PUBLIC REVIEW DRAFT

SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

FOR

MOSSDALE LANDING EAST

Lathrop, CA

December 5, 2003

Prepared for:

Community Development Department
CITY OF LATHROP
16775 Howland Road
Lathrop, CA 95330

PUBLIC REVIEW DRAFT

SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

FOR

MOSSDALE LANDING EAST

Lathrop, CA

December 5, 2003

Prepared for:

Community Development Department
CITY OF LATHROP
16775 Howland Road
Lathrop, CA 95330
(209) 858-2860

Prepared by:
INSITE ENVIRONMENTAL, INC.
6653 Embarcadero Drive, Suite Q
Stockton, CA 95219
(209) 472-8650

TABLE OF CONTENTS

APPENDICES (BOUND SEPARATELY)

LIST OF TABLES

LIST OF FIGURES Page

1.0 INTRODUCTION

1.1 PROJECT AND EIR BRIEF

This Supplemental Environmental Impact Report (SEIR) evaluates the potential environmental effects that may result from the City of Lathrop 's approval of the Mossdale Landing East (MLE) project. The MLE project consists of applications for City approval of an Urban Design Concept (UDC), Vesting Tentative Map, Development Agreement and Williamson Act contract cancellation for the 150.2-acre urban development project (all acreage counts are net unless otherwise noted). These approvals would result in development authorization for 403 single-family residential lots, 80 high-density residential units, 6.5 acres of Village Commercial development, 27.5 acres of Highway Commercial development, 14.0 acres of Service Commercial development and approximately 9.4 acres of parks and open space. The proposed project site is located within the City of Lathrop, east of the San Joaquin River, south of Louise Avenue and west of Interstate 5 (I-5). See Figures 1-1 through 1-6. The proposed project is described in more detail in Chapter 3.0 and summarized in Chapter 2.0 of this document.

This document presents an analysis of the potentially significant environmental impacts of the above-described project, as well as recommended mitigation measures that would reduce those impacts to a less than significant level. The analysis includes consideration of the project's potential cumulative impacts, alternatives to the proposed project and other analyses required by the California Environmental Quality Act (CEQA), Public Resources Code §§ 21000-21178.

This SEIR is an informational document that, in itself, does not determine whether the proposed project will be approved, but it functions as an aid in the local planning and decision-making process. The CEQA Guidelines § 15002 (f), state that the purpose of an EIR is to disclose to the public the significant environmental impacts of the proposed project, describe mitigation measures that could minimize or eliminate significant adverse impacts and evaluate alternatives to the proposed project. Additional information on the requirements of CEQA with respect to the project is provided in Section 1.3.

1.2 PROJECT BACKGROUND

The proposed project site is located within the West Lathrop Specific Plan (WLSP) area. The WLSP, approved by the City of Lathrop in and amended in 2003, addresses the planned development of approximately 6,055 acres of urban development in two parts: 1) the Stewart Tract (5,794 acres) and Mossdale Village (1,161 acres). The larger Stewart Tract area was originally planned to be developed with theme parks, commercial areas and residential development as well as golf courses and other open space areas. The Stewart Tract project was subsequently re-planned and approved by the City of Lathrop in January 2003 as "River Islands," as discussed in more detail below. The Mossdale Village portion of the WLSP was conceived as a residential village centered on a village commercial area. The proposed MLE project is located within the WLSP Mossdale Village

area and implements a portion of the approved Specific Plan. Large portions of the Mossdale Village area were also approved for development in January 2003; the approved area is known as Mossdale Landing. The 2003 changes to the WLSP did not impact the planned vision for the Mossdale Area under the 1995 WLSP.

The WLSP was the subject of Draft and Final Environmental Impact Reports that were certified by the City of Lathrop prior to the adoption of the Specific Plan. The EIR for the WLSP adopted in 1995 was the subject of litigation brought by the Sierra Club. In 1997, the San Joaquin County Superior Court found that the challenge to the EIR was untimely and that the EIR was therefore adequate. The Third District Court of Appeal affirmed that determination. According, as matter of law, the City is entitled to rely on this document as adequate.

Similarly, in a lawsuit denominated Silveria v. City of Lathrop, et al., the adequacy of the Mossdale Landing UDC EIR was challenged. That lawsuit was subsequently dismissed. Accordingly, the lack of a challenge now validates that EIR and makes it appropriate for tiering. This SEIR supplements and is tiered from the 1995 WLSP EIR, which is incorporated by reference in Section 1.3. All subsequent references to the "WLSP EIR" refer to the "1995" WLSP EIR.

The River Islands project, mentioned previously, consists of 300 acres of business park development, 1,800 acres of residential development, a town center and other commercial development. River Islands was designed with 200 acres of parks and 1,600 acres of lakes, as well as other open space uses. A Subsequent EIR was prepared for this project and certified by the City of Lathrop, prior to project approval, in January 2003.

The approved Mossdale Landing Project involved urban development of approximately 477 acres of farmland located adjacent to the project site. Mossdale Landing involves planned development of approximately 1,700 residential units, approximately 650,000 square feet of commercial uses, two elementary schools, a fire station, parks and other open space areas as well as urban utilities and services. An EIR was prepared for this project and certified by the City of Lathrop, prior to project approval, in January 2003. Two major portions of the Mossdale Landing project are currently underway, the northern portion which is being developed by Pacific Union Homes, and the southern portion which is being developed by TCN.

Applications for the MLE project, including the various elements described above and set forth in more detail in Chapter 3.0, were originally submitted to the City of Lathrop for review in early 2000 by Schuler Homes of California. Schuler was subsequently acquired by Western Pacific Housing, which is now the project applicant, together with Watt Commercial. The City of Lathrop prepared an Initial Study, which found that preparation of a Supplemental SEIR tiered to the WLSP EIR would be required to fulfill CEQA requirements with respect to the project. A Notice of Preparation incorporating the Initial Study was circulated through the State Clearinghouse, and several comments were received in response to the NOP. The NOP, Initial Study and comment letters are shown in Appendix A.

The MLE project has been subject to detailed technical review by City of Lathrop staff. In addition, the Lathrop Planning Commission conducted two Subdivision Conferences on the project, in February 2002 and October 2003. Input received on the project from City staff and Planning Commission has been incorporated into the proposed project and/or this SEIR as appropriate. A Scoping Meeting was also held on September 25, 2003 pursuant to Public Resources Code § 21083.9 public comment on the scope of the SEIR. All comments received at this meeting have been assessed in the SEIR.

Approximately 97 percent of the 6,955-acre West Lathrop Specific Plan area has been approved for development. The approved 4,880-acre River Islands project and the approved 913-acre Southeast Stewart Tract project account for 87 percent of the total development. The remaining 13 percent of the WLSP area is comprised of Mossdale Village, including Mossdale Landing, Mossdale Landing East, Mossdale Landing South, plus the other remaining properties. Only the 473-acre Mossdale Landing portion of Mossdale Village has been approved to date. With the approval of the 151-acre Mossdale Landing East project, 97 percent of the WLSP area will be approved for urbanization.

1.3 RELEVANT PROVISIONS OF CEQA

CEQA and the State CEQA Guidelines require an agency to prepare an EIR prior to taking a discretionary action that has the potential to cause significant, adverse effects on the environment. When an EIR has been prepared for an ongoing project, that EIR may be used to fulfill CEQA requirements for a later project, provided the information and analysis in the previous EIR adequately describe the project, its potential environmental effects and necessary mitigation measures. If this is not the case, additional documentation is required, ordinarily in the form of a Subsequent EIR, a Supplemental EIR, or an Addendum, depending on the degree of additional documentation required.

A Subsequent EIR is ordinarily required when the proposed project, its circumstances, or the available environmental information has changed substantially. The conditions under which a Subsequent EIR is warranted are defined in § 15162 of the CEQA Guidelines, as follows:

(a) When an EIR has been certified or a negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:

(1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;

(2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or

(3) New information of substantial importance, which was not known and could not have been known, with the exercise of reasonable diligence shows any of the following:

(A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;

(B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;

(C) Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or

(D) Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially lessen one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

A Supplemental EIR may be prepared if the conditions listed above for a subsequent EIR are met, but "only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation" (CEQA Guidelines § 15163).

The proposed project would not require the preparation of a "subsequent" EIR and would be consistent with the criteria for preparation of a supplemental EIR. The current proposed project conforms to and implements the approved Mossdale Village portion of the1995 WLSP. The potential environmental effects of Mossdale Village were addressed on a general level in the WLSP EIR, to which this SEIR is tiered. The WLSP considered the full range of potential environmental effects associated with urban development of the project site, including planned residential development west of Golden Valley Parkway and highway and service commercial areas to the east of the parkway. Major street and other infrastructure development required to support proposed urban development was also addressed in the WLSP EIR.

The Initial Study/Notice of Preparation for the project (Appendix A) identified the issues that were addressed in the WLSP EIR, and the issues that need to be addressed in the environmental review document for the MLE project. On the basis of this review, and the analysis contained in this document, the proposed project would not involve any new and potentially significant environmental effects that were not addressed in the previous EIR. The current SEIR does consider the site-specific potential environmental effects of the project that were not addressed at a project level-of-detail in the WLSP EIR.

The project vicinity is planned for substantial development pursuant to the approved WLSP and the River Islands project. Ongoing development of these projects, including current development activity within the Mossdale Landing project, will result in substantial changes to the project area environment. Changes in setting associated with ongoing development will be addressed in this Supplemental EIR; however, these changes have not resulted in the potential for additional or substantially more severe significant environmental effects associated with the proposed project.
This SEIR has been prepared in accordance with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines. CEQA was passed in 1970 to ensure that state and local agencies consider the environmental effects of actions initiated, regulated or financed by the agencies. The CEQA Guidelines contain advisory and mandatory requirements for the application of CEQA.

An EIR is intended to inform decision-makers and the public about the potential adverse environmental effects of the proposed project, and to identify measures that will reduce or avoid these effects. Members of the public have the opportunity to comment on the adequacy of the EIR in meeting these purposes during a 45-day review period following the publication of the Draft SEIR.

The City of Lathrop is the "Lead Agency" for the proposed project. As defined in the CEQA Guidelines, a Lead Agency is the public agency that carries out a project or that has the greatest responsibility for supervising or approving a project. Any comments or questions regarding this EIR should be submitted to the Lead Agency at the following address by the date specified in the Notice of Availability and/or Notice of Completion for this Draft SEIR.

City of Lathrop
Community Development Department
16775 Howland Road, Suite 1
Lathrop, CA 95330
Attention: Bruce Coleman, Community Development Director
(209) 858-2860

The preparation of this Draft SEIR is one step in the CEQA process. Following the public and agency review period for this Draft SEIR, the City of Lathrop will prepare responses to comments received, and the comments and responses will be incorporated into a Final SEIR. The Final SEIR will be used by the City and responsible agencies in their decision-making with respect to the various applications that make up the project.

The potential environmental effects of the proposed project have been considered on a cumulative level in both the West Lathrop Specific Plan EIR and in the Lathrop General Plan and EIR. The WLSP EIR addressed the potential environmental effects of planned urban development of the entire 6,955-acre WLSP area. The Lathrop General Plan EIR addressed the potential environmental impacts of planned urban growth within the City's Sphere of Influence, including the West Lathrop Specific Plan area and the MLE project site. Additional consideration of cumulative and other significant effects related to the project occurred in the City's consideration and approval of an Urban Design Concept and Tentative Map for the Mossdale Landing (ML) project, which adjoins the MLE project; a Supplemental EIR tiered to the WLSP EIR was prepared for the ML project.

The above-referenced EIRs and related documents, cited below, are incorporated in to this Draft EIR by reference. Copies of these documents are available for review at the offices of the City of Lathrop, 16775 Howland Road, Suite 1.

Grunwald and Associates. 1995a. Draft Environmental Impact Report, West Lathrop Specific Plan. SCH # 931120207. July 1995.

Grunwald and Associates. 1996. Final Environmental Impact Report, West Lathrop Specific Plan. SCH # 931120207. November 1995.

Grunwald and Associates. 1991. Comprehensive General Plan and Environmental Impact Report for the City of Lathrop, California. December 17, 1991.

EDAW. 2002. Draft Environmental Impact Report for the Mossdale Landing Urban Design Concept. SCH#2001052059. August 29, 2002.

EDAW, 2002. Draft Environmental Impact Report for the Lathrop Water Recycling Plant No. 1 Phase I Expansion Project. SCH# 2001122108. December 31, 2002.

The City of Lathrop recently adopted a comprehensive water, wastewater and recycled water master plan for the City (July 2001). An EIR was prepared for this document, and

this EIR is also incorporated by reference below. Copies of the EIR document are also available for review at the City offices.

EDAW, Nolte Associates, Inc., Larry Walker Associates and Hagar Environmental Science. 2001. Final Environmental Impact Report for the Lathrop Water, Wastewater, and Recycled Water Master Plan. June 2001.

1.4 RELATED PROJECTS

The proposed project site is located in the western portion of the City of Lathrop Planning Area, west of Interstate 5. The Lathrop General Plan designates the area north and west of the San Joaquin River for a variety of new urban development-types. The project site is located at the southern end of this area, within the City's current corporate boundary. Urban services for this area have been planned by the City in adopted utility master plans. Lands in the immediate vicinity of the site are planned or approved for urban use, as summarized below (Figure 6).

The River Islands project, located southwest of the MLE project and across the San Joaquin River, involves the planned development of approximately 4,800 acres of the Stewart Tract portion of the WLSP. A previously proposed theme park and other recreation-oriented development have been redesigned in favor of a business park-oriented development that includes substantial residential, commercial and recreational development. The proposed River Islands project consists of approximately 300 acres of business park development; approximately 1,800 acres of residential development generating approximately 11,000 homes; a town center; and other commercial development. The project also includes approximately 200 acres of parks and 1,600 acres of lakes, as well as other open space uses. The City of Lathrop completed Subsequent EIR for the project and approved the development in January 2003.

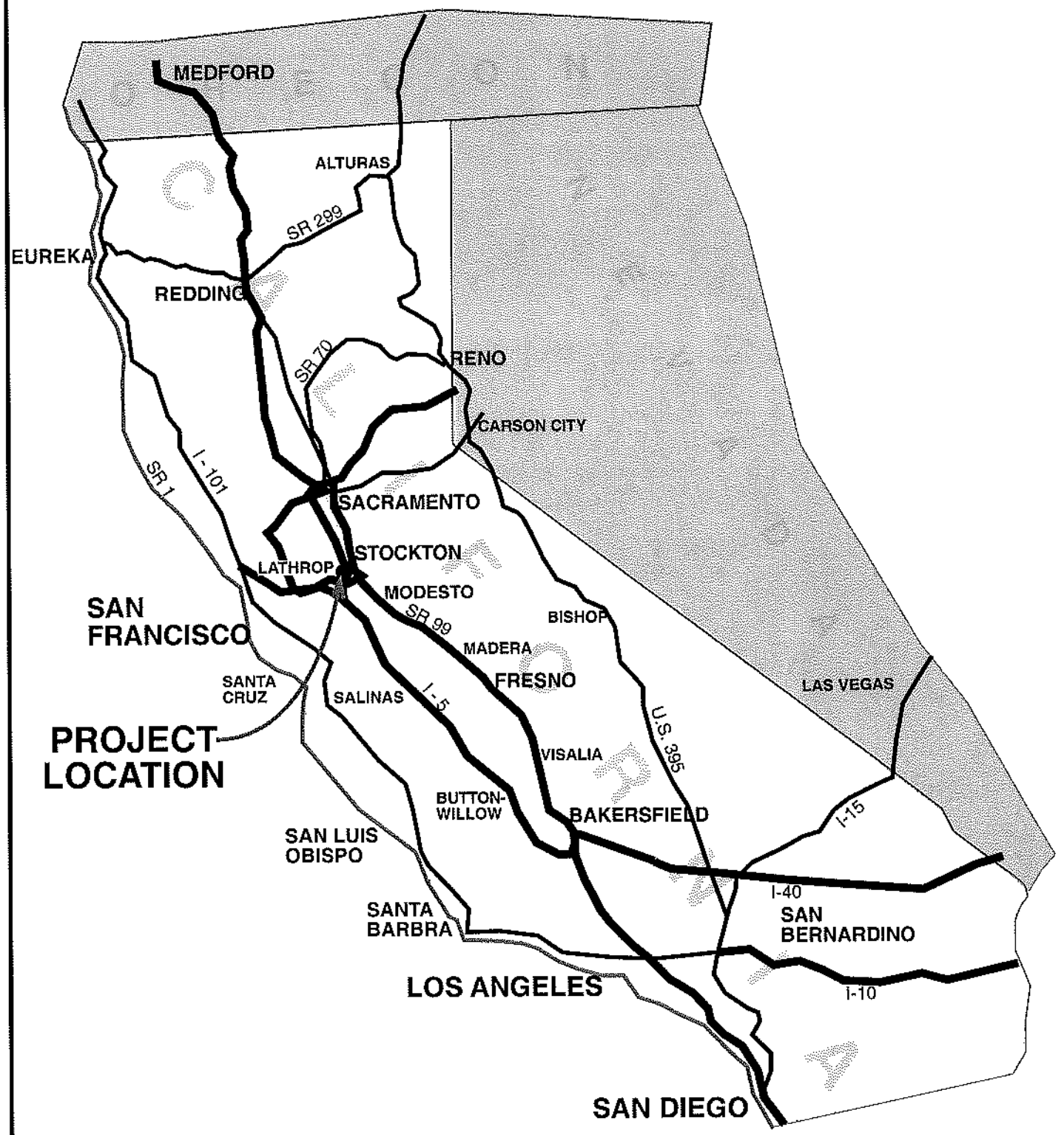
The Mossdale Landing project is located adjacent to the MLE project (Figure 1-6). Mossdale Landing implements a portion of the approved 1995 WLSP in Mossdale Village. This 477-acre project would create sites for approximately 1,700 largely single-family residential units, approximately 30 acres of commercial development, two schools and 50 acres of parks and recreation lands. The City of Lathrop has completed an EIR and approved the Mossdale Landing project in January 2003. Initial portions of this project are currently under construction.

The Central Lathrop Specific Plan area is located to the north of the proposed project. The land owners in this area have submitted an application to the City of Lathrop to develop a specific plan for this area, which encompasses a total of 1,044 acres. A specific plan and environmental documents for this area are currently in preparation.

From 2000-2001, the City of Lathrop processed applications for a project located north of the Central Lathrop area known as the Riverwalk Specific Plan. The Riverwalk project involved approvals required to permit urban development of a 423-acre site located between Interstate 5 and the San Joaquin River at the northern end of the central Lathrop Specific Plan area. The project application was withdrawn by the project proponent in late 2001. This site is now incorporated within the Central Lathrop Specific Plan area.

The City of Lathrop is currently involved in expansion of its water and sewage treatment infrastructure. These projects include construction of a new water well (#21) and expansion of Water Recycling Plan No. 1. The South County Surface Water Supply Project

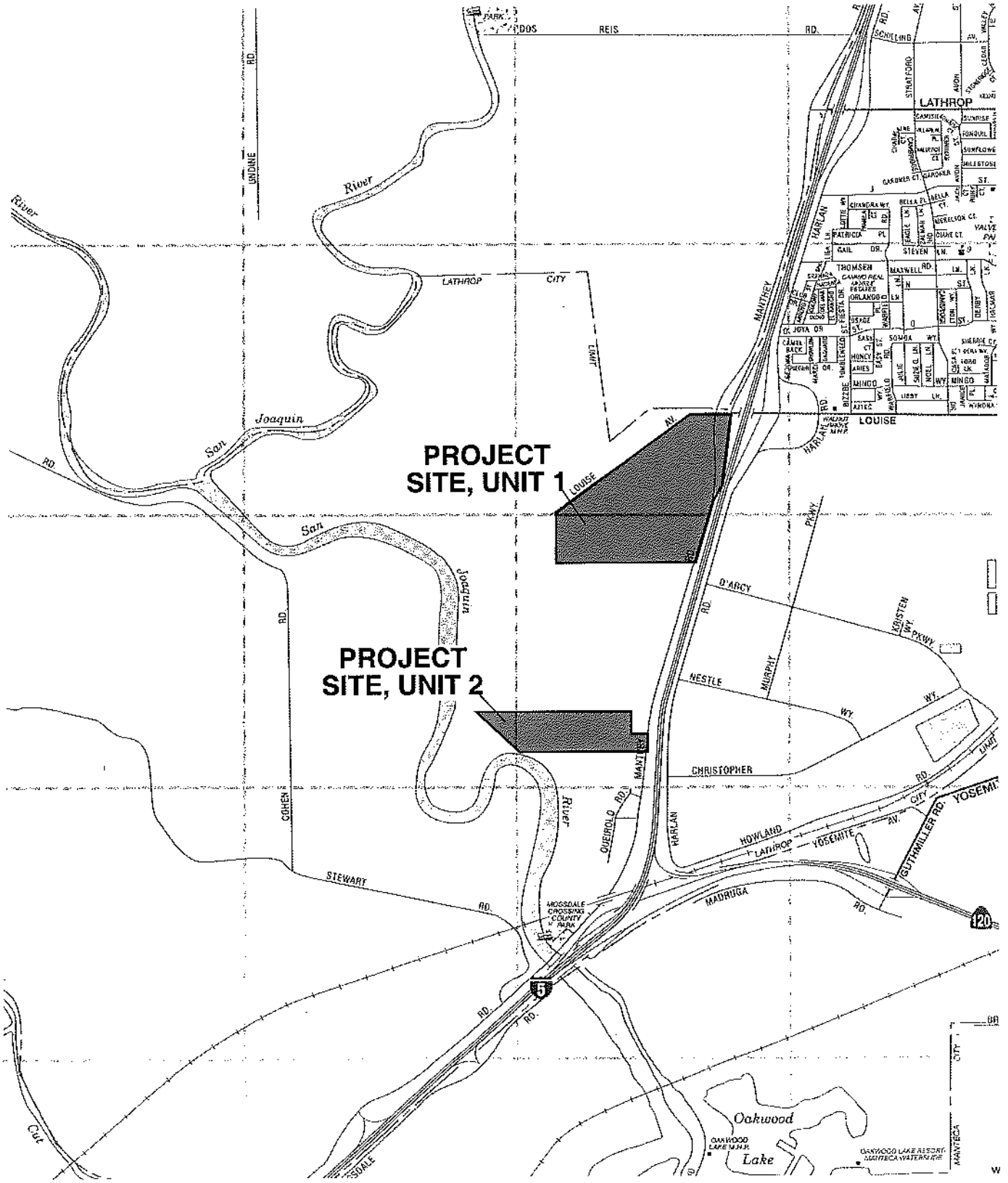
has also been initiated by the South San Joaquin Irrigation District and the cities of Manteca, Tracy, Escalon and Lathrop. This project includes infrastructure improvements and additional groundwater entitlements. These projects are currently under planning and construction stages.



Source: INSITE ENVIRONMENTAL

INSITE ENVIRONMENTAL

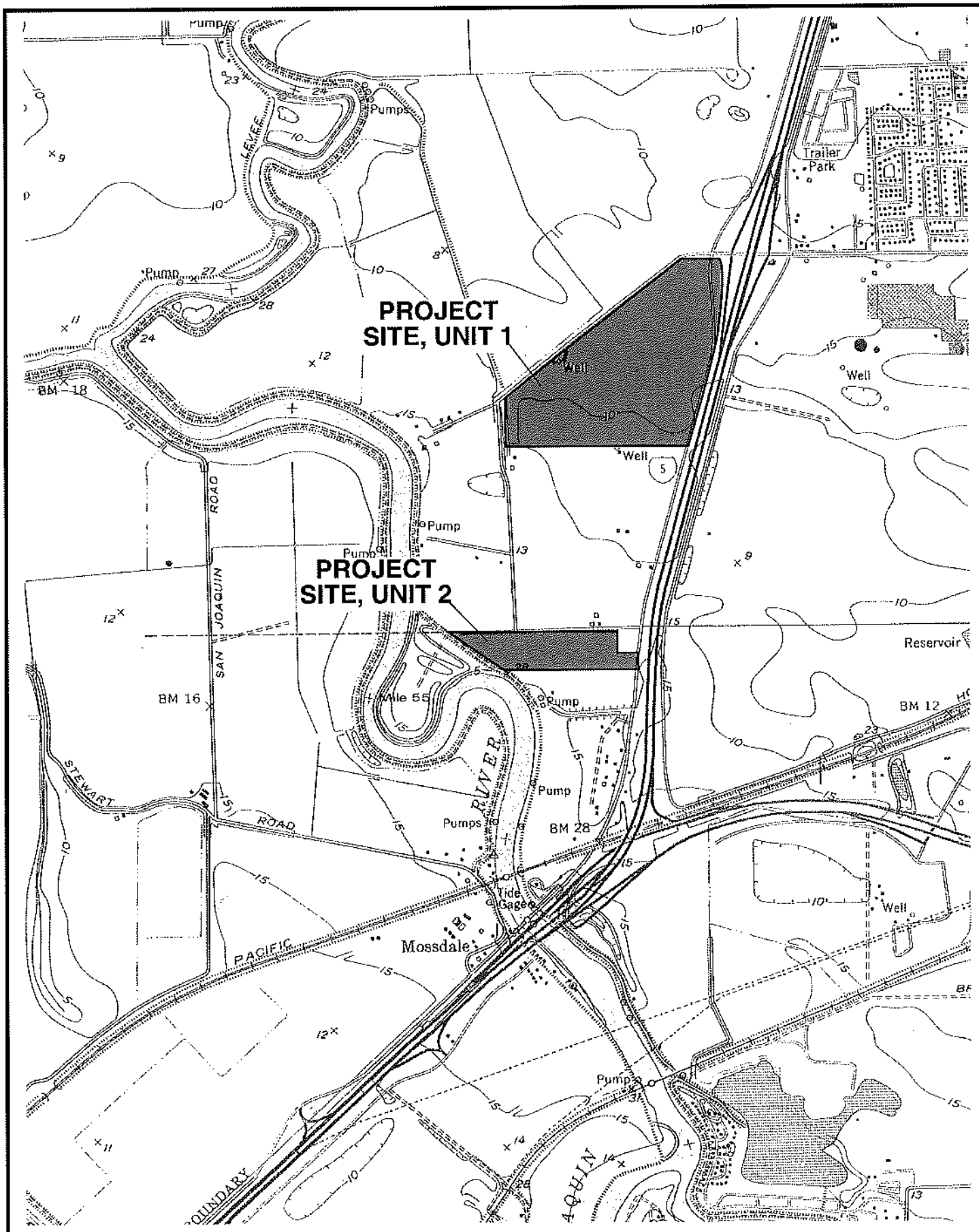
Figure 1-1
REGIONAL MAP



Source: AAA

INSITE ENVIRONMENTAL

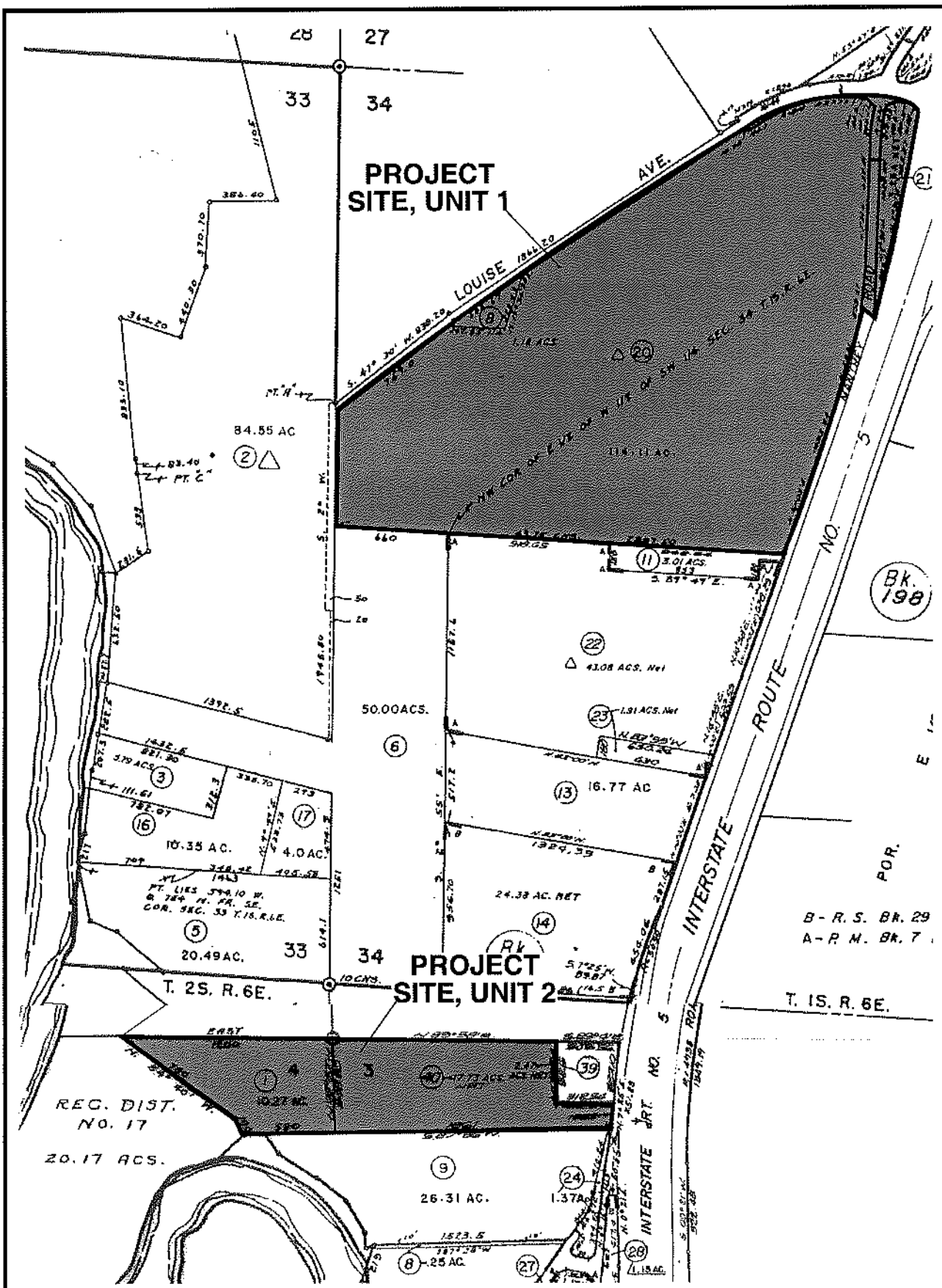
Figure 1-2
VICINITY MAP



Source: USGS LATHROP QUADRANGLE

INSITE ENVIRONMENTAL

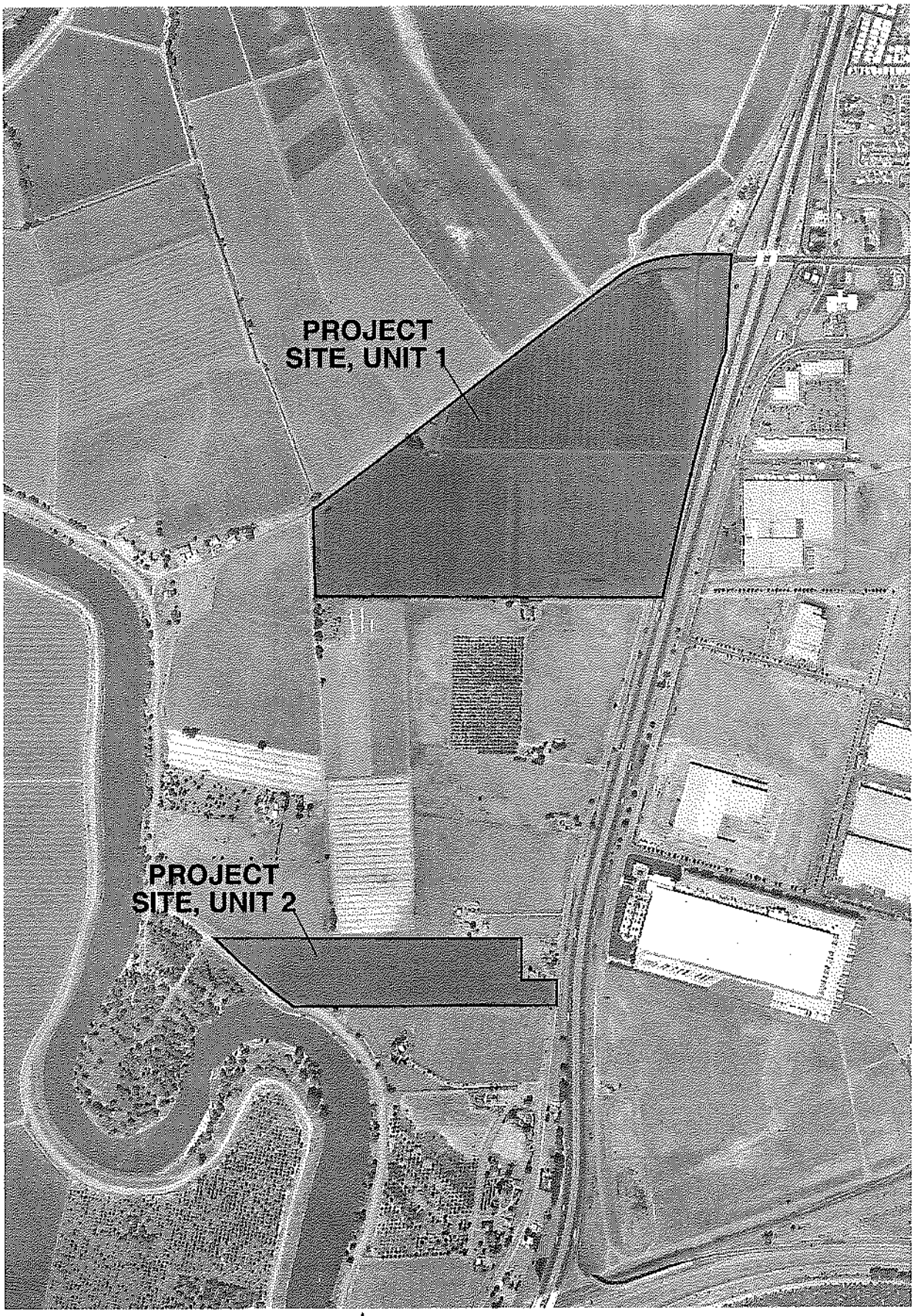
Figure 1-3
USGS MAP



Source: COUNTY ASSESSOR'S OFFICE

INSITE ENVIRONMENTAL

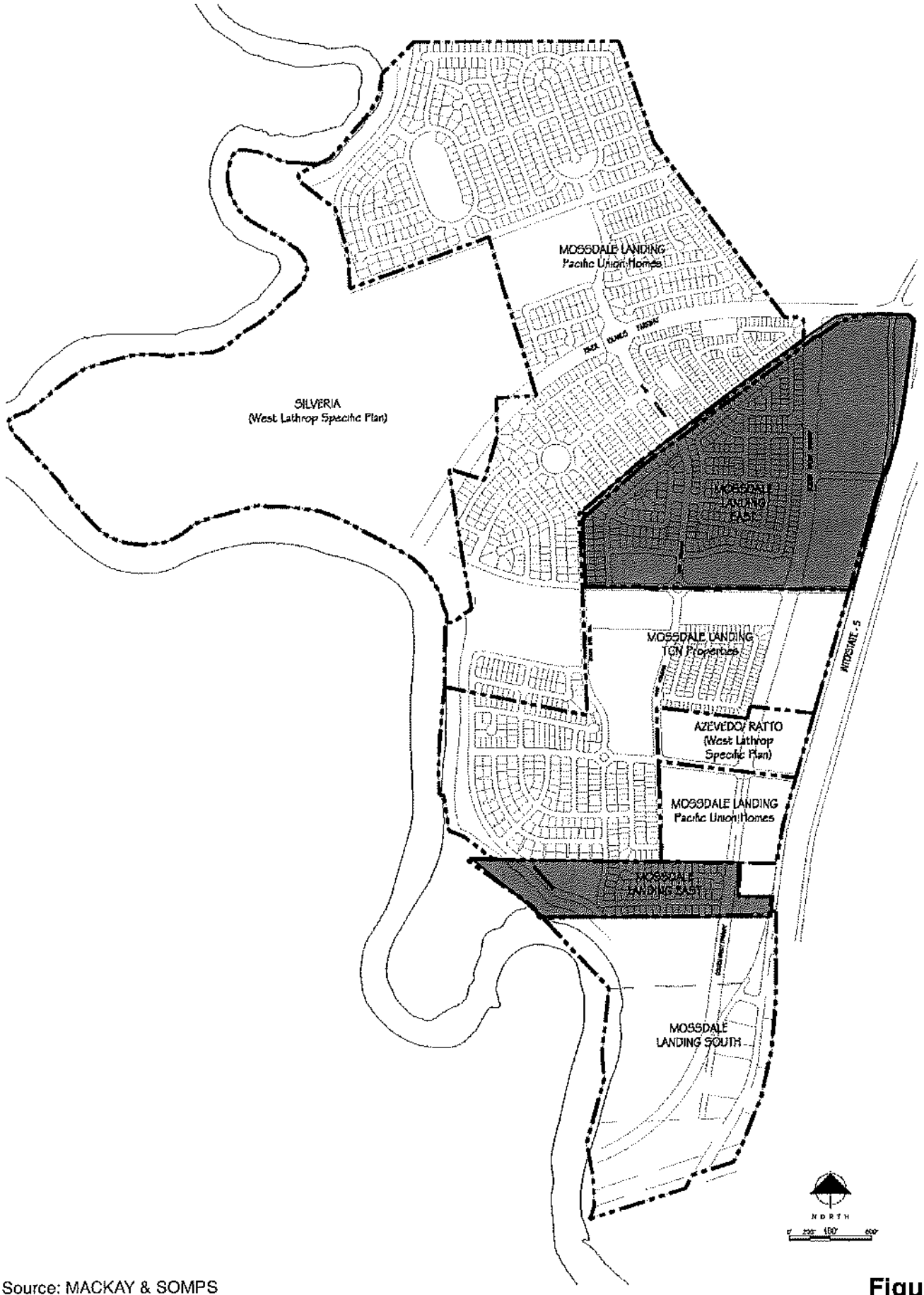
Figure 1-4
ASSESSOR PARCEL MAP



Source: GEONEX, THOMPSON-HYSELL ENGINEERS

INSITE ENVIRONMENTAL

Figure 1-5
AERIAL PHOTO



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

Figure 1-6
MOSSDALE LANDING PROJECTS

2.0 SUMMARY

2.1 SUMMARY PROJECT DESCRIPTION

The Mossdale Landing East (MLE) project consists of applications for City approval of an Urban Design Concept (UDC), Vesting Tentative Map, Development Agreement and Williamson Act contract cancellation for the 150.2-acre project site. These approvals would result in development authorization for 403 single-family residential lots, 80 high-density residential units, 6.5 acres of Village Commercial Development, 27.5 acres of Highway Commercial Development, 14.0 acres of Service Commercial Development and approximately 9.4 acres of parks and open space, including spray fields, ponds and other public uses (Figures 3-1 and 3-2). Additional detail on the project is provided below and in Chapter 3.0.

The proposed project involves development of a portion of Mossdale Village, a major element of the urban development described in the approved West Lathrop Specific Plan (WLSP). The WLSP is 6,955-acre urban development plan approved by the City of Lathrop in 1995. Mossdale Village is a primarily traditional residential development that includes a village commercial center and service and highway commercial development along I-5. Mossdale Village is located in the eastern portion of the WLSP area, west of I-5. Most of the Mossdale Village area, and the remainder of the WLSP area, now known as the River Islands project, have been approved for urban development and are preparing for construction. Additional detail on other ongoing development projects in Mossdale Village, River Islands and surrounding areas is provided in Section 1.2.

The proposed project site is located within the incorporated area of the City of Lathrop between I-5 and the San Joaquin River, south of the Louise Avenue interchange. The project site is divided into two units: Unit One (122 acres) is located immediately south of Louise Avenue and adjacent to I-5, and Unit Two (28 acres) is located approximately 0.5 miles south of Unit One. Figures 1-2 through 1-6 in Chapter 1.0 show the project location in detail.

The proposed UDC, required by the adopted WLSP, includes a detailed mapping and description of land uses, circulation systems, landscaping, design details, and other elements related to buildout of the project, including the provision of utilities and the financing of public services and facilities. The UDC prescribes development standards for proposed land uses in planned residential, commercial and public areas; the circulation system's location and standards; design guidelines for the various land uses; specifications for planned public improvements, signage and lighting; plans for water, sewer, storm drainage and reclaimed water systems; and project phasing and financing, including police, fire, animal control, maintenance and operation.

The UDC emphasizes the creation of a livable, pedestrian-oriented community that provides identity and variety. The UDC embodies themes associated with the history and imagery of the City of Lathrop as well as incorporating other elements of development in traditional Central Valley communities. These features would include a network of interconnected streets, roundabouts, parkways with canopy street trees, varied architectural styles and access, and a mix of land uses. Development authorized by the UDC is summarized in Table 2-1.

TABLE 2-1
LAND USE TABLE
MOSSDALE LANDING EAST PROJECT
(acres)

Proposed Land Use	Unit 1			Unit 2			TOTAL PROJECT		
	ACRES	SQ. FT.	UNITS	ACRES	SQ. FT.	UNITS	ACRES	SQ. FT.	UNITS
Highway Commercial	27.5	270,246					27.5	270,246	
Service Commercial	12.5	136,125		1.5	13,068		14.0	149,193	
Village Commercial	6.5	79,497					6.5	79,497	
High Density Residential	4.0		80				4.0		80
Low Density Residential	13.2		85	10.1		66	23.3		151
Medium Density Residential	27.6		252				27.6		252
Open Space				3.6			3.6		
River Park				1.7			1.7		
Neighborhood Park				4.1			4.1		
Streets	31.1			6.8			37.9		
TOTAL	122.4	485,868	417	27.8	13,068	66	150.2	498,936	483

The circulation provisions of the UDC (Figure 3-4) establish a street plan for the proposed community and linkage between the UDC area and the overall circulation network defined in the City's General Plan, the WLSP and subsequent development approvals.

Utility services for the project will be extended from planned improvements to be constructed in conjunction with the adjoining Mossdale Landing project. Domestic water service for the MLE project will be provided by an expansion of the City's existing water system in conjunction with proposed commercial and residential development (Figure 3-9). Water supply will be derived from new wells to be added to the City's well system and, in the long-term, from the South County Surface Water Supply Project (SCSWSP).

Wastewater treatment and disposal services shall be provided by the City of Lathrop, and the project would provide recycled water disposal areas on an interim basis. The proposed wastewater collection system (Figure 3-10) would be extended from improvement to be constructed by the Mossdale Landing project. The project will construct portions of the City's planned recycled water distribution system. Unit 2 of the project site, and a small portion of Unit 1, will serve as an interim disposal site for treated wastewater, subject to required state permits.

Storm Drainage. The project would involve the installation of new storm drainage facilities to serve the project (Figure 3-12), including a storm water detention pond. The proposed collection system would discharge to a planned outfall to be constructed adjacent to the San Joaquin River by the adjoining Mossdale Landing project.

The MLE project does not provide sites for schools. The project will provide one proposed neighborhood park on 4.1 acres at the west end of Unit 2, likely including both active and passive recreational facilities. An additional 5.3 acres west of River Drive in Unit 2 would be reserved for River Park and Open Space. Additional park facilities will be constructed in conjunction with the adjoining Mossdale Landing project. The project will contribute to development of park facilities through payment of required parkland dedication (Quimby Act) fees and cultural and leisure CFFs.

The MLE project would be phased as shown on Figure 3-16. The principal discretionary permits and approvals for the project would be granted by the City of Lathrop. Permits and approvals from a number of other agencies may also be necessary in the course of development of the project site. Anticipated and potential permits and approvals are identified in Table 3-3.

2.2 SUMMARY OF IMPACTS AND MITIGATION MEASURES

The potentially significant impacts of the proposed project and mitigation measures proposed to minimize these effects are listed in Table 2-2 at the end of this chapter. The table also identifies the level to which the proposed mitigation measures would reduce impacts. Significant unavoidable impacts are those for which the significance remains "significant" or "potentially significant" after mitigation measures are applied.

2.3 SUMMARY OF ALTERNATIVES

Chapter 19.0 identifies and discusses a range of reasonable alternatives to the proposed project, including the "no project" alternative. The alternatives addressed include:

No Project
Lower Density/Reduced Commercial Alternative

Several other alternatives were discussed that were found to be either infeasible or to not have the potential to reduce environmental impacts of the project. These alternatives were dismissed from further consideration:

General Plan/WLSP Buildout
Off-Site Alternative
Other Alternatives Addressed in the WLSP EIR
Extended Use Of On-Site Areas For Storm Water Detention And Recycled Water Disposal
Project Design To Address Significant Environmental Constraints

No Project Alternative

The No Project Alternative is defined as the continuation of existing conditions and trends in the project area. This alternative assumes that there is no action on the part of the City of Lathrop to approve the proposed UDC, SEIR, Development Agreement, and subdivision map for the project area. The analysis of this alternative is required by State law.

This alternative would avoid projected increases in population and associated demands for public services and utilities as well as eliminate increased traffic, air pollution and noise impacts due to project-related travel on local roadways. This alternative would involve no changes to aesthetics, agriculture, geology, soils, biology, or cultural resources within the project area. The alternative would be inconsistent with adopted planning documents such as the Lathrop General Plan and the West Lathrop Specific.

The environmental benefits of this alternative would be temporary as a result of continuing development pressure, and this alternative does not fulfill the basic objectives of the project.

Lower Density/Reduced Commercial Alternative

The Lower Density/Reduced Commercial alternative is defined as a general but substantial reduction in the residential and commercial development yield of the proposed project. For the purposes of this analysis, that reduction is nominally set at 25%. Under this alternative, then, the project would consist of up to approximately 350 residential units and 375,000 square feet of commercial development.

This alternative would reduce projected increases in population, associated demands for public services and utilities and traffic, air pollution and noise. This alternative would involve no substantial changes to the aesthetics, agriculture, geology, soils, biology, or cultural resources impacts of the project. This alternative would also be inconsistent with adopted planning documents.

Reduced density would displace demands for urban development onto other undeveloped lands, resulting in increased impacts on agricultural, cultural and biological resources; dispersion of new urban development may also result in increases in vehicle miles traveled and associated air quality effects as well as the costs of urban services and utilities.

This alternative would partially fulfill the objectives of the project and may result in short-term reductions in environmental impact. However, this alternative would likely result in greater resource land and traffic impacts as a result of displacement of anticipated growth. and potentially result in greater impacts associated with vehicular travel.

The No Project Alternative is the environmentally superior alternative. Of the project alternatives, the proposed project is the environmentally superior alternative.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
4.0 AESTHETICS			
Aesthetic Effects of Proposed Residential Development	LS	None required	
Light and Glare	LS	None required	
5.0 AGRICULTURE			
Conversion of Agricultural Land	S	None available	S
Urban Agricultural Conflicts	PS	1. The project proponent will implement mitigation measures 1.a. as provided in the WLSP EIR at page V-2 for planned residential uses that abut ongoing commercial agricultural operations.	LS
Williamson Act Contracts	PS	None available	PS
6.0 AIR QUALITY			
Construction-Related Emissions	S	1. The owners, developers and/or successors-in-interest shall comply with all applicable requirements of SJVAPCD Regulation VIII, including compliance with the following mitigation measures 2 through 10. 2. Visible Dust Emissions (VDE) from construction, demolition, excavation or other earthmoving activities related to the project shall be limited to 20% opacity or less, as defined in Rule 8011, Appendix A. The dust control measures specified in mitigations 3 through 10 shall be applied as required to maintain the VDE standard. 3. Pre-water all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activity sites and phase earthmoving. 4. Apply water, chemical/organic stabilizer/ suppressant, or vegetative ground cover to all disturbed areas, including unpaved roads.	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation

5. Restrict vehicular access to the disturbance area during periods of inactivity.

6. Apply water or chemical/organic stabilizers/ suppressants, construct wind barriers and/or cover exposed potentially dust-generating materials.

7. When materials are transported off-site, stabilize and cover all materials to be transported and maintain six inches of freeboard space from the top of the container.

8. Remove carryout and trackout of soil materials on a daily basis unless it extends more than 50 feet from site; carryout and trackout extending more than 50 feet from the site shall be removed immediately. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden. If the project would involve more than 150 construction vehicle trips per day onto the public street, additional restrictions specified in Section 5.8 of Rule 8041 will apply.

9. Traffic speeds on unpaved roads shall be limited to 15 mph.

10. The ODS shall submit a Dust Control Plan to the SJVAPCD at least 30 days prior to the start of construction activity, as required by Rule 8021, for any activities that involve more than 40 acres of disturbed surface area or will including moving more than 2,500 cubic yards per day of bulk materials on at least three days.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
Ozone Precursor Emissions	S	1. The proponents shall implement the following mitigation measures: Install central water heaters in all residential and commercial buildings. Prohibit the use of wood stoves or fireplaces in all residential dwellings. Orient buildings north/ south to take advantage of solar heat gain. Provide bus turnouts and transit improvements where requested by SMART Provide sidewalks and/ or pedestrian paths. Provide direct pedestrian connections. Provide street lighting. Provide pedestrian signalization and signage. Provide bike lanes/paths connecting to bikeway system. Provide shade trees to shade sidewalks. Provide pedestrian safety designs/ infrastructure at crossings. Provide secure bicycle parking Provide outdoor electric outlets and gas hook-ups	S
7.0 BIOLOGICAL RESOURCES			
Impacts of Waters of the U.S. and Wetlands	LS	None required	
Project Impacts on Swainson's Hawk, Burrowing Owl and Other Sensitive Species Addressed by the San Joaquin County Habitat Conservation Program	S	1. The project proponent shall pay the applicable (SJMSHCP) fee prior to the issuance of any building permit for the parcel area to be developed. 2. The Project proponents shall implement other "Incidental Take Avoidance Measures" as specified in the SJMSHCP.	LS
Project Impacts on Riparian Brush Rabbit	LS	None required	
Project Impacts on Heritage Oak Trees	LS	None required	
Sensitive Fish Species, Water Quality Concerns	LS	None required	

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
Impacts on Other Sensitive Plant or Wildlife Species	LS	None required	
8.0 CULTURAL RESOURCES			
Impact on Known Archaeological or Historical Resources	LS	None required	
Impact on Unknown Archaeological Resources	PS	1. If subsurface cultural materials are encountered, all construction activities in that area shall be halted until a qualified archaeologist can examine these materials and make a determination of their significance. The City of Lathrop Community Development Department shall be notified, and impacts on significant cultural resources shall be mitigated pursuant to the requirements of the CEQA Guidelines. 2. If human remains are encountered at any time during the development of the project, all work in the vicinity of the find shall halt, and the County Coroner and the Community Development Department shall be notified immediately. If the remains are of Native American origin, the Coroner must contact the Native American Heritage Commission. At the same time, a qualified archaeologist must be contacted to evaluate the archaeological implications of the finds. The CEQA Guidelines detail additional steps to be taken if human remains are found to be of Native American origin.	LS
10.0 GEOLOGY AND SOILS			
Seismic-Related and Soils Hazards	S	1. The project proponent shall submit copies of project geotechnical reports prepared by qualified geotechnical or soils engineers to the Lathrop Building Department for review and approval.	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		2. All proposed development shall conform to the soils engineer's recommendations, as detailed in the approved soils report.	
Shallow Groundwater Constraints	LS	None required	
Soil Erosion	PS	1. Comply with mitigation measures identified for storm water quality effects in Chapter 12.0, Hydrology and Water Quality	LS
11.0 HAZARDS AND HAZARDOUS MATERIAL			
Exposure to Hazardous Materials Transportation Risks	LS	None required	
Exposure to High-voltage Power Lines and Electromagnetic Fields	LS	None required	
Exposure to Hazardous and Toxic Materials and Sites	LS	None required	
Hazardous Air Pollutants	LS	None required	
12.0 HYDROLOGY AND WATER QUALITY			
Direct Impacts on Surface Water Features	LS	None required	
Potential Effects on River Flow and Volume	LS	None required	
Project Effects on Levee Stability and Flooding Risk	LS	None required	
Construction Effects on Surface Water Quality	PS	1. The project proponent shall prepare a Notice of Intent and Storm Water Pollution Prevention Plan and submit these documents to the California Regional Water Quality Control Board and the City of Lathrop.	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		2. The proponent shall implement all relevant provisions of the SWPPP, the City SWMP and Construction General Permit during project construction.	
Urban Runoff Effects on Surface Water Quality	LS	None required	
Effects of Recycled Water Storage and Disposal on Surface Water Quality	LS	None required	
Project Effects on Groundwater Quality	LS	None required	
13.0 LAND USE AND PLANNING			
Interim Land Use Conflicts during Project Buildout	LS	None required	
Conflicts between Planned and Existing Land Uses	LS	None required	
14.0 NOISE			
Construction Noise	PS	1. Construction activities should be restricted to the daytime hours of 7:00 a.m. to 7:00 p.m. In addition, all equipment shall be fitted with factory-equipped mufflers, and in good working order.	LS
Project-Related Increases in Traffic Noise Levels at Existing Land Uses.	LS	None required	
Traffic Noise Impacts at Proposed Residential Land Uses	S	1. The project proponent shall construct a noise barrier with a total height of eight feet along the rear property lines of residential lots adjacent to Golden Valley Parkway.	LS
Noise Impacts Associated With Commercial Uses	LS	None required	

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
15.0 PUBLIC SERVICES			
Project Impact on Law Enforcement	PS	1. The applicant shall be responsible for paying startup costs associated with police services. The manner and timing of payment shall be established in the project Development agreement.	LS
		2. The applicant shall fence, provide night lighting and provide private security for contractors' storage yards during the construction phases of new development to prevent theft and vandalism, and to reduce calls for assistance from the Police Department.	
		3. The proposed tentative map, circulation designs, residential numbering and other elements of the project shall be subject to the review of, and developed in coordination with the Police, Fire, and Public Works Department. The same mitigation measure is repeated in the following section 7.2 Fire Protection.	
		4. The applicant shall be responsible for providing traffic control preemption devices on all traffic lights to be constructed in conjunction with MLE development.	
Animal Control Services	PS	1. The applicants shall be responsible for paying startup costs associated with animal control services. The manner and timing of payment shall be established in the project development agreement.	LS
		2. The applicants shall pay Capital Facilities Fees to defray capital facilities costs associated with animal control facility expansion.	

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		3. The applicant shall provide each new homeowner with a pamphlet detailing the responsibilities of pet ownership, the City's leash law and procedures for dealing with wildlife.	
Fire Protection	PS	1. The applicant shall pay applicable Fire Facility Fees at the time of building permit issuance in accordance with the City of Lathrop's fee schedule in force at the time of development. If required in order to maintain fire district response time standards, and when requested by the fire district, the City may require that these fees be paid at the time of filing of final maps.	LS
		2. Improvement plans for each phase of development shall be subject to the review of the Lathrop-Manteca Fire Protection District, including consideration of the need to maintain secondary access to properties requiring fire protection.	
		3. The tentative map, improvement plans and other project plans and specifications shall be coordinated with the Lathrop Police, Fire and Public Works Departments. This mitigation measure is also included in the previous section 7.1 Police Protection.	
		4. Planned water distribution facilities shall be designed in order to meet applicable, adopted Uniform Fire Code requirements for the proposed land uses.	
Parks and Recreation	PS	1. The project proponent shall dedicate park sites shown in the UDC for public/ recreational use.	LS
		2. After consideration of parkland dedications, the applicant shall pay any remaining required parkland in-lieu fees. The applicant shall pay required Cultural and Leisure Capital Facilities Fees in order to meet parkland requirements generated by the project.	

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		3. Linear river park improvements shall conform to design standards provided by the City.	
Schools	S	1. Consistent with Government Code sections 53080-53080.15 and 65995-65995.3, the project proponents shall pay adopted developer fees toward construction of new schools prior to issuance of construction permits in accordance with the rate at the time of building permits.	LS
Solid Waste	LS	None required	
16.0 TRANSPORTATION AND CIRCULATION			
Year 2007 Intersection Level of Service Impacts	S	1. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution towards improvements at the River Islands Parkway/I-5 Southbound Ramps, as follows: • Add a third southbound off-ramp lane and stripe as two exclusive left turn lanes and a shared through/right turn lane. • Add a second eastbound Louise Avenue approach lane. 2. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution toward improvements at the Louise Avenue/I-5 Northbound Ramps, as follows: • Add a third northbound off-ramp lane and stripe as two exclusive right turn lanes and a shared through/left turn lane.	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		3. The project applicant shall participate in the Mossdale Landing Traffic Monitoring Program.	
Year 2007 Intersection Signal Warrant	LS	None required	
Year 2007 Freeway Level of Service	S	1. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution for I-5 and I-205 freeway improvements.	S
Year 2025 Intersection Level of Service Impacts	S	1. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution towards improvements at River Islands Parkway/I-5 Southbound Ramps as follows: • Add a fourth southbound off-ramp lane and stripe as two exclusive right turn lanes, and exclusives left turn lane and a shared left/through lane. One of the two right turn lanes would be a free right turn and channelized to its own exclusive departure lane, while the other right turn lane would be signal controlled. 2. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution towards improvements at Louise Avenue/I-5 Northbound Ramps as follows: • Add a fourth northbound off-ramp lane and stripe as two exclusive right turn lanes, an exclusive left turn lane and a shared left/through lane. One of the two right turn lanes would be a free right turn and channelized to its own exclusive departure lane, while the other right turn lane would be signal controlled.	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		3. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution towards improvements at River Islands Parkway/Golden Valley Parkway as follows: • Provide free right turns on the northbound Golden Valley Parkway intersection approach. • Add a fifth eastbound departure lane extending to the I-5 southbound ramps intersection. • Add a second left turn lane to the eastbound River Islands Parkway approach. 4. The project applicant is fully responsible for design and construction costs of improvements at River Islands Parkway/Golden Valley Parkway as follows: • Add third through lanes to the north and southbound Golden Valley Parkway approaches. 5. The project applicant is fully responsibly for design and construction costs of improvements at Golden Valley Parkway/Towne Centre Drive as follows: • Add a second right turn lane to the westbound Towne Centre Drive approach.	
Year 2025 Intersection Signal Warrant	LS	None required	

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures		Mitigation Measures	Significance After Mitigation
Year 2025 Freeway Level of Service	S	1.	The City of Lathrop shall ensure that the project applicant pays its Applicable Transportation Impact Fee for its fair share contribution for I-5 and SR 120 freeway improvements detailed as follows: Summary of Required Freeway Lanes for Base Case + Project Peak Hour Traffic I-5 (north of SR 120) - 5 lanes northbound / 4 lanes southbound I-5 (between SR 120 and I-205)-8 lanes each direction I-5 (south of I-205) – 3 lanes each direction I-205 (west of I-5) – 5 lanes each direction SR 120 (east of I-5) – 4 lanes each direction	S
Existing + Project Intersection Level of Service Impacts	S	1.	The project applicant is fully responsible for design and construction costs of improvements at Louise Avenue/I-5 Southbound Ramps as follows: • Add a second lane to the eastbound Louise Avenue approach.	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		2. The project applicant is fully responsible for design and construction costs of improvements at Louise Avenue/I-5 Northbound Ramps as follows: • Add a third northbound off-ramp lane and stripe as two exclusive right turn lanes and a combined through/left turn lane.	
		3. The project applicant is fully responsible for design and construction costs of improvements at Louise Avenue/Golden Valley Parkway as follows: • Signalize the intersection	
Existing + Project Intersection Signal Warrant	S	1. The project applicant is fully responsible for design and construction costs of improvements at Louise Avenue/Golden Valley Parkway as follows: • Signalize the intersection	LS
Existing + Project Freeway Level of Service	LS	None required	
Construction Traffic	S	1. No construction delivery truck traffic shall be allowed on the local roadway network before 8:00 AM or after 4:30 PM. 2. No construction worker traffic shall be allowed on the local roadway network between 6:30 and 8:30 AM and between 4:30 and 6:00 PM.	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		3. All degradation of pavement condition along Louise Avenue and Manthey Road due to Mossdale Landing East construction traffic will be fully repaired to the satisfaction of the City of Lathrop. City staff and project applicant shall jointly monitor the condition of each roadway every six months.	
Internal Circulation in the North Single-Family Residential Area	S	1. All proposed residential streets shall be 36 feet wide curb-to-curb on the approaches to and through each major curve (as listed in the impact section), or that on-street parking be prohibited on the inside of all 90-degree or sharper curves.	LS
		2. McKee Boulevard shall be widened to provide left turn lanes on the approaches to Johnson Ferry Road, Street D, Street C and any driveways serving the village commercial or apartment complex parking lots.	
Internal Circulation in the South Single-Family Residential Area	S	1. Widen Street P to at least 36 feet curb-to-curb for at least 100 feet west of Golden Valley Parkway and prohibit parking on the north side of the street at least 50 feet from Golden Valley Parkway.	LS
Internal Circulation in the Highway Commercial Area	S	1. Prohibit outbound movements at any driveway connection to Golden Valley Parkway north of the main entrance.	LS
		2. Prohibit diagonal parking along Street N in close proximity to the Golden Valley Parkway or Manthey Road intersections.	
Internal Circulation in the Service Commercial Area (North)	S	1. Provide right and left turn deceleration lanes on the approaches to both Manthey Road project driveways and a right turn deceleration lane on the southbound Manthey Road approach to Towne Centre Drive.	

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		2. Prohibit diagonal parking along Street N in close proximity to the Golden Valley Parkway or Manthey Road intersections.	
		3. Access to the service commercial areas along Street N about halfway between Golden Valley Parkway and Manthey Road (opposite the proposed new access to the highway commercial center). Potentially, all-way-stop control this intersection.	
Internal Circulation in the Village Commercial Area	S	1. Prohibit diagonal parking along Towne Centre Drive in close proximity to Golden Valley Parkway (at least 150 to 200 feet from Golden Valley Parkway).	LS
		2. Provide at least 100 feet of separation between the intersection of McKee/Street C and any driveway connections along McKee Boulevard to the Village Commercial parcels. Any village commercial and apartment complex driveways should also not be moved any closer than 150 feet from the Towne Centre Drive traffic circle approach (i.e. no closer than currently shown on the UDC plan).	
Internal Circulation in the Service Commercial Area (South)	S	1. Provide right and left turn deceleration lanes on the Manthey Road approaches to the commercial access driveway and limit access to a single driveway.	LS
Pedestrian Circulation	PS	1. North Single-Family Residential Area • Relocate the walkways connecting the northerly single-family subdivision to Golden Valley Parkway to the locations of the proposed signalized shopping center access	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		intersections along the parkway. (or) • Maintain walkways in their currently proposed locations and develop a design for the Golden Valley Parkway median that will prohibit or severely discourage mid-block pedestrian/bike crossings.	
Transit Service	PS	1. The project applicant should work with local transit agency to incorporate potential future transit route and transit stop designs into their plans for McKee Boulevard, Golden Valley Parkway, Manthey Road, Street N and Towne Centre Drive. 2. All project commercial area developers should work with the local transit agency to incorporate transit route and transit stop designs into their futures plans.	LS
Bicycle Circulation	PS	1. Widen all streets within the northerly subdivision to 36-foot widths on the approaches and through each curve (see locations in the internal circulation section). Or, prohibit parking on the inside of each 90-degree or sharper curve. 2. Design the one-parcel-long pathway connecting Street A in the northerly subdivision to Louise Avenue to require bike riders to dismount or proceed slowly near Louise Avenue. 3. Relocate the northerly subdivision pedestrian/bicycle connections to Golden Valley parkway to the locations of the proposed signalized shopping center access intersections along the Parkway. (or)	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		Maintain walkways/bicycle connections in their currently proposed locations and develop a design for the Golden Valley Parkway median that will prohibit or severely discourage mid-block bike crossing.	
		4. Provide left turn lanes on the McKee Boulevard approached to all intersections as well as the village commercial/apartment complex driveways.	
17.0 UTILITIES			
Existing and Planned Municipal Water Supplies	PS	1. Proportionate share groundwater and surface water allocations shall be acquired for the proposed project site before the project connects to the municipal water system.	LS
Water Distribution System	LS	None required	
Water Storage	LS	None required	
Demands for Wastewater Treatment Capacity	PS	1. The owners, developers, and successors-in-interest shall not exceed their allotted wastewater treatment capacity, namely 125,000 gpd. However, if project demands exceed the allotment, additional capacity must be acquired before additional construction can occur.	LS
		2. The owners, developers, and successors-in-interest shall reimburse sewer consortium properties for their share of WRP-1 expansion improvements.	
Wastewater Collection Systems	PS	1. If wastewater infrastructure required to connect the project site to WRP-1 is unavailable to either Unit 1 or Unit 2, the project proponents shall construct the necessary wastewater collection system improvements prior to occupation of the first house.	LS

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Potential Impact	Significance Before Mitigation Measures	Mitigation Measures	Significance After Mitigation
		2. The owners, developers and successors-in-interest shall pay their proportionate share of wastewater infrastructure improvements installed by others, in accordance with established reimbursement systems.	
Recycled Water Systems	PS	1. Proposed water recycling facilities shall be subject to the review and approval, including all conditions and requirements imposed on said facilities through review by City of Lathrop, Regional Water Quality Control Board and other agencies.	LS
Impacts on Terminal Drainage Facility	LS	None required	
Adequacy of Storm Drainage Collection and Disposal System	LS	None required	
Storm Drainage Water Quality Issues		These issues are addressed in detail in Chapter 12.0 Hydrology and Water Quality.	
Project Demands For Other Utility Services	LS	None required	

S = Significant, CS = Cumulatively Significant, PS = Potentially Significant, LS = Less than Significant, SOC Adopted = Statement of Overriding Considerations previously adopted.

3.0 PROJECT DESCRIPTION

3.1 BRIEF DESCRIPTION

This Supplemental Environmental Impact Report (SEIR) evaluates the potential environmental effects that would result from the City of Lathrop's approval of the Mossdale Landing East (MLE) project. The MLE project consists of applications for City approval of an Urban Design Concept (UDC), Vesting Tentative Map, Development Agreement and Williamson Act contract cancellation for the 150.2-acre project. These approvals would result in development authorization for 403 single-family residential lots, 80 high-density residential units, 6.5 acres of Village Commercial Development, 27.5 acres of Highway Commercial Development, 14.0 acres of Service Commercial Development and approximately 9.4 acres of parks and open space (Figure 3-1). The proposed project is described in more detail below.

The proposed project involves development of a portion of Mossdale Village, a major element of the urban development described in the approved West Lathrop Specific Plan (WLSP). The WLSP is 6,955-acre urban development plan approved by the City of Lathrop in 1995. Mossdale Village is a primarily residential development that includes a village commercial center and service and highway commercial development along I-5. Mossdale Village is located in the eastern portion of the WLSP area, west of I-5. Most of the Mossdale Village area, and the remainder of the WLSP area, now known as the River Islands project, have been approved for urban development and are preparing for construction. Additional detail on other ongoing development projects in Mossdale Village, River Islands and surrounding areas is provided in Section 1.2.

3.2 PROJECT LOCATION

The proposed project site is located within the incorporated area of the City of Lathrop, in southern San Joaquin County. The project is located between I-5 and the San Joaquin River, south of the Louise Avenue interchange. The project site is divided into two units: Unit One (122 acres) is located immediately south of Louise Avenue and adjacent to I-5, and Unit Two (28 acres) is located approximately 0.5 miles south of Unit One. Figures 1-2 through 1-6 in Chapter 1.0 show the project location in detail.

The MLE project site is made up of APNs 191-190-08, 20 and 21 (Unit One) and 241-020-01 and 40 (Unit Two) (Figure 1-4). The project site is located within the Lathrop, California, USGS 7.5-minute quadrangle map (Figure 1-3). The project area has not been subject to sectional subdivision; Unit 1 is located within Township 1 South, Range 6 East, MDBM. Unit 2 is located within Township 2 South, Range 6 East, MDBM.

3.3 PROJECT OBJECTIVES

The objective of the proposed project is the development of a livable, pedestrian-oriented community in accordance with the adopted West Lathrop Specific Plan. The proposed project would result in a total of approximately 403 single-family residences, 80 high-density residential units, 6.5 acres of Village Commercial development, 27.5 acres of Highway Commercial development and 14.0 acres of Service Commercial development, public streets, utilities, parks, and other public facilities. The proposed residential portions of the project are intended for development by the applicant, Western Pacific Housing. The proposed Highway Commercial area is intended for development by a joint applicant, Watt Commercial. Portions of the project may also be sold to other developers for construction consistent with the requirements of the approved UDC, Tentative Map and Development Agreement.

3.4 PROJECT DETAILS

The proposed project involves a request for City of Lathrop approval of the MLE UDC, Vesting Tentative Map, Development Agreement, Williamson Act contract cancellation and associated actions. Inherent in these approvals is City approval of proposed land uses, circulation systems, utility improvements, parks and design elements of the project.

Throughout the remaining description, reference is made to Unit 1 and Unit 2 of the proposed project. Unit 1 refers to the northernmost 122.4 acres of the project site, located immediately south of existing Louise Avenue. Unit 2 refers to the southern 27.8 acres of the project site, which is separate from Unit 1 and located immediately south of the Mossdale Landing project area (Figures 1-1 through 1-6).

3.4.1 Proposed Land Uses and Designations

The MLE project site is located within the City of Lathrop corporate limits, within Sub-Plan Area #2 of the Lathrop General Plan. Development within the project area is governed by the adopted West Lathrop Station Specific Plan (WLSP). The WLSP requires the preparation of an Urban Development Concept (UDC) prior to the acceptance of any development or building permit applications. Approval of a UDC requires the review and approval of the Lathrop Planning Commission. The UDC includes a detailed mapping and description of land uses, circulation systems, landscaping, design details, and other elements related to buildout of the project, including the provision of utilities and the financing of public improvements.

The proposed MLE UDC prescribes development standards for proposed land uses in planned residential, commercial and public areas; the circulation system's location and standards; design guidelines for the various land uses; specifications for planned public improvements, signage and lighting; plans for water, sewer, storm drainage and reclaimed water systems; and project phasing and financing. Each of the provisions of the UDC is described in more detail below.

The MLE project UDC emphasizes the creation of a livable, pedestrian-oriented community that provides identity and variety. The UDC will embody themes associated with the history and imagery of the City of Lathrop as well as incorporating other elements of development in traditional Central Valley communities. These features would include a network of interconnected streets, roundabouts, parkways with canopy street trees, varied architectural styles, an emphasis upon pedestrian scale and access, and a mix of land uses.

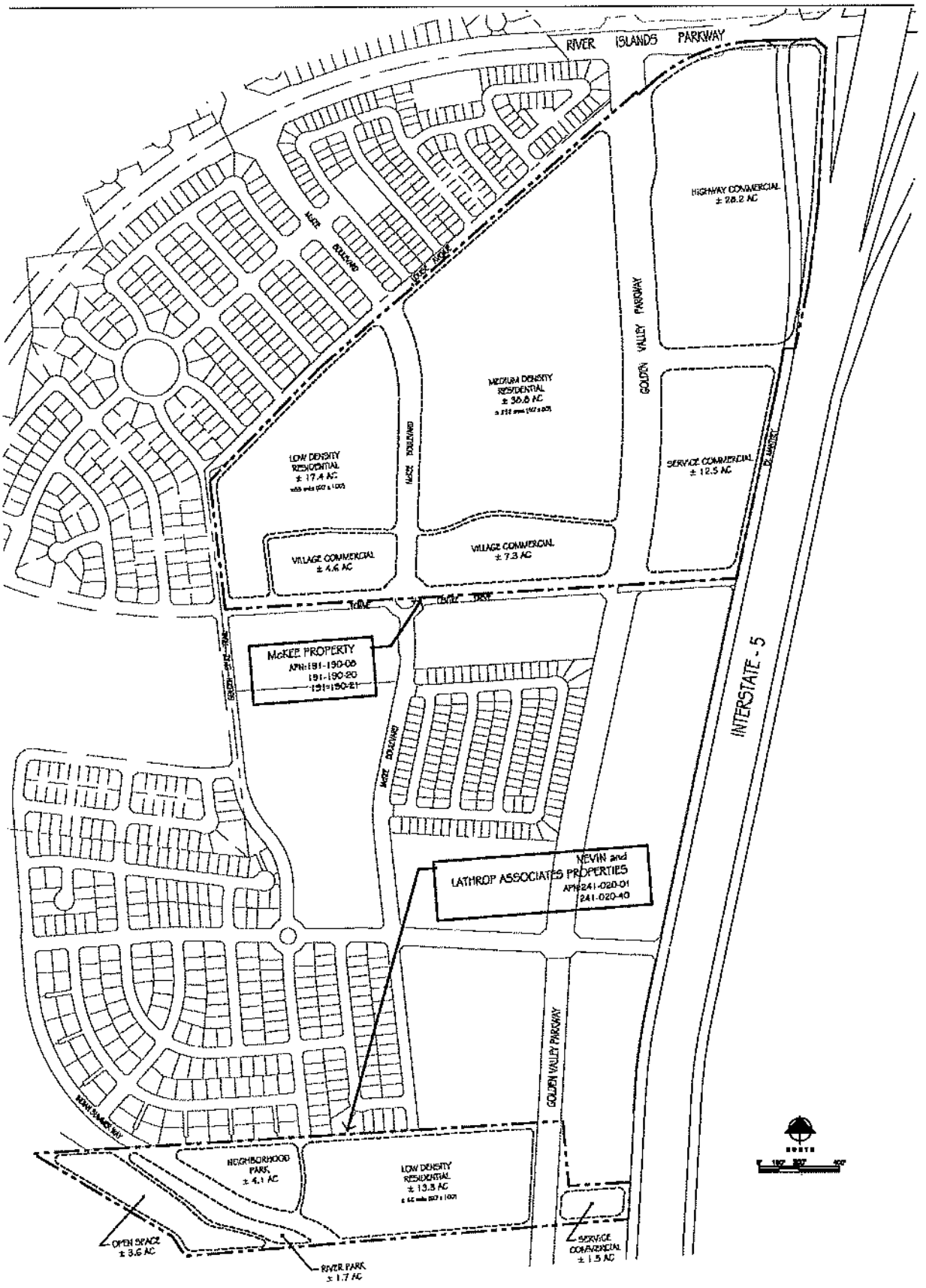
The provisions of the UDC apply to both Unit 1 and Unit 2 of the proposed project. Overall land use proposals for the proposed project area are shown on Figure 3-1, and proposed land use/zoning designations are shown in Figure 3-2. A conceptual plan for development of the Highway Commercial parcels is shown in Figure 3-3. Land uses permitted within the MLE project are briefly summarized below, and acreages devoted to each of these uses are listed, by unit, in Table 3-1. Net potential development associated with the proposed development is also shown in the table.

TABLE 3-1
LAND USE TABLE
MOSSDALE LANDING EAST PROJECT
(acres)

Proposed Land Use	Unit 1			Unit 2			TOTAL PROJECT		
	ACRES	SQ. FT.	UNITS	ACRES	SQ. FT.	UNITS	ACRES	SQ. FT.	UNITS
Highway Commercial	27.5	270,246					27.5	270,246	
Service Commercial	12.5	136,125		1.5	13,068		14.0	149,193	
Village Commercial	6.5	79,497					6.5	79,497	
High Density Residential	4.0		80				4.0		80
Low Density Residential	13.2		85	10.1		66	23.3		151
Medium Density Residential	27.6		252				27.6		252
Open Space				3.6			3.6		
River Park				1.7			1.7		
Neighborhood Park				4.1			4.1		
Streets	31.1			6.8			37.9		
TOTAL	122.4	485,868	417	27.8	13,068	66	150.2	498,936	483

Residential-MV. The Residential-MV designation (Figure 3-2) encompasses a total of 54.9 acres in both Units 1 and 2 and will support a range of single-family housing densities and types ranging from 4,000 square-foot lots at a density of approximately 6.5 units per acre (Medium Density Residential) to 7,000 square-foot and larger lots at a density of approximately 4.8 units per acre (Low Density Residential). Higher density residential development of up to 20 units per acre is permitted in the Village Commercial area.

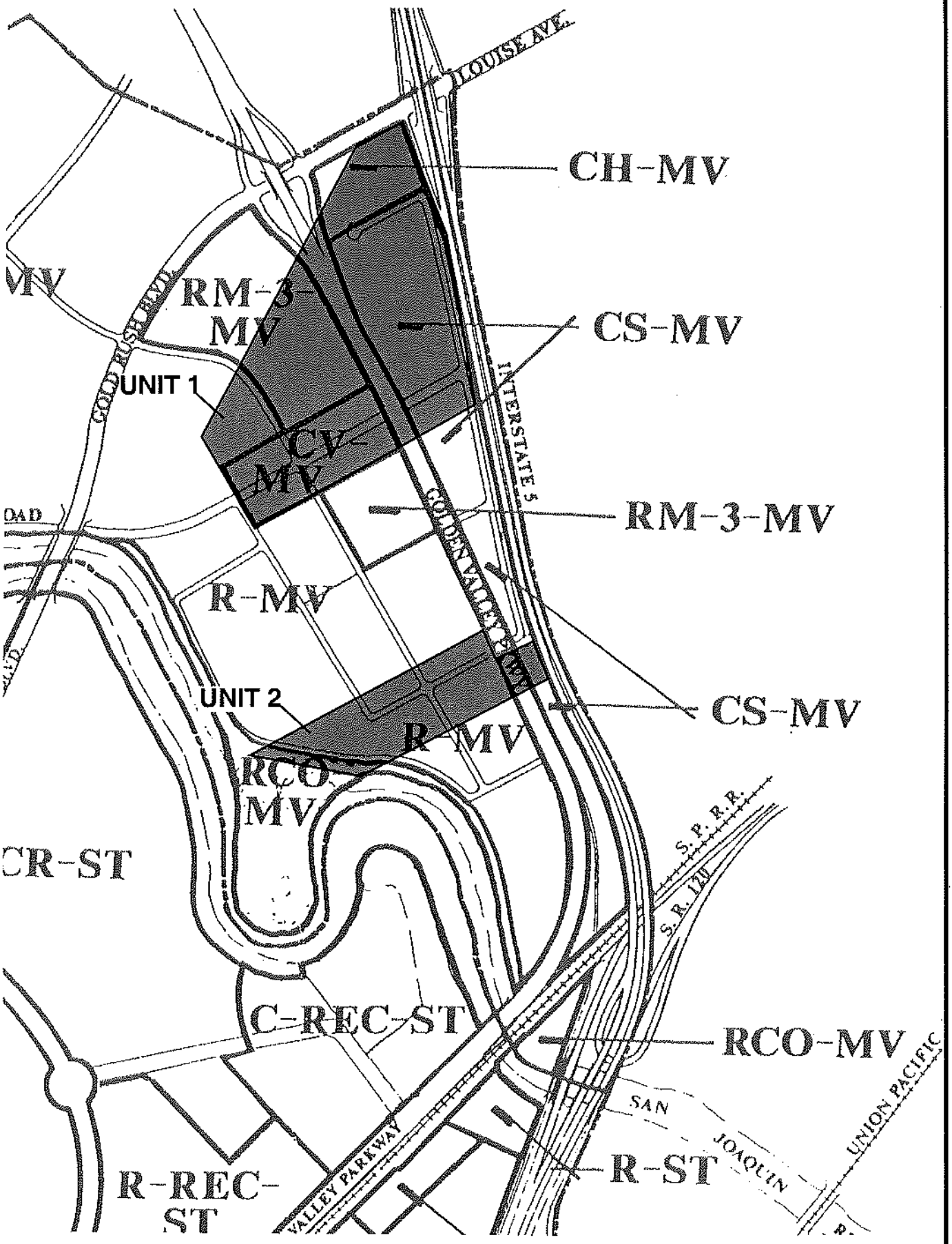
Village Commercial-MV. The Village Commercial-MV area of approximately 6.5 acres is located along the south boundary of Unit 1, which is the centerline of future Towne Centre Drive. This area, together with a mirror-image area located within the adjoining Mossdale Landing project, is envisioned as a mixed-use activity area where Mossdale Landing and MLE residents and visitors to the area can shop, eat, work and live. This area may include a mix of shops, restaurants, office space and multi-family residences. The designation is intended to establish a pedestrian-oriented commercial environmental with wide sidewalks, articulated and well-designed buildings, street trees, special paving and street furniture woven into a more urban setting.



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

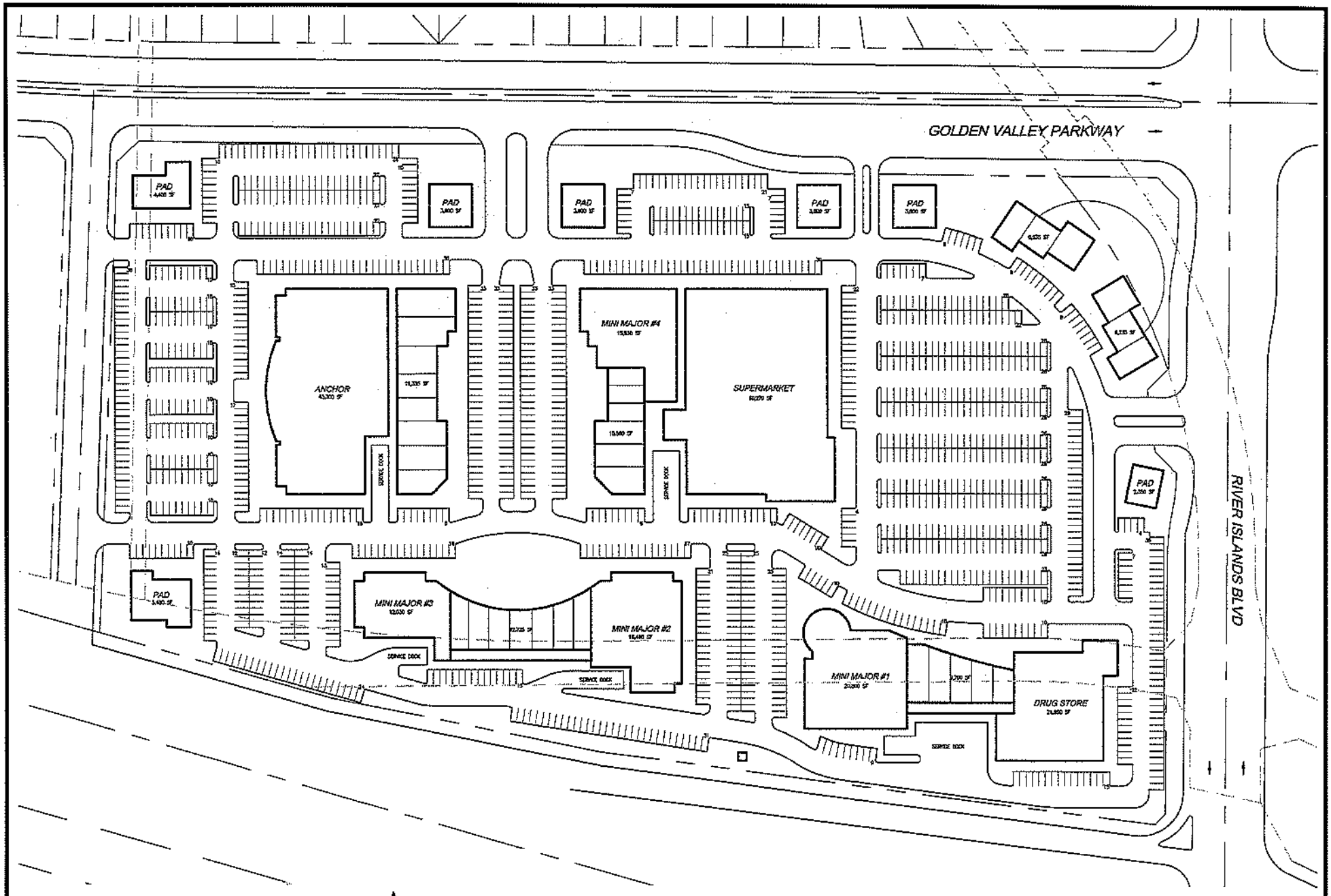
Figure 3-1
PROPOSED LAND USES



Source: WEST LATHROP SPECIFIC PLAN

INSITE ENVIRONMENTAL

Figure 3-2
WLSP LAND USE/ZONING



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

Figure 3-3
CONCEPTUAL HIGHWAY COMMERCIAL SITE PLAN

The western 4.0 acres of the Village Commercial area is reserved for High Density Residential uses. This area would support up to 80 residential units at a density of approximately 20 units per acre.

Highway Commercial-MV. The 27.5-acre Highway Commercial-MV area is located immediately south of existing Louise Avenue, between future Golden Valley Parkway and I-5. This designation provides for development of up to 270,246 square feet of commercial space oriented primarily to shoppers accessing the area from the interstate and major arterial roads in the area. However, the designation will also allow the development of community commercial uses.

Service Commercial-MV. A total of 14.0 acres of the project are reserved for Service Commercial-MV development. More than 90% of this area is located within Unit 1, with only 1.3 acres located in Unit 2. Proposed Service Commercial areas are located between future Golden Valley Parkway and I-5, south of the proposed Highway Commercial area. The Service Commercial areas will provide for a variety of services, retail and office uses that, at least in Unit 1, relate closely to planned uses in the Main Street (Village Commercial) district. An 3.0 acre portion of the Service Commercial areas will be utilized for storm water detention on a permanent basis. An additional 3.75 acres will be used to provide an enlarged storm water pond that will retain runoff from construction areas and early units of proposed development until completion of the Mossdale Landing storm drainage outfall structure at the San Joaquin River.

The quantities of potential highway and service commercial development, as well as residential development, associated with the MLE project, as identified above and in Tables 3-1 and 3-2, are proposed levels of development; these proposed levels are the subject of this SEIR. The development standards of the WLSP and the MLE UDC may permit development of additional residential units and higher floor area ratios in commercial areas than are proposed. Additional development over and above the quantities specified in this chapter are not necessarily addressed by this SEIR and may require additional environmental review. However, no such development is proposed at this time.

3.4.2 UDC Development Standards.

The UDC sets forth development standards for each of the proposed land use designations. Development standards implement, adhere to and draw upon the adopted provisions of the WLSP for the Mossdale Village Plan Area. Planned roadway improvements associated with adjacent nearby projects, proposed improvements associated with the project and future roadway improvements in the project area are shown on Figure 3-4. Cross-sections for these facilities are shown on Figure 3-5 and pedestrian and bicycle facilities are shown on Figure 3-6.

Proposed standards for MLE specify development themes and concepts; lists of permitted uses, conditional uses and uses that require site plan review; parcel dimensions, setbacks and building heights; guidelines and limitations for site planning, building massing, architecture, materials and colors, access and parking, and placement of mechanical and utility equipment. These standards are predominantly drawn from the WLSP. Lot and setback requirements apply largely to proposed residential uses while, in this regard, commercial uses are less restricted. Commercial uses, on the other hand, involve more

detailed guidance related to signage. More specific information with respect to development standards applicable within each land use designation is provided below.

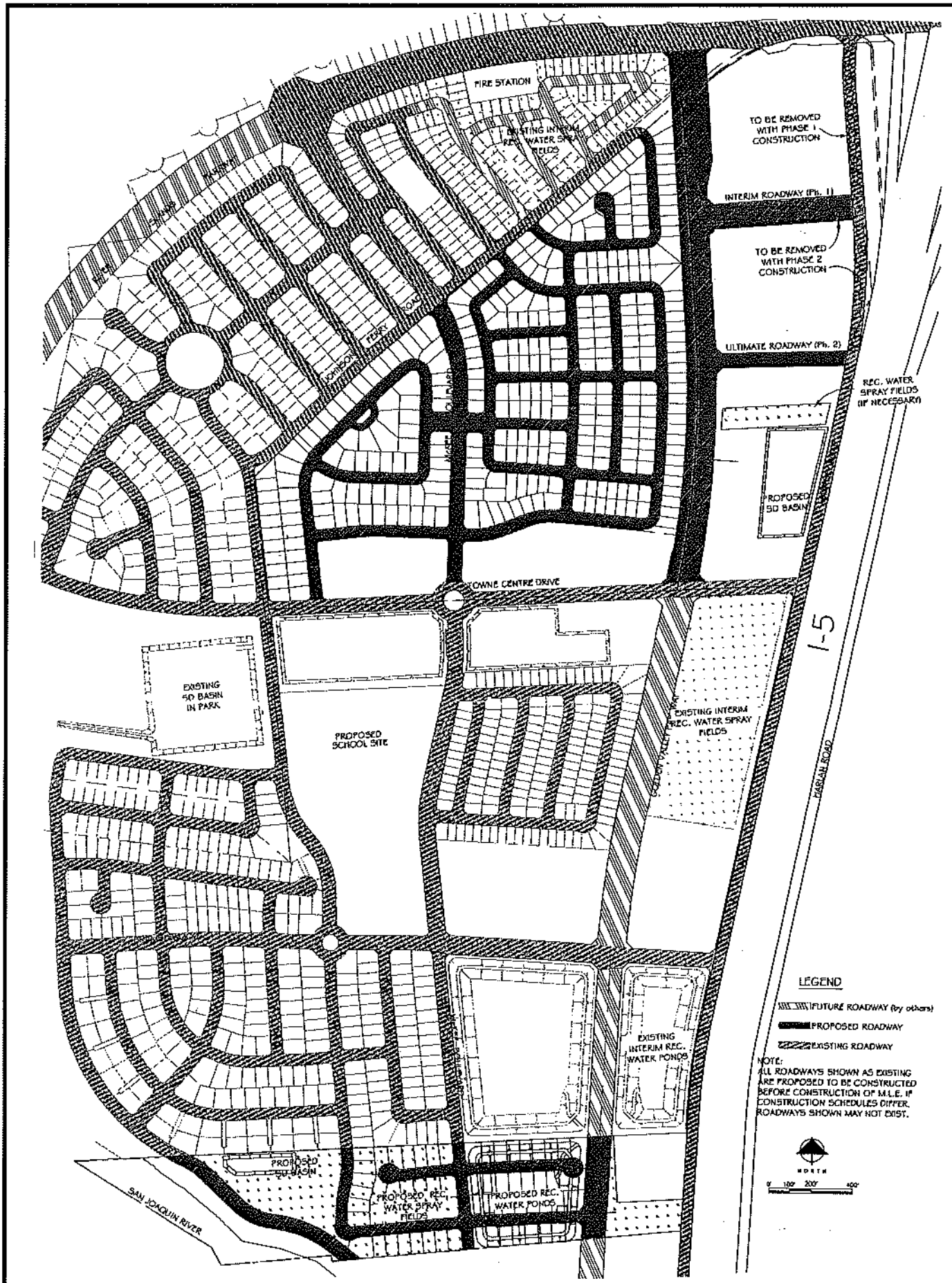
Service Commercial. Development standards for the Service Commercial areas identify a range of allowable retail, service and office commercial uses. Service Commercial areas would be largely pedestrian-oriented with buildings oriented to Golden Valley Parkway and to the Village Commercial area. Proposed architectural standards would require variations in building height, size and setback in order to reduce massing, and the standards would require a variety of architectural design details, landscaping and screening. The standards limit the use of low-quality materials, and the placement and screening of mechanical equipment.

Highway Commercial. A Highway Commercial area, located in the northeastern portion of the project area, would involve comparable design requirements to those specified for the Service Commercial areas. The proposed Freeway Commercial area would be oriented to highway travelers and shoppers accessing the area from major streets. Nonetheless, development standards for this area would require certain building orientation, massing limitations and architectural detail, as well as landscaping and screening and limitations on the use of certain materials.

Village Commercial. The proposed Village Commercial areas would involve a mixed-use "main street" area composed of retail and Service Commercial as well as professional offices and potential high-density residential uses. Village Commercial areas would be pedestrian-oriented, and building scale and level of architectural detail would be closely related to the "Main Street" theme. Commercial and residential structures would be oriented primarily to the streets with parking located to the rear of these buildings. Additional architectural detail would be required, including frequent variations in design style along the street front, interesting corners, special roof treatments and lighting that is related to the overall *Main Street theme*. Development standards for this area would also include limitations on materials and placement of mechanical equipment similar to the other commercial designations. Planned residential uses within the Village Commercial area would require additional landscaping and setbacks as well as certain window and door treatments.

Medium and Low Density Residential. Medium and Low Density Residential area development standards identify allowable housing types and architectural styles for the various neighborhoods included within the proposed project. A variety of styles would be offered, and development standards would require a variation among styles from home to home. A mix of single and two-story residences would be encouraged, as would minimizing the visual importance of garages and emphasizing the importance of porch elements in home design. These standards specify a range of architectural elements and materials that should be incorporated into residential design.

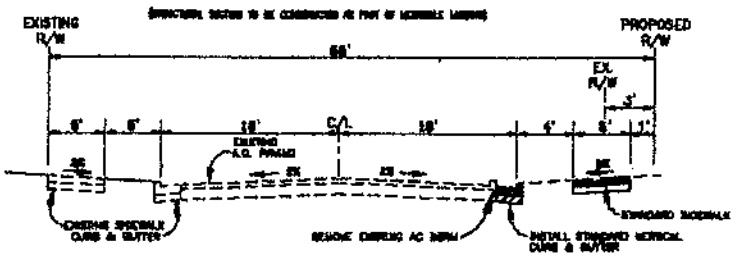
The Architectural Styles portion of the UDC defines a range of residential styles that may be used within the proposed project area. Building form, mass, material and detail information is provided for each of the styles, which include Spanish, Italianate, Craftsman and Cottage.



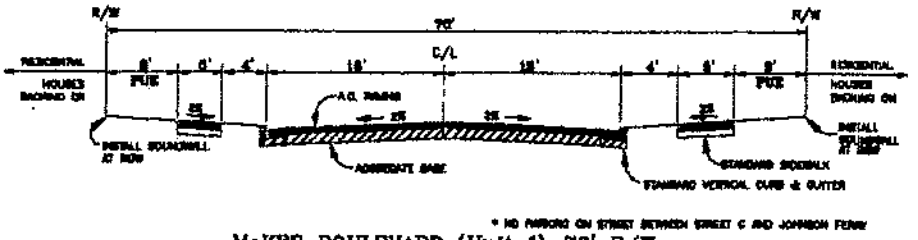
Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

Figure 3-4
PLANNED ROADWAYS

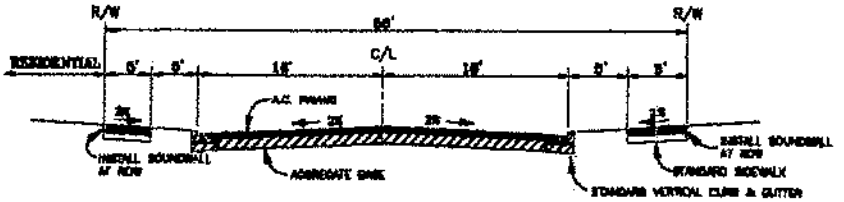


JOHNSON FERRY ROAD – 56' R/W

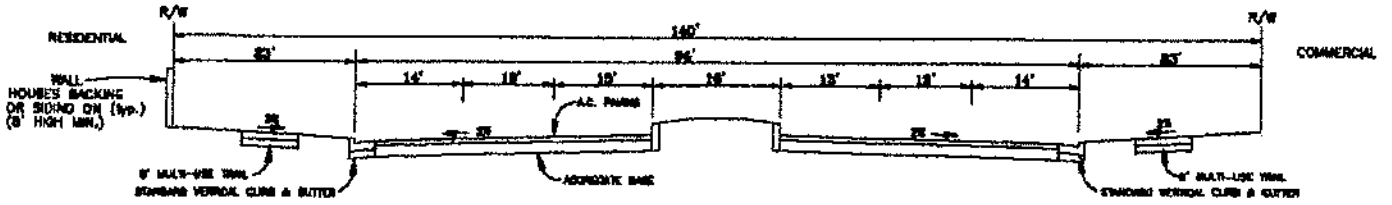


* NO PARKING ON STREET BETWEEN STREET C AND JOHNSON FERRY

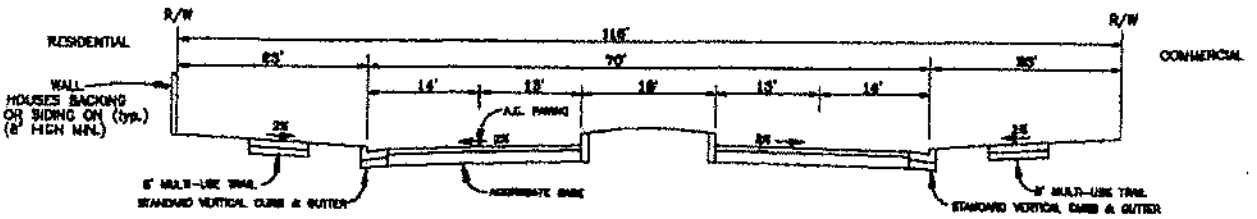
McKEE BOULEVARD (Unit 1)–70' R/W



McKEE BOULEVARD (Unit 2)–56' R/W



FUTURE GOLDEN VALLEY PARKWAY (Unit 1) – 140'

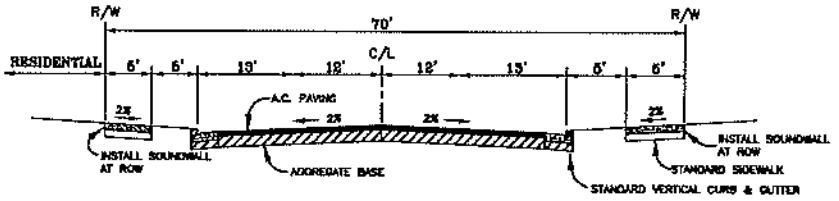


FUTURE GOLDEN VALLEY PARKWAY (Unit 2) – 116'

Source: MACKAY AND SOMPS

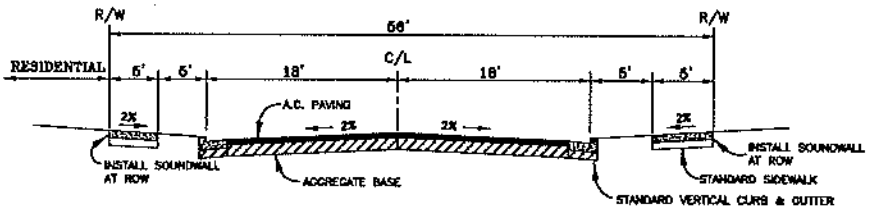
INSITE ENVIRONMENTAL

Figure 3-5A
PROPOSED STREET SECTIONS



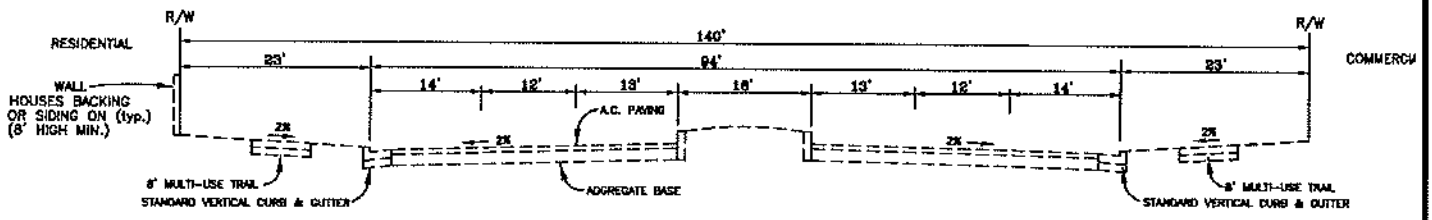
McKEE BOULEVARD (north)–70' R/W

N.T.S.



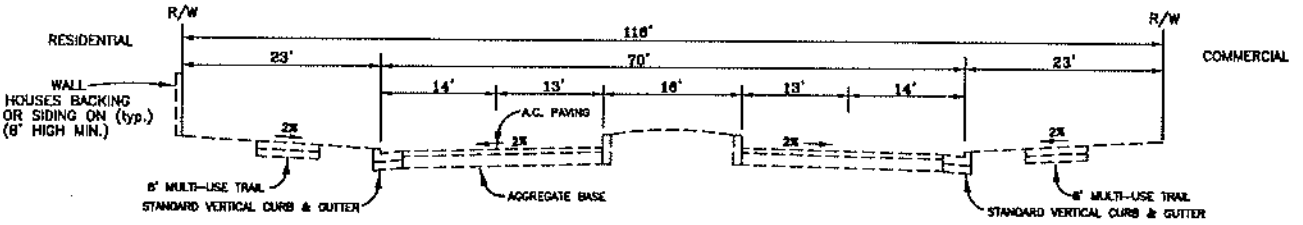
McKEE BOULEVARD (south)–56' R/W

N.T.S.



FUTURE GOLDEN VALLEY PARKWAY (north) – 140'

N.T.S.

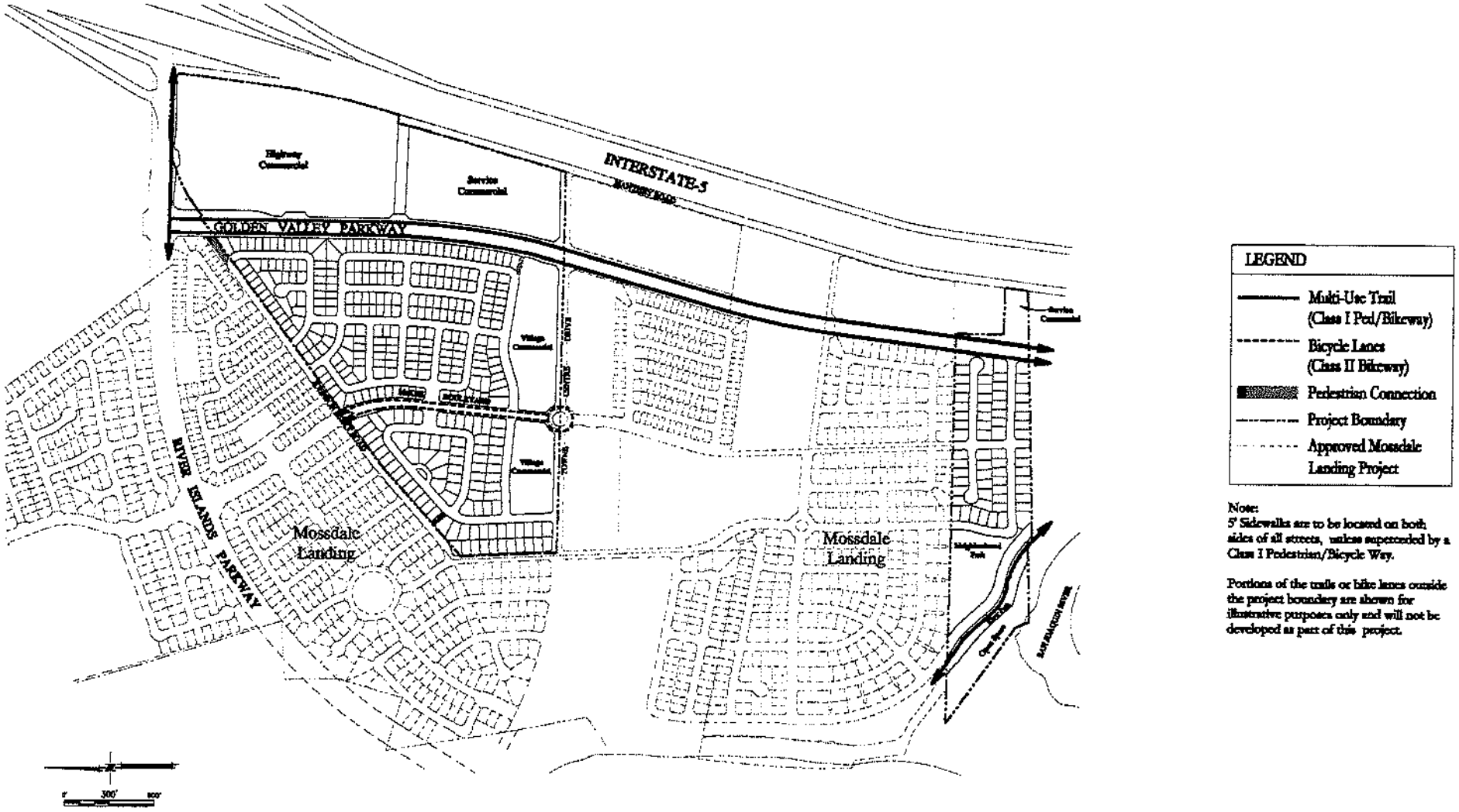


FUTURE GOLDEN VALLEY PARKWAY (south) – 116'

N.T.S.

Source: MACKAY AND SOMPS

Figure 3-5B
PROPOSED STREET SECTIONS



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

Figure 3-6
PEDESTRIAN AND BICYCLE CIRCULATION

Public Lands. Development standards for public areas apply to the approximately 9.4 net acres of park and open space lands located within the project site. The UDC defines the nature and type of recreational uses that will be permitted within these areas as well as other applicable requirements. These would include relating architecture of public buildings to nearby residential areas and repetition of certain tree planting styles.

Landscape Architecture Standards. The UDC also defines Landscape Architecture Standards for the project area. The purpose of the defined planting theme is to "recreate the character of memorable locally and regionally significant traditional neighborhoods and environs, with their broad shade trees, landmark palms" and elements "reflecting agricultural heritage of the Central Valley including windrows, orchards and grazing lands." The UDC defines a palette of plant materials to be utilized along the various major streets associated with the project, including the Main Street area as well as multi-use trails and bicycle lanes. The Landscape Architecture Standards also provide for special treatments at project gateways, including the intersection of Main Street and Golden Valley Parkway as well as the entryways to residential neighborhoods. The standards also provide guidance for landscaping in open space areas, standards for walls and fences used throughout the project area, and street furniture, utility placement and signage.

3.4.3 Planned Circulation Improvements

The adopted West Lathrop Specific Plan provides a general plan for provision of vehicular and pedestrian circulation to, from and within the UDC area. The circulation provisions of the UDC establish a street plan for the proposed community and linkage between the UDC area and the overall circulation network defined in the City's General Plan, the WLSP and subsequent development approvals. These include a precise plan adopted by the City for Golden Valley Parkway. A discussion of traffic issues and improvement needs related to the project is provided in Chapter 5.0.

Golden Valley Parkway is the only major arterial located within the proposed UDC area. The City has adopted a precise plan for this roadway. Located within a 70- to 184-foot right-of-way, Golden Valley Parkway will provide regional access to the project area as well as other City of Lathrop lands west of I-5. At full development, Golden Valley Parkway would consist of a six-lane roadway north of Towne Centre Drive, typically separated by a 16-foot median. South of Towne Centre Drive, Golden Valley Parkway would be a four-lane street with right-of-way reserved to allow development of two additional lanes, for a total of six. No on-street parking would be provided; shoulders, landscaped setbacks and an 8-foot bike/pedestrian way would be located on either side of the street. The City's General Plan identifies Golden Valley Parkway as the main north-south thoroughfare for the City west of I-5. When the six-lane roadway is completed it will eventually extend south from Roth Road to River Islands, parallel to I-5 and I-205.

The proposed project will involve construction of the initial portions of the roadway from River Islands Parkway to the south boundary of Unit 1 at Towne Centre Drive. Initial development will consist of development of one half of the ultimate street section, the median and parkway along the east side of the street. The precise extent of these initial improvements will be determined in the Development Agreement. Initial portions of the section south of Towne Centre Drive would be constructed in conjunction with buildout of the TCN Properties portion of the Mossdale Landing project.

Collector streets would be located within 70-foot rights-of-way Class II bikeways would be located within the McKee Boulevard right-of-way. Five-foot sidewalks would be located on each side of McKee within 17-foot landscaped areas. Within the proposed project, these would include McKee Boulevard, and Indian Summer Way. McKee Boulevard would be extended south from River Islands Parkway to the project site in conjunction with the adjoining Pacific Union Homes portion of Mossdale Landing.

Portions of Manthey Road to be retained would be located within a 59-foot right-of-way and would provide no bike lanes and emergency parking only. A 10-foot landscaping strip with a sidewalk would be located along the west side. The northernmost portion of Manthey Road, located immediately south of Louise Avenue, would be abandoned in conjunction with Phase 1 development of the Highway Commercial parcel, to be replaced by an interim roadway to be located along the south boundary of this parcel. An additional section of Manthey Road, extending to the south boundary of the Highway Commercial parcel, would be abandoned in conjunction with a second phase of commercial construction on this parcel.

Local streets would be constructed to provide direct access to individual residential lots. The typical local street would consist of 32 feet of pavement within a 56-foot right-of-way, providing a five-foot pedestrian circulation and landscaping along each side of the street. Local streets would be constructed in conjunction with adjoining units of residential development.

A traffic "roundabout" would be located at the intersection of Towne Centre Drive and McKee Boulevard. Located within an approximately 100-foot radius, the roundabout would include a central landscape island, special paving and raised planter areas along the perimeter. Diagonal parking is proposed on Towne Centre Drive, however, other options may be considered.

Proposed bicycle facilities will include Class I pedestrian/bikeways located along the south side of River Islands Parkway, both sides of Golden Valley Parkway and through the riverside park area. Class II bikeways would be located in the Towne Centre Drive/McKee Boulevard traffic circle and along McKee Boulevard. Sidewalks would be provided along all other streets, unless superseded by planned Class I ways.

3.4.4 Vesting Tentative Subdivision Map

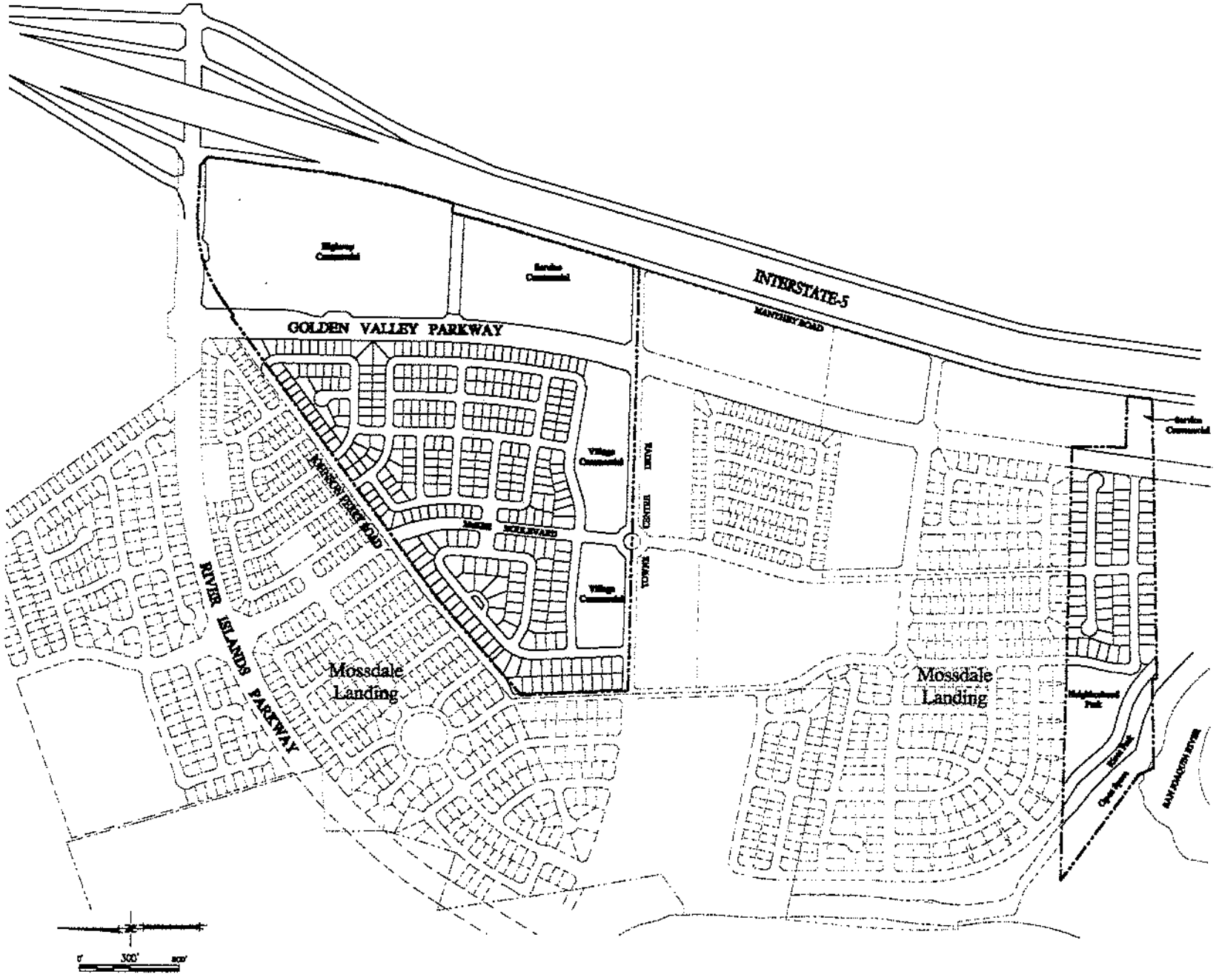
The proposed project would require City approval of the Vesting Tentative Map for the project (Figure 3-7). The map would create approximately 403 lots for development of single-family detached dwelling units. Within the Medium Density Residential area, lot sizes would range upward from approximately 4,000 square feet. Within the Low Density Residential area, lots sizes would range upward from approximately 6,000 square feet. The map would also create four lots for highway, service and "village" commercial development. These lots range in size from 4.0 to 27.5 acres in size for a total of 48 acres. The tentative map also provides for dedication of public street right of way and establishes improvement standards for proposed streets. Proposed street standards are consistent with UDC circulation plans.

3.4.5 Development Agreement

The proposed project would include a City/Applicant Development Agreement establishing the commitments of the parties with respect to the design, construction and financing of the proposed project.

3.4.6 Williamson Act Contract Cancellation

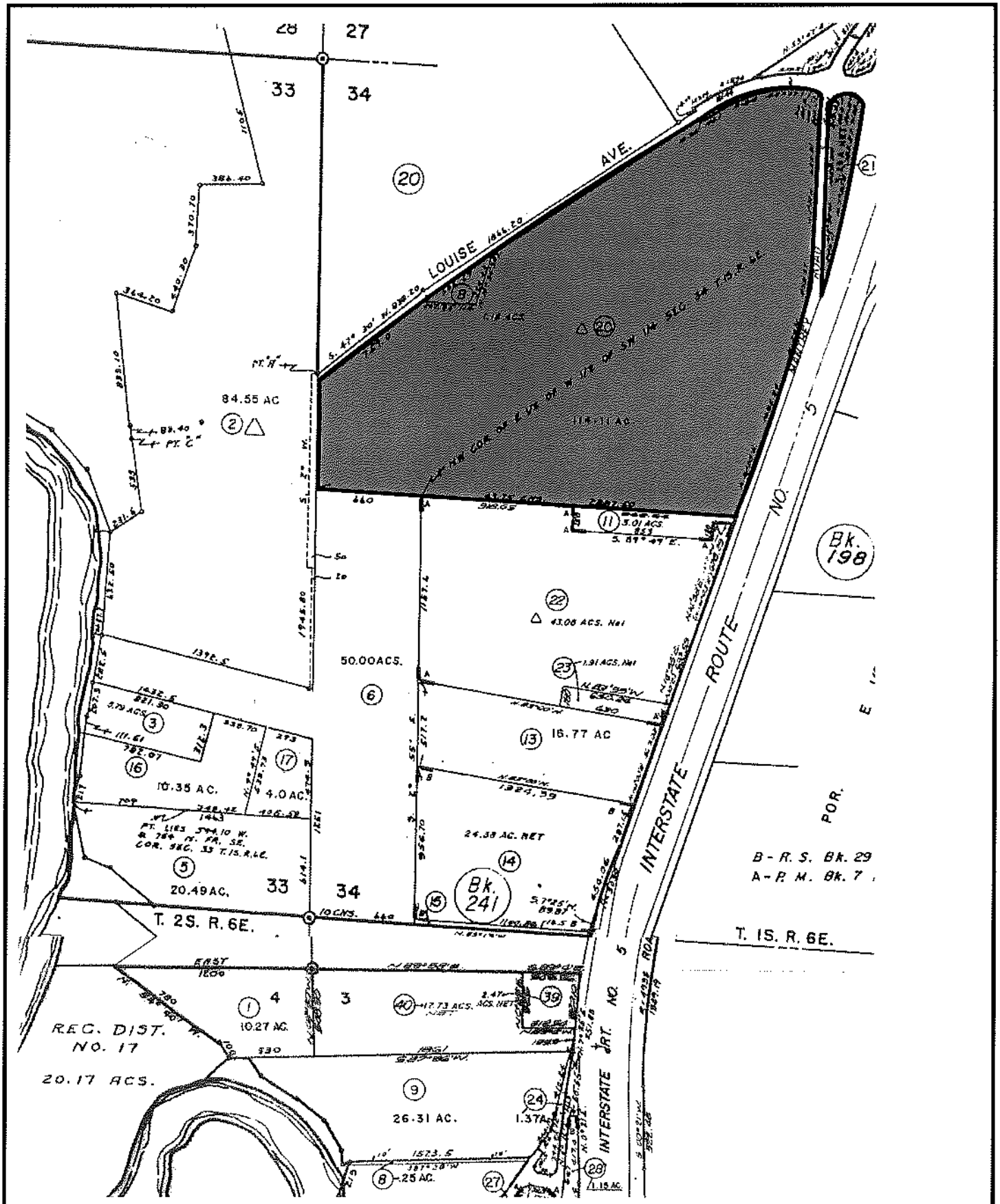
The proposed project includes a request to the City of Lathrop for immediate cancellation of two California Land Conservation (Williamson Act) contracts that apply to APNs 191-190-20 and 21 (Unit 1) (Figure 3-8). There are no Williamson Act contracts applicable to Unit 2 of the project. Notices of Nonrenewal have been filed for both parcels; the contract on the smaller parcel will expire in 2004, and the contract on the larger parcel, the majority of Unit 1, will expire naturally in 2008. Immediate cancellation is therefore necessary to allow development to proceed. A landowner may petition the City Council for cancellation of the contract for all or part of the contracted land, and the council may grant tentative approval for cancellation if certain findings are made as per Sections 51282 and 51284 of the California Government Code. These findings are discussed in more detail in Chapter 5.0 Agriculture.



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

Figure 3-7
VESTING TENTATIVE SUBDIVISION MAP



Source: COUNTY ASSESSOR'S OFFICE

INSITE ENVIRONMENTAL

Figure 3-8
WILLIAMSON ACT CONTRACT LANDS

3.4.7 Utilities

Domestic Water System. Domestic water service for the MLE project will be provided by an expansion of the City's existing water system in conjunction with proposed commercial and residential development. The proposed water system (Figure 3-9) would consist of a backbone of 10-inch water lines to be located within the major streets, with 8-inch lines located within planned local streets providing service to planned residential neighborhoods

Proposed water system improvement would be connected to the existing City system at the Louise Avenue/I-5 interchange, and at the intersection of Nestle Way and Harlan Road, adjacent to I-5. The northern connection would be made by extending an 18-inch line east along the future alignment of River Islands Parkway across I-5 to the existing line in Louise Avenue. The southern connection would extend east from Golden Valley Parkway across I-5 along the extension of Nestle Way. Both extensions are being constructed in conjunction with the Mossdale Landing project.

Additional water line construction would occur in conjunction with the Mossdale Landing project, including extension of mains along River Islands Parkway, McKee Boulevard and Towne Centre Drive. The proposed project would construct portions of the McKee Boulevard, the line along Golden Valley Parkway and all local lines serving planned development. The project will include the construction of a 1.0-million gallon water tank within the proposed Service Commercial parcel, within Unit 2 of the project.

The short-term water supply for MLE will be derived from new wells to be added to the City's well system. These improvements are expected to be completed in 2004. The project applicant has agreed to participate in the financing of these improvements on a proportional share basis. The long-term source of water will be the South County Surface Water Supply Project (SCSWSP). The proposed project site is located within the City's Water Service Planning Area, as defined in its recently adopted Lathrop Water, Wastewater, Recycled Water Master Plan. A Water Supply Assessment has been required for the project as required by Senate Bills 610/221 (Nolte, 2003). Based on this study, water supply is sufficient to serve the project in the long term, as discussed in Chapter 12.0 of this document.

Wastewater System. Wastewater treatment and disposal services are to be provided by the City of Lathrop. The project would provide recycled water disposal areas on an interim basis. The proposed wastewater collection system (Figure 3-10) would consist of a network of eight-inch to 15-inch lines flowing northerly by gravity to a pump station located within the adjoining Mossdale Landing project, near the corner of McKee Boulevard and River Islands Parkway. Wastewater would be pumped from this point across I-5 to the City's Water Recycling Plan No. 1 in 8- and 10-inch force mains.

Principal wastewater collection lines would be located along Golden Valley Parkway (12-15 inch), River Islands Parkway (15 inch), and McKee Boulevard (10 inch). A 10-inch line would be installed along Towne Centre Drive in conjunction with the adjoining Mossdale Landing project. Smaller collection lines would feed to these trunks from commercial areas and residential neighborhoods. Wastewater collection lines within Unit 2 would consist of 8-inch lines extended into the residential area from planned lines in adjoining Mossdale Landing neighborhoods, as well as from the 12-inch line to be located in Golden

Valley Parkway. Wastewater collection lines would be located within proposed public streets to be constructed in conjunction with the MLE and Mossdale Landing projects.

Wastewater treatment would be provided at the City's existing Waste Recycling Plant No. 1 (WRP-1). The City is in the process of expanding this facility to provide additional tertiary treatment capacity. Phase I improvements are expected to be completed in 2004. The project applicants have participated in a sewer consortium to aid in financing improvements and secure capacity to serve their project.

Recycled Water System. The City's adopted Water, Wastewater and Recycled Water Master Plan provides for a citywide system for the recycling of treated wastewater as irrigation water applied to parks, recreation lands and other open spaces. Portions of this system will be constructed in conjunction with the proposed project (Figure 3-11). The proposed project will provide a site for disposal of treated wastewater on an interim basis.

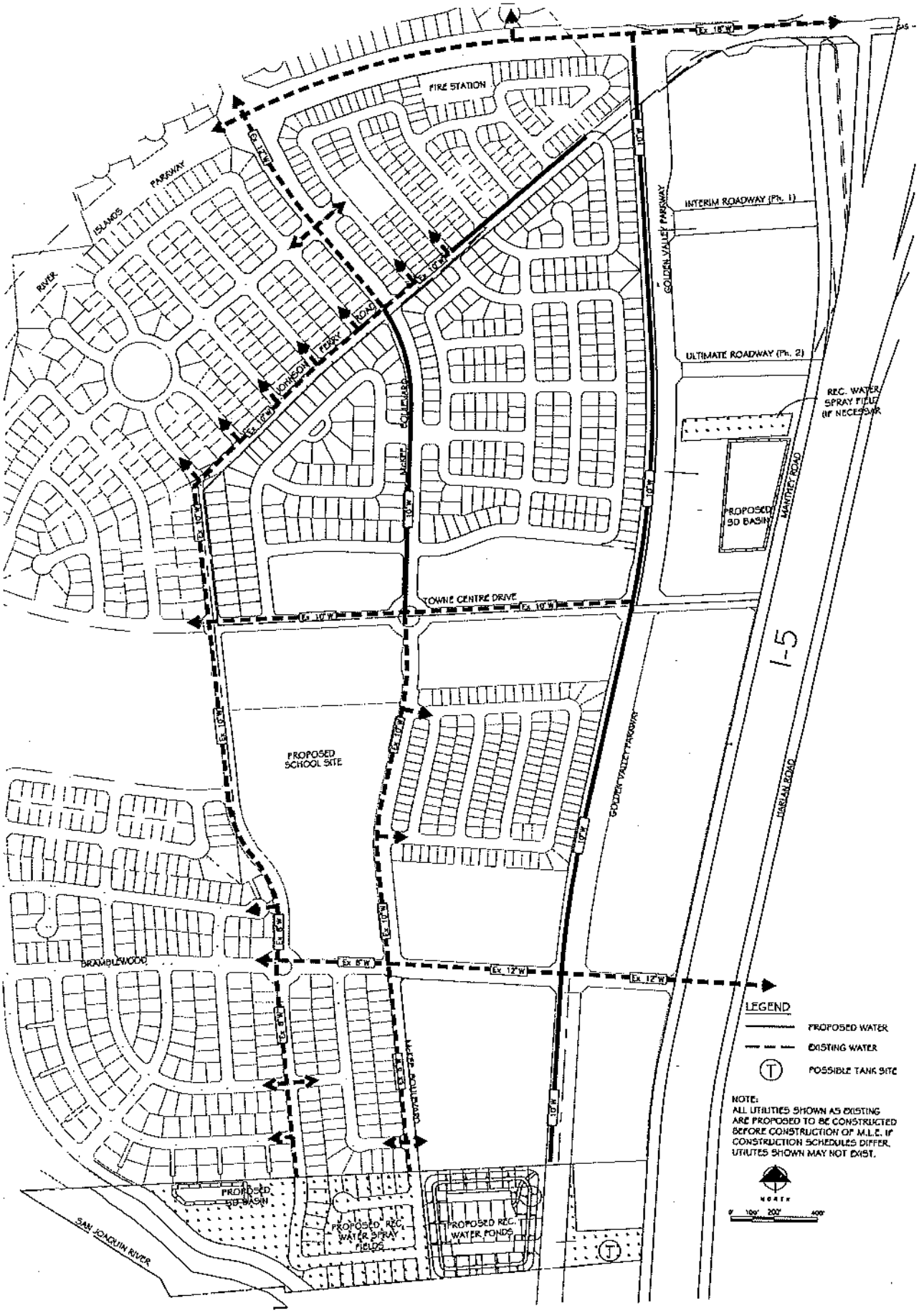
Unit 2 of the project site, and a small portion of Unit 1, will serve as a storage and disposal site for treated wastewater on an interim basis. Treated wastewaters will be stored on and applied to this site at agronomic rates in the production of alfalfa. When adequate sites become available for the disposal of project-generated wastewaters, this use will cease, and the land will become available for planned residential and commercial uses.

Tertiary treated effluent from WRP-1 would be returned to the Mossdale Village and the project site by a 20-inch line to be located along Nestle Way West of I-5, this line would branch north and south as 12-inch lines, to be located along Manthey Road. The proposed project would construct the line south along Manthey Road and then west to an approximately 10-acre interim recycled water storage pond to be located within the proposed residential area of Unit 1. This line would form a portion of the City's planned recycled water system. The project would also construct a six-inch recycled water line within the on-site portion of McKee Boulevard. Additional lines in the project vicinity would be constructed in conjunction with the adjoining Mossdale Landing project.

The project includes construction of a temporary holding pond for recycled water. The pond, to be located within Unit 2, would be approximately two acres in size and 19 feet in depth with a maximum storage volume of 36 acre-feet. The pond would be lined to prevent percolation of recycled water to the groundwater system. A pumping station at the pond site would be used to return recycled water to the City's system as needed for irrigation of disposal areas.

Approximately 16.7 acres of the site, consisting of the balance of Unit 2 and an approximately 1.7-acre portion of the Service Commercial area on Unit 1, would be reserved from development on a temporary basis and used for disposal of recycled water by the City. Recycled water would be applied at agronomic rates as permitted by weather and soil moisture conditions. Adequate separation will be maintained between the proposed disposal area on Unit 1 and the proposed storm drainage detention pond. Based on a water balance prepared by MacKay and Somps, the proposed disposal areas would sufficient to accept the approximately 123 acre-feet of recycled water generated by the project.

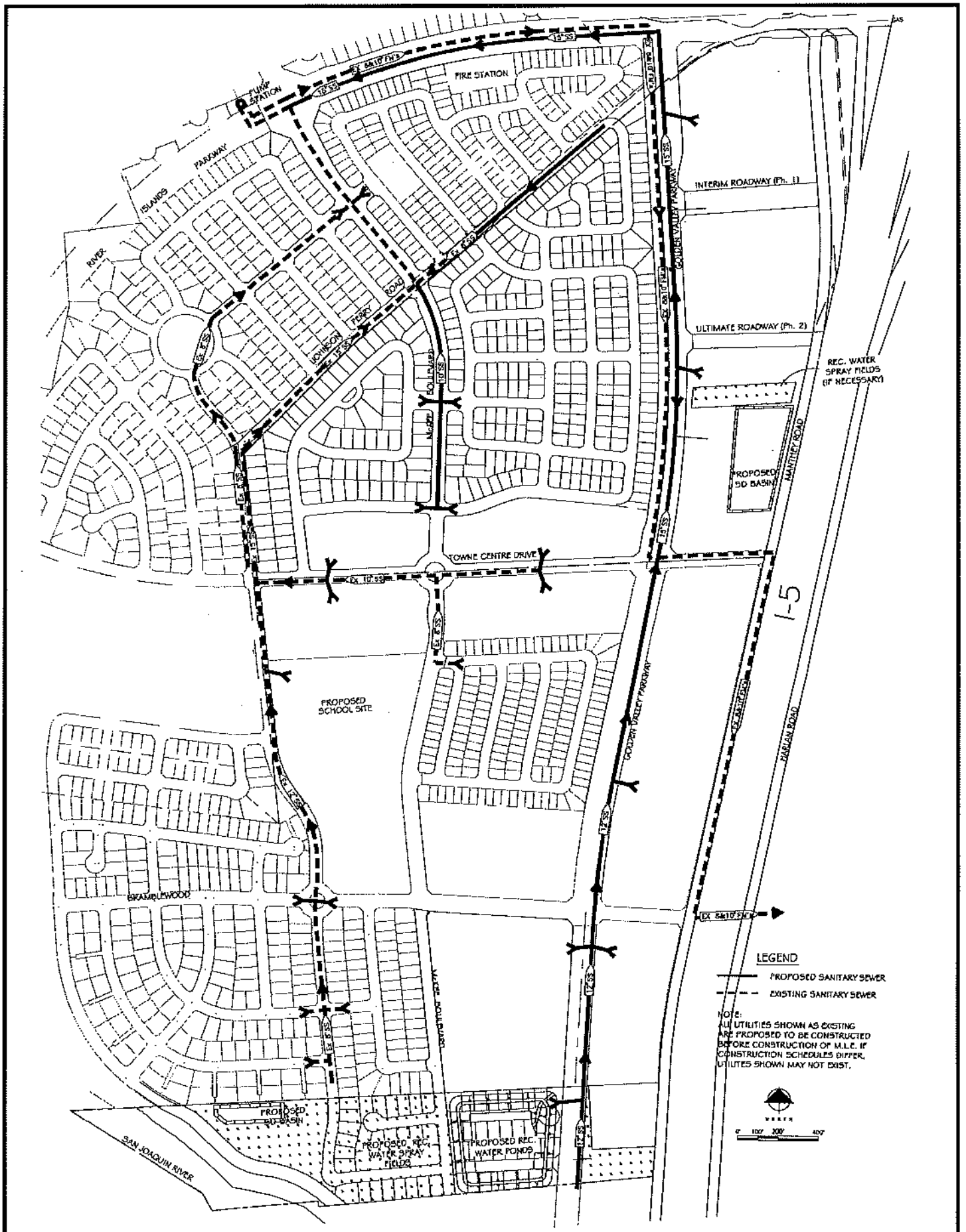
Storm Drainage. The proposed project would involve the installation of new storm drainage facilities to serve the project (Figure 3-12). The proposed collection system would consist of a network of 15-inch to 54-inch storm drains located within proposed public streets.



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

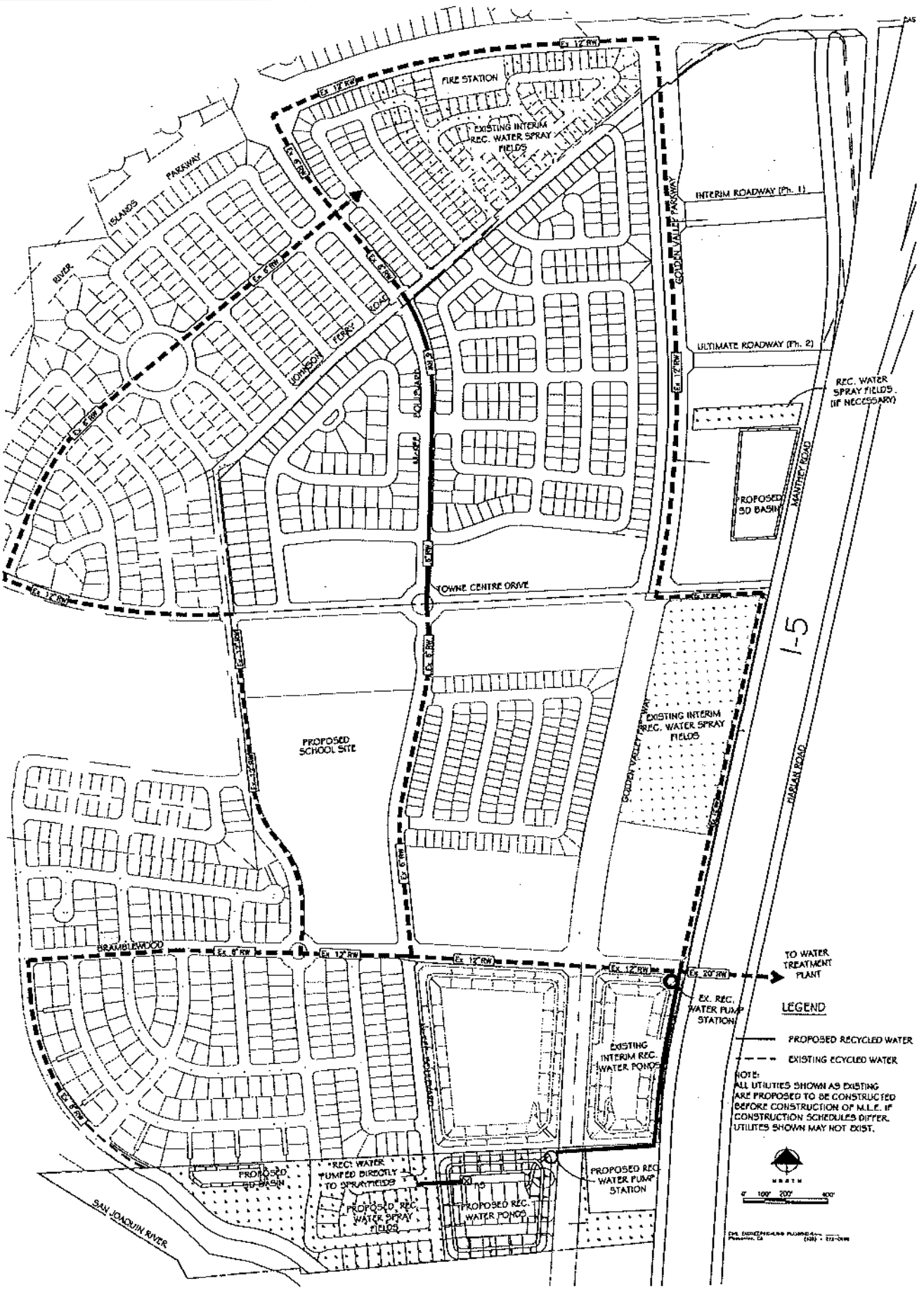
Figure 3-9
WATER SYSTEM



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

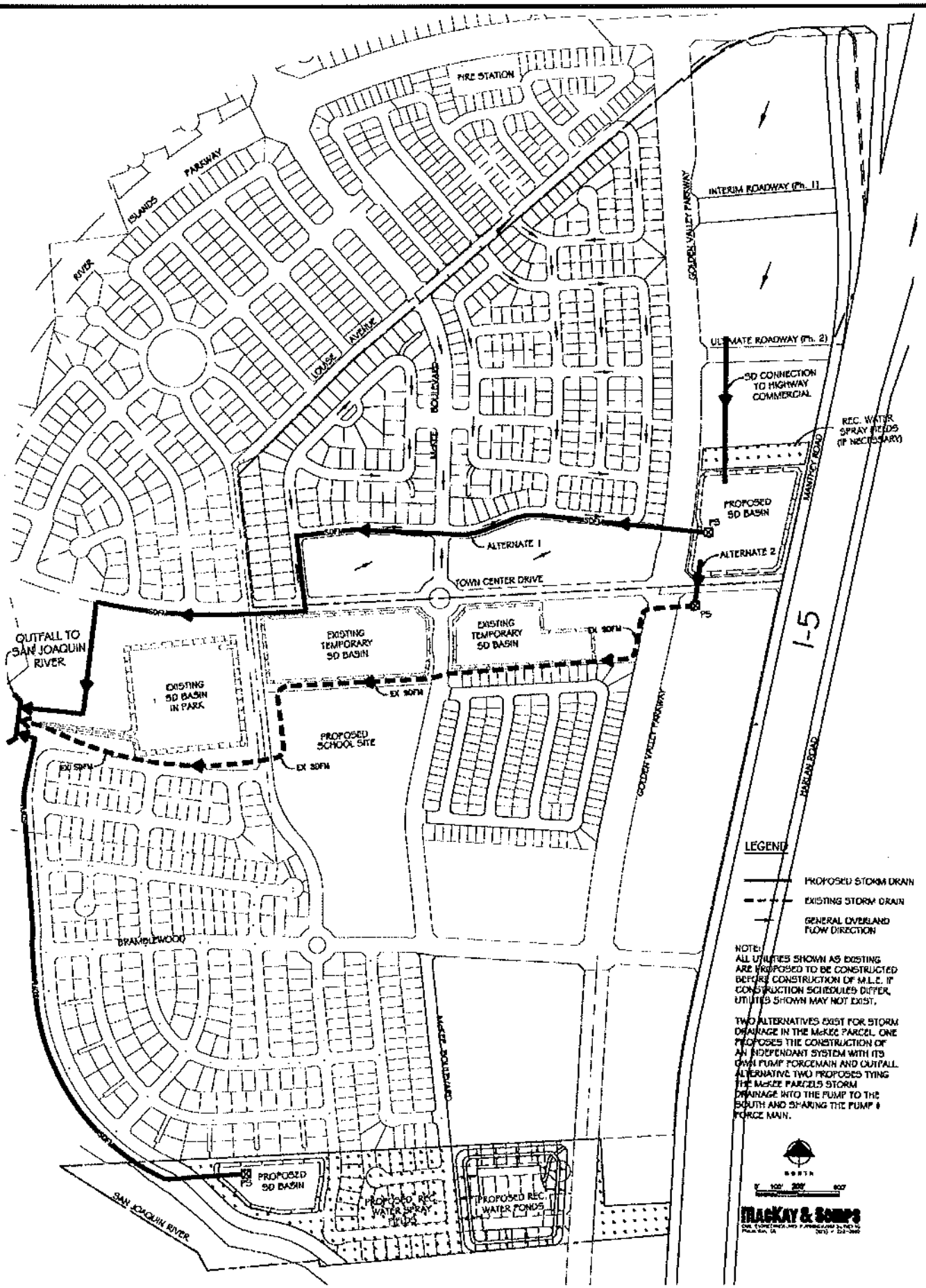
Figure 3-10
WASTEWATER COLLECTION SYSTEM



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

Figure 3-11
RECYCLED WATER SYSTEM



Source: MACKAY & SOMPS

Figure 3-12
STORM DRAINAGE SYSTEM

Within Unit 1, storm drains would flow by gravity to an interim retention/detention pond to be located in the southern portion of the proposed Service Commercial area. This facility would be excavated during first phase construction and would receive runoff from construction areas. On an interim basis, the proposed pond would also serve to retain all storm drainage generated by new development within the project area; retained storm flows would evaporate or percolate to groundwater.

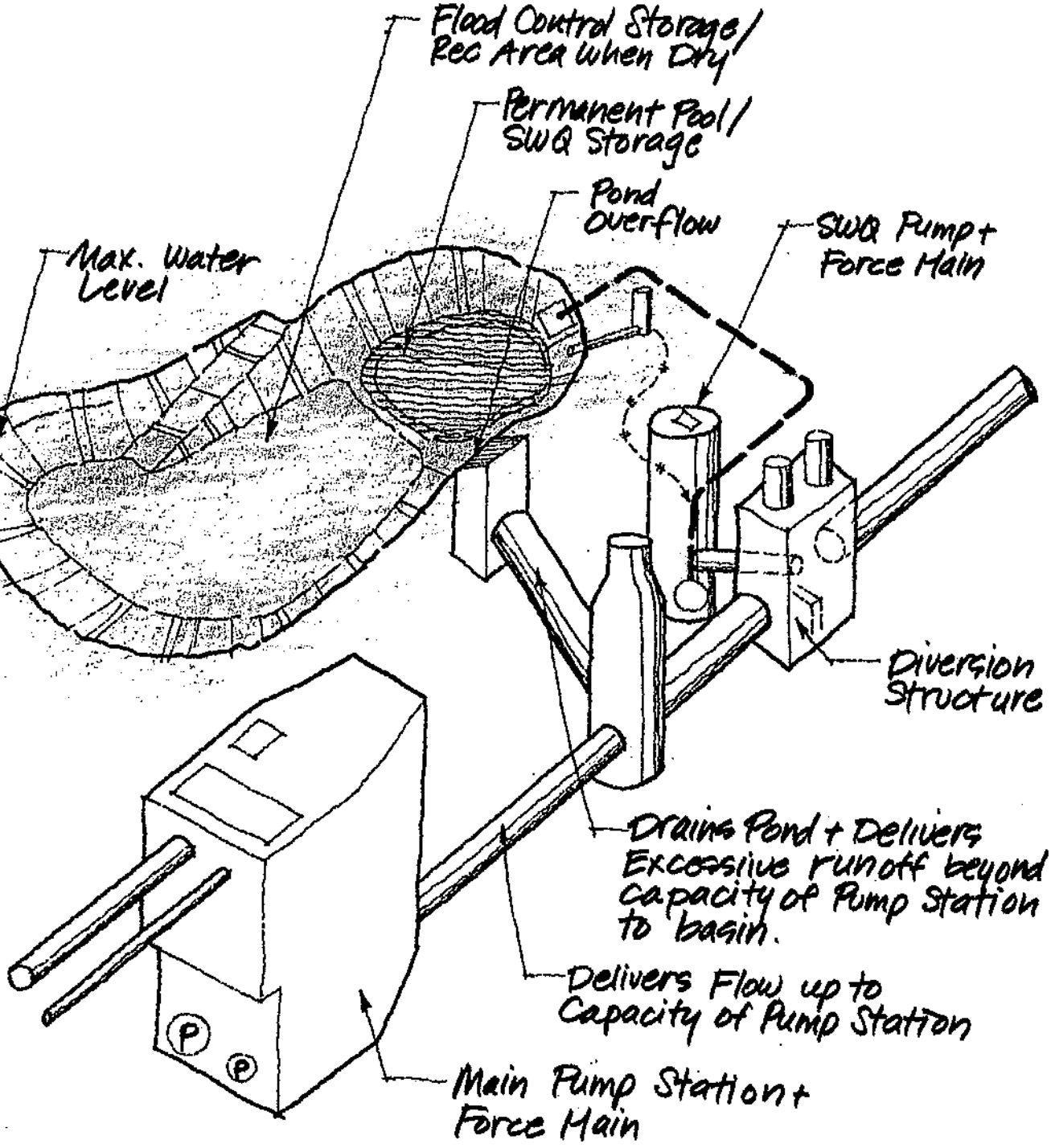
In order to provide adequate capacity to retain runoff from new development areas, this facility will be constructed larger than necessary to provide storm water retention only. A retention pond of approximately 6.75 acres and providing 27.0 acre-feet of storage would be necessary to meet these needs. In the long term, the proposed pond would provide storm water detention, as discussed below.

The proposed 3.0-acre detention pond for Unit 1 would be approximately 2.0 feet in depth and would provide up to 6.0 acre-feet of storage. The first foot of storage is contained for water quality while the remaining acreage is for flood control. Planned pumping facilities would transport storm flows to the terminal facility in a 30-inch force main. The proposed force main would be located within planned project streets.

Storm drainage from Unit 2 would be directed westerly to a proposed storm drainage basin located within the planned Neighborhood Park Area. This proposed 0.75-acre pond would be approximately 5.0 feet deep and would provide up to 3.75 acre-feet of storage. The first 2.0 feet of storage is contained for water quality, while the remaining acreage is for flood control. Planned pumping facilities would direct flows from Unit 2 and the Mossdale Village South area north along the planned River Road alignment to the Mossdale Landing outfall facility

The proposed storm water detention ponds would be designed in accordance with City Best Management Practices to limit peak flows from the project site (and in the case of Unit 2, lands to the south) to 30% of the potential maximum under 100-year storm conditions. In addition, these facilities would capture first-flush storm runoff for water quality protection. Excessive runoff would bubble up into the ponds and flood lands within the basin as needed to meet instantaneous requirements. Both of the proposed basins would maintain 2-foot separation from ground water and would be located a minimum of 200 feet from the nearest levee.

The proposed storm drainage system would be designed to cease discharge in excess of existing discharge when flows in the San Joaquin River exceed an elevation of 21.0 feet. The proposed project design includes sufficient storage in detention ponds, street systems and yard areas, up to an elevation of 1 foot below planned building pad elevations needed to contain 100-year runoff during a 48-hour period.



Source: MACKAY & SOMPS

Figure 3-13
TYPICAL DETENTION POND FACILITY

The MLE applicant will participate in the financing of these improvements on a proportional share basis.

Portions of the Unit 1 Service Commercial area that are used for recycled and storm water retention would be unavailable for commercial use on an interim basis. Once these uses have ceased, however, the land would become available for planned development as specified in the WLSP and UDC.

Drainage facilities associated with the project will include the installation of toe drains along the portion of the San Joaquin River levee located within Unit 2. Toe drains are designed to intercept levee seepage and direct it to the project storm drainage system. These improvements would be installed in conjunction with other Unit 2 subdivision improvements.

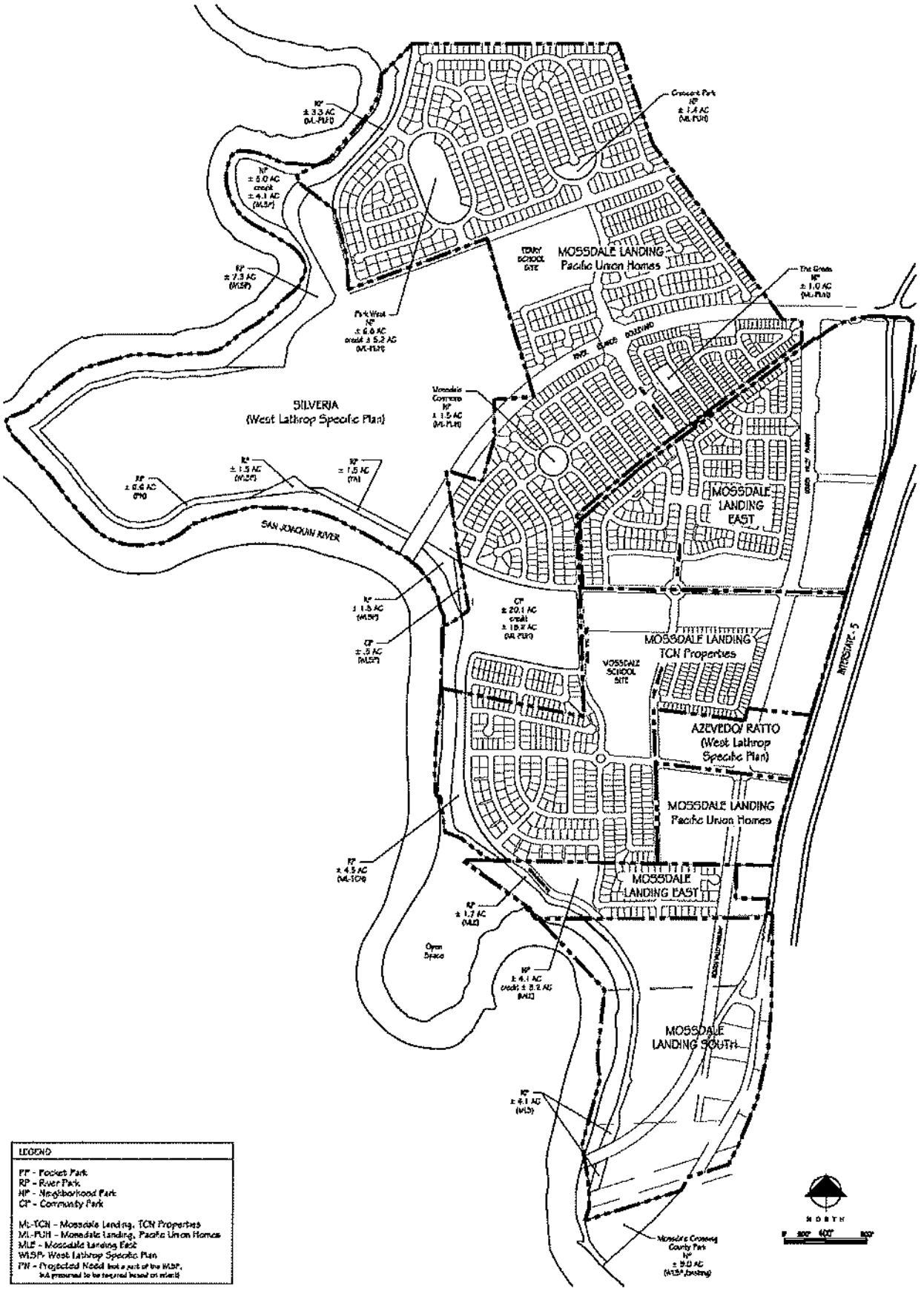
Other Utilities. The MLE project would be provided with electrical, gas, cable television and telephone by the regulated public utilities for the area. These would include Pacific Gas and Electric, SBC and Comcast. All utilities would be installed underground within proposed street systems.

3.4.8 Schools, Parks and Open Space.

The MLE does not provide sites for schools; no planned school sites are located within the project boundary. Two approximately 20-acre sites for proposed elementary (K-8) schools to be constructed by the Manteca Unified School District are located within the adjoining Mossdale Landing project (Figure 3-14). The project applicant will be responsible for the payment of school impact fees to help finance construction of these facilities.

The proposed project provides limited park land facilities, as most of the land to meet park needs for the Mossdale Village area will be met within the adjoining Mossdale Landing project. Staff analysis of park needs indicates that the Mossdale Village area will be served with parklands. One proposed neighborhood park would be located on 4.1 acres at the west end of Unit 2. This facility may include both active and passive recreational facilities, including playgrounds and equipment, restrooms and landscaping. The neighborhood park is intended to serve the future residential neighborhoods located within and near Unit 2. An additional 5.3 acres west of Indian Summer Way in Unit 2 would be reserved for River Park and Open Space. This area may form a portion of a planned off-leash area to be located within the Mossdale Landing project; plans for this facility are being developed in coordination with the City.

Additional park facilities will be constructed in conjunction with the adjoining Mossdale Landing project. Mossdale Landing includes a proposed community park, to be located southwest of the intersection of Towne Centre Drive and Golden Spike Trail. The MLE applicant will contribute to the development of this and other recreational facilities in the City of Lathrop through the payment of park in-lieu fees and Culture and Leisure CFF.



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

Figure 3-14
SCHOOLS, PARKS AND OPEN SPACE

3.4.9 Other Improvements

The proposed project will include the construction of walls and fences for noise attenuation and decorative purposes (Figure 3-15). These would include community walls located along the Golden Valley Parkway frontage of proposed residential areas and neighborhood fences separating proposed backup lots from Louise Avenue and proposed residential lots in Unit 2 from adjoining residential development, agricultural lands and the proposed Neighborhood Park. Decorative walls and monuments will also be provided at the entries to proposed residential neighborhoods.

3.4.10 Demolition

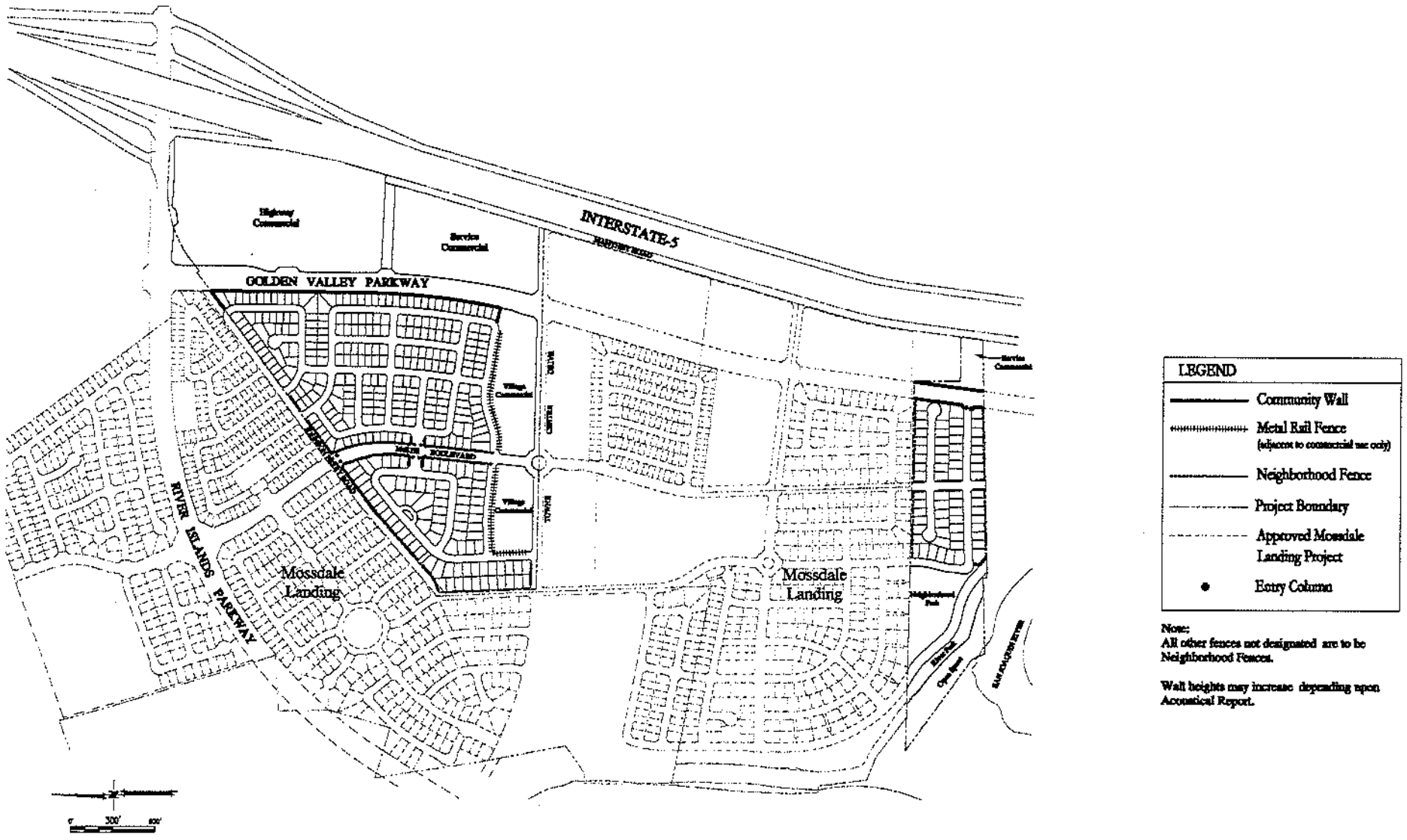
Project site development would involve the demolition of existing structures on Unit 1, including one residence and several farm-related structures. There are no existing structures located on Unit 2.

3.5 DEVELOPMENT POTENTIAL

The various approvals described in Section 3.4 will lead to physical development of the proposed MLE project. Potential quantities of development associated with the project are shown on Table 3-2. Approved development will involve physical effects on the environment, and these effects are addressed in detail in subsequent chapters of this document.

TABLE 3-2
NET DEVELOPMENT POTENTIAL
MOSSDALE LANDING EAST PROJECT
(residential units, 1,000 square feet commercial floor area)

Proposed Land Use	Unit 1	Unit 2	Total
Residential Low	85	66	151
Residential Medium	252		252
Residential, Village (potential)	80		80
Total Residential	417 units	66 units	483 units
Village Commercial	79.5		79.5
Service Commercial	136.1	13.0	149.2
Highway Commercial	270.2		270.2
Total Commercial	485.8 K sq. ft.	13.0 K sq. ft.	498.9 K sq. ft.



Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

Figure 3-15
WALLS, FENCES AND COLUMNS

3.6 PROJECT PHASING AND FINANCING

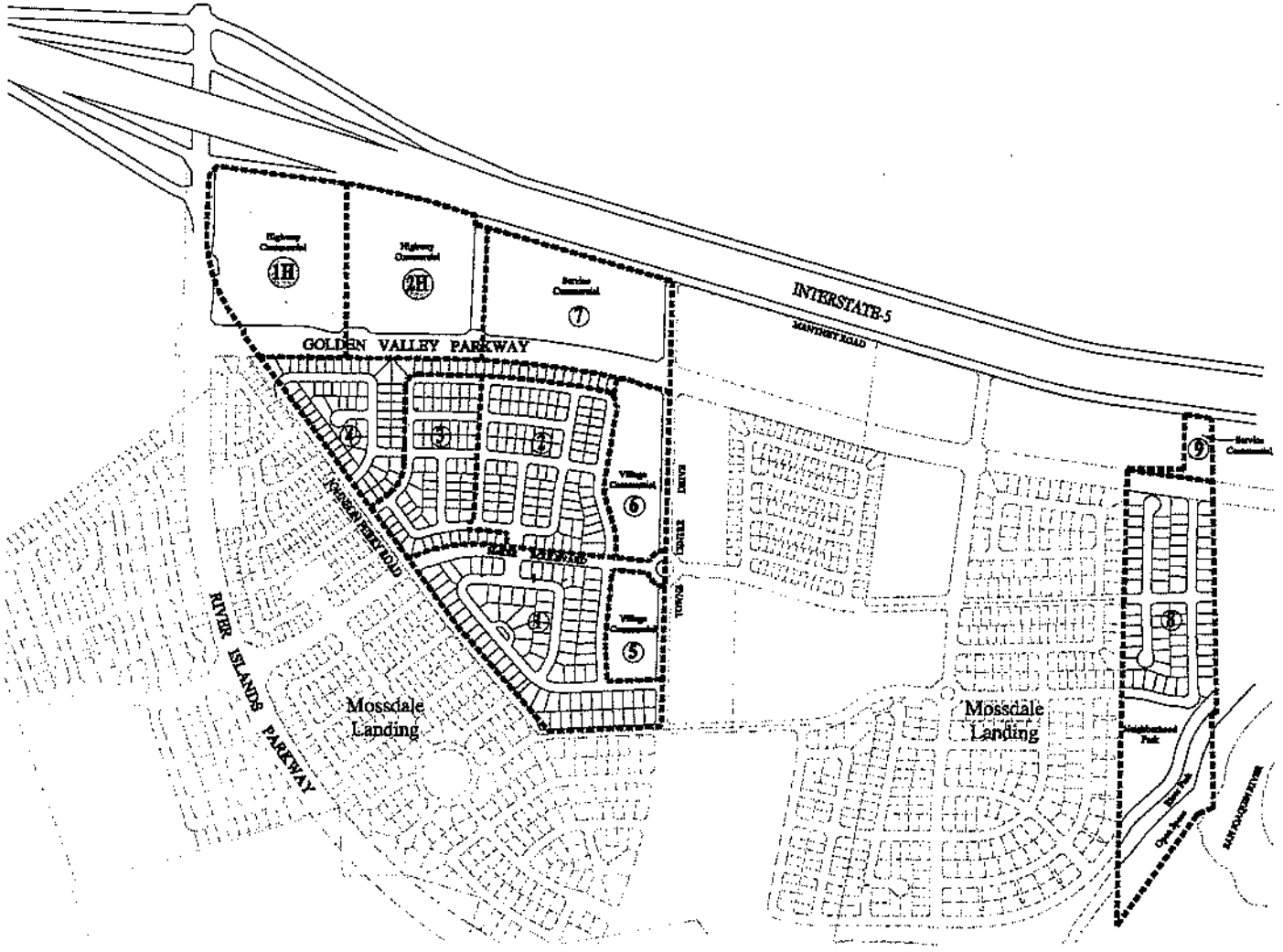
A preliminary phasing plan for the MLE project is shown on Figure 3-16. Residential development will be initiated with planned lots in the low-density residential development area of Unit 1 (Phase 1), followed by the southernmost portions of the medium density area. Residential portions of the Village Commercial area are expected. Development of proposed residences would be largely market-driven, with the demand for the 84 proposed larger single-family (Low Density) lots being constructed first. Proposed smaller (Medium Density) lots would likely be constructed in three subsequent phases.

Planned commercial development would likely be initiated with development of the northern portion of the Highway Commercial area (Phase 1). Remaining development within this area, and development of the Service Commercial and Village Commercial areas, will proceed as demands warrant. Conceptual phasing of this development is shown on Figure 3-16.

Infrastructure will be extended onto the project site, as required to service planned land uses as they develop. Street access will initially be extended onto the Unit 1 site from River Islands Parkway, which is to be constructed in conjunction with the adjoining Mossdale Landing project. Golden Valley Parkway will likely be constructed in stages, beginning with one half of the ultimate street section together with the median area and the east side parkway, adjacent to commercial development.

The UDC contains a general description of potential financing for project-related infrastructure and other improvements. A more precise definition of financing methods has been outlined in a fiscal impact analysis prepared by Goodwin and Associates for the Mossdale Landing project. In general, the UDC indicates the applicant will be responsible for all on-site street and utility improvements, including on-site portions of regional facilities. The applicant would also be responsible for its proportionate share of any off-site improvements required to mitigate traffic or other impacts of the project. Funding of these improvements may be accomplished with a variety of financing mechanisms including assessment and special districts such as lighting, landscaping maintenance (LLM), Mello-Roos, Community Facilities (CFD) or others. In addition, the City has adopted development impact fees.

Fee-based infrastructure can be an adequate mitigation measure under CEQA (Save Our Penninsula Committee v. Monterey County Bd. Of Supervisors, supra, 87 Cal.App.4th at p. 140, 104 Cal.Rptr.2d 326), and can be particularly useful where, as with the proposed project, traffic congestion results from cumulative conditions and not solely from the development of a single project. Therefore, unless otherwise stated, the discussion of impacts in this SEIR will be presumed to be implemented through the payment of appropriate mitigation fees as adopted by the City of Lathrop from time to time. To the extent that fees may not be sufficient, the City shall require the developer to upfront the costs of the improvements.



DEVELOPMENT PLAN SUMMARY

	PHASE	USE	NET AC/LOT SIZE	UNITS/SF
	1	LOW DENSITY RESIDENTIAL	4,500 sf	35
	2	MEDIUM DENSITY RESIDENTIAL	4,000 sf	93
	3	MEDIUM DENSITY RESIDENTIAL	4,000 sf	89
	4	MEDIUM DENSITY RESIDENTIAL	4,000 sf	91
	5	VILLAGE COMMERCIAL (High Density Residential)	4.0 ac	80
	6	VILLAGE COMMERCIAL	6.5 ac	79,697 sf
	7	SERVICE COMMERCIAL	12.5 ac	156,125 sf
	8	LOW DENSITY RESIDENTIAL	6,000 sf	68
		NEIGHBORHOOD PARK	4.1 ac	
		RIVER PARK	1.7 ac	
		OPEN SPACE	3.6 ac	
	9	SERVICE COMMERCIAL	1.5 ac	13,068 sf
		TOTAL		405 du 338,890 sf
*	1H	HIGHWAY COMMERCIAL	15.3 ac	151,285 sf
*	2H	HIGHWAY COMMERCIAL	12.3 ac	118,961 sf
		HC TOTAL		270,246 sf

LEGEND

- Project Boundary
- Construction Phasing
- ① Phase
- Ⓗ Highway Commercial Phase

Note:
Portions of the streets and development illustrated in this exhibit are illustrative and provided for context only. Not all of the streets and development shown will be developed as part of this project.

Development Phasing Plan is conceptual and subject to change.

*Highway Commercial Phasing is independent of the rest of the project.

Source: MACKAY & SOMPS

INSITE ENVIRONMENTAL

Figure 3-16
PROJECT PHASING

3.7 PERMITS AND APPROVALS

CEQA requires that an EIR identify the principal discretionary actions under consideration in the EIR as well as any other agency permits and approvals that may require consideration under CEQA. The principal discretionary permits and approvals for the project would be granted by the City of Lathrop. Permits and approvals from a number of other agencies may also be necessary in the course of development of the project site. Anticipated and potential permits and approvals are identified in Table 3-3.

TABLE 3-3
PERMITS AND APPROVALS
MOSSDALE LANDING EAST

Agency	Permit/Approval
City of Lathrop, City Council	Certification of Final Environmental Impact Report, adoption of CEQA findings and mitigation monitoring program
	Approval of Vesting Tentative Subdivision Map
	Approval of Williamson Act Contract Cancellation
	Approval of Development Agreement
City of Lathrop, Planning Commission	Recommendations to the City Council on the above matters,
	Approval of MLE Urban Design Concept
City of Lathrop, Public Works Department	Review and approval of street and utility improvement plans
Other City Actions	Final subdivision map approvals; acceptance of public improvements; establishment/expansion of maintenance districts and/or areas-of-benefit
Reclamation District 17	Levee bikeway construction encroachment
California Department of Health Services, Regional Water Quality Control Board	Engineer's Report, Waste Discharge Requirements, Recycled Water Discharge
Regional Water Quality Control Board	Notice of Intent, Storm Water Pollution Prevention Plan

4.0 AESTHETICS

4.1 ENVIRONMENTAL SETTING

The WLSP EIR provides an overview of scenic resources for the Stewart Tract and Mossdale Village areas. Resources mentioned include farmland, Valley Oaks, the San Joaquin River, riparian vegetation, old farm structures and bridges. Due to elevation, western views of the Coastal Range and partial eastern views of the Sierra Nevada Range are accessible from freeway corridors. Views of the San Joaquin River are generally restricted to its immediate vicinity due to the height of the levee system. The following offers a more focused look at the MLE project area.

The project site is located in a primarily agricultural and rural residential area. The flat topography is generally unvarying with minor localized exceptions, such as drainage channels and agricultural earth work. There are few trees, and agricultural features are generally repetitive. The most prominent landscape feature in the project area is the San Joaquin River and levee system. Aesthetically, the river feature is separated from the project site by the levees. Landscape character can be characterized as common to minimal on the project site, and throughout the surrounding area. Features are consistent with those identified in the WLSP, including several trees, riparian vegetation adjacent the western edge of Unit 2, farmland and farm structures.

Existing landscapes on and in the vicinity of the project site are rural in nature, and agriculture is the prevailing land use. Agricultural uses are predominantly alfalfa and vegetable row crops. The agricultural uses, levees, water works, electrical lines, and occasional residences are the principal features of viewsheds in the area. Individual residences and outbuildings often stand alone, in association with accompanying agricultural uses.

Surrounding lands were approved in January 2003 for development as a part of the Mossdale Landing project, which includes lands north of Unit 1 and most of the lands between Units 1 and 2. The Pacific Union Homes lands to the north of Unit 1 are under construction at this time, and construction within the TCN Properties portion of Mossdale Landing, between Units 1 and 2, is anticipated in the near future. Planned development of this site will result primarily in new commercial development in the vicinity of I-5 and urban residential development between this area and the San Joaquin River. Thus, while the project area is now in primarily agricultural use, it is planned to transition to urban use over the next few months.

Existing and potential future view corridors that could be affected by proposed project include I-5, Louise Avenue and Manthey Road. The site would also be visible from surrounding lands, including existing scattered residences and planned urban residential development. Views from these locations are presently primarily flat agricultural lands.

The aesthetic sensitivity of lands in urban areas is a function of the use of land and viewer expectations. As a result of continuing and planned residential development to the south and west of this project location, the project site can be considered somewhat sensitive to visual/aesthetic change.

The project area has generally open views with few distinctive features. Scattered residential and commercial development is visible south and east of the MLE project site. Louise Avenue and Manthey Road serve as access points to residential development and agricultural land, and as the northern and eastern boundaries of Unit 1. Yellow squash and other fields establish the boundary on the western and southern sides of the site. Unit 2 is bounded by Manthey Road on the west and vegetable crops on all other sides, except the southwestern corner, which is adjacent to the San Joaquin River levee system and riparian habitat. The I-5 corridor is visible to the east of the site. Visibility from the site to the west is limited by the levee along the San Joaquin River.

There are no designated scenic sites or transportation routes located in the vicinity of the project.

4.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Significance Thresholds.

According to the CEQA Guidelines, a project will ordinarily have a significant effect on the environment if it would have a substantial, demonstrable negative aesthetic effect. A project may have a significant aesthetic effect if it would a) have a substantial adverse effect on a scenic vista, b) substantially damage scenic resources, c) substantially degrade the existing visual character or quality of the site and its surroundings, or d) create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

Impacts Adequately Addressed in the Project Initial Study

The City of Lathrop prepared an Initial Study of the potential environmental impacts of the project prior to preparation of this SEIR. The Initial Study, which was circulated for agency review in conjunction with the Notice of Preparation for the project, identified aesthetic issues that were either less than significant, or need not be further addressed as a result of their treatment in a prior environmental document. These issues were addressed as follows:

1. Based on the WLSP EIR, the proposed project would not involve significant effects on distance views as development of parks and open space would provide better opportunities to enjoy scenic resources than are currently available.

2. Based on the WLSP EIR, the elimination of agricultural lands would not result in significant aesthetic effects; agricultural losses would be replaced by planned urban landscapes.

3. The WLSP EIR indicated that new development lighting would involve significant impacts on the night sky, even with shielding of light fixtures, as required by the WLSP. This significant and unavoidable effect was considered in the Statement of Overriding Considerations for the WLSP and does not require further analysis.

4. Based on the WLSP EIR, impacts of light from vehicles using major arterial roads on residential and other sensitive areas would be mitigated to a less than significant level by perimeter walls and landscaping treatment. The project is consistent with these requirements and would not involve a significant effect in this issue area.

Aesthetic Effects of Proposed Residential Development

Development of the proposed residential project will result in conversion of the project site from the existing agricultural use to urban use. Construction of the proposed project would involve removal of all existing site vegetation and agricultural features. The project site will be subject to extensive grading followed by construction of utility services, road access and other site improvements.

Site improvements would include residential construction in accordance with the proposed UDC and the West Lathrop Specific Plan. Construction disturbance would not result in significant aesthetic effects. The project area is in active agricultural use and is subject to substantial disturbance as a result of cycles of preparation, planting and harvest. Construction disturbance would be temporary and would be replaced by structures, landscaping and other improvements associated with the proposed urban development.

The proposed residential project would result in new urban development in an area that is otherwise undeveloped and that provides open space values. Potential impacts associated with open space loss were addressed in the previous EIR and found to be less than significant.

The proposed residential development is not expected to result in any substantial adverse visual effect. Aesthetic qualities of new development will be governed by the proposed Mossdale Landing East Urban Design Concept (MacKay and Somps, 2003). The UDC details design guidelines and development standards for MLE in accordance with the WLSP. Neighborhoods would include single and multiple family residential housing as well as a centralized village commercial area with a traditional "Main Street" feel. Landscape characteristics include use of a uniform street grid plan and creating a comfortable human-scaled streetscape in order to maximize pedestrian activity. Building designs are to be compatible with the surrounding natural and built environments as well

as be visually interesting through inclusion of subtle design variation. Lathrop Community Development Department staff have reviewed the proposed UDC for consistency with the adopted WLSP and found that the UDC is in close conformance

Planned commercial areas are expected to contribute to the overall appearance of the planned MLE urban landscape. All planned development will be required to conform to the requirements of the UDC, and these requirements include detailed specifications addressing required building orientation, vehicle and pedestrian circulation, site design, landscaping and architectural amenities, all intended to ensure that planned development realizes the objectives of the Lathrop General Plan, the WLSP and the UDC. Planned commercial development is expected to result in beneficial aesthetic effects on the planned urban environment.

Lands surrounding the project site are planned for comparable urban residential and commercial development. There are no extraordinarily sensitive land uses located on or near the project site, nor are any of the transportation corridors in the project vicinity considered sensitive to visual change. Urban residential and commercial development are not inherently impacting and is a common and accepted part of the landscape in and around the cities of the San Joaquin Valley.

Level of Significance: Less than significant

Mitigation Measures: None required

Light and Glare

Development of the project would involve new sources of night lighting, including street lighting, interior lighting of new structures, lighting of commercial parking areas and various building security lighting. Street lighting is an essential and accepted portion of the urban nightscape and would not result in significant adverse effects. Commercial parking areas located behind the central Village Commercial areas could result in potentially significant light and glare impacts on neighboring residential development. However, all residential areas are separated from Village Commercial areas by a landscape buffer and 56-62-foot street rights of way. These streets would be illuminated in accordance with City standards and should provide an adequate buffer against commercial parking glare.

The project area is located more than two miles from the Stockton Metropolitan Airport, and project-related lighting would not result in any aircraft operation concerns.

Level of Significance: Less than significant

Mitigation Measures: None required

5.0 AGRICULTURE

5.1 ENVIRONMENTAL SETTING

The WLSP EIR characterizes the planning area as dominated by agricultural uses and devoted to the production of field crops, vegetables, pasture, nuts and fruits on prime and near-prime soils. Many WLSP lands proposed for urbanization are considered Prime Farm Land and are under Williamson Act contracts with San Joaquin County. Agricultural issues associated with the project site were not discussed in the WLSP EIR and will be addressed below.

Units 1 and 2 of the project site are currently involved in agricultural production of alfalfa and vegetable crops such as green beans. Crops are irrigated through an existing on-site irrigation system supplied by on-site wells; the system includes underground piping and surface ditches. Irrigation systems are self-contained within Units 1 and 2.

The state Important Farmlands Map designates the project site as Prime Farmlands and Farmland of Statewide Importance; about half of the land area of the site is in each designation. Project site soils vary widely in type, including, in Unit 1, primarily clay loams but a large unit of loamy sands near the center of this area. Unit 2 soils are evenly balanced between clay and sandy loams. Consistent with the state farmlands designations, these soils are considered mostly prime.

The majority of Unit 1 of the project site (APNs 191-190-20 and 21) is under existing Williamson Act contracts. These contracts were executed in 1974. A Notice of Non-Renewal on APN 191-190-20 (114 acres) was recorded on October 9, 1998, and a Notice of Non-Renewal on APN 191-190-21 was recorded on February 4, 1994. As a result, the contracts will expire in 2008 and 2004 respectively.

5.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Significance Thresholds

According to CEQA, a project may have a significant effect on the environment if it would involve conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use, or impair the agricultural productivity of prime agricultural land. A project may also have a significant effect on agriculture if it would indirectly result in conversion of prime agricultural land or conflict with agricultural zoning or a Williamson Act contract.

Impacts Adequately Addressed in the Project Initial Study

The City of Lathrop prepared an Initial Study of the potential environmental impacts of the project prior to preparation of this SEIR. The Initial Study, which was circulated for agency review in conjunction with the Notice of Preparation for the project, identified several potential environmental issues that were either less than significant, or that need not be further addressed as a result of their treatment in a prior environmental document. These issues were addressed as follows:

1. The WLSP EIR identified the impacts of the proposed project and other WLSP lands on conversion of prime agricultural lands to urban uses as significant and unavoidable. These impacts were considered in the Statement of Overriding Considerations adopted in conjunction with the WLSP project, and no further analysis is required.

Conversion of Agricultural Land

As noted in the previous section the WLSP EIR included consideration of this issue, and adoption of the West Lathrop Specific Plan and annexation of the project area committed this land to urban development. The project would convert approximately 151 acres of agricultural land, contributing to the overall WLSP agricultural land conversion impact. This significant and unavoidable impact was the subject of a Statement of Overriding Considerations adopted in conjunction with the WLSP project.

The Initial Study indicated that this EIR would reconsider the potential for mitigation of agricultural land impacts. Partial mitigation for agricultural land conversion is provided by required project participation in the San Joaquin Multi-Species Habitat Conservation Plan. This program requires the payment of a per-acre fee which is used, in turn, to acquire other lands or development rights over other lands, including agricultural lands, for preservation and development of wildlife habitat values. However, recent case law indicates that off-site mitigation cannot reasonably serve as mitigation for agricultural land conversion. *See Friends of the Kangaroo Rat v. California Department of Corrections*, 111 Cal.App.4th 1400,4 Cal. Rptr.3d 558 (2003).

The San Joaquin County Community Development Department has recommended that monetary compensation for loss of agricultural land be included as mitigation for other proposed projects, and the County has retained a consultant to explore development of a mechanism for assessing and collecting agricultural land conversion fees. The timing of adoption of such a fee is uncertain, and, at this time, no public plan or mechanism for equitable assessment of such fees exists or appears to be nearing adoption. As a result, mitigation fees do not appear to represent feasible mitigation. A fee mechanism is not available and would not reduce potential impacts to less than significant.

This impact will remain significant and unavoidable.

Level of Significance: Significant

Mitigation Measures: None available

Urban- Agricultural Conflicts

Agricultural land use conflicts may result from the proximity of active agricultural and new urban residential uses. The potential for conflict between urban and agricultural lands was addressed in the WLSP EIR and the Initial Study (Appendix A). Examples of such conflict include trespassing, vandalism, theft, liability, pesticide drift, noise and spreading dust. To address this issue, the City of Lathrop and the County of San Joaquin have each adopted "Right to Farm" ordinances. These ordinances serve to protect farmers from nuisance complaints. They require owners and builders to notify their successors-in-interest of the potential conflicts and effects of agricultural activities, and the ordinances specify that typical agricultural practices shall not be considered a nuisance.

In addition, the WLSP EIR proposed two mitigation measures that would be applicable to the project and that would further reduce the potential for conflict:

1.a. As development occurs under the phasing plan, fencing or other suitable barriers such as watercourses should be established at the interface between the phases which are developing and adjacent to agricultural land so as to reduce the potential of urban-agricultural conflicts resulting from trespass, vandalism, crop and equipment damage, and theft.

1.b. To reduce the potential for adverse impacts from agricultural operations upon residential areas, a buffer zone of 50-100 yards shall be provided between the line of residential or commercial development and the nearest line of farmland, with fencing of each line to discourage trespass. This buffer should be assured as a condition of development approval, with removal of the buffer not to occur until the next phase of urban expansion is approved.

Mitigation measure 1.a would be applicable to the proposed project. Mitigation measure 1.b was analyzed in the Mossdale Landing EIR and found to the infeasible. However, the combined effect of mitigation measure 1.a and the adopted Right to Farm ordinances would be sufficient to reduce potential conflicts to less than significant.

At the time of preparation of the WLSP EIR, the timing of various units of development within the overall plan area was uncertain, and the potential existed that urban and agricultural lands would be juxtaposed, and this potential remains for some lands within the WLSP area. Unit 1 of the proposed project, however, is flanked on the north and south by approved units of the Mossdale Landing project that are under development at this time.

As a result, most of the development in Unit 1 would not be juxtaposed with agricultural uses. In the event that residual agricultural uses remain, the mitigation measures applicable to the WLSP would remain and would reduce potential impacts to less than significant.

Unit 2 of the project would, for the foreseeable short term, involve the storage and disposal of recycled water through agricultural application. This would involve no conflict with adjoining agricultural uses, if they remain. Lands to the north of Unit 2 are approved for urban development as well as additional recycled water disposal as a part of the Mossdale Landing project; proposed urban development of Unit 2 would involve no conflict with these lands. Lands to the south of Unit 2 are being processed by the City of Lathrop for urban residential and commercial development comparable to the proposed project. Assuming these lands are developed in the short term as proposed, no conflict would occur; should development of these lands not proceed as planned, the WLSP EIR mitigation measures would reduce potential impacts to less than significant.

As MLE develops, existing on-site irrigation system components would be removed. However, on-site irrigation systems are self-contained and independent of surrounding areas. Potential for irrigation system impacts is considered less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

1. The project proponent will implement mitigation measure 1.a. as provided in the WLSP EIR at page V-2 for planned residential uses that abut ongoing commercial agricultural operations.

Significance After Mitigation: Less than significant

Williamson Act Contracts

The MLE project is proposed for immediate development, which would require the immediate cancellation of existing Williamson Act contracts affecting the project site. The WLSP EIR acknowledged the existence of Williamson Act contracts within the WLSP planning area but did not evaluate existing contracts within MLE or provide a cancellation analysis for those contracts. That information is provided in the following section.

Two of the parcels in MLE Unit 1 (APNs 191-190-20 and 21) are under an existing Williamson Act Contracts. Notices of Non-Renewal have been filed for this site, the latest in 1998. When a Notice of Non-Renewal is filed, the contract is not renewed and will expire after 10 years. Since urban development is prohibited on lands under Williamson Act contract, proposed urban development on Unit 1 would ordinarily be postponed to 2008. There are no non-contracted lands within Unit 1, which constitutes the majority of the project site. Unit 2 is not subject to Williamson Act contracts.

A landowner may petition the County Board of Supervisors or City Council for immediate cancellation of the contract for all or part of the contracted land. The board or council may grant tentative approval for cancellation only if the following findings are made as per Sections 51282 and 51284 of the California Government Code:

1) that the cancellation is consistent with the purposes of th[e] . . . California Land Conservation Act of 1965, and

2) That cancellation is in the public interest.

Cancellation of a contract can be determined to be consistent with the purposes of the Act only if the board or council makes all of the following findings:

1) That the cancellation is for land on which a notice of non-renewal has been served pursuant to Government Code Section 51245.

2) That cancellation is not likely to result in the removal of adjacent lands from agricultural use.

3) That cancellation is for an alternative use which is consistent with the applicable provisions of the city or county general plan.

4) That cancellation will not result in discontiguous patterns of urban development.

5) That there is no proximate non-contracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or that development of the contracted land would provide more contiguous patterns of urban development than development of proximate non-contracted land.

Cancellation of a contract is considered to be in the public interest only if the board or council makes the following findings: (1) that other public concerns substantially outweigh the objectives of this chapter, and (2) that finding #5 above can be met.

The term "proximate, non-contracted land" means land not restricted by contract pursuant to the Act, which is sufficiently close to land which is so restricted that it can serve as a practical alternative for the use which is proposed for the restricted land. The term "suitable" means that salient features of the proposed use can be served by land not restricted by contract in the Act.

A summary of project consistency considerations related to the required cancellation findings is outlined as follows. The project proponent has applied to the City of Lathrop for contract cancellation. As a result, the actual determination would need to be made by the Lathrop City Council.

The proposed cancellation can be considered to be consistent with the purpose of the California Land Conservation Act of 1965, as the proposed cancellation would be consistent with each of the specified consisting criteria.

1. *Notice of Non-Renewal*: Notices of Non-Renewal have been filed for both of the parcels in Unit 1 that are subject to Williamson Act contracts.

2. *Removal of Adjacent Agricultural Lands:* Cancellation of the Unit 1 contracts would not result in the removal of adjacent agricultural lands, as these lands have already been committed to urban development. Lands surrounding Unit 1 of the project site were approved for development with the adoption of the West Lathrop Specific Plan in 1995. Lands to the north, west and south of Unit 1 were further approved for urban development with the City of Lathrop's January 2003 approval of the Mossdale Landing UDC project. This project included approval of tentative maps.

   Lands to the south of Unit 1 have also received tentative map approval in conjunction with the Mossdale Landing UDC project in January 2003. Cancellation of Williamson Act contracts for these lands were subsequently approved by the City of Lathrop.

3. *Consistency with City or County General Plan:* The proposed cancellation would allow the development of urban uses that would be consistent with applicable general plans. Proposed MLE land uses are consistent with the Lathrop General Plan and the West Lathrop Specific Plan. This issue is discussed in more detail in Chapter 13.0 Land Use and Planning.

4. *Contiguous Urban Development Patterns:* The proposed cancellation would not result in discontiguous patterns of urban development but would, rather, promote contiguous urban development. Lands surrounding Unit 1 are approved for urban development, and construction on these lands is being initiated. Assuming construction on these sites proceeds, denial of cancellation would leave Unit 1 as an agricultural remainder enclosed by urban development, an "infill" parcel.

5. *Proximate Non-Contracted Land:* There are no proximate non-contracted lands that meet both the availability and suitability criteria of Finding #5. Lands to the immediate north, south and west of Unit 1 are no longer under Williamson Act contract as a result of cancellations; these lands have been approved for urban development, which is under way, and are unavailable for the uses proposed in MLE Unit 1. Lands to the east include Interstate 5 and other developed lands within the City of Lathrop. One 17-acre parcel, located approximately 1,200 feet south of Unit 1 is non-contracted but is both too small to accommodate the project and is unavailable for development. Several developer attempts to purchase this site as a result of title difficulties.

   Development of the contracted lands within the site would create more contiguous patterns of urban development than development of proximate non-contracted land (that are available for development). As noted above, the Unit 1 site will, as a result of recent development approvals, be surrounded by urban development. Cancellation of Williamson Act contracts on the site, and its subsequent development, would result in infill within an area already dedicated

to urban development. Nearby non-contracted lands could involve discontiguous development. Non-contracted lands north and west of the Mossdale Village project area are outside the city boundary and more distant from the perimeter of existing urban development. The project site has already been annexed to the City, is designated for urban development and has been integrated into development concepts of the approved West Lathrop Specific Plan.

The proposed Williamson Act cancellation would result in no apparent conflict with Government Code findings requirements. However, a final determination of consistency with the required findings will be the responsibility of the Lathrop City Council. As a result, cancellation of the Williamson Act contracts will be considered a potentially significant impact. Other than selection of the "no project" alternative, there is no mitigation available for this potential impact.

Level of Significance: Potentially significant

Mitigation Measures: None available

Significance After Mitigation: Potentially significant

6.0 AIR QUALITY

6.1 ENVIRONMENTAL SETTING

Meteorology and Climate

The prevailing winds in the project area are from west to northwest and result from marine breezes through the Carquinez Strait. During winter months when sea breezes diminish, southerly winds occur more frequently. Summers are hot and dry, and winters are cool. Average daily temperatures range from 44.6 degrees F in January to 76.7 degrees F in July. Maximum temperatures of 90 degrees F or greater occur about 88 days per year. Temperatures of 32 degrees F and below occur about 22 days per year. Nearly 90% of the annual precipitation falls in the six months between November and April.

San Joaquin County enjoys a high percentage of sunshine. However, a reduction in sunshine occurs during the winter months of December and January because of fog and intermittent stormy weather. On the average, there are 185 clear days, 76 partly cloudy days, and 104 cloudy days in the region. Heavy fog with visibility of less than a quarter of a mile occurs about 44 times a year.

The vertical mixing of air pollutants is limited by the presence of persistent temperature inversions. Inversions may be either ground level or elevated. Ground level inversions occur frequently during early fall and winter (i.e., October through January). High concentrations of primary pollutants, which are those emitted directly into the atmosphere (e.g., carbon monoxide), may be found at these times. Elevated inversions act as a lid over the basin and limit vertical mixing. Severe air stagnation occurs as a result of these inversions. Elevated inversions contribute to the occurrence of high levels of ozone during the summer months.

Air Pollutants and Ambient Air Quality Standards

Both the State of California and the federal government have established ambient air quality standards for several different pollutants. For some pollutants, separate standards have been set for different periods. Most standards have been set to protect public health. For some pollutants, standards have been based on other values (such as protection of crops, protection of materials, or avoidance of nuisance conditions). The pollutants of greatest concern in San Joaquin County are carbon monoxide (CO), ozone, and particulate matter 10 microns or less in diameter (generally designated as PM10). A summary of state and federal ambient air quality standards is shown in Table 6-1.

TABLE 6-1.
AMBIENT AIR QUALITY STANDARDS APPLICABLE IN CALIFORNIA

Pollutant	Symbol	Average Time	Standard, as parts per million		Standard, as micrograms per cubic meter		Violation Criteria	
			California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	0.12	180	235	If exceeded	If exceeded on more than 3 days in 3 years
		8 hours	N/A	0.08	N/A	N/A	N/A	If exceeded on more than 3 days in 3 years
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year
(Lake Tahoe only)		8 hours	6	N/A	7,000	N/A	If exceeded	N/A
Nitrogen dioxide	NO_2	Annual average 1 hour	N/A 0.25	0.053 N/A	N/A 470	100 N/A	N/A If exceeded	If exceeded N/A
Sulfur dioxide	SO_2	Annual average	N/A	0.03	N/A	80	N/A	If exceeded
		24 hours	0.05	0.14	131	365	If exceeded	If exceeded on more than 1 day per year
		1 hour	0.25	N/A	665	N/A	N/A	N/A
Hydrogen sulfide	H_2S	1 hour	0.03	N/A	42	N/A	If equaled or exceeded	N/A
Vinyl chloride	C_2H_3Cl	24 hours	0.010	N/A	26	N/A	If equaled or exceeded	N/A
Inhalable particulate matter	PM10	Annual geometric mean	N/A	N/A	30	N/A	If exceeded	N/A
		Annual arithmetic mean	N/A	N/A	N/A	50	N/A	If exceeded
		24 hours	N/A	N/A	50	150	N/A	If exceeded on more than 1 day per year
Fine particulate matter	PM2.5	Annual arithmetic mean	N/A	N/A	N/A	15	N/A	If exceeded
		24 hours	N/A	N/A	N/A	65	N/A	If exceeded on more than 1 day per year
Sulfate particles	SO_4	24 hours	N/A	N/A	25	N/A	If equaled or exceeded	N/A
Lead particles	Pb	Calendar quarter	N/A	N/A	N/A	1.5	N/A	If exceeded no more than 1 day per year
		30 days	N/A	N/A	1.5	60	If equaled or exceeded	N/A

Notes: All standards are based on measurements at 25 C and 1 atmosphere pressure.
National standards shown are the primary (health effects) standards.
N/A = not applicable.

Carbon Monoxide. State and federal CO standards have been set for both 1-hour and 8-hour averaging times. The state 1-hour standard is 20 parts per million (ppm) by volume, and the federal 1-hour standard is 35 ppm. Both state and federal standards are 9 ppm for the 8-hour averaging period. CO is a public health concern because it combines readily with hemoglobin and thus reduces the amount of oxygen transported in the bloodstream.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

High CO concentrations occur in areas of limited geographic size, sometimes referred to as hot spots. Since CO concentrations are strongly associated with motor vehicle emissions, high CO concentrations generally occur in the immediate vicinity of roadways with high traffic volumes and traffic congestion. Areas adjacent to heavily traveled and congested intersections are particularly susceptible to high CO concentrations.

Ozone. Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, which include reactive organic gases (ROG) and nitrogen oxides (NOx), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and can cause substantial damage to vegetation and other materials.

State and federal standards for ozone have been set for a 1-hour averaging time. The state 1-hour ozone standard is 0.09 ppm, not to be exceeded. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any 3-year period. A new federal standard for ozone was issued in July 1997 by the U.S. Environmental Protection Agency (EPA). The new ozone standard has been set at a concentration of 0.08 ppm ozone measured over 8 hours.

Inhalable Particulate Matter. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Few particles larger than 10 microns in diameter reach the lungs. Consequently, both the federal and state air quality standards for particulate matter apply to particulate matter 10 microns or less in diameter (PM10).

The state PM10 standards are 50 micrograms per cubic meter (ug/m^3) as a 24-hour average and 30 ug/m^3 as an annual geometric mean. The federal PM10 standards are 150 ug/ m^3 as a 24-hour average and 50 ug/m^3 as an annual arithmetic mean.

PM10 conditions in San Joaquin County are a result of a mix of rural and urban sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic, and secondary aerosols formed by reactions in the atmosphere.

A new federal standard for particulate matter less than 2.5 microns in diameter (PM2.5) was issued in July 1997 by the EPA. PM2.5 is sometimes referred to as "fine particulate matter". The new PM2.5 standard has been set at a concentration of 15 ug/m^3 annually and 65 ug/m^3 daily.

Air Quality Monitoring

Table 6-2 presents air quality monitoring data for three pollutants: CO, ozone, and particulate matter (PM10 and PM2.5). The data presented in Table 6-2 are for the latest three years with available data for the full year. The monitoring station shown in the table is the closest to the project site for each of the three pollutants.

The entire San Joaquin Valley Air Basin (SJVAB), including San Joaquin County, has been designated an attainment area for the CO air quality standards. As shown in Table 6-2, the Hazelton Avenue CO monitoring station has not exceeded CO air quality standard for the three-year period.

The SJVAB, including San Joaquin County, has been classified as a nonattainment area for ozone because concentrations of this pollutant often exceed the state and federal standards. As shown in Table 6-2, the state ozone standard has been exceeded at the station closest to the project site several times each year. The federal ozone standard has been exceeded once at the Hazelton site.

San Joaquin County is considered a nonattainment area for PM10 because concentrations of this pollutant sometimes exceed the standards within the County. Table 6-2 shows the PM10 standard has been exceeded several times during the most three-year monitoring period for which monitoring data were available at the Hazelton station.

Neither San Joaquin County nor the SJVAB have yet been classified as attainment or nonattainment for the federal PM2.5 standards. Monitoring data show three violations of the federal standard during the 2000 through 2002 period at the Hazelton monitoring station.

Countywide Emissions

Table 6-3 presents emissions currently generated in San Joaquin County. The information presented in Table 6-3 is divided into emission source categories. The category that generates the largest amounts of ROG and NOx emissions in San Joaquin County is On-Road Motor Vehicles. The category that generates the largest amount of PM10 emissions is shown in Table 6-3 as Miscellaneous Processes; the two largest subcategories within this one category are Farming Operations and Unpaved Road Dust.

TABLE 6-2
STOCKTON AIR QUALITY MONITORING RESULTS

Pollutant	State Standard	Pollutant Concentration 2000	2001	2002
Carbon Monoxide (Hazelton)				
Highest 8-Hour Average (ppm)	9	3.9	6.0	2.9
Second Highest 8-Hour Average (ppm)	9	3.7	3.4	2.6
Days > State Standard		0	0	0
Ozone (Hazelton)				
Highest 1-Hour Average (ppm)	0.09	0.107	0.103	0.102
Second Highest 1-Hour Average (ppm)	0.09	0.104	0.101	0.095
Highest 8-Hour Average (ppm)	0.08*	0.08	0.088	0.081
Second Highest 8-Hour Average (ppm)	0.08*	0.079	0.08	0.077
Days > State Standard		4	5	2
Days > Federal Standard		0	1	0
PM 10 (Hazelton)				
Highest 24-Hour Average ($\mu g/m^3$)	50	91	140	87
Second Highest 24-Hour Average ($\mu g/m^3$)	50	86	97	78
Days > State Standard (Measured)		9	10	10
Days > State Standard (Calculated)		45	60	60
PM 2.5 (Hazelton)				
Highest 24-Hour Average ($\mu g/m^3$)	65	78	76	46
Second Highest 24-Hour Average ($\mu g/m^3$)	65	63	70	43
Days > Federal Standard		1	2	0

Source: The monitoring data are from the California Air Resources Board web site: http://www.arb.ca.gov
Note: ppm = parts per million
$\mu g/m^3$ = micrograms per cubic meter
*indicates Federal Air Quality Standard

TABLE 6-3
SAN JOAQUIN COUNTY EMISSIONS INVENTORY FOR 2002
(Tons per day)

Emission Category	Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Particulate Matter
Fuel Combustion	12.6	56.4	129.7	8.9
Waste Disposal	3.5	0.04	0.03	0.24
Cleaning & Surface Coatings	28.7	-	0.0	0.0
Petroleum Production & Marketing	41.3	0.44	0.29	0.10
Industrial Processes	14.5	3.4	21.2	32.9
Solvent Evaporation	64.0	-	-	-
Miscellaneous Processes	106.6	392.6	11.2	587.0
On-Road Motor Vehicles	102.7	1074.5	224.7	6.2
Other Mobile Sources	54.9	327.9	136.2	8.9
Natural Sources	2.2	43.5	1.8	8.7
TOTAL	431.0	1898.8	525.1	653.0

Notes: Emissions based on San Joaquin Valley emission inventory for 2002 as published on ARB's web site at: http://www.arb.ca.gov/emisinv/maps/basins/absjvmap.htm

Regulatory Setting

Air quality management responsibilities exist at local, state, and federal levels of government. Air quality management planning programs developed during the past few decades have generally been in response to requirements established by the federal Clean Air Act (CAA). However, the enactment of the California Clean Air Act of 1988 (CCAA) has produced additional changes in the structure and administration of air quality management programs in California.

Federal Clean Air Act. The 1970 amendments to the federal CAA established a joint state and federal program to control air pollution. Pursuant to Sections 109 and 110 of the amendments, the EPA established federal air quality standards. The amendments also required that states submit State Implementation Plans (SIPs) providing for attainment of the federal standards within certain periods of time. Because many of the original SIPs failed to bring about attainment, the CAA was amended in 1977. The federal CAA amendments of 1977 required all states to attain the federal standards by December 31, 1987. These amendments required states to submit plans that demonstrated attainment of the applicable standards by the statutory deadline.

Again, certain areas of the nation failed to meet the December 1987 deadline. In 1990, new federal CAA amendments were signed into law. Depending on the severity of an area's air pollution problem, the new amendments provided from 5 to 20 years for areas to attain the federal standards. The amendments also set new planning requirements for federal nonattainment areas.

California Clean Air Act. The CCAA substantially added to the authority and responsibilities of the state's air pollution control districts. The CCAA establishes an air quality management process that generally parallels the federal process. The CCAA, however, focuses on attainment of the state ambient air quality standards that, for certain pollutants and averaging periods, are more stringent than the comparable federal standards.

The CCAA requires that air districts prepare an air quality attainment plan if the district violates state air quality standards for CO, sulfur dioxide (SO_2), NOx, or ozone. No locally prepared attainment plans are required for areas that violate the state PM10 standards. The CCAA requires that the state air quality standards be met as expeditiously as practicable, but it does not set precise attainment deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards. The least stringent requirements are set for areas expected to achieve air quality standards by the end of 1994. The most stringent requirements are set for areas that cannot achieve the standards until after 1997.

The air quality attainment plan requirements established by the CCAA are based on the severity of air pollution problems caused by locally generated emissions. Upwind air pollution control districts are required to establish and implement emission control programs commensurate with the extent of pollutant transport to downwind districts.

Local Air Quality Management. The San Joaquin Valley Air Pollution Control District (SJVAPCD) has jurisdiction over most air quality matters in the SJVAB. The SJVAPCD is comprised of San Joaquin, Stanislaus, Merced, Madera, Fresno, Kings and Tulare Counties, and the Valley portion of Kern County. The SJVAPCD is tasked with implementing certain programs and regulations required by the federal CAA, and the CCAA.

6.2 ENVIRONMENTAL IMPACTS AND MITGATION MEASURES

Significance Thresholds

The following impact analysis is based primarily on the SJVAPCD's 2002 Guide for Assessing and Mitigating Air Quality Impacts (GAMAQI). GAMAQI defines analysis methodology, thresholds of significance, and mitigation measures for the assessment of air quality impacts. *Construction related impacts* would be considered less than significant with the implementation of applicable mitigation measures presented in Tables 6-2 and 6-3 of GAMAQI.

The proposed project will be considered to have a significant impact on *ozone precursor emissions* if it would generate more than 10 tons per year (tpy) or either ROG or NOx. The project's impact on CO will be considered significant if the project would:

- degrade operation of an intersection to level of service (LOS) E or F, or
- substantially worsen an intersection already operating at LOS F.

If the project meets either of these criteria, the Transportation Project-Level Carbon Monoxide Protocol is used to screen intersections for potentially significant CO impacts. The proposed project's impact on CO is considered potentially significant if it would increase traffic volumes at an intersection by an amount approaching 5%, or more.

If the project would result in a sensitive odor receptor being located in the vicinity of an undesirable odor generator, the impact on *odors* will be considered significant.

Impacts Adequately Addressed in the Project Initial Study

The initial study did not identify any issues in this area that could be clearly identified as not significant and that should not be subject to further analysis in the EIR.

Construction-Related Emissions

The proposed project would result in new construction activity, which would generate air pollutant emissions, determined by the SJVAPCD to be primarily PM10. The primary source of PM10 would be entrainment of fugitive dust from land clearing, earth moving, and wind erosion of exposed soil.

As noted in GAMAQI, "although the impacts from construction-related air pollutant emissions are temporary in duration, such emissions can still represent a significant air quality impact. In some cases, construction impacts may represent the largest air quality impact associated with a proposed project. Construction activities such as grading, excavation and travel on unpaved surfaces can generate substantial amounts of dust, and can lead to elevated concentrations of PM10."

According to GAMAQI, the SJVAPCD emphasizes the implementation of measures to control construction-related emissions, rather than the preparation of detailed quantification of construction-related emissions. The SJVAPCD has determined that implementation and enforcement of dust control measures specified in SJVAPCD Regulation VIII would reduce construction-related air quality impacts to a less than significant level.

Consistent with the approach presented in the GAMAQI document, this air quality study does not quantify construction-related emissions. The generation of construction-related emissions is, however, considered a short-term significant impact. This impact would be reduced to a less than significant level with implementation of mitigation measures.

Level of Significance: Significant

Mitigation Measures:

1. The owners, developers and/or successors-in-interest shall comply with all applicable requirements of SJVAPCD Regulation VIII, including compliance with the following mitigation measures 2 through 10.

2. Visible Dust Emissions (VDE) from construction, demolition, excavation or other earthmoving activities related to the project shall be limited to 20% opacity or less, as defined in Rule 8011, Appendix A. The dust control measures specified in mitigations 3 through 10 shall be applied as required to maintain the VDE standard.

3. Pre-water all land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activity sites and phase earthmoving.

4. Apply water, chemical/organic stabilizer/suppressant, or vegetative ground cover to all disturbed areas, including unpaved roads.

5. Restrict vehicular access to the disturbance area during periods of inactivity.

6. Apply water or chemical/organic stabilizers/suppressants, construct wind barriers and/or cover exposed potentially dust-generating materials.

7. When materials are transported off-site, stabilize and cover all materials to be transported and maintain six inches of freeboard space from the top of the container.

8. Remove carryout and trackout of soil materials on a daily basis unless it extends more than 50 feet from site; carryout and trackout extending more than 50 feet from the site shall be removed immediately. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden. If the project would involve more than 150 construction vehicle trips per day onto the public street, additional restrictions specified in Section 5.8 of Rule 8041 will apply.

9. Traffic speeds on unpaved roads shall be limited to 15 mph.

10. The ODS shall submit a Dust Control Plan to the SJVAPCD at least 30 days prior to the start of construction activity, as required by Rule 8021, for any activities that involve more than 40 acres of disturbed surface area or will including moving more than 2,500 cubic yards per day of bulk materials on at least three days.

Significance After Mitigation: Less than significant

Implementation: The owners, developers, and/or successors-in-interest will be responsible for compliance with the above standards in future project design and construction.

Monitoring: The SJVAPCD will, as applicable, verify compliance with district rules during project design, construction and operation.

Ozone Precursor Emissions

Operation of the proposed project would generate on-road vehicle travel, which would result in mobile source emissions. The mobile source emissions would include emissions that result in (i.e., are "precursors" to) ozone. Ozone precursor emissions include ROG and NOx.

GAMAQI describes a three-tier approach, based on the size of the project, for determining the appropriate level of analysis for assessing a project's generation of ozone precursor emissions. The Small Project Analysis Level (SPAL), which is the first tier, includes projects that are so small that quantification of ozone precursor emissions is not required. For the

tier that includes the largest projects (e.g., general plan updates, large specific plans, and large general plan amendments), GAMAQI recommends use of travel demand models and the Direct Travel Impact Model (DTIM). The SJVAPCD recommends use of the URBEMIS model for calculating mobile source emissions for the middle tier, which includes most development projects. The proposed project is included within the middle tier.

The URBEMIS2002 model, which was applied in this study, uses daily trip generation rates, along with vehicle fleet mix, trip length, and trip-start information. The results of the URBEMIS2002 model runs are summarized in Table 6-4. The full URBEMIS results are presented in Appendix C. Separate model runs were conducted for development through 2007 and in 2025. Implementation of the project without mitigation measures would generate emissions of 12.95 tons per year (tpy) of ROG and 12.54 tpy of NOx in 2007. In 2025, proposed land use development would generate unmitigated ROG emissions of 10.6 tpy and NOx emissions of 7.9 tpy. In both 2007 and 2025, unmitigated ROG emissions would exceed the 10 tons per year significance threshold. In 2007, unmitigated NOx emissions would also exceed the threshold. Therefore, the project is considered to have a significant impact.

TABLE 6-4.
PROJECT RELATED OZONE PRECURSOR EMISSIONS
(Tons per year)

Year	Emission Category	ROG	NOx
2007	Area Sources (unmitigated)	3.0	0.8
2007	Operational (Motor Vehicle) Emissions (unmitigated)	9.9	11.8
2007	Sum of Area and Operational Emissions (unmitigated)	12.9	12.6
2007	Area Sources (mitigated)	3.0	0.8
2007	Operational (Motor Vehicle) Emissions (mitigated)	9.1	10.7
2007	Sum of Area and Operational Emissions (mitigated)	12.1	11.5
2025	Area Sources (unmitigated)	4.4	1.6
2025	Operational (Motor Vehicle) Emissions (unmitigated)	6.2	6.3
2025	Sum of Area and Operational Emissions (unmitigated)	10.6	7.9
2025	Area Sources (mitigated)	4.3	1.6
2025	Operational (Motor Vehicle) Emissions (mitigated)	5.6	5.6
2025	Sum of Area and Operational Emissions (mitigated)	9.9	7.2

The proposed project would include several design features that would contribute to potential reductions in ozone precursor emissions, as recognized in the URBEMIS2002 model. The project will be required to provide transit improvements or right-of-way sufficient to provide transit improvements where requested by San Joaquin Regional Transit (SMART) (Chapter 16.0). Proposed subdivision improvements will include sidewalks and pedestrian paths as well as direct pedestrian connections between neighborhoods, and between residential areas and planned employment centers. All proposed streets will be lighted to City standards, and signalized intersections will provide pedestrian signalization and signage consistent with City standards. The project will include Class I bikeway and right-of-way will be provided for other on-street bikeways. Arterial and collector streets

will include landscaping areas adjacent to sidewalks that will include tree plantings providing for intermittent shade. The majority of the proposed residential lots are oriented to permit north-south unit orientation. Other potential measures are the option of future residential builders, including choices in mechanical equipment and prohibition of wood stoves and fireplaces. Rule 4901, which was recently enacted by the San Joaquin Valley Air Pollution Control District, prohibits and/or places strict limits on the number of wood stoves and fireplaces that can be installed in new residential development (depending on residential density).

The nature of development in planned commercial areas has not been determined. As a result, no specific commitment to mitigation measures is feasible. Based on the design requirements of the UDC, the project as a whole can be expected to provide pedestrian connections between employment and residential areas, food service opportunities and bicycle parking. The project is not expected to support very large employers that could support shuttle services.

Based on the URBEMIS2002 model, implementation of these mitigation measures would reduce ROG emissions in 2007 to 12.09 tpy, and NOx emissions to 11.47 tpy. In 2025, ROG emissions would be reduced to 9.96 tpy. Because ROG and NOx emissions would exceed the 10 tpy significance threshold in 2007, this impact would be significant and unavoidable in the short-term. In the long term, as ozone precursor emissions would not exceed significance thresholds, project impacts would be less than significant.

Level of Significance: Significant (short-term)

Mitigation Measures:

1. The proponents shall implement the following mitigation measures:

   Install central water heaters in all residential and commercial buildings.
   Prohibit the use of wood stoves or fireplaces in all residential dwellings.
   Orient buildings north/south to take advantage of solar heat gain.
   Provide bus turnouts and transit improvements where requested by SMART
   Provide sidewalks and/or pedestrian paths.
   Provide direct pedestrian connections.
   Provide street lighting.
   Provide pedestrian signalization and signage.
   Provide bike lanes/paths connecting to bikeway system.
   Provide shade trees to shade sidewalks.
   Provide pedestrian safety designs/infrastructure at crossings.
   Provide secure bicycle parking
   Provide outdoor electric outlets and gas hook-ups

Significance After Mitigation: Significant (short-term, less than significant after 2025)

Carbon Monoxide Emissions

As described in Chapter 16.0, the Transportation/Circulation section of this EIR, implementation of the proposed project would contribute to degraded traffic operations at several intersections within or near the project site. Under the base case plus project conditions for both 2007 and 2025, several study intersections would operate at an unacceptable levels of service (LOS) of E or F during the AM and/or PM peak hour. The intersections that would operate at LOS E or F include Louise Avenue/I-5 northbound ramps, Louise Avenue/I-5 southbound ramps, River Islands Parkway/Golden Valley Parkway, and Golden Valley Parkway/Towne Center Drive. Traffic congestion associated with LOS E and F can potentially expose sensitive individuals to significant increases in CO concentrations.

As described in Chapter 16.0, traffic operations at the intersections listed above would be improved to LOS D or better by implementing the mitigation measures identified in that chapter. The traffic mitigation measures include substantial improvements to project area roadways and intersections. Intersections operating at LOS D or better typically do not result in CO concentrations that exceed state or federal standards. As a result, implementation of the recommended traffic mitigation measures would reduce the potential carbon monoxide impacts of the project to less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

1. The project applicants shall design and construct, or pay proportionate share costs as appropriate, for the recommended transportation improvements identified as mitigation measures in Chapter 16.0 Transportation/Circulation.

Significance After Mitigation: Less than significant

Odor Impacts

Land uses included in the proposed project are residential and commercial in nature. While some relatively minor odor generators may occur, the location of a major odor source as a part of the proposed project is considered unlikely.

Implementation of the proposed project would locate residents in an area that is initially at the boundary between urban and rural uses, and in the vicinity of building construction. There are no major identified odor sources in the vicinity of the project. As a result, in the short-term, residents may be exposed to odors related to rural activities and building construction activities (e.g., crop harvesting, and diesel exhaust). The presence of these odors at the project site is considered to be minor and short-term. Therefore, this impact is considered less than significant.

The proposed project would involve the agronomic disposal of recycled water (tertiary treated wastewater) on portions of the project. There are no known odor concerns associated with disposal of recycled water.

Level of Significance: Less than significant

Mitigation Measures: None required

7.0 BIOLOGICAL RESOURCES

7.1 ENVIRONMENTAL SETTING

The WLSP EIR included a detailed inventory of wildlife, including sensitive species that could occur within the planning area. A biological inventory and analysis was prepared in connection with preparation of this EIR by Moore Biological. The inventory included several field biological surveys of the project site.

Prior to each of the field surveys, a search of California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) was conducted. This information was used to identify species that have been previously documented in the project vicinity or have the potential to occur in the project vicinity based on suitable habitat. The United States Fish and Wildlife Service (USFWS) list of sensitive species that have been documented throughout in San Joaquin County was also reviewed.

Field surveys of the residential and wastewater treatment plant sites were conducted on several days in 2000-2003. The surveys consisted of walking and driving around the sites making observations of habitat conditions, surrounding land uses, and plant and wildlife species. Moore Biological conducted a search for potential jurisdictional Waters of the U.S. (ACOE, 1987), sensitive species, and suitable habitat for sensitive species. The surveys also included searching the entire site for potential habitat for the riparian brush rabbit (*Sylvilagus bachmani riparius*), a focus species of regional interest, and searching the site and adjacent parcels for potential nest trees and/or active nest for Swainson's hawks (*Buteo swainsoni*).

Particular care was taken to determine whether potential habitat for federally listed species such as fairy or tadpole shrimp (*Branchinecta* spp.; *Lepidurus packardi*), Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*), or giant garter snake (*Thamnophis gigas*) exists in the project site. The project site and adjacent buffer areas were evaluated as suitable burrow habitat for burrowing owls (*Athene cunicularia*), a State of California species of concern. Trees located on the project site and in surrounding areas that were readily accessible were evaluated as potential nest trees of Swainson's hawks (*Buteo swainsoni*), a State of California threatened species. The surveys also included searching the entire site for potential habitat for riparian brush rabbit (*Sylvilagus bachmani riparius*).

Vegetation

Both parcels that make up the project sites are agricultural fields that have been planted in alfalfa, oats, and various row crops during the past few years. All of these fields have been leveled for flood irrigation and are routinely maintained for weed and

rodent control. The most notable vegetation at each of the sites are the discontinuous bands of native/non-native grass and weed species found along the edges of the sites, dirt roads, levees, and irrigation ditches. This vegetation represents a highly disturbed assemblage of species within the California Annual Grassland series (Sawyer and Keeler-Wolf, 1995). Dominant plant species in the native/non-native grassland at the site include bull thistle (*Cirsium vulgare*), wild radish (*Raphanus sativus*), yellow star thistle (*Centaurea solstitialis*), oats (*Avena* sp.), perennial ryegrass (*Lolium perenne*), soft chess brome (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), filaree (*Erodium* sp.), rose clover (*Trifolium hirtum*), and foxtail barley (*Hordeum murinum*). Plant species documented within the project sites are listed in Table 7-1.

There are very few trees in the site. The only relative large trees are some cottonwoods (*Populus fremontii*) and ornamental trees at the ranch house in the northern parcel; there are some willow saplings along the south edge of the north site. There are no notable trees or shrubs besides ornamentals within the southern parcel. No blue elderberry shrubs (*Sambucus mexicana*) were observed within or adjacent to the site.

Wildlife

A variety number of bird species were observed during the recent survey; all of these are common species found in urban and agricultural areas of the Central Valley (Table 7-2). Several birds were flying around and over the site and perching in trees on-site or trees associated with off-site residences. Mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), yellow-billed magpie (*Pica nuttalli*), red-winged blackbird (*Agelaius phoeniceus*), American goldfinch (*Carduells tristis*), western meadowlark (*Sturnella neglecta*), and starling (*Sturnus vulgaris*) are representative of the bird species observed at the project site.

All of the trees within the project site were searched for raptor nests. Several raptor stick nests were located in a dense stand of oaks along the western edge of Unit 1; however, no raptors were observed using these nests. Despite lack of use during field surveys, future use of these or off-site trees by raptors cannot be precluded.

A limited variety of mammals likely occur in the project site. Coyote (*Canis latrans*) and black-tailed hare (*Lepus californicus*) were observed during the recent field surveys. Desert cottontail (*Sylvilagus audubonii*), raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*) are expected to occur in the project site. A number of species of small rodents, including mice (*Mus musculus, Reithrodontomys megalotis,* and *Peromyscus maniculatus*) and voles (*Microtus californicus*) also likely occur. As noted in Tables 7-2 and 7-3, the riparian brush rabbit was not identified on the project site.

Based on habitat types present, a limited number of amphibians and reptiles may use habitats in the project site. However, no amphibians were observed in the project site during the recent surveys.

TABLE 7-1
PLANT SPECIES OBSERVED DURING THE 2001 SURVEYS

Acer negundo	Box elder
Artemisia douglasiana	mugwort
Avena sp.	wild oats
Amaranthus albus	tumbleweed
Brassica nigra	black mustard
Bromus diandrus	ripgut brome
Bromus hordeaceus	Soft-chess brome
Cardaria pubescens	white-top
Centaurea solstitialis	yellow star-thistle
Cephalanthus occidentalis	California button willow
Convolvulus arvenis	morning glory
Cucurbita foetidissima	calabazilla
Cynodon dactylon	Bermuda grass
Cyperus eragrostis	umbrella sedge
Epilobium angustifolium	fireweed
Eremocarpus setigerus	doveweed
Erodium botrys	filaree
Fraxinus latifolia	Oregon ash
Helianthus annuus	sunflower
Heliotropium curassavicum	Salt heliotrope
Hordeum marinum	Mediterranean barley
Hordeum murinum	foxtail barley
Juglans californica	California black walnut
Lactuca serriola	prickly lettuce
Leymus triticoides	creeping wild rye
Lolium perenne	perennial ryegrass
Malva sp.	mallow
Medicago polymorpha	California burclover
Morus alba	white mulberry
Nicotiana glauca	Tree tobacco
Phoradendron macrophyllum	big leaf mistletoe
Populus fremonti	Fremont cottonwood
Quercus lobata	Valley oak
Rosa californica	California wild rose
Rumex crispus	curly dock
Salix exigua	narrow-leaved willow
Salix lasiolepis	Arroyo willow
Salsola tragus	tumbleweed
Scirpus acutus	Tule
Silybum marianum	milkthistle
Tribulus terrestris	puncture vine
Typha latifolia	broad-leaved cattail

TABLE 7-2
WILDLIFE SPECIES OBSERVED DURING THE 2001 SURVEYS

BIRDS	
Great blue heron	*Ardea herodias*
Green-backed heron	*Butorides striatus*
Mallard	*Anas platyrhynchos*
Swainson's hawk	*Buteo swainsoni*
Ring-necked pheasant	*Phasianus colchicus*
California quail	*Callipepla californica*
Mourning dove	*Zenaida macroura*
Western kingbird	*Tyrannus verticalis*
Barn swallow	*Hirundo rustica*
Western scrub jay	*Aphelocoma coerulescens*
American crow	*Corvus brachyrhynchos*
European starling	*Sturnus vulgaris*
California towhee	*Pipilo crissalis*
Red-winged blackbird	*Agelaius phoeniceus*
Brewer's blackbird	*Euphagus cyanocephalus*
House finch	*Carpodacus mexicanus*
House sparrow	*Passer domesticus*
MAMMALS	
Black-tailed hare	*Lepus californicus*
Coyote	*Canis latrans*
REPTILES	
Western fence lizard	*Sceloporus occidentalis*

Waters of the U.S. and Wetlands

There are no areas that meet the technical and regulatory criteria of jurisdictional Waters of the U.S. or wetlands within the project sites. The San Joaquin River, a jurisdictional Water of the U.S., is located adjacent to Unit 2 to the west. This channel is bounded by a levee that is routinely maintained for weed control and is virtually devoid of notable vegetation. This non-wetland levee isolates the river from the site.

Sensitive Plant and Wildlife Species

The likelihood of occurrence of listed, candidate, and other sensitive species on the project sites is considered low. Tables 7-3 and 7-4 provide a summary of the listing status and habitat requirements of sensitive species that have been documented in the greater project vicinity, or for which there is potentially suitable habitat somewhere in San Joaquin County. These tables also include an assessment of the likelihood of occurrence of each of these species at the project site.

While the project site may have provided habitat for a subset of the sensitive species listed in the tables at some time in the past, agriculture has substantially modified natural habitats in the project vicinity. Through reviewing of the tables it is apparent that the likelihood of occurrence of listed, candidate, and other sensitive species in the project site is considered low. Other than Swainson's hawk (*Buteo swainsoni*), no sensitive species were observed during the recent surveys. The intensively cultivated fields and bands of highly maintained ruderal vegetation along field edges provide mostly low-quality habitat to some of the species listed in the tables.

Sensitive Plants. Sensitive plants generally occur in relatively undisturbed areas and are largely found within unique vegetation communities such as Delta wetlands, among others, that are not present within the project site. Consequently, the likelihood of occurrence within the fields, irrigation ditches, or disturbed ruderal areas along the edges of these routinely maintained fields, roads, and ditches is considered very low to none.

Sensitive Wildlife. The potential for intensive use of habitats within the project site by sensitive wildlife species is considered low. There are only two species with what is considered a moderate potential to occur on more than an "occasional" basis: Swainson's hawk and burrowing owl (*Athene cunnicularia*). These species could be adversely affected through loss of foraging habitat and/or construction-related disturbance.

Swainson's Hawk. Trees within the greater project vicinity may be used by nesting Swainson's hawks and on-site agricultural fields represent foraging habitat for this species. There are potential nest trees along the margins and utility alignments of the project site for this species, as well as nearby surrounding areas. While no active nests were located during the recent surveys, a Swainson's hawk was observed soaring and foraging at the project site. These hawks likely nest within a few miles of the site. While the CNDDB (2003) does not contain records of Swainson's hawks nesting in trees near the site, the use of on-site trees by nesting Swainson's hawks cannot be precluded. The nearest occurrence of a nesting Swainson's hawk is located approximately one mile south of Unit 2.

TABLE 7-3
SPECIAL-STATUS PLANT SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY.

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Likeliness of Occurrence
Valley spearscale	*Atriplex joaquiniana*	SC	none	1B	Valley/foothill grassland, meadows, chenopod scrub	None: considered extinct in San Joaquin County (CNPS, 1994). Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Heartscale	*Atriplex cordulata*	SC	none	1B	Valley and foothill grassland, chenopod scrub	None: considered extinct in San Joaquin County (CNPS, 1994). Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Alkali milk-vetch	*Astragalus tener ssp. tener*	SC	none	1B	Valley and foothill grassland, vernal pools	None: considered extinct in San Joaquin County (CNPS, 1994). Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Interior California larkspur	*Delphinium californicum ssp. Interius*	SC	none	1B	Cismontane woodland	None: habitat not present; intensive farming at the project site precludes the existence of this species (CNPS, 1994). Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Slough thistle	*Cirsium crassicaule*	SC	none	1B	Riparian scrub, marshes and swamps, chenopod scrub	Low: the San Joaquin River and its levees, which bounds the site to the west, provides marginal habitat. The nearest occurrence listed in the CNDDB (2003) is 1-mile northwest of the project site.
Suisun marsh aster	*Aster lentus*	SC	none	1B	Freshwater and brackish marsh	None: marsh habitats not present within or adjacent to the project site. Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Delta tule pea	*Lathyrus jepsonii ssp. jepsonii*	SC	none	1B	Brackish and freshwater marshes restricted to the Sacramento/San Joaquin Delta	Very low: the San Joaquin River and its levees, which bounds the site to the west, provides marginal habitat. This species was not observed during the 2000-2003 surveys. Further, this species is not reported within the CNDDB (2003) Lathrop topographic quadrangle.
Delta button-celery	*Eryngium racemosum*	SC	E	1B	Riparian scrub associated with seasonally inundated floodplain.	Very low: the San Joaquin River and its levees, which bounds the site to the west, provides marginal habitat. The nearest occurrence listed in the CNDDB (2003) is 0.5 mile south of the site. Not observed within the site during the 2000-2003 surveys.

TABLE 7-3
SPECIAL-STATUS PLANT SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY.

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Likeliness of Occurrence
Fleshy owls clover	*Castelleja campestris ssp. succulenta*	T	none	1B	Vernal pools	None: there are no vernal pools located within the project site.; the nearest occurrence is listed in eastern Stanislaus County (CNPS, 1994). Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Greene's tuctoria	*Tuctoria greenei*	E	R	1B	Vernal pools	None: there are no vernal pools located within the project site. Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Large-flowered fiddleneck	*Amsinckia grandiflora*	E	E	1B	Cismontane woodland, valley and foothill grassland	None: habitat not present; only known from foothills of western San Joaquin County (CNPS, 1994). Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Mason's lilaeopsis	*Lilaeopsis masonii*	SC	R	1B	Marshes and swamps (brackish or fresh), riparian scrub	None: the San Joaquin River Delta system, which bounds the site to the west, provides marginal habitat. However, this species was not observed within the site during the 2000-2003 surveys.
Palmate-bracted bird's beak	*Cordylanthus palmatus*	E	E	1B	Chenopod scrub, valley and foothill grassland (alkaline)	None: there is no habitat for this species within the project site. Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Sanford's arrowhead	*Sagittaria sanfordii*	SC	none	1B	Marshes and swamps (freshwater)	None: there is no habitat for this species within the project site. Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Wright's trichocoronis	*Trichocoronis wrightii var. wrightii*	none	none	2	Marshes and swamps, riparian forests, meadows and seeps, vernal pools	Low to none: the San Joaquin River system, which provides marginal habitat, bounds the site to the west. The nearest occurrence listed in the CNDDB (2003) is 0.5-mile southwest of the project site. This species was not observed within the project site during the 2000-2003 surveys.

1 E = Endangered; T = Threatened; SC=Species of Concern.

2 E = Endangered; R = Rare

3 CNPS List 1B includes species that are rare, threatened, or endangered in California and elsewhere; list 2 includes plants that are limited in California, but are more common elsewhere in the United States.

TABLE 7-4
SENSITIVE WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat	Likeliness of Occurrence
BIRDS					
Bald eagle	*Haliaeetus leucocephalus*	T	E	Ocean shorelines, lake margins. and river courses for both nesting and wintering	Very low: no occurrences listed in CNDDB (2003) within the Lathrop topographic quadrangle. However, this species may occasionally fly over or forage near the project site.
Swainson's hawk	*Buteo swainsoni*	none	T	Nesting: large trees, usually within riparian corridors; foraging: agricultural fields and grassland	Present: uses agricultural fields in the project site and greater project vicinity for foraging. The are also a few suitable nest trees within the project site. The nearest known nest territories in the CNDDB (2003) are located approximately 0.5 miles south and southwest of the project site.
Aleutian Canada goose	*Branta canadensis leucopareia*	T	none	Forages in cultivated grain fields or pasture; loafs on lakes, reservoirs , and ponds	Very low: Aleutian Canada goose may migrate through area in winter months and use nearby fields for foraging. There are no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle. This species was seen flying over the site while conducting the survey.
American peregrine falcon	*Falco peregrinus*	E	E	Breeds on cliffs; forages in dry, open hilly or flat grasslands	Very low: no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle. This species may occasionally fly over project site.
Mountain plover	*Charadrius montanus*	PT	E	Winters on grasslands and plowed fields; avoids dense cover.	Very low: no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle. This species may occasionally fly over project site.
Tricolored blackbird	*Agelaius tricolor*	SC	none	Seeks cover in wetland vegetation, especially tulles and cattails; also in trees and shrubs	Very low: agricultural ditches in the project site provide marginal nesting habitat, but may forage in nearby fields. Location information is suppressed (CNDDB, 2003).
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	C	E	Riparian forest nester, along broad bottoms of larger river systems. Prefers willows mixed with cottonwoods with an understory of blackberries and nettle.	Low to none: this species was not observed during the 2003-2003 surveys. Not listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Burrowing owl	*Athene cunicularia*	SC	none	Uses ground squirrel or other small mammal burrows for roosting and nesting cover.	Low: this species was not observed during the 2000-2003 surveys. The nearest occurrence is located approximately 2 miles east of the project site (CNDDB, 2003).

TABLE 7-4
SENSITIVE WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat	Likeliness of Occurrence
MAMMALS					
San Joaquin kit fox	*Vulpes macrotis mutica*	E	T	Inhabits open, dry annual or perennial grasslands and scrublands with loose soil for denning.	None: the site is just outside of this species range. It occurs in grassland habitats in southwest San Joaquin County foothills. There are no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Riparian (=San Joaquin Valley) woodrat	*Neatoma fuscipes riparia*	E	SC	Riparian areas along valley rivers.	Very low to none: there is no suitable habitat for this species in the project site; no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Riparian brush rabbit	*Sylvilagus bachmani riparius*	E	E	Riparian areas along the Sacramento-San Joaquin Delta system; require very dense thickets of willows, wild rose, and/or blackberry for cover; usually found in mature, moderately open-canopy riparian woodlands with dense understory vegetation.	Very low to none: there is no suitable habitat for this species in the project site; A new occurrence was just sited less than 0.5 miles from the site CNDDB (2003).
REPTILES					
Alameda whipsnake	*Masticophus lateralis euryxanthus*	T	T	A mosaic of shrub and scrub habitats within Alameda, Contra Costa, San Joaquin, and Santa Clara Counties.	Very low: the habitat within the project site is unsuitable for this species. This species has not been documented within the Lathrop topographic quadrangle and is known only from the extreme western edge of San Joaquin County
Giant garter snake	*Thamnophis gigas*	T	T	Freshwater marsh and low gradient streams; adapted to Central Valley drainage canals and irrigation ditches	Very low: the San Joaquin River provides very little usable habitat due to extensive use of rip-rap and lack of resting and basking sites required for this species. No occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
FISH					

TABLE 7-4
SENSITIVE WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat	Likeliness of Occurrence
Central Valley steelhead	*Oncorhynchus mykiss*	T	none	Deep flowing pools with water temperatures less than 27 degrees Celsius.	Extremely low to none: The re is no habitat on site. However, the San Joaquin River, which bounds the project site to the west, provides seasonal habitat for this species. No occurrences are listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Winter-run chinook salmon	*Oncorhynchus tshawytscha*	E	E	Deep flowing pools with water temperatures less than 27 degrees Celsius.	Extremely low to none: The re is no habitat on site. However, the San Joaquin River, which bounds the project site to the west, provides seasonal habitat for this species. No occurrences are listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Fall/late fall run chinook salmon	*Onchorhynchus tshawytscha*	T	T	Deep flowing pools with water temperatures less than 27 degrees Celsius.	Extremely low to none: The re is no habitat on site. However, the San Joaquin River, which bounds the project site to the west, provides seasonal habitat for this species. No occurrences are listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Green sturgeon	*Acipenser medirostris*	C	None	Estuarine and riverine habitats with water temperature that ranges from 5 to 16 degrees C.	None: the project site is well outside this species range. No occurrences of this species are recorded in the CNDDB (2003) search area.
Delta smelt	*Hypomesus transpacifcus*	T	T	Main channels of the Sacramento-San Joaquin Delta in low to moderate salinities (2 ppt - 10 ppt).	Extremely low to none: The re is no habitat on site. However, the San Joaquin River, which bounds the project site to the west, provides seasonal habitat for this species. No occurrences are listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
AMPHIBIANS					
California tiger salamander	*Ambystoma californiense*	PT	None	Underground refuges. Ground squirrel burrows and vernal pools or other seasonal water sources for breeding.	Low to none. There is no suitable habitat on site for breeding. The closest occurrence in the CNDDB (2003) is approximate 1 mile south east of the project soie.
California red-legged frog	*Rana aurora draytonii*	T	SC	Perennial water bodies (i.e., streams and ponds) with abundant riparian vegetation.	None: considered extinct on floor of the Central Valley; no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle.

TABLE 7-4
SENSITIVE WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat	Likeliness of Occurrence
INVERTEBRATES					
Vernal pool invertebrates	*Branchinecta lynchi; B. longiantennae, B. conservatio; Lepidurus packardi,*	E & T	SC	Vernal pools	None: there is no suitable habitat for these species. No vernal pools were observed within the project site during the 2000-2003 surveys. Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T	E	Elderberry shrubs, usually in Central Valley riparian habitats	None: there are no elderberry shrubs located at either site or along any of the utility alignments. Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.

1 T= Threatened; E = Endangered; PT= Proposed Threatened; C= Candidate; SC=Species of Concern.

2 T = Threatened; E = Endangered; SC=State of California Species of Special Concern

Burrowing Owl. No burrowing owls were observed within the project site during the recent surveys. There is a moderate concentration of ground squirrel burrows located in the southern parcel and along the levee, but few burrows elsewhere on the site, primarily due to the intensity of farming. There were also a few ground squirrel burrows located in the immediate vicinity of the utility alignment that extends east of I-5. However, no burrowing owls were observed within this immediate area. Burrowing owls are often migratory and could use burrows within the sites on a seasonal basis for nesting. However the limited amount of suitable habitat and the intensity of farming substantially reduce the likelihood of owls using the site for nesting in the future.

Riparian Brush Rabbit. Although not reported in the CNDDB (2002) within the Lathrop topographic quadrangle, the federally listed riparian brush rabbit is known to occur along the heavily vegetated riparian corridors associated with the San Joaquin and Stanislaus Rivers and was raised as a potential issue at the sites due to their geographical location and proximity to the San Joaquin River. Until recently, the only known riparian brush rabbit population was located at Caswell State Park, approximately 9.5 miles southeast of the project site. However, additional populations have been located in a riparian habitat area on Stewart Tract and in the oxbow area adjacent to the project site but outside of proposed development areas. The project proponent has dedicated this land adjacent to the San Joaquin River for riparian brush rabbit habitat. The project will participate in the costs of habitat acquisition and maintenance through the City's Capital Facilities Fee and the project area community financing district.

The riparian brush rabbit requires very dense thickets of willows, wild rose, and/or blackberry for cover and is usually found in mature, moderately open-canopy riparian woodlands with dense understory vegetation. This species rarely ventures out into the open more than 1.5 feet from dense cover (USFWS, 2000). The open fields on site do not contain the dense cover required by this species. While the riparian brush rabbit may occur in riparian habitats elsewhere along the San Joaquin River, they are geographically isolated from the site by levees, roads, and irrigation ditches that surround the site. These surrounding levees, roads, and irrigation ditches are regularly maintained for weeds by use of herbicide and mowing, resulting in the creation of open strips of land that the riparian brush rabbit would not be expected to traverse. The likelihood of occurrence of this species in the project site is considered remote.

Sensitive Fish. Federally-threatened delta smelt may occur within or downstream of the portion of the San Joaquin River bordering the project sites during various times of the year. Delta smelt is a small fish (2 to 3 inches in length), which is known from the Lower Sacramento-San Joaquin River Delta. Delta smelt are usually found at the mixing zone where fresh water and salt water come together, and in the freshwater areas immediately upstream of the mixing zone. The position of the mixing zone shifts upstream and downstream is usually in the vicinity of Honker Bay, just east of Suisun Bay. During February through June, delta smelt swim upstream to spawn in the sloughs and shallow edge-waters of channels in the upper Delta waterways. On occasion, delta smelt have been documented in the San Joaquin River just downstream of the project site. However, the site is not within designated critical habitat of the species.

critical habitat triggers a mandatory consultation between ACOE and the National Marine Fisheries Service (NMFS) during any Section 10 and/or Section 404 permit process.

A number of other sensitive fish species occur in Delta waterways during various times of the year. These include green sturgeon (*Acipenser medirostris*), river lamprey (*Lampetra ayersi*), Pacific lamprey (*Lampetra tridentata*), and longfin smelt (*Spirinchus thaleichthys*). Some of these fish species may move through or occur in the study area on an occasional basis. However, the project site is not within designated or proposed critical habitat of any of these species.

7.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Significance Thresholds. A project will ordinarily have a significant effect on biological resources if it will result in a substantial reduction in the habitat of fish, wildlife, or plants species, substantial interference with the movement of resident or migratory fish or wildlife species, take or substantial impacts on a rare or endangered plant or animal species or its habitat, or loss of wetland or riparian habitat.

Impacts Adequately Addressed in the Project Initial Study

The City of Lathrop prepared an Initial Study of the potential environmental impacts of the project prior to preparation of this SEIR. The Initial Study, which was circulated for agency review in conjunction with the Notice of Preparation for the project, identified several potential biological issues that were either less than significant, or that need not be further addressed as a result of their treatment in a prior environmental document. These issues were addressed as follows:

1. Based on the WLSP EIR, and reaffirmed by current biological surveys of the project site, potential impacts on special-status plants were found to be less than significant.

2. The proposed project does not contain areas of riparian vegetation or other sensitive communities, and the project would have a less than significant on these resources.

3. The proposed project will be required to participate in the SJMSCP, as appropriate, and would not involve conflicts with this plan.

Impacts of Waters of the U.S. and Wetlands

There are no jurisdictional Waters of the U.S. or wetlands located within the project sites, with the exception of the westernmost portion of Unit 2, which adjoins the San Joaquin River. This area is, however, designated Open Space and would not be subject to any proposed development activity. There are also irrigation and roadside ditches that exhibit some wetland attributes, but it is highly unlikely that these created and maintained ditches would fall under the jurisdiction of state or federal agencies. As a result, the project would have no significant effect on Waters of the US or wetlands.

Impacts of Waters of the U.S. and Wetlands

There are no jurisdictional Waters of the U.S. or wetlands located within the project sites, with the exception of the westernmost portion of Unit 2, which adjoins the San Joaquin River. This area is, however, designated Open Space and would not be subject to any proposed development activity. There are also irrigation and roadside ditches that exhibit some wetland attributes, but it is highly unlikely that these created and maintained ditches would fall under the jurisdiction of state or federal agencies. As a result, the project would have no significant effect on Waters of the US or wetlands.

Level of Significance: Less than significant

Mitigation Measures: None required

Project Impacts On Swainson's Hawk, Burrowing Owl and Other Sensitive Species Addressed by the San Joaquin County Habitat Conservation Program

Proposed development of the planned residential and commercial sites would result in the conversion and/or elimination of existing foraging habitat for Swainson's hawks. This is considered a significant environmental effect of the project. The site also provides suitable habitat for Swainson's hawk nesting as well as foraging and nesting use by burrowing owls. Both of these species are addressed by the San Joaquin County Multi-Species Habitat Conservation and Open Space Program.

Recognizing the importance of habitat values provided by agricultural land to the Swainson's hawk and other sensitive species, and the potential for cumulative impacts on these species from agricultural land conversion in the Central Valley, the San Joaquin County COG, in cooperation with the County and incorporated cities, has prepared a countywide habitat conservation plan that was adopted by the various agencies with jurisdiction. This plan is known as the San Joaquin County Multi-Species Habitat Conservation and Open Space Program (SJMSHCP). The SJMSHCP provides a fee mechanism for mitigation of wildlife habitat losses that recognizes variations in wildlife habitat values from site to site. In addition, the SJMSHCP provides mechanisms for avoidance of the actual "take" of sensitive species. Implementation of the SJMSHCP program is intended to provide for "no-net-loss" of habitat values and to reduce potential impacts associated with development to a less than significant level. The project proponent will participate in the SJMSHCP

Level of Significance: Significant

Mitigation Measures:

1. The project proponent shall pay the applicable (SJMSHCP) fee prior to the issuance of any building permit for the parcel area to be developed.

2. The Project proponents shall implement other "Incidental Take Avoidance Measures" as specified in the SJMSHCP.

Significance After Mitigation: Less than significant

Project Impacts on Riparian Brush Rabbit

The project sites do not contain suitable habitat for the riparian brush rabbit, and the likelihood of occurrence of this species on the project sites is considered remote. A portion of Unit 2 is adjacent to the San Joaquin River; however, this portion of the site is designated Open Space, and no development is proposed for this area.

A portion of the proposed project site has been dedicated to a public agency for perpetual use as riparian brush rabbit habitat. The project will participate in acquisition and maintenance of riparian brush rabbit habitat lands by participating in the City's Capital Facility Fee program and the project area community financing district.

Level of Significance: Less than significant

Mitigation Measures: None required

Project Impacts on Heritage Oak Trees

The project site does not include oak trees of heritage size. Planned grading and site preparation would involve removal of existing oak tree saplings, but the project would involve no significant effect on oak trees.

Level of Significance: Less than significant

Mitigation Measures: None required

Sensitive Fish Species, Water Quality Concerns

Operation of the storm drain outfall is not expected to result in adverse impacts to San Joaquin River or aquatic habitats. The outfall will discharge storm water into the river primarily during and shortly after rain events. These discharges would occur primarily after the time of year when fall-run salmon move upstream past the site to spawn (i.e., the early-fall) and before delta smelt move upstream to spawn (i.e., the spring). However, steelhead could be migrating upstream past the site concurrent with discharges from the storm drain outfall.

Storm waters discharged from the site would be subject to treatment in accordance with the City's recently-adopted Storm Water Management Plan. Based on the analysis in Chapter 12.0, the project would result in generally improved quality of discharge from the project site. Any remaining oils, greases, or other chemicals in storm water would be diluted upon discharge into the San Joaquin River and would not be expected to measurably alter water quality.

Level of Significance: Less than significant

Mitigation Measures: None required

Impacts on Other Sensitive Plant or Wildlife Species

The likelihood of occurrence of sensitive plant species on the project sites is considered none to low. No such species were observed during field surveys of the project site. The project does not contain suitable habitat for sensitive wildlife species other than those discussed in the above issue areas. The project would not involve any significant effect on these species.

Level of Significance: Less than significant

Mitigation Measures: None required

8.0 CULTURAL RESOURCES

8.1 ENVIRONMENTAL SETTING

The WLSP EIR documented a cultural resource investigation of most of the WLSP area conducted by Far Western Anthropological Research Group, Inc. Far Western examined 2,290 acres on Stewart Tract and 500 acres within Mossdale Village using record searches and field surveys. Although Far Western surveyed a portion of Mossdale Village, the MLE project area was not included in their scope of work. Findings of their investigation are therefore not applicable to the proposed project.

Record searches from 1991 revealed a Yokuts Indian village, artifacts and several burial sites. The village reportedly contained metates and manos, large bowl mortars and internments ranging from 5,500 to 170 years old. It is thought that the village was abandoned after the outbreak of malaria in the 1830's. In 1972 the village was completely destroyed in conjunction with the construction of Interstate 5. Records searches also revealed a large occupation mound and a midden deposit located within the WLSP area Field surveys revealed three archaeological sites, six isolated finds, and several existing farming structures.

InSite Environmental retained Jensen & Associates to conduct a detailed archaeological inventory survey for the project site in conjunction with the preparation of this Supplemental EIR. Jensen & Associates' investigation included a records search and a field survey.

A records search of both national and local databases was conducted at the Central California Information Center of the California Historical Resource Information System at CSU-Stanislaus to determine the presence of previously recorded archaeological sites exist in or near the project area. Record search results revealed no prehistoric or significant historic sites on or adjacent to the MLE project area.

A pedestrian field survey was conducted to search for previously unidentified cultural resources. During the course of the field survey, areas of higher sensitivity (c. 10% of project area) received intensive-level inspection, while remaining areas (c. 80% project area) received general-level inspection. The surveyor, while taking the records research into account, was alert for unusual land contours, soil changes, vegetation patterns, artifacts, features or any evidence of a cultural site. The fieldwork identified extensive ground disturbance due to agricultural and levee maintenance and no evidence of prehistoric resources were observed during the survey.

In a 1998 survey by Deitz, a single projectile point was discovered 300 meters south of MLE Unit 2. No evidence of similar cultural material was observed adjacent the San Joaquin River levee at its closest point to the project boundary. Although built resources

identified within the project area included irrigation components, pumps, pump houses, storage facilities, graded access roads, graded equipment parking areas, equipment storage building and residences, none of these structures were considered historic. The archaeological survey confirms the absence of both prehistoric and historic resources on the MLE project site that are identifiable on the surface of the project site.

8.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Significance Thresholds.

The CEQA Guidelines indicate that a significant effect on the environment may result if the project will cause a substantial adverse change in the significance of a historical resource or unique archaeological resource; directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or disturb any human remains, including those interred outside of formal cemeteries. Significance may be evaluated in accordance with the eligibility criteria for inclusion in the National Register of Historic Places (NRHP) (36 CFR 60.4) and/or the CEQA Guidelines, as appropriate.

Impacts Adequately Addressed in the Project Initial Study

The City of Lathrop prepared an Initial Study of the potential environmental impacts of the project prior to preparation of this SEIR. The Initial Study, which was circulated for agency review in conjunction with the Notice of Preparation for the project, identified cultural environmental issues that were either less than significant, or that need not be further addressed as a result of their treatment in a prior environmental document. These issues were addressed as follows:

1. The proposed project does not involve the potential for destruction of unique paleontological resources or unique geologic features. The project site is located on relatively flat and recent alluvial sedimentary deposits.

Impact on Known Archaeological or Historical Resources

The WLSP EIR identified three archaeological sites and isolated historic finds that qualify for preservation under federal and state law. Identified resources are, however, located outside of the MLE project area and would not be impacted by the project.

Cultural resource surveys of the project site did not encounter any archaeological or historical resources on the project site. As a result, project development would not impact any known cultural resources.

Level of Significance: Less than significant

Mitigation Measures: None required

Impact on Unknown Archaeological Resources

The WLSP EIR noted that the project area lies in a zone of thick Holocene alluvial deposition. Potential therefore exists for the existence of buried archaeological resources and the disturbance of subsurface archaeological deposits during construction activities. The potential for disturbing subsurface archaeological deposits exists within the MLE project area.

Mitigation measures included in the WLSP EIR include close monitoring of the construction process by the City of Lathrop and halting excavation in the event of a find until competent archaeological and Native American specialists are consulted to determine the significance of the find. Updated and more specific mitigation measures are outlined below.

Level of Significance: Potentially significant

Mitigation Measures:

1. If subsurface cultural materials are encountered, all construction activities in that area shall be halted until a qualified archaeologist can examine these materials and make a determination of their significance. The City of Lathrop Community Development Department shall be notified, and impacts on significant cultural resources shall be mitigated pursuant to the requirements of the CEQA Guidelines.

2. If human remains are encountered at any time during the development of the project, all work in the vicinity of the find shall halt, and the County Coroner and the Community Development Department shall be notified immediately. If the remains are of Native American origin, the Coroner must contact the Native American Heritage Commission. At the same time, a qualified archaeologist must be contacted to evaluate the archaeological implications of the finds. The CEQA Guidelines detail additional steps to be taken if human remains are found to be of Native American origin.

Significance After Mitigation: Less than significant

9.0 FISCAL IMPACTS

9.1 FISCAL SETTING

The City of Lathrop is a relatively new municipality, established in 1989. The first goal listed in the City of Lathrop General Plan involves "balancing the social and economic costs and benefits of urbanization." To this end, development projects are analyzed with respect to the fiscal impact to the City. It is a clear policy of the General Plan to limit the pace and quantity of housing construction to annual allocations in reasonable balance with the growth of Lathrop's economic base (City of Lathrop General Plan, 1991). The Plan further states that, rather than adhering to an arbitrarily fixed percentage of annual growth as a matter of policy, it will be the City's responsibility to manage the growth rate in relation to the physical and financial capability of municipal services. As a result, a fiscal analysis of the Mossdale Landing East project has been prepared (Appendix F). As stated in the analysis, there is currently a pent-up demand for retail space within the City in retail categories such as apparel, general merchandise, food stores, eating and drinking establishments, home furnishings and building materials.

9.2 FISCAL IMPACTS

Significance Thresholds

According to CEQA, economic or social effects are not ordinarily treated as significant environmental effects. However, economic information may be included in an EIR to trace the chain of cause and effect from the project to physical changes constituting environmental effects. Economic factors shall be considered in deciding whether changes in a project are feasible to reduce or avoid the significant effects on the environment identified in the EIR. The City of Lathrop's policy to evaluate the fiscal impact of projects supports the City's continuing ability to provide public services to urbanized areas.

Previous Analysis

In January 2003, Goodwin Consulting Group, Inc. (Goodwin), completed a fiscal impact report that analyzed the recurring fiscal impacts to the City of Lathrop and the Lathrop-Manteca Fire Protection District that would result from the development of Mossdale Landing and the proposed Lathrop Station (currently Mossdale Landing East) projects. That report analyzed the anticipated revenues compared to the projected cost of providing public services within the new planned development areas. Only the City's General Fund

and the Fire District's General Fund were analyzed. The other districts and funds supported by development fees and user charges (enterprise funds), state funding (school districts), or a specific allocation of property taxes (flood control districts, reclamation districts, etc.) were not analyzed.

Due to changes in the MLE project that had occurred between the January 2003 report and preparation of this EIR, Goodwin re-evaluated the fiscal impact of Mossdale Landing East in a report shown in Appendix F. As with the January 2003 report, only the City's General Fund and the Fire District's General Fund were analyzed; the other districts and funds supported by development fees and user charges, state funding, or a specific allocation of property taxes were not analyzed. The following text is excerpted from that report.

Methodology and Assumptions

Fiscal impacts arising from land development can be categorized into one of two types: 1) one-time impacts or 2) recurring impacts. Both of these types of impacts generally contain a revenue and expense component. For example, a project may create the need for a police station and a development impact fee may offset the one-time construction cost of the station. The annual property taxes, however, may offset the annual expenses associated with staffing and maintaining the police substation.

Two methodologies are employed in estimating recurring or annual fiscal impacts. The Case Study Method is used to estimate recurring revenues and expenses by applying defined service standards, existing tax and fee rates, and suggested operating and maintenance costs to the land uses and services proposed in the project. The Multiplier Method assumes that fiscal impacts will result from proposed development at a forecasted rate per person served based on the City's current fiscal budget. Both of these methods are necessary in forecasting anticipated fiscal impacts of a development project and are used under the following conditions:

Multiplier Method

1. Average cost is a reasonable approximation of the actual costs to provide similar services to specific developments in the future.

2. Specific revenues and expenses are generated based on population.

3. Service standards and other information are not available or accurate.

Case Study Method

1. Marginal cost is a better approximation of the actual costs to provide similar services.

2. The land use distribution of the project being analyzed does not resemble the land use distribution within the public agency's area.

3. Service standards and estimated future costs for new projects are anticipated to be different than they are now.

A number of economic assumptions were factored into the fiscal analysis. The assumptions are summarized below and discussed in full detail in Appendix F.

1. The information is presented in 2003 dollars.

2. The Educational Revenue Augmentation Fund shift will continue in the future.

3. The City's share of the 1.00% property tax for the proposed area is 11.77%.

4. Fiscal expense and service standards do not reflect existing expense and service levels, but reflect the projected standards at buildout.

5. Revenues that will not have a significant impact on the City after buildout have been excluded.

6. Fiscal revenues are based on the budgeted revenues as noted in the City of Lathrop and the Lathrop-Manteca Fire Protection District 2002-2003 budgets.

7. Estimated value of dwelling units are based upon current sales figures.

8. Annual and cumulative absorption rates are based on a nine year horizon.

Fiscal Revenues

The City of Lathrop will provide the majority of public services to the Mossdale Landing East area. Nine of the fourteen revenue sources itemized in the fiscal analysis are calculated using the Multiplier Method: franchise tax, business licenses, animal licenses, construction, transportation and encroachment permits, fines and forfeitures, state motor vehicle in-lieu revenues, gas tax, charges for services and General Fund transfers. The Case Study Method was used for the remaining revenues: secured property tax, unsecured property tax, real property transfer tax, sales and use tax, public safety sales tax and property assessment. Revenues from each of these sources are calculated in Appendix F and shown in Table 9-1.

Fiscal Expenses

Of the nine expense categories, all but three (depreciation, street maintenance, and services financing district costs) are calculated using a multiplier method. The General Government, Public Works Administration and Community Development categories are calculated using a persons-served estimate. Police Services, Animal Licenses, and Culture and Leisure categories are estimated using a "per resident" multiplier. Expenses associated with each of these sources are calculated in Appendix F and shown in Table 9-1.

City Fiscal Impacts

Goodwin analyzed the fiscal impacts to the City of Lathrop based on the proposed project's land uses, anticipated service demands and the relative revenues and expenses associated with meeting those demands. The Mossdale Landing East project is projected to have a positive net fiscal impact on the City of Lathrop. As shown in Table 9-1, fiscal deficits are projected from 2005 until 2009 and a surplus is anticipated to range from approximately to $600,000 beginning in 2010. With the project revenues totaling $3.07 million annually and the expenses estimated at $2.76 million annually after buildout (Table 9-1), a surplus of $310,000 is anticipated annually. This amounts to approximately $140 per dwelling unit.

Drainage and lighting, landscaping, trail and open space maintenance, and park maintenance services are assumed to be included in a land-secured financing district. As shown in Table 9-1, these costs will increase from $94,000 to $1.1 million per year which is $240 - $520 per dwelling unit.

One or more financing mechanisms will be established by the City and the developers to fund annual drainage, lighting, landscaping, trail and open space, and park maintenance costs. These mechanisms may include a Mello-Roos district, a landscaping and lighting district, a homeowners association, development impact fees, or other alternatives. With the financing mechanisms in place, there will be no negative fiscal impact on the City from the proposed project.

TABLE 9-1
CITY OF LATHROP NET FISCAL IMPACTS

Fiscal Impacts	*Project Year*	1	2	3	4	5	6	7	8	9
	Fiscal Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
Revenues										
Property Tax: Secured		$123,435	$267,929	$407,891	$508,861	$622,077	$716,763	$733,457	$750,395	$754,907
Property Tax: Unsecured		$1,234	$4,928	$7,876	$9,931	$13,710	$15,690	$18,524	$21,267	$22,033
Real Property Transfer Tax		$0	$5,822	$11,869	$18,127	$22,695	$27,447	$31,996	$32,453	$32,903
Sales and Use Tax		$0	$232,958	$371,820	$470,783	$708,608	$807,571	$1,045,396	$1,276,595	$1,358,292
Public Safety Sales Tax		$0	$458	$731	$926	$1,394	$1,588	$2,056	$2,511	$267
Franchise Fees		$28,979	$62,897	$95,939	$120,666	$147,355	$168,792	$172,090	$175,274	$176,268
Licenses & Permits		$20,321	$48,140	$74,101	$93,343	$116,751	$133,687	$140,693	$147,457	$149,569
Hotel Tax		$0	$0	$0	$0	$0	$0	$0	$0	$0
Fines and Forfeitures		$4,180	$9,144	$13,960	$17,561	$21,494	$24,620	$25,178	$25,717	$25,886
State Motor Vehicle		$12,725	$26,374	$40,022	$50,293	$60,564	$69,390	$69,390	$69,390	$69,390
Gas Tax & Street Maintenance		$17,506	$36,283	$55,059	$69,189	$83,319	$95,461	$95,461	$95,461	$95,461
Transfers In		$0	$0	$0	$0	$0	$0	$0	$0	$0
Charges for Current Services		$74,505	$162,975	$248,805	$312,977	$383,068	$438,781	$448,736	$458,346	$461,348
Other Revenue		$7,915	$17,313	$26,431	$33,248	$40,694	$46,613	$47,671	$48,691	$49,010
Subtotal		$290,801	$875,222	$1,354,506	$1,705,907	$2,221,730	$2,546,402	$2,830,648	$3,103,559	$3,197,741
Expenses										
General Government		($162,940)	($302,786)	($445,965)	($491,558)	($536,733)	($572,062)	($554,255)	($533,625)	($512,162)
Community Development		($73,035)	($133,332)	($191,970)	($208,072)	($240,609)	($254,080)	($251,247)	($239,549)	($235,006)
Police Department		($150,680)	($262,647)	($414,599)	($511,954)	($659,105)	($744,131)	($755,427)	($812,083)	($836,438)
Animal Control		($13,509)	($23,240)	($30,355)	($33,311)	($36,195)	($38,764)	($36,764)	($66,105)	($71,904)
Street Maintenance		($67,218)	($144,650)	($222,083)	($285,412)	($348,742)	($403,179)	($419,179)	($419,179)	($419,179)
Depreciation		($12,406)	($24,488)	($36,005)	($40,678)	($45,805)	($51,692)	($50,659)	($52,852)	($51,318)
Public Works		($41,056)	($117,954)	($168,617)	($182,364)	($196,948)	($255,830)	($239,937)	($22,831)	($213,028)
Culture and Leisure		($55,781)	($94,290)	($141,184)	($155,219)	($167,621)	($199,141)	($187,237)	($274,978)	($259,337)
Subtotal		($576,625)	($1,103,386)	($1,650,777)	($1,908,569)	($2,231,758)	($2,518,877)	($2,527,704)	($2,626,681)	($2,598,372)
Net Fiscal Impact		($285,824)	($228,164)	($296,272)	($202,662)	($10,028)	$27,525	$302,944	$476,878	$599,369
Surplus per Dwelling Unit		($736)	($279)	($238)	($129)	($5)	$13	$139	$219	$276
Mossdale Landing East Service Financing District										
Drainange		($14,140)	($28,099)	($42,058)	($52,812)	($63,566)	($72,300)	($72,300)	($72,300)	($72,300)
Street Lighting		($20,314)	($40,368)	($60,422)	($75,872)	($91,323)	($103,870)	($103,870)	($103,870)	($103,870)
Landscaping		($59,786)	($102,833)	($145,881)	($179,046)	($212,211)	($239,144)	($239,144)	($239,144)	($239,144)
Trail Maintenance		$0	($2,500)	($5,000)	($7,500)	($10,000)	($10,000)	($10,000)	($10,000)	($10,000)
Open Space Maintenance		$0	($10,400)	($20,800)	($31,200)	($41,600)	($41,600)	($41,600)	($41,600)	($41,600)
Park Maintenance (Fair Share)		$0	($70,132)	($140,263)	($210,395)	($588,496)	($657,103)	($657,103)	($657,103)	($657,103)
Total Expenses		($94,240)	($254,332)	($414,423)	($556,824)	($1,007,195)	($1,124,017)	($1,124,017)	($1,124,017)	($1,124,017)
Annual Cost Per Dwelling Unit		($243)	($311)	($333)	($354)	($529)	($517)	($517)	($517)	($517)

Source: Goodwin Consulting Group, Inc.

10.0 GEOLOGY AND SOILS

10.1 ENVIRONMENTAL SETTING

The WLSP EIR focused on discussion of the soils and seismicity of the Stewart Tract and Mossdale Village areas at a general level. Soils west of Interstate 5 were identified as mostly Delta floodplains consisting of silty, sandy clay of the Merritt-Grangeville-Columbia association. These soils drain poorly with slow permeability and moderate shrink-swell potential. Water erosion potential is low to moderate and the soils are subject to a high water table as well as high flooding potential. Soil characteristics east of Interstate 5 were discussed but do not pertain to the proposed project and will not be discussed further in this document.

Discussion of seismicity in the West Lathrop planning area includes the potential for seismic shaking from nearby faults such as the San Andreas, Hayward, Calaveras and Green Valley-Concord.

While these geological characteristics are relevant to MLE, their treatment in the previous EIR is brief and generalized. The objective of this SEIR is to provide more site-specific information regarding soils and geology for the MLE project area including, soil characteristics, geotechnical constraints and updated mitigation measures based on new data.

Soil and Geotechnical Constraints

This analysis is based on a geotechnical report for Unit 1 of the MLE project area that was prepared by Kleinfelder. The Preliminary Geotechnical Services Report (PGSR) identified issues relating to the project site such as surface soil consistency, shrink-swell potential, the potential impact of shallow groundwater and seismicity.

Soft Soils. According to the PGSR findings, the sands, silts and clays underlying the project site are soft/loose, relatively weak and moderately compressible under structural loading. The eastern portion of Unit 1 includes extensive and deep areas of sand and saturated sand. Elsewhere, strata of highly compressible organic silt were encountered.

Expansive Clays. Expansive soils are characterized by their tendency to undergo significant volume change (shrink or swell) due to variations in moisture content and the kind and amount of clay present. Five degrees of expansiveness are generally recognized: very low; low; medium; high; and very high. PGSR findings encountered near-surface clays in the western and southern portions of the project site with moderate to high shrink-swell capacity.

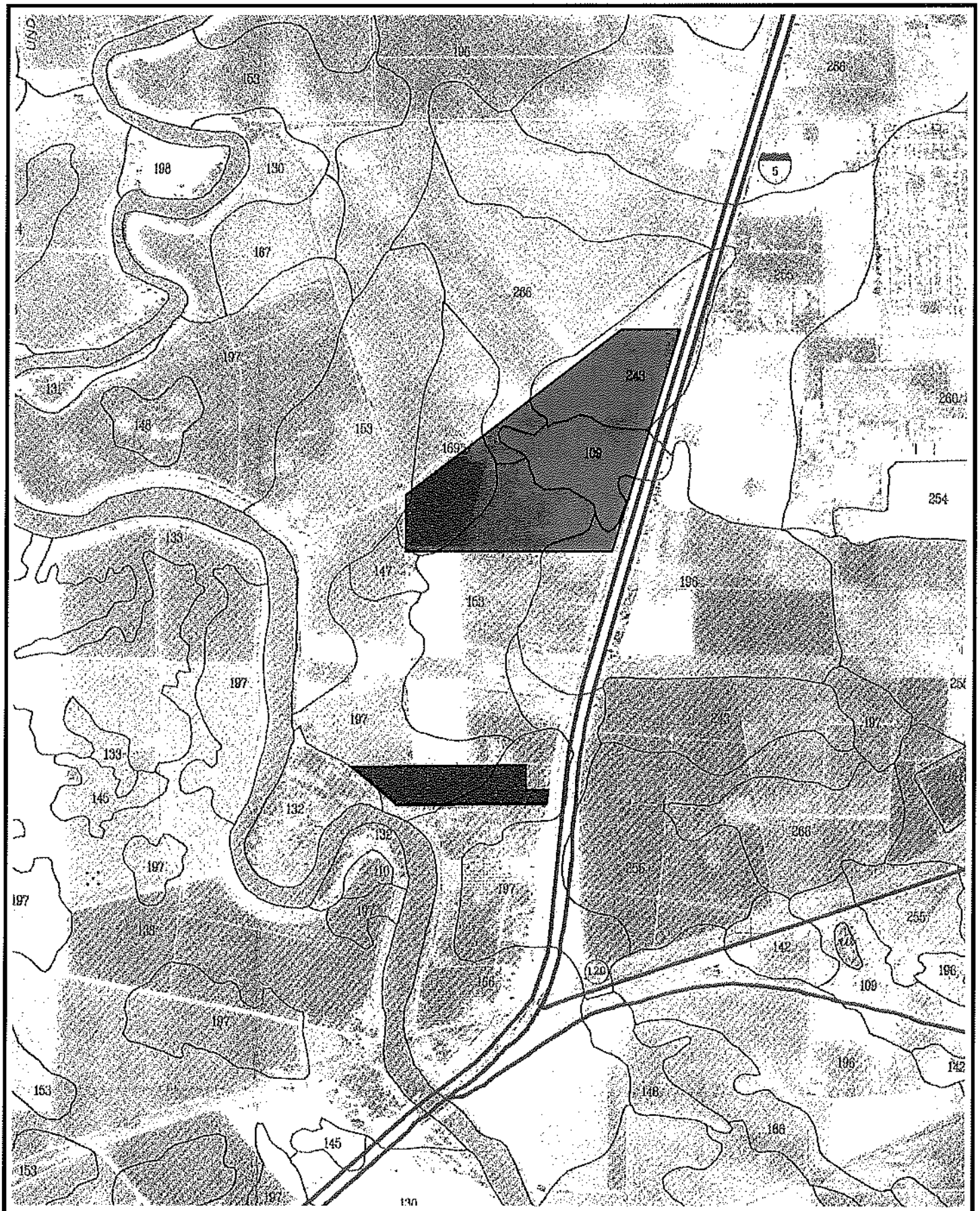
Shallow Groundwater. According to the PGSR, shallow groundwater is a frequent problem in the MLE project area. Borings encountered groundwater as shallow as 4.1 feet in the northern portion of Unit 1. Local residents and San Joaquin County representatives report day-lighted groundwater at the surface for extended periods of time when the San Joaquin River reaches peak levels. Kleinfelder (2003a) reports, however, that data obtained from additional monitoring wells on the project site, and groundwater observations in other recently-developed areas, indicate that groundwater levels on the site are likely relatively high as a result of flood irrigation and other farming practices. Kleinfelder indicates that no permanent dewatering system will be required for the project, other than the French drains, which are recommended in Chapter 12.0 to intercept river seepage during high flow events in the San Joaquin River.

Seismicity and Faulting. The project vicinity is normally associated with low to moderate seismic activity, but historical records indicate it could be subject to substantial seismic shaking. Kleinfelder indicates that seismic shaking affecting the project area could produce a peak ground acceleration of 0.17g. There are no active or potentially active fault traces at or near the project site. The project site, however, is not located within or adjacent to any Fault Rupture Hazard Zones.

Liquefaction and Subsidence. Earthquake induced ground shaking can also result in soil liquefaction and subsidence. Liquefaction occurs primarily in relatively loose, saturated, cohesionless soils. Under earthquake stresses, these soils become "quick," loose their strength and become incapable of supporting the weight of the overlying soils or structures. PGSR findings indicate that the fine-grained, loose sands present on the project site are vulnerable to liquefaction during strong seismic ground shaking events. Given the distance to the nearest fault (15 miles), Kleinfelder estimates that even a maximum magnitude seismic event would not likely be sufficient to initiate liquefaction. Quantified risks will be taken into consideration during the engineering design and incorporated per City standards.

General Soil Characteristics

Project area soils include Guard clay loam, Grangeville fine sandy loam, Egbert silty clay loam, Bisgani loamy course sand, Veritas fine sandy loam, Scribner clay loam, and Merritt silty clay loam (Figure 10-1). The eastern portions of the two units tend to support the sandy soil units while the western portions tend toward clayey units. All soils are relatively deep and originate from the same parent materials. Sandy soils are typically well drained and permeable with slow runoff and moderate water capacity. Clayey soils are poorly drained, less permeable with moderate to high water capacity and slow runoff. See Table 10-1 for a complete listing of soils and their characteristics. These soils are conducive to growing a variety of crops (pers. comm., Dr. Lee Jackson, UC Davis). Outside of Bisgani loamy coarse sand, all are considered "prime". For a more complete discussion of agriculture-related impacts, see chapter 5.0 Agricultural Resources.



Source: SOIL SURVEY OF SAN JOAQUIN COUNTY, CALIFORNIA

INSITE ENVIRONMENTAL

Figure 10-1
SOILS MAP

TABLE 10-1
SOILS DATA

Name	Depth	Drainage	Parent Material	Permeability	Available Water Capacity	Runoff	Capability Class	Prime or not
109-Bisgani loamy coarse sand, partially drained, 0-2 percent slopes.	Very deep	Poorly drained	Formed in alluvium derived from granitic sources	Rapid	Low	Very slow	IVw-4 Non-irrigated	Not
153-Egbert silty clay loam, partially drained, 0 to 2 percent slopes.	Very deep	Poorly drained	Formed in alluvium derived from mixed rock sources.	Slow	High	Slow	IVw-2 Non-irrigated	Prime
166- Grangeville fine sandy loam, partially drained, 0-2 percent slopes.	Deep	Some what poorly	Formed in alluvium derived from granitic sources	Moderately rapid	Moderate	Slow	IVw-2 Non-irrigated	Prime
169-Guard clay loam, drained, 0-2 percent slopes.	Very deep	Poorly drained	Formed in alluvium derived from mixed rock sources.	Slow	High	Slow	Ivw-2 Non-irrigated	Prime
197-Merritt silty clay loam, partially drained, o to 2 percent slopes.	Very deep	Poorly drained	Formed in alluvium derived from mixed rock sources	Moderately slow	High	Slow	IVw-2 Non-irrigated	Prime
243-Scribner clay loam, partially drained, 0-2 percent slopes.	Very deep	Poorly drained	Formed in alluvium derived from mixed rock sources	Moderately slow	Very high	Very slow	IVw-2 Non-irrigated	Prime
266- Veritas fine sandy loam, 0-2 percent slopes.	Deep	Moderately well drained	Formed in alluvium derived from mixed rock sources	Moderately rapid	Moderate	Slow	IVs-8 Non-irrigated	Prime

Significance Thresholds.

According to CEQA, a project may have a significant effect on the environment if it would involve substantial exposure of people or improvements to injury or damage from geologic hazards such as earthquake fault rupture, strong seismic ground shaking, liquefaction or landslides; impacts on unique geologic features; substantial topsoil or productivity loss; substantial soil erosion or siltation; exposure to expansive soil; or development on soils which cannot support use of on-site wastewater disposal systems where sewers are not available.

Impacts Adequately Addressed in the Project Initial Study

The City of Lathrop prepared an Initial Study of the potential environmental impacts of the project prior to preparation of this SEIR. The Initial Study, which was circulated for agency review in conjunction with the Notice of Preparation for the project, identified several potential environmental issues that were either less than significant, or that need not be further addressed as a result of their treatment in a prior environmental document. These issues were addressed as follows:

1. The proposed project site is not subject to fault rupture hazards. There are no mapped fault traces and no Alquist-Priolo fault rupture hazard areas located on or near the project site. This impact was identified as less than significant in the WLSP EIR, and no further analysis is required.

2. The project site is subject to seismic shaking, but potential impacts on structures are reduced to less than significant by the City's adoption of the Uniform Building Code.

3. The project site is not subject to landslide

Seismic-Related and Soils Hazards

While there are no active faults on or in the vicinity of the project area, new commercial and residential development and infrastructure improvements would be exposed to potential ground shaking associated with earthquake activity on more distant fault systems. Shaking could result in structural damage on the project site. The City's ongoing implementation and enforcement of the Uniform Building Code and other planning and safety regulations would reduce the potential for seismic shaking damage to structures an insignificant level. Special design requirements would apply to site improvements and support systems. Specific recommendations with respect to these facilities are provided in the Kleinfelder (2000) report.

Proposed development and related improvements would be subject to potential for seismic-induced liquefaction of sandy, saturated soils in conjunction with seismic activity. Kleinfelder indicates that slab foundation systems with underlying engineered fill are preferred for the proposed project and are suitable for liquefaction and settlement conditions. Kleinfelder provides recommendations for these and other acceptable foundation systems in their report (2000).

Soft/loose sands, silts and clays were identified underlying the project site. These soils are moderately to highly compressible under structural loading. This is not a significant issue for residential and lightly loaded retail buildings, but may represent a settlement problem with heavier foundations.

In other areas, Kleinfelder identified the shrink-swell (expansion) potential of near surface clays as moderate to high. Floor slabs, lightly loaded foundations, exterior flatwork and pavements could be subject to heaving, cracking and increased maintenance under this condition. Recommendations for risk reduction are listed in their report (2000) and should be incorporated into the project.

Level of Significance: Significant

Mitigation Measures:

1. The project proponent shall submit copies of project geotechnical reports prepared by qualified geotechnical or soils engineers to the Lathrop Building Department for review and approval.

2. All proposed development shall conform to the soils engineer's recommendations, as detailed in the approved soils report.

Significance After Mitigation: Less than significant

Shallow Groundwater Constraints

Uncontrolled high groundwater can lead to sub-grade instability, pavement failure and increased maintenance demands. Geotechnical study and reports of day-lighted groundwater and ponding on the Lathrop Station project site identified this as a potential concern during the early planning phases of the project. Based on further groundwater monitoring and observations in other areas of new urban development, Kleinfelder (2003a) indicates that dewatering systems will not be necessary.

Level of Significance: Less than significant

Mitigation Measures: None required

Soil Erosion

Erosion hazard is the susceptibility of soil to erosion by water or wind. In general, erosion risk depends on soil texture and structure, slope of the land, vegetative cover, and runoff. Five classes of soil erosion are generally recognized: none; slight; moderate; severe; and very severe. According to the San Joaquin County Soil Survey, the hazard of erosion by water within the project area is slight.

Vegetation removal and excavation for construction of the proposed project would expose area soils to wind and water erosion. The potential for soil erosion would occur mainly during the construction period, and the use of standard construction practices and procedures to control erosion and dust would reduce the impact to area soils to a less than significant level.

Construction erosion and related storm water quality are the subject of regulation by the Federal Clean Water Act through the National Pollution Discharge Elimination System (NPDES). These regulations require the filing of a Notice of Intent (NOI) and the preparation of a Storm Water Pollution Prevention Plan (SWPPP) outlining water quality measures to be implemented at the site before, during and after construction. The project will also be subject to the requirements of the Lathrop NPDES Phase II Storm Water Management Plan, which will implement further controls on construction site runoff. Conformance with these regulations would reduce erosion-related effects of the proposed project to less than significant. Compliance with these regulations is required, and more detailed information on this regulatory program is provided, in Chapter 12.0, Hydrology and Water Quality.

Level of Significance: Potentially significant

Mitigation Measures:

1. Comply with mitigation measures identified for storm water quality effects in Chapter 12.0, Hydrology and Water Quality

Significance After Mitigation: Less than significant

11.0 HAZARDS AND HAZARDOUS MATERIALS

11.1 ENVIRONMENTAL SETTING

Highways, Railroads and Airports

Highways, railroads and airports represent risks associated with noise and accidents which could result in injury to persons or damage to structures located on adjoining or nearby lands. Noise concerns associated with transportation sources are addressed in detail in Chapter 14.0 Noise.

Interstate 5 is a heavily used travel corridor for local, commuter, intrastate and interstate travel, and commercial truck traffic. Traffic accidents very rarely extend beyond the fenced freeway right-of-way, and as a result potential risks to a proposed project located west of the freeway would be limited to the immediate freeway vicinity. The proposed project site is separated from Interstate 5 by Manthey Road that parallels the freeway from Louise Avenue on the north to the Union Pacific Railroad tracks on the south.

The Union Pacific Railroad corridor is located approximately one mile east and half-mile south of the project site and is subject to substantial freight use. Rail accidents involving derailment are relatively uncommon. In the event of such an occurrence, physical damage and risk would be limited to the railroad vicinity. Both the highway and railroad corridors accommodate shipments of hazardous substances. Hazardous substance transportation involves a risk of release of toxic substances to the air and ground surface and has the potential for fire and/or explosion. These risks are reduced with distance from the corridor.

There are no existing public airports within six miles of the project area. The nearest public airport to the study area is the Stockton Metropolitan Airport, more than six miles northeast of the project area. There is a small airstrip at the former Sharpe Army Depot two miles northeast of the project area. However, it is no longer in use and there are no plans to reopen the facility. There are no known airport-related hazards associated with the EIR study area.

Information and issues associated with traffic safety are addressed in detail in Chapter 17.0 Transportation/Circulation. The project area is planned for urbanization. The area includes lands that are developed to rural and agricultural standards. As the study area and vicinity develop, additional street and associated pedestrian infrastructure will be constructed. This infrastructure would include improvements to existing local roads and the construction of numerous other new streets associated with project development. The anticipated future road system in the study area is accounted for in the traffic analysis in Chapter 17.0.

High-voltage Power Lines

High-voltage transmission lines generate electromagnetic fields (EMFs) which vary in proportion to the line voltage and distance from the line. There has been public concern since 1979 that long-term exposure to electromagnetic fields (EMFs) surrounding transmission lines and other electrical equipment have the potential to contribute to increased risk of cancer. Several national health studies have concluded that the evidence for a risk of cancer and other human disease from electric and magnetic fields around power lines is "weak."

High-voltage power lines are not present in or proposed for the project area. The closest high voltage power lines are located approximately two miles west of the project site. There are no known EMF hazards associated with the project area.

Geologic Hazards and Flooding

Geologic hazards in the project area are addressed in detail in Chapter 10.0 Geology and Soils. There are no active or potentially active faults located within the study area nor is the area exposed to any substantial risk of landsliding, tsunami or seiche. The study area could be subjected to severe ground shaking resulting from a maximum credible earthquake on any of several Coast Range faults. Based on potential regional seismic activity, the Uniform Building Code has placed all of San Joaquin County within Seismic Zone 3. Project site soils may exhibit high shrink-swell capacity depending on moisture content.

Potential flooding hazards within the study area are addressed in detail in Chapter 12.0 Hydrology and Water Quality. The project study area is potentially subject to flooding from the San Joaquin River, but is protected by an extensive levee system. These levees are maintained by Reclamation District 17, which is responsible for about 18 miles of river levees in the project vicinity.

Hazardous Materials and Sites

Hazardous materials are defined as substances or combinations of substances which may contribute to increases in serious illness or mortality, or pose a substantial hazard to human health or environment when improperly treated, stored, transported or disposed. Hazardous wastes are hazardous materials that no longer have a practical use. Hazardous materials or wastes are generally classified as toxic (heavy metals, pesticides, solvents), ignitable (gasoline, natural gas), corrosive (strong acids and bases) and/or reactive (explosives, among others). These materials are ordinarily associated with certain land uses, as illustrated in Table 11-1.

TABLE 11-1
LAND USES COMMONLY ASSOCIATED
WITH HAZARDOUS MATERIAL

Land Use	**Potential Hazardous Material**
Auto Repair	Fuels, oils, solvents, heavy metals, oils
Gas Stations	Fuel, oil, solvents
Painting	Paints, solvents, heavy metals
Agricultural	Pesticides, herbicides, fertilizers, fuel, oils
Railroads	Fuels, oils, solvents, heavy metals

The potential existence of hazardous materials or waste sites on or in the vicinity of the study area was reviewed in an environmental records search prepared by Environmental Data Resources, Inc. (EDR, August 2001). Sources searched are identified in Table 11-2. The purpose of the environmental record search was to identify hazardous waste or hazardous material sites with a one-mile radius of the project site. The record search includes historical aerial photographs and topographic maps and lists of known hazardous material sites maintained by federal and state environmental agencies.

Most of the database searches included lands located within a one-mile radius of the project site. The project site was not listed in any of the databases searched by EDR. The EDR databases search found no environmental concerns in the project area. The study area is predominantly farmland, and available historic aerial photography evidence indicated that the project site has only been used for agriculture.

The occurrence of hazardous materials or hazardous waste in off-site areas was also evaluated in the database search. One site east of Interstate 5, the former Nestle Distribution facility, is within one-half mile of the project site. The former Nestle facility, now closed, was identified as handling and transporting hazardous materials in the past, but has not been cited for releases to the environment. Most identified sites in the EDR report are located east of Interstate 5 and more than one half mile from the project area. None of the sites listed in the EDR report have had or are expected to have any hazardous waste effect on the project area.

The proposed project includes several farming structures including a residential structure on the northern border of Unit 1, adjacent Louise Avenue. Demolition of older homes involves the possibility of releasing harmful substances into the air, such as asbestos.

TABLE 11-2
TYPICAL REGULATORY DATA BASES SEARCH

Federal Lists:
National Priorities List (NPL)
Resource, Conservation and Recovery Act (RCRA) Corrective Action (CORRACTS) Treatment Storage and Disposal (TSD) facilities
Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)
RCRA non-CORRACTS TSD facilities
RCRA Generators list
Hazardous Materials Information Reporting System (HMIRS)
Toxic Chemical Release Inventory System (TRIS)
Emergency Response Notification System (ERNS)
State of California Lists:
Cal-Sites List and Annual Workplan (AWP)
California Hazardous Materials Information Reporting System (CHMIRS)
Notify 65
Hazardous Waste and Substance Site List (Cortese)
Solid Waste Information System/Solid Waste Landfills (SWIS/SWLF) database
Solid Waste Assessment Test/Waste Management Unit Database System (SWAT/WMUDS)
Leaking Underground Storage Tank (LUST) database
California Regional Water Quality Control Board - Central Valley Region Spills, Leaks, Incidents and Complaints (SLIC) list
Underground Storage Tank Registrations (UST) database

11.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Significance Thresholds

Appendix G of the CEQA Guidelines indicates that a significant effect on the environment may result if the project will create a potential public health hazard, will involve the use, production, or disposal of materials which pose a hazard to people or animal or plant populations, or will interfere with emergency response or evacuation plans. The CEQA

Initial Study Checklist suggests that significant effects may be associated with accidental explosion or release of hazardous substances, exposure of people to existing health hazards, or an increase in fire hazards.

Impacts Adequately Addressed in the Project Initial Study

The City of Lathrop prepared an Initial Study of the potential environmental impacts of the project prior to preparation of this SEIR. The Initial Study, which was circulated for agency review in conjunction with the Notice of Preparation for the project, identified several potential hazards and hazardous materials issues that were either less than significant, or that need not be further addressed as a result of their treatment in a prior environmental document. These issues were addressed as follows:

1. Proposed residential and commercial uses would not involve substantial quantities of hazardous material. Hazardous materials use would be typical of other urban development and would not create a significant hazard.

2. The project would involve no hazardous materials use that would be subject to potential upset or accident conditions.

3. The proposed project will be within a quarter of a mile of two schools located in the Mossdale Landing project, but the project will not involve substantial hazardous materials use or acutely hazardous material.

4. The project is not located within two miles of a private or public airstrip.

5. The project would involve no substantial conflict with adopted emergency response or evacuation plans. Existing public street access will be maintained in accordance with existing City standards.

6. The proposed project is located on intensively cultivated agricultural lands that are not subject to substantial wildland fire risks.

Exposure to Hazardous Materials Transportation Risks

Land use adjacent to I-5 is entirely commercial in nature. The proposed residential uses are located near I-5, but would be adequately buffered by distance, future commercial uses and an eight-foot sound wall surrounding the residential area. The site is more than 2,000 feet from the Union Pacific Railroad and six miles from the Stockton Metropolitan Airport. The proposed project would not be exposed to any significant safety risks from these sources.

Level of Significance: Less than significant

Mitigation Measures: None required

Exposure to High-voltage Power Lines and Electromagnetic Fields

There are no high voltage electrical lines within the study area. The nearest high-voltage power transmission lines are two miles west of the study area.

Level of Significance: Less than significant

Mitigation Measures: None required

Exposure to Hazardous and Toxic Materials and Sites

Based on the environmental databases search summarized in the Environmental Setting, there are no potential environmental concerns associated with the proposed project.

Level of Significance: Less than significant

Mitigation Measures: None required

Hazardous Air Pollutants

The proposed project would involve the demolition of existing structures located in Unit 1 of the project site. These properties have not been inspected for the presence of asbestos-containing materials, and demolition activities could involve releases of such materials to the air. The Lathrop Building Department requires demonstration of compliance with the National Emissions Standards for Hazardous Air Pollutants (NESHAP). Compliance with these requirements would ordinarily prevent any significant release of asbestos to the air.

Level of Significance: Less than significant

Mitigation Measures: None required

12.0 HYDROLOGY AND WATER QUALITY

12.1 ENVIRONMENTAL SETTING

Surface Waters

The project area is located immediately east of the Sacramento-San Joaquin Delta. Because of the relatively flat topography and historical agricultural improvements, drainage patterns in the project area have been extensively modified. The principal surface water resource in the project area is the San Joaquin River, which is located approximately 1,400 feet west of Unit 1 and bounds Unit 2 on the west. There are no natural surface water features located within the proposed project site. Man-made drainage ditches are located along the boundaries of the site. Existing peak storm water discharges from the project site to the San Joaquin River are estimated at 3.9 cubic feet per second (MacKay and Somps, 2002).

The San Joaquin River has a drainage area of approximately 13,500 square miles above Vernalis, a mean annual flow of approximately 4,400 cubic feet per second (CFS) and an annual discharge of approximately 3.2 million acre-feet. Peak flows have reached 79,000 CFS (12/9/50) at the Vernalis gage. Peak flows at Vernalis reached a new high of an estimated 80,000 CFS in January of 1997, and sustained high flows were experienced through the middle of February of the same year (USACOE). Downstream of the Vernalis gage, flows in the San Joaquin River channel are reduced by diversions to Paradise Cut and Old River.

The San Joaquin River is a natural channel that conducts base flow, storm runoff and irrigation water for a large portion of the San Joaquin Valley. The San Joaquin River does not provide a municipal water source for the City of Lathrop. Groundwater provides the source of irrigation water for the project site. Based on recent agricultural use of the site (alfalfa), and information on average water demands provided by the USDA Natural Resource Conservation Service (Grinstad, pers.comm), average annual water use on the project site would amount to about 57 inches. Over the approximately 151 acres of agricultural land in the two properties, total agricultural water use would amount to approximately 717 acre-feet annually.

As discussed in more detail in Section 17.1 Domestic Water, the City currently uses only groundwater for domestic purposes. Municipal water supplies will soon be obtained through a combination of additional groundwater development and surface water supplies obtained from the South San Joaquin Irrigation District (SSJID) via the South County Surface Water Supply Project (SCSWSP), a joint project between SSJID and the cities of Lathrop, Manteca, Escalon, and Tracy. The approved SCSWSP project involves the construction of a water treatment plant, a 36.5-mile water transmission pipeline, pumping facilities and

turnouts at each city. This project, which does not rely on the San Joaquin River for water supply but rather would draw a portion of SSJID's Stanislaus River entitlement from the Woodward Reservoir, is under construction.

California legislation has recently enacted SB 610 requiring a Water Supply Assessment Report (WSAR) to be prepared for large development projects to assess project water needs in relationship to localized water supplies. In 2001, SB 221 was adopted, additionally requiring a Written Verification of Stable Water Supply Report (WVSWSR) be prepared pursuant to SB 610, to ensure availability of adequate water supplies to serve the project. A WSAR (August 2002) and a WVSWSR (October 2002) were prepared by Nolte Engineering for the Mossdale Landing, River Islands at Lathrop, and Mossdale Landing East projects. SB 610/221 requirements for the proposed project have been met by these documents.

Surface Water Quality

The water quality of the lower San Joaquin River and Delta has been affected by human activities, predominantly water withdrawals, agricultural activities and land development. The use of pesticides and fertilizers has altered water quality, sometimes affecting sensitive invertebrates (Nolte, 2001). Agricultural runoff and municipal storm drainage can contain high concentrations of salts, oxygen-demanding material, dissolved solids and trace elements that can degrade water quality. Section 303 (d) of the Clean Water Act requires the state to identify and list surface waters that have been impaired with respect to beneficial uses that are dependent on the water. The San Joaquin River and Delta waterways have been so listed due to a variety of pollutants and stressors (EDAW, 2001).

The Draft EIR for the Lathrop Water, Wastewater and Recycled Water Master Plan (EDAW 2001) compiled water quality monitoring data for the San Joaquin River from a variety of sources. These data show principal water quality parameters that comply with adopted water quality criteria. Dissolved oxygen and pH levels are typically within acceptable ranges. During low flow periods, total dissolved solids, conductivity and temperature may be high. Compliance problems are generally found more frequently in the lower regions of the river near Stockton. Additional data on San Joaquin River quality is provided in that document.

The Mossdale Landing EIR (EDAW, 2003) contains a detailed description of San Joaquin River water quality issues, standards and regulatory requirements. This discussion indicates that the California Regional Water Quality Control Board currently has established Total Maximum Daily Loads (TMDLs) for selenium and that draft TMDLs are under consideration for boron, diazinon, chlorpyrifos and salinity. Other TMDLs are in the planning stages. Specific information with respect to each of these constituents is provided in detail in the referenced document. The Mossdale Landing EIR indicates that:

> "Each of these pollutants/stressors poses a threat to the water quality of the SJR. However, it should be noted that none of the listed pollutants exceed water quality objectives for the Mossdale Watershed".

Existing runoff from the project site is collected in drainage ditches and ultimately pumped to the San Joaquin River. Pollutant loading levels of the existing site runoff are unknown. As documented in the Mossdale Landing EIR, "agricultural land use typically results in relatively high discharge of sediment, nutrients, herbicides and pesticides as well as elevated concentrations of selenium." Estimated constituent loading for agricultural runoff on the adjoining Mossdale Landing site, as estimated from the literature, were summarized in Table 4.2-1 of the Mossdale Landing EIR. For the most part, these predicted levels are substantially higher for agricultural land uses than for planned residential or commercial uses; however, it should be noted that planned urban land uses would involve substantially higher runoff volumes.

An EPA publication oriented toward urban runoff planning and control for urban areas (EPA 1990) indicates that "the net effect of urbanization is to increase pollutant runoff loads by at least an order of magnitude over pre-development levels." Urban runoff is often referred to solely as urban storm water runoff, although it includes both runoff from winter storms and water generated by human activities, such as lawn watering and auto washing. In California, with its seasonal rainfall pattern, these two runoff sources are largely separate. The end result is, however, that urban runoff carries pollutants that would, if untreated, degrade receiving waters such as lakes, reservoirs, rivers, streams, sloughs, and wetlands.

Pollutants contained within urban runoff may include but are not limited to sediment, oxygen-demanding substances (e.g., organic matter), nutrients (primarily nitrogen and phosphorus), heavy metals, bacteria, oil and grease, and toxic chemicals. These pollutants may stem from erosion of disturbed areas, deposition of atmospheric particles derived from automobile or industrial sources, corrosion or decay of building materials, rainfall contact with toxic substances, decomposing plant materials, animal excrement, and spills of toxic materials on surfaces which receive rainfall and generate runoff.

The U.S. Environmental Protection Agency's National Pollution Discharge Elimination System (NPDES) controls the discharge of pollutants to water bodies from point and non-point sources to regulate water quality in California. In San Joaquin County, the Central Valley Regional Water Quality Control Board (RWQCB), a division of the State Water Resources Control Board (SWRCB) administers this program. The SWRCB's authority includes permitting of storm water discharges from municipal storm drain facilities, industrial processes, and construction sites that involve areas larger than one acre. Such projects require an NPDES General Construction Activities permit, which is obtained by filing a Notice of Intent (NOI) and preparing a Storm Water Pollution Prevention Plan (SWPPP) that addresses storm water pollution.

NPDES Phase II storm water regulations address communities with populations of less than 100,000 that are located in urbanizing areas. The City of Lathrop falls under the Phase II Program and has adopted a Storm Water Management Plan (SWMP). With the adoption of this plan, City activities and activities under its jurisdiction (i.e. land development) are covered under a general permit system that will be administered locally by the City. The Lathrop Storm Water Management Plan was adopted by the City in October 2003 and is expected to be adopted by the RWQCB in early 2004.

Flooding

Flooding hazards in the project area are related to peak flows in the San Joaquin River, failure of existing reservoirs on rivers flowing into the San Joaquin Valley, seasonally high groundwater or inadequate storm drainage facilities.

Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM), as amended by a Conditional Letter of Map Revision in 1990, indicate that the 100-year flood on the San Joaquin River would be contained within the existing levee system. The project site is designated Zone B, an area protected from 100-year flooding by levees. The existing levee system is owned and maintained by Reclamation District 17 (RD 17). This levee system was subject to substantial improvement in conjunction with the development of Weston Ranch in Stockton. These improvements resulted in a Conditional Letter of Map Revision, which excluded the proposed project area from the 100-year flood plain.

During the 1997 peak flow event along the San Joaquin River, seepage along the levee was significant at certain locations. RD 17 and the Army Corps of Engineers (ACOE) repaired the most severe seepage during or immediately after the event. Additional sites beyond those repaired during the flood event were repaired in subsequent years, including work on levees adjacent to the project site. Levee improvements included repair and construction of toe berms. According to RD 17 the landside toe berms are intended to both stabilize the levee and increase seepage resistance.

The ACOE is currently involved in basin-wide study of flood protection improvements along the San Joaquin and Sacramento Rivers. This study is expected to result in recommendations for additional levee improvements but is not expected to be complete in the immediate future. The RD 17 levees have a minimum of three feet of freeboard above the predicted 100-year flood elevation and have been built to protect against a 100-year flood event.

Flows in the San Joaquin River have, however, exceeded the "design elevation" of the levees, which has been determined by the US Army Corp of Engineers to be elevation 21.0 in the vicinity of the project. These levels were exceeded for approximately 72 hours during the winter of 1997. The California Reclamation Board has adopted a "zero impact policy" indicating "new development must have zero impact on the river when the water level is at or above the design water surface elevation". In response to this restriction, the adjoining Mossdale Landing Project required that storm water discharge from the project be restricted to pre-development levels when flows exceed the design elevation.

The City of Lathrop has determined that storm water discharges to the San Joaquin River will also be limited during periods when San Joaquin River water levels are below the design elevation. During these times, discharges will be limited to a maximum of 30% of the potential 100-year discharge of the project site. The proposed project has been designed to conform to this standard.

Issues have been raised by RD 17 in the past regarding development near its levees. A primary concern is seepage through the levee during high rainfall and/or river flow events.

While areas of past seepage have been repaired or reinforced, additional seepage could occur at unimproved portions of the levee system. In correspondence related to this and other land development projects adjacent to its levees, RD 17 has requested maintenance of a minimum setback from the existing levee toe of 60 feet. The setbacks would allow the District to maintain and reinforce the existing levee if required in the future.

RD 17 also has concerns with the number and type of levee penetrations for storm drainage facilities. Through a series of recent discussions with the respect to the project and other ongoing land development projects in the West Lathrop area, RD 17 agreed to a single storm drainage outfall site west of Unit 1 of the proposed project, within the approved Mossdale Landing project. This outfall would serve Unit 1 of the proposed project, Unit 2 and other Mossdale Village development properties to the south of project. RD 17 prefers that storm drainage lines not exceed 30 inches in diameter and are located "up and over," rather than "through," the levee. Detention basins should be located no nearer than 200 feet from the levee toe.

Groundwater

The project site is located within the Great Valley Geomorphic Province of California (The Central Valley). This approximately 400-mile long sediment-filled trench is composed of both marine and non-marine sediments representing alluvial, flood and delta plains of the Sacramento and San Joaquin Rivers and their tributaries.

Several groundwater formations underlie the Lathrop area. However, only the upper two, the Victor and the Laguna formations, are used as a source of water supply. The Victor formation is the uppermost formation, extending from the surface to approximately 150 feet. The Laguna formation is hydrologically connected to the Victor formation and is estimated to be 750 to 1,000 feet thick. The majority of groundwater within the County is drawn from the Laguna formation. City wells are sealed to withdrawal depths of at least 270 feet and typically penetrate through the Victor formation and into the Laguna formation.

Groundwater analysis of the project site was prepared by Kleinfelder (2001) based on sampling data from six monitoring wells. These data are shown and summarized on Table 12-1. In general, these data show relatively high dissolved solids and related concentrations. Volatile organic compounds and pesticide residues were not detected in any of the samples.

The City draws its existing water supply from groundwater wells. There are currently five municipal groundwater wells, with four currently in use. An additional well (No. 21) is currently under construction. The City currently pumps approximately 2,100-acre feet per year (AFY) to meet municipal demands (Nolte 2001). The City of Lathrop master water plans provide for conjunctive use of surface and groundwater to meet anticipated demands for domestic water. Surface water supplies will be obtained from the approved South County Surface Water Supply Project (SCSWSP). Additional information on planned

domestic water supply for the City of Lathrop is provided in Section 17.1 Domestic Water of this document.

Groundwater currently pumped by the City of Lathrop has been found to meet all state water quality standards (Nolte, 2001). Treatment currently consists of chlorination at each wellhead.

An issue of concern not only to the City, but also to the San Joaquin Valley is the intrusion of saltwater into the groundwater supply. Over time, saltwater has intruded into the underlying groundwater in the San Joaquin Valley from the Delta. The intrusion of salt water results in the deterioration of the quality of the existing groundwater supply. The primary reason for this intrusion is attributed to increased groundwater pumping throughout the Valley. Pumping of groundwater over time has encouraged the advance of saline water from the Delta in an eastward direction.

The City's Water, Wastewater, and Recycled Water Master Plan (Nolte, 2001) indicates that a 500 milligrams per liter (mg/L) saltwater intrusion front has been identified just west of the City's existing well field, located east of I-5. Total dissolved solids (TDS) are used to provide a measurement of the level of saltwater intrusion in the groundwater supply. Recommended secondary TDS standard for drinking water is 500 mg/L, with upper limits for long-term use set at 1,000 mg/L. TDS information for wells in Lathrop has ranged from 245 mg/L to 422 mg/L, with an average of 297 mg/L. Existing TDS levels in shallow water on the project site range between 1,100 and 3,400 mg/L. Additional groundwater quality issues in the Lathrop area include nitrate, iron, manganese and bacteriological and radiological contamination.

Discharges that may affect groundwater quality are regulated by the California Regional Water Quality Control Board under the authority of the Federal Clean Water Act. The proposed application of recycled waters to land would be subject to these requirements, which include applicable water quality standards are established in the SWRCB's Basin Plan for the Central Valley Region as well as adopted Primary and Secondary Maximum Contaminant Levels (MCLs) adopted by the state of California. "The RWQCB and local agencies have (also) required a 5-foot separation between the bottom of recycled water storage ponds and the highest known historical groundwater elevation in the area of (such) ponds. If the ponds are lined, these agencies sometimes require only a 2-foot separation" (EDAW, 2003).

TABLE 12-1
GROUNDWATER MONITORING DATA

Parameter	Detection Limit	Units of Measure	Result S200012-0725	Result S200012-0726	Result S200012-0727	Result S200012-0728	Result S200012-0729	Result S200012-0730	Range
Alkalinity, Total	1	mg/L CaCO3	800	330	630	620	330	360	330-800
Alkalinity, Bicarbonate	1	mg/L CaCO3	800	330	630	620	330	360	330-800
Alkalinity, Carbonate	1	mg/L CaCO3	<1	<1	<1	<1	<1	<1	<1
Alkalinity, Hydroxide	1	mg/L CaCO3	<1	<1	<1	<1	<1	<1	<1
Conductivity	0	m mhos/cm	3800	1700	4900	4300	2600	3700	1700-4900
pH	1	pH Units	8.22	7.45	7.37	7.39	7.03	7.12	7.03-8.22
Turbidity	0.1	NTU	120	330	120	200	120	130	120-330
Color Apparent	5	Color Units	25	15	10	20	25	15	25-Oct
Total Dissolved Solids	7	mg/L	2700	1100	3400	2800	1600	2400	1100-3400
Nitrate-N-Ion Chromatography	0.7	mg/LN	<0.7	24	<0.7	<0.7	<0.3	<0.7	<0.3-24
Nitrite-N-Ion Chromatography	0.9	mg/LN	<0.9	<0.5	<0.9	<0.9	<0.5	<0.9	<0.5-<0.9
NO3 + NO2	1.6	mg/LN	<1.6	24	<1.6	<1.6	<0.8	<1.6	<0.8-<1.6
Magnesium-ICP-OES	0.2	mg/L	23	60	150	63	100	110	23-150
Potassium-ICP-OES	1	mg/L	3.1	2	4.8	2.1	3.6	4.7	2-4.8
Sodium-ICP-OES	1	mg/L	950	210	790	850	240	470	210-950
Chloride-Ion Chromatography	3	mg/L	830	250	1400	1200	700	1100	250-1400
Cyanide, Total	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Fluoride-Ion Chromatography	2	mg/L	<2	<1	<2	<2	<1	<2	<1-<2
Hardness, as CACO3	0.1	mg/L	148	462	1100	472	1020	1080	148-1100
Sulfate-Ion Chromatography	3	mg/L	270	130	390	230	200	270	130-390
Total Recoverable Metals-Acid			Completed	Completed	Completed	Completed	Completed	Completed	-
Odor	0	T.O.N.	0	0	0	0	0	0	0
Antimony-ICP-MS	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Aluminum-ICP-OES	0.05	mg/L	5.7	16	9.2	23	9.4	21	5.7-23
Arsenic-ICP-MS	0.005	mg/L	0.07	0.01	<0.005	0.005	<0.005	0.01	<0.005-0.07
Barium-ICP-MS	0.005	mg/L	0.12	0.35	0.21	0.46	0.54	0.47	0.12-0.54
Beryllium-ICP-MS	0.005	mg/L	<1.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005-<1.005
Cadmium-ICP-MS	0.005	mg/L	<1.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005-<1.005
Chromium-ICP-MS	0.005	mg/L	<1.005	0.015	0.01	0.02	0.01	0.02	<0.01-<1.005
Silver-ICP-MS	0.005	mg/L	<1.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005-<1.005
Cobalt-ICP-MS	0.005	mg/L	<1.005	0.01	0.005	0.015	0.005	0.02	0.005-<1.005
Copper-ICP-MS	0.005	mg/L	0.01	0.025	0.015	0.025	0.015	0.035	0.01-0.035
Iron-ICP-OES	0.05	mg/L	7.3	21	14	29	16	31	7.3-31
Lead-ICP-MS	0.005	mg/L	<0.005	<0.005	<0.005	0.005	<0.005	0.005	<0.005-0.005
Manganese-ICP-MS	0.005	mg/L	0.27	1.5	2.7	2.4	3.6	4.3	0.27-4.3
Mercury-AA Cold Vapor	0.0005	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Molybdenum-ICP-MS	0.005	mg/L	0.085	<0.005	0.005	<0.005	<0.005	<0.005	<0.005-0.085
Nickel-ICP-MS	0.005	mg/L	0.01	0.025	0.025	0.035	0.02	0.045	0.01-0.045
Selenium-ICP-MS	0.005	mg/L	0.02	0.01	0.04	0.03	0.01	0.02	0.01-0.04
Thallium-ICP-MS	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Vanadium-ICP-MS	0.005	mg/L	0.17	0.075	0.055	0.095	0.045	0.085	0.055-0.17
Zinc-ICP-MS	0.025	mg/L	0.03	0.08	0.05	0.09	0.04	0.1	0.03-0.1

Source: Kleinfelder, Analytical Results from Monitoring Wells (12/12/00) Lathrop Station (Mossdale Village) Lathrop, California.

12.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Significance Thresholds

According to CEQA, a project may have a significant effect on the environment if it would involve substantial adverse changes in surface water flow or drainage patterns, or substantial flooding or exposure to flooding, erosion or siltation; violation of adopted water quality standards or waste discharge requirements; substantial degradation of water quality; contamination of a public water supply; substantial degradation or depletion of ground water resources; or substantial interference with groundwater recharge.

Impacts Adequately Addressed in the Project Initial Study

The City of Lathrop prepared an Initial Study of the potential environmental impacts of the project prior to preparation of this SEIR. The Initial Study, which was circulated for agency review in conjunction with the Notice of Preparation for the project, identified several potential environmental issues that were either less than significant, or that need not be further addressed as a result of their treatment in a prior environmental document. These issues were addressed as follows:

1. Potential impacts of urban development of the project site on groundwater resources were addressed on a worst-case basis in the WLSP EIR as well as the City's more recent Water, Wastewater and Recycled Water Master Plan EIR (Nolte 2001). The City is proceeding with the identified mitigation for these impacts with the development of the approved South County Surface Water Supply Project. With this mitigation in place, and based on these previous documents, the project would have no significant impact on groundwater supplies or recharge.

2. The proposed project includes development of an urban storm drainage system in accordance with adopted City standards. This will avoid potential for increases in on-site flooding.

3. The project site is protected from 100-year flooding by existing levees, and planned development would not be subject to significant flood risk. The 2003 Mossdale Landing EIR evaluated existing levee protection in the project area and found that exposure to flooding would be less than significant.

4. The project would not place any structures within the San Joaquin River levee system that would impede or redirect flood flows.

5. The project site is not subject to significant flooding risks from tsunamis, seiches or potential failure of storage reservoirs in the Sierra Nevada foothills.

Direct Impacts on Surface Water Features

The proposed project would involve no potential for direct effects on existing surface water features, other than storm water discharges to the San Joaquin River, as discussed below. There are no existing natural surface water resources located within the proposed project site, with the exception of the westernmost portion of Unit 2, which includes portion of the San Joaquin River. Existing man-made drainage and irrigation features on the project site would be disturbed as the site is graded for residential and commercial development purposes, and as new storm drainage systems are installed. These impacts would not be considered significant. Effects on the storm drainage and irrigation systems are addressed in Chapters 17.0 Utilities and 5.0 Agriculture, respectively.

The WLSP and the proposed MLE UDC designate the westernmost portion of Unit 2 for Open Space and Riverfront Park Use. The Open Space designation, which encompasses the riverbanks and channel area, does not provide for development of any kind. The upland Riverfront Park designation would allow for the development of picnic, trail, landscaping and, possibly, restroom facilities. However, any such development would not result in impacts to the San Joaquin River bank, channel or other hydrologic features. Planned storm drainage discharge for the proposed project would be via an approved storm drain outfall to be constructed in conjunction with the adjoining Mossdale Landing project. Environmental review and permitting of this facility are occurring outside the review of the MLE Project. No other development of the San Joaquin River vicinity is anticipated by the proposed project.

Level of Significance: Less than significant

Mitigation Measures: None Required

Potential Effects on River Flow and Volume

Water supply for future urban development will be derived from the City's proposed conjunctive use system involving groundwater wells located east of I-5 and surface water supplies obtained from the South County Surface Water Supply Project, derived from the Stanislaus River. As a result, the project will result in no significant effect on San Joaquin River flows or availability for irrigation, fish and wildlife or other purposes.

Development of the project site with new residential and commercial structures, site improvements and associated impervious surfaces would increase runoff from the site. Runoff from the project site would be conducted to the San Joaquin River via the proposed storm drainage system described in Chapters 3.0 and 17.0 and would add to the river's total discharge and instantaneous flows during and following storm events.

Phase 1 of the Highway Commercial area and the Phase 1 residential area are expected to involve no impact on San Joaquin River flows. During this period, prior to the construction of the Mossdale Landing drainage outfall structure, all runoff from the project site will be

directed to a temporary retention basin located at the site of the permanent detention facility (Figure 3-12). Storm drainage flows accumulated at this location would be allowed to percolate and/or evaporate. The facility has been sized to accommodate this function.

Similarly, Unit 2 of the project will not generate new storm water flows to the San Joaquin River in the near term. This portion of the project site is planned for use as a recycled water storage and disposal facility. When alternative recycled water storage and disposal sites are provided by the City, this portion of the site will be developed and would contribute to the overall project storm drainage contributions to San Joaquin River flows discussed below.

Storm drainage flows from the developed project site would be discharged to the San Joaquin River via the proposed storm drainage system identified and discussed in Chapter 3.0 Project Description. These facilities would be designed to accommodate discharges generated by 100-year storm events, in accordance with adopted City standards. As discussed in the drainage plan for the MLE project, storm water runoff from the project site would increase from the existing 3.9 CFS level to a total maximum flow of approximately 49 CFS. Additional discussion of planned storm drainage systems is provided in Chapter 17.0 Utilities.

As discussed in Chapter 3.0, the proposed storm drainage system is designed to limit discharges to the San Joaquin River to a total of 30% of the projected 100-year flows at all times. Consequently, total maximum flows to the San Joaquin River generated by the project would amount to 266 CFS. This limitation would be accomplished via proposed detention facilities as well as additional on-site detention in streets and yard areas (below one foot building pad elevations). This would limit contributions to the San Joaquin River to less than significant, except during flows exceeding the river's design elevation (21.0 feet).

Proposed discharges to the San Joaquin River, as limited, would result in relatively incidental increases in San Joaquin River levels during lower flow stages. On the basis of a hydraulic model prepared by project engineers MacKay and Somps in the Mossdale Landing EIR (Appendix M), project contributions to high San Joaquin River flows would be relatively incidental. The MacKay and Somps study, which accounted for all potential development in the Mossdale Village area, predicted potential increases in flow that amounted to 0.04 feet at 41,600 CFS and 0.03 feet at the maximum recorded flow of 49,000 CFS. The Mossdale Landing EIR found these potential impacts of San Joaquin River flows to be less than significant.

Discharges from the site would be further limited to existing discharge volumes from the undeveloped site when the San Joaquin River exceeds the design flood elevation of 21.0 feet. As a result, the proposed project would not contribute to San Joaquin River near-flood flows and would, therefore, not contribute to increases in downstream flooding during these peak events. This limitation arises from and would avoid conflict with the California Reclamation Board's zero impact policy. Additional information on this issue is provided in Section 17.3 Storm Drainage of this document. Potential indirect effects on the San Joaquin River and other downstream water resources are addressed in subsequent discussions of water volume and quality concerns.

Level of Significance: Less than significant

Mitigation Measures: None required

Project Effects on Levee Stability and Flooding Risk

As noted in "Impacts Adequately Addressed in the Project Initial Study", the project site is not currently exposed to flooding hazards from the San Joaquin River. Existing levees on the San Joaquin River have been improved to address seepage and damage associated with past flooding events. Levees are considered adequate to accommodate projected 100-year flows in the San Joaquin River.

RD 17 has, however, indicated that there may occur a need for additional levee improvements, including toe berms, drainage systems as future peak flow events reveal additional limitations in the levee structures. RD 17 recommends that all projects be set back 60 feet from the landward toe of the levee. RD 17 has requested construction of a drainage system along the levee toe in conjunction with new development to collect and dispose of levee seepage in order to help prevent the weakening of the levee.

Project encroachment on the San Joaquin River levee would occur only within Unit 2 of the project. River frontage within Unit 2 is planned for Open Space and Riverfront Park Development. The project will include the construction of toe drains, as described in Chapter 3.0 Project Description, and observe recommended setbacks from the levee toe. As a result, the project will not result in any decrease in levee stability or interference with efforts to protect levees in the future. The project would result in less than significant impacts in this issue area.

The proposed project will not involve any new penetrations of the existing San Joaquin River levee. Proposed storm drainage facilities would discharge to a new outfall structure to be permitted and developed in conjunction with the adjoining Mossdale Landing project.

Level of Significance: Less than significant

Mitigation Measures: None required

Construction Effects on Surface Water Quality

Project construction would involve extensive potential site disturbance and potential for soil erosion and sediment discharge to storm drainage systems and the San Joaquin River. Because the project site and all of the project phases are more than one acre in size, the construction project will need to comply with the federal NPDES General Construction

Activities permit. The permit is obtained by filing a Notice of Intent (NOI) and preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP) with the City and the Regional Water Quality Control Board. The project will also need to conform to requirements of the Lathrop NPDES Phase II Storm Water Management Plan, as they are implemented by the City.

The SWPPP will need to include measures that would be effective in reducing or avoiding construction-related storm water pollution. This would include such measures as temporary runoff controls and detention facilities, the use of straw wattle, gravel (construction entrances and drain inlet gravel bags), filter fabric, silt fences and seeding or landscaping of areas that remain disturbed after construction of proposed infrastructure and housing. Additional control on the quality of storm water runoff will be provided in early stages of project construction by directing runoff from construction areas to the planned temporary storm water retention facility. These measures would reduce potential construction impacts on water quality to less than significant.

Level of Significance: Potentially significant

Mitigation Measures:

1. The project proponent shall prepare a Notice of Intent and Storm Water Pollution Prevention Plan and submit these documents to the California Regional Water Quality Control Board and the City of Lathrop.

2. The proponent shall implement all relevant provisions of the SWPPP, the City SWMP and Construction General Permit during project construction.

Significance After Mitigation. Less than significant

Urban Runoff Effects on Surface Water Quality

Planned commercial and residential uses would result in the generation of new urban runoff and contributions of associated pollutants to storm water flows and the San Joaquin River. Phase II NPDES regulations are intended to address storm water discharge requirements for communities such as the City of Lathrop, and the City has adopted a Storm Water Management Plan (SWMP). The SWMP includes Best Management Practices (BMPs) that include structural and non-structural practices that reduce potential storm water pollution such as community education, street sweeping, curb marking and yard waste pickup programs. The SWMP also includes provisions for post-construction structural controls on new development that will facilitate storm water quality. Typical BMPs are grass swales and filter strips, and detention basins such as found in California Stormwater Quality (CASQA) Stormwater Best Management Practices Handbooks.

An analysis of potential storm water quality impacts of comparable development on the adjoining Mossdale Landing site was prepared in conjunction with the SEIR for that project. The analysis compared potential constituent loading generated by the project site

under existing conditions, the developed condition without the use of storm water BMPs and with the inclusion of storm water BMPs. The specific analysis data is provided in Table 4.2-3 of the EIR (EDAW 2002). Estimated pollutant concentrations in storm water runoff are typically lower than those in the existing agricultural runoff. However, substantial increases in storm water flows associated with new development would result in an increase in total loading of pollutants to the San Joaquin River without the incorporation of storm water BMPs. The inclusion of storm water BMPs in the project would, however, result in reductions in pollutant loading for all constituents, excepting selenium and diazinon, as compared to existing conditions. That is, the proposed project, with BMPs, would result in reduced pollutant loading for all but the two indicated constituents.

The Mossdale Landing analysis found that projected selenium levels would be lower than the established TMDL for the San Joaquin River and that projected selenium levels were likely overstated as a result of the lack of primary sources in the project area. In fact, the analysis noted, "Selenium loading is likely to decrease as a result of increased impervious cover." The analysis also indicated that the project was not expected to result in measurable increases in diazinon levels in the San Joaquin River. As a result of a planned phase-out of diazinon by December 2003, it is anticipated that diazinon loading from urbanized areas would approach zero.

The Mossdale Landing analysis also indicated that the project would have no significant effect on potential storm water pollutants for which the San Joaquin River is listed as impaired: boron, salinity (or TDS) and DDT. Boron and salinity levels generated in storm water are typically well below the most restrictive standards for these constituents, and DDT is a banned substance and would not be used in or generated by the project. Overall, the Mossdale Landing analysis found that with planned BMPs in place, the project would serve to decrease existing pollutant loading of the San Joaquin River and thereby result in improved water quality.

Level of Significance: Less than Significant

Mitigation Measures: None Required

Effects of Recycled Water Storage and Disposal on Surface Water Quality

The proposed project would generate up to approximately 110,000 gallons per day of wastewater, which would be treated at the city's Water Recycling Plant No. 1 (WRP-1). This plant is currently being expanded and upgraded to provide tertiary treatment in order to serve planned new development located west of I-5. Wastewater generated by the project would be treated to a tertiary level in accordance with Title 22 Standards allowing unlimited human contact. Wastewater would be subject to coagulation, filtration and disinfection and would conform to the very restricted Title 22 Standards allowing only very low turbidity, coliform bacteria, BOD and TSS standards.

While the city will have sufficient sewage treatment capacity to treat project-generated wastewater, sufficient disposal sites for the recycled water must be provided in conjunction with new development. As a result, the project will include temporary use of approximately 16.7 acres of land located primarily within Unit 2 of the project area for disposal of recycled water generated by the project. Recycled water would be delivered to the site from the City's planned recycled water system, which would be constructed in conjunction with the proposed project and the approved adjoining Mossdale Landing project. As wastewater disposal to land is limited during the rainy months, the project will also provide for winter storage of up to 36-acre feet of recycled water on the Unit 2 site.

Recycled water storage is not expected to result in any effect on surface water quality. Recycled water would be confined to a storage pond that would provide, at maximum storage levels, a minimum of two feet of freeboard. Pond capacity was determined through use of a water balance (PACE, 2003) that accounts for wastewater inflows/outflows as well as precipitation, evaporation and other influences. As a result, this aspect of the project would involve no substantial potential for release or recycled water to surface waters. In the unlikely event of an accidental release, the proposed treatment standards applied to the stored water would prevent any adverse effect on surface water quality.

The project would also involve the application of approximately 120 annual acre-feet of recycled water to approximately 16.7 acres of disposal area, located primarily within Unit 2 of the project. Recycled water application is not expected to result in any potential for contamination of surface waters. Recycled water application would occur subject to California Department of Health Services review under Title 22 regulations and subject to Waste Discharge Requirements imposed by the RWQCB. Application standards would require setbacks between proposed application areas and surrounding property boundaries and wells, and standards would prevent the accumulation of recycled water in order to prevent runoff or ponding. Recycled water would be applied at agronomic rates to minimize potential for percolation. As with proposed recycled water storage, an accidental release of reclaimed water during application would not result in any substantial contamination of surface water as a result of the Title 22 treatment standard applied to these waters.

Additional detail on recycled water storage and application is provided in Chapter 3.0 Project Description and Chapter 17.0 Utilities. Additional detail on the relationship of proposed recycled water storage and application to ground water resources is addressed in the following section.

Level of Significance: Less than significant

Mitigation Measures: None required

Project Effects on Groundwater Quality

Urbanization of the project site would have mixed effects on groundwater quality. The project would likely lead to a net decrease in the quantity of agricultural chemicals applied to the land, but pest control and herbicide use by new homeowners would increase. The relative volumes of chemical use between existing and future conditions is unknown. With increased population, the potential for illegal dumping of hazardous materials and wastes would be reduced within the project area, but would likely be displaced to other locations.

Project related excavation, including the excavation of utility trenches for deeper sections of the sanitary sewer system, may involve interception of shallow groundwater on the project site. Trench dewatering would be required to facilitate construction process, but groundwater removed from construction trenches would be routed to the proposed storm water retention facility and would have no impact on groundwater quality or wells.

The project would involve the storage of storm water in unlined ponds on the project site, with the potential for percolation of stored waters to the ground water system. A 5 acre-foot storm water detention pond would be located on Unit 1 of the project within the Service Commercial Area. An approximately two acre-foot pond would be located within Unit 2. Storm waters detained in the pond, in particular "first flush" waters, would have potentially high levels of sediment, heavy metals and petroleum product contaminants. Potential impacts on shallow groundwater would be limited by observation of minimum groundwater separation requirements. The project would involve no substantial potential for contamination of potable groundwater, which is located at depths of 150 feet or more in the eastern portion of the City. The potential for ground water contamination as a result of storm water detention was addressed in the Mossdale Landing EIR. That project was found to have a less than significant impact on ground water quality.

The project would involve the storage and application of approximately 120 acre-feet of recycled water annually on the project site. Recycled water would be treated to Title 22 unlimited contact standards as discussed in previous sections. Recycled water would be stored in a lined 36 acre-foot pond located within Unit 2 of the proposed project. As a result of the pond lining, which would allow minimal percolation, and the high level of water treatment, recycled water storage would involve no significant potential for groundwater contamination or impacts on wells.

Recycled waters would be applied to approximately 16.7 acres of agricultural land within Units 2 and 1 of the proposed project. Similarly, recycled water application would not involve any significant potential for groundwater contamination. Recycled waters are treated to a high level, allowing unlimited human contact. Even if released to protected waters, no significant water quality effect would occur. Recycled waters would be applied at agronomic rates, limiting the potential for percolation to groundwater; in addition, the agricultural use supported by recycled water application would result in substantial uptake of minerals during the growth process. Anticipated recycled water quality exceeds or is in the range of existing ground water quality, as described in the Mossdale Landing EIR. As a result, contact with the shallow ground water system would either maintain or enhance water quality in the system.

The project is expected to have no effect on the quality of deeper potable ground water or wells tapping this resource. The potable ground water system is located at depths of 150 feet or greater in the eastern portion of the City. Theoretically, agronomic application of recycled water would allow no substantial percolation beyond the root zone. Should any recycled waters percolate to the deeper groundwater system, the already-reduced contaminant levels of the recycled water would be further reduced by percolation through the soil system.

Level of Significance: Less than significant

Mitigation Measures: None required

13.0 LAND USE AND PLANNING

13.1 ENVIRONMENTAL SETTING

Existing land use in the project area is characterized by the WLSP EIR as essentially devoid of urbanization and dominated by agricultural lands and farmsteads. This general characterization is also true of the project site. In the past few years, urban development in Lathrop has primarily involved residential, freeway commercial and industrial expansion east of Interstate 5. The WLSP EIR does not describe specific current land uses on the project site or surrounding areas. This chapter will supplement information provided by the previous EIR with more site-specific analysis.

Land uses in the MLE project vicinity are predominantly agricultural with the exception of several residential and farming structures located near the boundaries of Units 1 and 2. Unit 1 is in agricultural use, supporting primarily alfalfa with various row crops in the southeast portion of the site. Unit 1 also includes a farmstead and associated barn structures. Unit 2 is devoted to alfalfa cultivation.

Lands to the north, south and west of Unit 1 support a variety of row crops. Two farmsteads are located along the south boundary of Unit 1. Land uses adjacent to Unit 2 are devoted primarily to alfalfa cultivation. Two farmsteads are located adjacent to the north boundaries of the site.

Local roads are also principal features in the project vicinity. Unit 1 is bounded on the north by Louise Avenue and Manthey Road bounds both Unit 1 and Unit 2 on the east. Just east of Manthey Road lies Interstate 5. Lands east of I-5 are primarily developed for industrial purposes in the Crossroads Industrial Park.

The proposed project is located in the City of Lathrop and is subject to the Lathrop General Plan and the West Lathrop Specific Plan (WLSP). As shown in Figure 3-2, the WLSP designates the project site for Residential-Low Density, Residential-Medium Density, Public, Village Commercial, Freeway Commercial and Service Commercial uses. Planned development as shown in the MLE Urban Design Concept conforms to requirements of the WLSP and other applicable planning requirements. The WLSP, in turn, conforms to the Lathrop General Plan.

By virtue of the Lathrop General Plan, the WLSP and other subsequent approvals, the project area has been programmed for urban development and will be transformed from agricultural to urban use over the coming years as a result of approved development projects. Unit 1 of the project is surrounded on the north, west and south by the approved Mossdale Landing project, portions of which are currently under construction. The Mossdale Landing project was designed in conformance with the WLSP and includes

commercial and residential land uses that are similar and complimentary to proposed MLE land uses. The proposed UDC for MLE was modeled after the approved UDC for Mossdale Landing.

The proposed project will be subject to the WLSP Habitat Management Plan (HMP), the Management Authorization and the San Joaquin Multi-Species Habitat Conservation Plan (SJCMSHCP). Consequent conformance to applicable requirements of each program will be necessary. For further discussion of biological resource management plans see Chapter 7.0 Biological Resources. Issues related to agriculture are addressed in Chapter 5.0 Agricultural Resources.

13.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Significance Thresholds

According to the CEQA Guidelines, a project may have a significant effect on the environment if it would involve substantial alteration of the present or planned land use of an area, disrupt or divide the physical arrangement of an established community, conflict with established recreational, educational, religious or scientific uses of the area, conflict with adopted environmental plans and goals of the community where the project is located, convert prime agricultural land to non-agricultural use, or impair the agricultural productivity of prime agricultural land.

Impacts Adequately Addressed in the Project Initial Study

The City of Lathrop prepared an Initial Study of the potential environmental impacts of the project prior to preparation of this SEIR. The Initial Study, which was circulated for agency review in conjunction with the Notice of Preparation for the project, identified several potential land use issues that were either less than significant, or that need not be further addressed as a result of their treatment in a prior environmental document. These issues were addressed as follows:

1. The proposed project will not have an impact on established communities since property is currently undeveloped and planned for urbanization.

2. The project does not conflict with applicable land use plans, policies or regulation of the City of Lathrop. The proposed MLE UDC has been reviewed by City staff and found to be consistent with applicable WLSP requirements.

3. The proposed project will be subject to the WLSP Habitat Management Plan (HMP), the associated Management Authorization and the San Joaquin County Multi-Species Habitat Conservation Plan. The relationship between the proposed project and applicable biological resource management plans will be discussed in the Biological Resources, Chapter 7.0.

Interim Land Use Conflicts during Project Buildout

The proposed project would be developed in phases as discussed in Chapter 3.0 and shown on Figure 3-16. As a result, planned building, vacant lands and residual agricultural use may be juxtaposed during the buildout period. This temporary condition is typical of new development areas and is not expected to result in significant land use conflicts.

Portions of the Service Commercial area on Unit 1 are planned for temporary storm water retention and permanent storm water detention facilities. These facilities would be consistent with planned commercial and existing agricultural use and would not involve the potential for conflict. Storm water detention facilities would be separated from planned residential uses by the Golden Valley Parkway right-of-way, eliminating the potential for conflict with these uses.

Unit 2 lands are proposed for temporary use for storage and disposal of recycled water. These lands are adjacent to lands within the Mossdale Landing project that are ultimately planned for residential development; a portion of the Mossdale Landing project adjacent to Unit 2 would also be used for temporary use as storage and disposal of recycled water. The potential for conflict between residential and recycled water disposal uses is minimal. Recycled water would be treated to a tertiary standard and is suitable for human contact. These waters would pose no hazard to nearby residents and are not know to generate odors.

Level of Significance: Less than significant

Mitigation Measures: None required

Conflicts between Planned and Existing Land Uses

Planned development would be consistent with remaining non-agricultural land uses in the project vicinity. These uses consist of scattered farm residences that would, with the exception of one residence adjacent to Unit 2, be located adjacent to or near planned MLE residential areas. These uses would not be inherently conflicting. The existing residence on Unit 2 would be adjacent to future commercial development of this site. However, the residential site is also designated and zoned in the WLSP for future commercial use and would likely be developed for that purpose in the future. Development of this area is

expected to be delayed for the foreseeable future as a result of use of these areas for recycled water disposal.

The project is not expected to result in any internal future land use conflicts associated with proposed land uses within or surrounding the MLE project. Both Mossdale Landing and MLE have been designed consistent with the overall guidance of the WLSP and do not include any inherent land use conflicts. Future land uses in Mossdale Landing are consistent with those proposed for Mossdale Landing East. Housing densities are matched, street systems are aligned for common circulation, and village commercial areas mirror each other along Towne Centre Drive. Unit 2 is comprised primarily of low-density housing that is located adjacent to similar development within Mossdale Landing; unapproved lands to the south are designated for similar uses. The western portion of Unit 2 is a proposed park site, which would be compatible with planned low-density housing that surrounds it.

The project would not involve any substantial potential for land use conflicts.

Level of Significance: Less than significant

Mitigation Measures: None required

14.0 NOISE

This chapter discusses the existing noise environment in the project vicinity, and identifies potential noise impacts and mitigation measures related to development of the Mossdale Landing East project. Specifically, this section analyzes potential noise impacts due to existing and future traffic noise, and noise levels associated with commercial uses on the project site. The noise levels are compared to the applicable noise level criteria and to the existing ambient noise environment. This analysis was prepared by Bollard and Brennan, Inc. A complete copy of the technical report is shown in Appendix H.

14.1 ENVIRONMENTAL SETTING

Acoustical Terminology

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and hence are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by the A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq), which corresponds to a steady-state A-weighted sound

level containing the same total energy as a time-varying signal over a given time period (usually one hour). The Leq is the foundation of the composite noise descriptor, Ldn, and shows very good correlation with community response to noise.

The Day-night Average Level (Ldn) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment. A complete listing of acoustical terminology is provided in Appendix H.

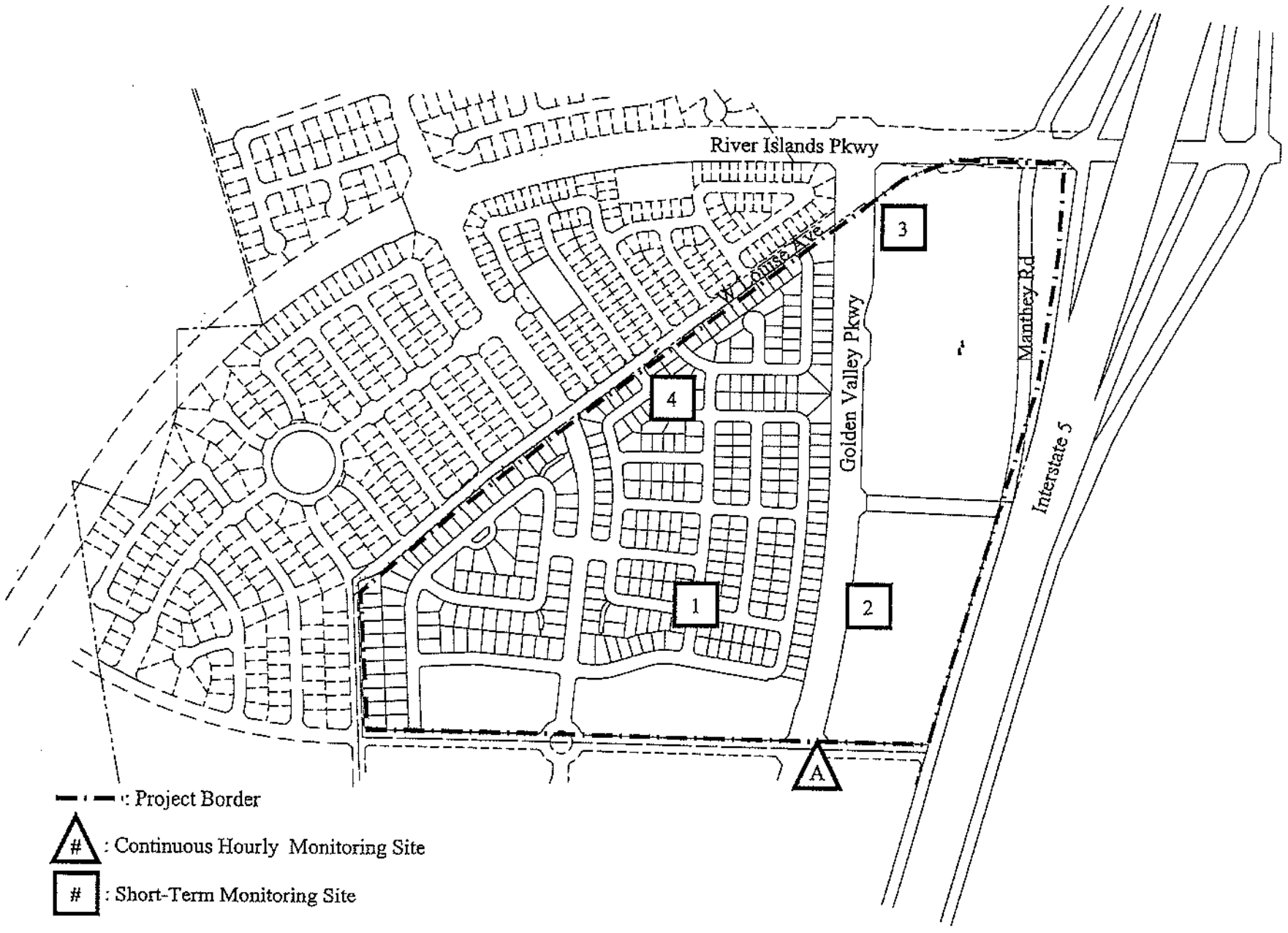
Existing Ambient Noise Levels

To quantify existing ambient noise levels in the vicinity of the project site, Bollard & Brennan, Inc. conducted short-term noise level measurements at four locations in the vicinity of the project site on November 1, 2001, and continuous hourly noise level measurements at one location adjacent to the project site on July 31, 2003 (Figure 14-1). The noise level measurements were conducted to determine typical background noise levels and for comparison to the project noise levels. Figure 14-2 graphically shows the results of the continuous hourly noise level measurements. Table 14-1 shows a summary of the noise measurement results.

TABLE 14-1
EXISTING AMBIENT NOISE MONITORING RESULTS
MOSSDALE LANDING EAST

Site	Location	24-hour L_{dn}	Average Measured Hourly Noise Levels, dBA: Daytime (7:00 am - 10:00 pm) L_{eq}	L_{50}	L_{max}	Nighttime (10:00 pm - 7 am) L_{eq}	L_{50}	L_{max}
Continuous 24-hour Noise Measurement Site (July 31, 2003)								
A	Southern border of project site	74.0	68.0	67.1	76.5	67.5	65.3	74.6
Short-term Noise Measurement Sites (November 11, 2001)								
1	Southern Central portion of project site	NA	55.3	54.9	60.0	Measurement at 2:23 p.m.		
2	Southeast portion of project site	NA	60.6	60.1	66.7	Measurement at 2:45 p.m.		
3	Northeast portion of project site	NA	56.1	55.4	61.6	Measurement at 3:18 p.m.		
4	Northwest portion of project site	NA	52.3	51.1	60.0	Measurement at 3:45 p.m.		

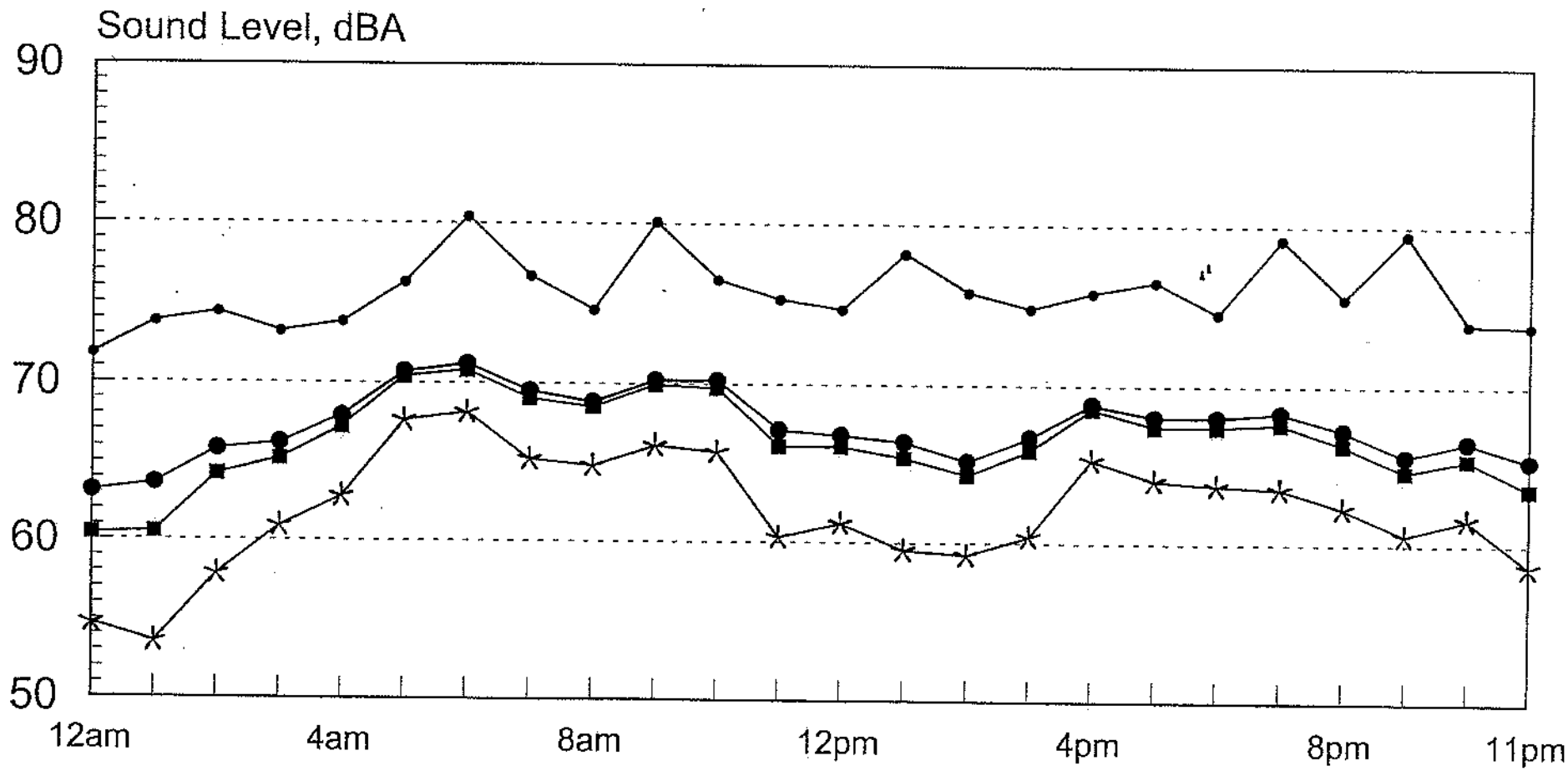
Source: Bollard & Brennan, Inc.



Source: BOLLARD & BRENNAN

INSITE ENVIRONMENTAL

Figure 14-1
NOISE MEASUREMENT LOCATIONS



Ldn = 74.0 dB

Note: Measurement Site A, Thursday July 31, 2003

Source: BOLLARD & BRENNAN

INSITE ENVIRONMENTAL

Figure 14-2
NOISE LEVELS

Existing Traffic Noise Levels

To describe noise levels due to traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The FHWA model is the analytical method currently favored for highway traffic noise prediction by most state and local agencies, including the California Department of Transportation (Caltrans). Additional information on this methodology is provided in Appendix H.

Based upon model calibration by Bollard and Brennan, the FHWA Model was found to considerably over-predict traffic noise levels on the project site. Based upon field observations, this is attributed in part to shielding of northbound traffic due to the fact that I-5 is elevated relative to the project site. For the purposes of this study, a conservative -5 dB correction was included in the calculations of existing and future traffic noise levels due to I-5 at the site. Appendix H shows the complete inputs to the FHWA Model.

Existing traffic noise associated with the project site is primarily contributed to Interstate 5 traffic. Therefore, to predict existing traffic noise levels, existing average daily traffic (ADT) volumes for I-5 were obtained from Caltrans and inputted into the FHWA model. The FHWA Model inputs are contained in Appendix B. Predicted noise levels at 100 feet and distances to Ldn contours are summarized in Table 14-2.

TABLE 14-2
PREDICTED EXISTING TRAFFIC NOISE LEVELS
MOSSDALE LANDING EAST

Roadway	Ldn at 100' (dBA)	Distance to Ldn Contour in feet 60 dBA	65 dBA
Interstate 5	79.4	1968	913

Note: Distances to roadway noise contours and predicted noise levels are relative to the roadway centerlines.

Applicable Noise Standards

The City of Lathrop General Plan Noise Element establishes a 60 dB Ldn exterior noise level criterion as being normally acceptable for new residential uses affected by traffic noise sources. An exterior noise level of up to 70 dB Ldn is considered conditionally acceptable only after a detailed analysis of noise reduction requirements is made, and needed noise insulation features included in the design. An interior noise-level criterion of 45 dB Ldn is specified in the Noise Element for residential land uses exposed to transportation noise sources.

For stationary or on-site noise sources, the Lathrop Noise Element establishes hourly noise level performance criteria. The noise element standards applicable to the Lathrop Station Project on-site noise sources are summarized in Table 14-3.

TABLE 14-3
EXTERIOR NOISE LIMITS FOR
CITY OF LATHROP NOISE ELEMENT

		Noise Level, dB
Land Use Category	Time Period	Leq
Residential	7am – 10pm	60
	10 pm – 7am	50

Source: City of Lathrop General Plan Noise Element

The potential increase in noise from a project, primarily traffic noise is a factor in determining significance. Research into the human perception of changes in sound level indicates the following:

- A 3 dB change is barely perceptible,
- A 5 dB change is clearly perceptible, and
- A 10 dB change is perceived as being twice or half as loud.

14.2 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Thresholds of Significance

Criteria for determining the significance of noise impacts were developed based on information contained in the California Environmental Quality Act Guidelines (State CEQA Guidelines). According to those guidelines, a project may have a significant effect on the environment if it will satisfy the following conditions:

a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

c. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

For this project, the significance of anticipated noise effects is based on a comparison between predicted noise levels and noise criteria defined by the City of Lathrop. For this project, noise impacts are considered significant if the proposed residential uses would be exposed to noise levels in excess of the City of Lathrop Noise Element standards shown in Table 14-3. Increases in noise levels due to the project will be considered significant if they result in a +3 dB increase.

Tables 14-4 and 14-5 show the results of the traffic noise analyses for the years 2007 and 2025. The following analyses assess the noise impacts along the primary roadway network that have been affected by the project.

TABLE 14-4
PREDICTED FUTURE (YEAR 2007) TRAFFIC NOISE LEVELS
MOSSDALE LANDING SOUTH

Roadway/Intersection	Segment	Ldn at 100' (dBA)	Distance to Ldn Contour in feet 60 dBA	65 dBA
Without Project				
McKee Blvd/River Islands Pkwy	North	54.7	44	21
	South	55.7	52	24
River Islands Pkwy/Golden Valley	West	N/A*	N/A	N/A
	South	N/A	N/A	N/A
Interstate 5		79.8	2074	963

Plus Project Roadway/Intersection	Segment	Ldn at 100' (dBA)	ΔdBA	Distance to Ldn Contour in feet 60 dBA	65 dBA
McKee Blvd/River Islands Pkwy	North	55.4	0.3	49	23
	South	56.8	1.1	61	28
River Islands Pkwy/Golden Valley	West	59.0	N/A	86	40
	South	53.8	N/A	38	18
Interstate 5		79.8	0	2102	976

Notes: Distances to roadway noise contours and predicted noise levels are relative to the roadway centerlines.
* Roadways are not planned to be constructed by 2007.

TABLE 14-5
PREDICTED FUTURE (YEAR 2025) TRAFFIC NOISE LEVELS
MOSSDALE LANDING SOUTH

Roadway/Intersection	Segment	Ldn at 100' (dBA)	Distance to Ldn Contour in feet 60 dBA	65 dBA
Without Project				
McKee Blvd/River Islands Pkwy	North	58.6	81	37
	South	56.3	57	26
River Islands Pkwy/Golden Valley	West	64.8	208	97
	South	65.4	231	107
Interstate 5	South	81.3	2620	1216
Plus Project				
Roadway/Intersection	Segment	Ldn at 100' (dBA)	ΔdBA	Distance to Ldn Contour in feet 60 dBA	65 dBA
McKee Blvd/River Islands Pkwy	North	59.4	0.8	91	42
	South	58.6	2.3	81	37
River Islands Pkwy/Golden Valley	West	65.1	0.3	219	102
	South	66.3	0.9	264	123
Interstate 5	South	81.3	0	2626	1219

Notes: Distances to roadway noise contours and predicted noise levels are relative to the roadway centerlines.

Construction Noise

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. Activities involved in construction would generate maximum noise levels, as indicated in Table 14-7, ranging from 85 to 90 dB at a distance of 50 feet. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A significant project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from construction sites. This noise increase would be of short duration, and would likely occur primarily during daytime hours.

Activities associated with construction will result in elevated noise levels, with maximum noise levels ranging from 85-90 dB at 100 feet, as shown in Table 14-7. Construction activities would be temporary in nature and would likely occur during normal daytime working hours. Nonetheless, because construction activities would result in periods of elevated noise levels, this impact is considered potentially significant.

Level of Significance: Potentially significant

Mitigation Measures:

1. Construction activities should be restricted to the daytime hours of 7:00 a.m. to 7:00 p.m. In addition, all equipment shall be fitted with factory-equipped mufflers, and in good working order.

Significance After Mitigation: Less than significant

Project-Related Increases in Traffic Noise Levels at Existing Land Uses

A comparison of Future 2007 without and plus project traffic noise levels located within Table 14-4 indicates that noise levels will experience a range of increase between +0.3 and +1.1 dB. Similarly, a comparison between Future 2025 without and plus project traffic noise levels located within Table 14-5 indicates a range of increase between +0.3 and +2.3 dB. The results of the analysis indicate that the project will result in increases in traffic noise of less than 3 dB Ldn. An increase in traffic noise of less than 3 dB is considered to be less than significant. In addition, there are no existing noise-sensitive land uses in the project vicinity.

Level of Significance: Less than Significant

Mitigation Measures: None required

Traffic Noise Impacts at Proposed Residential Land Uses

Based upon the analysis, proposed residential uses within the project site will be exposed to traffic noise levels in excess of the City of Lathrop 60 dB Ldn exterior noise level standard. Table 14-6 shows the future (2025) traffic noise levels at the project site.

TABLE 14-6
PREDICTED FUTURE TRAFFIC NOISE LEVELS AT PROPOSED RESIDENTIAL USES

Roadway	Traffic Noise Level at Project Site	Distance to Noise Contours* 60 dB Ldn	65 dB Ldn
I-5	68 dB Ldn	2,626 feet	1,219 feet
Golden Valley Parkway	67 dB Ldn	264 feet	123 feet
McKee Boulevard	60 dB Ldn	81 feet	37 feet

Note: Distances to contours are from the roadway centerlines.

Based upon the analysis shown in Table 9, the predicted noise levels will exceed the exterior noise level criterion of 60 dB Ldn. Bollard and Brennan conducted barrier analyses to determine the barrier height required to reduce projected future noise

levels that exceed City of Lathrop standards to fall within those standards. Proposed six-foot masonry walls along McKee Boulevard and Johnson Ferry Road would be adequate to maintain anticipated noise within City standards. These analyses determined that an 11-foot barrier would be required along Golden Valley Parkway to reduce projected noise levels to less than 60 dB.

Because an 11-foot wall can be visually obtrusive, the City allows the consideration of an Ldn 65 dBA goal, which would allow shorter barrier heights (EDAW, 2002). With this approach, noise barriers would not need to exceed 8 feet in height to achieve the City's alternative standard of an Ldn of 65 dBA for exterior noise.

Level of Significance: Significant

Mitigation Measures:

1. The project proponent shall construct a noise barrier with a total height of eight feet along the rear property lines of residential lots adjacent to Golden Valley Parkway.

Significance After Mitigation: Less than significant

Noise Impacts Associated With Commercial Uses

Commercial development within the project area has the potential to create noise levels in excess of the applicable noise standards or result in annoyance at existing and future noise-sensitive developments within the project area. Potential noise would be associated with commercial loading docks, and on-site truck circulation.

At this time specific uses, and detailed site and grading plans associated with these types of noise sources have not yet been developed. As a result, it is not feasible to identify specific noise impacts associated with these sources. Rather, the potential for these sources to generate excessive or annoying noise levels is identified, and consideration of this potential should occur during the design phases of the development.

Due to the elevated noise emissions of heavy trucks and the common practice of utilizing loading docks during late night or early morning hours, adverse public reaction to loading dock usage is not uncommon. This is especially true if heavy trucks idle during unloading or if refrigeration trucks are parked in close proximity to residential boundaries.

Average noise levels for single idling trucks generally range from 60 to 65 dB Leq at a distance of 100 feet, and maximum noise levels associated with heavy truck passage range from 70 to 75 dB Lmax at a distance of 100 feet. Maximum noise levels generated by passages of medium duty delivery trucks generally range from 55 to 65 dB at a distance of 100 feet, depending on whether or not the driver is accelerating. The potential for adverse noise impacts associated with loading dock usage could be

reduced by restricting heavy truck arrivals or departures to the daytime hours, requiring that truck drivers turn off their engines while parked at the loading dock, and by requiring solid noise barriers along the side of the loading docks.

Due to the locations of the proposed Commercial Freeway and Service uses adjacent to I-5, and the elevated background noise levels from I-5, it is not expected that loading docks or truck circulation noise levels generated in this area will be a significant noise source. Noise mitigation measures at future residential uses which will be required to reduce I-5 traffic noise will be sufficient to reduce any potential commercial use noise impacts.

The proposed Village Commercial area would be located adjacent to planned residential areas. Planned commercial uses would be separated from residential areas by a 60+-foot wide public street, and proposed commercial structures would be located immediately adjacent to Towne Centre Drive, with parking areas between proposed structures and residential areas. As a result, residential areas would be separated from potentially noise-generating uses, other than parking lots, by more than 200 feet. This is not expected to result in a significant noise impact.

Level of Significance: Less than significant

Mitigation Measures: None required

15.0 PUBLIC SERVICES

This chapter identifies the impacts of the proposed project on law enforcement, fire protection, schools, parks and recreation and solid waste services in the City of Lathrop. Each section includes and supplements general public services information found in the WLSP EIR.

15.1 ENVIRONMENTAL SETTING

Law Enforcement

Police services are provided by the City of Lathrop through a contract with the San Joaquin County Sheriff's Department. The Police Department is located at Lathrop City Hall, 16775 Howland Road. Officers employed by the Sheriff's Department are selected for a minimum three-year assignment to Lathrop Police Services. The City determines the number of officers assigned and reimburses San Joaquin County for the costs of providing police services. Under the contract arrangement with the County, the City has access to all of the Sheriff's Department resources, including the SWAT team, hostage negotiators, additional detective services, specialized equipment and additional patrol manpower. A mutual aid agreement also allows the City to summon additional assistance from other cities in the County.

The Lathrop Police Services Department currently has a staff of 20, including 14 deputy sheriffs, one detective, one community resources officer, one office manager, one full-time clerk, one lieutenant and one police chief. The Department operates six shifts that are each staffed with one officer. With the exception of the hours between 4:00 a.m. and 8:00 a.m., the shifts overlap so that at least two officers are on duty at a given time. The City Council has currently adopted a staffing ratio policy of 1.5 officers per 1,000 residents.

The most common calls received by the Police Services Department are for misconduct or disturbing the peace, followed by property crimes and theft. Response time varies depending on the severity of the call, the number of officers on duty and the severity and nature of other calls that may be assigned to the officers. Within central Lathrop the driving time to a call is two to three minutes. From central Lathrop, driving time to the MLE subdivision and other distant locations would be three to five minutes.

Animal Control is a part of the City's police services function and is supported by the City's General Fund. This division is staffed with city employees that include an Animal Control Administrator and two Animal Control Officers. The division is equipped with two fully equipped animal collection vehicles. The City of Lathrop presently contracts with the City of Manteca for animal shelter services. Presently, Animal Control monitors the number of calls received at the department; as the number of calls increase, additional patrol units will be required.

Fire Protection

The Lathrop-Manteca Fire Protection District provides fire protection and first response emergency medical services in the City as well as in nearby unincorporated areas. The District headquarters are located at 800 J Street in Lathrop. Response time to the project site is within the District's three to four minute threshold that has been established in the Manteca-Lathrop Rural Fire District General Plan (2000). Ambulance service is available at the station on J Street.

The J Street station is equipped with two engines, one heavy rescue unit, one squad and one tender pump unit. The J Street Station is staffed with four firefighters per shift. Additional assistance is available from two outlying stations, surrounding cities, and County and State fire agencies through automatic and mutual-aid agreements. All firefighters are trained as an EMT-D (emergency medical technician-defibrillator). Approximately 70 percent of the calls received at the District are for medical emergencies.

Presently, the District services are adequate to serve the community, but are at their limit to serve when multiple calls occur at the same time. When this situation arises, it is necessary to move up additional engine companies either to the border of the response zone or to the central station in the City.

The District's adopted Master Plan-2000 establishes various standards for fire protection within the District, including response time, station location, staffing and equipment. The Master Plan identifies the need for five new stations to serve the City of Lathrop as it builds out the land use designations in the adopted General Plan. New stations include one each within the Crossroads Industrial Park, the area north of Lathrop Road and the Mossdale Village area, and two stations within the River Islands (Gold Rush City) development. Other than the first new station planned in Mossdale Village area, the schedule for construction of the other new stations is unknown at this time.

The District and Pacific Union Homes, the applicants for the planned and approved Mossdale Landing urban development project surrounding the proposed, entered into an agreement in 2002, now being updated, in which a new fire station would be constructed after either the first 170 homes are constructed or the three-four minute response time is exceeded from the existing Lathrop Station #31 to Mossdale Landing, whichever occurs first. The proposed fire station would serve the early stages of development in the Mossdale area as well as the Crossroads Commerce Center. The proposed fire station would be located between Golden Valley Parkway and McKee Boulevard, and would initially be staffed with two persons per shift, increasing to three persons per shift upon buildout.

The City has an adopted fee of 21 cents per residential square foot and 29 cents per commercial square foot. However, the Lathrop-Manteca Fire District does not consider these fees adequate. It is anticipated that these fees will be updated in the near future. According to the Master Plan, the need for a new fire station is triggered when either 1) 50 new residential units are constructed outside of the existing three minute response area, or 2) more than two commercial buildings are located outside the four minute response area.

Under the agreement between the District and Pacific Union Homes, however, at the sole discretion of the District, if funding is not adequate for construction of the first new station in Mossdale Village and its staffing, Pacific Union Homes would be required to fund its construction.

Parks and Recreation

The City of Lathrop is responsible for provision of parks and recreation services within the corporate limits. The City operates and maintains one community park and a community center identified as Valverde Park and Community Center, and three neighborhood parks identified as Woodfield, Milestone and Libby Parks. Valverde Park and the Community Center are located adjacent to Lathrop Elementary School. Outdoor recreational facilities at this location include four softball/soccer fields, one outdoor basketball court and hard court area, a tot lot and picnic shelters. Indoor facilities include a gymnasium, multi-purpose rooms and an office. Park facilities and acreage in the established, older area of town are limited and do not meet the City's adopted parks and recreation standards.

Woodfield Park, a five-acre facility, is located near the intersection of Fifth Street and Lathrop Road, and has play equipment, restrooms and open space. Milestone Park and Libby Park are neighborhood parks located in residential areas on the east side of I-5. Both facilities are storm drain ponds approximately one acre in size and have park-like amenities including tot lots and picnic benches.

Stonebridge Park is a new 10-acre neighborhood park facility. The park is located near Harlan Road and Stonebridge Drive, adjacent to the Joseph Widmer School. The site includes a softball diamond, a tot lot, picnic tables and barbecues, a one-half mile paved walking trail, field area and restrooms.

In addition to City park facilities, public boat launching facilities operated by San Joaquin County are located along the San Joaquin River at the west end of Dos Reis Road, and at Mossdale Crossing. Other amenities at Mossdale Crossing Regional Park include picnic areas and a children's playground facility.

The Lathrop General Plan sets forth standards for the provision of park and recreation land in conjunction with new urban development. The standards require the provision of 2.0 acres of Neighborhood Parks and 3.0 acres of Community Parks per 1,000 population. Park needs associated with new urban development may be met through land dedication and park development, or through the payment of park in-lieu fees for land acquisition, in accordance with Government Code Section 66477 (Quimby Act), or payment of City capital facility fees.

There are no existing parks in the project vicinity. Primary community and neighborhood park facilities for the MLE project area would be provided in conjunction with the adjoining Mossdale Landing project. Mossdale Landing would construct approximately 20.1 acres of Community Parks and 14.8 acres of Neighborhood Parks. A 20-acre

Community Park would be located adjacent to the site; the proposed Mossdale Commons and The Green neighborhood parks would be located north of Louise Avenue.

There are currently no park facilities located in Unit 1. Within the project site, one proposed neighborhood park would be located adjacent the San Joaquin River levee system on 4.1 acres at the west end of Unit 2. This facility would be passive and include landscaping. This neighborhood park is intended to serve the future residential neighborhoods located within and near Unit 2. A 1.7-acre riparian park would be located just west of the neighborhood park in Unit 2, adjacent to the San Joaquin River. On Unit 1, 0.7 acres of pedestrian connections are proposed.

Schools

The WLSP EIR provided a brief summary of the public school situation in Lathrop, but this information provided in the WLSP EIR is no longer current. School information is revised and expanded below.

Students from MLE would attend schools within the Manteca Unified School District (MUSD). Currently, there are three MUSD elementary school sites located within the City of Lathrop. Lathrop Elementary School is located on Fifth Street and accommodates grades 4–8. The second site, known as the Lathrop Annex, is located on Thomsen Road and accommodates grades K–3. A new elementary school, Joseph Widmer School, located in the Stonebridge development, was recently opened. The school has a capacity of 1,000 to 1,100 students. The Joseph Widmer and Lathrop schools are slated for year-round education.

The MUSD plans the construction of new elementary schools to serve new development within the City of Lathrop. Current plans exist for the next elementary school to be built in Mossdale Village within the Terry property, north of future River Islands Parkway and Louise Avenue. This school, temporarily referred to as Lathrop No. 1 (Terry) Elementary School, is being planned to serve grades K-8. Another new K-8 elementary school, temporarily referred to as Lathrop No. 2 (Mossdale) Elementary School, is planned for Mossdale Village, located south of future Main Street and Louise Avenue. New MUSD elementary schools typically serve 1,000 to 1,100 students on a school site area of between 16 and 20 acres.

High school students (Grades 9–12) from Lathrop attend Sierra High School in Manteca. This facility currently accommodates 1,471 students and is at capacity. The District is adding 10 classrooms that will be ready for the 2002-2003 school year. Within five years the District anticipates an additional 400 students attending this high school. The additional classrooms will encroach into the playing fields, thereby decreasing the amount of area that can be used for sports activities. A new high school is currently under construction in Weston Ranch (south Stockton), which will have a capacity of 2,000 students. The first phase of this facility is complete and opened at the beginning of the 2003 school year for tenth and eleventh grades. The second phase is under construction at this time. Upon completion of Phase II, the school facility will enable total population to

increase to 1,500 students in ninth through twelfth grades. The third and final phase of the facility is scheduled for occupancy in July 2006 and will accommodate an additional 500 students. Construction of this high school and associated boundary adjustments will relieve high school student congestion at existing MUSD high schools. In order to meet anticipated future needs, the MUSD is seeking an additional 50-acre high school site within the City of Lathrop, north of Mossdale Village and west of Interstate 5. This facility will be located within the Central Lathrop Specific Plan area.

The School District imposes school impact fees upon new development to the maximum permitted by law, and derives additional school facility funding through Mello-Roos Districts. There is currently a provision in the State Law that exempts senior citizen housing projects from participation in school financing through school impact fees.

The District provides busing service based upon the following policy:

Grades K-3	One mile from school
Grades 4-6	One and one/half mile from school
Grades 7-8	Two miles from school
Grades 9-10	Two and one/half miles from school

Solid Waste

Residential and commercial solid waste services in the City of Lathrop are provided by Lathrop Sunrise Sanitation and Delta Container. All wastes collected pursuant to the franchise agreement within the City are taken to the Forward Inc. landfill. Self-haul permits are also available for residents pursuant to ordinance.

City recycling programs are also operated by Sunrise Sanitation. These programs include curbside collection of glass, aluminum, newspaper, plastics, steel and yard waste. Additionally, the Manteca-Lathrop Fire Protection District collects used oil.

Industrial solid waste is handled by permitted haulers. The City has two permitted industrial waste haulers. There are no anticipated industrial uses in this project.

Total waste generation in the City of Lathrop is approximately 3,600 pounds per capita annually. Of this amount, the City estimates that total waste reduction is approximately 74%. Marginal increases in this percentage are expected over the next few years. Ultimate disposal of solid waste is to Foothills Landfill, which has adequate capacity to accommodate waste generation from foreseeable growth in San Joaquin County. The total capacity of the landfill is approximately 45 million tons. At an average annual rate of approximately 250,000 tons per year, and accounting for 5% to 10% increases in waste disposal annually, the County estimates that more than 45 years of disposal capacity remain in the landfill.

Project Impact on Law Enforcement

Development of the Mossdale Landing East project would create an additional need for law enforcement officers and facilities. Based on the City's existing police staffing standard of 1.5 sworn officers per 1,000 population, development of the entire project area would generate the need for about two officers at proposed development densities.

These needs would be realized incrementally as buildout of the proposed project proceeds. An additional patrolman would be required after the development of approximately 483 homes and 80 multi-family housing units. New officers would be hired as needed, based on the recommendations of the Chief.

Funding of police facilities and services comes from the City of Lathrop General Fund. The City would incur start-up costs associated with the hiring, training and equipment expenses for each new officer. The manner and timing of payment for police services shall be established in the project Development Agreement. The fiscal effects study for the project (Chapter 9.0) concluded the costs associated with providing additional personnel to provide police protection services, as well as other public services costs, are offset by revenues generated by new growth.

Construction sites have become easy targets for people stealing construction materials or vandalizing equipment. The number of calls coming from construction sites has increased over the past few years according to the Police Chief. Fencing of construction yards and the presence of an on-site security guard help to reduce the number of reported incidents.

Other potential impacts related to law enforcement can include inadequate emergency access to new development and inadequate security features. The project involves generally good circulation, streets constructed to City standards and adequate access for law enforcement personnel. These concerns are addressed generally by the mitigation measures below.

As a means of reducing response times, patrol and fire vehicles are equipped with flashing strobe lights, that when activated, trigger the traffic control signals to cycle to a green light. As new traffic lights are installed, the sensors need to be installed as well.

Level of Significance: Potentially significant

Mitigation Measures:

1. The applicants shall be responsible for paying startup costs associated with police services. The manner and timing of payment shall be established in the project development agreement.

2. The applicant shall fence, provide night lighting and provide private security for contractors' storage yards during the construction phases of new development to prevent theft and vandalism, and to reduce calls for assistance from the Police Department.

3. The proposed tentative map, circulation designs, residential numbering and other elements of the project shall be subject to the review of, and developed in coordination with the Police, Fire, and Public Works Department. The same mitigation measure is repeated in the following section 7.2 Fire Protection.

4. The applicant shall be responsible for providing traffic control preemption devices on all traffic lights to be constructed in conjunction with MLE development.

Significance After Mitigation: Less than Significant

Impact of Proposed Project on Animal Control Services

The MLE project would result in the addition of dwelling units that will increase the animal population in the City, thereby increasing the demand for animal control services. This is a potentially significant impact. As development occurs in the project area, Animal Control Services anticipates an increase in the number of calls for service if pets are not properly contained. In addition, Animal Control anticipates an increase in barking dog complaints, cruelty investigations and humane investigations not only for domestic animals, but wildlife as well. Additional calls will result from new use of the parks associated with this project, including leash law violations, stray animals, dog bites and abandoned animals. With increasing public access to the San Joaquin River, animal control services will be required to address domestic pets stranded in the river or abandoned in uninhabited areas.

Funding for additional animal control services is typically offset by project-generated revenue such as property taxes, however, in the early stages of the project, required funding for additional services will not be realized. The applicants shall pay their proportionate share of startup costs associated with additional services until revenues generated from the project can cover the cost, as well as pay Capital Facility Fee – City Services. Educational programs will also help to alert new residents of their responsibility in containing their pets and how to live with wildlife that may enter residential neighborhoods.

Level of Significance: Potentially significant

Mitigation Measures:

1. The applicants shall be responsible for paying startup costs associated with animal control services. The manner and timing of payment shall be established in the project development agreement.

2. The applicants shall pay Capital Facilities Fees to defray capital facilities costs associated with animal control facility expansion.

3. The applicant shall provide each new homeowner with a pamphlet detailing the responsibilities of pet ownership, the City's leash law and procedures for dealing with wildlife.

Significance After Mitigation: Less than significant

Project Impact on Fire Protection

The proposed project will ultimately result in the construction of approximately 483 new residential units and approximately 50 acres of village, service and highway commercial space. New construction will increase the need for fire protection services and generate a need for additional personnel, equipment and station facilities. Fire protection needs will be realized as soon as construction begins. New residences that have reached the framing stage (as well as later stages) are flammable and involve potential demands for fire protection service.

As development of MLE and surrounding projects proceeds, it is anticipated that response times to the project area will exceed the District's standards. However, the Lathrop-Manteca Fire Protection District's public facilities planning program has accounted for these needs. A new fire station is planned for the project area, and the adjoining Mossdale Landing project has made a site available for the station. Funding required to construct these facilities is partially provided by the District's adopted fee system. These fees are currently undergoing revisions.

Additional funding will be necessary to meet operational needs, but this funding would be generated from project-related revenues and fees. See Chapter 9.0, Fiscal Analysis.

The MLE project area would contribute to exceeding the response time standard of three to four minutes for the Lathrop-Manteca Fire Protection District. As a result, a new fully equipped fire station with engine, associated equipment and staffing will be needed to provide fire protection services for the project. This new fire facility would serve both Mossdale Landing and Mossdale Landing East. Costs of design and construction would be subject to reimbursement from the payment of Fire Facility Fees for the project as well as for other future development that would be served by the proposed station. As described above, at the sole discretion of the District, if funding is not adequate for construction of the first new station in Mossdale Village and its staffing, the Mossdale Landing developers (Pacific Union Homes) would be required to fund the its construction. MLE may be required to assist in this construction through advance payment of Fire Facility Fees, as provided in the mitigation measures below.

The proposed project would be constructed in phases, and phasing would involve the potential for portions of the proposed street system to remain incomplete, pending completion of later phases. Phasing plans should be subject to review by the Lathrop-Manteca Fire Protection District for adequacy of access during the development process.

The ability of the Lathrop-Manteca Fire Protection District to provide fire protection service at master planned levels is dependent upon the availability of an adequate water distribution system and fire hydrants. Project infrastructure and improvement design will need to provide fire flows of 1,250 gpm for proposed low to medium density residential development and 2,000 gpm for commercial development.

Level of Significance: Potentially significant

Mitigation Measures:

1. The applicant shall pay applicable Fire Facility Fees at the time of building permit issuance, in accordance with the City of Lathrop's fee schedule in force at the time of development. If required in order to maintain fire district response time standards, and when requested by the fire district, the City may require that these fees be paid at the time of filing of final maps.

2. Improvement plans for each phase of development shall be subject to the review of the Lathrop-Manteca Fire Protection District, including consideration of the need to maintain secondary access to properties requiring fire protection.

3. The tentative map, improvement plans and other project plans and specifications shall be coordinated with the Lathrop Police, Fire and Public Works Departments. This mitigation measure is also included in the previous section 7.1 Police Protection.

4. Planned water distribution facilities shall be designed in order to meet applicable, adopted Uniform Fire Code requirements for the proposed land uses.

Significance After Mitigation: Less than significant

Project Impact on Parks and Recreation

City standards require two acres of Neighborhood Park per 1,000 people and three acres of Community Park per 1,000 people. MLE will provide approximately 483 housing units (see Chapter 3.0). Unit 1 would generate an estimated population of approximately 1,062 people, requiring 2.1 acres of Neighborhood Park and 3.2 acres of Community Park, a total of 5.3 acres. Currently there is a deficit of 5.3 acres. This is a potentially significant impact.

It is the applicant's proposal and staff's recommendation for the developer to pay park in-lieu fees. Paying park fees would help to offset the cost of Mossdale Landing parks, while utilizing their "extra" park dedications. All residential homes within Unit 1 would be within a one-half mile radius of Mossdale Landing parks. Payment of park in-lieu fees would reduce potential impacts of the MLE project to less than significant.

Development of Unit 2, would generate an added population of approximately 212 people. Associated park demands include approximately 0.4 acres of neighborhood park and approximately 0.6 acres of community park for a total of 1.0 acres. The site includes a proposed 4.1-acre neighborhood park, and this portion of the project may be eligible for park in-lieu fees for dedication of this area.

A linear river park is also proposed adjacent the San Joaquin River. Basic amenities may be required such as picnic tables, walking/biking paths, restrooms and staging areas. This facility may also be used as an off-leash area in conjunction with similar adjoining lands on the Mossdale Landing site. Linear park improvements must conform to design standards provided by the City. These facilities will contribute to the overall availability of park facilities in Lathrop.

Level of Significance: Potentially significant

Mitigation Measures:

1. The project proponent shall dedicate park sites shown in the UDC for public recreational use.

2. After consideration of parkland dedications, the applicant shall pay any remaining required parkland in-lieu fees. The applicant shall pay required Cultural and Leisure Capital Facilities Fees in order to meet parkland requirements generated by the project.

3. Linear river park improvements shall conform to design standards provided by the City.

Significance after Mitigation: Less than significant

Project Impact on Schools

The Mossdale Village residential area is projected to generate about 1,145 new MUSD students, the majority of which (774, 68%) would be elementary school (K-8) students. Student generation for the proposed project is shown in Table 15-1, below. The proposed commercial development portions of the project would not involve new student generation.

Development of new housing units in conjunction with the proposed project would result in generation of new student populations that would need to be accommodated by MUSD facilities. New student generation would add to existing school overcrowding within the district and would add to the need for new schools.

To assist in meeting school construction costs, the MUSD collects developer fees. The District's adopted developer fee schedule establishes a current fee for single-family homes of $4.01 per square foot of construction for residential projects that have not joined a Community Services District for Mello Roos fees. Developer fees are also collected for all categories of commercial development at the rate of $.34 per square foot. The current fee for residential projects that are annexed to the Mello Roos district is $2.14. The project applicants have not come to a decision about annexing into the Mello Roos district, but will do so prior to project approval (John Compaglia, pers. comm.).

Table 15-1
MOSSDALE LANDING EAST
STUDENT GENERATION

School	Generation Rate	Number of Students
Elementary School (Grades K–6)	.48	227
Middle School (Grades 7–8)	.14	66
High School (Grades 9–12)	.30	142
Total	.92	435

Source: Manteca Unified School District, April 2002.Source: Manteca Unified School District, April 2002.

High school student generation associated with the project would be accommodated by the Weston Ranch High School, which opened in August 2003. Elementary school needs associated with the proposed project would be accommodated in the two new elementary schools to be constructed within Mossdale Village. Until these schools are constructed and operational, K–8 students would attend either Joseph Widmer School, Lathrop Elementary School or the Lathrop Elementary School Annex. The MUSD will construct the proposed school facilities using state school construction funding, developer fees and other funds, as coordinated with the developers.

All of the existing schools are operating at capacity, and the increase in students from Lathrop Station would create a short-term significant impact.

Level of Significance: Significant

Mitigation Measures:

1. Consistent with Government Code sections 53080-53080.15 and 65995-65995.3, the project proponents shall pay adopted developer fees toward construction of new schools prior to issuance of construction permits in accordance with the rate at the time of building permits.

Significance After Mitigation: Less than significant

Project Impact on Solid Waste

The WLSP EIR discusses project impact on solid waste generation. Stewart Tract and Mossdale Village are expected to generate large quantities of solid waste during construction and at full development. Recommended mitigation measures included compliance with the City's Integrated Solid Waste Management Plan, traditional management of agricultural wastes, mandatory pickup of residential solid waste, curbside recycling measures, reuse of wood wastes in landscaping, and composting of lawn wastes. These mitigation measures are relevant to the proposed project and would reduce potential impacts.

Sufficient landfill capacity exists at the County's Foothills site to receive and dispose of solid waste generated by new urban development within the City of Lathrop and other San Joaquin County communities for the foreseeable future. As a result, the proposed project would not result in a significant environmental effect on solid waste services, and no mitigation measures are necessary.

Level of Significance: Less than significant

Mitigation Measures: None required

16.0 TRANSPORTATION

16.1 INTRODUCTION

This section, prepared by Crane Transportation Group, evaluates the on and off-site traffic impacts of the proposed project. Similar to the other chapters in this document, the transportation analysis is divided into this Introduction (Section 16.1), Environmental Setting (Section 16.2), Summary of Model Run Procedures and Assumptions (Section 16.3) Future Base Case (Without Project) Operating Conditions (Section 16.4) and Environmental Impacts and Mitigation Measures (Section 16.5).

The transportation analysis considers the potential impacts of the project on various transportation modes available in the project area, primarily roadway traffic. Traffic impacts of the project are analyzed in two horizon years: the year 2007, during which the project will be partially built out, and 2025, when the project is expected to be completely built out. The analysis also considers the effect of adding all project-generated traffic to existing conditions as well as the effects of project construction, internal circulation within the project and pedestrian and bicycle circulation concerns. It begins by documenting existing traffic conditions in the vicinity of the project site. Next, it projects anticipated future development (Base Case), excluding the Mossdale Landing East Project, and the resulting traffic impacts in the Lathrop area for the two horizon years (2007 and 2025, the year of anticipated project build-out). It follows with an analysis of needed improvements for each horizon year to handle anticipated non-project traffic. Under the environmental impact analysis, it evaluates the traffic impacts associated with the addition of project traffic to the Base Case condition (i.e., "Base Case + Project") for each of the two project-development horizon years.

Because of the high degree of unknowns concerning regional development and road improvements more than twenty years in the future, there is a need to identify the potential impacts of the project without any debate over future development projections in the region. For this reason, this section also evaluates the Existing Baseline (2003) + Project conditions of the project build-out to isolate the implications of project-only development. Impacts and mitigations for both the Base Case + Project and the Existing Baseline (2003) + Project are therefore included.

The traffic mitigation applicable to the proposed project will be a combination of both the mitigation measures identified in the Base Case + Project and the Existing Baseline (2003) + Project analyses. The majority of the mitigation measures, especially for the Base Case + Project, require fair-share payments by the project applicant for future regional traffic improvements. These improvements will ultimately serve all local area cumulative projects (including the proposed project).

The City of Lathrop adopted the West Lathrop Specific Plan (WLSP) in 1996. Although the WLSP provided an analysis of the traffic impacts of proposed development within the WLSP area, and the land area proposed for development has not increased, many

of the land uses proposed for the Stewart Tract part of the WLSP have changed. In addition, the character and intensity of the Stewart Tract (River Islands) development have changed. The land uses proposed for the River Islands Project will create a broader range of jobs and housing, and will reduce the higher peak traffic flows that would have been experienced with the original entertainment focused plan. In addition, traffic projections within the county and the anticipated timing of development have been updated and the regional improvements assumed to be in place have changed. For these reasons, a reanalysis of the traffic impacts of development of the WLSP area including the Mossdale Landing East site is included in this EIR.

The following analysis is based on a detailed modeling methodology and numerous assumptions regarding existing traffic, future roadway improvements and future growth in the City of Lathrop. Details regarding methodology and assumptions are provided in Appendix B.

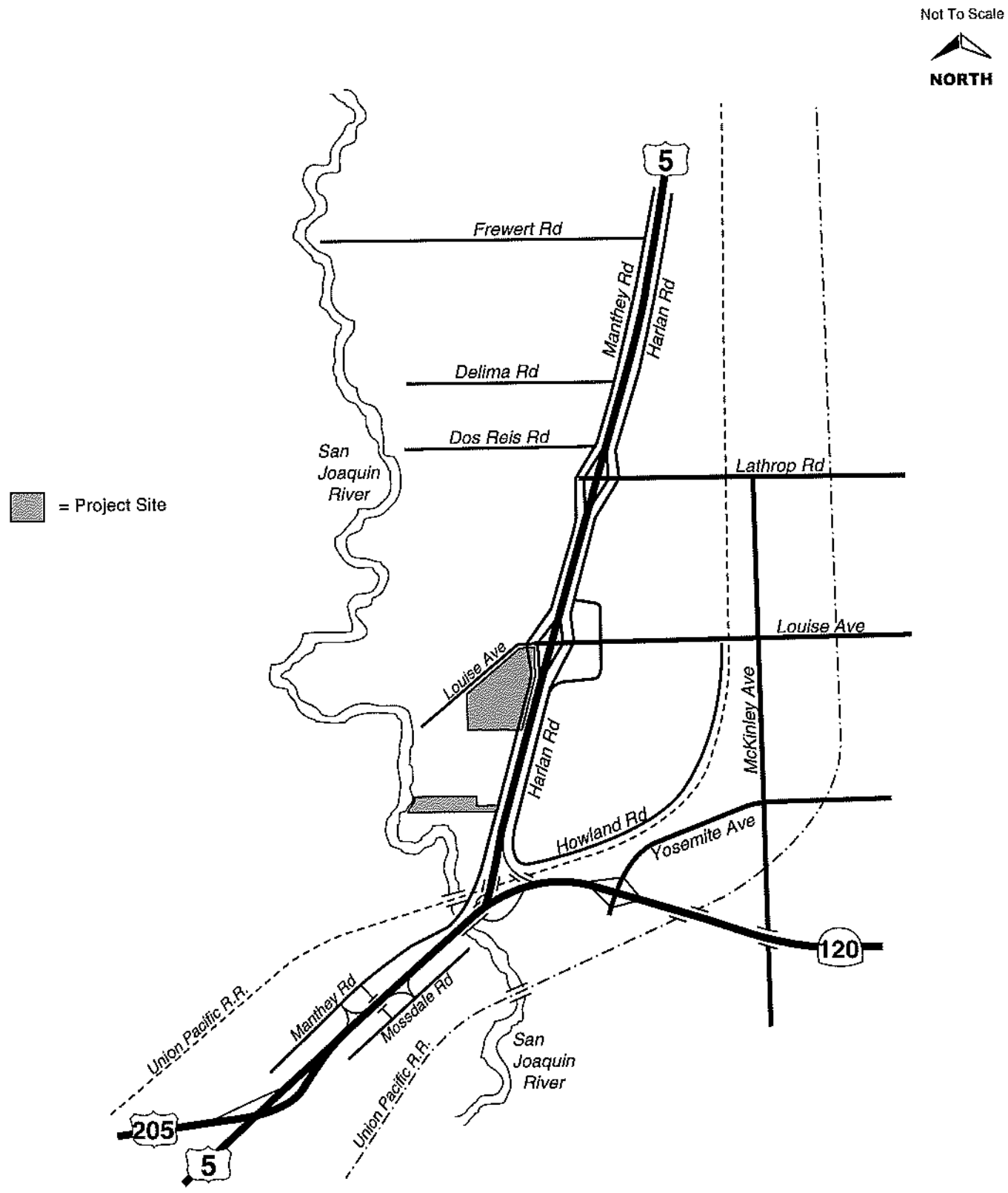
16.2 ENVIRONMENTAL SETTING

Roadways

Regional access to the Lathrop area is provided by the Interstate 5 (I-5), Interstate 205 (I-205), and State Route 120 (SR 120) freeways. Local access is provided by Louise Avenue and Manthey Road. See Figure 16-1. Each freeway or roadway is briefly described below while existing intersection geometrics and control are provided in Figure 16-2.

I-5 is a major north-south thoroughfare in the City of Lathrop. It continues north of Lathrop to Stockton, Sacramento and Oregon; and south of Lathrop through the San Joaquin Valley to Los Angeles and San Diego. In the project vicinity, it has three travel lanes in each direction and interchanges with Louise Avenue (directly east of the site), Lathrop Road (approximately a mile north of Louise Avenue) and Manthey Road and Mossdale Road (buttonhook ramps approximately 2.5 miles south of Louise Avenue). The Louise Avenue interchange is a tight diamond design with the north and southbound ramps signal controlled at their surface street intersections. Both off-ramps have two travel lanes in the vicinity of their surface street intersections. The southbound on-ramp has a single travel lane near Louise Avenue while the northbound on-ramp has two travel lanes near Louise Avenue. The posted speed limit on I-5 at the Louise Avenue interchange is 70 miles per hour (mph).

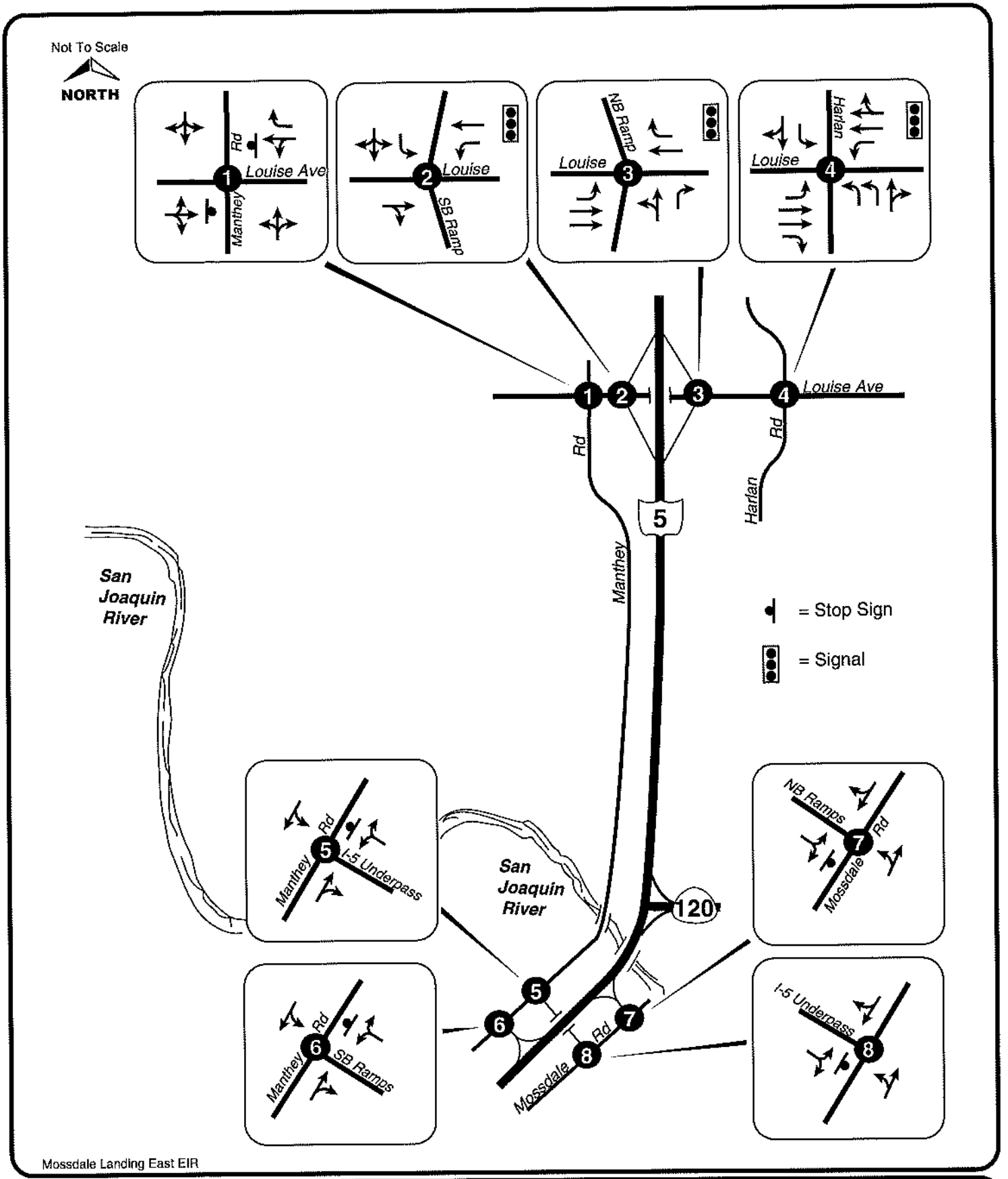
I-5 connects to the I-205 and SR 120 freeways approximately 4 and 1.5 miles south of the Louise Avenue interchange, respectively. I-205 extends westerly and provides access to/from the Bay Area, while SR 120 extends easterly and provides access to Manteca and the State Route 99 (SR 99) freeway. I-5 has a minimum of five southbound and four northbound travel lanes between its connections to the I-205 and SR 120 freeways.



East Mossdale Landing EIR

CRANE TRANSPORTATION GROUP

Figure 16-1
Area Map



CRANE TRANSPORTATION GROUP

Figure 16-2
Existing (August 2003)
Intersection Geometrics and Control

I-205 extends west from I-5 (just south of the City of Lathrop) to the City of Tracy and a connection with the I-580 freeway. I-580 then continues westward across the Altamont Pass and into the Bay Area. I-205 has two travel lanes in each direction between I-5 and the 11th Street interchange in west Tracy and three travel lanes between 11th Street and I-580. The I-205 connection to I-5 allows eastbound I-205 to northbound I-5, and southbound I-5 to westbound I-205 movements only; there are no freeway-to-freeway ramps providing eastbound I-205 to southbound I-5, or northbound I-5 to westbound I-205 movements. The first interchange along I-205 west of I-5 is at MacArthur Drive, approximately 4.5 miles from the I-5/I-205 connection. The posted speed limit near I-5 is 70 mph.

SR-120 is a four-lane freeway extending easterly from I-5 in the southern section of the City of Lathrop to the City of Manteca and a connection with the SR 99 freeway. The posted speed limit is 65 mph.

Louise Avenue is an arterial roadway that extends west of I-5 almost to the San Joaquin River (SJR) and east of the freeway through Lathrop to the City of Manteca. It has two lanes west of the freeway, four lanes in its underpass of I-5 between the north and southbound ramps intersections, and four lanes to the east of the freeway (to Howland Road, where it narrows to two lanes). In its 64-foot-wide (curb-to-curb) underpass of the freeway it has two eastbound lanes, one westbound lane and back-to-back left-turn pockets for turn movements to both the north and southbound freeway on-ramps.

Manthey Road is a two-lane local frontage road running in a north-south direction immediately west of I-5. It extends north to Stockton and south through Lathrop across the San Joaquin River. It ends near a set of single lane on- and off-hook ramps connecting to the southbound I-5 freeway. Left-turn lanes are not provided on the approaches to any intersection. Pavement condition is good. Observed vehicle speeds ranged from 45 to more than 60 miles per hour in the project vicinity. Manthey Road has a bridge crossing of the San Joaquin River that contains two 13-foot travel lanes but no shoulder areas.

Stewart Island Road is a poorly paved, two-lane rural road extending westerly from Manthey Road across the Stewart Tract. It is stop sign controlled at Manthey Road. The roadway ultimately connects to Paradise Road near the west end of the Stewart Tract. Stewart Island Road has numerous sharp horizontal curves as well as an at-grade crossing of a single track Union Pacific Railroad line near Manthey Road. The crossing is protected by gates and flashing lights.

Mossdale Road is a two-lane frontage road extending along the east side of the I-5 freeway between the San Joaquin River and Paradise Cut. It provides access to single lane on- and off-hook ramps that connect to the northbound I-5 freeway. Mossdale Road and Manthey Road are connected via a two-lane roadway in an underpass of the I-5 freeway.

Traffic Volumes

Weekday AM and PM peak period turn movement traffic counts (5:30-8:30 AM and 3:30-6:00 PM) were conducted by TJKM Associates in August 2003 at eight intersections in the study area. Count locations were:

- Louise Avenue/Manthey Road
- Louise Avenue/I-5 southbound ramps
- Louise Avenue/I-5 northbound ramps
- Louise Avenue/Harlan Road
- Manthey Road/I-5 Southbound Hook Ramps
- Mossdale Road/I-5 Northbound Hook Ramps
- Manthey Road/I-5 Underpass Connection to Mossdale Road
- Mossdale Road/I-5 Underpass Connection to Manthey Road

Weekday AM and PM peak period counts (5:30-8:30 AM and 4:00-6:00 PM) were also conducted by either TJKM Associates or "All Traffic Data" on an August Thursday in 2003.

- I-205 eastbound and westbound just west of I-5
- I-5 northbound and southbound just south of I-205
- SR 120 eastbound and westbound just east of I-5
- I-5 northbound just south of Louise Avenue and I-5 southbound just north of Louise Avenue

All intersection and freeway counts differentiated between autos and trucks. A summary presentation of intersection volumes is presented in Figures 16-3 and 16-4 for AM and PM peak hour conditions, respectively, while AM and PM peak hour freeway volumes are presented in Figure 16-5. Appendix B presents a discussion of existing traffic volume findings.

Intersection Operations

The City of Lathrop uses LOS D as the poorest acceptable operation at signalized intersections. However, it has no minimum published standard for all-way-stop or side street stop sign controlled intersections. City staff has indicated that all-way-stop minimum standards should be the same as signalized (LOS D), while the minimum LOS for movements at side street stop-sign controlled intersections should be LOS E. Analysis methodologies from the Year 2000 Highway Capacity Manual are detailed in Appendix B.

Table 16-1 shows that all analyzed intersections are currently operating at good to acceptable levels of service during both the AM and PM commute peak traffic hours. At Louise Avenue/Harlan Road, there is LOS C signalized operation during both the AM and PM peak traffic hours; at the Louise Avenue/I-5 northbound ramps there is LOS B signalized operation during both the AM and PM peak traffic hours; and at the Louise Avenue/I-5 southbound ramps there is LOS C signalized operation during both the AM

and PM peak traffic hours. The stop sign controlled Louise Avenue approaches to Manthey Road are operating at LOS A conditions during both peak traffic hours. The stop sign controlled I-5 off-ramp approaches to both Manthey Road and Mossdale Road currently experience LOS A operation during both the AM and PM peak traffic hours.

Intersection Signalization Needs (Warrants)

Currently, none of the un-signalized intersections analyzed for this study have AM or PM peak hour volumes close to meeting peak hour signal warrant criteria levels. Caltrans peak hour signal warrant #11 analysis methodology is detailed in Appendix B.

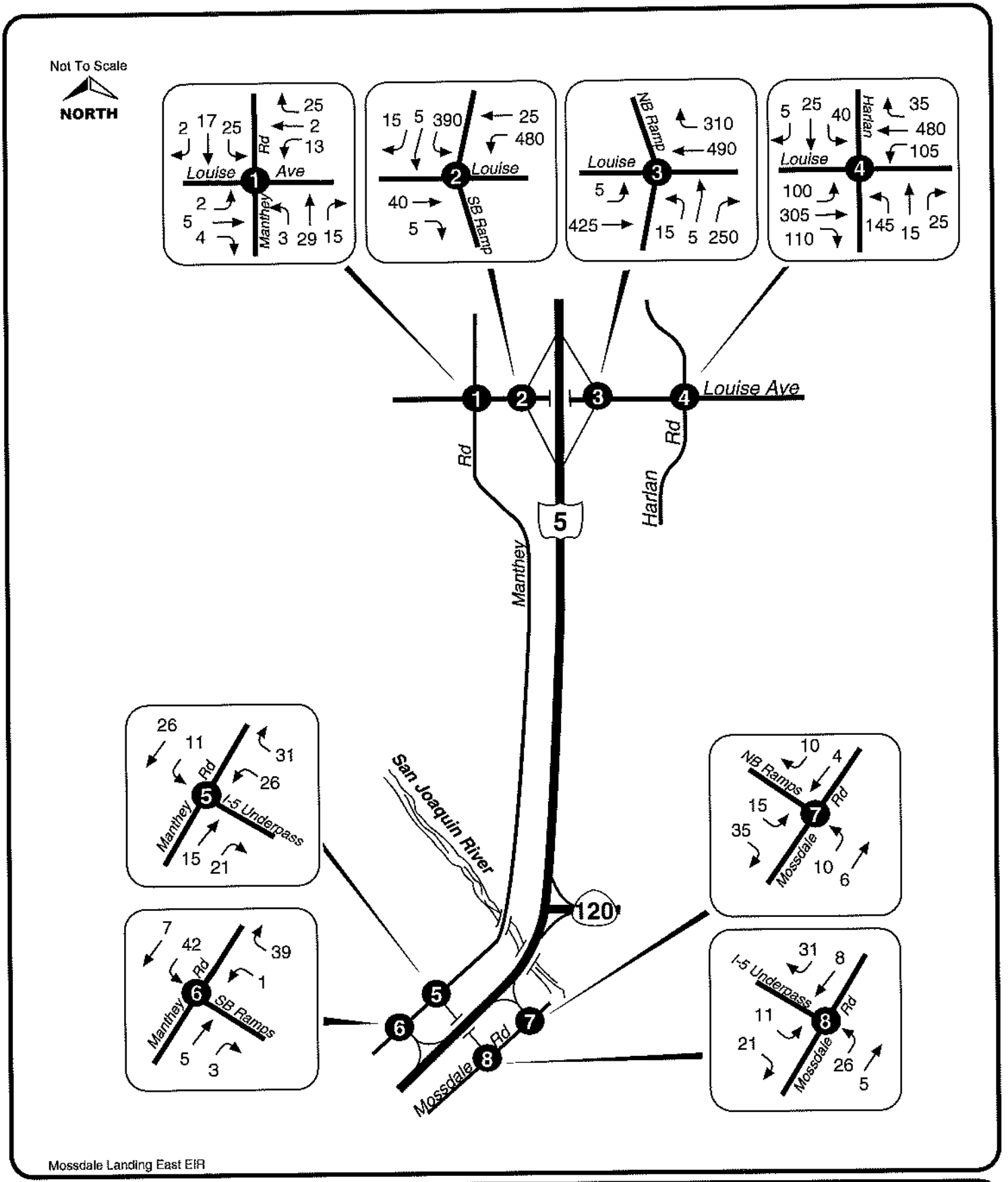
Freeway Mainline Operations

Freeway operation has been evaluated based upon methodology contained in the year 2000 TRB Highway Capacity Manual. Operating conditions are reported as a LOS, vehicle speed and density of traffic per lane, and are based upon number of lanes, volumes, percent trucks, percent recreational vehicles and terrain. Caltrans uses LOS D as the poorest acceptable operation for freeways in the Lathrop/Tracy area.

Table 16-2 shows that during both the AM and PM peak hours all local freeway segments along I-5, I-205 and SR 120 are operating at acceptable levels of service. It should be noted, however, that on the sections of I-205 theoretically projected to be operating at LOS D (by volume levels), observed speeds and intermittent stop-and-go conditions are more reflective of LOS F operation.

Public Transit

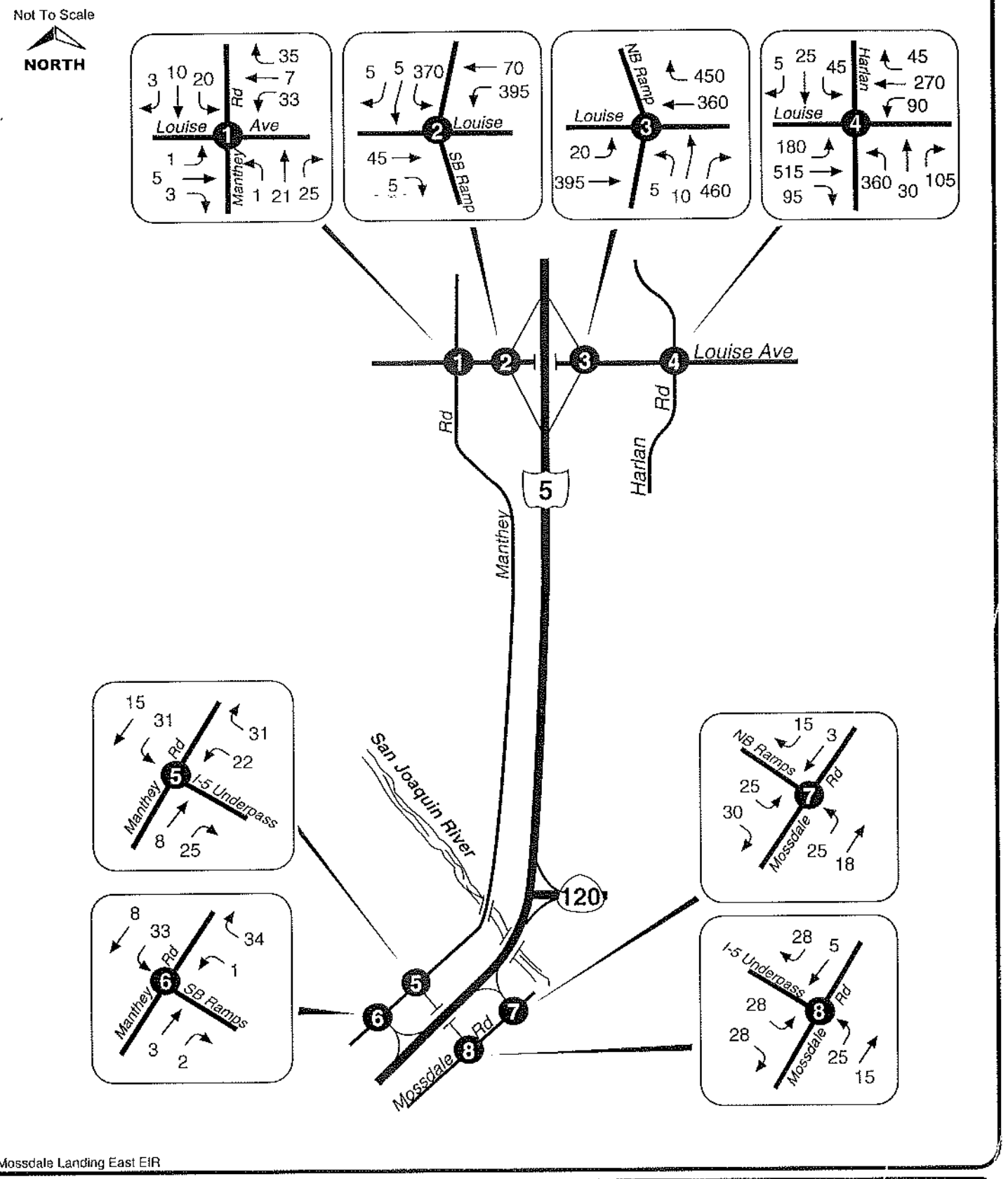
The San Joaquin Regional Transit District SMART Route 20 travels along I-5 in the Lathrop area and uses the Lathrop Road and Louise Avenue interchanges to access the Lathrop City street system east of the freeway. This route extends north to downtown Stockton and Lodi and south (and west) to Tracy. There are 12 buses each day both northbound and southbound. The first buses depart at about 5:45 a.m. and the last buses depart at about 6:15 p.m. Service runs seven days a week with the exception of six major holidays. There is also San Joaquin Regional Transit District SMART County Area Transit (CAT) fixed route service (no number) between Manteca, Lathrop and French Camp. The bus runs along Harlan Road and along Louise Avenue east of Harlan Road. There are five buses in each direction seven days a week. The first bus departs at 7:00 a.m. and the last bus departs at about 5:45 p.m.



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-3
Existing (August 2003)
AM Peak Hour Volumes

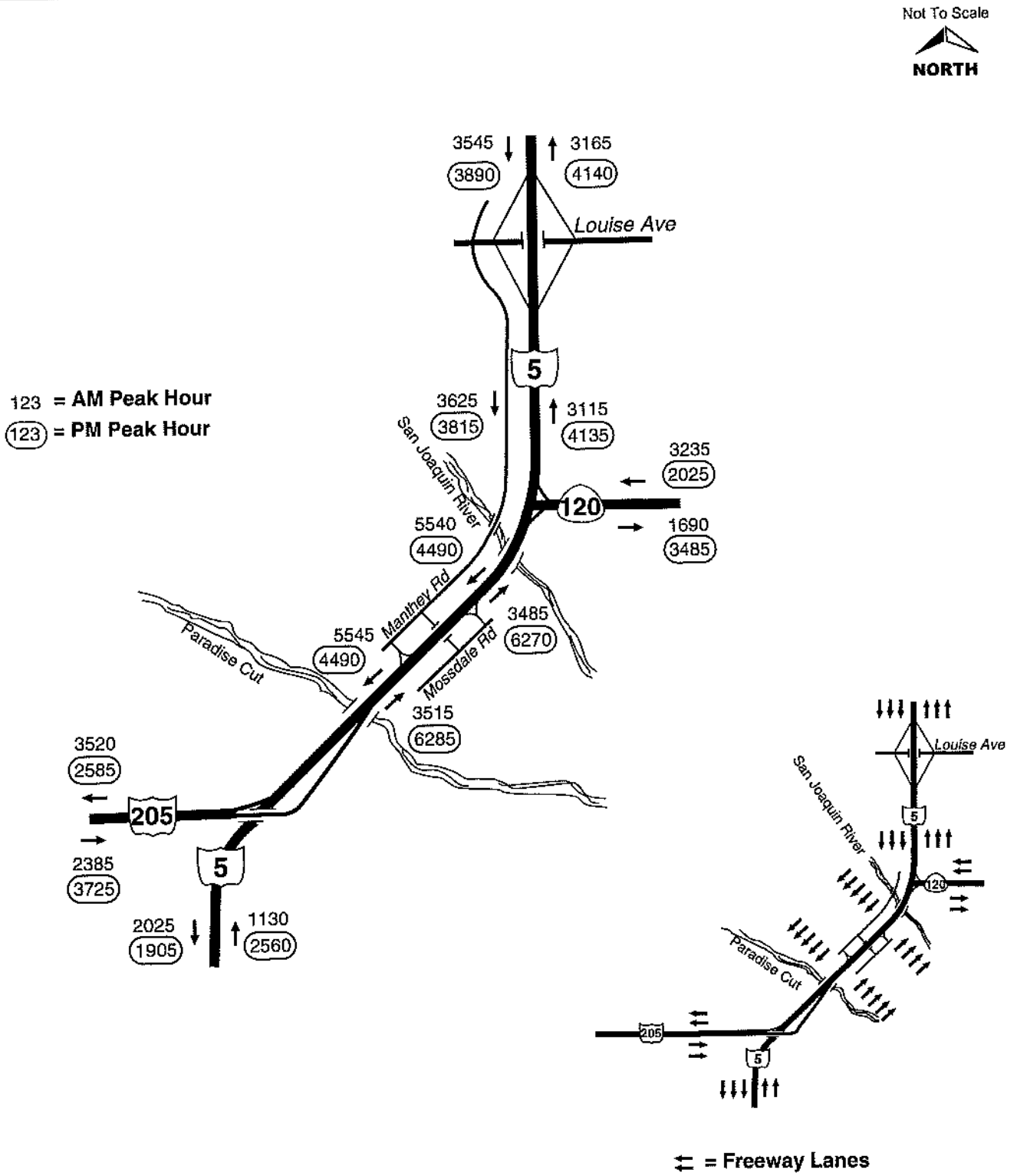


Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-4

Existing (August 2003)
PM Peak Hour Volumes



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Exhibit 16-5
Existing (August 2003)
AM and PM Peak Hour
Freeway Volumes and Lanes

TABLE 16-1
INTERSECTION LEVEL OF SERVICE
EXISTING

Intersection	AM Peak Hour	PM Peak Hour
Louise Ave./Harlan Rd.	C-25.8[1]	C-28.2
Louise Ave./I-5 Northbound Ramps (Signal)	B-15.1[1]	B-19.7
Louise Ave./I-5 Southbound Ramps (Signal)	C-29.2[1]	C-26.8
Manthey Rd./Louise Ave. (Louise Ave. Stop Sign Controlled)	A-9.5/A-9.7[2]	A-9.6/A-9.4
Manthey Rd./I-5 Southbound Hook Ramps (Off-Ramp Stop Sign Controlled)	A-9.0[3]	A-8.7
Mossdale Rd./I-5 Northbound Hook Ramps (Off-Ramp Stop Sign Controlled)	A-8.8[3]	A-8.8
Manthey Rd./I-5 Underpass from Mossdale Rd. (Underpass Stop Sign Controlled)	A-9.2[4]	A-9.1
Mossdale Rd./I-5 Underpass from Manthey Rd. (Underpass Stop Sign Controlled)	A-9.0[5]	A-9.3

Notes:

(1) Signalized level of service–control delay in seconds.
(2) Unsignalized level of service–average control delay in seconds–Louise Ave. westbound stop sign controlled through-left turn/right turn/Louise Ave. eastbound stop sign controlled approach.
(3) Unsignalized level of service–average control delay in seconds–Off-ramp stop sign controlled approach.
(4) Unsignalized level of service–average control delay in seconds–Underpass stop sign controlled approach to Manthey Road.
(5) Unsignalized level of service–average control delay in seconds–Underpass stop sign controlled approach to Mossdale Road.

Year 2000 Highway Capacity Manual Operations Methodology
Source: Crane Transportation Group

TABLE 16-2
FREEWAY SEGMENT LEVEL OF SERVICE
EXISTING

Location	Direction	# Lanes	AM Peak Hour	PM Peak Hour
I-5 North of Louise Ave. Interchange	NB	3	C	C
	SB	3	C	C
I-5 Between Louise Ave. & S.R.120	NB	3	C	C
	SB	3	C	C
I-5 Between S.R.120 and Manthey/Mossdale Hook Ramps	NB	4	B	C
	SB	5	B	B
I-5 Between Manthey/Mossdale Hook Ramps and I-205	NB	5	B	C
	SB	5	B	B
I-5 Just South of I-205	NB	2	A	C
	SB	3	B	B
I-205 Between I-5 and MacArthur Dr. Interchange	EB	2	C	D
	WB	2	D	C
S.R.120 Just East of I-5	EB	2	B	D
	WB	2	D	B

Notes:

Year 2000 Highway Capacity Manual Analysis Methodology
Source: Crane Transportation Group

16.3 SUMMARY OF MODEL RUN PROCEDURES AND ASSUMPTIONS

The traffic analysis for this Project evaluated six different development scenarios with AM and PM peak hour model runs for each scenario, for a total of 12 separate model runs. Every model run projected traffic volumes on existing and/or future streets, intersections and freeways. These volumes were used to analyze and predict roadway, intersection and freeway operating conditions in the future with and without project traffic.

Model Run Descriptions

The 12 traffic model scenarios evaluated traffic conditions under existing baseline, existing baseline plus project, future baseline (Base Case), and future baseline plus project traffic for specific horizon years.

Existing Baseline (Year 2003)

Existing Baseline (represented as Year 2003) volumes were obtained from actual August and September 2003 traffic counts on the freeways and surface streets in the Lathrop area. While these counts were used to determine Existing Baseline (Year 2003) conditions, a set of AM and PM peak hour Existing Baseline (Year 2003) calibrated modeling runs were also developed in order to be able to more accurately project Existing Baseline (Year 2003) + Project volumes.

To develop an "existing traffic conditions" set of AM and PM peak hour traffic model calibration runs, this traffic analysis relied on the San Joaquin Council of Governments (SJCOG) Regional Traffic Model analysis for the year 2001 as updated in September 2003 to reflect (1) the current local street configuration in Lathrop, (2) redefined traffic analysis zones, (3) updated traffic counts, and (4) updated existing land use projections. To accurately evaluate traffic conditions resulting from the proposed project, in 2001 SJCOG's modeler (TJKM) first updated the SJCOG Regional Traffic Model to add many local Lathrop streets to the model network (the map of the streets used by the model). This step provided more accurate traffic projection detail in the Project area. Second, the SJCOG Regional Traffic Model traffic analysis zones were further refined to provide smaller traffic analysis zones in the Lathrop area in order to provide greater detail in the modeling projections. Lathrop originally comprised only 15 traffic zones; the model was updated to dis-aggregate the area into 109 separate traffic zones to more accurately predict impacts at a localized level. Third, the land use projections used in the SJCOG Regional Traffic Model were updated to reflect year 2001 development in Lathrop based on aerial photography and development records, and this development was further dis-aggregated into the 109 separate traffic zones described above. Finally, the model was re-calibrated to reflect additional traffic counts in the Lathrop area in order to predict more accurately the year 2003 measured traffic volumes. As noted in the modeling explanation by TJKM included as part of this appendix, the recalibrated model very accurately predicts year 2003 traffic volumes on the streets

and freeways in the Lathrop area, based upon comparison of actual counts and the traffic model calibration results.

Base Case (Without Project) Future Development Horizons

To evaluate future traffic conditions, the SJCOG model was used to develop Base Case (Without Project) AM and PM peak hour traffic projections for two different design years: 2007 and 2025. The Base Case represents existing, approved and planned development that is consistent with the City's General Plan and/or WLSP (although additional entitlement approvals are needed) and that is reasonably expected to occur in each of these two years, excluding the Mossdale Landing East development but including the recently approved River Islands project. The City of Lathrop allocated the level of development anticipated to occur within each of the 109 Lathrop traffic zones for each design year. The Base Case also included development in the balance of Lathrop projected in each design year based on adopted specific and general plans and approvals. The results were AM and PM Base Case model runs for 2007 and 2025.

Staff from both SJCOG and the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) confirmed that the level of development within San Joaquin County was accurately projected in the SJCOG model for the county as a whole for each of their design years. Development for the YEAR 2007 was interpolated between year 2005 and 2010 SJCOG data. To maintain an accurate projection of growth within San Joaquin County, SJCOG and SJVUAPCD staff confirmed that an increase in projected development in one location of the County (above that assumed in the original SJCOG model) should result in a corresponding proportionate decrease in projected growth in other regions within the County. Based upon available demographic and economic information and recent growth projections, SJCOG and the SJVUAPCD recommended the City adjust the land use inputs to the model so that increased development in Lathrop would be offset by a corresponding proportionate reduction in development growth elsewhere in the County. The resulting reapportioned land use data sets represent a total growth in San Joaquin County consistent with the original SJCOG model assumptions for each design year.

The EIR has not assumed any freeway improvements that are not included in the Regional Transportation Improvement Plan (RTIP). Lacking regional freeway improvements, future model runs project extensive freeway congestion in the Base Case scenarios.

Base Case + Project

To evaluate future traffic conditions with development of the Mossdale Landing East project, the SJCOG model was used to develop AM and PM peak hour Base Case + Project traffic projections for the same two years: 2007 and 2025. A summary of the Mossdale Landing East land uses anticipated in each phase is presented in Section 16.5, Environmental Impacts.

It should be noted that the roadway network is different for each design year since new roads will be built as part of the Project and other Lathrop developments. As with the Base Case scenario, development projections were added to Lathrop zones with corresponding reductions in growth from other zones in the County. The results were AM and PM Base Case + Project model runs for 2007 and 2025.

Existing Baseline (Year 2003) + Project

In order to demonstrate the maximum potential impact of the Mossdale Landing East project, a set of model runs was developed adding traffic from the proposed project to the existing (year 2003) highway network and volumes. To evaluate the incremental effects of the Mossdale Landing East project, this Existing Baseline (2003) + Project scenario assumed that no development would occur in San Joaquin County or the Bay Area after the year 2003 except the Mossdale Landing East project. This scenario was not intended to represent a realistic scenario of growth. Instead, the intent was to evaluate the corresponding level of roadway improvements required to serve only the Mossdale Landing East project if it were developed under existing conditions. The added development for these runs was not reallocated from other growth in the County, since this scenario assumed that no other growth occurs. The result was AM and PM Existing Baseline (Year 2003) + Project traffic projections for full project development.

Model Run Summary

In summary, AM and PM model runs were conducted for each of the following scenarios:

1. Existing Baseline (Year 2003)
2. Year 2007 Base Case (No Project)
3. Year 2025 Base Case (No Project)
4. Year 2007 Base Case + Project Phase 1
5. Year 2025 Base Case + Project Build-Out
6. Existing Baseline (Year 2003) + Project Build-Out

Future Base Case (Without Project) Development and Roadway Improvements

Background (without project) operating conditions have been developed for the two horizon years of project analysis in this EIR, year 2007 (Phase 1) and 2025 (Project Build-out). Projections have first been developed of likely new (non-project) development and roadway improvements to be considered in place for each horizon year. AM and PM peak hour traffic projections have then been produced using the San Joaquin County Council of Governments (COG's) countywide traffic model with refinements added to provide increased detail in the Lathrop and northeast Tracy areas. The following sections describe the non-project-related land use and roadway improvement assumptions for each of the two horizon years, while TJKM's "Demand

Forecasting Methodology for the Mossdale Landing East Project: Preliminary Results" (following this traffic analysis) presents details of the traffic model and the traffic modeling methodology.

Base Case Land Use Development Projections

Year 2007

Appendix B lists all approved development within Lathrop that should be completed before 2007. For planned but not approved development within Lathrop as well as for areas outside the City of Lathrop, growth was projected using COG land use input.

Year 2025

Lathrop staff has projected that overall new development within the City would include 21,923 new single and multi-family residential units and 31,851 new employees by 2025. For areas outside the City of Lathrop, year 2025 growth was based upon COG's land use projections. It should be noted that these 2025 projections had already been used by COG in their countywide traffic model to develop regional traffic volume projections for air quality monitoring purposes. The initial COG land use estimates assigned an increase in residential and employment growth expected to occur within the City of Lathrop between the years 2000 and 2025. Specifically, COG projected that Lathrop would experience an increase of 8,246 residential units and 5,708 employees by 2025. This is a lower level of growth than that currently projected by City staff (referenced above). Because Lathrop staff requested that their higher 2025 land use projections for the City be used for traffic modeling purposes in this SEIR, land use projections for all other jurisdictions in the County were adjusted downward in order to produce a revised land use scenario where there would be no net change in 2025 land use on a countywide basis from that projected by San Joaquin (COG). The minor reductions in land use growth assigned to all other jurisdictions was done on a proportional basis in relation to the COG projected land use growth in these areas between 2000 and 2025. Thus, the net difference in Lathrop land use growth requested for use by City staff versus that projected for Lathrop by COG, 13,677 residential units and 26,143 new employees, was proportionally reduced from other County jurisdictions.

Base Case Roadway Improvements

Year 2007

Caltrans has scheduled completion of I-205 widening to six lanes (from I-5 to the existing six-lane section at 11th Street in Tracy) by the end of 2006 or the beginning of

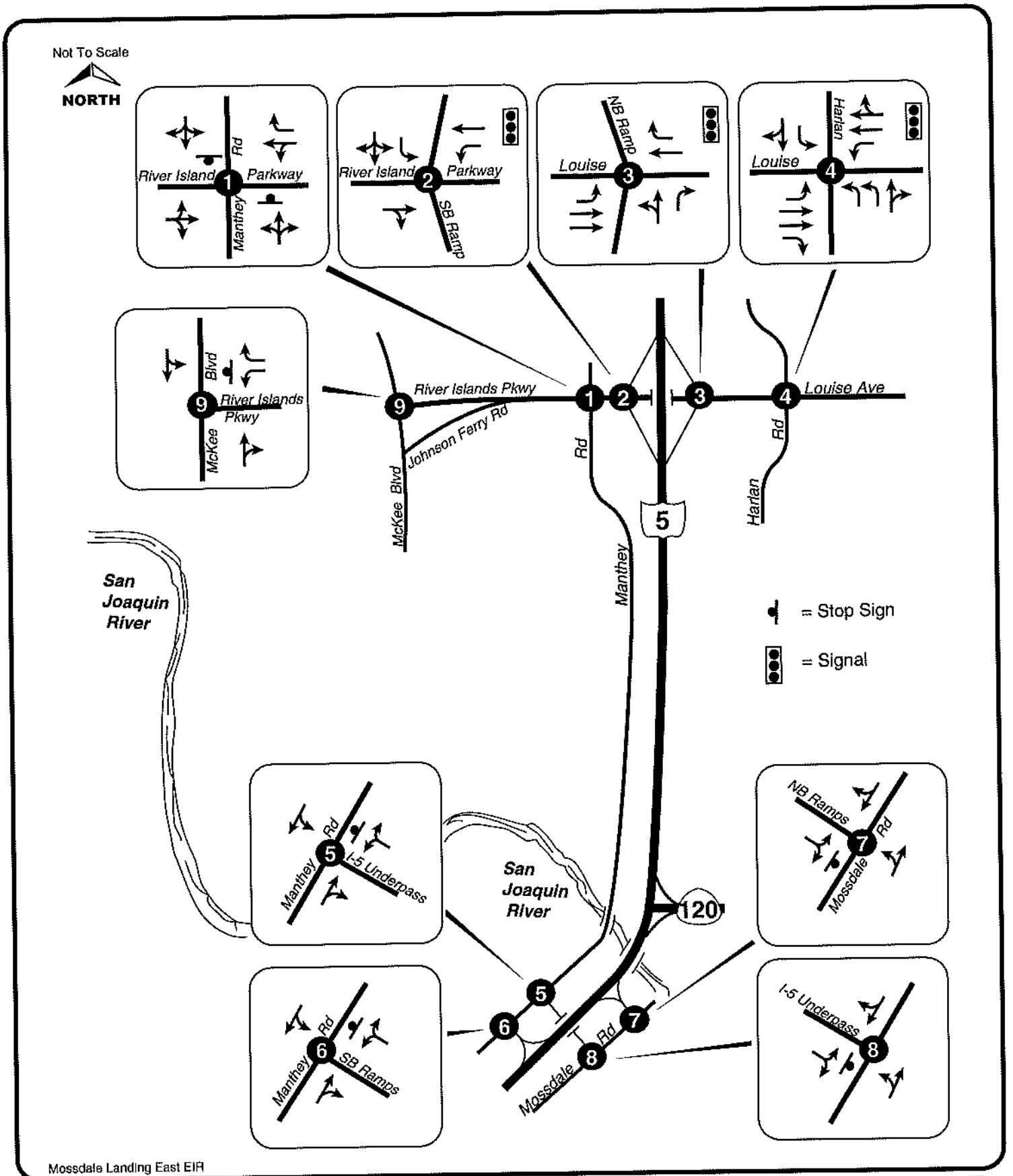
2007. However, there is a chance that the schedule may be revised to allow project completion one year earlier.

The City of Lathrop currently has one circulation system improvement funded along the Louise Avenue corridor. The north side of Louise Avenue (between I-5 and Harlan Road) will be improved to its final four-lane configuration in 2004. In addition to this one measure, a new roadway infrastructure will be started to the west of the Louise Avenue/I-5 interchange as part of the planned development of the Mossdale Landing project. As shown in Figure 16-6, the most likely current projection would have two lanes of River Islands Parkway built to the west of I-5 between Manthey Road and the proposed McKee Boulevard (a new north-south street serving the Mossdale Landing development). No major improvements would be likely at the Louise Avenue-River Islands Parkway interchange. All new development within the River Islands development would be served via Stewart Road, which connects to Manthey Road just south of the San Joaquin River. Figure 16-6 presents projected intersection geometrics and control for 2007 Base Case level of service evaluation.

Year 2025

Figure 16-7 shows the Lathrop roadway systems projected to be in place by 2025 to serve anticipated development without the Mossdale Landing East Project along with projected intersection geometrics and control used for level of service analysis. River Islands Parkway is projected to be four lanes wide across the San Joaquin River, six lanes wide between McKee Boulevard and Golden Valley Parkway and more than eight lanes wide (including turn lanes) between Golden Valley Parkway and the I-5 interchange. The 1992 Project Study Report (PSR) Phase 2 improvements at the Louise Avenue/I-5 interchange are projected to be fully in place. This includes widening the freeway underpass to allow eight travel lanes and widening each off-ramp to include three lanes. Golden Valley Parkway would be six lanes wide from Towne Centre Drive to north of River Islands Parkway and four lanes wide to the south of Towne Centre Drive across the San Joaquin River. Right-of-way would be reserved to the south of Towne Centre Drive for an ultimate six-lane-wide roadway. In addition, Manthey Road would be restricted to one-way northbound flow across the San Joaquin River. In Tracy, a new interchange is projected by Tracy City staff to be in place along the I-205 freeway at Paradise Road-Chrisman Road to serve both Tracy and the River Islands development.

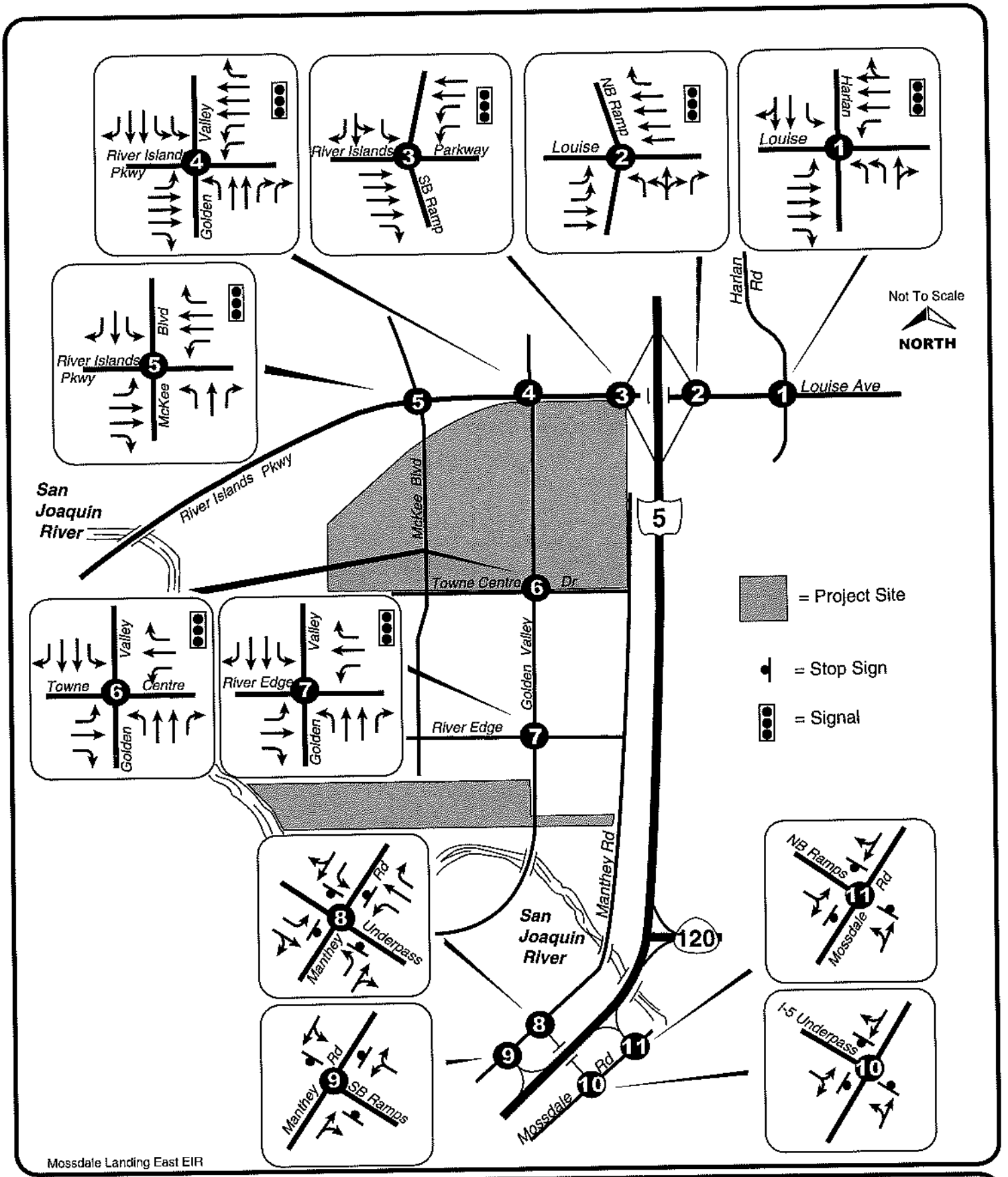
No additional improvements are projected along the I-5, SR 120 or I-205 freeways due to lack of committed funding, with one exception. Northbound I-5 will be widened across the San Joaquin River to provide a fifth travel lane. It will then be possible to travel northerly on I-5 to the north of the I-5/SR 120 diverge on four travel lanes. This fourth northbound lane will then merge into the existing three-lane segment of I-5 about halfway between the SR 120 and Louise Avenue interchanges. This improvement is scheduled for completion in 2008.



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-6
Year 2007 Base Case (Without Project)
Intersection Geometrics and Control



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-7
Year 2025 Base Case (Without Project)
Intersection Geometrics and Control

16.4 FUTURE BASE CASE (WITHOUT PROJECT) OPERATING CONDITIONS

Year 2007 Base Case Operating Conditions

Future Base Case conditions for the analysis scenario years of 2007 and 2025 provide the baseline for the following impact analysis. The base case conditions described below are based on assumptions of future growth in Lathrop and project area as well as roadway improvements that will be in place. These assumptions are described in detail in Appendix B. Assumed roadway improvements are shown on Figures 16-6 and 16-7.

Traffic Volumes

Year 2007 Base Case (without project) volumes were developed using the SJCOG traffic model with added traffic zones and roadway system detail provided in the Lathrop area. Additional adjustments were then made to reflect 100 construction workers commuting to/from the Mossdale Landing and River Islands projects and the use of Paradise Road by River Islands commuters destined to the west. Resultant AM and PM peak hour intersection volumes are presented in Figures 16-8 and 16-9, respectively, while AM and PM peak hour freeway volumes are presented in Figure 16-10.

Intersection Operations

Table 16-3 shows that by 2007 all analyzed intersections would be operating at acceptable levels of service with Base Case traffic during the AM and PM peak traffic hours with the following exceptions.

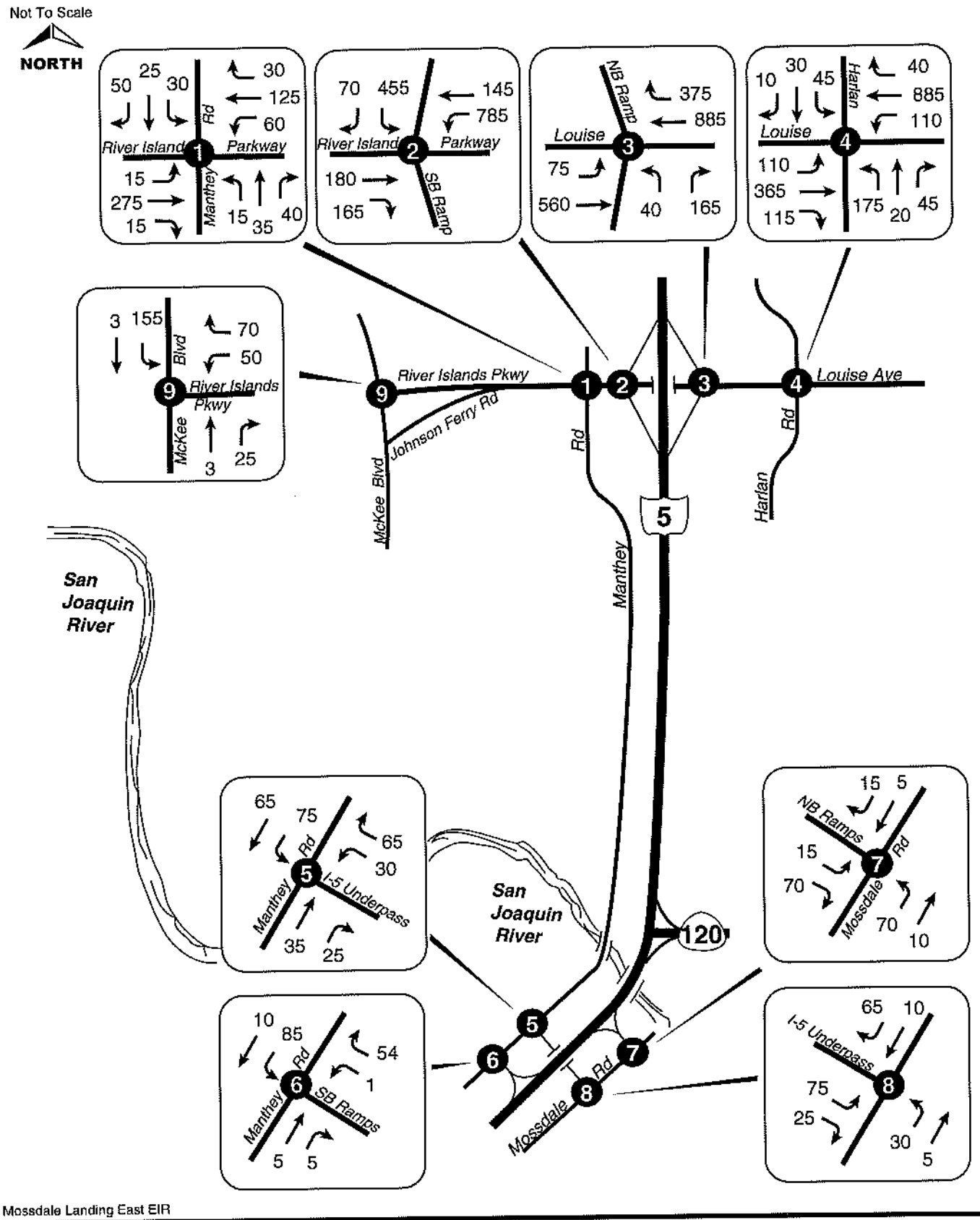
- AM Peak Hour

  Louise Avenue/I-5 Southbound Ramps – LOS F

- PM Peak Hour

  Louise Avenue/I-5 Northbound Ramps – LOS E

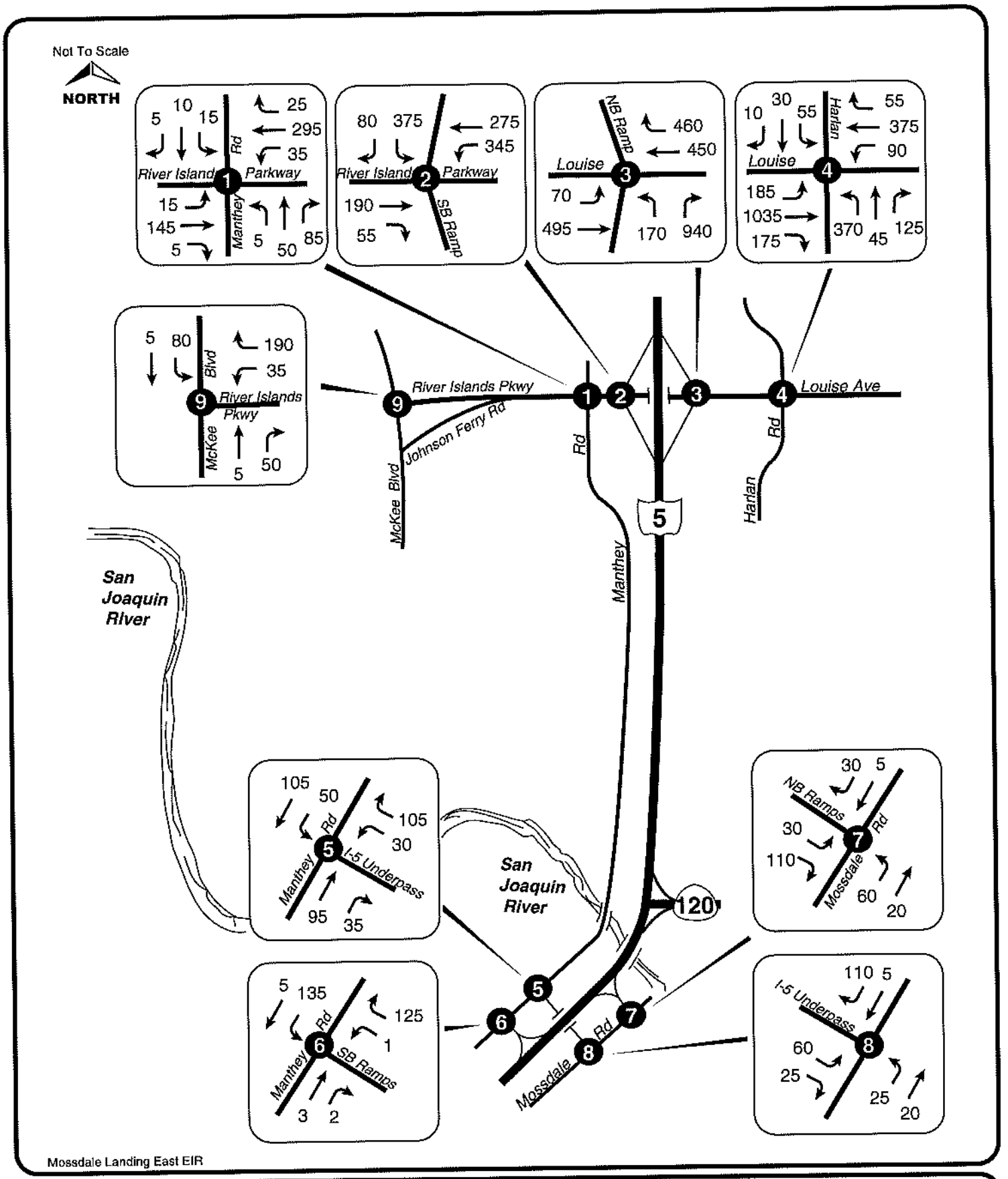
During the AM and PM peak hours all un-signalized intersections analyzed for the 2007 horizon year would have Base Case volumes below peak hour signal warrant criteria levels.



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

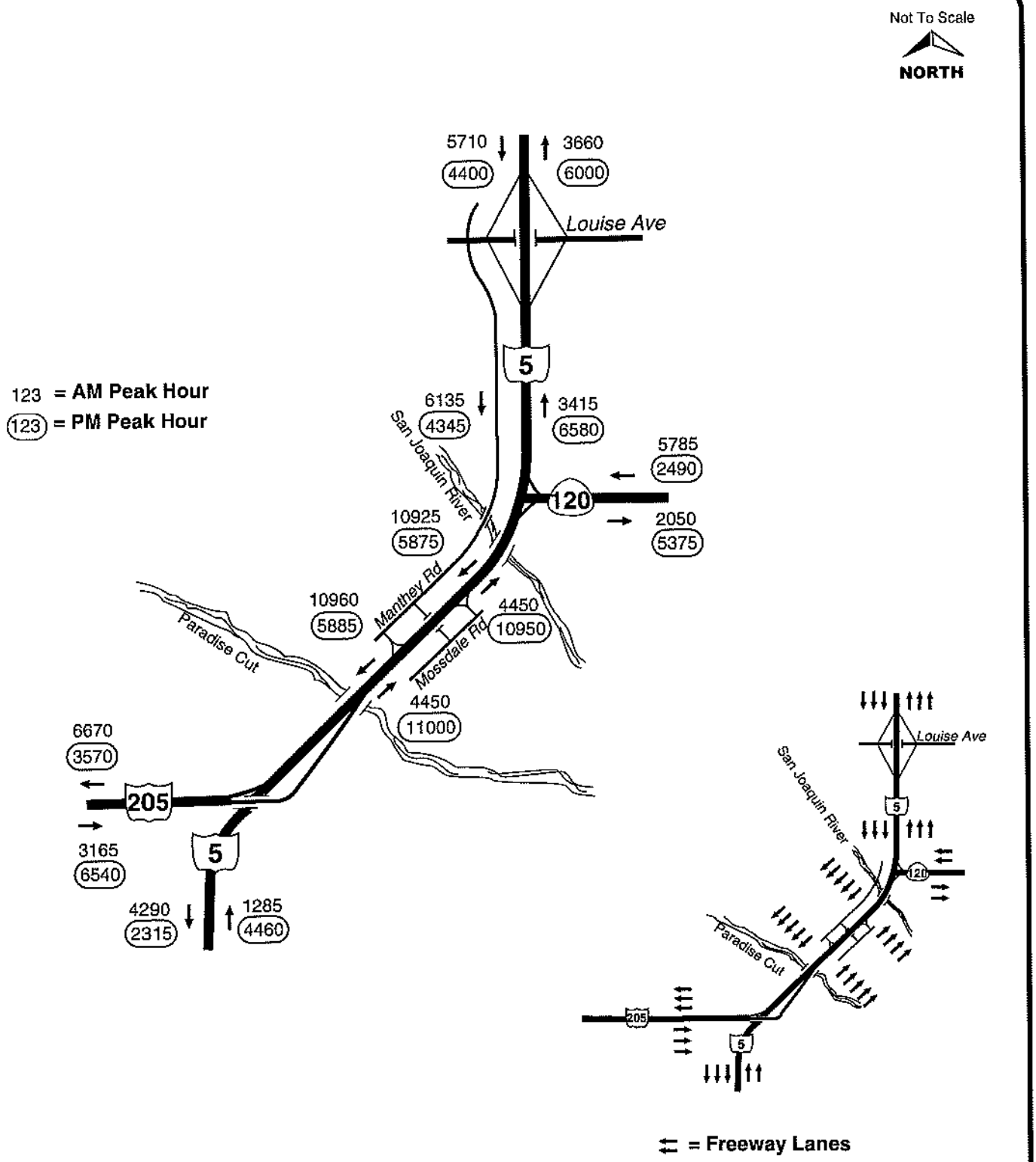
Figure 16-8
Year 2007 Base Case
AM Peak Hour Volumes



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-9
Year 2007 Base Case
PM Peak Hour Volumes



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Exhibit 16-10
2007 Base Case (Without Project)
AM and PM Peak Hour
Freeway Volumes and Lanes

TABLE 16-3
INTERSECTION LEVEL OF SERVICE
YEAR 2007 BASE CASE & BASE CASE + PROJECT

Intersection	AM Peak Hour		PM Peak Hour	
	Base Case	Base Case + Project	Base Case	Base Case + Project
Louise Ave./Harlan Rd. (Signal)	C-27.4[1]	C-27.9	C-31.5	C-32.9
Louise Ave./I-5 Northbound Ramps (Signal)	C-23.0[1]	C-34.9	E-69.2	F-96.8
River Islands Parkway./I-5 Southbound Ramps (Signal)	F-142.0[1]	F-243.7	C-34.0	D-48.9
Manthey Rd./Louise Ave. (Manthey Rd. Stop Sign Controlled)	C-15.2/B-14.8[2]	N/A	B-13.3/C-16.2	N/A
River Islands Parkway/Shopping Center Entrance (Signal)	N/A	C-21.8[1]	N/A	C-21.8
River Islands Parkway/Golden Valley Parkway (Signal)	N/A	B-13.6[1]	N/A	B-10.7
River Islands Parkway/McKee Blvd. (River Islands Stop Sign Controlled)	B-12.5[3]	C-20.8	B-10.4	B-14.5
River Islands Parkway/Manthey Rd. North (Manthey Rd. Stop Sign Controlled)	N/A	B-13.2/A-8.8[4]	N/A	B-14.2/A-9.6
Manthey Rd./I-5 Southbound Hook Ramps (Off-Ramp Stop Sign Controlled)	A-9.1[5]	A-9.2	A-9.1	A-9.2
Mossdale Rd./I-5 Northbound Hook Ramps (Off-Ramp Stop Sign Controlled)	A-9.2[5]	A-9.2	A-9.2	A-9.3
Manthey Rd./I-5 Underpass from Mossdale Rd. (Underpass Road Stop Sign Controlled)	A-10.2[6]	B-10.3	B-10.7	B-11.0
Mossdale Rd./I-5 Underpass from Manthey Rd. (Underpass Road Stop Sign Controlled)	A-10.0[7]	A-10.0	B-10.1	B-10.3

Notes:
(1) Signalized level of service–control delay in seconds.
(2) Un-signalized level of service–average control delay in seconds–Manthey Road southbound stop sign controlled approach/northbound stop sign controlled approach.
(3) Un-signalized level of service–average control delay in seconds–River Islands Parkway westbound stop sign controlled left turn.
(4) Un-signalized level of service–average control delay in seconds–Manthey Road southbound stop sign controlled right turn/River Islands Parkway eastbound left turn to Manthey Road.
(5) Un-signalized level of service–average control delay in seconds–Off-ramp stop sign controlled approach.
(6) Un-signalized level of service–average control delay in seconds–Underpass stop sign controlled approach to Manthey Road.
(7) Un-signalized level of service–average control delay in seconds–Underpass stop sign controlled approach to Mossdale Road.

Year 2000 Highway Capacity Manual Operations Methodology
Source: Crane Transportation Group

Freeway Mainline Operation

Table 16-4 shows that by 2007, and even with the widening of the I-205 freeway west of I-5 to six lanes, many analyzed segments of the I-5, I-205 and SR 120 freeways would be operating at unacceptable levels of service during both the AM and PM peak traffic hours in the peak flow directions.

- AM Peak Hour

I-5 Southbound from Louise Avenue to I-205	LOS E or F
SR 120 westbound east of I-5	LOS F
I-205 westbound west of I-5	LOS F

- PM Peak Hour

I-5 northbound from south of I-205 to north of Louise Avenue	LOS E or F
SR 120 eastbound east of I-5	LOS F
I-205 eastbound west of I-5	LOS E

Recommended Base Case 2007 Improvements

The following recommended base case (without project) improvements were not assumed to exist in the impact analysis, but have been identified here as an informational item to demonstrate what improvements are required, in addition to the assumed base case improvements discussed above, to serve future 2007 and 2025 (without project) conditions.

Intersections (see Figure 16-11 and Table 16-5)

Louise Avenue/I-5 Southbound Ramps.

Add a second eastbound Louise Avenue approach lane (for a total of two). In addition, add one additional southbound off-ramp lane (for a total of three). Stripe as two exclusive left turn lanes and one combined through/right turn lane.

Resultant AM Peak Hour Operation:
AM Peak Hour: LOS D–48.6 seconds vehicle delay

Louise Avenue/I-5 Northbound Ramps

Add one additional northbound off-ramp lane (for a total of three). Stripe as a shared left/through lane and two exclusive right turn lanes.

Resultant PM Peak Hour Operation:
PM Peak Hour: LOS C–31.7 seconds vehicle delay

TABLE 16-4
FREEWAY SEGMENT LEVEL OF SERVICE
YEAR 2007 BASE CASE & BASE CASE + PROJECT

Location	Direction	# Lanes	AM Peak Hour		PM Peak Hour	
			Base Case	Base Case + Project	Base Case	Base Case + Project
I-5 North of Louise Ave. Interchange	NB	3	C	C	E	E (0.5%)
	SB	3	D	E	C	C
I-5 Between Louise Ave. & S.R.120	NB	3	C	C	F	F (1.6%)
	SB	3	E	E (1.4%)*	C	C
I-5 Between S.R.120 and Manthey/Mossdale Hook Ramps	NB	4	C	C	F	F (0.8%)
	SB	5	F	F (0.3%)*	C	C
I-5 Between Manthey/ Mossdale Hook Ramps and I-205	NB	5	B	B	E	E (0.6%)
	SB	5	F	F (0.2%)*	C	C
I-5 Just South of I-205	NB	2	B	B	F	F (-0.8%)
	SB	3	C	C	B	
I-205 Between I-5 and MacArthur Dr. Interchange	EB	2	B	B	E	E (1.6%)
	WB	2	F	F (0.4%)*	C	C
S.R.120 Just East of I-5	EB	2	B	B	F	F (0.2%)
	WB	2	F	F (0.1%)*	C	C

Notes:

* Percent change in traffic due to the project.

Year 2000 Highway Capacity Manual Analysis Methodology
Source: Crane Transportation Group

TABLE 16-5
MITIGATED INTERSECTION LEVEL OF SERVICE
YEAR 2007 BASE CASE & BASE CASE + PROJECT

Location	AM Peak Hour		PM Peak Hour	
	Base Case	Base Case + Project	Base Case	Base Case + Project
River Islands Parkway/I-5 Southbound Ramps (Signal)	D-48.6[1][2]	D-49.8[2]		
Louise Ave./I-5 Northbound Ramps (Signal)			C-31.7[1][3]	D-37.8[3]

Notes:

[1] Signalized level of service–control delay in seconds.
[2] Add a third southbound off-ramp lane and stripe as two exclusive left turn lanes and a combined through/right turn lane.
Add a second lane to the eastbound River Islands Parkway approach.
[3] Add a third northbound off-ramp lane and stripe as two exclusive right turns and a combined through/left turn lane.

Year 2000 Highway Capacity Manual Analysis Methodology
Source: Crane Transportation Group

Freeway Mainline (see Table 16-6)

The I-5, SR 120 and I-205 freeways in the Lathrop and northeast Tracy areas would all require widening by one lane in each direction to provide acceptable operation, with the exception of the segment of northbound I-5 across the San Joaquin River, which would require widening from four up to six lanes. Resultant operation would be LOS D or better along all segments.

Year 2025 Base Case Operating Conditions

Traffic Volumes

Year 2025 Base Case (without project) volumes were developed using the SJCOG traffic model with added traffic zones and roadway system detail provided in the Lathrop area. Resultant AM and PM peak hour intersection volumes are presented in Figures 16-12 and 16-13, respectively, while AM and PM peak hour freeway volumes are presented in Figure 16-14.

Intersection Operation

Table 16-7 shows that by 2025 all analyzed intersections would be operating at acceptable levels of service during the AM and PM peak traffic hours with the following exceptions.

- AM Peak Hour

  Louise Avenue/I-5 Southbound Ramps LOS F

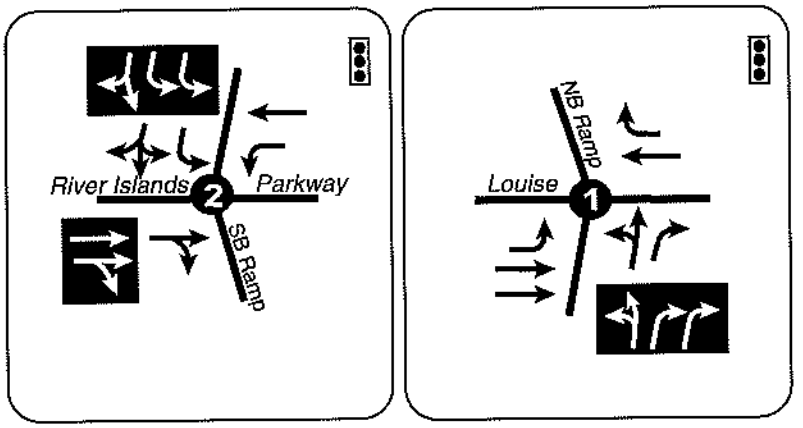
- PM Peak Hour

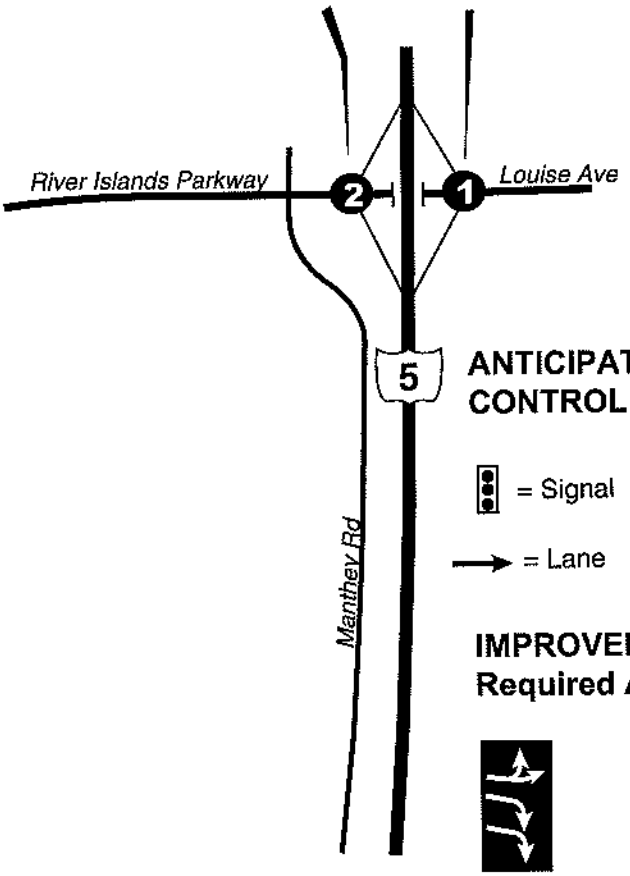
  Louise Avenue/I-5 Northbound Ramps LOS F
  River Islands Parkway/Golden Valley Parkway LOS E

During the AM and PM peak hours all un-signalized intersections analyzed for the 2025 horizon year would have volumes below peak hour signal warrant criteria levels.

Not To Scale

NORTH





ANTICIPATED LANES & CONTROL

= Signal

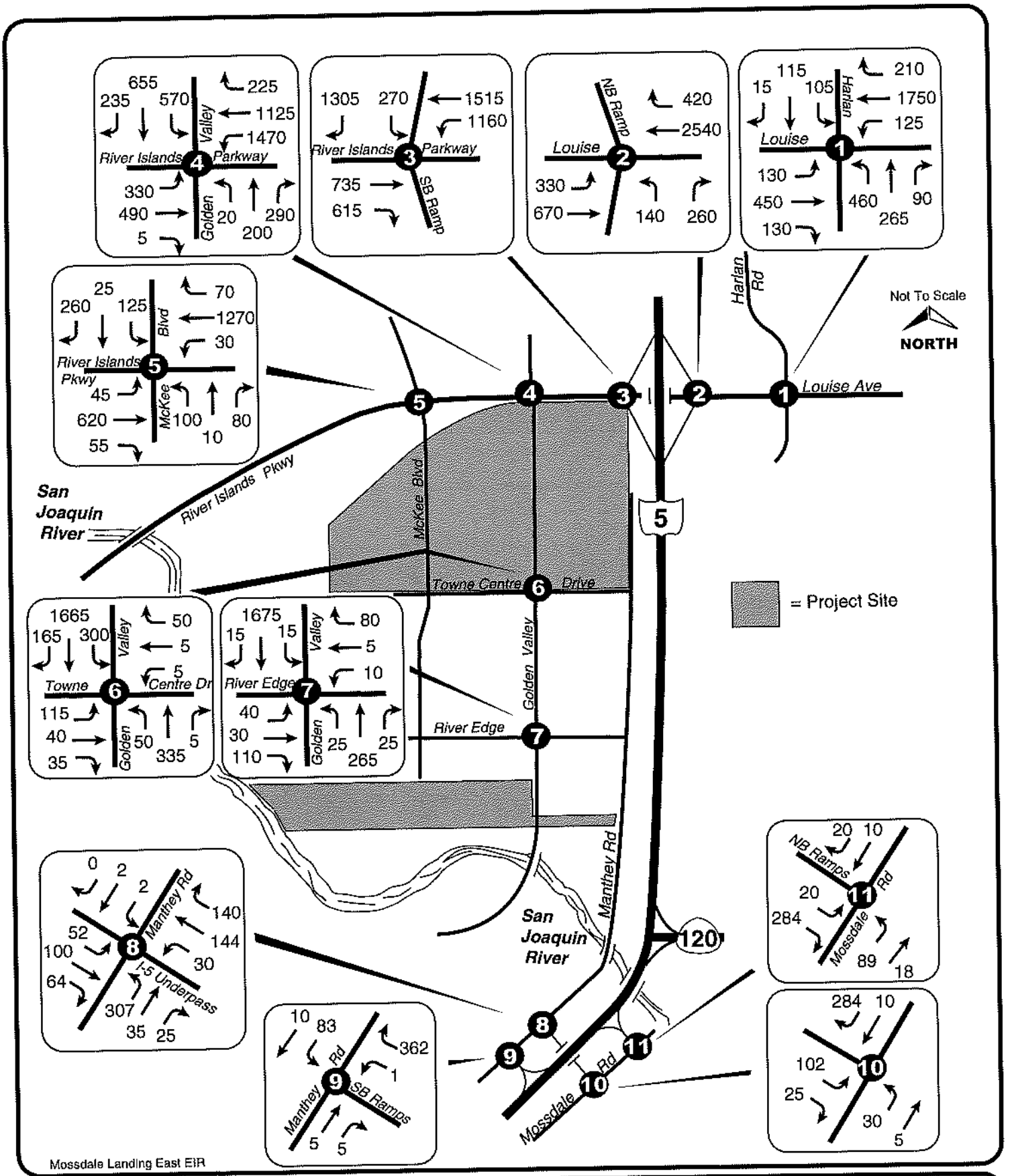
= Lane

IMPROVEMENT:
Required Approach Lanes

Mossdale Landing East EIR

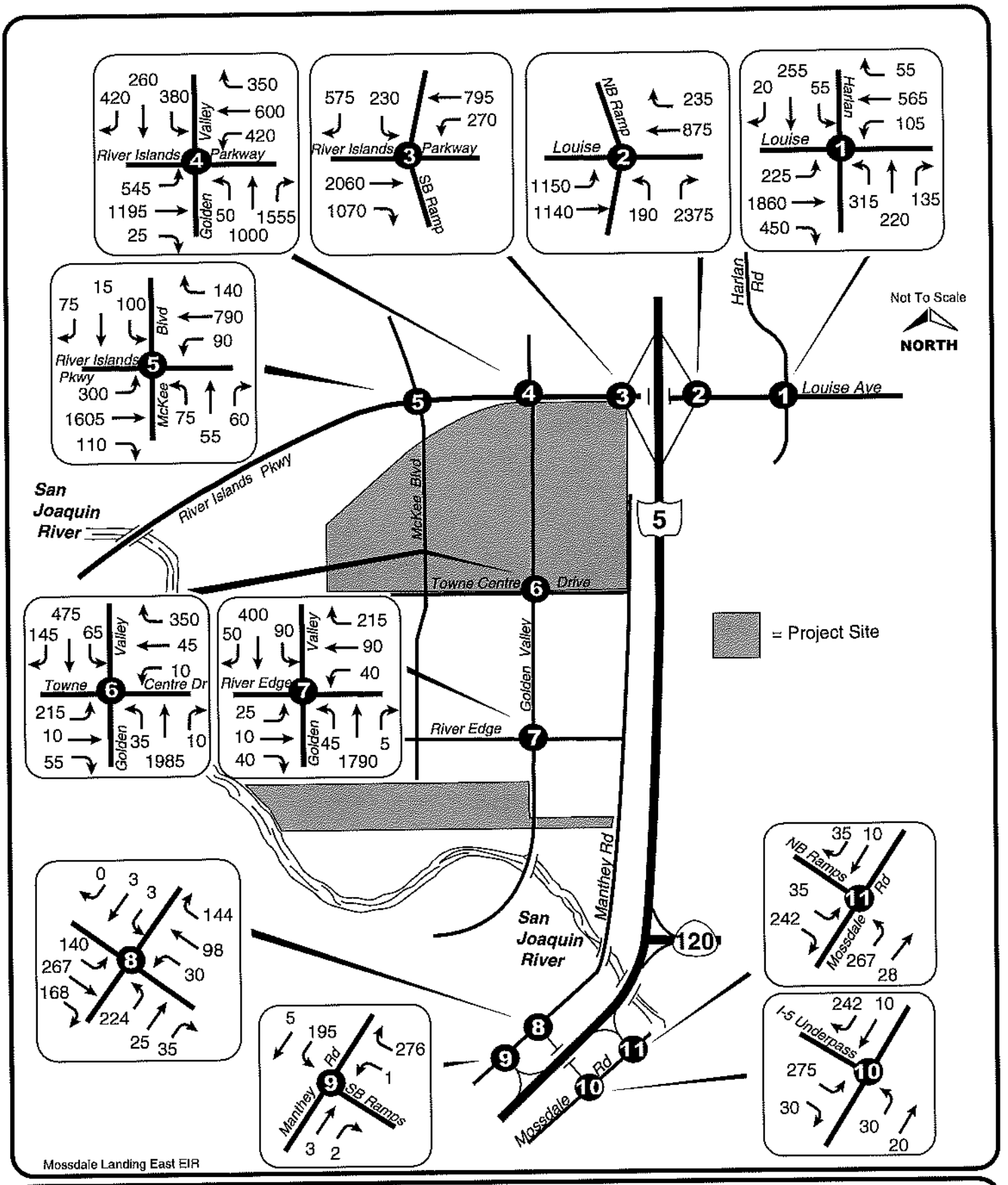
CRANE TRANSPORTATION GROUP

Figure 16-11
Year 2007 Base Case
Intersection Improvements



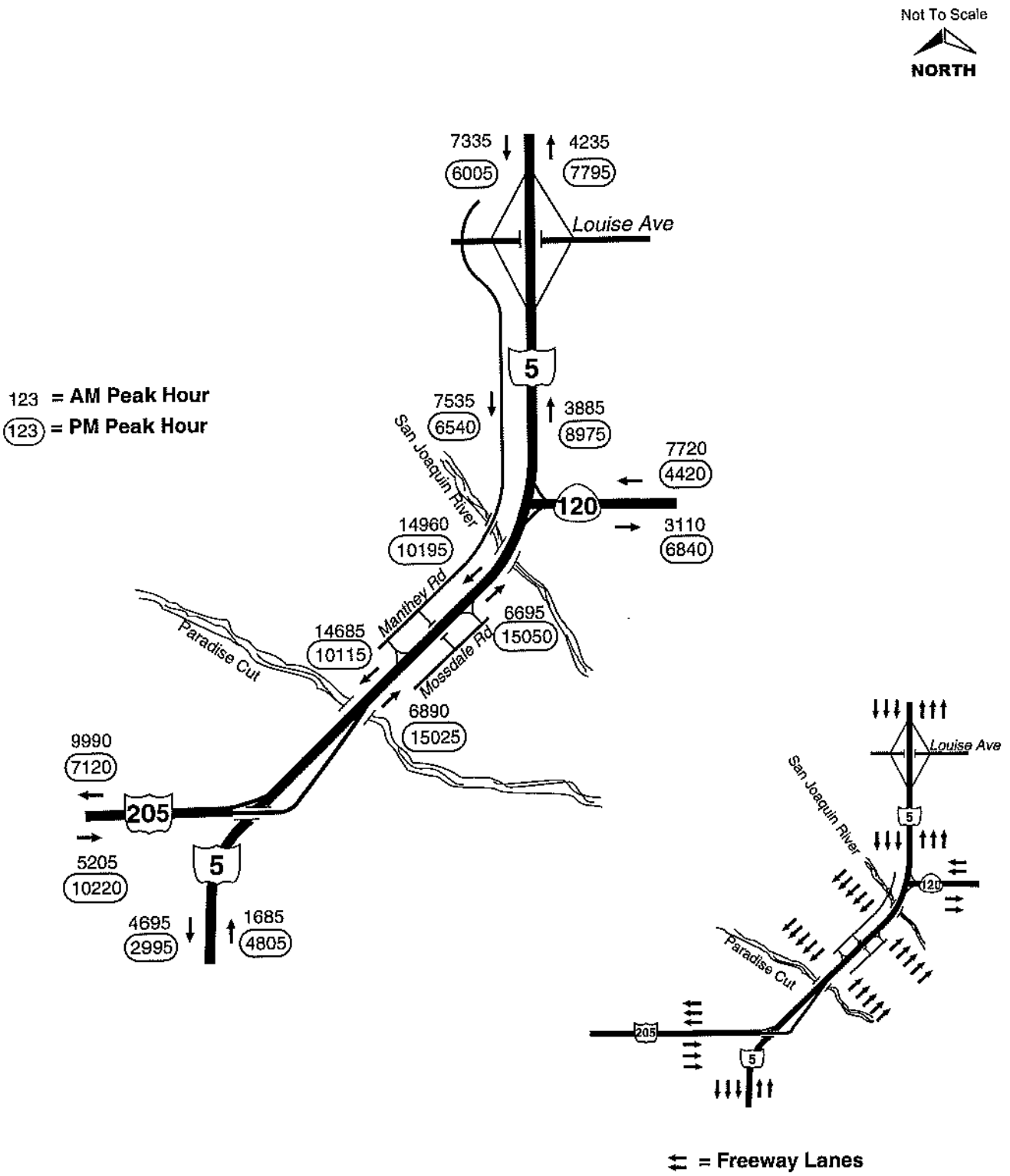
CRANE TRANSPORTATION GROUP

Figure 16-12
Year 2025 Base Case (Without Project)
AM Peak Hour Volumes



CRANE TRANSPORTATION GROUP

Figure 16-13
Year 2025 Base Case (Without Project)
PM Peak Hour Volumes



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Exhibit 16-14
2025 Base Case (Without Project)
AM and PM Peak Hour
Freeway Volumes and Lanes

TABLE 16-6
FREEWAY SEGMENT MITIGATED LEVEL OF SERVICE
YEAR 2007 BASE CASE & BASE CASE + PROJECT

Location	Direction	Projected # of Lanes Used For Analysis Purposes	AM Peak Hour		PM Peak Hour	
			Base Case	Base Case + Project	Base Case	Base Case + Project
I-5 North of Louise Ave. Interchange	NB	3			4/C	4/C
	SB	3		4/C*		
I-5 Between Louise Ave. & SR120	NB	3			4/D	4/D
	SB	3	4/C*	4/C		
I-5 Between SR120 and Manthey/ Mossdale Hook Ramps	NB	4			6/D	6/D
	SB	5	6/D*	6/D		
I-5 Between Manthey/ Mossdale Hook Ramps and I-205	NB	5			6/D	6/D
	SB	5	6/D*	6/D		
I-5 Just South of I-205	NB	2	–	–	3/C*	3/C
	SB	3	–	–		
I-205 Between I-5 and MacArthur Dr. Interchange	EB	3			4/D	4/D
	WB	3	4/D*	4/D		
SR120 Just East of I-5	EB	2			3/D	3/D
	WB	2	3/D*	3/D		

Notes:

* Required total number of lanes/resultant level of service.

Year 2000 Highway Capacity Manual Analysis Methodology
Source: Crane Transportation Group

TABLE 16-7
INTERSECTION LEVEL OF SERVICE
YEAR 2025 BASE CASE & BASE CASE + PROJECT

Intersection	AM Peak Hour		PM Peak Hour	
	Base Case	Base Case + Project	Base Case	Base Case + Project
Louise Ave./Harlan Rd. (Signal)	D-43.6[1]	D-43.8	D-44.5	D-50.1
Louise Ave./I-5 Northbound Ramps (Signal)	C-22.2[1]	C-24.3	F-216.4	F-220.4
River Islands Parkway/I-5 Southbound Ramps (Signal)	F-152.4[1]	F-190.2	D-40.5	E-63.1
River Islands Parkway/Shopping Center Entrance (Signal)	N/A	A-7.9	N/A	B-14.3
River Islands Parkway/Golden Valley Parkway (Signal)	D-49.3[1]	E-71.5	E-72.7	F-87.5
River Islands Parkway/McKee Blvd. (Signal)	C-29.2[1]	D-36.4	C-30.6	D-38.4
Golden Valley Parkway/Shopping Center Entrance North (Signal)	N/A	A-9.8	N/A	C-32.7
Golden Valley Parkway/Shopping Center Entrance South (Signal)	N/A	B-11.9	N/A	B-19.3
Golden Valley Parkway/Towne Centre Dr. (Signal)	C-22.6[1]	C-29.8	D-53.5	E-65.3
Golden Valley Parkway/River Edge Dr. (Signal)	C-25.1[1]	C-28.9	D-40.7	D-46.4
Manthey Rd./I-5 Southbound Hook Ramps (All Way Stop)	A-8.7[2]	A-8.8	A-9.0	A-9.1
Mossdale Rd./I-5 Northbound Hook Ramps (All Way Stop)	A-8.3[2]	A-8.4	A-9.9	B-10.5
Manthey Rd./I-5 Underpass from Mossdale Rd. (All Way Stop)	B-12.4[2]	B-13.2	B-14.5	C-16.3
Mossdale Rd./I-5 Underpass from Manthey Rd. (All Way Stop)	A-8.6[2]	A-8.7	A-9.9	B-10.5

Notes:

[1] Signalized level of service–control delay in seconds.
[2] All way stop level of service–average control delay in seconds.

Year 2000 Highway Capacity Manual Operations Methodology
Source: Crane Transportation Group

TABLE 16-8
FREEWAY SEGMENT LEVEL OF SERVICE
YEAR 2025 BASE CASE & BASE CASE + PROJECT

Location	Direction	# Lanes	AM Peak Hour		PM Peak Hour	
			Base Case	Base Case + Project Full Buildout	Base Case	Base Case + Project Full Buildout
I-5 North of Louise Ave. Interchange	NB	3	C	C	F	F (3.1%)
	SB	3	F	F (2.9%)*	E	E (1.6%)
I-5 Between Louise Ave. & S.R.120	NB	3	C	C	F	F (-0.3%)
	SB	3	F	F (0.999%)*	E	E (1.4%)
I-5 Between S.R.120 and Manthey/Mossdale Hook Ramps	NB	5	C	C	F	F (-0.3%)
	SB	5	F	F (0.8%)*	E	E (-0.1%)
I-5 Between Manthey/Mossdale Hook Ramps and I-205	NB	5	C	C	F	F (0.0%)
	SB	5	F	F (0.7%)*	E	E (-0.4%)
I-5 Just South of I-205	NB	2	B	B	F	F (3.7%)
	SB	3	C	D	B	B
I-205 Between I-5 and Paradise Rd. Interchange	EB	3	D	D	F	F (-1.8%)
	WB	3	F	F	F	F (0.5%)
S.R.120 Just East of I-5	EB	2	C	D	F	F (1.6%)
	WB	2	F	F (0.7%)*	E	E (0.1%)

* Percent change in traffic due to the project.

Year 2000 Highway Capacity Manual Analysis Methodology
Source: Crane Transportation Group

Freeway Mainline Operation

Table 16-8 shows that by 2025 many analyzed segments of the I-5, I-205 and SR 120 freeways would be operating at overcapacity conditions (have a theoretical demand well above available capacity) during both the AM and PM peak traffic hours. Segments with unacceptable operation would be as follows.

- AM Peak Hour

  I-5 Southbound (from north of Louise Avenue to I-205)–LOS F
  SR 120 Westbound (just east of I-5)–LOS F
  I-205 Westbound (west of I-5)–LOS F

- PM Peak Hour

  I-5 Northbound (from south of I-205 to north of Louise Avenue)–LOS F
  I-5 Southbound (from north of Louise Avenue to I-205)–LOS E
  I-205 Westbound (west of I-5)–LOS F
  I-205 Eastbound (west of I-5)–LOS F
  SR 120 Westbound (east of I-5)–LOS E
  SR 120 Eastbound (east of I-5)–LOS F

Recommended Base Case (without Project) Improvements

Intersections (see Figure 16-15 and Table 16-9)

Louise Avenue/I-5 Southbound Ramps

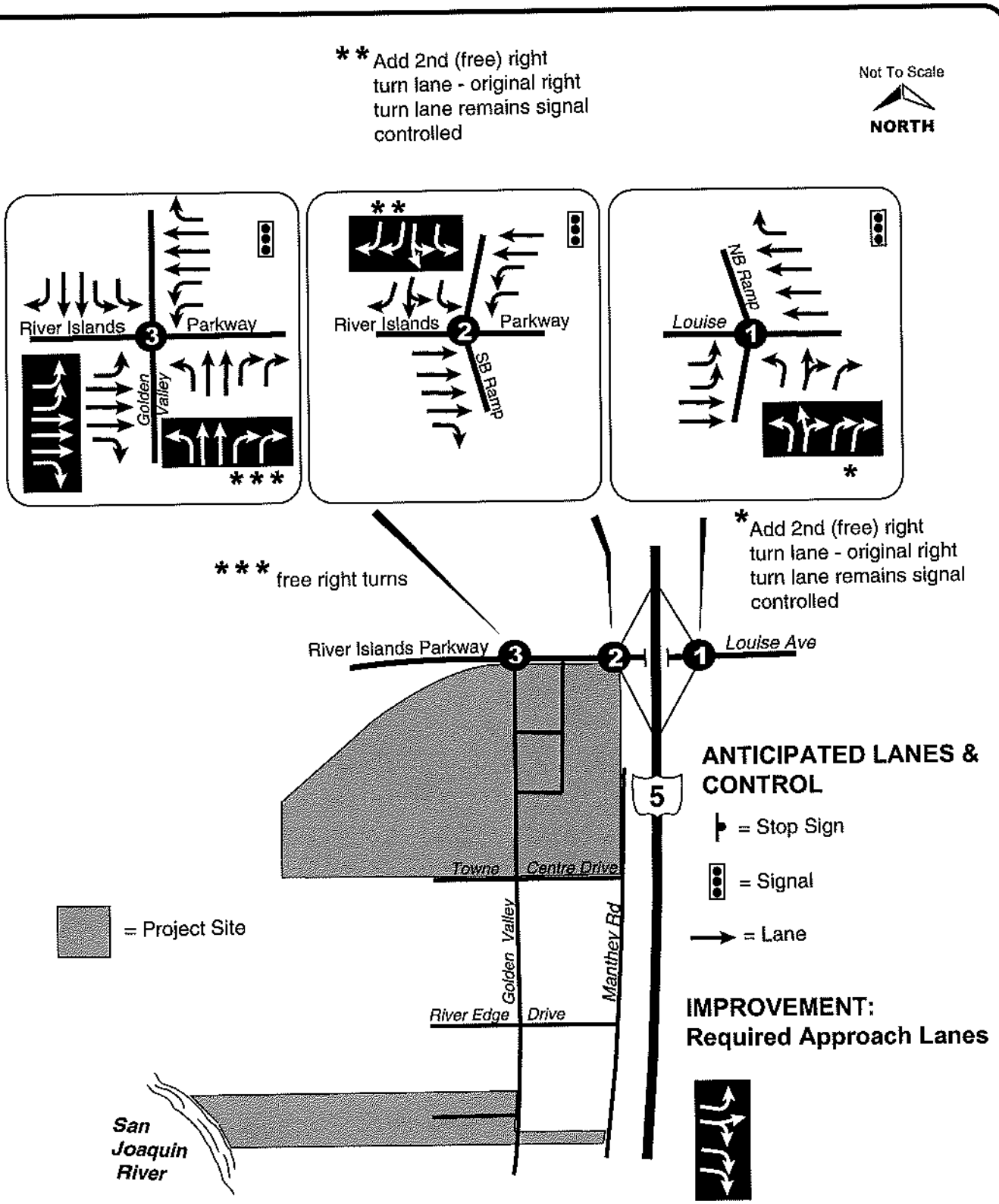
Add a fourth southbound off-ramp lane and stripe to allow right turns from two lanes and left turns from two lanes. Allow free right turns from the most westerly right turn lane.

Resultant Operation:
AM Peak Hour: LOS C–34.8 seconds vehicle delay

Louise Avenue/I-5 Northbound Ramps

Add a fourth northbound off-ramp lane and stripe to allow right turns from two lanes and left turns from two lanes. Allow free right turns from the most easterly right turn lane.

Resultant Operation:
PM Peak Hour: LOS D–41.3 seconds vehicle delay



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-15
Year 2025 Base Case
Intersection Improvements

TABLE 16-9
MITIGATED INTERSECTION LEVEL OF SERVICE
YEAR 2025 BASE CASE & BASE CASE + PROJECT

	AM PEAK HOUR		PM PEAK HOUR	
Location	Base Case	Base Case + Project	Base Case	Base Case + Project
River Islands Parkway/I-5 Southbound Ramps (Signal)	C-34.8[1][2]	D-53.2[2]		D-46.7[2]
Louise Ave./I-5 Northbound Ramps (Signal)			D-41.3[1][4]	D-53.1[4]
River Islands Parkway/ Golden Valley Parkway (Signal)		D-54.7[1][3]	D-52.6[5]	D-53.7[5]
Golden Valley Parkway/ Towne Centre Dr. (Signal)				D-54.2[1][6]

Notes:

(1) Signalized level of service–control delay in seconds.

(2) Add a fourth southbound off-ramp lane and stripe as two exclusive right turn lanes, an exclusive left turn and a shared left-through lane.
One of the two right turn lanes would be a free right turn and channelized to its own exclusive departure lane, while the other right turn lane would be signal controlled.

(3) Add a second left turn lane to the eastbound River Islands Parkway approach.
Add third through lanes to the north and southbound Golden Valley Parkway approaches.
Provide free right turns on the northbound Golden Valley Parkway approach.
Provide a fifth eastbound lane on River Islands Parkway between Golden Valley Parkway and the I-5 Southbound Ramps.

(4) Add a fourth northbound off-ramp lane, stripe as two exclusive right turn lanes, an exclusive left turn and a shared left/through lane.
One of the two right turn lanes would be a free right turn and channelized to its own exclusive departure lane, while the other right turn lane would be signal controlled.

(5) Add a second left turn lane to the eastbound River Islands Parkway approach.
Provide free right turns on the northbound Golden Valley Parkway approach.
Provide a fifth eastbound lane on River Islands Parkway between Golden Valley Parkway and the I-5 Southbound Ramps.

(6) Add a second right turn lane to the westbound Towne Centre Drive approach.

Year 2000 Highway Capacity Manual Analysis Methodology
Source: Crane Transportation Group

TABLE 16-10
FREEWAY SEGMENT MITIGATED LEVEL OF SERVICE
YEAR 2025 BASE CASE & BASE CASE + PROJECT

Location	Direction	Projected # of Lanes (Used For Analysis Purposes)	Total Required Freeway Lanes/Resultant Level Of Service			
			AM Peak Hour		PM Peak Hour	
			Base Case	Base Case + Project Full Buildout	Base Case	Base Case + Project Full Buildout
I-5 North of Louise Ave. Interchange	NB	3	4/D[1]	4/D	4/D	5/C
	SB	3			4/C	4/C
I-5 Between Louise Ave. & S.R.120	NB	3	4/D[1]	4/D	5/D	5/D
	SB	3			4/C	4/D
I-5 Between S.R.120 and Manthey/Mossdale Hook Ramps	NB	5	8/D[1][2]	8/D[2]	8/D[2]	8/D[2]
	SB	5			8/C[2]	8/C[2]
I-5 Between Manthey/Mossdale Hook Ramps and I-205	NB	5	8/D[1][2]	8/D[2]	8/D[2]	8/D[2]
	SB	5			8/C[2]	8/C[2]
I-5 Just South of I-205	NB	2			3/D[1]	3/D
	SB	3				
I-205 Between I-5 and Paradise Rd. Interchange	EB	3	5/D[1]	5/D	5/D	5/D
	WB	3			5/C	5/C
S.R.120 Just East of I-5	EB	2	4/D[1]	4/D	4/D	4/D
	WB	2			4/B	4/B

Notes:

(1) Required total number of lanes/resultant level of service.

(2) This mitigation/improvement indicates the need for 8 freeway lanes in the north or southbound directions. While 8 adjacent freeway lanes could not function acceptably, two adjacent northbound (and southbound) freeways, each with 4 lanes (between I-205 and S.R.1120) would be able to function acceptably. This would be an extremely expensive improvement.

Year 2000 Highway Capacity Manual Analysis Methodology
Source: Crane Transportation Group

River Islands Parkway/Golden Valley Parkway

Provide free right turns on the northbound Golden Valley Parkway intersection approach.
Add a fifth eastbound departure lane extending to the I-5 southbound ramps intersection.
Add a second left turn lane to the eastbound River Islands Parkway approach.

Resultant Operation
PM Peak Hour: LOS D–52.6 seconds vehicle delay

Freeway Mainline (see Table 16-10, above)

All freeways in the Lathrop and north Tracy areas would require major lane additions in order to provide acceptable Base Case (without project) peak hour operation. These are regional transportation improvements that are beyond the scope of any one project. Lane addition requirements to provide LOS D operation would be as follows:

I-5 (north of Louise Avenue)

Add 1 lane each direction–total 4 lanes each direction

I-5 (from Louise Avenue to SR 120)

Add 2 lanes each direction–total 5 lanes each direction.

I-5 (from SR 120 to I-205)

Add 3 lanes each direction–total 8 lanes each direction. This would require two side-by-side freeways (4 lanes each) in the north and southbound directions.

I-5 (south of I-205)

Add 1 lane northbound–total 3 lanes northbound.

SR 120 (east of I-5)

Add 2 lanes each direction–total 4 lanes each direction.

I-205 (I-5 to Paradise Road)

Add 2 lanes each direction–total 5 lanes each direction.

Failure to provide these lanes would cause additional traffic diversion to already congested parallel surface street routes as well as the spreading of the peak traffic periods to four or more hours.

Significance Thresholds

The Mossdale Landing East project would result in a significant traffic impact if it would result in one or more of the following (which are based, in part, upon standards established in the City of Lathrop's General Plan or by the Lathrop Public Works Department or standards established by Caltrans:

- If project traffic degrades Base Case operation at a signalized or all-way-stop intersection in the City of Lathrop from LOS A through D to LOS E or F, or degrades Base Case operation at a City of Lathrop side street stop-sign controlled intersection from LOS A through E to LOS F;
- If the project increases traffic by 1% or more at Base Case signalized or all-way-stop intersections in the City of Lathrop already operating at LOS E or F, or side street stop sign controlled intersections in the City of Lathrop already operating at LOS F;
- If the projects increases traffic at Base Case un-signalized intersections such that Caltrans Peak Hour Warrant #11 criteria levels are exceeded;
- If the project increases traffic by 1% or more at Base Case un-signalized intersections that already exceed Caltrans Peak Hour Warrant #11 criteria levels;
- If project traffic degrades Base Case operation at a signalized, all-way-stop or side street stop sign controlled intersection from LOS A through C to LOS D, E or F;
- If the project increases traffic by 1% or more at Base Case signalized, all-way-stop or side street stop sign controlled intersections already operating at LOS D, E or F;
- If project traffic degrades base case freeway segment operation from LOS A through D to LOS E or F;
- If the project increases traffic by 1% or more to base case freeway segments already operating at LOS E or F;
- If, in the opinion of the EIR registered traffic engineer, certain project-related traffic changes or proposed designs would substantially increase auto, pedestrian or bicycle rider safety concerns;
- If the proposed project internal circulation does not provide for or allow flexibility to provide for public transit service along major internal streets; or
- If project traffic could significantly degrade existing roadway pavement condition.

Introduction

As discussed in the introduction, this section evaluates the traffic impacts associated with the addition of project traffic to the existing condition (i.e., "existing baseline (2003) plus project") and the modeled Base Case for each of two horizon years: the Year 2007 scenario and the Year 2025 (Project Buildout) scenario.

Project Year 2007 Scenario

- 250 single family units
- 80 apartment units
- 14 acres highway commercial (∀ 135,000 SQ.FT.)

Project Year 2025 Buildout Scenario

- 403 single family units
- 80 apartment units
- 28 acres highway commercial (∀ 270,000 SQ.FT.)
- 6.5 acres village commercial
- 12.5 acres service commercial

The traffic impact analysis addresses potential project impacts on intersection operations, need for signalization and freeway level of service under each of the three analysis scenarios (2007, 2025 and Existing). Project construction, internal circulation within the project and pedestrian and bicycle circulation concerns are addressed following the traffic scenarios. Transportation issues addressed in this section are listed below.

Year 2007 Base Case + Project Traffic Impacts

Year 2007 Intersection Level of Service Impacts
Year 2007 Intersection Signal Warrant
Year 2007 Freeway Level of Service

Year 2025 Base Case + Project Traffic Impacts

Year 2025 Intersection Level of Service Impacts
Year 2025 Intersection Signal Warrant
Year 2025 Freeway Level of Service

Existing + Project Traffic Impacts

Existing + Project Intersection Level of Service Impacts
Existing + Project Intersection Signal Warrant
Existing + Project Freeway Level of Service

Other Transportation Issues

Construction Traffic
Internal Circulation
Pedestrian Circulation
Transit Service
Bicycle Circulation

The City of Lathrop required the development of a Traffic Monitoring Program in conjunction with the approved Mossdale Landing project, adjacent to MLE. The TMP requires that the Mossdale Landing applicant commence traffic monitoring at specified locations starting with occupancy of the 50th on-site residential unit and continuing until all required traffic improvements have been completed. The TMP is intended to be used as the basis for determining when each of the traffic improvements required by the mitigation measures are required to be implemented. The proposed project will be required to participate in the TMP, as required by subsequent mitigation measures.

Assumed Project Access, Intersection Control and Intersection Geometrics

A forecast of future traffic conditions also requires a forecast of the physical state of the transportation system including the availability and configuration of access to the project site, intersection geometrics and traffic controls at the intersections. These assumptions for each of the analysis scenarios (2007, 2025 and Existing) are outlined below.

Year 2007 Base Case + Project Scenario

Figure 16-16 shows the roadway system and intersection control/geometrics to be in place to serve Base Case + Project development by 2007. The project would provide two lanes of Golden Valley Parkway extending approximately 900 feet south of River Islands Parkway. An east-west public roadway would then be constructed connecting the south end of Golden Valley Parkway and Manthey Road. The existing Manthey Road alignment just south of River Islands Parkway would be eliminated due to construction of a shopping center between Golden Valley Parkway and the I-5 freeway right-of-way. Access to this shopping area would be provided via an intersection along the new east-west roadway connecting Golden Valley Parkway and Manthey Road, an extension of Manthey Road into the south end of the center and via a signalized intersection along the center's River Islands Parkway frontage that would allow all but left turn outbound movements from the shopping center.

The Johnson Ferry Road connection to River Islands Parkway would be eliminated with construction of the first segment of Golden Valley Parkway. All access to Mossdale Landing East single family and apartment units would be via McKee Boulevard extending to the south of River Islands Parkway.

Year 2025 Base Case + Project Buildout Scenario

Figure 16-17 shows the roadway system and intersection control/geometrics expected to serve Base Case + Project Buildout development. The northern part of the project would have all single family and apartment units accessed via McKee Boulevard (to Towne Centre Drive or River Islands Parkway). Parking for village commercial uses along the north side of Towne Centre Drive (between McKee Boulevard and Golden Valley Parkway) would be accessed via a driveway connection to McKee Boulevard as well as a right turn in driveway from southbound Golden Valley Parkway to the north of Towne Centre Drive. Commercial uses between Golden Valley Parkway and Manthey Road (or the I-5 freeway) would be accessed via Manthey Road, Towne Centre Drive, two signalized intersections along Golden Valley Parkway (between River Islands Parkway and Towne Centre Drive) and a signalized intersection along River Islands Parkway between Golden Valley Parkway and the I-5 freeway (where all but left turn outbound movements from the shopping center would be allowed).

The southern Mossdale Landing East development residential area (west of Golden Valley Parkway) would be accessed via Golden Spike Trail and the southerly extension of McKee Boulevard as well as a right turn in/right turn out intersection with southbound Golden Valley Parkway. The small commercial parcel in the southern area would be accessed via driveway connections to Manthey Road.

Existing Baseline (2003) + Project Buildout Scenario

Projected Existing Baseline (2003) + Project Buildout intersection geometrics and control are presented in Figure 16-18. Two lanes of Golden Valley Parkway would be constructed from Louise Avenue to Towne Centre Drive and Towne Centre Drive would extend westerly from Manthey Road to Golden Valley Parkway and into the project's village commercial area.

Analysis Organization and Notes

As explained in Model Run Descriptions, the SJCOG regional traffic model with added traffic zone and roadway infrastructure for the Lathrop area has been utilized to project Base Case + Project year 2007 and 2025 weekday peak hour traffic volumes. Resultant year 2007 Base Case + Project AM and PM peak hour intersection volumes are presented in Figures 16-19 and 16-20, respectively, while year 2007 Base Case + Project AM and PM peak hour freeway volumes are presented in Figure 16-21. Resultant year 2025 Base Case + Project Buildout AM and PM peak hour intersection volumes are presented in Figures 16-22 and 16-23, respectively, while Year 2025 Base Case + Project Buildout AM and PM peak hour freeway volumes are presented in Figure 16-24. The net change in traffic due to proposed project development in 2007 and 2025 is presented in Appendix Figures 1 to 6.

Adjustments were made in the 2007 projections to reflect at least 25 construction worker vehicles that could be entering the site during the AM peak hour and leaving the site during the PM peak hour. No construction-truck activity would be expected during either peak hour. In addition, adjustments were also made to the 2007 with project projections to reflect locations of elementary, middle and high school attendance.

It should be noted that year 2007 and 2025 Base Case and Base Case + Project traffic projections show projected volumes exceeding available capacities on the I-5, I-205 and SR 120 freeways. In particular, by 2025 demand exceeds capacity by more than 50 percent (with or without the Mossdale Landing East project) in many locations. Given the capacity constrained reality of the local freeway system not to be able to accept or deliver the surface street volumes that are included as part of the traffic modeling output, there is the distinct possibility that interchange and surface street intersection impacts and needed mitigations are conservatively overstated in this analysis.

As explained in Model Run Descriptions, an additional evaluation has been conducted for this DEIR: an existing baseline (2003) + Project Buildout. Resultant existing + Project Buildout AM and PM peak hour intersection volumes are presented in Figures 16-25 and 16-26, respectively, while existing + Project Buildout AM and PM peak hour freeway volumes are presented in Figure 16-27.

The mitigation measures below correspond by name to the environmental impacts. Where either a less-than-significant impact" or "no impact" would occur, no mitigation is identified below. A general discussion of funding and monitoring programs is provided in the Appendix. These include the WLSP Regional Transportation Fee, the City of Lathrop Capital Facility Fee for Transportation Improvements, The Stewart Tract On-Site Traffic Mitigation Fee, the City of Tracy/San Joaquin County/City of Lathrop Cooperative Agreement and Traffic Fee and the Stewart Tract Traffic Monitoring Program. Together, these fee programs are referenced in this document as the Transportation Impact Fees. Therefore, rather than reference the fee program specific to each facility, the individual mitigation measures reference payment of applicable Transportation Impact Fees.

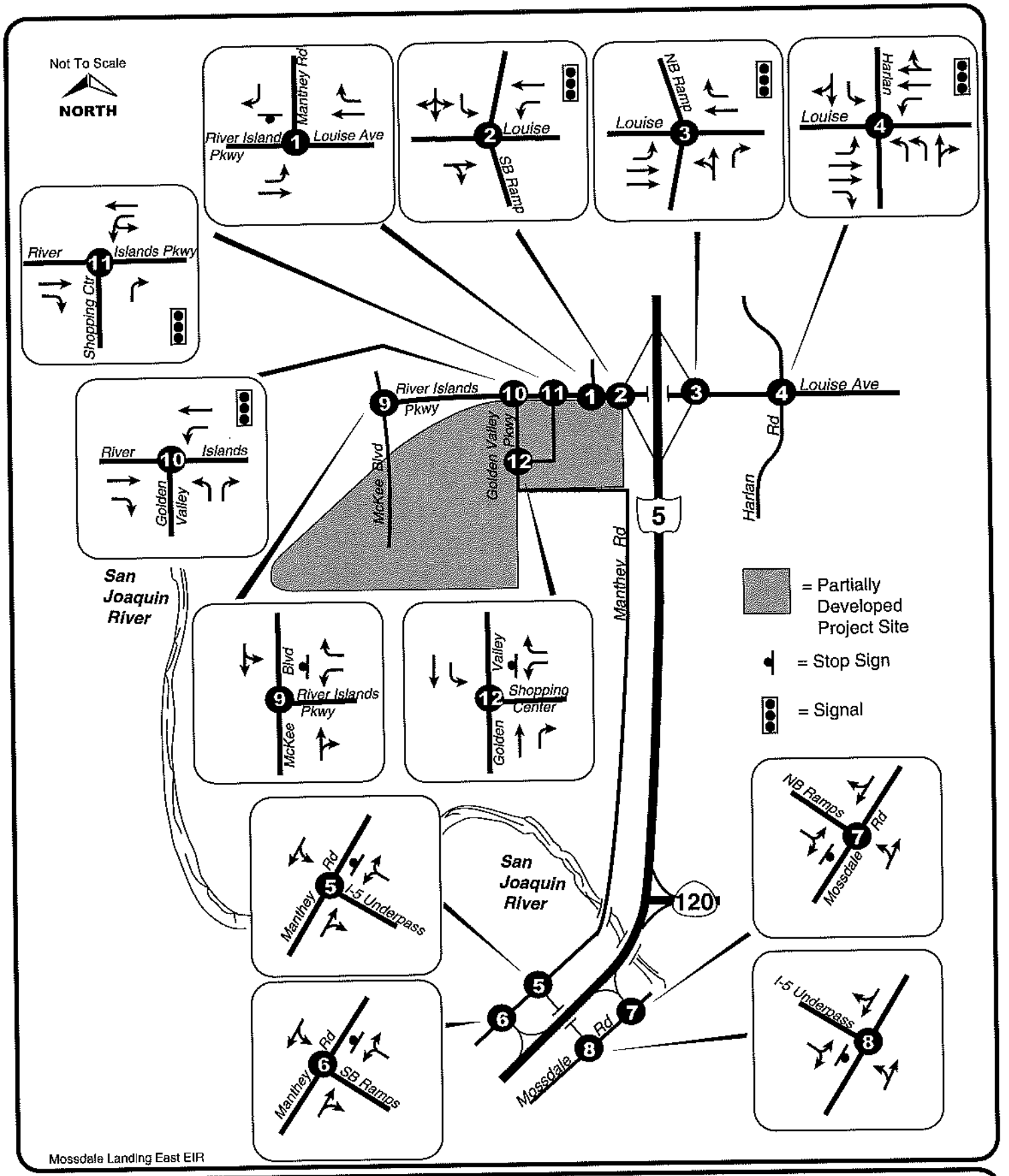
16.3.1 Year 2007 Base Case Traffic Impacts

Year 2007 Intersection Level of Service Impacts (see Table 16-3)

Proposed project development by 2007 would produce significant level of service impacts at the following intersections.

River Islands Parkway/I-5 Southbound Ramps

AM Peak Hour—The project would increase volumes by more than 1% (29.1%) at this location already experiencing unacceptable Base Case LOS F operation. The AM peak hour level of service would be improved to LOS D – 49.8 seconds vehicle control delay with the mitigation measures recommended below.



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-16
Year 2007 Base Case + Project Intersection Geometrics and Control

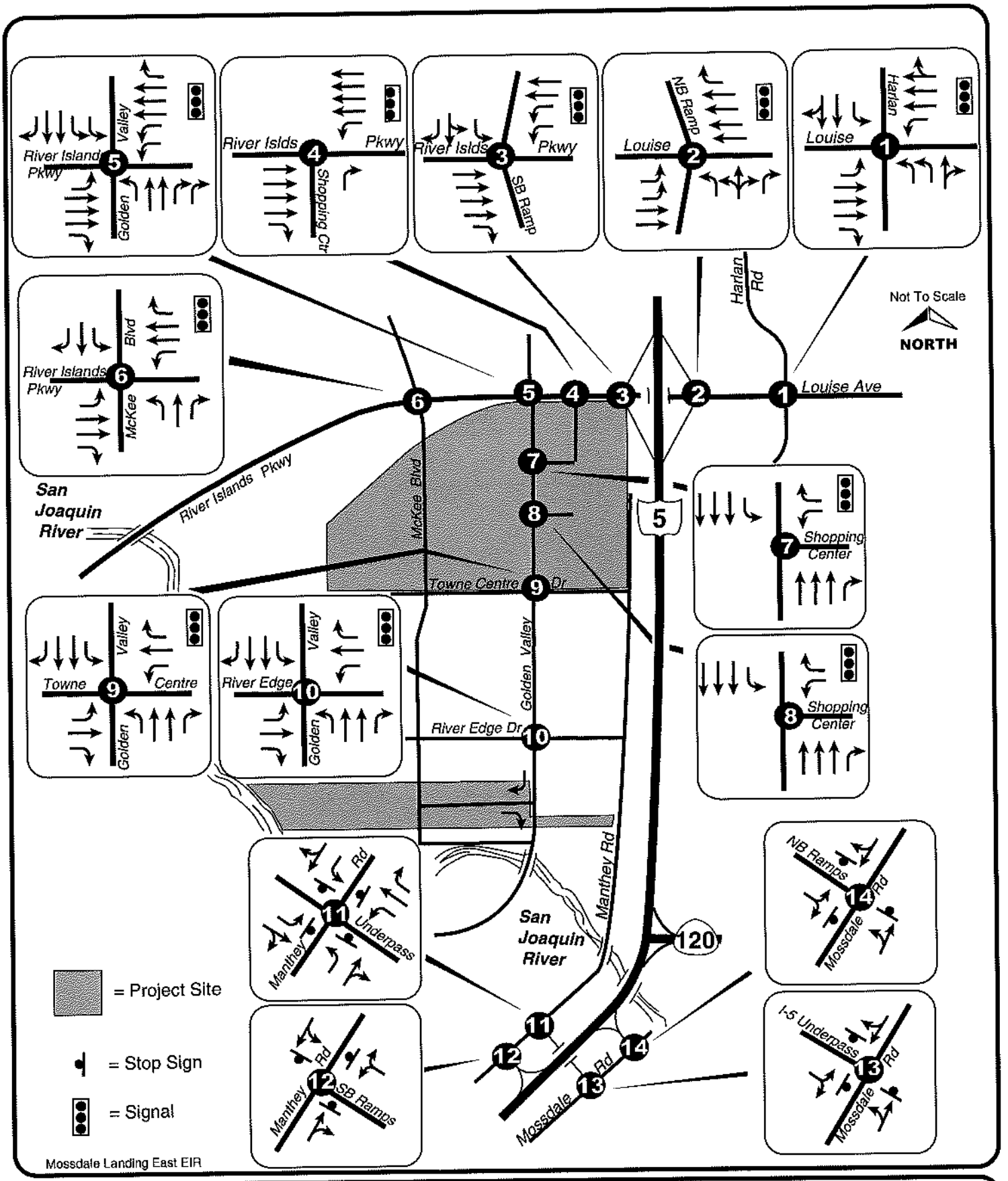
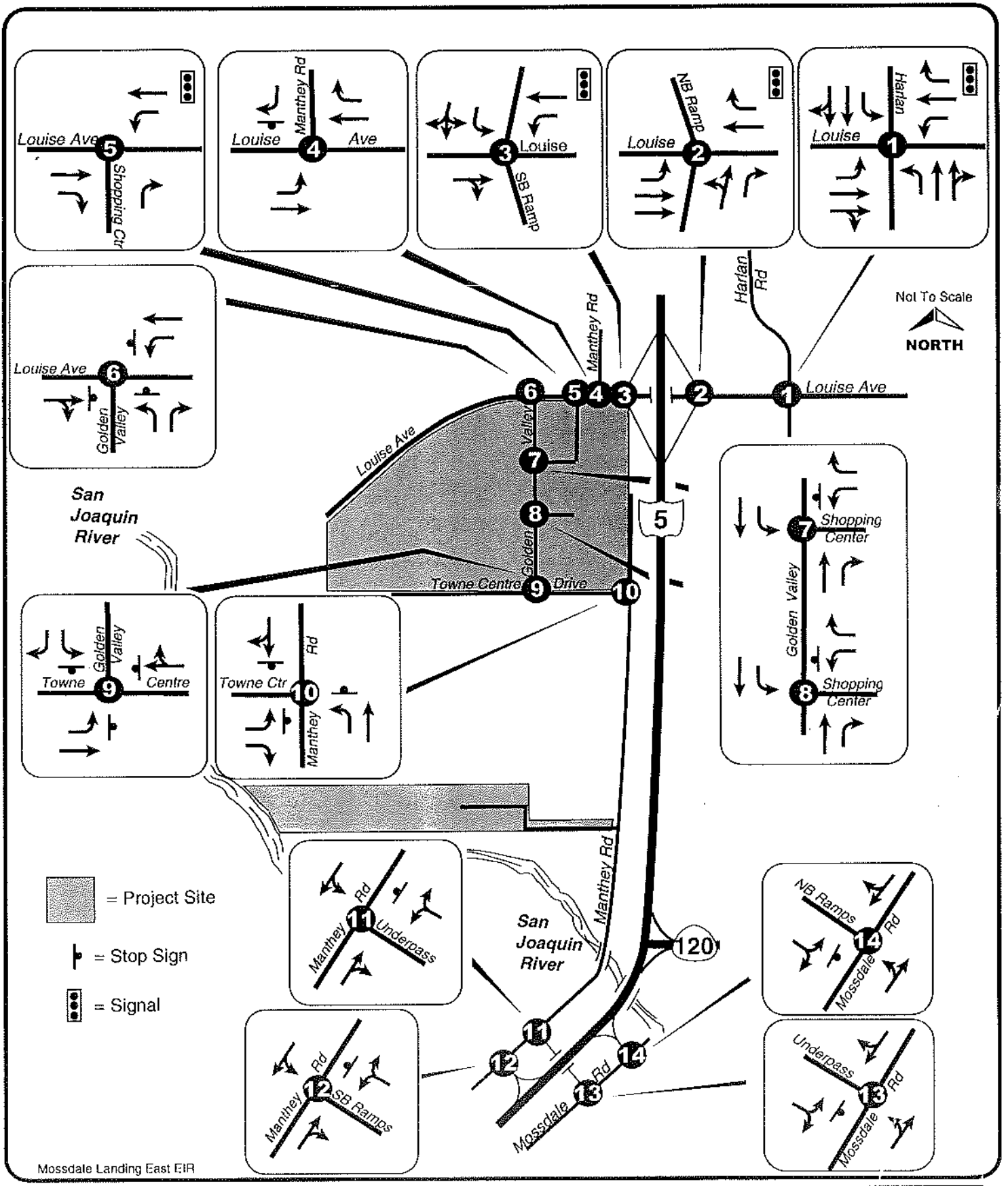


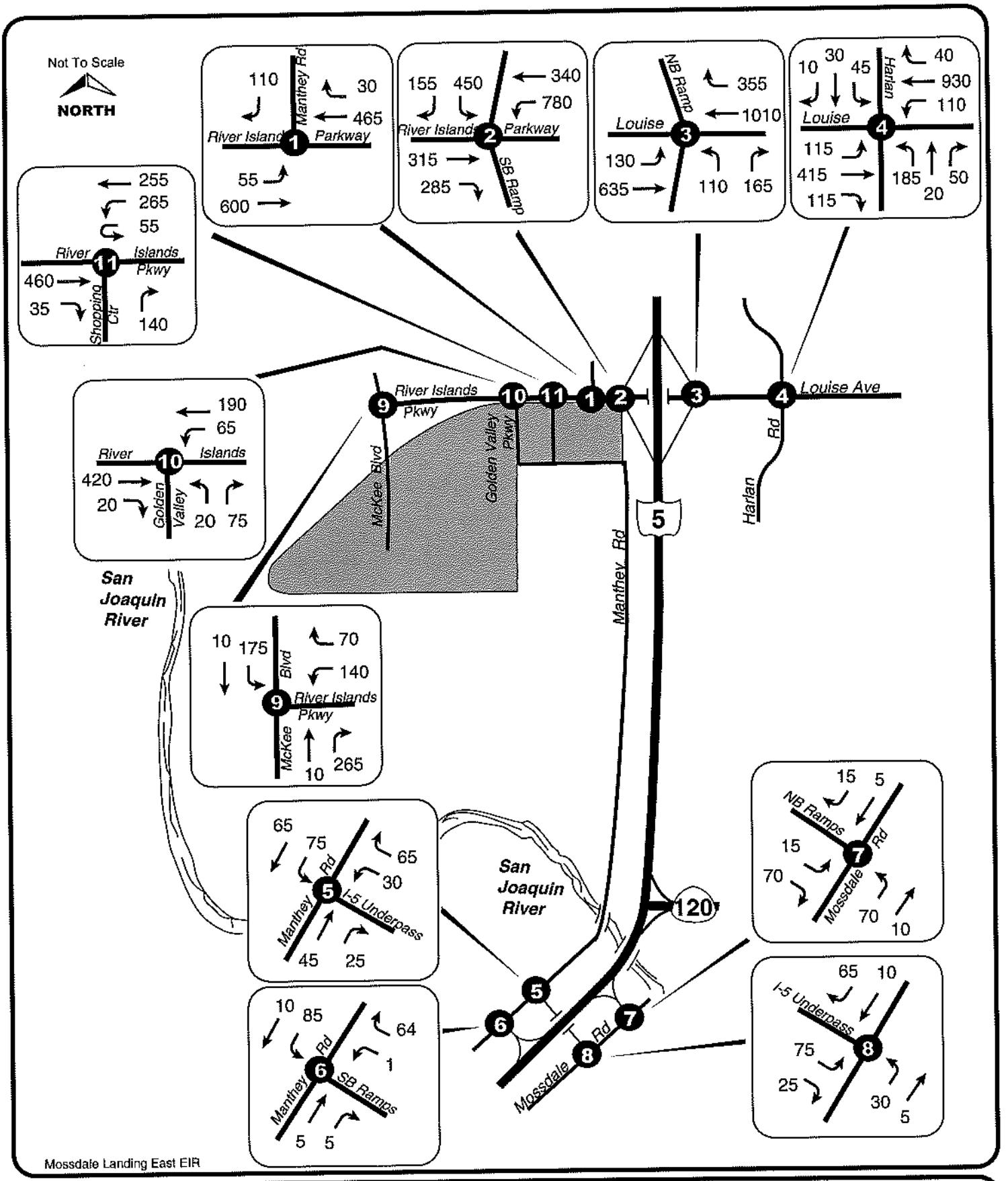
Figure 16-17
Year 2025 Base Case + Project Intersection Geometrics and Control

CRANE TRANSPORTATION GROUP



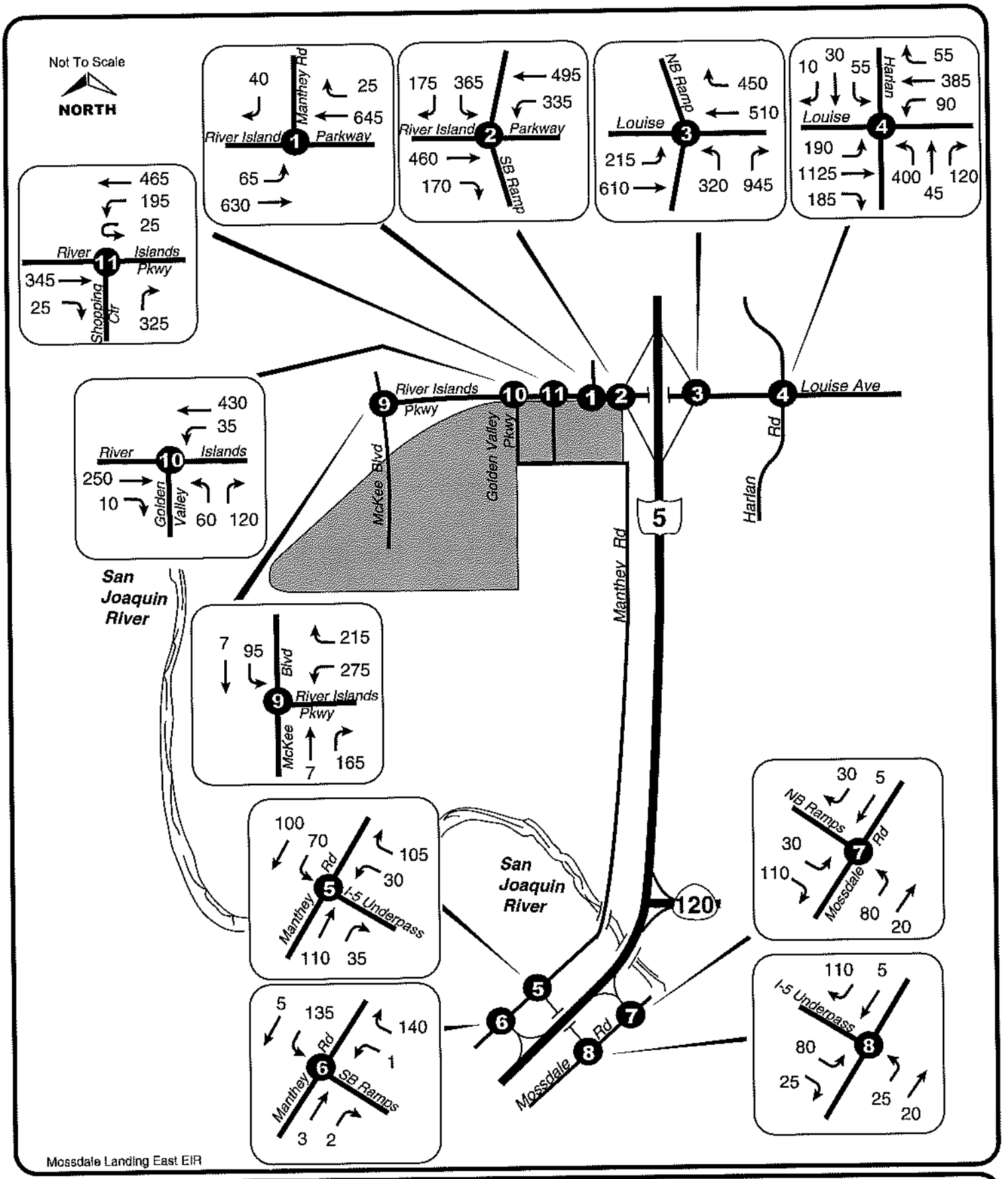
CRANE TRANSPORTATION GROUP

Figure 16-18
Existing + Project Buildout
Intersection Geometrics and Control



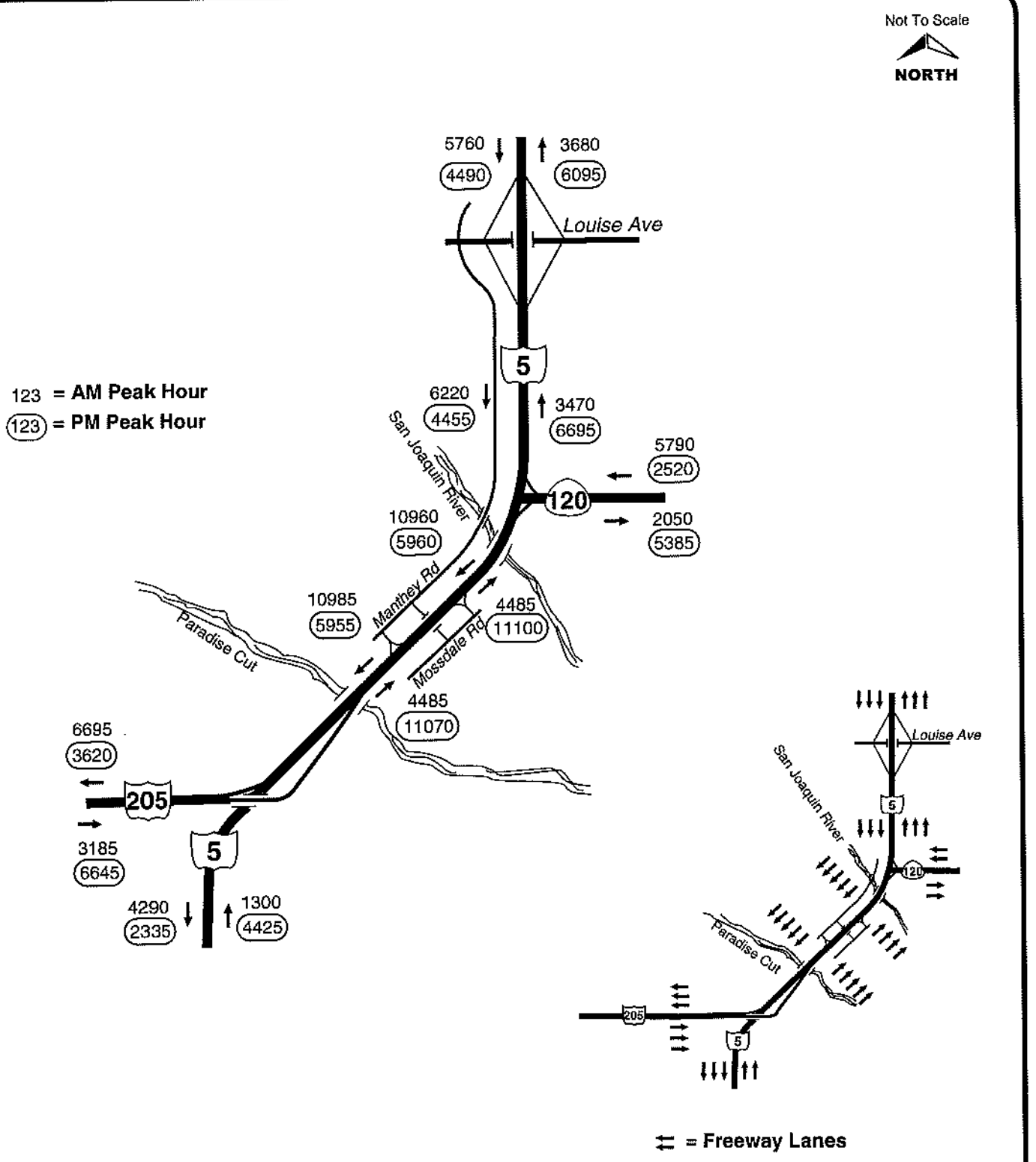
CRANE TRANSPORTATION GROUP

Figure 16-19
Year 2007 Base Case + Project
AM Peak Hour Volumes



CRANE TRANSPORTATION GROUP

Figure 16-20
Year 2007 Base Case + Project
PM Peak Hour Volumes



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Exhibit 16-21
2007 Base Case + Project
AM and PM Peak Hour
Freeway Volumes and Lanes

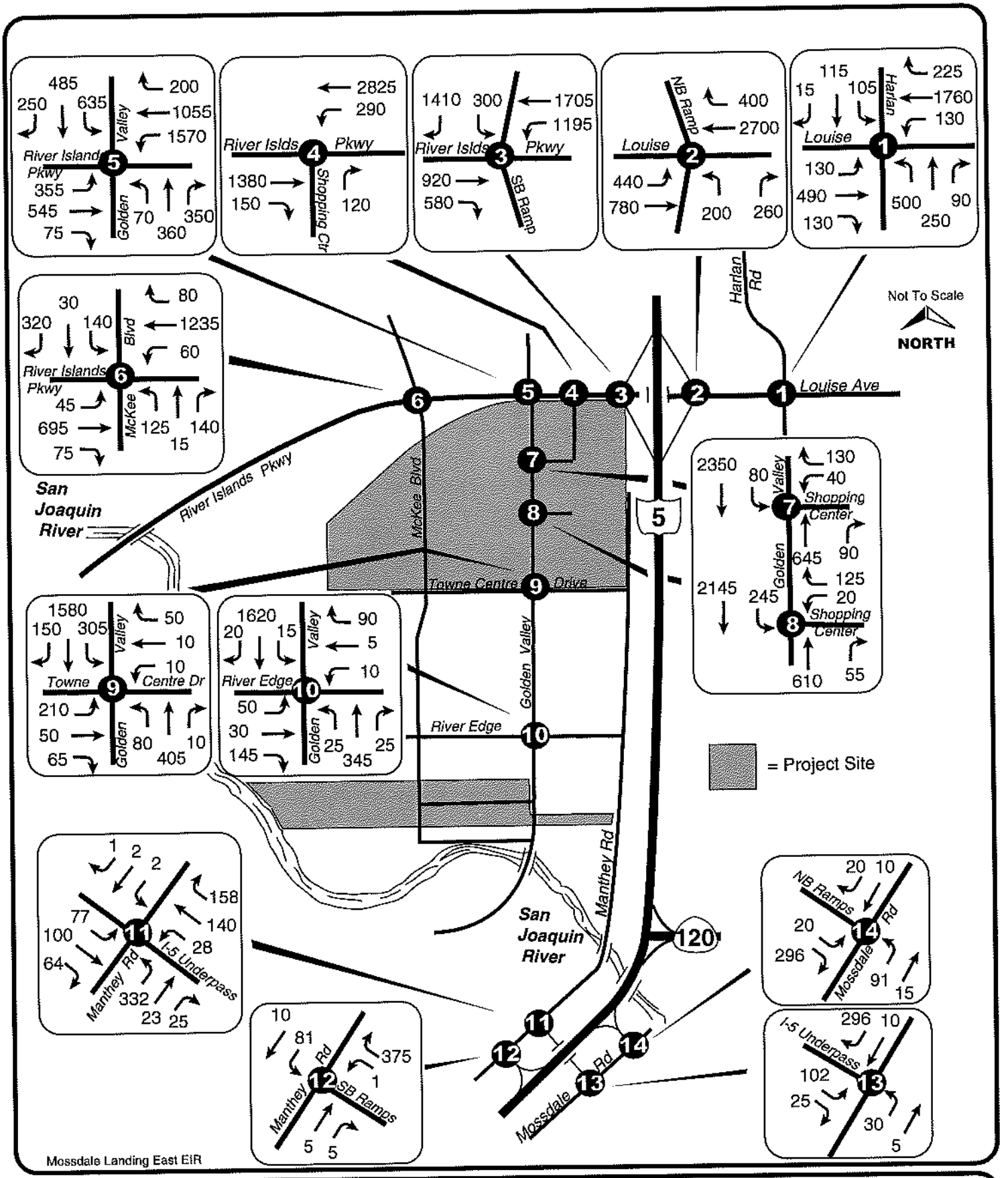
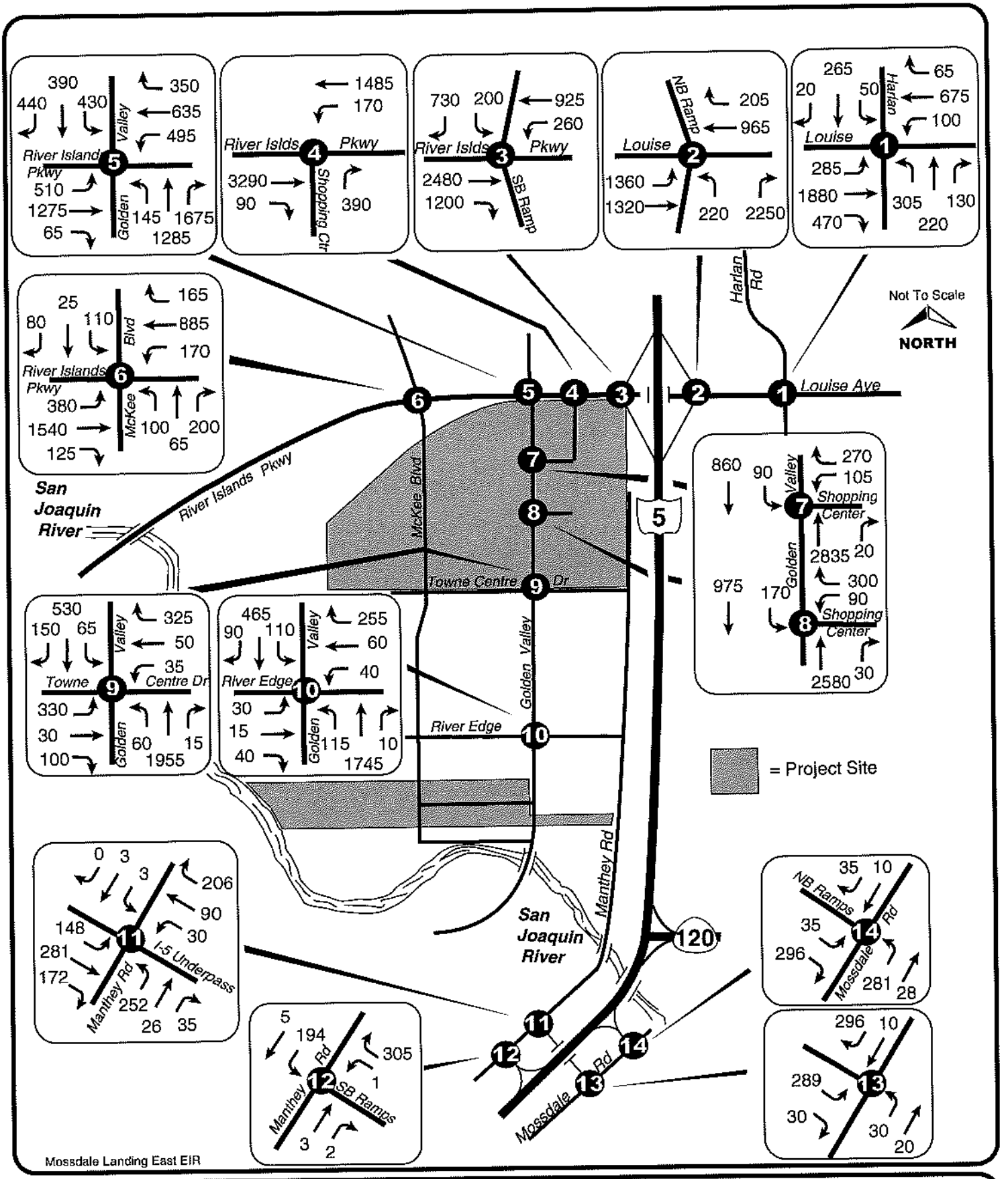


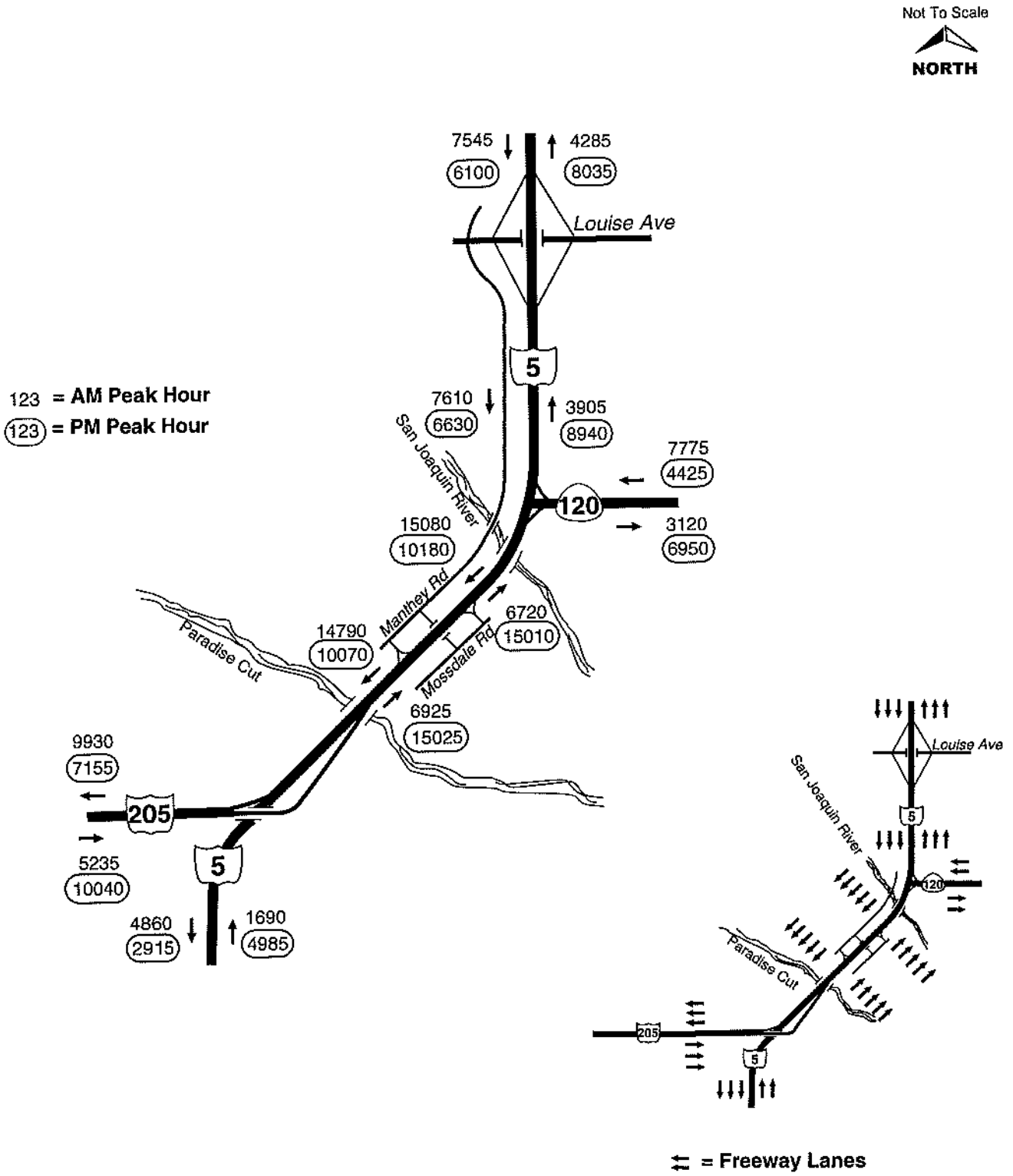
Figure 16-22
Year 2025 Base Case + Project AM Peak Hour Volumes

CRANE TRANSPORTATION GROUP



CRANE TRANSPORTATION GROUP

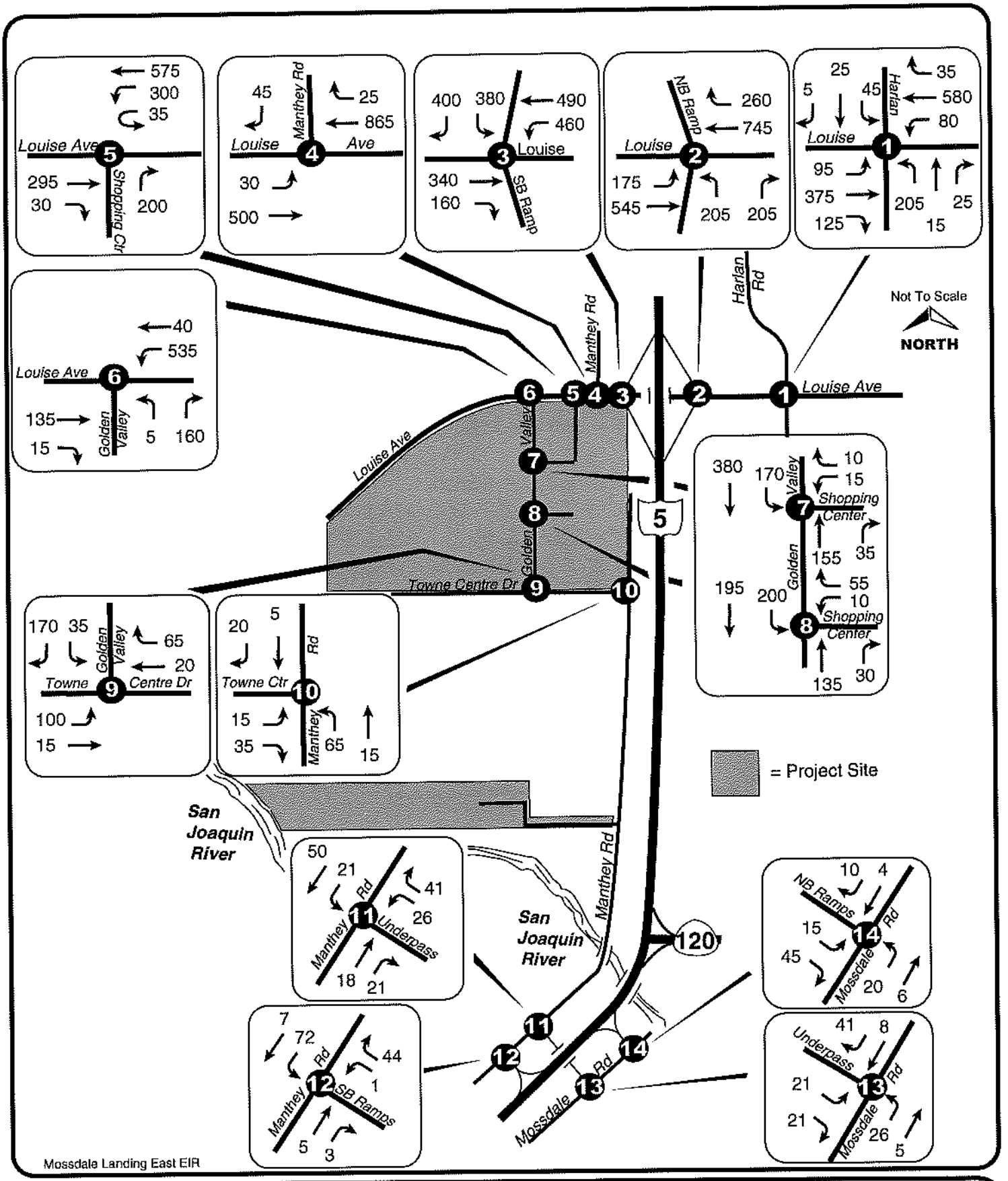
Figure 16-23
Year 2025 Base Case + Project
PM Peak Hour Volumes



Mossdale Landing East EIR

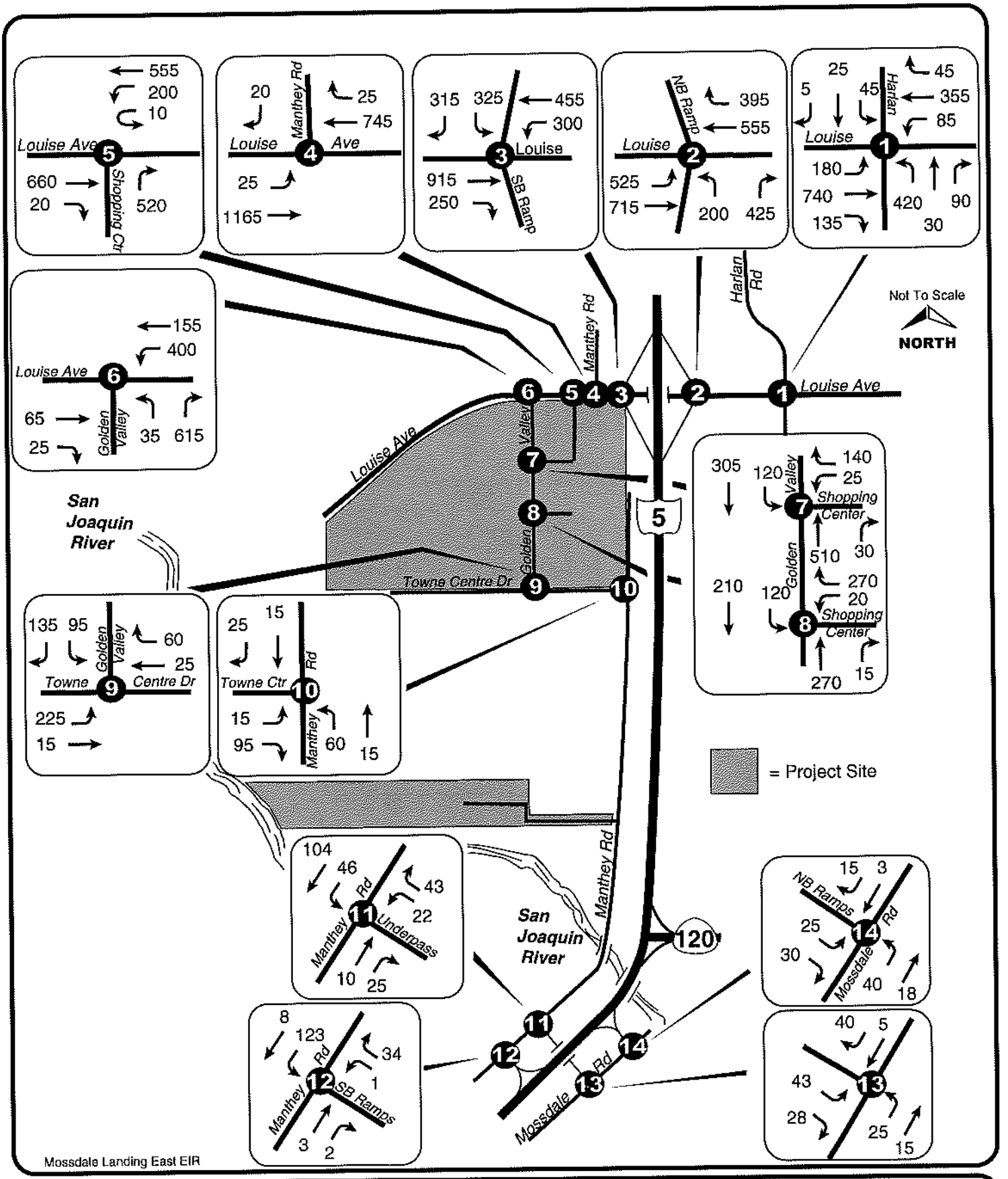
CRANE TRANSPORTATION GROUP

Exhibit 16-24
2025 Base Case + Project
AM and PM Peak Hour
Freeway Volumes and Lanes



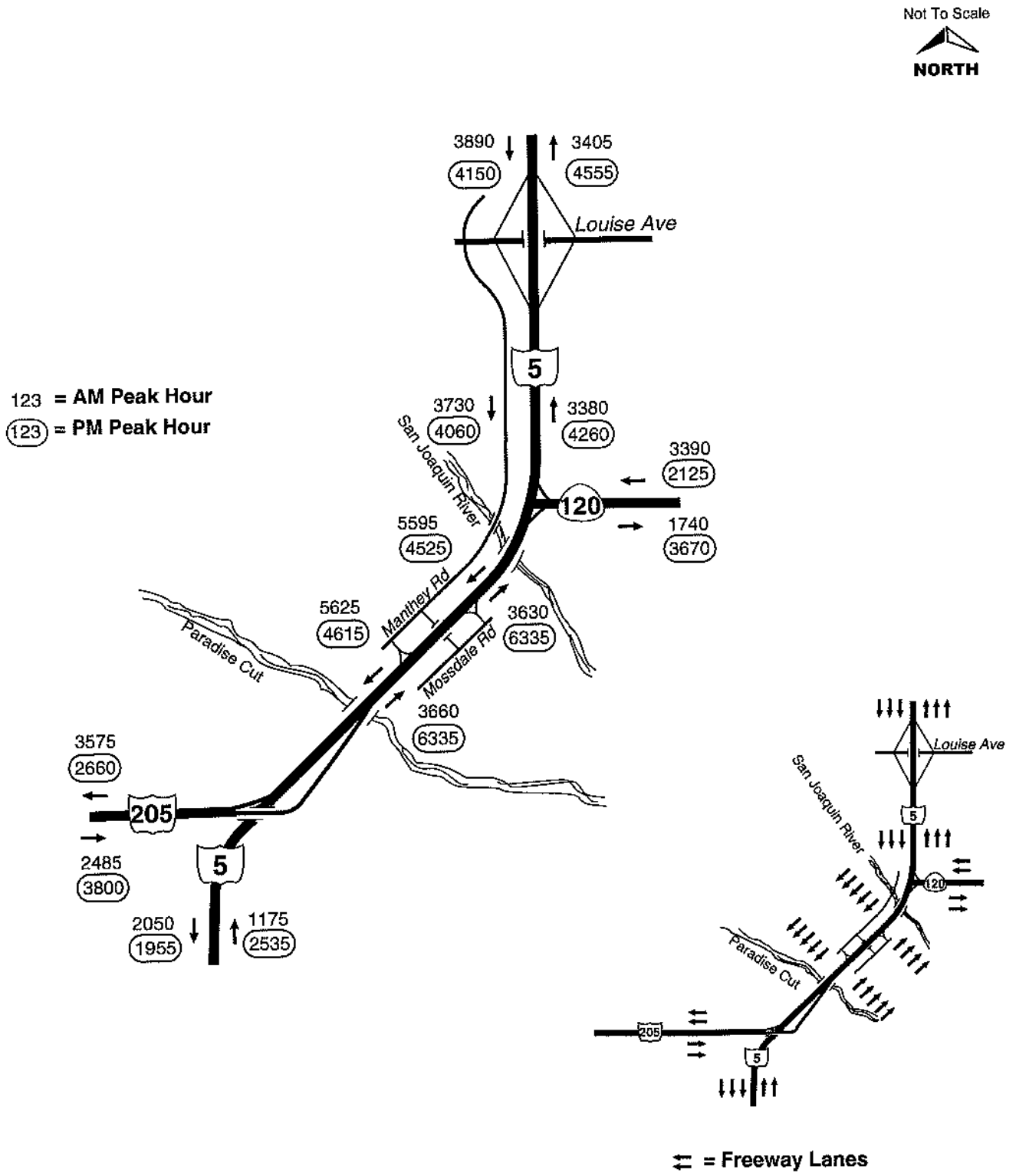
CRANE TRANSPORTATION GROUP

Figure 16-25
Existing + Project Buildout
AM Peak Hour Volumes



CRANE TRANSPORTATION GROUP

Figure 16-26
Existing + Project Buildout
PM Peak Hour Volumes



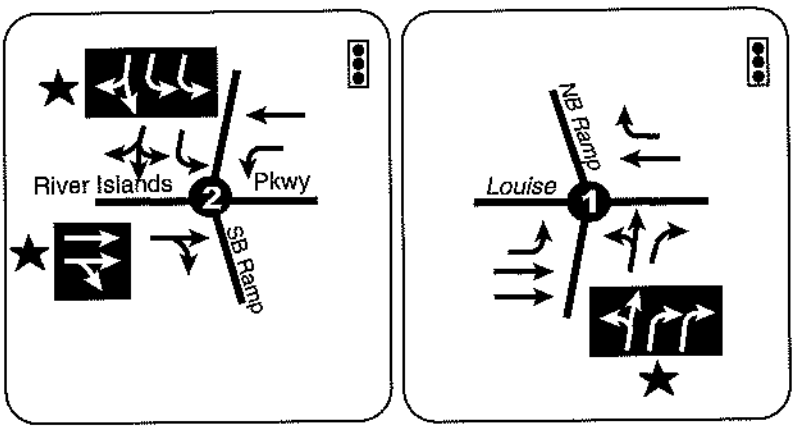
Mossdale Landing East EIR

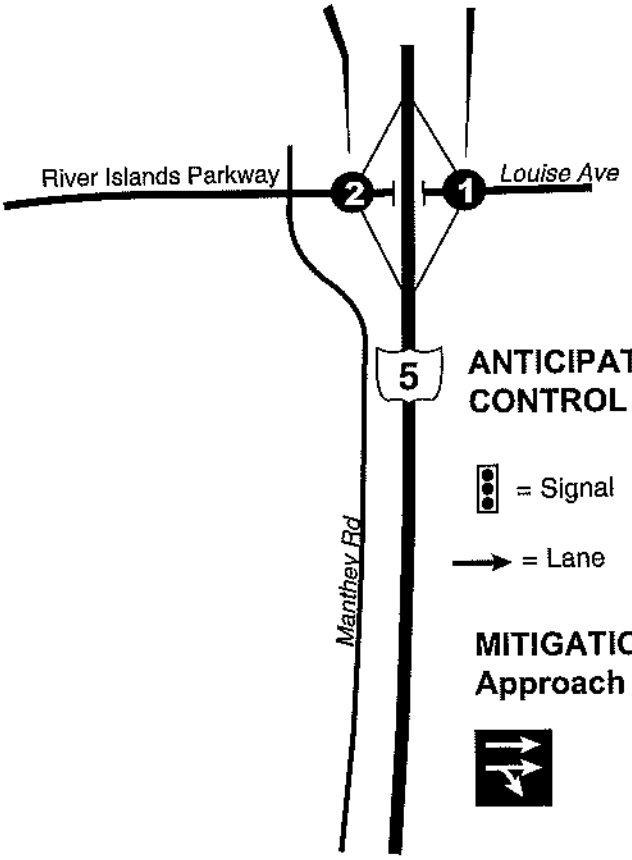
CRANE TRANSPORTATION GROUP

Exhibit 16-27
Existing + Project Buildout
AM and PM Peak Hour
Freeway Volumes and Lanes

Not To Scale

NORTH





ANTICIPATED LANES & CONTROL

= Signal

= Lane

MITIGATION: Required Approach Lanes

★ Improvement also required for Base Case conditions only

Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-28

Year 2007 Base Case + Project Intersection Mitigations

Louise Avenue/I-5 Northbound Ramps

PM Peak Hour—The project would increase volumes by more than 1% (18.0%) at this location already experiencing unacceptable Base Case LOS E operation. In addition, operation would be degraded from LOS E to LOS F conditions. The PM Peak hour level of service would be improved to LOS D – 37.8 seconds vehicle control delay with the mitigation measures recommended below.

Level of Significance: Significant

Mitigation Measures: (See Figure 16-28 and Table 16-5, above)

1. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution towards improvements at the River Islands Parkway/I-5 Southbound Ramps, as follows:

- Add a third southbound off-ramp lane and stripe as two exclusive left turn lanes and a shared through/right turn lane.

- Add a second eastbound Louise Avenue approach lane.

2. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution toward improvements at the Louise Avenue/I-5 Northbound Ramps, as follows:

- Add a third northbound off-ramp lane and stripe as two exclusive right turn lanes and a shared through/left turn lane.

3. The project applicant shall participate in the Mossdale Landing Traffic Monitoring Program.

Significance After Mitigation: Less than significant

Year 2007 Intersection Signal Warrant

Proposed project development by 2007 would not increase Base Case volumes to meet peak hour signal warrant #11 criteria levels at any major un-signalized intersection.

Level of Significance: Less than significant

Mitigation Measures: None required

Year 2007 Freeway Level of Service (see Table 16-4)

Proposed project development by 2007 would increase volumes along the I-5, SR 120 and I-205 freeways where Base Case operating conditions would already be an unacceptable LOS E or F in the peak commute directions (southbound or westbound during the AM peak hour and eastbound or northbound during the PM peak hour). However, project volume increases along these segments would be less than 1% (resulting in a less-than-significant impact) with three exceptions.

I-5 Southbound (from Louise Avenue to SR 120)

AM Peak Hour - The project would increase volumes by more than 1% (1.4%) along this segment of freeway already experiencing unacceptable Base Case LOS E operation.

I-5 Northbound (from SR 120 to Louise Avenue)

PM Peak Hour - The project would increase volumes by more than 1% (1.6%) along this segment of freeway already experiencing unacceptable Base Case LOS F operation.

I-205 Eastbound (west of I-5)

PM Peak Hour - The project would increase volumes by more than 1% (1.6%) along this segment of freeway already experiencing unacceptable Base Case LOS E operation.

As indicated by the mitigation measure below, the City of Lathrop would ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution for I-5 and I-205 freeway improvements. However, because the needed improvements (widening I-5 or I-205 to 8 lanes with or without the project) are not currently scheduled by Caltrans and because the development of these improvements by the proposed project is outside the scope of the project (i.e., it is a regional improvement), the Mossdale Landing East Phase 1 development would result in significant unavoidable (short term) traffic impacts to the identified I-5 and I-205 segments until said improvements are completed. Resultant 2007 Base Case + Project Phase 1 operating conditions with added freeway lanes is presented in Table 16-6.

Although the implementation of the Mitigation Measure would assist in reducing degradation of freeway operation on I-5 and I-205, actual freeway improvements would not be implemented by Caltrans rapidly enough to reduce the impact to less-than-significant levels. Therefore, these impacts are considered significant and unavoidable.

Level of Significance: Significant

Mitigation Measures:

1. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution for I-5 and I-205 freeway improvements.

Significance After Mitigation: Significant and Unavoidable

16.3.2 Year 2025 Base Case Traffic Impacts

Year 2025 Intersection Level of Service Impacts (see Table 16-7)

Proposed full project development by 2025 would produce significant level of service impacts at the following intersections.

River Islands Parkway/I-5 Southbound Ramps

AM Peak Hour—The project would increase volumes by more than 1% (9.1%) at this location already experiencing unacceptable Base Case LOS F operation. The level of service would be improved to LOS D – 53.2 seconds vehicle control delay with the mitigation measures recommended below.

PM Peak Hour—Project traffic would degrade operation from an acceptable LOS D to an unacceptable LOS E. The level of service would be improved to LOS D – 46.7 seconds vehicle control delay with the mitigation measures recommended below.

Louise Avenue/I-5 Northbound Ramps

PM Peak Hour—The project would increase volumes by more than 1% (6.0%) at this location experiencing unacceptable Base Case LOS E operation. The level of service would be improved to LOS D – 53.1 seconds vehicle control delay with the mitigation measures recommended below.

River Islands Parkway/Golden Valley Parkway

AM Peak Hour—Project traffic would degrade operation from an acceptable LOS D to an unacceptable LOS E. The level of service would be improved to LOS D – 54.7 seconds vehicle control delay with the mitigation measures recommended below.

PM Peak Hour—Project traffic would increase volumes by more than 1% (13.2%) at this location experiencing unacceptable Base Case LOS E operation. In addition, operation would be degraded from LOS E to LOS F conditions. The level of service would be improved to LOS D – 43.7 seconds vehicle control delay with the mitigation measures recommended below.

Golden Valley Parkway/Towne Centre Drive

PM Peak Hour—Project traffic would degrade operation from an acceptable LOS D to an unacceptable LOS E. The level of service would be improved to LOS D – 54.2 seconds vehicle control delay with the mitigation measures recommended below.

Level of Significance: Significant

Mitigation Measures: (see Figure 16-29 and Table 16-9)

1. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution towards improvements at River Islands Parkway/I-5 Southbound Ramps as follows:

- Add a fourth southbound off-ramp lane and stripe as two exclusive right turn lanes, and exclusives left turn lane and a shared left/through lane. One of the two right turn lanes would be a free right turn and channelized to its own exclusive departure lane, while the other right turn lane would be signal controlled.

2. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution towards improvements at Louise Avenue/I-5 Northbound Ramps as follows:

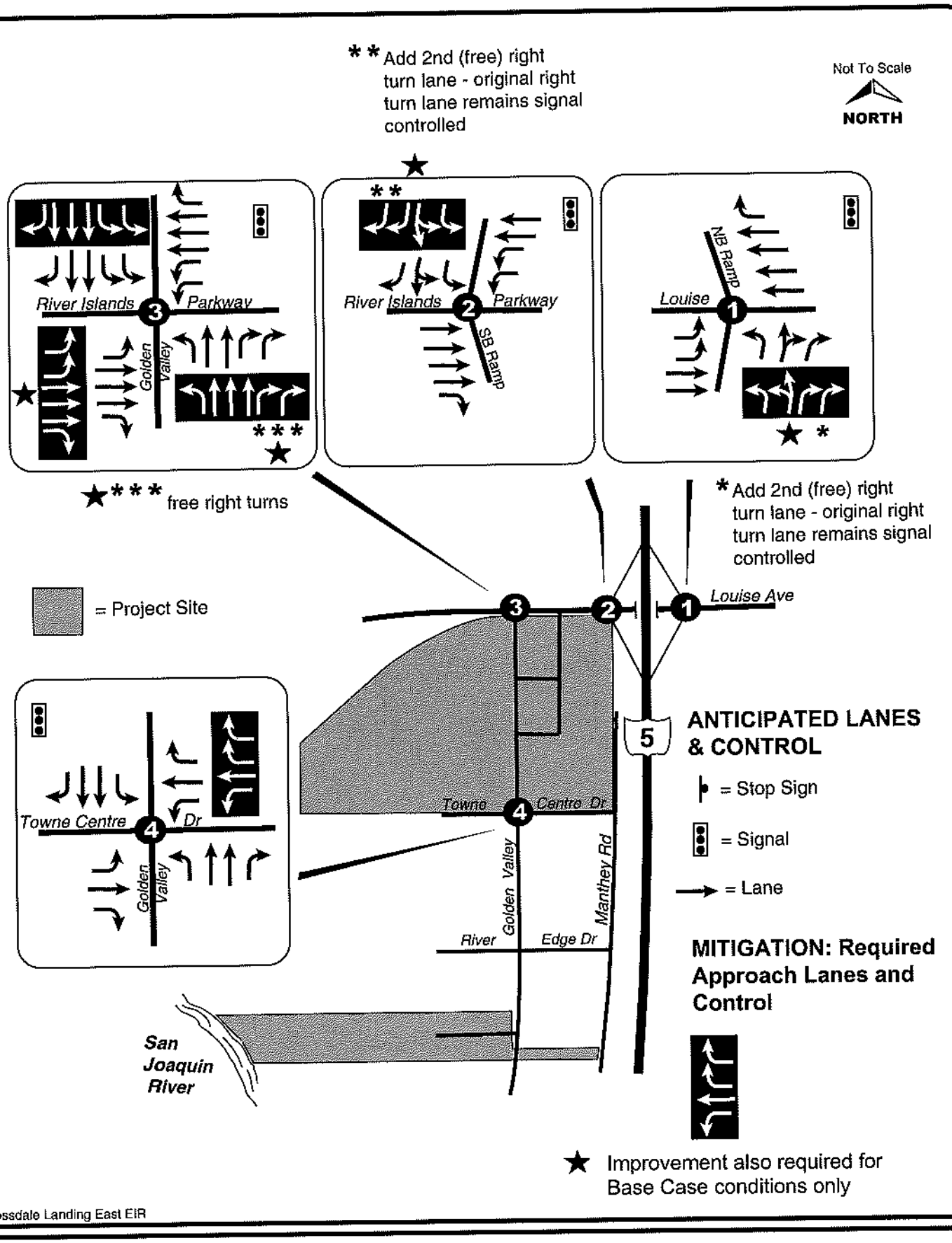
- Add a fourth northbound off-ramp lane and stripe as two exclusive right turn lanes, an exclusive left turn lane and a shared left/through lane. One of the two right turn lanes would be a free right turn and channelized to its own exclusive departure lane, while the other right turn lane would be signal controlled.

3. The City of Lathrop shall ensure that the project applicant pays its applicable Transportation Impact Fee for its fair share contribution towards improvements at River Islands Parkway/Golden Valley Parkway as follows:

- Provide free right turns on the northbound Golden Valley Parkway intersection approach.
- Add a fifth eastbound departure lane extending to the I-5 southbound ramps intersection.
- Add a second left turn lane to the eastbound River Islands Parkway approach.

4. The project applicant is fully responsible for design and construction costs of improvements at River Islands Parkway/Golden Valley Parkway as follows:

- Add third through lanes to the north and southbound Golden Valley Parkway approaches.



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-29
Year 2025 Base Case + Project Buildout Mitigations

5. The project applicant is fully responsibly for design and construction costs of improvements at Golden Valley Parkway/Towne Centre Drive as follows:

- Add a second right turn lane to the westbound Towne Centre Drive approach.

Significance After Mitigation: Less than significant

Year 2025 Intersection Signal Warrant

Proposed full project development by 2025 would not increase Base Case volumes to meet peak hour signal warrant #11 criteria levels at any major un-signalized intersection.

Level of Significance: Less than Significant

Mitigation Measures: None required

Year 2025 Freeway Level of Service (see Table 16-10)

Proposed full project development by 2025 would increase volumes along the I-5, SR 120 and I-205 freeways where Base Case operating conditions would already be an unacceptable LOS E or F in the peak commute directions (southbound or westbound during the AM peak hour and eastbound or northbound during the PM peak hour). However, project volume increases along these segments would be less than 1% (resulting in a less-than-significant impact) with four exceptions.

I-5 Southbound (north of Louise Avenue)

AM Peak Hour - The project would increase volumes by more than 1% (2.9%) along this segment of freeway already experiencing unacceptable Base Case LOS F operation.

I-5 Southbound (from north of Louise Avenue to SR 120)

PM Peak Hour - The project would increase volumes by more than 1% (1.6% north of Louise Avenue and 1.4% south of Louise Avenue) along these segments of freeway already experiencing unacceptable LOS E operation.

I-5 Northbound (north of Louise Avenue and south of I-205)

PM Peak Hour - The project would increase volumes by more than 1% (3.1% north of Louise Avenue and 3.7% south of I-205) along these segments of freeway already experiencing unacceptable LOS F operation.

SR 120 Eastbound (east of I-5)

PM Peak Hour - The project would increase volumes by more than 1% (1.6%) along this segment of freeway already experiencing unacceptable LOS F operation.

As indicated by the mitigation measure below, the City of Lathrop shall ensure that the project applicant pays its Applicable Transportation Impact Fee for its fair share contribution for I-5 and SR 120 freeway improvements. However, because these needed freeway improvements are not schedules to be completed by Caltrans by 2025, and because the full development of these improvements by the proposed project is outside the scope of the project (i.e. they are regional improvements), the Mossdale Landing East project would result in significant unavoidable (long term) traffic impacts to the identified I-5 and SR 120 segments until said improvements are completed. Table 16-10 lists needed 2025 Base Case and Base Case + project freeway lanes in order to provide acceptable peak hour operation. In all but one case, the number of new freeway lanes required to accommodate Base Case traffic would also accommodate Base Case + project volumes. The one exception is: I-5 northbound north of Louise Avenue, where an additional 5 lanes (rather than 4) would be required to provide acceptable operation with project traffic.

Although implementation of the following mitigation measure would assist in reducing degradation of freeway operation on I-5 and SR 120, actual freeway improvements may not be implemented by Caltrans rapidly enough to reduce the impact to less than significant levels. Therefore, this impact is considered significant and unavoidable.

Level of Significance: Significant

Mitigation Measures: (See Table 16-10)

1. The City of Lathrop shall ensure that the project applicant pays its Applicable Transportation Impact Fee for its fair share contribution for I-5 and SR 120 freeway improvements detailed as follows:

Summary of Required Freeway Lanes for Base Case + Project Peak Hour Traffic

I-5 (north of SR 120)	5 lanes northbound / 4 lanes southbound
I-5 (between SR 120 and I-205)	8 lanes each direction*
I-5 (south of I-205)	3 lanes each direction
I-205 (west of I-5)	5 lanes each direction
SR 120 (east of I-5)	4 lanes each direction

*As detailed in the 2025 Base Case improvements section, this would potentially require provision of two side-by-side freeways (4 lanes each) in the north and southbound directions.

Significance After Mitigation: Significant and Unavoidable

16.3.3 Existing Plus Project Traffic Impacts

Existing + Project Intersection Level of Service Impacts (see Table 16-11)

Proposed full project development would produce significant level of service impacts to the existing circulation system at the following intersections.

Louise Avenue/I-5 Southbound Ramps

AM Peak Hour—Signalized operation would be degraded from an acceptable LOS C to an unacceptable LOS E. The level of service would be improved to LOS D – 38.1 seconds vehicle control delay with the mitigation measures recommended below.

PM Peak Hour—Signalized operation would be degraded from an acceptable LOS C to an unacceptable LOS F. The level of service would be improved to LOS D – 39.2 seconds vehicle control delay with the mitigation measures recommended below.

Louise Avenue/I-5 Northbound Ramps

PM Peak Hour—Signalized operation would be degraded from an acceptable LOS B to an unacceptable LOS E. The level of service would be improved to LOS D – 42.6 seconds vehicle control delay with the mitigation measures recommended below.

Louise Avenue/Golden Valley Parkway

PM Peak Hour—All-way-stop operation would be an unacceptable LOS E. The level of service would be improved to LOS C – 22.8 seconds vehicle control delay with the mitigation measures recommended below.

Level of Significance: Significant

Mitigation Measures: (see Figure 16-30 and Table 16-12)

1. The project applicant is fully responsible for design and construction costs of improvements at River Islands Parkway /I-5 Southbound Ramps as follows:

- Add a second lane to the eastbound Louise Avenue approach.

2. The project applicant is fully responsible for design and construction costs of improvements at River Islands Parkway/I-5 Northbound Ramps as follows:

- Add a third northbound off-ramp lane and stripe as two exclusive right turn lanes and a combined through/left turn lane.

3. The project applicant is fully responsible for design and construction costs of improvements at River Islands Parkway/Golden Valley Parkway as follows:

- Signalize the intersection

TABLE 16-11
INTERSECTION LEVEL OF SERVICE
EXISTING + PROJECT

Intersection	AM Peak Hour		PM Peak Hour	
	Existing	Existing + Project	Existing	Existing + Project
Louise Ave./Harlan Rd. (Signal)	C-25.8[1]	C-24.2	C-28.2	C-28.5
Louise Ave./I-5 Northbound Ramps (Signal)	B-15.1[1]	D-36.1	B-19.7	E-66.3
Louise Ave./I-5 Southbound Ramps (Signal)	C-29.2[1]	E-57.5	C-26.8	F-129.7
Louise Ave./Manthey Rd. (Manthey Rd. Stop Sign Controlled)	A-9.5/A-9.7[2]	C-17.9[3]	A-9.6/A-9.4	B-14.8
Louise Ave./Shopping Center Entrance (Signal)	N/A	C-23.4[1]	N/A	C-21.2
Louise Ave./Golden Valley Parkway (All-Way-Stop)	N/A	D-32.1[4]	N/A	E-44.1
Golden Valley Parkway/Shopping Center Entrance North (Shopping Center Stop Sign Controlled)	N/A	C-20.8[5]	N/A	D/27.6
Golden Valley Parkway/Shopping Center Entrance South (Shopping Center Stop Sign Controlled)	N/A	C-17.6[5]	N/A	C-17.1
Towne Centre Dr./Golden Valley Parkway (All-Way-Stop)	N/A	A-8.3[4]	N/A	A-9.9
Manthey Rd./Towne Centre Dr. (Towne Centre Dr. Stop Sign Controlled)	N/A	A-9.1[6]	N/A	A-9.3
Manthey Rd./I-5 Southbound Hook Ramps (I-5 Ramps Stop Sign Controlled)	A-9.0	A-9.0[7]	A-8.7	A-8.7
Mossdale Rd./I-5 Northbound Hook Ramps (I-5 Ramps Stop Sign Controlled)	A-8.8	A-8.9[8]	A-8.8	A-9.0
Manthey Rd./I-5 Underpass from Mossdale Rd. (Underpass Stop Sign Controlled)	A-9.2	A-9.4[9]	A-9.1	A-9.7
Mossdale Rd./I-5 Underpass from Manthey Rd. (Underpass Stop Sign Controlled)	A-9.0	A-9.2[10]	A-9.3	A-9.6

Notes:

(1) Signalized level of service–control delay in seconds.
(2) Unsignalized level of service–average control delay in seconds–Louise Ave. westbound stop sign controlled through-left turn/Louise Ave. eastbound stop sign controlled approach.
(3) Unsignalized level of service–average control delay (in seconds). Southbound Manthey Rd. right turn.
(4) All-way-stop level of service–average control delay in seconds.
(5) Unsignalized level of service–average control delay (in seconds). Westbound Shopping Center driveway left turn.
(6) Unsignalized level of service–average control delay (in seconds). Eastbound Towne Centre Dr. approach.
(7) Unsignalized level of service–average control delay (in seconds). Southbound I-5 off-ramp approach.
(8) Unsignalized level of service–average control delay (in seconds). Northbound I-5 off-ramp approach.
(9) Unsignalized level of service–average control delay (in seconds). Westbound Underpass Rd. stop sign controlled approach to Manthey Rd.
(10) Unsignalized level of service–average control delay (in seconds). Eastbound Underpass Rd. strop sign controlled approach to Mossdale Rd.

Year 2000 Highway Capacity Manual Operations Methodology
Source: Crane Transportation Group

Significance After Mitigation: Less than significant

Existing + Project Intersection Signal Warrant

The proposed full project development would increase volumes above signal warrant criteria levels at one location.

Louise Avenue/Golden Valley Parkway

PM Peak Hour – (All-Way-Stop) Existing + project buildout volumes would exceed Caltrans #11 peak hour urban warrant criteria levels during the PM peak hour. The level of service would be improved to LOS C – 22.8 seconds vehicle control delay with the mitigation measures recommended below.

Level of Significance: Significant

Mitigation Measures: (see Figure 16-30 and Table 16-12)

1. The project applicant is fully responsible for design and construction costs of improvements at River Islands Parkway/Golden Valley Parkway as follows:

- Signalize the intersection

Significance After Mitigation: Less than significant

Existing + Project Freeway Level of Service (see Table 16-13)

Existing + proposed project full buildout traffic would not result in unacceptable AM or PM peak hour operation along any segment of the I-5, SR 120 or I-205 freeways in the project vicinity.

Level of Significance: Less than significant

Mitigation Measures: None required

16.3.4 Other Transportation Issues

Construction Traffic

The project applicant estimates there could be up to 75 construction workers accessing the project site on any given weekday. All but 25 workers are expected to access the site before 6:30 AM and all but 25 would exit the site before 4:30 PM. No construction-truck traffic is expected before 8:00 AM or after 4:00 PM. Should these projections and commute times be followed, operational impacts would remain at a less-than-

significant level. However, construction traffic, particularly truck traffic, could degrade pavement condition along all roadways used for access. As indicated by the mitigation measures below, the project applicant will ensure that all degradation of pavement condition due to project construction is fully repaired and monitored every six months, reducing this impact to less than significant.

Level of Significance: Significant

Mitigation Measures:

1. No construction delivery truck traffic shall be allowed on the local roadway network before 8:00 AM or after 4:30 PM.

2. No construction worker traffic shall be allowed on the local roadway network between 6:30 and 8:30 AM and between 4:30 and 6:00 PM.

3. All degradation of pavement condition along Louise Avenue and Manthey Road due to Mossdale Landing East construction traffic will be fully repaired to the satisfaction of the City of Lathrop. City staff and project applicant shall jointly monitor the condition of each roadway every six months.

Significance After Mitigation: Less than significant

Internal Circulation in the North Single-Family Residential Area

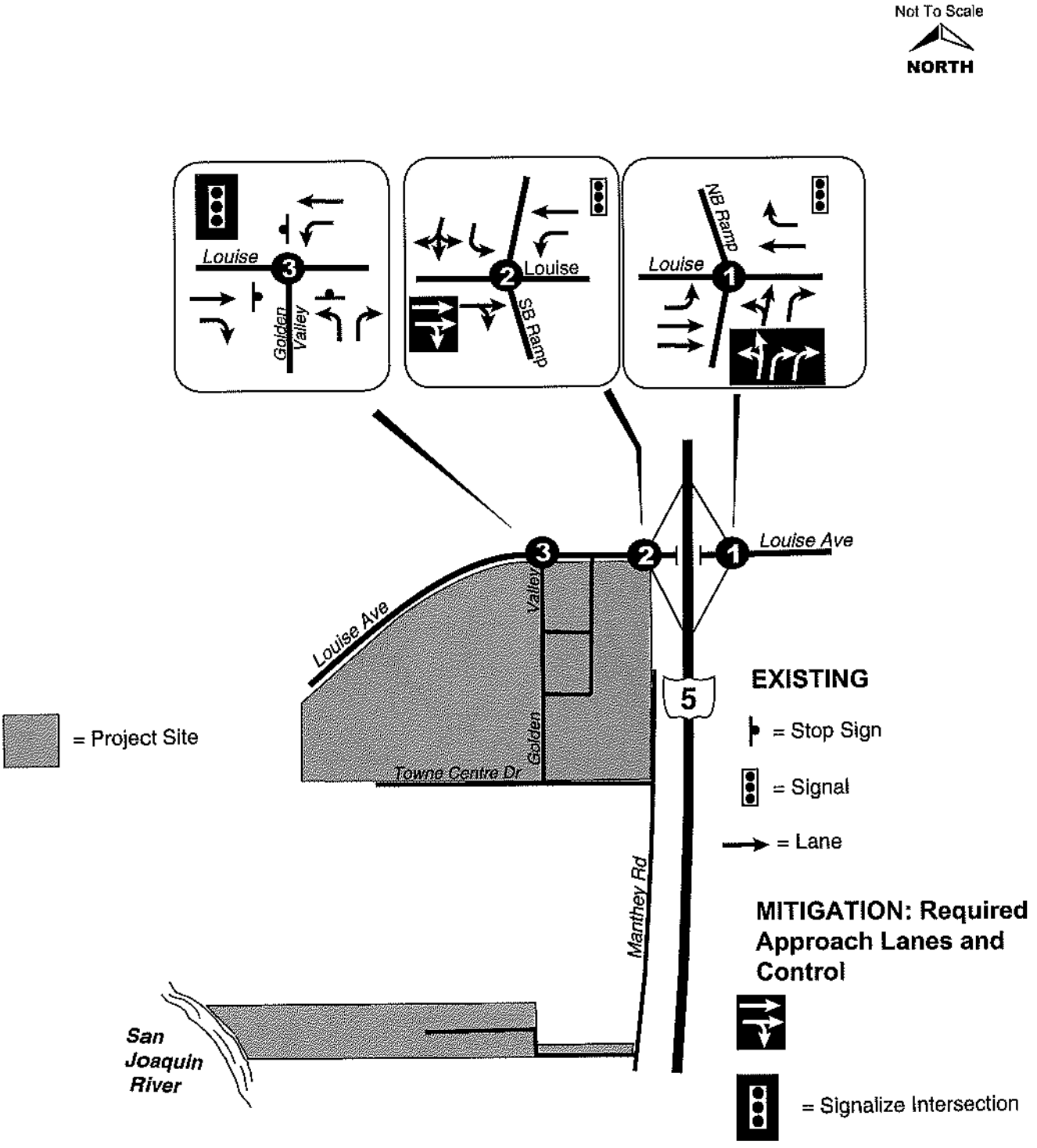
Proposed curb-to-curb street widths within the North Single-Family Residential Are are as follows:

McKee Boulevard: 36 feet (no parking allowed, striped Class II bike lanes)
Johnson Ferry Road and Golden Spike Trail: 36 feet
Median and Low Density Residential Streets: 32 feet
Neighborhood Entries: 20 feet (separate 20-foot exit lane and 20-foot entry lane)

The proposed circulation plan for the north single-family residential area appears acceptable with the following exceptions. These concerns would be mitigated to a less than significant level with the following mitigation measures.

- The 32-foot-wide residential streets should function acceptably where straight, but would result in significant safety concerns at any moderate to 90-degree or sharper curve due to the increased potential for sideswipe or head-on collisions. Locations would be:

  Colonian Way (east and west end)
  Victorian Way (east and west end)
  Street M (north end)
  Street E (north and south end)
  Street K (north and south end)



Mossdale Landing East EIR

CRANE TRANSPORTATION GROUP

Figure 16-30
Existing + Project Buildout Mitigations

TABLE 16-12
MITIGATED INTERSECTION LEVEL OF SERVICE
EXISTING + PROJECT BUILDOUT

Location	AM Peak Hour	PM Peak Hour
Louise Ave./I-5 Southbound Ramps (Signal)	D-38.1[(1)(2)]	D-39.2[(2)]
Louise Ave./I-5 Northbound Ramps (Signal)		D-42.6[(1)(3)]
Louise Ave./Golden Valley Parkway		C-22.8[(1)(4)]

Notes:

(1) Signalized level of service–control delay in seconds.
(2) Add a second lane to the eastbound Louise Avenue approach.
(3) Add a third northbound off-ramp lane, stripe as two exclusive right turn lanes and a combined through/left turn lane.
(4) Signalize the intersection.

Year 2000 Highway Capacity Manual Analysis Methodology
Source: Crane Transportation Group

TABLE 16-13
FREEWAY SEGMENT LEVEL OF SERVICE
EXISTING+ PROJECT BUILDOUT

Location	Direction	# of Lanes	Am Peak Hour	PM Peak Hour
I-5 North of Louise Ave. Interchange	NB	3	C	C
	SB	3	C	C
I-5 Between Louise Ave. & SR120	NB	3	C	C
	SB	3	C	C
I-5 Between SR120 and Manthey/Mossdale Hook Ramps	NB	4	B	D
	SB	5	C	B
I-5 Between Manthey/Mossdale Hook Ramps and I-205	NB	5	B	C
	SB	5	C	B
I-5 Just South of I-205	NB	2	A	C
	SB	3	B	B
I-205 Between I-5 and MacArthur Dr. Interchange	EB	2	C	D
	WB	2	D	C
SR120 Just East of I-5	EB	2	B	D
	WB	2	D	B

Year 2000 Highway Capacity Manual Analysis Methodology
Source: Crane Transportation Group

Street A (north end and just south of southerly Street B connection)
Street B (southwest 90-degree curve)

- The 36-foot-wide McKee Boulevard would not allow provision of left turn lanes on the approaches to any intersections along the moderately high volume road (with 450 to 500 vehicles per hour). Some through traffic attempting to pull around the right side of a stopped vehicle waiting to turn left would need to enter the bike lane adjacent to the curb. This would be a significant safety concern for bike riders.

Level of Significance: Significant

Mitigation Measures:

1. All proposed residential streets shall be 36 feet wide curb-to-curb on the approaches to and through each major curve (as listed in the impact section) or on-street parking be prohibited on the inside of all 90-degree or sharper curves.

2. McKee Boulevard shall be widened to provide left turn lanes on the approaches to Johnson Ferry Road, Street D, Street C and any driveways serving the village commercial or apartment complex parking lots.

Significance After Mitigation: Less than significant

Internal Circulation in the South Single-Family Residential Area

Proposed curb-to-curb street widths within the South Single-Family Residential Area are as follows:

McKee Boulevard: 36 feet (no bicycle lanes proposed)
Golden Spike Trail: 36 feet
Residential Street P (connecting to southbound Golden Valley Parkway—right turn in/out only): 32 feet
Other Residential Culs-de-sac: 32 feet
Indian Summer Way: 50 feet

The proposed circulation plan for the south single-family residential area appears acceptable with the following exceptions. These concerns would be mitigated to a less than significant level with the following mitigation measures.

- The narrow width of Street P at its connection to southbound Golden Valley Parkway would lead to safety concerns due to the potential for vehicles turning from Golden Valley Parkway at a high speed not staying fully within their westbound (departure) travel lane near the intersection (particularly if there is parking along both sides of the street).

Level of Significance: Significant

Mitigation Measures:

1. Prohibit outbound movements at any driveway connection to Golden Valley Parkway north of the main entrance.

2. Limit proposed driveway connections to Street N to a single driveway connection about midway between Golden Valley Parkway and Manthey Road.

3. Prohibit diagonal parking along Street N in close proximity to the Golden Valley Parkway or Manthey Road intersections.

Significance After Mitigation: Less than significant

Internal Circulation in the Service Commercial Area (North)

The proposed plan in the UDC shows one access connection to Street N (near Golden Valley Parkway), two along Manthey Road and one along Towne Centre Drive (midway between Golden Valley Parkway and Manthey Road). Manthey Road is proposed to be 44 feet wide curb-to-curb, while Town Centre Drive is proposed to be 60 feet wide (30-foot half section adjacent to the project site) with diagonal parking.

The proposed service commercial circulation and access plan appears acceptable with the following exceptions. These concerns would be mitigated to a less than significant level with the following mitigation measures.

- The Manthey Road 44-foot width would not allow provision of two travel lanes along with both right and left turn deceleration lanes on the approaches to project driveways and to Towne Centre Drive.

- Maneuvers to/from the diagonal parking on both sides of Towne Centre Drive and Street N in close proximity to Golden Valley Parkway and Manthey Road could lead to short term backups of traffic through both the Golden Valley Boulevard and Manthey Road intersections as well as inefficient delivery of vehicles into each intersection.

- The access connection to Street N is too close to the Golden Valley Parkway intersection. Turns to/from this driveway could interfere with turn movements from Golden Valley Parkway.

Level of Significance: Significant

Mitigation Measures:

1. Provide right and left turn deceleration lanes on the approaches to both Manthey Road project driveways and a right turn deceleration lane on the southbound Manthey Road approach to Towne Centre Drive.

Mitigation Measures:

1. Widen Street P to at least 36 feet curb-to-curb for at least 100 feet west of Golden Valley Parkway and prohibit parking on the north side of the street at least 50 feet from Golden Valley Parkway.

Significance After Mitigation: Less than significant

Internal Circulation in the Highway Commercial Area

The proposed plan in the UDC shows one access connection to River Islands Parkway, two connections to Golden Valley Parkway and two connections to Street N at the south end of the site. Street N would connect Golden Valley Parkway to Manthey Road. The Street N and southerly driveway connections to Golden Valley Parkway would ultimately be signalized, as would the driveway connection to the River Islands Parkway. No left turns out would be allowed at the River Islands Parkway signal. Street N is proposed to be 60 feet wide curb-to-curb and have diagonal parking in each direction. None of the uses within the highway commercial center (including all the pads) are shown having drive-thru facilities.

The highway commercial internal circulation access plan appears acceptable with the following exceptions. These concerns would be mitigated to a less than significant level with the following mitigation measures.

- The northerly (un-signalized) driveway connection to River Islands Parkway (where right turns in and out only would be allowed) would result in significant safety concerns due to some potential movements from the outbound right turn. Some outbound vehicles would attempt to cross five lanes of traffic to enter the left turn lane providing access to westbound River Islands Parkway. This diagonal movement over a short distance would create significant safety concerns.

- The two project access drive connections to Street N are too close to Golden Valley Parkway and Manthey Road. Turns to/from both driveways could interfere with turn movements from the major streets at either end of Street N.

- Maneuvers to/from the diagonal parking on both sides of Street N in close proximity to the Golden Valley Parkway intersection could lead to short-term backups of traffic back through the intersection as well as inefficient delivery of vehicles into each intersection.

Level of Significance: Significant

2. Prohibit diagonal parking along Street N in close proximity to the Golden Valley Parkway or Manthey Road intersections.

3. Access to the service commercial access along Street N should be located about halfway between Golden Valley Parkway and Manthey Road (opposite the proposed new access to the highway commercial center). Potentially, all-way-stop control this intersection.

Significance After Mitigation: Less than significant

Internal Circulation in the Village Commercial Area

The proposed plan in the UDC shows access to the village commercial area via a right-turn-in-only driveway from southbound Golden Valley Parkway, a driveway connection to Towne Center Drive (about halfway between Golden Valley Parkway and McKee Boulevard), and a driveway connection to McKee Boulevard (just south of the McKee Boulevard intersection with Street C in the residential neighborhood north of the village commercial parking). Towne Centre Drive would be 60 feet curb-to-curb with diagonal parking.

The proposed village commercial vehicular circulation and access plan appears acceptable with the following exceptions. These concerns would be mitigated to a less than significant level with the following mitigation measures.

- Maneuvers to/from the diagonal parking on the north side of Towne Centre Drive in close proximity to Golden Valley Parkway could lead to short term backups of traffic through the Golden Valley Parkway intersection.

- The close proximity of the McKee Boulevard/village commercial parking lot/apartment complex intersection with the McKee Boulevard/Street C intersection could lead to occasional conflicts due to simultaneous turns at both intersections. This would create a significant safety concern.

Level of Significance: Significant

Mitigation Measures:

1. Prohibit diagonal parking along Towne Centre Drive in close proximity to Golden Valley Parkway (at least 150 to 200 feet from Golden Valley Parkway).

2. Provide at least 100 feet of separation between the intersection of McKee/Street C and any driveway connections along McKee Boulevard to the Village Commercial parcels. Any village commercial and apartment complex driveways should also not be moved any closer than 150 feet from

the Towne Centre Drive traffic circle approach (i.e. no closer than currently shown on the UDC plan).

Significance After Mitigation: Less than significant

Internal Circulation in the Service Commercial Area (South)

No detail is shown in the UDC regarding access to or internal circulation for this parcel. Access is therefore assumed from Manthey Road, which is proposed as a 44-foot-wide street.

This access plan appears acceptable with the following exception. This concern would be mitigated to a less than significant level with the following mitigation measure.

- A 44-foot-wide Manthey Road would not allow provision of two through lanes as well as left and right turn deceleration lanes on the approaches to an access driveway.

Level of Significance: Significant

Mitigation Measures:

1. Provide right and left turn deceleration lanes on the Manthey Road approaches to the commercial access driveway and limit access to a single driveway.

Significance After Mitigation: Less than significant

Pedestrian Circulation

North Single Family Residential Area

A detailed internal pedestrian circulation plan has only been prepared for the northerly single-family development. Sidewalks would be provided along both sides of all streets within this area. An eight-foot-wide multiuse trail would also be provided along the west side of Golden Valley Parkway. In addition, two walkways would connect Street K and Street M in the residential area to Golden Valley Parkway at the north and south ends of the subdivision (just south of the River Islands Parkway intersection and just north of the Towne Centre Drive intersection and the southbound right turn access into the Village Commercial parking area). Also, a walkway between residential units would connect Street A to Louise Avenue at the westerly end of the site (opposite a roadway leading to a park in the Mossdale Landing development). Pedestrian circulation in the single family development appears acceptable with the one potential concern that neither of the walkways connecting to Golden Valley Parkway is located at either of the two proposed signalized intersections along the Parkway (between River Islands Parkway and Towne Centre Drive) that will access the shopping centers east of

Golden Valley Parkway. Some pedestrians may attempt to cross Golden Valley Parkway at the mid-block locations where the pedestrian walkways would be located. These concerns would be mitigated to a less than significant level with the following mitigation measures.

South Single Family Residential Area

Sidewalks are proposed along both sides of all internal streets and an eight-foot-wide multiuse trail would be provided along the west side of Golden Valley Parkway. Indian Summer Way would have a five-foot sidewalk along its east side and a 12-foot-wide multiuse trail along its west side. All should function acceptably and the level of impact would be less than significant.

Village Commercial and Apartment Complex Area

An eight-foot-wide multiuse trail would be provided along Golden Valley Parkway. Sidewalks would also be provided along Towne Centre Drive, McKee Boulevard, Street A and Street C frontages. Five pedestrian paseos would connect the village commercial (north) parking area to Towne Centre Drive. All should function acceptably and the level of impact would be less than significant.

Highway and Service Commercial Areas

An eight-foot-wide multiuse trail would be provided along the south side of River Islands Parkway and the east side of Golden Valley Parkway, while sidewalks would be provided adjacent to the commercial facilities along Manthey Road, Street N and Towne Centre Drive. All should function acceptably. No detail is provided regarding internal pedestrian circulation in either case.

Level of Significance: Potentially Significant

Mitigation Measures:

1. North Single-Family Residential Area

    - Relocate the walkways connecting the northerly single-family subdivision to Golden Valley Parkway to the locations of the proposed signalized shopping center access intersections along the parkway.

    (or)

    - Maintain walkways in their currently proposed locations and develop a design for the Golden Valley Parkway median that will prohibit or severely discourage mid-block pedestrian/bike crossings.

Significance After Mitigation: Less than significant

Transit Service

There are no indications on the tentative map for the northerly or southerly single-family subdivisions or in the UDC plans for the highway commercial, service commercial or village commercial areas that transit route considerations have been taken into account. Realistically, Golden Valley Parkway, Towne Centre Drive, McKee Boulevard, Street N and Manthey Road are the only thoroughfares that would likely ever have bus service. No potential bus stop locations or bus bays are shown on these routes. These concerns would be mitigated to a less than significant level with the following mitigation measures.

Level of Significance: Potentially significant

Mitigation Measures:

1. The project applicant should work with local transit agency to incorporate potential future transit route and transit stop designs into their plans for McKee Boulevard, Golden Valley Parkway, Manthey Road, Street N and Towne Centre Drive.

2. All project commercial area developers should work with the local transit agency to incorporate transit route and transit stop designs into their future plans.

Significance After Mitigation: Less than significant

Bicycle Circulation

The UDC shows that internal to the project or along project roadway frontages, Class I pedestrian/bicycle trails would be provided along both sides of Golden Valley Parkway, the south side of River Islands Parkway and along the west side of Indian Summer Way (in the southern project area). In addition, the internal circulation plan for the northerly single family residential area shows a Class II bike route along both sides of McKee Boulevard between Johnson Ferry Road and Towne Centre Drive. Bike riders would share the streets with cars along all residential streets. This could lead to significant safety concerns at curves on the proposed narrow 32-foot residential streets if parking is allowed on both sides of the street. These concerns would be mitigated to a less than significant level with the following mitigation measures.

Bike riders in the north single family subdivision using the one-parcel-long pathway connecting Street A to Louise Avenue could be tempted to cross Louise Avenue at a high rate of speed (due to the low volume of traffic likely on this section of Louise Avenue). This would create a significant safety concern. These concerns would be mitigated to a less than significant level with the following mitigation measures.

Bike riders using the pathways connecting Street K and Street M to Golden Valley Parkway may also be tempted to cross the Parkway at these mid-block locations (similar to the potential problem with mid-block pedestrian crossings). Also, as discussed in the internal circulation section, the 36-foot curb-to-curb width of McKee Boulevard and lack of left turn lanes on intersection approaches would promote vehicles pulling into the Class II bike lanes as they make their way around vehicles waiting to turn left. These concerns would be mitigated to a less than significant level with the following mitigation measures.

Level of Significance: Potentially significant

Mitigation Measures:

1. Widen all streets within the northerly subdivision to 36-foot widths on the approaches and through each curve (see locations in the internal circulation section) or prohibit parking on the inside of each 90-degree or sharper curve.

2. Design the one-parcel-long pathway connecting Street A in the northerly subdivision to Louise Avenue to require bike riders to dismount or proceed slowly near Louise Avenue.

3. Relocate the northerly subdivision pedestrian/bicycle connections to Golden Valley parkway to the locations of the proposed signalized shopping center access intersections along the Parkway.

   (or)

   Maintain walkways/bicycle connections in their currently proposed locations and develop a design for the Golden Valley Parkway median that will prohibit or severely discourage mid-block bike crossing.

4. Provide left turn lanes on the McKee Boulevard approached to all intersections as well as the village commercial/apartment complex driveways.

Significance After Mitigation: Less than significant

17.0 UTILITIES

This chapter addresses the availability of, and potential project impacts on, urban utility services needed for development of the proposed project. Required utilities would include domestic water, wastewater disposal, recycled water, storm drainage and electrical, gas, solid waste disposal, cable television and phone service.

The primary source documents for this analysis are City of Lathrop Master Plans for the various municipal utilities. The most comprehensive of these master plans is the City's recently adopted (July 2001) Lathrop Water, Wastewater, and Recycled Water Master Plan (Nolte 2001). The City has also adopted a Storm Drain Master Plan (Lew-Garcia-Davis 1992). Thresholds of significance for all utility-related issues are provided below.

Thresholds of Significance

According to the CEQA Guidelines, a project may have a significant effect on the environment if it would 1) exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, 2) require or result in the construction or expansion of water, wastewater or storm drainage facilities that could cause significant environmental effects, 3) require the development of new water supplies available to serve the project, 4) not comply with federal, state and local statutes and regulations related to solid waste, or 5) not be served by a landfill with sufficient capacity to accommodate the project's solid waste disposal needs.

Impacts Adequately Addressed in the Project Initial Study

The initial study did not identify any issues in this area that could be clearly identified as not significant and that should not be subject to further analysis in the EIR.

17.1 DOMESTIC WATER

Environmental Setting

The City of Lathrop's existing domestic water supply is derived from groundwater. The City has four active groundwater wells (Wells 6 through 9). Combined capacity of the four operating wells is approximately 5,000 GPM or 7.2 MGD. The City's water system also includes three water storage tank and booster pump stations that store and transport water from the wells throughout the City's water service area.

According to the Lathrop Water, Wastewater and Recycled Water Master Plan (Master Plan), in the near term (2001-2004), the City of Lathrop plans to obtain all its water from existing and expanded well system. Over the period, well pumping would increase steadily, from the current 2,100 acre-feet per year (AFY) to approximately 6,300 AFY in 2004, to accommodate near-term development. Demands through 2030 are projected to reach 18,800 AFY. This increase in well water extraction would be reduced, starting in 2005, with the advent of planned South County Surface Water Supply Project (SCSWSP) water deliveries, discussed below. Any delay in SCSWSP water deliveries would result in corresponding increase in pumping. Table 17-1 identifies future water demand and the planned sources of this water.

TABLE 17-1
AVERAGE ANNUAL WATER DEMAND AND SUPPLY (IN AFY)

Year	Water Demand	Water Supply		
		Groundwater	SCWSP	Total
2000 (near term)	2,100	2,100	0	2,100
2001	3,300	3,300	0	3,300
2002	4,300	4,300	0	4,300
2003	5,300	5,300	0	5,300
2004	6,300	6,300	0	6,300
2005	7,300	2,100	5,200	7,300
2010	10,900	2,900	8,000	10,900
2015	13,100	5,100	8,000	13,100
2020	15,200	3,400	11,800	15,200
2025	17,000	5,200	11,800	17,000
2030	18,000	7,000	11,800	18,800

The South San Joaquin Irrigation District (SSJID) and the cities of Lathrop, Escalon, Manteca and Tracy have joined to form the South County Surface Water Supply Project (SCSWSP). This project would withdraw a portion of SSJID's Stanislaus River entitlement from Woodward Reservoir, treat it at a new plant located in the vicinity of the reservoir, and distribute it to the four participating cities via a new pipeline system. This new source would limit the amount of groundwater needed to accommodate projected growth in the south county, and is expected to halt or even reverse the salt water intrusion that threatens water quality in the area. The adopted master plan assumes the SCSWSP will be in operation by 2005. This project is under construction.

A project level EIR was certified on the construction of three of the new wells (#21-23). Well #21 would serve near term development in the Mossdale Landing and MLE (formerly Lathrop Station) areas. Well #21 is currently under construction and construction of the accompanying manganese treatment plant is expected to begin in the next few months. A water line from Well #21 is expected to be available for municipal use in 2004 (Buck, pers. comm.).

California legislation has recently enacted SB 610 requiring a Water Supply Assessment Report (WSAR) to be prepared for large development projects to assess project water needs in relationship to localized water supplies. In 2001, SB 221 was adopted, additionally requiring a Written Verification of Stable Water Supply Report (WVSWSR) be prepared pursuant to SB 610, to ensure availability of adequate water supplies to serve the project. A WSAR (August 2002) and a WVSWSR (October 2002) were prepared by Nolte Engineering for the Mossdale Landing, River Islands at Lathrop, and Mossdale Landing East projects. SB 610/221 requirements for the proposed project have been met by these documents.

The project site is not currently served by the City's municipal water system, however, extension of water service to the area is anticipated in 2003 in conjunction with the approved development of the Mossdale Landing project. The westernmost backbone portion of the existing water system is located immediately east of I-5, more or less along Harlan Road. Two points of connection are proposed to the existing system, one at Louise Avenue (18-inch) and one at Nestle Way (12-inch). The planned Mossdale Landing water distribution system includes 10-inch lines located along Golden Valley Parkway, McKee Boulevard, Louise Avenue and Towne Centre Drive. The distribution system would serve planned development within Mossdale Landing as well as the MLE project (McKee and Lathrop Associates properties). Distribution lines are located throughout the planned developed areas.

Environmental Impacts and Mitigation Measures

The proposed project involves the urbanization of approximately 150 acres and associated new demands for domestic water service, which is proposed to be provided by the City of Lathrop. Based on demand factors utilized in the City's adopted Water, Wastewater, and Recycled Water Master Plan (Nolte 2001), proposed demands would amount to approximately 1.3 million gallons per day (MGD). The majority of this demand, detailed in Table 17-2, would be the result of proposed medium-density residential development (approximately 57%). Most of the remaining demand would be associated planned with commercial development.

The approved Mossdale Landing project includes improvements to the existing City of Lathrop domestic water system that are intended to accommodate MLE water demands as well as flow requirements needed to support municipal fire protection. The following sections address the effectiveness of the proposed improvements in meeting anticipated demands as well as potential impacts on the capacity and operation of the City of Lathrop system.

TABLE 17-2
MOSSDALE LANDING EAST WATER DEMANDS AT BUILDOUT

Land Use Category	Acres	Rate gal/ac/day	Demands GPD
Low Density Residential	23.2	1,760	41008
Med. Density Residential	27.6	3,000	82800
High Density Residential	4.0	4,200	16800
Village Commercial	6.5	1,500	9750
Service Commercial	14.0	1,500	21000
Highway Commercial	27.5	1,500	41250
Open Space	3.6	none	
Parks	5.8	300	1740
Streets	37.9	none	
TOTAL	146.8		214348

Note: Rates derived from Nolte 2001

Project Impacts on Existing and Planned Municipal Water Supplies

The proposed project is located within the adopted service area for City water, wastewater, and recycled water utilities. The City of Lathrop recently (July 2001) adopted a comprehensive Master Plan for Water, Wastewater and Recycled Water Utilities (Nolte 2001). The adopted Master Plan identifies needed water supply development to support planned urbanization through the year 2030. Planned sources of water supply include new wells, as well as the City's participation in the improved South County Service Water Supply Project (SCSWSP), which is currently under construction.

A Written Verification of Stable Water Supply for Mossdale Landing, River Islands and Lathrop Station projects was written in accordance with SB 610/221 by Nolte (2002). Annual water demand for the MLE (formerly Lathrop Station) project area is projected at 296 acre-feet per year. This is substantially below the 478 acre-foot annual water demand identified for Lathrop Station in the Nolte study. The study determines that water demands will be met by available water supplies in the interim and buildout conditions (2005-2025), and in normal year, single-year drought, and multi-dry year drought conditions for the Mossdale Landing, River Islands and Lathrop Station projects.

Water demands associated with the project are consistent with projected demands included in the adopted Master Plan and SB 610/221 Water Supply Analysis, and the project will be required to participate in financing of City water supply projects through adopted connection fees and financing mechanisms, such as the Water Consortium or Mossdale Village Community Facilities District 2003-01, adopted for construction of Well #21 and water treatment facility, and the SCSWSP project.

Although the proposed project would participate proportionately in the financing of these improvements, and available water supplies have been determined to meet project demands, specific surface water allocations have not yet been made for the proposed project.

Level of Significance: Potentially significant

Mitigation Measures:

1. Proportionate share groundwater and surface water allocations shall be acquired for the proposed project site before the project connects to the municipal water system

Significance after mitigation: Less than significant

Potential Effects on Water Distribution System

The water distribution system approved for Mossdale Landing and proposed for MLE was developed in accordance with the Lathrop Water, Wastewater and Recycled Water Master Plan. The project would involve construction of additional points of connection within a looped water system proposed and to be initially installed by Mossdale Landing (Figure 3-9). MLE proposes a 10-inch domestic water line originating at an 18-inch line in Louise Avenue, traveling south along Golden Valley Parkway to the northern border of the Lathrop Associates site. The MLE project would provide an additional 10-inch line along Louise Avenue between Golden Valley Parkway and McKee Boulevard, as well as a 10-inch line along McKee Boulevard from Louise Avenue to Towne Center Drive.

The water distribution system has been designed and sized to serve the proposed project under buildout conditions, in accordance with City Standards. A looped system is proposed with connections to the existing water system at Louise Avenue and at Nestle Way. Communication with City of Lathrop Public Works department has confirmed that the system, as proposed, is adequately designed to serve the project.

Level of Significance: Less than significant

Mitigation Measures: None required

Water Storage

Mossdale Village as a whole will require a water storage facility. A water tank is proposed to be located on the southeast corner of Unit 2, and the proposed project will dedicate a site for this facility. The steel tank would be approximately 26 feet tall, 90 feet in diameter and have a capacity of approximately one million gallons. This tank would fulfill water storage needs for the Mossdale Village project area, including the proposed project (Nolte, 2002).

Level of Significance: Less than significant

Mitigation Measures: None required

17.2 WASTEWATER AND RECYCLED WATER SYSTEMS

Environmental Setting

There are no existing public sewers or wastewater treatment facilities serving the proposed project area. Existing land uses on and in the vicinity of the site rely on on-site (i.e. septic tanks/leach field) systems that provide wastewater treatment by percolating sewage effluent into the soil.

Wastewater collection and treatment systems are in place to serve existing development east of I-5 within the city of Lathrop. The City's residential wastewater, approximately 90 percent of Lathrop's wastewater, is conveyed to the City of Manteca Water Quality Control Facility. The City's industrial wastewater from the Crossroads Industrial Park, the remaining ten percent of Lathrop's wastewater, is conveyed via a gravity system to the City's existing Water Recycling Plant #1 (WRP-1) (EDAW 2002). Both of the existing treatment facilities (Manteca WQCF and Lathrop WRP-1) are limited in capacity and are not intended to serve new development areas located west of I-5. However, Stage 1 expansion of WRP-1 is currently underway; this expansion will allow portions of the Mossdale Village project to be served by the WRP-1 plant. Plant expansion is expected to be complete in 2004.

The City of Lathrop recently (July 2001) adopted an updated Water, Wastewater And Recycled Water Master Plan addressing the provision of domestic water and wastewater systems for both developed and developing portions of the City of Lathrop. The Master Plan calls for the expansion of WRP-1 and the establishment of two new sewage treatment facilities as required to serve Lathrop's wastewater generation through 2030 (EDAW 2002). Sewage flows are expected to increase to 11.5 million gallons per day at buildout of the General Plan. Development assumptions used in the Master Plan were based on Lathrop General Plan land use designations.

The City currently receives sewage flow of less than 1.0 million gallons per day (MGD) at its existing facilities. The existing capacity of WRP-1 is 0.25 MGD. According to the adopted Master Plan, the City would expand its existing WRP-1 plant within the Crossroads area to provide an additional 3.0 (MGD) of capacity. Approximately 25% of this capacity (0.75 MGD) is expected to be available in 2004. The MLE project is expected to generate 0.18 MGD of wastewater at buildout.

The proposed WRPs are all planned to provide a common method of treatment and to meet comparable quality standards for treated effluent. Each of the proposed facilities would meet all applicable regulations for Title 22 Tertiary Treatment and Disposal. The proposed treatment systems at each plant would consist of mechanical screening, influent

pumping, grit removal, extended aeration, clarification, flow equalization, chemical addition, coagulation, flocculation, filtration, ultraviolet disinfection, chlorination, nitrification and denitrification. Each facility would include off-line storage to account for temporary interruptions in disposal facilities. All solids generated by the proposed facilities would be disposed to existing landfills.

Disposal of treated effluent would be accomplished by land application. The DEIR for the WRP-1 Phase 1 Expansion does not include discharge of treated effluent to the San Joaquin River, but envisions discharge of treated effluent to land via irrigation of crops and landscaped areas. Recycled water would be directed from proposed treatment facilities to a distribution pipe system that would transport recycled water to public recreation lands, street and highway right of ways and other available disposal sites.

In the Mossdale Landing area, the recycled water system will consist of a 12-inch main located within the Golden Valley Parkway and Manthey Road alignments. A 6- to 12-inch recycled water line would be located more or less along the north side of the project site, and 12-inch lines would be located along the San Joaquin River levee (land side), along the west and east boundaries of the site. Both of these lines would also extend south to connect to other future lines of the recycled water system.

Sewage collection facilities are outlined in the adopted Master Plan. There is currently no sewer infrastructure in the MLE project area. The nearest existing municipal sewer line is located on Nestle Way. Construction of infrastructure, however, is anticipated to begin in 2003 in conjunction with the Mossdale Landing project. Planned facilities in the Mossdale Landing area consist of 8- to 15-inch gravity lines located along portions of Towne Centre Drive, and Louise Avenue. These lines lead to a pump station at the intersection of McKee Boulevard and River Islands Parkway. From the pump station at McKee Avenue and River Islands Parkways, 8- and 10-inch force mains would direct wastewater south along Golden Valley Parkway, Manthey Road and west on Nestle Way to WRP-1.

Environmental Impacts And Mitigation Measures

Demands for Wastewater Treatment Capacity

Development of the proposed MLE project would generate new sewage collection, treatment and disposal demands. According to Lathrop City staff, the WRP-1 expansion should provide sufficient sewage treatment capacity to serve the Mossdale Landing and MLE projects, however, it is possible that the Village Commercial area of MLE may need additional capacity (Batista, pers. comm.).

As indicated in Table 17-3, the project would generate demand for 158,826 gpd (0.16 mgd) wastewater treatment capacity at buildout. The project developer participated in the funding of the expansion of the WRP-1 and is entitled to a portion of the wastewater treatment capacity. The WRP-1 Phase 1 expansion is currently under construction and expected to be operating in 2004.

Table 17-3
PROJECT WASTEWATER DEMAND AT BUILDOUT

Land Use Category	Acres	Units	Rate gpd/acre	Rate Gpd/unit	Demands gpd
Low Density Residential	23.3	151		288	43488
Med. Density Residential	27.6	252		234	58968
High Density Residential	4.0	80		189	15120
Village Commercial	6.5	79,497	1,200		7800
Service Commercial	14.0	149,193	1,200		16800
Highway Commercial	27.5	270,246	1,200		3300
Open Space	3.6			none	
Parks	5.8			300	1740
Streets	37.9			none	
TOTAL					176916

Source: Rates derived from Nolte 2001

Under near-term conditions, Phase I of the MLE project is slated for completion by 2007. Phase I includes development of residential and commercial portions of Unit 1. In the near-term, Unit 2 would be utilized as a recycled water spray field, and would not require wastewater treatment capacity. At buildout conditions Units 1 and 2 would be developed and the project would demand 176,916 gpd, or, approximately five and a half percent of the WRP-1 wastewater treatment capacity. Because the WRP-1 expansion should be completed in 2004, under near-term, wastewater treatment capacity is expected to be available to the MLE project, and no significant impacts are anticipated. However, if under project buildout conditions project demands, anticipated at 176,916 gpd, exceed the project's share of treatment capacity, currently 125,000 gpd, additional treatment capacity must be secured before construction can continue. Additional capacity can be obtained either through the purchase of excess capacity from another developer, or financial participation in the Phase II WRP-1 expansion to ensure a portion of the next 0.75 MGD capacity.

Both MLE developers participated in the sewer consortium and their properties are included in the Mossdale Village Assessment District (MVAD), a financing mechanism for construction of the WRP-1 expansion. Due to property value limitations imposed on the project site due to Williamson Act contracts, MLE was only able to make a small contribution to the MVAD. Once Williamson Act contracts are cancelled, during the second issuance of bonds MLE proponents shall reimburse other properties that fronted the McKee property developments.

Level of Significance: Potentially significant

Mitigation measures:

1. The owners, developers, and successors-in-interest shall not exceed their allotted wastewater treatment capacity, namely 125,000 gpd. However, if project demands exceed the allotment, additional capacity must be acquired before additional construction can occur.

2. The owners, developers, and successors-in-interest shall reimburse sewer consortium properties for their share of WRP-1 expansion improvements.

Significance After Mitigation: Less than significant

Wastewater Collection Systems

Sewage demands generated by the project would be met by public infrastructure improvements started in conjunction with the Mossdale Landing project. Planned Mossdale Landing improvements scheduled for construction in 2003 include gravity lines, a force main and a pump station to serve the Mossdale Village area.

MLE proposes to construct additional lines within Mossdale Village, including portions of Louise Avenue and McKee Boulevard Figure 3-10). Most significantly, the MLE project proposes to construct a backbone gravity line from the southern boundary of the Lathrop Associates site along Golden Valley Parkway to River Islands Parkway, and continuing west to the pump station. Tributaries of this main line would serve service and highway commercial areas east of Golden Valley Parkway. Residential and village commercial areas west of Golden Valley Parkway in the Mossdale Landing and MLE project areas will be served by existing and proposed lines located in Louise Avenue, McKee Boulevard, and Towne Centre Drive. Collection system improvements have been sized and designed to accommodate project flows (Guenther, pers. comm.).

Portions of Unit 1 will comprise MLE's first phase of construction. Phase 1 will be dependent on the availability of planned Mossdale Landing infrastructure. The development of Unit 2 will occur later, anticipated to be after 2007. It is anticipated that the collection system infrastructure will be completed by Mossdale Landing by the time Unit 2 is constructed. However, if wastewater infrastructure is unavailable to either Unit 1 or Unit 2, the necessary improvements must be completed by the MLE project proponents before the occupation of the first house.

Level of Significance: Potentially significant

Mitigation Measures:

1. If wastewater infrastructure required to connect the project site to WRP-1 is unavailable to either Unit 1 or Unit 2, the project proponents shall construct the necessary wastewater collection system improvements prior to occupation of the first house.

2. The owners, developers and successors-in-interest shall pay their proportionate share of wastewater infrastructure improvements installed by others, in accordance with established reimbursement systems.

Significance After Mitigation: Less than significant

Recycled Water Systems

The City's adopted Water, Wastewater and Recycled Water Master Plan provides for a network of recycled water lines that would direct treated sewage effluent to disposal sites in parks, street rights-of-way and other open spaces. This system is not presently constructed, but initial elements will be constructed in conjunction with the adjoining Mossdale Landing project.

The MLE project would construct additional planned components of the recycled water system. A six-inch line would be constructed along McKee Boulevard between Louise Avenue and Towne Centre Drive. A shorter 12-inch line would be added south of the McKee property to connect the existing reclaimed water pump station at the corner of Manthey Road and Bramblewood to a proposed pump station just west of GVP on the Lathrop associates site. A line would also be added on the Lathrop Associates site connecting a proposed pump station and reclaimed water pond to the reclaimed water spray field located adjacent to and west of the pond.

The City currently lacks adequate disposal sites to accommodate wastewaters generated by the project site.

An interim recycled water spray field and recycled water pond is proposed on the Lathrop Associates site to serve planned development on Unit 1. The western portion of Unit 2 would serve as a spray field for tertiary treated effluent during the growing season (approximately March through October). The proposed 36 acre-foot recycled water pond would contain excess recycled water during these months, as well as be the primary recycled water receptor during the winter months. If necessary, an additional spray field area will be established in the Service Commercial area of Unit 1, just north of the proposed storm drainage basin. For additional details on recycled water systems see Chapter 3.0 Project Description.

Utilization of the Lathrop Associates site is the currently proposed option for MLE recycled water disposal, however, other options may present themselves. The applicant has proposed interim use of Unit 2 for recycled water disposal, with eventual development of the site for residential, park, open space, and storm drainage basin uses. One of two conditions must be met before development of Unit 2 can occur. Either replacement spray field locations must be secured to dispose of project generated recycled water, or, a discharge permit must be obtained (from the RWQCB) to discharge recycled water into the San Joaquin River.

Proposed recycled water systems would adequately meet the needs of the proposed project. These facilities have been designed by professional engineers and have been and/or will be subject to reviews by the City of Lathrop, the California Department of

Health Services, the California Regional Water Quality Control Board (RWQCB) and other agencies. Planned facilities have been reviewed by the City Engineer and their consultants prior to submittal of the Report of Waste Discharge to the RWQCB. The proposed facilities are currently under RWQCB review and will require its approval prior to construction. Proposed facilities will also be subject to additional reviews by the City of Lathrop and other agencies for consistency with adopted master plans, ability to meet projected sewage demands and function adequately in the context of the larger City water recycling system. The proposed facilities will need to conform to all applicable reviews and conditions imposed by these reviews.

Level of Significance: Potentially significant

Mitigation Measures:

1. Proposed water recycling facilities shall be subject to the review and approval, including all conditions and requirements imposed on said facilities through review by City of Lathrop, Regional Water Quality Control Board and other agencies.

Significance After Mitigation: Less than significant

17.3 STORM DRAINAGE

Environmental Setting

The project sites are located adjacent to the San Joaquin-Sacramento Delta, on the east side of the San Joaquin River. Surface runoff is unable to flow directly from the project site to the River due to a levee that separates the two. Existing agricultural drainage and storm water generally flows through existing agricultural drainage ditches, eventually discharging to the San Joaquin River through private pump stations.

Existing maximum discharge to the river is estimated by the project engineer at approximately 3.9 cfs. An existing 36-inch storm drain line is located along the existing Louise Avenue. This line terminates at an existing pump station which discharges runoff over the levee into the SJR. It serves development east of I-5 and does not serve the proposed project site.

Future construction of storm drainage infrastructure in the vicinity of the project area has been proposed by the Mossdale Landing project. The Project Area Drainage Plan for Mossdale Landing was approved by the City Council in July 2002; and, then, in February 2003 revised for the Mossdale Village area. The drainage plan consists of six drainage shed areas, each equipped with collection lines leading to a flood control detention basin, where a pump station would direct drainage to a common outfall structure and terminal discharge facility into the San Joaquin River. Portions of these improvements are already under construction in the Mossdale Landing project area. The outfall structure is expected to be completed in 2004.

The City has adopted drainage requirements and design standards for drainage facilities in the City of Lathrop Design and Construction Standards Manual (Sept. 2001). A Drainage Plan for Mossdale Landing (MacKay and Somps, 2002) was also prepared in accordance with the Standards Manual. MLE would adhere to requirements set forth in the Mossdale Landing Drainage Plan.

Construction and post-construction storm water quality issues are subject to regulation by the Federal Clean Water Act through the National Pollution Discharge Elimination System (NPDES). These issues are addressed in Chapter 12.0 Hydrology and Water Quality.

Environmental Impacts and Mitigation Measures

The proposed project involves approximately 151-acres of residential and commercial development. Each element of the proposed project would involve generation of new storm water run off and the need for its disposal. The proposed project includes the construction of storm drainage facilities required to serve the proposed residential and commercial elements of the project, as detailed below.

A storm drainage detention pond would be located in Unit 1 in the southern portion of the proposed Service Commercial area. This facility would be designed to capture and process run off from all of Unit 1, also known as the M3 drainage area in the Mossdale Landing Drainage Plan. Another proposed detention facility would be located within the proposed Neighborhood Park of Unit 2. This facility would serve Unit 2 as well as remaining lands within Mossdale Village to the south. Proposed detention ponds would be designed to accept run off which exceeds the 30% limitation on 100-year outflow to the San Joaquin River. Excessive runoff would bubble up into the ponds and flood lands within the basin as needed to meet instantaneous requirements. Both of the proposed basins would maintain two-foot separation from ground water and would be located a minimum of 200 feet from the nearest levee.

The proposed storm drainage system would be designed to cease discharge in excess of existing discharge when flows in the San Joaquin River exceed an elevation of 21.0 feet. The proposed project design includes sufficient storage in detention ponds, street system and yard areas up to an elevation of one foot below planned building pad elevations needed to contain 100-year runoff during a 48-hour period. (For additional information see Chapter 3.0 Project Description)

The MLE applicant will participate in the financing of these improvements on a proportional share basis.

Impacts on Terminal Drainage Facility

The proposed storm drainage system would discharge to the San Joaquin River channel via the proposed gravity lines, storm drainage detention basins, pump station, storm drainage force main and outfall structure.

The proposed project would contribute to San Joaquin River flows. The San Joaquin River has accommodated peak flows of up to 80,000 CFS (January 1997). These flows were experienced after several days of intense rainfall throughout the San Joaquin River drainage. Ordinarily, flows in the San Joaquin River would be operating substantially below this historical peak, and project-related flows could be accommodated without concern. Even at historical peak flows, project contributions would represent an incidental increase in flow and stage.

The project includes design parameters to prevent project contributions to San Joaquin River when its flows are in excess of 21.0 feet during a 48-hour period. In addition, runoff in excess of 30% of 100-year peak discharges from the site would automatically be routed to the detention basin. The proposed discharge would also require the applicant's acquisition of permits from federal, state and local agencies with jurisdiction over both water resources and flood protection. The proposed discharge would necessarily conform to all applicable regulatory requirements and standards. As a result, the proposed project would result in no significant effect on the terminal drainage facility.

Level of Significance: Less than significant

Mitigation Measures: None required

Adequacy of Storm Drainage Collection and Disposal System

The proposed storm drainage system has been designed by the applicant to conform to adopted City Standards and policies. The proposal has been prepared by professional engineers and has been subject to review by the City Engineer. As a result, the proposed system, to be constructed in accordance with the proposal, would provide adequate storm drainage service to the proposed project.

The proposed pump station would be operated using either natural gas or diesel engines. The proposed system may also be electrically driven with stand-by gas-fueled engine generator to provide back-up power. Consequently, failure of any portion of the system should be limited to a single pump, and the proposed station has been designed in order to provide its full discharge capacity with one pump down.

According to RD 17, levee seepage occurred along the SJR levee during the 1997 rainfall events. Collection of levee seepage would be required in conjunction with the proposed project. The proposed project includes a seepage drainage system, or, toe drains, that would discharge to the storm drainage system. The proposed pump station includes adequate capacity to accommodate these flows in addition to peak storm water run-off from the project site.

Level of Significance: Less than significant

Mitigation Measures: None required

Storm Drainage Water Quality Issues

Construction and operation of the proposed project would involve potential contribution of pollutants to storm water run-off. The project may also contribute to flooding risks, levee failure and additional erosion. These issues are addressed in detail in Chapter 12.0 Hydrology and Water Quality and are not addressed further here.

17.4 OTHER UTILITIES

Environmental Setting

Natural gas service in the Lathrop area and in the project vicinity is provided by Pacific Gas and Electric Company (PG&E). PG&E's local service mains are located east of I-5, the nearest of which is located in Louise Avenue and Harlan Road (EDAW 2002).

Local electrical service in the project area is also provided by PG&E. Existing 12 kilovolt (kV) lines are located along the Manthey Road, northwest of the project site and along Louise Avenue west of I-5 (EDAW 2002).

Cable television service is provided in the Lathrop area by Comcast. Comcast currently provides no cable television service west of I-5 in the immediate project vicinity. Comcast representatives indicate that service can and will be extended in to the project area when sufficient demand exists.

Telephone service in the project vicinity is provided by SBC. Existing telephone services are located along Manthey.

Environmental Impacts And Mitigation Measures

Project Demands For Other Utility Services

Development of the proposed project, including proposed utility facilities, would involve new demands for electrical, gas, telephone and cable television services. The most substantial demands would be associated with the proposed residential development; the project would introduce a total of 483 housing units and approximately 500,000 square feet of commercial development to the project area at buildout. These demands have, however, been accounted for in the consideration and the adoption of the Lathrop General Plan and the WLSP.

The California Public Utilities Commission (CPUC) requires that gas, electric and other utility facilities be placed underground. Proposed improvement plans will necessarily effect these requirements. Utility improvements will be completed under subdividers/ utility company cost-sharing agreements as required by CPUC rules.

Representatives of each of the utility companies that would serve the proposed project have been contacted regarding any concerns related to serving the proposed project. All representatives indicated that they had no concerns with extending service to the proposed residential project.

Project construction would involve potential for conflict with existing overhead and underground utilities in the project vicinity. These potential conflicts will be accounted for in preparation of improvement plans that must document existing structures in the ground to the degree that information is available. The City of Lathrop will require that Underground Service Alert (USA) be notified of all proposed construction work so that locations of existing utilities can be marked to prevent accidental damage. Improvement plans will need to be coordinated with the utility companies.

Level of Significance: Less than significant

Mitigation Measures: None required

18.0 CUMULATIVE IMPACTS

18.1 INTRODUCTION

A cumulative impact is an environmental impact that may result from the combination of two or more environmental impacts associated with the proposed project with each other, or the combination of one or more project impacts with related environmental impacts caused by other projects. Cumulative impacts may also result when a project's impacts compound or increase other environmental impacts. The CEQA Guidelines provide that an EIR must discuss the cumulative environmental impacts of a project "when the project's incremental effect is cumulatively considerable," that is when the project's contribution is deemed considerable when viewed in light of the cumulative effects of past, current and probable future projects.

If the project does not involve a "cumulatively considerable" contribution to a significant cumulative effect, the project's effect need not be considered significant, and discussion in the EIR can be limited to the basis for that conclusion. Projects that do involve cumulatively considerable contributions may involve significant cumulative impacts. Project contributions may also be found less than cumulatively considerable if the project is required to implement or fund its fair share of mitigation measures designed to avoid or substantially reduce the cumulative impact.

When a project may involve a considerable contribution to a significant cumulative impact, the EIR must contain adequate analysis of that impact. The analysis should be based on either 1) a list of past, present, and probable future projects producing related or cumulative impacts, or 2) on a summary of projections contained in an adopted general plan or related planning document, or in a certified environmental document which described or evaluated regional or area-wide conditions contributing to the cumulative impact. Where significant cumulative impacts are identified, the EIR must examine reasonable, feasible options for mitigating or avoiding the project's contribution to a less than considerable level. In some cases, the only feasible mitigation may involve the adoption of ordinances or regulations.

18.2 CUMULATIVE IMPACTS OF MLE ADDRESSED IN PRIOR DOCUMENTS

The CEQA Guidelines Section 15130 (d) makes a provision for cases in which cumulative impacts have been adequately addressed in a prior EIR for a community plan, zoning action, or general plan. If the proposed project is consistent with the previously analyzed plan or action, then the project EIR should not further analyze the cumulative impacts addressed in the prior EIR.

Section 15130 (d) of the CEQA Guidelines specifies that, "No further cumulative impacts analysis is required when a project is consistent with a general, specific, master, or comparable programmatic plan where the lead agency determines that the regional or area wide cumulative impacts of the proposed project have already been adequately addressed, as defined in Section 15152 (f), in a certified EIR for that plan." As documented in Chapter 13.0 Land Use and Planning, the proposed project is consistent with the certified WLSP EIR, in which cumulative impacts were adequately addressed. This EIR is incorporated by reference in Chapter 1.0 of this document. In accordance with CEQA Guidelines Section 15130 (d), no additional analysis of cumulative impacts is required in this EIR.

In addition to the cumulative consideration provided in the WLSP EIR, the potential cumulative impacts of the project were also considered in the recent EIR on the adjoining Mossdale Landing UDC project (EDAW 2002). This EIR considered the cumulative impacts of the Mossdale Landing (West) project. The Mossdale Landing East (MLE) project (identified as Lathrop Station in that EIR) was evaluated along with a list of other past, present, and future projects that would potentially contribute to cumulative impacts in the area. Discussion of cumulative impacts in the Mossdale Landing UDC EIR is considered applicable and sufficient for the MLE project and is summarized below.

In addition to the cumulative impact analysis included in the two referenced previous EIRs, this document includes project-specific cumulative analysis of future conditions in certain issue areas. These issue areas include Chapter 6.0 Air Quality, which quantifies the potential air quality impacts of cumulative traffic generated by the project, Chapter 14.0 Noise, which quantifies future noise conditions with cumulative traffic, and Chapter 17.0 Transportation/Circulation, which identifies future traffic scenarios with and without the project.

Past, present, and reasonably anticipated future projects contributing to potential cumulative impacts would include the following:

Crossroads Commerce Center and Industrial Park
Field Storage Corporation
Lathrop Industrial Park
Panattoni Distribution Center
Riverwalk
Stonebridge
Utility Trailer Sales
Farm World
Califia/River Islands (Stewart Tract)
Mossdale Landing West
Mossdale Landing East (Lathrop Station)
Central Lathrop Specific Plan
South Lathrop Specific Plan
Kentucky Fried Chicken
Hampton Inn
Wastewater Recycling Plant (WRP) #1 Phase I Expansion Project
Wastewater Recycling Plant (WRP) #2

Well #21-23 Development Project

The potential cumulative impacts of the proposed project were examined pursuant to the direction provided by the CEQA Guidelines in the Mossdale Landing UDC EIR (EDAW 2002). That EIR has been incorporated into this document by reference in Chapter 1.0.. The following summarizes the analysis of cumulative impacts and its determination for each potentially affected environmental discipline: 1) whether a potentially significant cumulative impact could occur, 2) whether the project would make a cumulatively considerable contribution to a significant cumulative impact, or make significant an impact that was otherwise less than significant, and 3) whether a considerable contribution can feasibly be reduced to a less than considerable level, in accordance with Section 15130 of the State CEQA Guidelines.

Air Quality

At the project level, impacts from both construction activities and mobile source CO emissions would be less than significant. Ozone precursors like ROG and NOx generated from project level mobile source emissions would exceed the 10 tpy significance threshold and constitute a significant and unavoidable air quality impact.

From the perspective of impacts resulting from the proposed project and other regionally related projects, cumulative air quality impacts may occur. The San Joaquin Valley Air Basin has a non-attainment status for particulate matter (PM 10), and although an individual project would not create significant PM 10 concerns, the combined number of regional projects may result significant cumulative construction-related air quality impacts.

Future projects are bound to generate substantial increases in regional traffic. Increased traffic would result in a higher level of CO emissions, which may exceed recommended significance thresholds and result in a significant cumulative impact with respect to mobile source CO emissions. The project, though less than significant at the project level, would make a minor contribution to this cumulative impact.

The proposed project will not exceed the SJVAPCD's recommended significance threshold for ozone precursors ROG and NOx under cumulative conditions. Consequently, the project will involve a less than significant impact on ozone precursor emissions.

Biological Resources

The proposed project would involve potentially significant impacts on Swainson's hawk foraging habitat, however, these impacts would be reduced to less than significant through participation in the San Joaquin County Multispecies Habitat Conservation Plan (HCP). The project will involve potential impacts on oak trees, but these will be reduced to less than significant with mitigation measures. No other sensitive species or biological issues were observed within the project site.

Related projects would also contribute to elimination of sensitive species habitat. Projects within the City of Lathrop are subject to the requirements of the HCP. Therefore, related projects would be subject to these requirements, and cumulative losses of sensitive species and or habitat would be reduced to less than significant levels.

The project would contribute to a cumulatively significant loss of open space in the project area. Through participation in the HCP would mitigate the project's contribution to less than significant through provision of open space at a different location, related projects may not opt to participate in the HCP. Cumulative loss of open space was addressed in the WLSP EIR and subject to a Statement of Overriding Considerations.

Cultural Resources

The WLSP EIR along with the site-specific record search and pedestrian field survey revealed no known archaeological, historical, or significant Native American resources on the MLE project site. The possibility remains that once excavation begins, resources would be discovered below ground. These potential impacts have been accounted for, and, with the adoption of mitigation measures in Chapter 8.0 Cultural Resources, would be reduced to less than significant.

Multiple related projects also have the potential to encounter buried resources. Failure to undertake mitigation measure such as those recommended for the proposed project could result in a potentially significant cumulative impact on archaeological resources.

Hydrology and Water Quality

Adherence by the Mossdale Village projects to the Drainage Plan for Mossdale Village would prevent significant cumulative drainage impacts to adjacent properties, as storm water runoff would be discharged to the San Joaquin River (SJR) rather than be conveyed to adjacent properties.

Cumulative drainage impacts to the SJR would be less than significant because storm water discharge would not increase peak flows to the point of flooding. EDAW demonstrates under Impact 4.1-b in the Mossdale Landing UDC EIR that even during 100-year flows, approximately 6.0 feet of freeboard would remain in the SJR downstream of the project site, indicating the river has existing available capacity to absorb project-related flows and flows associated with related projects.

Adherence to BMPs, along with SWPPP and NPDES discharge requirements would prevent project-related significant impacts in terms of sedimentation and runoff contaminants. Construction and operation of related projects could cause cumulatively significant impacts if they do not adhere to same standards. However, all projects are expected to adhere to the City's adopted SWMP.

Through adherence to NPDES and RWQCB permit requirements and phasing out of existing agricultural discharge into the SJR, the proposed project's and related projects' overall effect on surface water quality is expected to be beneficial despite the increased quantity of urban runoff.

The proposed project would involve land application of recycled water. Treatment and application requirements would reduce project-level impacts on surface water quality resulting from recycled water to less than significant

Although specific recycled water disposal plans for related projects is unavailable, cumulative surface water quality impacts from recycled water are considered less than significant due to the lack of any proposal to directly discharge treated wastewater to the SJR, the high treatment standards proposed under the WRP #1 Expansion Project, and the need for any discharge to be permitted by the RWQCB.

The proposed project would involve potential sources of groundwater contamination such as construction activities, urban runoff, and land disposal of treated wastewater. However, the project would comply with protective measures to reduce groundwater contamination such as BMPs, tertiary treatment of wastewater to Title 22 standards, and application of wastewater at agronomic rates. For these reasons, project related impacts on groundwater quality were considered less than significant.

Although related projects would be varied in nature, from residential to industrial, these projects would involve the elimination of agricultural activities and associated contaminants and would provide regulatory safeguards for groundwater protection. Cumulative impacts on groundwater quality are therefore anticipated to be less than significant.

Noise

The proposed project would result in significant noise impacts before mitigation due to construction, traffic, and other activities. These impacts however would be reduced to less than significant with incorporation of mitigation measures.

Cumulative noise issues were evaluated in the Mossdale Landing UDC EIR (EDAW, 2002). According to EDAW, cumulative projects in the vicinity of the proposed project may add to stationary and activity related noise levels associated with the project site, resulting in cumulative noise impacts. Because the proposed project would not result in significant noise impacts, it would not contribute to these significant cumulative noise impacts.

Cumulative traffic noise impacts are considered significant and unavoidable, and the proposed project would contribute to this impact.

Public Services

The proposed project would involve increased demand for police, fire, and school services and facilities. These impacts would be reduced to less than significant levels through proposed mitigations.

It is yet unclear whether sufficient police, fire and school facilities are available or planned to serve related projects. If there is a future shortage of cumulative public services, significant environmental impacts may accompany development of such services.

Traffic Impacts

Cumulative traffic impacts were analyzed in the Mossdale Landing UDC EIR (EDAW, 2002). Under cumulative conditions, significant impacts were identified at Louise Avenue/I-5 southbound ramps and Louise Avenue/I-5 northbound ramps intersections, the Golden Valley Parkway/Main Street intersection, the Main Street/Manthey Road intersection, the Manthey Road/River Edge Drive intersection, the segment of Golden Valley Parkway between Gold Rush Boulevard and Main and the segment of Main Street between Golden Valley Parkway and Manthey Road. These impacts were mitigated to less than significant, although a residual temporary significant unavoidable impact was noted with the unacceptable operation of the I-205 segment between I-5 and MacArthur Drive.

Results from the current cumulative traffic study for Mossdale Landing East are included in Chapter 16.0.

Utilities

Local utility infrastructure improvements such as the City Well Field Expansion Project and the WRP #1 Phase 1 Expansion Project would provide for adequate water, wastewater treatment and wastewater disposal capacity to the project. The SB 610 Water Supply Assessment has ensured the availability of adequate water supplies to meet demand generated by MLE under present and future development conditions. Project level utility impacts concerning water, wastewater treatment and disposal capacity, storm drainage, and other miscellaneous utilities have been determined to be less than significant, either before or after mitigation incorporation.

Under long-term cumulative conditions, existing and planned domestic water, storm drainage, and wastewater utility infrastructure may not be adequate. Additional expansion of municipal utilities may be necessary to serve future development. Potentially significant cumulative impacts may occur related to future impacts on domestic water, storm drainage, and wastewater disposal capacity. Cumulative impacts associated with other utilities are anticipated to be less than significant.

19.0 ALTERNATIVES TO THE PROPOSED PROJECT

19.1 INTRODUCTION

CEQA requires that an EIR describe and analyze the relative environmental effects of alternatives to the proposed project and evaluate their comparative merits. The EIR must consider a range of reasonable alternatives that can feasibly attain most of the basic objectives of the project and that would avoid or substantially lessen one or more of the significant effects of the project. The environmentally superior alternative must be identified among the alternatives considered.

The alternatives analysis must identify the potential alternatives and include sufficient information about each one to allow meaningful evaluation, analysis, and comparison with the proposed project. The discussion must focus on alternatives that can avoid or reduce the significant effects of the project. However, if an alternative is not feasible, or does not provide an opportunity to avoid or reduce environmental effects, the analysis should be truncated and the reasons for doing so be identified. Similarly, if an alternative would cause one or more significant effects, in addition to those that would be caused by the project, the significant effects of the alternative shall still be discussed, but in less detail than the analysis of the project. Measures of feasibility may include site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries and whether the applicant can reasonably acquire, control or otherwise have access to the alternative site.

The alternatives analysis must always include evaluation of the "no project" alternative. "No project" is defined as no action and continuation of existing conditions. However, "no project" also considers what could reasonably occur on the project site if development trends continue, to the degree that current plans, zoning, infrastructure and services permit.

The following section (19.2) identifies those alternatives that were rejected from consideration on the basis of their infeasibility or lack of opportunity to reduce the potential environmental impacts of the project. The second section following addresses the alternatives that require detailed consideration in this document, including the "no project" alternative.

19.2 ALTERNATIVES CONSIDERED AND REJECTED FROM FURTHER CONSIDERATION

As discussed in the introduction above, alternatives discussion should focus on alternatives that can avoid or reduce the significant effects of the project. If an alternative is not feasible, or does not provide an opportunity to avoid or reduce environmental effects, the

analysis should be abbreviated and the reasons for doing so be identified. The following is a discussion of alternatives that are either infeasible or do not have the potential to reduce environmental impacts of the project. These alternatives have consequently been dismissed from further consideration.

General Plan/WLSP Buildout

The General Plan/WLSP buildout alternative involves development of the project area in accordance with land uses specified in Lathrop General Plan and the West Lathrop Specific Plan. Because the proposed project is consistent with both the General Plan and the WLSP, this alternative and the proposed project are roughly equivalent. A buildout alternative would not, therefore, significantly reduce the potential environmental impacts of the project. The buildout alternative is therefore not further evaluated in this SEIR.

Off-Site Alternative

The off-site alternative involves selection of a different site on which to construct the proposed project. This alternative would not further the intent of the approved WLSP, nor are there available parcels of similar size and situation in the vicinity of the project site. The project site is located within the City limits and designated for development in the General Plan and an adopted Specific Plan. Other similarly situated and undeveloped parcels are currently in the development planning stages and are unavailable. It is also unlikely that any significant impacts of the proposed project would be avoided or substantially reduced through selection of an alternative site in the area. The off-site alternative is therefore rejected from further consideration.

Other Alternatives Addressed in the WLSP EIR

Two other alternatives were considered in the WLSP EIR, including a Conservation-Oriented alternative which favors park and open space areas adjacent the San Joaquin River above residential areas, and a Job-Intensive alternative which increases Service Commercial acreage and decreases residential acreage. Both of these alternatives were evaluated in a previously certified EIR, and the Lathrop City Council selected the adopted WLSP instead of these alternatives. As a result, these alternatives are moot and are not addressed further in this SEIR.

Extended Use Of On-Site Areas For Storm Water Detention And Recycled Water Disposal

This alternative was evaluated in the Mossdale Landing UDC EIR, and it involves permanent on-site disposal of both storm water and treated wastewater effluent. Permanent on-site disposal would mean that permanent areas of the project site are dedicated for spray field and storm basin usage. These alternatives would result in substantially less intensive commercial and residential development of the site. Due to less intensive development, some environmental impacts of the project would be temporarily reduced such as traffic, air quality, and surface water quality. However, this alternative is unfeasible and would not result in long-term reductions in environmental impact for the following reasons:

- The alternative is inconsistent with adopted planning documents such as the Lathrop General Plan and WLSP.

- It was rejected as an alternative as part of the approval of the Mossdale Landing UDC EIR.

- It would be contrary to principles encouraging contiguous development by integrating patchwork open space areas amidst urban development. Such development would result in discontiguous leap-frog development, would reduce overall development density, require additional conversion of agricultural land to meet development demands, and increase travel demands and associated air quality impacts, among other concerns.

For these reasons, this alternative is not consistent with project objectives, would not involve potential for significant reduction of environmental impacts, and will therefore not be considered further in this SEIR.

Project Design To Address Significant Environmental Constraints

The environmental constraints alternative would involve specific project designs to lessen environmental impacts, such as preservation of sensitive resources, like wetland areas. Environmental impacts of the proposed project are addressed in Chapters 4.0-23.0 of this SEIR. Significant environmental impacts were identified in the following issue areas: agriculture, air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, noise, public services, transportation and utilities. None of these impacts are location specific within the project site. In other words, if the proposed land uses were to be reconfigured, there were be little to no change with respect to the level of environmental impact of the project. Therefore, the project design alternative to address environmental constraints would not be effective in achieving substantial reduction in environmental impacts and is consequently rejected from further consideration in this SEIR.

19.3 ALTERNATIVES CONSIDERED

19.3.1 No Project Alternative

The No Project Alternative, with respect to proposed residential and other development of the MLE site, is defined as the continuation of existing conditions and trends in the project area. This alternative assumes that there is no action on the part of the City of Lathrop to approve the proposed UDC, SEIR, Development Agreement, and subdivision map for the project area. Under the No Project Alternative, the proposed residential, commercial, recreational, and other development of the project area would not occur. The existing mix of agricultural and related residential land uses and activities would continue.

This alternative would avoid projected increases in population and associated demands for public services and utilities. The No Project Alternative would avoid increased traffic, air pollution and noise impacts due to project-related travel on local roadways. Under the No Project Alternative, there would be no changes to aesthetics, agriculture, geology, soils, biology, or cultural resources within the project area. The no project alternative would involve continuation of adverse impacts to water quality due to continued discharge of agricultural runoff into the San Joaquin River. It would also involve inconsistencies with adopted planning documents such as the Lathrop General Plan and the West Lathrop Specific Plan which designate the site for urban development.

The contributions of the proposed project to planned land development in areas of Lathrop designated for urban growth would be foregone. These contributions would include initial development and extension of urban infrastructure into areas planned for development. Increased employment and housing opportunities associated with the project would not be realized. The No Project Alternative would be fiscally neutral for the City.

However, denial of the residential portion of the proposed project would result in only temporary avoidance of the potential environmental effects of urban development. The project site is currently designated in the Lathrop General Plan and WLSP for substantial urban development. Assuming that existing land use designations remain in place, it can be assumed that the project site that the project site will be subject to continuing pressure for urban development.

Denial of the commercial portion of the proposed project would also involve temporary avoidance of potential environmental effects. This site is, however, already designated for commercial use. Due to its proximity to an I-5 interchange, a designation of other nearby lands for similar development, there are no likely alternatives for the future use of the site.

This alternative does not fulfill any of the basic objectives of the project. Elimination of the proposed project would inhibit planned urban growth in the City of Lathrop areas located west of I-5, including the project site. The alternative is not reasonable in that it is contrary to the adopted General Plan for the area, which serves as the "constitution" for development in the City of Lathrop.

This alternative would avoid some significant environmental effects of the proposed project, but would only result in temporary avoidance of these environmental effects. Demands for new residential and commercial facilities would still need to be satisfied at another site with generally comparable impact potential, and urban development of the study area can be expected to occur in the foreseeable future with comparable environmental effects. With few exceptions, the potentially significant environmental effects of the current proposed project can be reduced to less than significant with proposed mitigation measures identified in this document.

19.3.2 Lower Density/Reduced Commercial Alternative

The Lower Density/Reduced Commercial alternative would is defined as a general but substantial reduction in the residential and commercial development yield of the proposed project. For the purposes of this analysis, that reduction is nominally set at 25%. Under this alternative, then, the project would consist of up to approximately 350 residential units and 375,000 square feet of commercial development.

This alternative would reduce projected increases in population and associated demands for public services and utilities. The alternative would reduce projected increases in traffic, air pollution and noise impacts due to project-related travel on local roadways by approximately 25%. However, with this alternative, there would be no substantial changes to the aesthetics, agriculture, geology, soils, biology, or cultural resources impacts of the project; while the alternative would involve a reduction in density, physical impacts to land would be relatively unchanged. The alternative may involve slight reductions in potential for hydrologic and water quality impacts but would involve inconsistencies with adopted planning documents such as the Lathrop General Plan and the West Lathrop Specific Plan. The reduced project would fall below projected densities established in these plans.

Reduced density may result in adverse resource impacts associated with development with other lands. The proposed project is designed to accommodate anticipated growth at planned urban densities. Reduction of these densities would displace demands for urban development onto other undeveloped lands. This would result in increased impacts on agricultural, cultural and biological resources; dispersion of new urban development may also result in increases in vehicle miles traveled and associated air quality effects. Costs of providing urban services and utilities could be increased incrementally.

This alternative would partially fulfill the objectives of the project and would result in short-term reductions in environmental impact. However, this alternative would likely result in greater resource land impacts via displacement and potentially result in greater impacts associated with vehicular travel. The alternative is not reasonable in that it is contrary to the adopted General Plan and Specific Plans for the area. With few exceptions, the potentially significant environmental effects of the current proposed project can be reduced to less than significant with proposed mitigation measures identified in this document.

19.3.3 Environmentally Superior Alternative

Of the alternatives identified, the No Project Alternative is the environmentally superior alternative. This alternative would avoid all of the potentially significant environmental impacts of the project. The continuation of agricultural discharges to the San Joaquin River would be the only environmentally detrimental aspect of this alternative. Environmental benefits associated with this alternative would be short-lived, as the project site is planned for urban development and is likely to receive continued pressure for that use.

Of the project alternatives, the proposed project is the environmentally superior alternative. The project would accommodate more of the growth projected for the project area within less land area than the other alternative, and would provide for a more compact urban form, efficient transportation, and efficient provision of utilities and services.

20.0 GROWTH-INDUCING IMPACTS

The CEQA Guidelines require that an EIR discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Projects that could induce growth include those that involve development in undeveloped areas, which extend new infrastructure or remove physical or economic obstacles to population growth, or which encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. The Guidelines note that it must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Growth can be induced in a variety of ways, for example by development that creates demands for other types of development. For example, a new industrial facility that creates a large number of jobs may accelerate demands for housing. In an area of relative housing shortage, this effect could be growth-inducing. The same project in a labor surplus area may have no growth-inducing effect. Development of amenities may also spur development of other land uses nearby.

Growth can also be induced by removing obstacles to development or by providing facilities to serve development. Extension of new sewer and potable water systems to un-served areas can stimulate development. If these facilities are extended in conjunction with other planned development, however, they may not have a distinguishable growth-inducing effect. Growth may also be induced by government action to permit development through the amendment of a general plan or zoning ordinance.

The Mossdale Landing East project would be developed within the planned Mossdale Village area of the City of Lathrop. Mossdale Landing East could be characterized essentially as an infill project, as it will function as a counterpart to and complete sections of an already planned and approved community of residential and commercial land uses previously entitled as Mossdale Landing. Development of the Mossdale Village area has been planned for and evaluated in both the Lathrop General Plan EIR and the West Lathrop Specific Plan EIR. An EIR was prepared for the Mossdale Landing project prior to its approval by the City in January 2003. This project is currently under construction.

The proposed project would contribute to the development and extension of existing infrastructure systems such as roadways, domestic water, wastewater, recycled water and storm drainage. The project will, however, supplement and fill in utility and road systems to be extended as a part of the adjoining approved Mossdale Village project. Extension of utilities to Unit 2 would be considered mildly growth-inducing as this site is located south of approved development. Roadway and storm drainage systems would be consistent with the WLSP and Mossdale Landing Drainage Plan. Domestic water as well as wastewater treatment and disposal would be consistent with the adopted Lathrop Water, Wastewater and Recycled Water Master Plan. Otherwise, the project

would be consistent with all other applicable land use, infrastructure, fee, and environmental plans. The project would not be growth inducing in this respect, because it would not lead to new development in an undeveloped area.

The Mossdale Landing East proposal includes development of approximately 483 residential units and 498,936 square feet of commercial development. Additional population generated by the proposed project within the City of Lathrop will lead to increased demand for jobs, goods, and services that are not necessarily met by the project. This increased demand may facilitate additional commercial or industrial development, a potential growth inducing impact for the proposed project.

All in all, the project would be considered mildly growth inducing, because it would contribute to extension of roadway and municipal utility infrastructure to areas that are currently unserviced. In this respect, obstacles to growth would be removed. The project would also extend the area of urbanization west of I-5 to the southern edge of the Lathrop Associates site. The project would also increase public demand for goods and services, fostering economic growth in the City. Growth inducing impacts created by the proposed project have, however, been evaluated and provided for in the City of Lathrop's General Plan and WLSP EIR.

21.0 IRREVERSIBLE ENVIRONMENTAL CHANGES

CEQA requires that an EIR address any significant irreversible environmental changes that would be involved in the proposed project if it were implemented. Significant irreversible environmental changes could include conversion or use of substantial amounts of nonrenewable resources during the construction or operation of the project, or the commitment of resources to other uses, or to their permanent non-use. Resources that may be considered subject to irreversible change may include materials, land, energy or state of development/non-development. Consumption, use or commitment of resources is considered irreversible when it is likely that future generations will be committed to similar uses. Irreversible damage can also result from environmental accidents associated with the project. CEQA suggests that irretrievable commitments of resources be evaluated to assure that such current consumption is justified.

The proposed project would involve the irreversible commitment of construction materials and energy consumption to project construction. Construction materials would involve sand and gravel, concrete, asphalt, plastics and metals as well as various renewable resources. For the most part, sand and gravel resources are renewable. Energy use would occur as a result of operation of equipment used in construction of the project. These materials would not be used in highly significant or unusual quantities and would be obtained from existing commercial sources.

The project would involve the conversion of approximately 151 acres of land from the present agricultural use to urban residential and commercial uses. This would involve an irreversible commitment of the project site to developed uses; subdivision of the site, dispersion of ownership and investment in streets and utilities would likely prohibit any future return to agricultural use. The conversion of agricultural lands and associated resources is identified in Chapter 5.0 of this document as a significant unavoidable impact.

Development of the project site as proposed would commit the site to long-term use for urban residential and commercial activities. This would likely result in the perpetuation of these activities as well as associated vehicular use, air pollutant emissions and noise.

Commitment of the proposed project site to urban uses would involve an essentially irreversible loss of open space and the biological resource values inherent in the project site. These losses would be mitigated to a less than significant level as documented in Chapter 7.0. Development of the site would involve an essentially irreversible reduction in groundwater recharge and increases in runoff during rainfall events. Groundwater recharge losses are not considered significant, and potential increases in runoff would be mitigated to a less than significant level, as documented in Chapter 12.0 and 17.0.

There are no other changes associated with the project, or resources impacted by the project, which are not reversible.

22.0 REFERENCES CITED AND PERSONS CONSULTED

22.1 REFERENCES CITED

American Association of State Highways and Transportation Officials. 1994. A Policy on Geometric Design of Highways and Streets. 1994.

Baseline Environmental Consulting. 1990. San Joaquin Comprehensive Planning Program. June 1990.

California Department of Health Services. 2001. California Health Law Related to Recycled Water. June 2001.

City of Lathrop. 2003. Mossdale Landing Conditions of Approval, Vesting Tentative Map Tract 3142. January 21, 2003.

City of Lathrop. 2003. Staff Report, Intent to Subdivide Mossdale Landing East. October 28, 2003.

City of Lathrop. 2003. NPDES Phase II Storm Water Management Plan. November 4, 2003.

EDAW. 2001. Draft Environmental Impact Report for the Lathrop Water, Wastewater, and Recycled Water Master Plan. SCH# 98082050. March, 2001.

EDAW, 2002. Draft Environmental Impact Report for the Mossdale Landing Urban Design Concept. SCH# 2001052059. August 29, 2002.

EDAW, 2002. Draft Environmental Impact Report for the Lathrop Water Recycling Plant No. 1. SCH# 2001122108. December 31, 2002.

Environmental Data Resources, Inc. 2001. EDR Radius Map, Lathrop Station. August 22, 2001.

Grunwald and Associates. Comprehensive General Plan & Environmental Impact Report for the City of Lathrop, CA. December 1991.

Grunwald and Associates. 1995. Draft Environmental Impact Report for the West Lathrop Specific Plan. SCH# 93112027. July, 1995.

Grunwald and Associates. Final Environmental Impact Report for the West Lathrop Specific Plan, SCH# 1993112027. November 1995.

Impact Sciences, Inc. 2002. Initial Study, Golden Valley Parkway Precise Plan Alignment. May 20, 2002.

InSite Environmental. Draft EIR for the Riverwalk Specific Plan. October 2001.

Jensen and Associates. Archaeological Inventory Survey: Proposed Lathrop Station Residential and Commercial Development Project. September 2001.

Kleinfelder, Inc. Preliminary Geotechnical Services Report, Mossdale Landing Development, Lathrop, CA. August 2000.

Kleinfelder, Inc. 2003. Geotechnical Services Report, Proposed Lathrop Associates Subdivision, Lathrop, California. October 28, 2003.

Kleinfelder, Inc. 2003a. Letter to Mr. Charlie Simpson, Subject: Permanent Dewatering Issues, Mossdale Landing East, Lathrop, California. File No. 35179. November 19, 2003.

MacKay & Somps. 2002. Project Area Drainage Plan for Mossdale Landing. July 2002.

MacKay & Somps. 2002. Urban Design Concept for Lathrop's Mossdale Landing. July 30, 2002.

MacKay & Somps. 2003. Urban Design Concept for Lathrop's Mossdale Landing East. _____ 2003.

Moore Biological. 2003. Biological Resources Inventory, Mossdale Village Project. Novemeber, 2003.

Nolte Associates, Inc. 2002. SB 610 Water Supply Assessment Report for Mossdale Landing, River Islands at Lathrop and Lathrop Station. August 27, 2002.

Nolte Associates, Inc. 1999. Draft Final Master Plan Documents (Work in Progress) for the Water Supply and Distribution, Wastewater Collection, Wastewater Treatment and Disposal, and Recycled Water Master Plan. December, 1999.

Pacific Advanced Civil Engineering (PACE), Inc. 2003. Title 22 Information Prepared for Lathrop Station on Behalf of Western Pacific Housing. August, 2003.

Pacific Advanced Civil Engineering (PACE), Inc. 2003a. Letter to Mr. John Compaglia re: Reclaiimed Water Irrigation and Impoundment Adjacent to Drinking Water Wells, and attachments. September 23, 2003.

San Joaquin Council of Governments. 1997. The Development Of The West Lathrop Specific Plan Regional Transportation Fee, West Lathrop Specific Plan. August 1997.

USDA Soil Conservation Service. 1992. Soil Survey of San Joaquin County, California. October 1992.

22.2. PERSONAL COMMUNICATIONS

Baker, Liz. Labor Market Division. EDD, San Joaquin County.

Barth, Justin. Acquisition/Development Manager, Watt Commercial.

Batista, Ramon. Assistant City Manager, City of Lathrop.

Bechta, Sean. EDAW.

Brennan, Jim. Principal, Bollard and Brennan.

Briscoe, Gary. Engineer, SBC.

Buck, Ken. Deputy Public Works Director, City of Lathrop.

Callis, Chris. Engineer, Pacific Gas & Electric.

Carder, Pam. City Manager, City of Lathrop.

Cole, Jason. McKay & Somps Civil Engineering, Planning, Surveying.

Coleman, Bruce. Community Development Director, Lathrop Community Development.

Compaglia, John. Forward Planner, Western Pacific Homes.

Crane, Mark. Principal, Crane Transportation.

Dwyer, Sandy. Facilities Planning Specialist, Manteca Unified School District

Fletcher, Vince. Western Pacific Housing.

Freudenburger, Dave. Principal, Goodwin Consulting.

Garvey, Patrick. Thompson-Hysell Engineers.

Gregory, Scott. Contract Planner, Lamphier Gregory.

Guenther, Chris. McKay & Somps Civil Engineering, Planning, Surveying.

Hansen, Gary. Principal, CCS Planning and Engineering.

Hakeem, Mike. Principal, Hakeem, Ellis and Marengo.

Hillman, Robert. EDAW.

Jackson, Dr. Lee. Professor, UC Davis Agronomics Department

Jacob, Violet. City Engineer, Public Works Department, City of Lathrop.

Jacobs, Gary. EDAW.

Jensen, Peter. Principal, Jensen and Associates.

Judy, Brian. Goodwin Consulting.

Keaten, Cary. City of Stockton Department of Public Works.

Kinzel, Chris. TJKM Transportation Consultants.

Kumar, Atull. West-Yost & Associates.

Moffit, Barbara. Chief, Lathrop Police Department.

Monty, Jim. Deputy Fire Chief, Fire Marshall, Lathrop-Manteca Fire Department.

Moore, Diane. Principal, Moore Biological Consultants.

Ragan, Chris. McKay & Somps Civil Engineering, Planning, Surveying.

Reed, David. Crane Transportation Group.

Rimpo, Tim. CCS Planning and Engineering.

Shijo, Wayne. CCS Planning and Engineering.

Sousa, Tracy. Permit Technician, City of Lathrop.

Thompson, Stan. Thompson-Hysell Engineers.

Wall, Ann. Director. Parks and Recreation, City of Lathrop.

Walsh, Deanna. Senior Planner, Lathrop Community Development.

Wu, Jia Hao. TJKM Transportation Consultants.

Yercek, Jim. HDR.

22.3 REPORT PREPARATION

This document was prepared by InSite Environmental of Stockton, under the direction of Bruce Coleman, Director, City of Lathrop Community Development Department.

The following InSite Environmental staff members were principal contributors: Charlie Simpson, Rachel Shaak, Krista Pauling, Duffy Ruffin, and Joy Remy.

PUBLIC REVIEW DRAFT

APPENDICES TO

SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

FOR

MOSSDALE LANDING EAST

Lathrop, CA

December 5, 2003

Prepared for:

Community Development Department
CITY OF LATHROP
16775 Howland Road
Lathrop, CA 95330

APPENDICES
MOSSDALE LANDING EAST
SUPPLEMENTAL EIR

TABLE OF CONTENTS

APPENDIX A
NOP AND RESPONSE LETTERS

NOTICE OF PREPARATION

FROM: CITYOF LATHROP
16775 Howland Road, Suite One
Lathrop, California 95330
Attn: Deanna Walsh, Project Manager

SUBJECT: NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE LATHROP STATION URBAN DEVELOPMENT CONCEPT, VESTING TENTATIVE MAP AND DEVELOPMENT AGREEMENT

The City of Lathrop will be the Lead Agency and will prepare an Environmental Impact Report for the project identified below. We need to know the views of interested persons, organizations and agencies as to the scope and content of the environmental information to be included in the EIR. Agencies should comment on the scope and content of the environmental information which is germane to their statutory responsibilities in connection with the proposed project. Agencies may need to use the EIR prepared by the City when considering future permits or other approvals for portions of the overall project.

The description, location and potential environmental effects of the proposed project are identified in the attached Initial Study.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this notice.

Please send your response to Deanna Walsh, Project Manager, at the address shown above. Responses should include the name of a contact person from your home, organization or agency.

PROJECT INFORMATION:

Project Title:	Lathrop Station
Project Entitlements:	Urban Design Concept, Vesting Tentative Map and Development Agreement
Project Location:	City of Lathrop, San Joaquin County, California
Project Applicant:	Schuler Homes

NOP ISSUER INFORMATION:

Date: May 13, 2002

Signature:
Deanna Walsh, Project Manager, City of Lathrop
(209) 858-2860, ext. 269

ENVIRONMENTAL EVALUATION FORM

GENERAL PROJECT INFORMATION:

1. Project Title:	Lathrop Station
2. Project Entitlements:	Urban Design Concept, Vesting Tentative Subdivision Map, and Development Agreement
3. Lead Agency Name and Address:	City of Lathrop Department of Community Development 16775 Howland Road Lathrop, CA 95330
4. Contact Person and Phone Number:	Deanna D. Walsh, Project Manager, 209-858-2860 ext. 269
5. Project Location:	The proposed project site consist of approximately 151 acres of land located within the Mossdale Village portion of the West Lathrop Specific Plan area. This site is located immediately west of Interstate 5 and Manthey Road, south of Louise Avenue and east of the San Joaquin River
6. Project Sponsor's Name and Address:	Schuler Homes 1210 Central Blvd. Brentwood, CA 94513 Attn: Vince Fletcher
7. General Plan Designation:	The northern portion of the project site (Unit 1) is designated by the Lathrop General Plan as Village Center and Low-Density Residential. The southern portion of the project site (Unit 2) is designated Low-Density Residential, Neighborhood Park and Open Space (San Joaquin River corridor).
8. Zoning:	Existing zoning within the northern portion of the project site is Single-Family Residential (R-MV), Multi-Family residential (RM-MV), Village Commercial (CV-MV), Highway Commercial (CH-MV) and Service Commercial (CS-MV).

9. Description of Project: The Lathrop Station project involves approximately 151 acres of urban development authorized in the City of Lathrop in its adopted West Lathrop Specific Plan (WLSP). Approved by the City in 1996, the WLSP established an urban design plan for two areas known as Stewart Tract (5,794 acres) and Mossdale Village (1,161 acres). Lathrop Station is located within the Mossdale Village portion of the WLSP area. Mossdale Village is planned as a residential community centered around a Village Commercial area and also encompasses regional commercial areas.

A central requirement of the WLSP is the preparation of an Urban Design Concept which establishes detailed plans and development regulations for new development within the WLSP area. The proposed project involves City approval of the proposed UDC for Lathrop Station, as well as approval of a Vesting Tentative Subdivision Map and Development Agreement for the project.

Consistent with the WLSP's overall land use concept for Mossdale Village, Lathrop Station involves a mixed-use urban development consisting of single-and multi-family residential development, regional commercial development and village commercial development together with associated open space and infrastructure. Major elements of the project include:

- The western area of the project would be developed with a total of 370 single-family residential units at low and medium density. Up to 70 units of multi-family residential development would occur in the Village Commercial area. Proposed residential areas are of neotraditional design, facilitating pedestrian and bicycle use.

- The proposed Village Center consists of 17 acres of commercial development located north of the proposed Lathrop Station Drive, a new, primary proposed street accessing the western portions of the project area. The Village is a mixed-use area; in addition to planned commercial development, the UDC provides for up to 70 units of multi-family residential development.

- A total of 39 acres of Freeway and Service Commercial development located between I-5 and future Golden Valley Parkway. Approximately 21 acres of freeway commercial development would be located at the intersection of Louise Ave and I-5; the remainder of the area is reserved for service commercial development.

- The project would include development of portions of the major arterial Golden Valley Parkway which would serve both the Stewart Tract and Mossdale Village areas.

- The project would include development of sewer, water, storm drainage, reclaimed water and other utilities, consistent with City of Lathrop utility master plans. Proposed Service Commercial areas, and Unit 2 of the project, would be utilized for storage and disposal of wastewater on an interim basis.

10. Surrounding Land Uses and Setting: The proposed project site is located immediately west of Manthey Road and I-5 in an area planned for urbanization but currently in agricultural use. East of Interstate 5, lands are predominantly urbanized, consisting of industrial development and commercial and residential portions of the City of Lathrop.

11. Other public agencies whose approval is required: City of Lathrop, California Department of Transportation –District 10 (Caltrans), State Water Resource Control Board, Regional Water Quality Control Board-Central Valley Region #5 (RWQCB), State Department of Health Services, San Joaquin Valley Air Pollution Control District and the Lathrop-Manteca Fire District.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

■ Aesthetics	■ Agriculture Resources	■ Air Quality
■ Biological Resources	■ Cultural Resources	■ Geology /Soils
■ Hazards & Hazardous Materials	■ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	■ Noise	■ Population / Housing

■ Public Services ■ Recreation ■ Transportation/Traffic
■ Utilities/Service Systems ■ Mandatory Findings of Significance

EARLIER ANALYSES

Earlier analyses may be used where, pursuant to the tiering, program EIR, or other provisions of CEQA, environmental effects may be considered adequately analyzed in an earlier EIR or Negative Declaration.

The proposed project is located within the West Lathrop Specific Plan (WLSP) area. An EIR was prepared on the WLSP that included a comprehensive analysis of the potential environmental effects of its adoption. This EIR did not address specific site designs for Lathrop Station. This Initial Study Document is tiered to the WLSP EIR, which was prepared by the City of Lathrop and certified on December 17, 1995. The various documents which make up the WLSP EIR are hereby incorporated by reference and listed below:

> Grunwald and Associates. 1995. Draft Environmental Report, West Lathrop Specific Plan. Sch#93112027. July, 1995.
>
> Grunwald and Associates. Final Environmental Impact Report. West Lathrop Specific Plan. Sch#93312027. December, 1995.

The WLSP EIR was tiered to the EIR prepared for the Lathrop General Plan. The Lathrop General Plan area included consideration of new urban development proposed in the WLSP and included a comprehensive analysis of the potential environmental impacts of planned urban development within the city as a whole, at a general level of detail. The Lathrop General Plan EIR, cited below, is hereby incorporated by reference.

> Grunwald and Associates. 1991. Comprehensive General Plan & Environmental Impact Report for the City Lathrop, California. SCH#91022059. December, 1991

The following checklist and narrative identifies the environmental effects of the project that are within the scope of and adequately analyzed in the earlier documents, and whether such effects were addressed by mitigation measures identified in the earlier analyses. Environmental issues which were not addressed in the WLSP EIR will be subject to further review in the Supplemental EIR for the Lathrop Station project.

LEAD AGENCY DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent . A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

■ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment because all potentially significant effects (a) have been analyzed adequately in an earlier EIR pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Deanna Walsh, Project Manager
City of Lathrop, Department of Community Development

May 13, 2022
Date

EVALUATION OF ENVIRONMENTAL IMPACTS

I. AESTHETICS -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	■	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	■	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	■	☐	☐	☐

DISCUSSION:

The WLSP EIR provided an overview of the aesthetic resources of the project area, including a general description of farmlands, Valley Oak stands and riparian vegetation along the San Joaquin River and other watercourses. The presence of expansive views of farmland, Mt. Diablo and the Coast Range, in particular from elevated areas such as levee systems and the I-5 Freeway. Distant views were noted as being generally obscured by the presence of levees and existing vegetation.

a) The proposed project would involve development of new commercial and residential structures that could limit views of agricultural lands, Mt. Diablo and the Coast Range. This issue was addressed in the WLSP EIR (IV-18). The EIR noted that the development of parks and open space within Mossdale Village would provide better opportunities to enjoy scenic resources than are currently available. This potential impact was identified as less than significant. The proposed project would be consistent with development analyzed in the WLSP EIR. No further discussion of this issue is needed in conjunction with the Lathrop Station project.

b-c) The project would involve the elimination of aesthetic resources associated with existing agricultural use, including open space values and limited areas of tree cover. This potential effect was addressed in the WLSP EIR that noted that the larger WLSP project would result in a "change in character" of the landscape, but that existing agricultural open space would be replaced by planned urban landscapes. This potential impact was characterized as less than significant. The proposed project would be developed consistent with land use plans and specifications contained in the WLSP, specifically its requirement for preparation of an Urban Design Concept. No further analysis of this issue is required in connection with the Lathrop Station EIR.

d) Lathrop Station would involve the development of new residential and commercial areas and associated street, parking and building security lighting. The WLSP EIR addressed potential impacts of new lighting on night skies as well as on other planned land uses on and in the vicinity of the WLSP area. Potential impacts on the night sky were identified as significant; even with shielding of light fixtures as required by the WLSP, this impact would remain potentially significant and unavoidable. As this potential effect was evaluated in the WLSP EIR and considered in the Statement of Overriding Considerations adopted for the WLSP, and as the Lathrop Station project

conforms to the WLSP, no further analysis is required in conjunction with the Lathrop Station project.

The WLSP EIR addressed the potential effect of large-scale commercial lighting within Stewart Tract as well as commercial lighting within Mossdale Village on planned residential development. Commercial development plans for Stewart Tract are in the process of being scaled back. With the adoption of appropriate mitigation measures, commercial development within Stewart Tract is not expected to involve a substantial lighting effect on planned residential development within Mossdale Village. This issue does not need to be further evaluated in the Lathrop Station SEIR.

Commercial development associated with the Lathrop Station project will involve potential for effects on adjoining and nearby residential development. Although this issue was addressed on a general level in the WLSP EIR, more site-specific information is available in connection with the Lathrop Station project. This potential effect will be addressed in more detail in the SEIR.

The WLSP EIR considered the potential effects of light from vehicles using major arterial roads on residential and other sensitive areas. The WLSP EIR noted that these potential effects would be mitigated by perimeter walled and landscaping treatment. The Lathrop Station project has been designed consistent with the various requirements of the WLSP. Proposed residential areas will be shielded from vehicles using Golden Valley Parkway, Gold Rush Boulevard and other major arterials by perimeter walls and landscaping. This potential impact was identified as less than significant in the WLSP EIR and will remain so for the Lathrop Station project. No further analysis of this issue is required in the Lathrop Station SEIR.

II. AGRICULTURE RESOURCES -- In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	■	☐	☐	☐
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	■	☐	☐	☐
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	■		☐	☐

DISCUSSION:

The WLSP EIR identified and discussed the agricultural nature of the Specific Plan area and set forth general soils information for the area east of the San Joaquin River. Soils in this area were

said to consist of sand and silty clay soils which were moderately to well drained, of varying permeability with moderate water erosion and high wind erosion potential. These areas are considered "Prime" agricultural soils and are mapped as Prime Farm Land by the State Department of Conservation.

a) The proposed project would involve the conversion of prime agricultural lands to urban uses. Agricultural land conversion impacts were identified in the WLSP EIR on pages IV-7 through IV-8. The potential impacts of the WLSP on agricultural lands, including Mossdale Village, were quantified at approximately 5,800 acres, and the annual economic productivity loss associated with agriculture conversion was estimated approximately $6.2 million. The WLSP as a whole was said to result in shifts in the location of agriculture/urban conflicts and some positive effects associated with elimination of agricultural operations (i.e. dust, pesticides). Mitigation for these impacts was centered around Lathrop General Plan land use controls and purchase of conservation easement which would preserve agricultural land as well as habitat for sensitive wildlife species. These measures would not reduce potential impacts on agriculture to "less than significant", and this impact was identified as "significant" and unavoidable. These potential impacts were considered in the Statement of Overriding Considerations adopted in conjunction with the WLSP project. No further analysis of agricultural land conversion is required in the Lathrop Station SEIR. The potential for additional mitigation for agricultural land conversion will be addressed in the Lathrop Station SEIR.

b) Unit 1 of the proposed project is under an existing Williamson Act Contract. A Notice of Non-Renewal was filed on this site in 1999 to permit urban development prior to 2008. This contract will need to be canceled by the City. The WLSP EIR acknowledged the existence of Williamson Act Contracts within the WLSP area but did not provide specific analysis of consistency of canceling existing contracts with Government Code findings requirements. The consistency of canceling of the existing Williamson Act Contract within the Lathrop Station project will be evaluated in the Lathrop Station SEIR as a potentially significant effect.

c) The proposed project would involve urban development adjacent to existing agricultural operations. The WLSP EIR includes discussion of conflicts associated with urbanization of agricultural lands on pages V-1 through V-3. This discussion deals with trespass, vandalism, theft, liability, pesticide/herbicide drift, noise and dust generated by agricultural operations that can conflict with urban development. Additional discussion of potential impacts and mitigation measures will be provided in the Lathrop Station SEIR.

III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan?	■	☐	☐	☐
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	■	☐	☐	☐

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	■	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	■	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	■	☐

DISCUSSION:

The WLSP EIR included detailed information on climate and air quality conditions in the project area and identified applicable air quality standards and regulatory background information. Since publication of the WLSP EIR, there have been some changes in the air quality setting. In addition, the San Joaquin Valley Air Pollution Control District (SJVAPCD) has adopted a new impact analysis methodology and thresholds of significance. Updated air quality information and analysis will be included in the Lathrop Station SEIR.

a-b) The proposed project would involve the generation of new vehicular traffic and associated pollutant emissions. These potential emissions were addressed in the WLSP EIR that identified significant effects on regional ozone and PM10 levels. While the WLSP included substantial design features that would minimize potential air quality impacts, these impacts were identified as remaining significant after mitigation. The Lathrop Station SEIR will include an updated analysis of potential mobile source emissions and a review of mitigation measures identified in the WLSP EIR as well as comparison to new significance thresholds adopted by the SJVAPCD.

c) The WLSP EIR included an analysis of potential cumulative impacts of mobile and stationary source emissions associated with the WLSP project. The analysis identified in the previous section will also address potential cumulative impacts.

The Lathrop Station project would involve potential emissions of carbon monoxide that could exceed air standards in areas of traffic congestion. The WLSP EIR included an analysis of potential carbon monoxide impacts, but this analysis was based upon projected traffic conditions that were substantially influenced by planned major theme park and other commercial development of Stewart Tract. Potential carbon monoxide impacts need to be re-evaluated in light of traffic studies.

d) The project will involve construction disturbance of much of the project site and the potential for construction dust and construction vehicle emissions. The WLSP EIR included a detailed analysis of potential construction impacts and identified compliance with the SJVAPCD's Regulation VIII as mitigation for this impact. Under the new air quality impact analysis methodology adopted by SJVAPCD, potential construction impacts are reduced to less than significant with this same mitigation measures. No further analysis of construction impacts is required for the Lathrop Station project.

e) The proposed project would involve the development of new commercial and residential uses. Proposed uses would not involve the potential for significant new

odor generation. Proposed residential development would be sensitive to existing odor sources. However, field review of the site vicinity identified no substantial existing odor sources in the vicinity of the project. Consequently, this potential effect can be considered less than significant, and it will not be addressed in the Lathrop Station SEIR.

IV. BIOLOGICAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Adversely impact, either directly or through habitat modifications, any endangered, rare, or threatened species, as listed in Title 14 of the California Code of Regulations (sections 670.2 or 670.5) or in Title 50, Code of Federal Regulations (sections 17.11 or 17.12)?	■	☐	☐	☐
b) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	■	☐	☐	☐
c) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	■	☐
d) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	■	☐	☐	☐
e) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	■	☐	☐	☐
f) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	■	☐
g) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	■	☐

DISCUSSION:
The WLSP EIR included extensive biological studies of both the Stewart Tract and Mossdale Village areas. These studies included data base searches and consultations with state and federal wildlife management agencies, and encompassed an extensive list of potentially-occurring sensitive plant and wildlife. The WLSP EIR included surveys of plant communities and wildlife usage, identification of sensitive biological communities and surveys for potentially-occurring special-status plant and wildlife species.

a-b) The WLSP EIR included surveys for an extensive list of special-status plant and wildlife species. Special-status plants included several species, all associated with wetland or riverine habitat. These species were not found within the WLSP project area. Potential impacts on special-status plants were found to be less than significant. No additional study of this issue is required in conjunction with the proposed project.

The WLSP EIR included surveys for Mexican elderberry, the host plant for the Valley Elderberry Longhorn Beetle. Tree, shrubs or clumps of shrubs were identified in the Mossdale Village area. The proposed project could involve conflicts with or damage to Elderberry shrubs, and this would be considered a potentially significant environmental effect of the project. Site-specific surveys of the project site will be provided in the SEIR for Lathrop Station.

The project has the potential to impact special-status wildlife species occurring within the project area. The WLSP EIR identified these potential species as Swainson's hawk and western pond turtle. The WLSP EIR documented surveys for an extensive list of other potentially-occurring species, but none of these species were found within the WLSP area. Potential impacts on these other species were found to be less than significant.

The proposed project would involve the removal of Swainson's hawk foraging habitat and could involve potential impacts on Swainson's hawk nesting. Swainson's hawk foraging habitat impacts are addressed in the adopted WLSP Habitat Management Plan (HMP) and associated Management Authorization. This document was adopted in conjunction with the WLSP project. Additional options for mitigation of Swainson's hawk foraging habitat are available through the San Joaquin County Multi-Species Habitat Conservation Plan (SJCMSCP) to which the City of Lathrop is a party. The application of these two mitigation options to the proposed project will be explored in the Lathrop Station SEIR.

The proposed project would involve potential for impacts on Swainson's hawk nesting activity. Specific mitigation measures that would avoid these potential impacts were not addressed in the WLSP EIR. This issue will be explored in the Lathrop Station SEIR and mitigation measures recommended as required.

The WLSP EIR identified potential impacts on the riparian brush rabbit were considered less than significant. A population of this species has been identified in the project vicinity, however, and potential impacts on this species need to be explored in the Lathrop Station SEIR.

The project would involve the potential for impacts on the burrowing owl, a state Species of Special Concern. Surveys for this species will be documented in the Lathrop Station SEIR, and mitigation measures will be identified if necessary.

The WLSP EIR identified the potential for urban development water quality impacts on fish and other aquatic species within the San Joaquin River. The proposed project would contribute to these impacts. Mitigation measures for these impacts were identified on a general level in the WLSP EIR. The Lathrop Station SEIR will explore mitigation measures in more detail, particularly in light of the City's ongoing storm water management planning process.

c) The WLSP EIR identified habitats within the Mossdale Village as predominantly irrigated fields, row crops and orchards with a thin band of riparian habitat located along the inboard side of the San Joaquin River levee system. This area is intensively

maintained in conjunction with levee maintenance. The WLSP EIR identified the potential loss of riparian vegetation as located predominantly within the Stewart Tract.

The proposed project does not contain known areas of riparian vegetation or other sensitive communities. Consequently, this impact is expected to be less than significant. Nonetheless, site-specific biological studies prepared in conjunction with the Lathrop Station SEIR will document the presence or absence of sensitive communities on the site as well as identify any potential impacts to these resources.

d) The WLSP EIR identified approximately 15 acres of wetland within the Mossdale Village area. None of these areas is located within the proposed project site. Nonetheless, the Lathrop Station SEIR will include a site-specific evaluation of potential wetlands. If wetlands are identified on the site, potential impacts and mitigation measures will be described.

e) The proposed project includes no work within the San Joaquin River corridor. The WLSP EIR identified the presence of several special-status fish species, including anadromous fish, within the corridor, and the potential for significant physical as well as water quality effects. The proposed project would contribute to urban runoff and potential water quality impacts. These potential effects will be considered at the project level as well as potential mitigation measures, including project-specific storm drainage controls and the City's ongoing storm drainage master planning process.

f) The proposed project will conform to the adopted Lathrop General Plan, the West Lathrop Specific Plan and other applicable policies and ordinances. These elements address protection of sensitive species, conservation of trees and other measures. Project conformance with these policies will be addressed in the Lathrop Station SEIR.

g) The proposed project is subject to the adopted West Lathrop Specific Plan Habitat Management Plan (WLSPHMP) which governs the mitigation of potential project impacts on Swainson's hawk foraging habitat. In addition, the project may participate in the SJMSCP. The proposed project would not, however, involve conflicts with either of these plans. This would be considered a less than significant impact and need not be addressed further in the Lathrop Station SEIR.

V. CULTURAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource?	■	☐	☐	☐
b) Cause a substantial adverse change in the significance of a unique archaeological resource (i.e., an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it contains information needed to answer important scientific research questions, has a special and particular quality such as being the oldest or best available example of its type, or is directly associated with a scientifically recognized important prehistoric or historic event or person)?	■	☐	☐	☐

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	■
d) Disturb any human remains, including those interred outside of formal cemeteries?	■	☐	☐	☐

DISCUSSION:

a-b, d) The Lathrop Station project would involve the potential to impact any cultural resources that may be located within the project site. The WLSP EIR included a record search of both the Stewart Tract and Mossdale Village areas as well as an archeological field survey of selected parcels within the overall WLSP area. The record search and surveys found no known cultural resources sites located on or in the immediate vicinity of the proposed project site. The Lathrop Station sites were not, however, included in the field survey. The Lathrop Station SEIR will include a site-specific survey as well as a new record search and contacts with Native American representatives. This is a potentially significant impact.

The WLSP EIR included mitigation measures for the avoidance of potential cultural resource impacts. While these mitigation measures would be generally applicable to the proposed project, their effectiveness in avoiding or mitigating cultural resource impacts will be re-evaluated in the Lathrop Station SEIR.

c) The project does not involve the potential for destruction of unique paleontological resources for unique geologic features. The project site is located on relatively flat and recent alluvial sedimentary deposits. No further discussion of this issue will be required in the Lathrop Station SEIR.

VI. GEOLOGY AND SOILS -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	■	☐
ii) Strong seismic ground shaking?	☐	■	☐	☐
iii) Seismic-related ground failure, including liquefaction?	■	☐	☐	☐
iv) Landslides?	☐	☐	☐	■
b) Result in substantial soil erosion or the loss of topsoil?	■	☐	☐	☐
c) Be located on strata or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	■	☐	☐	☐

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial risks to life or property?	■	☐	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	■	☐	☐	☐

DISCUSSION:

a) The proposed project site is not subject to fault rupture hazards. As documented in the WLSP EIR, there are several regional fault systems that could produce seismic shaking events of significance on the project site. However, there are no mapped fault traces and no Alquist-Priolo fault rupture hazards located on or near the project site. This impact was considered less than significant in the WLSP EIR, and no further analysis is required in conjunction with the Lathrop Station project.

The project site is subject to seismic shaking from regional fault systems but is located in an area of generally low seismicity. The WLSP EIR identified potential seismic shaking effects, but these were related primarily to flood protection hazards within the Stewart Tract area. These potential impacts would be reduced to less than significant with mitigation measures identified in the WLSP EIR. Seismic shaking hazards are addressed by the City's adoption of the Uniform Building Code with respect to structural stability. However, based on limited testing included in the WLSP EIR, the project site and other WLSP areas would be subject to potential liquefaction and subsidence as a result of saturated soils. The WLSP EIR indicated that additional engineering evaluation and design would be needed in this issue area and that these potential impacts may not be mitigated to less than significant levels. These potential effects will be evaluated on a site-specific basis in the Lathrop Station SEIR and are considered potentially significant.

The project site is not subject to landslide hazards.

b) The proposed project would involve the potential for disturbance and covering of soils as well as potential soil erosion. These potential effects were evaluated in the WLSP EIR and found to be potentially significant. WLSP EIR mitigation measures included project design to minimize soils erosion and storm water detention features; these mitigation measures were identified on a generalized level but were said to reduce potential erosion effects to less than significant. In addition to the identified measures, the Lathrop Station project would be subject to National Pollution Discharge Elimination System (NPDES) are requirements for preparation of a Storm Water Pollution Prevention Plan (SWPPP). The potential effects of the project and their relationship to storm water pollution prevention requirements will be evaluated on a site-specific basis in the Lathrop Station SEIR.

c) The proposed project would be subject to potential liquefaction hazards, as addressed under item (a), above.

d) Portions of the proposed project site are located on expansive soils. Potential hazards associated with expansidity were addressed in the WLSP EIR, which also addressed mitigation measures, including preparation of site-specific geotechnical studies. The Lathrop Station SEIR will evaluate potential conflicts with expansive

soils based on site-specific geotechnical analysis. These impacts are considered potentially significant.

e) The Lathrop Station project did not involve the use of septic tanks but would involve land disposal of tertiary-treated wastewater on an interim basis. Wastewater would be applied at an agronomic rate, and would rely on plant evapotranspiration for wastewater treatment and disposal. Wastewater disposal will be subject to the review and approval of the Regional Water Quality Control Board. This issue will be addressed in the Lathrop Station SEIR as a potentially significant water resource impact. (See Section VIII.)

VII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	■	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	■	☐	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	■
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	■	☐	☐	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	■
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	■

DISCUSSION:

a) The proposed project would involve no substantial transportation, use or disposal of hazardous materials. Proposed residential and commercial uses would not involve

substantial quantities of hazardous material, and hazardous materials use would be typical of other urban development. Hazardous material use is subject to intensive federal, state and local regulation. This potential impact would be less than significant. No further evaluation will be provided in the Lathrop Station SEIR.

b) The proposed project would involve no hazardous material uses that would be subject to potential upset or accident condition. These potential effects were evaluated in the WLSP EIR but only with respect to the Stewart Tract area which would involve very intensive commercial development and large crowds of theme park visitors that would be subject to accidental releases. The project would involve no significant effects in this issue area, and no further evaluation is required.

The project would be located adjacent to I-5 which is used for hazardous material transportation. Potential hazards associated with this use will be evaluated in the Lathrop Station SEIR.

c) The proposed project will be located within 1/4 mile of two proposed schools to be located within the Mossdale Landing project. The project, however, would involve no substantial hazardous materials use or storage and no acutely hazardous materials. The project would have no impact in this issue area and no further evaluation is necessary.

d) The proposed project has the potential to conflict with listed hazardous materials or waste sites. This issue was addressed in a general level in the WLSP EIR but primarily with respect to proposed development on Stewart Tract. This represents a potentially significant impact of the project that will be evaluated in the Lathrop Station SEIR.

e, f) There are no public airports or private airstrips located within two miles of the project site. There would be no potential impact in this issue area and no further evaluation is requires.

g) Proposed urban development would be served with emergency access by proposed public streets constructed to City of Lathrop standards. The project would involve no conflict with adopted emergency response or evacuation plans. Project construction with involve disturbance and relocation of existing access ways. Temporary access will need to be maintained during this process. This issue is addressed in more detail in the WLSP EIR, primarily with respect to large crowds generated by planned theme parks to be located within the Stewart Tract. This discussion as well as recommended mitigation measures are not applicable to the proposed project. This issue would be considered less than significant, and no further evaluation is required in the Lathrop Station EIR.

h) The project would not result in any substantial exposure to wildland fire risk. The project site is in intensive agricultural use and is not subject to significant wild land fire hazards. Planned urban development of the site will eliminate wildland fire potential. This issue requires no further analysis.

VIII. HYDROLOGY AND WATER QUALITY – Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Violate any water quality standards or waste discharge requirements?	■	☐	☐	☐

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	■	☐	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	■	☐	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	■	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems?	■	☐	☐	☐
f) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	■	☐
g) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	■
h) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	■	☐
i) Inundation by seiche, tsunami, or mudflow?	☐	☐	☐	■

DISCUSSION:

a) The proposed project would include interim storage of wastewater treated at the City's existing WRP-1 in temporary ponds located in the eastern portion of the Unit 1. Until sites for disposal of the City's reclaimed water are available, the project will provide interim disposal of treated wastewater within Unit 2. Wastewater disposal involves the potential for violation of water quality standards or waste discharge requirements. This issue was addressed on a general level in the WLSP EIR which evaluated potential for disposal of reclaimed wastewater in park and open space areas as well as interim storage within Stewart Tract. Use of Mossdale Village lands for these purposes was not envisioned in that EIR.

Storage and disposal associated with the proposed project would involve tertiary-treated wastewater which is suitable for human contact and would not involve any inherent potential for water quality degradation. Storage and disposal will, however, require the review and approval of the California Regional Water Quality Control Board and other permitting agencies. Permission to store and dispose wastewater would be conditional upon avoiding any violation of the adopted water quality standards and

would be subject to Waste Discharge Requirements. This issue is potentially significant and will be evaluated in the Lathrop Station SEIR.

b) Water supply for the proposed project would be drawn from the City of Lathrop municipal water supply system. This system would be supplied in the very near term from planned expansion of the City well field. Long-term water supplies would be provided predominantly by surface water supplies derived form the South County Surface Water Supply Project (SCSWSP). The WLSP EIR evaluated potential project impacts on groundwater conditions, identifying the potential to worsen existing overdraft and contribute to groundwater salinity problems. The WLSP EIR required development of a firm supply of water; this requirement is being fulfilled in the City's approval of and participation in the SCSWSP. Potential for groundwater impacts associated with urban water use in the City as a whole, including Lathrop Station, was addressed more recently in the EIR (EDAW, 2001) prepared for the Lathrop, Water, Wastewater and Reclaimed Water Master Plan. This analysis, along with project adherence to mitigation measures in the WLSP EIR, indicated that planned urban development, including the proposed project, would not result in any substantial adverse impact on groundwater supply or substantial interference with groundwater recharge. Water supplies for the proposed project and related impacts will be discussed in the Lathrop Station SEIR, however, no further analysis of groundwater supply issues is required.

c) The project would result in soil disturbance and alteration of existing drainage patterns. Storm drainage from the developed project site would be diverted to a new urban storm drainage system. As discussed in the previous Geology and Soils section, proposed development would be subject to WLSP EIR mitigation measures, NPDES requirements and potential future requirements of a local Storm Water Management Program currently being developed by the City of Lathrop. This remains a potentially significant issue. The relationship to the project to these requirements and potential requirements will be addressed in detail in the Lathrop Station SEIR.

d) The proposed project would involve a substantial increase in the amount of runoff generated by the project site as a result of new building and paved area construction. Proposed new development would include a new urban storm drainage system sized to accommodate potential flows from these sources in accordance with adopted City standards. Consequently, project development will result in no increase in potential for flooding either on-or off-site.

e) The project will involve the generation of new urban runoff. As noted in the previous response, project-generated runoff would be within the capacity of planned storm drainage systems. Urban runoff would be contaminated with gas, oil, grease and other "urban runoff" constituents. The WLSP EIR addressed the potential water resource effects of urban runoff and identified mitigation measures calling for the removal of such contaminants. In accordance with federal requirements, the City of Lathrop is currently working on a city-wide plan for storm water quality management that will be incorporated into the City's Storm Drainage Master Plans. The projects' contribution to potential urban runoff impacts is potentially significant. The Lathrop Station SEIR will evaluate these potential impacts and their consistency with existing and new regulations.

f) With the exception of the westernmost portion of Unit 2, which is not planned for urban development, the project site is located outside the 100-year floodplain and

would not be subject to significant flooding impacts. This is a less than significant effect, and no further analysis is required in conjunction with the proposed project.

g) The proposed project would involve no construction or other activity within the San Joaquin River levee system, and the project would involve no effect on or redirection of flood flows. No further analysis of this issue is required.

h) The proposed project site is located in potential flooding areas associated with failure of reservoirs located in the Sierra Nevada foothills to the east. Potential flooding hazards associated with failure of these reservoirs were evaluated in conjunction with adoption of the Lathrop General Plan. These potential effects were found to be less than significant.

i) There are no large bodies of water located in the project vicinity that could involve potential tsunami or seiche hazards. No further analysis is required in this issue area.

IX. LAND USE AND PLANNING – Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Physically divide an established community?	☐	☐	☐	■
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	■	☐
c) Conflict with any applicable habitat conservation plan or natural communities conservation plan?	☐	☐	■	☐

DISCUSSION:

a) The proposed project would not physically divide any established community. The project site and vicinity is undeveloped and planned for urban development. The proposed project would be consistent with adopted land use plans and would be integrated with surrounding projects as a result of coordination efforts between the applicant, city and other developers in the area. The project would involve no impact in this issue area, and no further analysis is required in the Lathrop Station SEIR.

b) The proposed project would involve no conflict with applicable land use plans, policies or regulation of the City of Lathrop or other agencies. The planning framework for the City of Lathrop, and for the project area, is provided by the Lathrop General Plan and the West Lathrop Specific Plan. The West Lathrop Specific Plan designates the project site areas for Residential-Medium Density, Residential-Low Density, Village Commercial, Service Commercial, Highway Commercial and Public. The WLSP establishes allowable land uses as well as development standards and requires preparation of an Urban Design Concept that conforms to applicable WLSP requirements. The proposed UDC for Lathrop Station has been reviewed by City staff and found to be consistent with applicable WLSP requirements. The consistency of the project with applicable WLSP and other planning requirements will be briefly documented in the Lathrop Station SEIR, but this issue will not be subject to further evaluation.

c) The proposed project will be subject to the WLSP Habitat Management Plan (HMP) and the associated Management Authorization. Consequently, the project will need to conform to applicable HMP requirements. The project may also participate in the San Joaquin County Multi-Species Habitat Conservation Plan (SJCMSCP). If the project elects SJCMSCP participation, the project will need to apply with applicable requirements. The relationship between the proposed project and applicable biological resource management plans will be discussed in the Biological Resources analysis section of the Lathrop Station SEIR. No substantial conflict with these management plans is anticipated and no further analysis of plan consistency as a land use issue will be provided in the Lathrop Station SEIR.

X. MINERAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the state?	☐	☐	☐	■
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	■

DISCUSSION:

a-b) The proposed project would not result in the loss or availability of known mineral resource sites. Unit 1 of the proposed project is classified MRZ-1 by the state of California; Unit 2 is classified MRZ-3. The former classification indicates that no significant mineral deposits are present, and the latter indicates that significance cannot be determined from available data. The entire project area has been annexed to the City of Lathrop and is designated for urban development. The project would involve no impact in this issue area, and no additional analysis is required in the Lathrop Station SEIR.

XI. NOISE -- Would the project result in:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	■	☐	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	■	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	■	☐	☐	☐

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■

DISCUSSION:

a) The proposed project would involve the potential for exposure to and generation of noise in excess of adopted city noise standards. The WLSP EIR included detailed analysis of traffic-generated noise originating from both I-5 and planned streets located within the project area. Both of the Lathrop Station sites would be subject to future I-5 traffic noise-levels in excess of 60 dB. The WLSP EIR identified mitigation measures that would reduce potential noise impacts to less than significant levels. These mitigation measures, including the placement of service and highly commercial structures along I-5, construction of barrier walls and other measures have been incorporated into the proposed project. The WLSP EIR's analysis of mitigation effectiveness was, however, generalized, and this remains a potentially significant effect. The Lathrop Station SEIR will include an evaluation of current and projected noise conditions, site-specific noise impacts and the specific effectiveness of proposed building siting and barrier wall placement and height.

b) Neither project construction nor operation will involve land uses or equipment use that would generate substantial groundborne vibration or noise. Traffic on I-5 may produce some groundborne vibration, but no significant impact on residential or other sensitive uses is anticipated as a result of the setback of these areas from the highway. The project would involve a less than significant impacts in this issue area, and no further analysis will be provided in the Lathrop Station SEIR.

c) The proposed project will involve contribution to long-term increases in ambient noise levels in the project area. Traffic noise contributions will be addressed, as discussed in item "a." Proposed commercial and residential land uses will also involve non-traffic increases in ambient noise. Commercial and residential activities are, however, typical of urban development areas and would not cause City noise standards to be exceeded. Use-related noise levels would be unlikely to exceed mitigated freeway-generated noise throughout the project area. The project would involve less than significant impacts in this issue area, and no further analysis is required.

d) The project will involve temporary construction noise impacts on residences or other sensitive receptors located in the project vicinity. At present, there are few existing sensitive receptors; however, early phases of new residential development would be subject to potential noise impacts during construction of latter phases. This potential impact is not evaluated in the WLSP EIR. Further evaluation will be provided in the Lathrop Station SEIR.

e-f) The proposed project site is not located within two miles of any public airport. There are no private airstrips located in the project vicinity. The project would no be subject to airport-related noise. No further analysis of this issue area is required.

XII. POPULATION AND HOUSING -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	■	☐	☐	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	■	☐
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	■	☐

DISCUSSION:

a) The Lathrop Station project would involve both direct and indirect growth inducement. Project would create a potential total of 378 residential units, and would involve the construction of new infrastructure that would serve the project and some surrounding lands. Potential growth inducement associated with the project would not be considered significant. These potential impacts were accounted for in both the Lathrop General Plan EIR and the WLSP EIR. Population growth associated with housing development is both planned and anticipated, and this growth has been affirmed in the adoption of the General Plan and WLSP.

Infrastructure development associated with the project is primarily intended to serve Lathrop Station but will be developed in conjunction with urban development projects on adjoining and nearby lands that are also being processed by the City. While infrastructure associated with the project may facilitate this nearby development, these projects are already underway and would not be "induced" by Lathrop Station.

As documented in the WLSP EIR analysis, planned growth would involve indirect secondary effects in several issue areas. Analysis of potential impacts and mitigation measures in each of these issue areas has been provided on a programmatic level in the WLSP EIR and will be provided on a project-specific level in the Lathrop Station SEIR.

b-c) The Lathrop Station project would involve the displacement of one existing residence located within the Unit 1 area. Displacement of this residence will result in an incidental and less than significant effect on both housing stock and population. No further analysis of this issue will be required in the Lathrop Station SEIR.

XIII. PUBLIC SERVICES -- Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Fire protection?	■	☐	☐	☐
b) Police protection?	■	☐	☐	☐
c) Schools?	■	☐	☐	☐
d) Parks?	■	☐	☐	☐
e) Other public facilities?	■	☐	☐	☐

DISCUSSION:

a) The proposed project will involve an increase in demand for fire protection services provided by the Manteca-Lathrop Fire District. Potential impacts on the District were treated on a limited basis in the WLSP EIR. Since publication of that EIR, the District has advanced in its planning for provision of services for new urban development. These plans include the provision of a new fire station within and by the adjoining Mossdale Landing project. The relationship of the proposed project to existing and projected demands, and to plans for provision of fire protection services needs to be evaluated in more detail, including financing of proposed improvements. This issue is considered potentially significant and will be considered in the Lathrop Station SEIR.

b) The Lathrop Station project would involve increased demands for police protection services provided to the City of Lathrop by the San Joaquin County Sheriff's Department. The WLSP EIR included limited treatment of this issue but did not quantify demands or indicate how required expansion of services would be financed. This issue is considered potentially significant and will be evaluated in the Lathrop Station SEIR.

c) The Lathrop Station project would generate additional student populations and the demand for schools. These potential demands were accounted for on a general level in the WLSP and the WLSP EIR. The WLSP identified sites for two elementary schools within Mossdale Village as well as a high school site. The Manteca Unified School District has determined that a high school will not be developed in this area. None of the proposed school sites are located within the Lathrop Station project areas.

Development of the Lathrop Station project is not expected to result in significant adverse effects on schools. No school sites would be located within the project area, and the project developer would be required to pay applicable school impact fees. School impact fees are, however, not sufficient to meet all school development needs. School impacts remain potentially significant and will be evaluated in the Lathrop Station SEIR.

d) The Lathrop Station project will involve increased demands for urban park facilities but no direct impact on existing City of Lathrop park lands. Parks and recreation demands generated by the WLSP project were considered in both the planning and environmental review of that project. The WLSP designated park sites throughout the Mossdale Village area, including a river-side park, a portion of which is located in the western portion of Unit 2 of the Lathrop Station project. No other proposed park sites are located within Lathrop Station. Several of these nearby proposed parks would be developed in conjunction with the adjoining Mossdale Landing project. Park demands generated by the Lathrop Station project will be met by contribution of park in-lieu fees to the City, which will be used for other park land acquisition and development. Potential park demands, timing of development and financing issues were not addressed in detail in the WLSP EIR. This issue will be considered potentially significant and will be addressed in the Lathrop Station SEIR.

e) The Lathrop Station project will involve increase demand for gas and electrical utility services. These potential issues were addressed in detail in the WLSP EIR, and Pacific Gas and Electric (PG&E) indicated that demands associated with all aspects of the WLSP project could be met. The recent state-wide energy crisis constitutes a change in circumstances with respect to this issue. The Lathrop Station SEIR will include consideration of energy-related issues.

XIV. RECREATION	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	■	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	■	☐	☐	☐

DISCUSSION:

a) Lathrop Station would involve no substantial increase in the use of existing parks in the project vicinity. The project area is undeveloped and does not include neighborhood parks. However, a private houseboat, marina and bar/restaurant in located west of the San Joaquin River, and the County's Mossdale Crossing Park is located south of the project site near the I-5/San Joaquin River crossing. The project will contribute to the use of these facilities, more or less on a proportional basis with other settled areas in the southern portion of San Joaquin County. New local city parks will be available to future Lathrop Station residence in conjunction with development of Lathrop Station and surrounding lands. Project development is not expected to result in physical deterioration of existing or planned recreational facilities.

b) The project would include construction of a portion of the City's planned linear park system along the San Joaquin River in Lathrop Station Unit 2. Development of this park facility would result in physical disturbance on project area lands in the vicinity of the San Joaquin River and could involve potentially significant agricultural land,

biological resource or other physical effects. This is a potentially significant issue that will be addressed in various technical sections of the Lathrop Station SEIR.

The project would create demands for other parks that are not a part of the Lathrop Station project. Lathrop Station would contribute in-lieu fees that would support development of other parks by the Mossdale Landing project and other planned urban development in the project vicinity. Development of these park facilities would involve potentially significant environmental effects. This is a potentially significant issue that will be addressed in other environmental review documents related to urban development.

Park needs generated by the proposed project will be met in conjunction with development of other lands in the project vicinity that are planned for urban development, including the adjoining Mossdale Landing project. Planned facilities are consistent with adopted city standards and plans. However, the timing of availability of these facilities with respect to Lathrop Station development is unknown. This is a potentially significant issue that will be explored in the Lathrop Station SEIR.

XV. TRANSPORTATION/TRAFFIC -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	■	☐	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	■	☐	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	■
d) Substantially increase hazards to a design feature (e g., sharp curves or dangerous intersections) or incompatible uses (e g, farm equipment)?	☐	☐	■	☐
e) Result in inadequate emergency access?	☐	☐	■	☐
f) Result in inadequate parking capacity?	☐	☐	■	☐
g) Conflict with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	■	☐

DISCUSSION:

a-b) The Lathrop Station project would involve the generation of substantial new traffic in the largely undeveloped project area. New traffic generation would be accompanied by the development of planned urban street infrastructure. Nonetheless, the project would result in potentially significant effects on new local roads, existing intersections and regional freeways. The potential traffic impacts of development of the WLSP were addressed in detail in the WLSP EIR, which also included identification of

mitigation measures needed to minimize significant traffic effects. The proposed project is consistent with land use designations adopted in the WLSP, and the potential traffic impacts of the project are generally represented by the WLSP EIR. The Lathrop Station SEIR will include a project-level analysis of traffic impacts and re-consideration of necessary traffic mitigation measures. This is a potentially significant impact.

c) The Lathrop Station project will result in an in increase in population in the Lathrop area but a less than significant increase in population regionally. As a result, the project will not contribute to any substantial change in air traffic volume or pattern. The project will involve no impact in this issue area, and no further analysis is needed.

d) The Lathrop Station project would include substantial new transportation improvements designed to serve traffic generated by the project. All proposed roadway improvements would be constructed in accordance with adopted City of Lathrop standards and would result in no known effect on design safety. Traffic generated by the project as well as other nearby development may require improvements to the I-5/Louise Avenue interchange. These improvements will be made pursuant to a Project Study Report (PSR) prepared by others and constructed as a separate project. The applicant will be responsible for its proportionate share of improvement costs. The project would involve no significant impacts in this issue area, and no further analysis is necessary.

The Lathrop Station project would be served with access by existing city streets, and development is expected to extend westward from I-5. Consequently, the project is not expected to result in substantial conflicts with farm machinery or other non-highway traffic. Continuing farm operations would be located west and south of the project area. The project would involve less than significant impacts in this issue area, and no further analysis is required.

e) Project construction may result in temporary interference with emergency access to project site and surrounding lands as a result of temporary closures. Under standard city construction requirements, contractors must provide for adequate vehicle and pedestrian circulation as well as warning devices. As a result, potential impacts on emergency access would be less than significant. No further analysis of this issue is required.

f) Development of the Lathrop Station project, including residential, commercial and other uses, will involve increase demand for parking. However, all new development will be subject to the standards and requirements of the WLSP which incorporates the parking requirements of the Lathrop Zoning Code. These same requirements are reflected in the proposed Lathrop Station UDC. Existing parking standards will be applied to each new proposed use, resulting in the provision of adequate on-site parking capacity on a site-by-site basis. The project would result in no significant impact in this issue area, and further analysis is required.

g) The project would involve no conflict with adopted transportation policies, plans or programs. Regional transportation systems, including rail transit, have been provided for in the WLSP. The proposed Tentative Map and UDC conform to the plans and requirements set forth in the WLSP. The project would involve no impact in this issue area, and no further analysis is required.

XVI. UTILITIES AND SERVICE SYSTEMS -- Would the project:	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	■	☐	☐	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	■	☐	☐	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	■	☐	☐	☐
d) Are sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	■	☐	☐	☐
e) Has the wastewater treatment provider which serves or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	■	☐	☐	☐
f) Is the project served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	■	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	■	☐

DISCUSSION:

a) The Lathrop Station project would generate new sewage treatment demands that cannot be met with existing City sewage treatment systems. The City's existing WRP-1 does not have sufficient capacity to serve the proposed project. Expansion of this plant is planned and is being processed as a separate project. A possible alternative to use of WRP-1 would be construction of the City's planned WRP-2 in conjunction with another development project. There are no plans for construction of this plant at present. The amount and timing of available of waste water treatment services is a potentially significant issue with respect to the proposed project and will be evaluated in the Lathrop Station SEIR.

b) The project will require the construction of new sewer mains, a pump station and force main to transport sewage to either WRP-1 or WRP-2. In addition, the project will need to provide interim treated waste water storage and disposal areas until the City's planned reclaimed water facilities are in place. The timing of treatment options, consideration of alternatives, and other issues are potentially significant and will need to be addressed in the Lathrop Station SEIR.

c) The Lathrop Station project will involve the construction of new storm drainage systems that will be tied to off-site development of other storm drains and a new storm drainage outfall to the San Joaquin River, to be constructed in conjunction with the Mossdale landing project. The project will be dependent on, and will contribute

financially to, these off-site facilities. The design, timing and financing of planned storm drainage improvements is a substantial issue that will need to be considered in detail in the Lathrop Station SEIR.

d) The City of Lathrop has established plans for the provision of domestic water service to planned urban development within the city, including the Lathrop Station project. These plans are established in the city's recently adopted Water, Wastewater and Recycled Water Master Plan. The Lathrop Station SEIR will evaluate water supply and delivery issues on a project-specific basis.

e) As discussed in items "a and b" above, the City of Lathrop is developing plans for the provision of adequate wastewater treatment capacity to the proposed project. The Lathrop Station SEIR will need to evaluate whether adequate capacity can and will be available to the Lathrop Station project in a timely manner. This issue is potentially significant and will be evaluated in the Lathrop Station SEIR.

f-g) The Lathrop Station project will generate potentially substantial new volumes of solid waste. Potential solid waste generation and disposal impacts were identified in the WLSP EIR. Among other things, solid waste handling will be governed by the City's Integrated Solid Waste Management Plan. Solid waste management would include curbside pickup of recyclables. The WLSP EIR found that the recommended mitigation measures would reduce potential solid waste impacts to less than significant. The Lathrop Station project would be consistent with the WLSP. Applicable solid waste mitigation measures will be incorporated into the Lathrop Station SEIR, and no further analysis will be required in this issue area.

XVII. FISCAL ANALYSIS	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Will the project generate costs to the City associated with the provisions of City services, utilities, and infrastructure that will exceed the City revenues to be generated by the project?	■	☐	☐	☐

DISCUSSION:

a) The Lathrop Station project would generate both new costs and revenues to the City of Lathrop and the Lathrop/Manteca Fire District. While fiscal effects do not ordinarily constitute a CEQA issue, an analysis of fiscal impacts of the Lathrop Station project will be incorporated in the Lathrop Station SEIR.

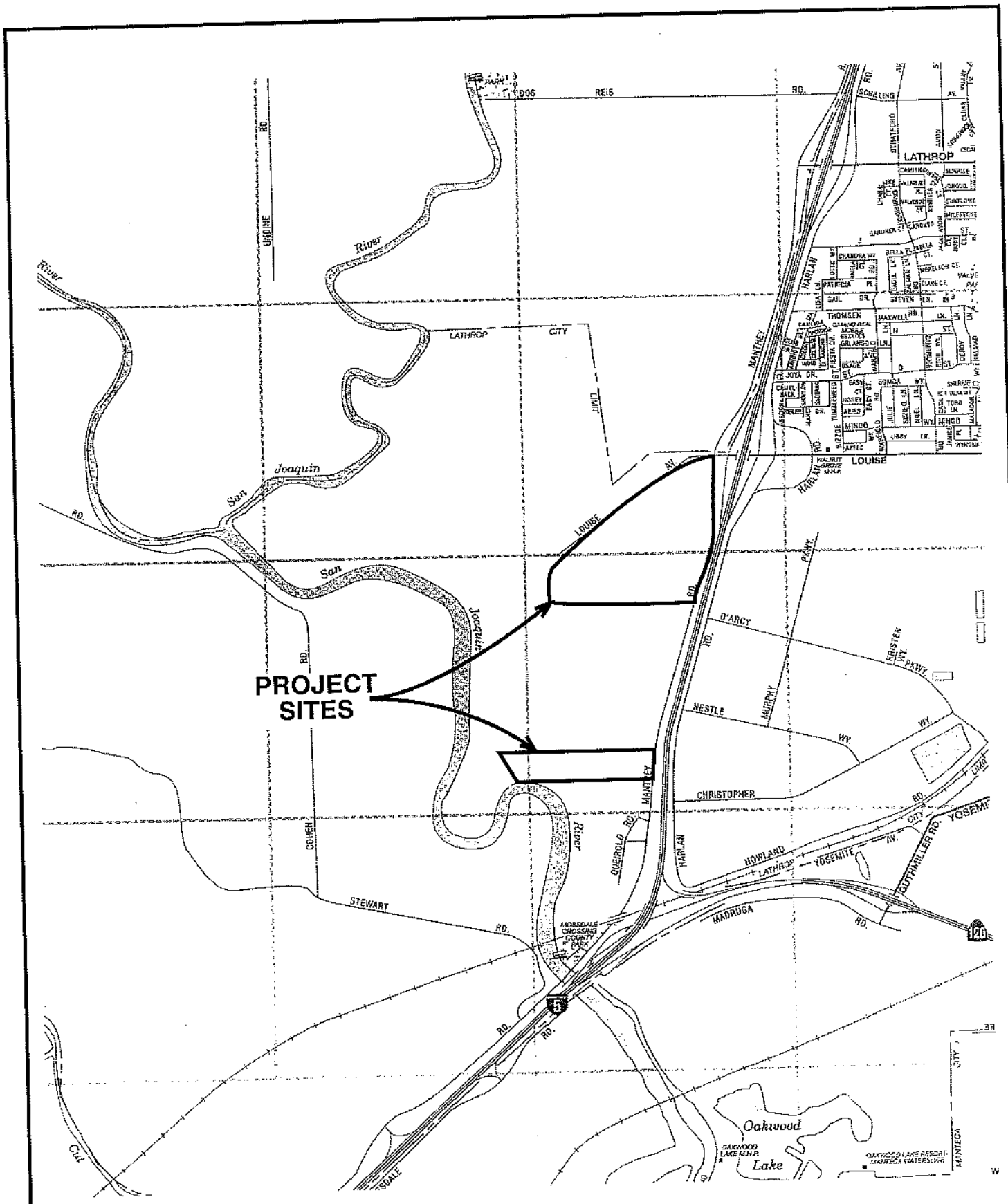
XVII. MANDATORY FINDINGS OF SIGNIFICANCE --	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	■	☐	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	■	☐	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	■	☐	☐	☐

DISCUSSION:

a) As discussed in Sections IV and V, the Lathrop Station project would involve the potential for significant effects on sensitive wildlife and cultural resource. These issues are potentially significant and will be addressed in a site-specific basis in the Lathrop Station SEIR.

b) The Lathrop Station project, in conjunction with other planned development in the WLSP area, has the potential for significant cumulative impacts. These potential impacts have been addressed to some degree in previous documents including the Lathrop General Plan EIR and the WLSP EIR. Potential cumulative impacts of the Lathrop Station project will be examined in detail in the Lathrop Station SEIR.

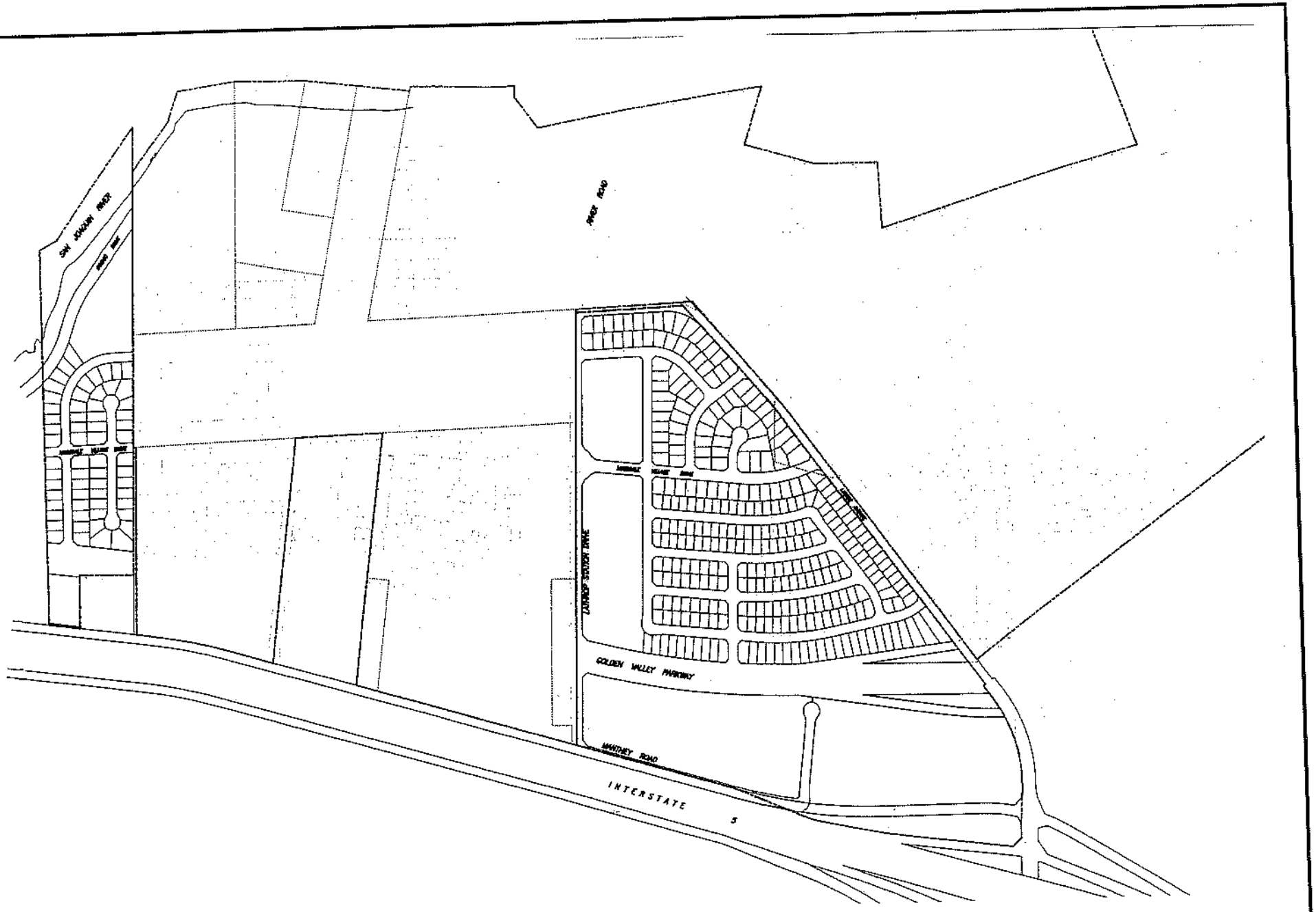
c) The Lathrop Station project will involve the potential for significant environmental effects in several issue areas that would cause substantial adverse effects on human beings. These potential effects will be addressed in detail in the Lathrop Station SEIR.



Source: AAA

INSITE ENVIRONMENTAL

Figure 1
LOCATION MAP



Source: THOMPSON-HYSELL ENGINEERS

INSITE ENVIRONMENTAL

Figure 2
PROPOSED TENTATIVE MAPS

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

Notice of Preparation

May 17, 2002

To: Reviewing Agencies

Re: Lathrop Station
SCH# 2002052083

Attached for your review and comment is the Notice of Preparation (NOP) for the Lathrop Station draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Deanna D. Walsh
City of Lathrop Department of Community Development
16775 Howland Rd., Ste. One
Lathrop, CA 95330

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Brian Grattidge
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH#	2002052083
Project Title	Lathrop Station
Lead Agency	Lathrop, City of

Type	NOP Notice of Preparation
Description	The Lathrop Station project involves approximately 151 acres of urban development authorized in the City of Lathrop in its adopted West Lathrop Specific Plan known as Stewart Tract (5,794 acres) and Mossdale Village (1,161 acres). Lathrop Station is located within the Mossdale Village portion of the WLSP area. Mossdale Village is planned as a residential community centered around a village Commercial area and also encompasses regional commercial areas.

Lead Agency Contact

Name	Deanna D. Walsh		
Agency	City of Lathrop Department of Community Development		
Phone	209-858-2860 x 269	*Fax*	
email			
Address	16775 Howland Rd., Ste. One		
City	Lathrop	*State* CA	*Zip* 95330

Project Location

County	San Joaquin			
City	Lathrop			
Region				
Cross Streets	West of Manthey Road and I-5			
Parcel No.				
Township		*Range*	*Section*	*Base*

Proximity to:

Highways	I-5
Airports	
Railways	
Waterways	
Schools	
Land Use	Existing zoning within the northern portion of the project site is Single-Family Residential (R-MV), Multi-Family residential (RM-MV), Village Commercial (CV-MV), Highway Commercial (CH-MV) and Service Commercial (CS-MV).

Project Issues	Aesthetic/Visual; Biological Resources; Forest Land/Fire Hazard; Toxic/Hazardous; Agricultural Land; Water Quality; Noise; Air Quality; Geologic/Seismic; Population/Housing Balance; Public Services; Other Issues; Recreation/Parks; Traffic/Circulation
Reviewing Agencies	Resources Agency; Department of Conservation; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 2; Native American Heritage Commission; State Lands Commission; Caltrans, District 10; Regional Water Quality Control Bd., Region 5 (Sacramento)

Date Received 05/17/2002 *Start of Review* 05/17/2002 *End of Review* 06/17/2002

OP Distribution List

County: San Joaquin. SCH# 2002052083

sources Agency

- Resources Agency
  Nadell Gayou
- Dept. of Boating & Waterways
  Bill Curry
- California Coastal Commission
  Elizabeth A. Fuchs
- Dept. of Conservation
  Roseanne Taylor
- Dept. of Forestry & Fire Protection
  Allen Robertson
- Office of Historic Preservation
  Hans Kreutzberg
- Dept of Parks & Recreation
  B. Noah Tilghman
  Environmental Stewardship Section
- Reclamation Board
  Pam Bruner
- S.F. Bay Conservation & Dev't. Comm.
  Steve McAdam
- Dept. of Water Resources
  Resources Agency
  Nadell Gayou

Health & Welfare

- Health & Welfare
  Wayne Hubbard
  Dept. of Health/Drinking Water

Food & Agriculture

- Food & Agriculture
  Steve Shaffer
  Dept. of Food and Agriculture

Fish and Game

- Dept. of Fish & Game
  Scott Flint
  Environmental Services Division
- Dept. of Fish & Game 1
  Donald Koch
  Region 1
- Dept. of Fish & Game 2
  Banky Curtis
  Region 2
- Dept. of Fish & Game 3
  Robert Floerke
  Region 3
- Dept. of Fish & Game 4
  William Laudermilk
  Region 4
- Dept. of Fish & Game 5
  Don Chadwick
  Region 5, Habitat Conservation Program
- Dept. of Fish & Game 6
  Gabrina Gatchel
  Region 6, Habitat Conservation Program
- Dept. of Fish & Game 6 I/M
  Tammy Allen
  Region 6, Inyo/Mono, Habitat Conservation Program
- Dept. of Fish & Game M
  Tom Napoli
  Marine Region

Independent Commissions

- California Energy Commission
  Environmental Office
- Native American Heritage Comm.
  Debbie Treadway
- Public Utilities Commission
  Ken Lewis
- State Lands Commission
  Betty Silva
- Governor's Office of Planning & Research
  State Clearinghouse Planner
- Colorado River Board
  Gerald R. Zimmerman
- Tahoe Regional Planning Agency (TRPA)
  Lyn Barnett
- Office of Emergency Services
  John Rowden, Manager
- Delta Protection Commission
  Debby Eddy
- Santa Monica Mountains Conservancy
  Paul Edelman

Dept. of Transportation

- Dept. of Transportation 1
  IGR/Planning
  District 1
- Dept. of Transportation 2
  Vicki Roe
  Local, Development Review, District 2
- Dept. of Transportation 3
  Jeff Pulverman
  District 3
- Dept. of Transportation 4
  Jean Finney
  District 4
- Dept. of Transportation 5
  James Kilmer
  District 5
- Dept. of Transportation 6
  Marc Birnbaum
  District 6
- Dept. of Transportation 7
  Stephen J. Buswell
  District 7
- Dept. of Transportation 8
  Mike Sim
  District 8
- Dept. of Transportation 9
  Colleen O'Brien
  District 9
- Dept. of Transportation 10
  Chris Sayre
  District 10
- Dept. of Transportation 11
  Lou Salazar
  District 11
- Dept. of Transportation 12
  Aileen Kennedy
  District 12

Business, Trans & Housing

- Housing & Community Development
  Cathy Creswell
  Housing Policy Division
- Caltrans - Division of Aeronautics
  Sandy Hesnard
- California Highway Patrol
  Lt. Julie Page
  Office of Special Projects
- Dept. of Transportation
  Ron Helgeson
  Caltrans - Planning
- Dept. of General Services
  Robert Sleppy
  Environmental Services Section

Air Resources Board

- Airport Projects
  Jim Lerner
- Transportation Projects
  Kurt Karperos
- Industrial Projects
  Mike Tollstrup

- California Integrated Waste Management Board
  Sue O'Leary
- State Water Resources Control Board
  Diane Edwards
  Division of Clean Water Programs

RECEIVED
MAY 2 1 2002
CITY OF LATHROP

- State Water Resources Con Board
  Greg Frantz
  Division of Water Quality
- State Water Resouces Contl Board
  Mike Falkenstein
  Division of Water Rights
- Dept. of Toxic Substances C
  CEQA Tracking Center

Regional Water Quality Cont Board (RWQCB)

- RWQCB 1
  Cathleen Hudson
  North Coast Region (1)
- RWQCB 2
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- RWQCB 3
  Central Coast Region (3)
- RWQCB 4
  Jonathan Bishop
  Los Angeles Region (4)
- RWQCB 5S
  Central Valley Region (5)
  - RWQCB 5F
    Central Valley Regi (5)
    Fresno Branch Off.
  - RWQCB 5R
    Central Valley Region (5)
    Redding Branch Office
- RWQCB 6
  Lahontan Region (6)
  - RWQCB 6V
    Lahontan Region (6)
    Victorville Branch Office
- RWQCB 7
  Colorado River Basin Region (7
- RWQCB 8
  Santa Ana Region (8)
- RWQCB 9
  San Diego Region (9)

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse

Gray Davis
GOVERNOR

Tal Finney
INTERIM DIRECTOR

Memorandum

Date: May 23, 2002

To: All Reviewing Agencies

From: Brian Grattidge, Associate Planner BG

Re: SCH # 2002052083
Lathrop Station Urban Design Concept, Vesting Tentative Map and Development Agreement

---

Pursuant to the attached letter, the Lead Agency has corrected their information regarding the above project. All other information remains the same.

cc: Deanna D. Walsh
City of Lathrop Department of Community Development
16775 Howland Road, Suite One
Lathrop, CA 95330

RECEIVED
MAY 2 9 2002
CITY OF LATHROP

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
916-445-0613 FAX 916-323-3018 www.opr.ca.gov

INSITE ENVIRONMENTAL

Sch# 2002052083

May 22, 2002

ATTN: RECIPIENTS OF NOTICE OF PREPARATION
LATHROP STATION URBAN DESIGN CONCEPT, VESTING TENTATIVE MAP AND DEVELOPMENT AGREEMENT

Dear Recipient,

The purpose of this letter is to inform you that the Notice of Preparation for the above-referenced project contained two inadvertent errors:

1. Pages 5 and 6 of the document were reversed.

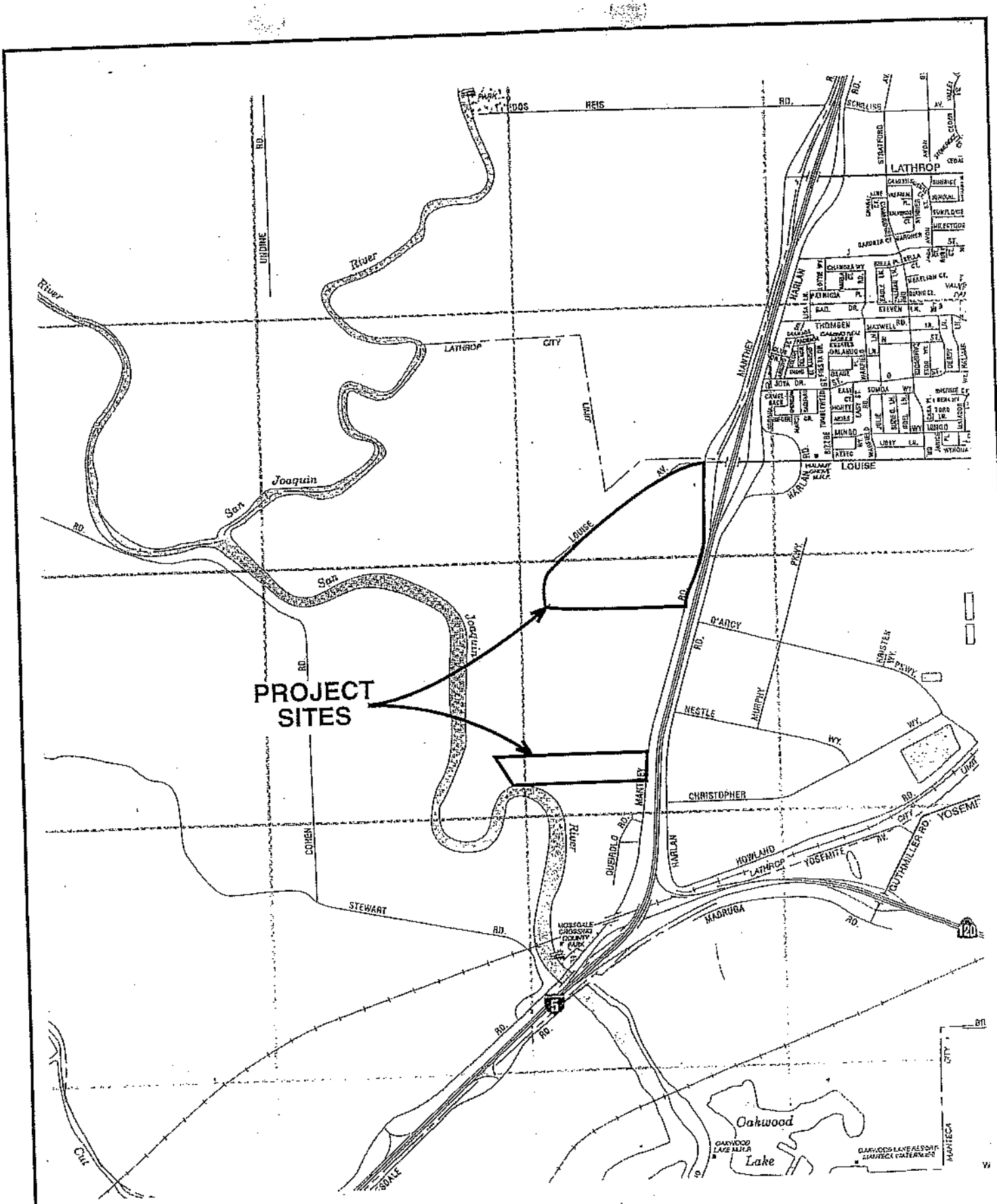
2. Location and project maps intended to be attached to the document were omitted. Copies of the omitted maps are attached for your information and use.

Because of these errors, the response time for the Notice of Preparation will be extended to 30 days from your receipt of this letter. InSite Environmental apologizes for any inconvenience this may have caused you.

Sincerely,

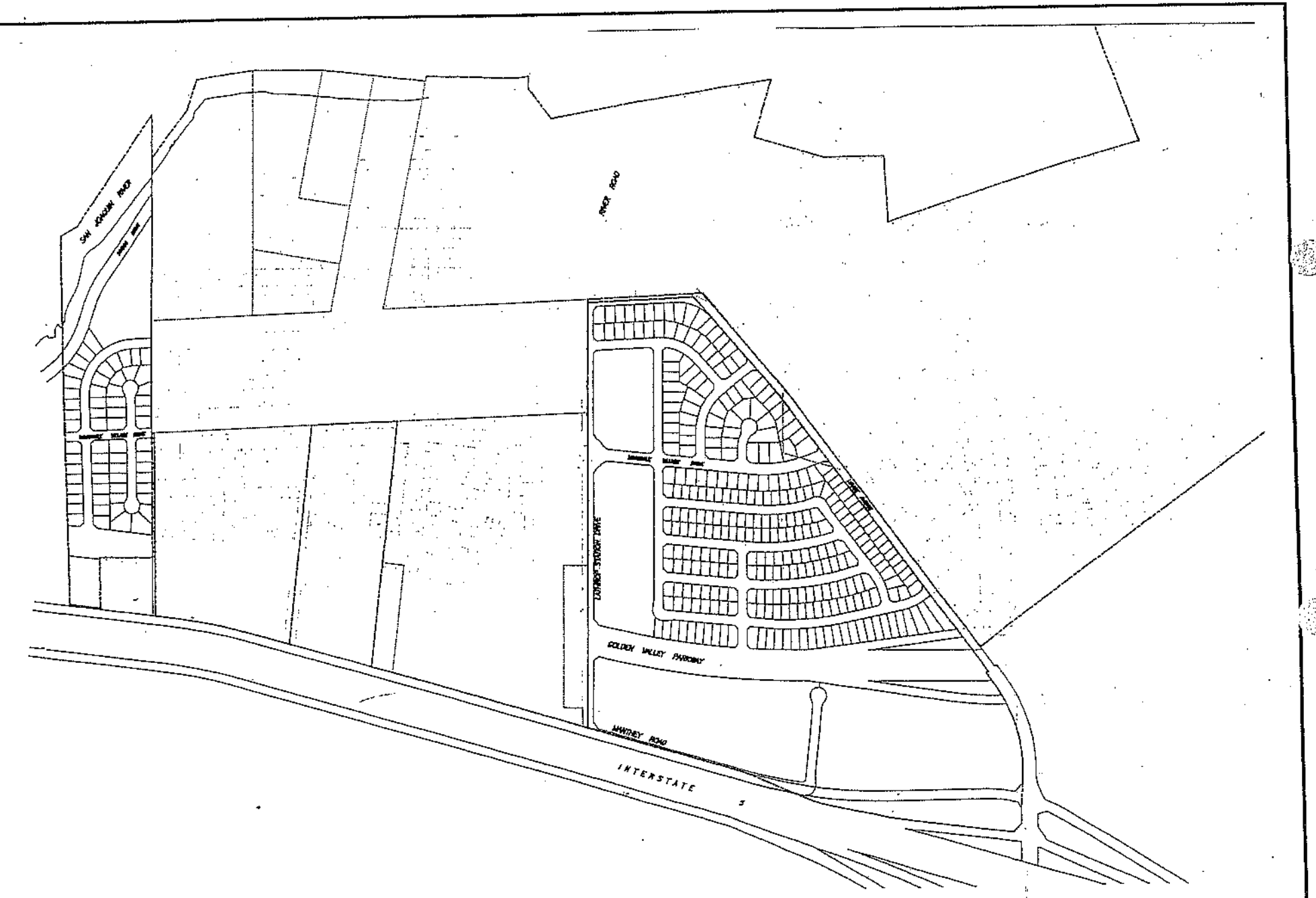
Charlie Simpson
Principal

STOCKTON, CA 95207



Source: AAA

Figure 1
LOCATION MAP



Source: THOMPSON-HYSELL ENGINEERS

INSITE ENVIRONMENTAL

Figure 2
PROPOSED TENTATIVE MAPS

...or Distribution List

County: San Joaquin SCH# 2002052083

...esources Agency

- [ ] **Resources Agency**
  Nadell Gayou
- [ ] **Dept. of Boating & Waterways**
  Bill Curry
- [ ] **California Coastal Commission**
  Elizabeth A. Fuchs
- [x] **Dept. of Conservation**
  Roseanne Taylor
- [ ] **Dept. of Forestry & Fire Protection**
  Allen Robertson
- [ ] **Office of Historic Preservation**
  Hans Kreutzberg
- [ ] **Dept of Parks & Recreation**
  B. Noah Tilghman
  Environmental Stewardship Section
- [ ] **Reclamation Board**
  Pam Bruner
- [ ] **S.F. Bay Conservation & Dev't. Comm.**
  Steve McAdam
- [x] **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou

...Health & Welfare

- [ ] **Health & Welfare**
  Wayne Hubbard
  Dept. of Health/Drinking Water

...Food & Agriculture

- [ ] **Food & Agriculture**
  Steve Shaffer
  Dept. of Food and Agriculture

Fish and Game

- [ ] **Dept. of Fish & Game**
  Scott Flint
  Environmental Services Division
- [ ] **Dept. of Fish & Game 1**
  Donald Koch
  Region 1
- [x] **Dept. of Fish & Game 2**
  Banky Curtis
  Region 2
- [ ] **Dept. of Fish & Game 3**
  Robert Floerke
  Region 3
- [ ] **Dept. of Fish & Game 4**
  William Laudermilk
  Region 4
- [ ] **Dept. of Fish & Game 5**
  Don Chadwick
  Region 5, Habitat Conservation Program
- [ ] **Dept. of Fish & Game 6**
  Gabrina Gatchel
  Region 6, Habitat Conservation Program
- [ ] **Dept. of Fish & Game 6 I/M**
  Tammy Allen
  Region 6, Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Game M**
  Tom Napoli
  Marine Region

Independent Commissions

- [ ] **California Energy Commission**
  Environmental Office
- [ ] **Native American Heritage Comm.**
  Debbie Treadway
- [ ] **Public Utilities Commission**
  Ken Lewis
- [ ] **State Lands Commission**
  Betty Silva
- [ ] **Governor's Office of Planning & Research**
  State Clearinghouse Planner
- [ ] **Colorado River Board**
  Gerald R. Zimmerman
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Lyn Barnett
- [ ] **Office of Emergency Services**
  John Rowden, Manager
- [ ] **Delta Protection Commission**
  Debby Eddy
- [ ] **Santa Monica Mountains Conservancy**
  Paul Edelman

Dept. of Transportation

- [ ] **Dept. of Transportation 1**
  IGR/Planning
  District 1
- [ ] **Dept. of Transportation 2**
  Vicki Roe
  Local, Development Review, District 2
- [ ] **Dept. of Transportation 3**
  Jeff Pulverman
  District 3
- [ ] **Dept. of Transportation 4**
  Jean Finney
  District 4
- [ ] **Dept. of Transportation 5**
  James Kilmer
  District 5
- [ ] **Dept. of Transportation 6**
  Marc Birnbaum
  District 6
- [ ] **Dept. of Transportation 7**
  Stephen J. Buswell
  District 7
- [ ] **Dept. of Transportation 8**
  Mike Sim
  District 8
- [ ] **Dept. of Transportation 9**
  Colleen O'Brien
  District 9
- [x] **Dept. of Transportation 10**
  Chris Sayre
  District 10
- [ ] **Dept. of Transportation 11**
  Lou Salazar
  District 11
- [ ] **Dept. of Transportation 12**
  Aileen Kennedy
  District 12

Business, Trans & Housing

- [ ] **Housing & Community Development**
  Cathy Creswell
  Housing Policy Division
- [ ] **Caltrans - Division of Aeronautics**
  Sandy Hesnard
- [ ] **California Highway Patrol**
  Lt. Julie Page
  Office of Special Projects
- [ ] **Dept. of Transportation**
  Ron Helgeson
  Caltrans - Planning
- [ ] **Dept. of General Services**
  Robert Sleppy
  Environmental Services Section

Air Resources Board

- [ ] Airport Projects
  Jim Lerner
- [ ] Transportation Projects
  Kurt Karperos
- [ ] Industrial Projects
  Mike Tollstrup

- [ ] **California Integrated Waste Management Board**
  Sue O'Leary
- [ ] **State Water Resources Control Board**
  Diane Edwards
  Division of Clean Water Programs
- [ ] **State Water Resources Con Board**
  Greg Frantz
  Division of Water Quality
- [ ] **State Water Resouces Contr Board**
  Mike Falkenstein
  Division of Water Rights
- [ ] **Dept. of Toxic Substances C**
  CEQA Tracking Center

Regional Water Quality Cont Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [ ] **RWQCB 4**
  Jonathan Bishop
  Los Angeles Region (4)
- [x] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Of
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

GRAY DAVIS, Governor

DEPARTMENT OF TRANSPORTATION
P.O. BOX 2048 (1976 E. CHARTER WAY)
STOCKTON, CA 95201
TDD (209) 948-7981
PHONE (209) 941-1921
FAX (209) 948-7194

Flex your power!
Be energy efficient!

June 17, 2002

10-SJ-5-16.470
Notice of Preparation
Lathrop Station Urban
Development Concept

Ms. Deanna Walsh
Community Development Department
City of Lathrop
Planning Division
Howland Road, # 1
Lathrop, CA 95330

Dear Ms. Walsh:

Caltrans has reviewed the above Notice of Preparation (NOP) for the Lathrop Station Urban Development Concept. The proposed project consists of approximately 151 acres of residential, commercial and mixed use located within the Mossdale Village portion of the West Lathrop Specific Plan area. Caltrans has the following comments:

As part of the project level traffic impact analysis referred to on page 25(b) of the initial study, Caltrans requests an updated traffic study to adequately determine mitigation needed as a result of this project. Caltrans has created a Guide for the Preparation of Traffic Impact Studies, to assist in ensuring sufficient information is included in a traffic study, please refer to this guide. If you need a copy of this guide, please call Mike Higgins, at (209) 948-3996 to request one, or access from the website below:

http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

If you have any questions or would like to discuss these comments in more detail, please contact Mike Higgins at (209) 948-3996 (e-mail: mhiggins@dot.ca.gov).

Sincerely,

TOM DUMAS, Chief
Office of Intermodal Planning

STATE OF CALIFORNIA

GRAY DAVIS, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

PAUL D. THAYER, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
California Relay Service From TDD Phone **1-800-735-2922**
from Voice Phone **1-800-735-2929**

Contact Phone: **(916) 574-1868**
Contact FAX: **(916) 574-1885**

June 14, 2002

File Ref: SCH#2002052083

Ms. Nadell Gayou
The Resources Agency
901 P Street
Sacramento, CA 95814

Ms. Deanna D. Walsh
City of Lathrop Department of Community Development
16775 Howland Road., Suite One
Lathrop, CA 95330

Dear Ms. Gayou and Ms. Walsh:

Staff of the California State Lands Commission (CSLC or Commission) has reviewed the Notice of Preparation for the Lathrop Station Urban Design Concept, Vesting Tentative Map and Development Agreement, SCH#2002052083. The CSLC is a Responsible Agency under the California Environmental Quality Act. Based on this review, we offer the following comments.

Jurisdiction

The State acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all the people of the State for statewide Public Trust purposes which include waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. The landward boundaries of the State's sovereign interests in areas that are subject to tidal action are generally based upon the ordinary high water marks of these waterways as they last naturally existed. In non-tidal navigable waterways, the State holds a fee ownership in the bed of the waterway between the two ordinary low water marks as they last naturally existed. The entire non-tidal navigable waterway between the ordinary high water marks is subject to the Public Trust. The State's sovereign interests are under the jurisdiction of the State Lands Commission.

Any activities involving the San Joaquin River may require a lease from the Commission. Please contact Diane Jones, Public Land Manager at (916) 574-1843 for any questions concerning our leasing requirements.

Subdivision Map Act

For your information, Government Code Section 66478.1, et. seq., prohibits local agencies from approving either a tentative or a final map of any proposed subdivision to be fronted upon a public waterway, river or stream which does not provide reasonable public access to and along that portion of the bank of the river or stream bordering or lying within the proposed subdivision. Such important legal requirements of the Subdivision Map Act must be satisfied for any project subdivision project adjacent to the San Joaquin River.

We appreciate the opportunity to comment on this Notice and look forward to receiving future environmental documents concerning this project.

Sincerely,

Stephen L. Jenkins

Stephen L. Jenkins, Assistant Chief
Division of Environmental Planning
And Management

cc: Diane Jones

STATE OF CALIFORNIA—THE RESOURCES AGENCY

RECEIVED

GRAY DAVIS, *Governor*

DELTA PROTECTION COMMISSION
14215 RIVER ROAD
P.O. BOX 530
WALNUT GROVE, CA 95690
Phone (916) 776-2290
FAX (916) 776-2293
E-Mail: dpc@citlink.net Home Page: www.delta.ca.gov

June 10, 2002

Ms Deanna Walsh, Project Manager
City of Lathrop Planning Department
16775 Howland Road, Suite One
Lathrop, CA 95330

Subject: Notice of Preparation of a Draft Environmental Impact Report for the Lathrop Station Urban Development Concept, Vesting Tentative Map and Development Agreement

Dear Ms Walsh,

I have received and reviewed the above document, and am submitting general comments on behalf of the Delta Protection Commission. The Commission itself has not had the opportunity to review the document and these comments, so these are staff comments only.

The Delta Protection Commission, created under the Delta Protection Act of 1992, has appeal authority over local government actions within the Legal Delta's Primary Zone (see attached map for Zone definitions). The Commission was mandated to prepare a regional land use plan; the Land Use and Resource Management Plan (Plan) for the Primary Zone of the Delta was completed in 1995.

The proposed new development on Stewart Tract is located in the Legal Delta's Secondary Zone, and so is not subject to the Commission's appeal authority, so these are advisory comments only. The Commission's Plan does, however, include some recommendations on recreation and access that apply to this proposed project:

> "R-3: New projects in the Secondary Zone, adjacent to the Primary Zone, should include commercial and public recreation facilities which allow safe, supervised access to and along the Delta waterways (pedestrian and bike trails, launch ramps including small boat launch ramps, windsurfing access, overlooks, nature observation areas, interpretive information, picnic areas, etc.)."

The Notice of Preparation states that the City of Lathop would be constructing a portion of its planned linear park system along the San Joaquin River; this appears to be consistent with the Commission's above recommendation. I strongly encourage that the portion of the park associated with this particular development provide adequate public access and recreational opportunities in the San Joaquin River and Old River.

RECEIVED

Thank you for the opportunity to review the Notice of Preparation. If you'd like more information about the Commission or its Plan, the Commission's website has a lot of useful information: www.delta.ca.gov. You may also contact me directly at (916) 776-2290 or loridpc@citlink.net.

Sincerely,

Lori Clamurro
Environmental Scientist

Cc: Patrick N. McCarty, Chairman
Katie Shulte-Joung, Governor's Office of Planning and Research

San Joaquin Valley
Air Pollution Control District

June 10, 2002

Deanna Walsh, Senior Planner
City of Lathrop
16775 Howland Road Suite 1
Lathrop, CA 95330

SUBJECT: NOTICE OF PREPARATION FOR THE ENVIRONMENTAL IMPACT REPORT LATHROP STATION

Dear Ms Walsh:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the proposed project and offers the following comments:

The San Joaquin Valley's air quality has been designated nonattainment by the EPA and by the Air Resources Board (ARB) for ozone and fine particulate matter (PM-10). The Federal Clean Air Act (CAA) and the California Clean Air Act require areas that are designated nonattainment to reduce emissions until standards are met.

The District recommends that the air quality section of the EIR have three main components. **Section one** should provide a description of the regulatory environment and existing air quality conditions impacting the San Joaquin Valley. **Section two** should provide estimates of existing emissions and projected pollutant emissions related to any increases in population, vehicle use, and construction activities along with an analysis of the effects of these increases. **Section three** should identify and discuss all feasible mitigation measures which, after implementation, will reduce the air quality impacts generated by this project.

Section 1: ***description of the regulatory environment and existing air quality conditions of the San Joaquin Valley.***

The District has several sources of information available to assist with the existing air quality and regulatory environment section of the EIR. The District's ***Guide for Assessing and Mitigating Air Quality Impacts*** (GAMAQI) contains discussions regarding the existing air quality conditions and trends of the San Joaquin Valley Air Basin, including those pollutants of particular concern: ozone, PM-10, and carbon monoxide. In addition, it provides an overview of the regulatory environment governing air quality at the federal, state, and regional levels. The GAMAQI provides air monitoring data and other relevant information for PM-10 and other pollutants

David L. Crow
Executive Director/Air Pollution Control Officer

Northern Region Office
4230 Kiernan Avenue, Suite 130
Modesto, CA 95356-9322
(209) 557-6400 • FAX (209) 557-6475

Central Region Office
1990 East Gettysburg Avenue
Fresno, CA 93726-0244
(559) 230-6000 • FAX (559) 230-6061
www.valleyair.org

Southern Region Office
2700 M Street, Suite 275
Bakersfield, CA 93301-2373
(661) 326-6900 • FAX (661) 326-6985

Section 2: ***projected pollutant emissions generated during the construction and operational phases of the project.***

The growth-inducing and cumulative impacts analyses should take into consideration the existing and planned development both within the project area and in the surrounding areas. The District recommends the use of the URBEMIS 7G modeling program to calculate the pollutant emissions resulting from motor vehicle trips generated by this development project. Additional guidance is provided in the GAMAQI.

Additionally, the EIR should quantify emissions that are individually small but cumulatively significant sources of pollution. This includes, but is not limited to, emissions from natural gas combustion for space and water heating and emissions from gas-powered lawn and garden maintenance equipment. URBEMIS 7G may also be used to quantify these emissions.

As the projects are considered for approval the applicant and the City of Lathrop should consider the toxic risk associated with diesel-fueled engines and vehicles. The California Air Resources Board has issued a report entitled **Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles** (October 2000). Appendix VII of the report provides several risk characterization scenarios, which may serve as a starting point for estimating risks from diesel engine emissions. The District will work with applicants to review appropriate methodology for estimating toxic risk.

Section 3: ***mitigation measures.***

Mitigation measures must be included in the EIR that reduce the emissions of reactive organic gases (ROG), nitrogen oxides, carbon monoxide, and PM-10 to the maximum extent feasible. Site design and building construction measures that would reduce air quality impacts should be included. In addition, measures to reduce vehicle trips, miles traveled, and cold starts should be included in the project.

As a result of the Valley's nonattainment status, the District strongly recommends that the project applicant and the City of Lathrop implement all feasible mitigation measures to reduce the amount of ozone precursors that will result from the buildout of this project. Please note that some of these measures may already exist as City development standards. The following is a list of potential mitigation measures; the list is not meant to be all inclusive, and the District encourages new innovative ideas.

- If fireplaces are proposed, only natural gas fireplaces or EPA-certified wood burning fireplaces/stoves should be installed. Conventional open-hearth fireplaces should not be permitted.

- Energy efficient design including automated control system for heating/air conditioning and energy efficiency beyond Title 24 requirements, lighting controls and energy-efficient lighting in buildings, increased insulation beyond Title 24 requirements, and light colored roof materials to reflect heat.

- Planting of deciduous trees on the south and westerly facing sides of buildings.

- Provide low nitrogen oxide (NOx) emitting and/or high efficiency water heaters.

- If transit service is available to the project site, improvements should be made to encourage residents to use it. If transit service is not currently available, but is planned for the future, appropriate easements should be reserved to provide for future improvements such as bus turnouts, loading areas, and shelters.

- Sidewalks and bikepaths should be installed throughout as much of the project as possible and should be connected to any nearby open space areas, parks, schools, commercial areas, etc.

- Natural gas lines and electrical outlets should be installed in patio areas to encourage the use of gas and/or electric barbecues.

- All housing units should include as part of the purchase an electric lawn mower and an electric edger.

- One of the issues that will arise in conjunction with any proposed renovation/demolition of existing building in the project area is compliance with the National Emission Standards for Hazardous Air Pollutants (NESHAPS). Specifically, the primary air pollutant of concern is asbestos. To ascertain whether this project is subject to NESHAPS, the project applicant is advised to review the enclosed *Asbestos - Compliance Assistance Bulletin*, dated December 1994. Leaf Sexton is the Northern Region's District contact for the program and is available should you need further assistance.

- Prior to the issuance of construction contracts the City of Lathrop should perform a review of new technology, as it relates to heavy-duty equipment, to determine what if any advances in emission reduction are available for use. It is anticipated that in the near future both NOx and PM10 control equipment will be available. The District would be available for consultation on this process.

- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.

- Install wheel washer for all exiting trucks, or wash off all trucks and equipment leaving the site.

- Install wind breaks at windward sides of construction areas.

- Suspend excavation and grading activity when winds exceed 20 mph.

- Limit area subject to excavation, grading, and other construction activity at any one time.

- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operation are occurring. (the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting t limit the visible dust emissions.)

- Use alternative fuel construction equipment.

- Minimize idling time (e.g. 10 minute maximum)

- Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use.

- Replace fossil-fueled equipment with electrically driven equivalents(provided they are not run via a portable generator set).

- Curtail construction during periods of high ambient pollutant concentrations; this may include ceasing of construction activity during the peak-hour of vehicular traffic on adjacent roadways (Days declared as Spare the Air Days by the District).

- Air Quality impact fees should be developed to help fund additional air quality mitigation measure to further reduce air quality impacts.

Thank you for the opportunity to comment. If you have any questions, please feel free to contact me at (209) 557-6400.

Sincerely,

John Cadrett
Air Quality Planner
Northern Region

APCD REF # 20020099

KJELDSEN, SINNOCK & NEUDECK, INC.
CONSULTING ENGINEERS & LAND SURVEYORS

KENNETH L. KJELDSEN
STEPHEN K. SINNOCK
CHRISTOPHER H. NEUDECK

711 N. PERSHING AVENUE
POST OFFICE BOX 844
STOCKTON, CALIFORNIA 95201-0844

TELEPHONE 946-0268
FAX NO. 946-0296
AREA CODE 209

856.011-10-700

June 5, 2002

Ms. Deanna Walsh
City of Lathrop
Community Development Department
16775 Howland Road, Suite One
Lathrop, CA 95330

Re: Reclamation District No. 17
Lathrop Station
Notice of Preparation of
Draft Environmental Impact Report (DEIR)

Dear Ms. Walsh:

These comments are being submitted on behalf of RD 17 relative to the subject Notice of Preparation for the DEIR for Lathrop Station. Over the last several years RD 17 has transmitted comments to your Department related to RD 17's levees and your Floodplain Ordinance. There are numerous important planning issues raised in those letters particularly the impacts resulting from seepage through the levee and high ground water associated with either high rain or river water events. On October 2, 2001 I transmitted comments on Lathrop Station's Intent to Subdivide, which primarily addressed the drainage component of my previous letters. Since that time I have regularly participated in the monthly Council workshops held to coordinate the master storm drainage plan west of I-5.

I have enclosed for your review and reference RD 17's Board of Trustees Drainage Plan considerations for the City of Lathrop area within RD 17. I would request that the authors of the DEIR reference this document and its applicable conditions when drafting their document.

If you have any questions regarding the enclosed please call me. Thank you in advance for your anticipated cooperation in this matter.

Sincerely,

KJELDSEN, SINNOCK & NEUDECK, INC.

Christopher H. Neudeck

Christopher H. Neudeck

CHN/ls
Encl.
cc: Trustees (w/encl)
Dante J. Nomellini (w/encl)
Mike Callahan SJCo. (w/encl)

RE CAP OF
OCTOBER 19, 2001
RD 17 BOARD OF TRUSTEES MEETING
DRAINAGE PLAN CONSIDERATIONS
CITY OF LATHROP AREA

1. Developers will be required to reconstruct the District's levee within 100 feet either direction of the limits of the pump station and its appurtenances on the levee. Since the discharge pipes and pump station will restrict access to the levee for future reconstruction the District will require that the Developer consider the condition of the existing levee and improve it accordingly. Improvements suggested included sheet piling the frontage, slurry trenching the limits, placement of riprap, placement of landside berms, excavation and re-compaction etc.

2. Consolidate the number of pump stations for a given drainage watershed. "The District strongly recommends that the collection and conveyance systems designed by developments within the District terminate at regional facilities thereby reducing the number of pump station and levee crossings that will occur as a result of urban development".

3. Limit the number of discharge pipes crossing the levee. Adequate spacing must be provided between the discharge pipes in order to properly compact the levee fill material between the pipes. Provided the levee is required to be raised the following will be required:
    a. Maximum ramp slope is 5%
    b. Crown width must be maintained at 20 feet wide minimum and the levee backslope flattened accordingly.
    c. No flow control structures will be allowed to be placed with in the crown of the levee.
    d. Discharge pipes must extend down the waterside slope to a point below the River's low water surface. The submerged discharge pipes will be constructed in a manner as to direct the flow away from the levee.

4. Detention Basins will be located as far away from the levee as possible with a minimum setback of 200 feet from the toe of the levee. There are several reasons for requiring the greatest possible setback from the levee for instance:
    a. The closer you get towards the levee, the higher the ground water is and therefore the less functional the Basin will be during high-water events
    b. Placement of the detention basins near the levee toe will exasperate the seepage and groundwater problem that occur during high water events. A detention basin that is surcharged with water will add to the high ground water/seepage condition that the developers must contend with in the design of their subsurface drainage system. Developers must demonstrate that ground water levels will be maintained sufficiently below the ground and not be impacted by the placement of their detention ponds.
    c. An established levee detail for repairing seepage damage is the construction of a berm at the toe of the levee. Berm construction requires the placement of fill and would not be compatible with detention basins.

5. Developers will be required to evaluate the scour potential of their discharge water in the District's levee as well as the adjoining levee system across the River.

6. The William Lyon's Stonebridge Development drainage plan submittal must incorporate drainage from the Riverwalk Subdivision and the Dos Reis Road drainage area.

7. Developers will be required to evaluate the impacts of their outfall on the water surface profile for San Joaquin River. Unmitigated impacts, resulting in an increase to the Base Flood Elevation will not be allowed.

STATE OF CALIFORNIA -- THE RESOURCES AGENCY

GRAY DAVIS, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

June 4, 2002

Ms. Deanna Walsh, Project Manager
City of Lathrop
16775 Howland Road, Suite One
Lathrop, California 95330

Dear Ms. Walsh:

The following are our comments on the Notice of Preparation of a Draft Environmental Impact Report for the Lathrop Station Urban Development Concept, Vesting Tentative Map and Development Agreement. We received the NOP May 15, 2002.

1. Page 9, Biological Resources, General, recommend review and consideration of "Recovery Plan for Upland Species of the San Joaquin Valley, California", September 1998, U.S Fish & Wildlife Service, published after WLSP EIR (1995);

2. Page 13, Geology and Soils, Item b), Line 8, revise "are" to "and" following (NPDES);

3. Page 15, Hazards and Hazardous Materials, Item b), Line 4, recommend noting reference to the "theme park" is no longer applicable to the Stewart Tract River Islands of Lathrop plan;

4. Page 16, Hazards and Hazardous Materials, Item f), pending draft U.S. Army Corps of Engineers Sacramento and San Joaquin River Basins Comprehensive Study findings have identified the planned development area with flood corridor potential;

5. Page 16, Hazards and Hazardous Materials, Item h), the planned development area could experience significant loss as a result of a levee failure;

6. Page 26, Utilities and Service Systems, Item a) and b), review and consideration of Department of Water Resources State Water Project Operations should be included for treated water discharge to the San Joaquin River;

7. Page 26, Utilities and Service Systems, Item c), Line 1-3, review and consideration of Department of Water Resources State Water Project Operations should be included for storm water discharge to the San Joaquin River; and

8. Page 26, Utilities and Service Systems, Item c), Line 4, reference to "Mossdale landing project" – recommend revision to "Mossdale Village project" or notation if two different projects are being addressed.

Should you have any questions, please contact Mr. Bob Pedlar at (916) 653-5085 or myself at (916) 653-1099.

Sincerely,

Katherine F. Kelly, Chief
Office of State Water Project Planning

LATHROP-MANTECA FIRE DISTRICT
800 "J" Street
Lathrop, California 95330
(209) 858-2331 ph. 858-1180 fax.
www.lmfd.org

May 23, 2002

City of Lathrop
Planning Department

Attn: Deanna Walsh, Project Manager

Application # NOP - Lathrop Station DEIR, Vesting Map and DA

Dear Staff:

After reviewing the above document, I would request the following corrections be made:

1. The name of our Fire Department is listed several way within the document. The correct name of the department is the Lathrop-Manteca Fire District. Please correct as needed.

Should there be any questions in reference to the above, please contact me at my office.

Sincerely,

J.R. Monty
Fire Marshal

San Joaquin County Sheriff

LATHROP POLICE SERVICES

Inter-office Memo

TO: **Deanna Walsh, Senior Planner** **DATE: July 13, 2001**

FROM: **Barbara Moffitt, Chief**

SUBJECT: **Lathrop Station – Notice of Preparation of Draft EIR**

Thank you for the opportunity to respond to this draft EIR for Lathrop Station. This reports acknowledges that potentially significant impact to Police Services will be created by the proposed development. It also states that the impact will be further evaluated in the Lathrop Station SEIR. I will look forward to that document.

SAN JOAQUIN COUNTY
COMMUNITY DEVELOPMENT DEPARTMENT

1810 E. HAZELTON AVE., STOCKTON, CA 95205-6232
PHONE: 209/468-3121 FAX: 209/468-3163

May 28, 2002

Deanna Walsh
City of Lathrop
15775 Howland Road, Suite One
Lathrop, California 95330

Dear Ms. Walsh:

Re: Notice of Preparation of Draft Environmental Impact Report for the Lathrop Station Urban Development concept, Vesting Tentative Map and Development Agreement

Thank you for the opportunity to review the above NOP. Please provide the San Joaquin Community Development Department with a copy of the Draft EIR when it is available.

Sincerely,

Chandler Martin
Senior Planner

CM:vb
lathropstationnop

September 23, 2003

Mr. Bruce Coleman, Community Development Director
City of Lathrop
16775 Howland Road
Lathrop, CA 95330

Re: Mossdale Landing East Project Draft Environmental Impact Report

Dear Mr. Coleman,

San Joaquin County Mosquito and Vector Control District (the District) respectfully requests to participate in the environmental review process for the Mossdale Landing East Project.

Items of concern for the District include 1) increased demand for mosquito and vector control services as the project develops, 2) urban/suburban development near rural areas that support high mosquito populations, and 3) the location of the proposed project near future wetland development areas (primary and secondary zone of the Delta).

Although the District will not be represented at the September 25, 2003 Scoping Meeting, we do look forward to working with City staff during the environmental review process.

Sincerely,

John R. Stroh
Manager

7759 SOUTH AIRPORT WAY, STOCKTON, CALIFORNIA 95206-3918
(209) 982-4675 • FAX (209) 982-0120

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO
ATTENTION OF

January 10, 2002

Regulatory Branch (200100608)

Deanna Walsh
City of Lathrop Community Development
Planning Division
16775 Howland Road, Suite 1
Lathrop, California 95330-9792

Dear Ms. Walsh:

I am responding to a September 25, 2001 Referral Letter, that was received on October 9, 2001, for the Lathrop Station Village subdivision 1&2. The first project site (118.5 acres) is located on the west side of Interstate 5 between Manthey Road and the San Joaquin River south of Louise Avenue. The second site (28 Acres) located west of Manthey Road and east of the San Joaquin River within the City of Lathrop, San Joaquin County, California.

The Corps of Engineers' jurisdiction within the study area is under the authority of Section 404 of the Clean Water Act for the discharge of dredged or fill material into waters of the United States. Waters of the United States include, but are not limited to, rivers, perennial or intermittent streams, lakes, ponds, wetlands, vernal pools, marshes, wet meadows, and seeps. The Corps of Engineers' also has jurisdiction under Section 10 of the Rivers and Harbors Act for any work in, over, or under any Federally navigable waterway. Project features that result in the discharge of dredged or fill material into waters of the United States or any work below the mean high tide line of the San Joaquin River will require Department of the Army authorization prior to starting work.

The range of alternatives considered in an EIR should include alternatives that avoid impacts to wetlands or other waters of the United States. Every effort should be made to avoid project features which require the discharge of dredged or fill material into waters of the United States. In the event it can be clearly demonstrated there are no practicable alternatives to filling waters of the United States, mitigation plans should be developed to compensate for the unavoidable losses resulting from project implementation.

If you have any questions, please write to Mr. Paul Maniccia, Room 1480, or telephone (916) 557-6704. We appreciate the opportunity to be included in your review process.

Sincerely,

Nancy A. Haley
Chief, San Joaquin Valley Office

STATE OF CALIFORNIA BUSINESS, TRANSPORTATION AND HOUSING A

DEPARTMENT OF TRANSPORTATION
P.O. BOX 2048 (1976 E. CHARTER WAY)
STOCKTON, CA 95201
TDD (209) 948-7981
PHONE (209) 941-1921
FAX (209) 948-7194

Post-it Fax Note 7671	Date 6/17/02	# of pages ▶ 1
To Deanna Walsh	From Mike Higgins	
Co./Dept.	Co. CALTRANS	
Phone #	Phone # 713-3996	
Fax # 858-5259	Fax #	

June 17, 2002

10-SJ-5-16.470
Notice of Preparation
Lathrop Station Urban
Development Concept

Ms. Deanna Walsh
Community Development Department
City of Lathrop
Planning Division
Howland Road, # 1
Lathrop, CA 95330

Dear Ms. Walsh:

Caltrans has reviewed the above Notice of Preparation (NOP) for the Lathrop Station Urban Development Concept. The proposed project consists of approximately 151 acres of residential, commercial and mixed use located within the Mossdale Village portion of the West Lathrop Specific Plan area. Caltrans has the following comments:

As part of the project level traffic impact analysis referred to on page 25(b) of the initial study, Caltrans requests an updated traffic study to adequately determine mitigation needed as a result of this project. Caltrans has created a Guide for the Preparation of Traffic Impact Studies, to assist in ensuring sufficient information is included in a traffic study, please refer to this guide. If you need a copy of this guide, please call Mike Higgins, at (209) 948-3996 to request one, or access from the website below:

http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

If you have any questions or would like to discuss these comments in more detail, please contact Mike Higgins at (209) 948-3996 (e-mail: mhiggins@dot.ca.gov).

Sincerely,

TOM DUMAS, Chief
Office of Intermodal Planning

STATE OF CALIFORNIA GRAY DAVIS, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

PAUL D. THAYER, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
California Relay Service From TDD Phone **1-800-735-2922**
from Voice Phone **1-800-735-2929**

Contact Phone: **(916) 574-1868**
Contact FAX: **(916) 574-1885**

June 14, 2002

File Ref: SCH#2002052083

Ms. Nadell Gayou
The Resources Agency
901 P Street
Sacramento, CA 95814

Ms. Deanna D. Walsh
City of Lathrop Department of Community Development
16775 Howland Road., Suite One
Lathrop, CA 95330

Dear Ms. Gayou and Ms. Walsh:

Staff of the California State Lands Commission (CSLC or Commission) has reviewed the Notice of Preparation for the Lathrop Station Urban Design Concept, Vesting Tentative Map and Development Agreement, SCH#2002052083. The CSLC is a Responsible Agency under the California Environmental Quality Act. Based on this review, we offer the following comments.

Jurisdiction

The State acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all the people of the State for statewide Public Trust purposes which include waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. The landward boundaries of the State's sovereign interests in areas that are subject to tidal action are generally based upon the ordinary high water marks of these waterways as they last naturally existed. In non-tidal navigable waterways, the State holds a fee ownership in the bed of the waterway between the two ordinary low water marks as they last naturally existed. The entire non-tidal navigable waterway between the ordinary high water marks is subject to the Public Trust. The State's sovereign interests are under the jurisdiction of the State Lands Commission.

Any activities involving the San Joaquin River may require a lease from the Commission. Please contact Diane Jones, Public Land Manager at (916) 574-1843 for any questions concerning our leasing requirements.

Subdivision Map Act

For your information, Government Code Section 66478.1, et. seq., prohibits local agencies from approving either a tentative or a final map of any proposed subdivision to be fronted upon a public waterway, river or stream which does not provide reasonable public access to and along that portion of the bank of the river or stream bordering or lying within the proposed subdivision. Such important legal requirements of the Subdivision Map Act must be satisfied for any project subdivision project adjacent to the San Joaquin River.

We appreciate the opportunity to comment on this Notice and look forward to receiving future environmental documents concerning this project.

Sincerely,

Stephen L. Jenkins, Assistant Chief
Division of Environmental Planning
And Management

cc: Diane Jones

APPENDIX B
TRAFFIC APPENDICES

APPENDIX

West Lathrop Specific Plan (WLSP) Regional Transportation Fee

The West Lathrop Specific Plan Regional Transportation Fee (Regional Transportation Fee) was adopted as a mitigation program to calculate new development's fair share of regional improvements needed within San Joaquin County, including improvements to mainline freeways, freeway interchanges, regional streets, the regional bicycle system and the bus transit system, as well as rail corridor improvements. Under this program, the City of Lathrop decides the order and the timing of the construction of these facilities within their sphere of influence. The Regional Transportation Fee was adopted by the City of Lathrop as Ordinance No. 97-146 on September 16, 1997, and applies to the entire West Lathrop Specific Plan area. Payment of the Regional Fee will therefore mitigate the project's impacts upon mainline freeway widening on I-5, SR 120, and I-205.

Specific Improvements in the area to be funded by the Regional Transportation Fee include:

Mainline Freeway Facility	Improvement Funded	Fee Funding	Total Funding
I-5 mainline, I-205 to SR 120	widen to 12 lanes	$11,505,000	$23,010,000
I-5 Southbound, SR 120 to I-205	add SB aux lane	$6,500,000	$13,000,000
I-5 mainline, SR 120 to French Camp	widen to 8 lanes	$14,495,000	$28,990,000
I-5 Northbound, @ San Joaquin River	widen bridge, 1 lane	$10,000,000	$20,000,000
SR 120, I-5 to SR 99	widen to 6 lanes	$8,450,000	$16,900,000
I-205, I-580 to I-5	widen to 8 lanes	$27,950,000	$55,900,000

Freeway Interchange Facility	Improvement Funded	Fee Funding	Total Funding
		$	$
I-5 / Louise Avenue	Included in GVP funding		
I-5 / Lathrop Road	Stage I and II improvements	$5,100,000	$17,200,000
I-205 / Paradise-Chrisman	New interchange	$13,400,000	$19,200,000
I-5 / SR 120	New branch connections	$15,000,000	$30,000,000

Regional Roadway Facility	Improvement Funded	Fee Funding	Total Funding
Golden Valley Pkwy, Lathrop Rd. to Paradise/Chrisman	New facility	$41,503,000	$59,290,000
E/W Expressway, along Arbor (Paradise to Mountain House)	Expanded facility	$18,655,000	$26,650,000

City of Lathrop Capital Facility Fees (CFF) for Transportation Improvements

The Regional Transportation Fee anticipated some funding from local impact fees to account for local impacts to some regional facilities, including Golden Valley Parkway and some freeway Interchanges. There are also other facilities of a City-wide nature that benefit multiple projects yet were not included in the Regional Fee. The City will require payment of Capital Facility Fee (CFF) impact fees for funding City-wide transportation improvements required within the Mossdale Landing East area that are beyond the scope of the Regional Transportation Fee.

The City's existing CFF program provides funding for various elements of infrastructure and public amenities, including those for transportation in accordance with California Government Code §66000 et seq. However, the current fee applies only to new development in the area east of I-5. The CFF program is currently being updated to reflect the impact of anticipated residential and commercial development within the West Lathrop Specific Plan area, and will set a fee for mitigating those impacts. The existing CFF for transportation includes funding for the following improvements:

Interstate 5/Louise Avenue Interchange Stage 1 and partial 2 improvements (local share)
Interstate 5/Lathrop Road Interchange Stage 1 and partial 2 improvements (local share)
Interstate 5/Roth Road Interchange Stage 1 improvements
Railroad grade separations
Traffic signals at major intersections
Park and Ride Lots and bicycle trails

The CFF update currently being processed will include, at a minimum, the following improvements:

Golden Valley Parkway (local share), River Islands Parkway to Paradise Road
River Islands Parkway (formerly Gold Rush Boulevard), I-5 to San Joaquin River
Interstate 5 Interchange improvements at Louise Avenue
(Balance of Stage 2 improvements plus par-clo or equivalent, local share)
Traffic Signals at new major intersections, including:
Golden Valley Parkway/River Islands Parkway
Golden Valley Parkway/Towne Centre Drive
Golden Valley Parkway/South River Islands Parkway
Golden Valley Parkway/Broad Street
Golden Valley Parkway/Lake Harbor Blvd
Golden Valley Parkway/Paradise/Arbor
Golden Valley Parkway/River Edge Drive
River Islands Parkway/McKee Boulevard
River Islands Parkway/Silvera Access

In addition, The CFF update will review the extent that major improvements on Stewart Tract benefit an area beyond Stewart Tract and should be partially funded by development east of the San Joaquin River. Facilities analyzed will include:

River Islands Parkway Bridge (Bradshaw's Crossing) over San Joaquin River
Expanded Paradise Road Bridges over Paradise Cut
Paradise Road widening, I-205 to North River Islands Parkway
North River Islands Parkway (on Stewart Tract)
South River Islands Parkway (on Stewart Tract)

Since the Stewart Tract is controlled by one developer, the option exists to create a Stewart Tract On-Site Traffic Mitigation Fee to enable the recovery of Stewart Tract's share of the costs of the five major facilities located on Stewart Tract noted above from the various future developers of land on the Stewart Tract. Rather than process this fee through the City, the developer has agreed to handle this recovery separately and impose this fee as a condition of the sale of land to future purchasers on Stewart Tract.

City of Tracy/San Joaquin County/City of Lathrop Cooperative Agreement and Traffic Fee

There is one more category of improvements that need to be funded. These are the improvements that are beyond the Sphere of Influence of the City of Lathrop and are not included in the Regional Transportation Fee. They include improvements in the area of the MacArthur Boulevard interchange with I-205. The project will have some responsibility of partial funding these improvements, yet there is also some responsibility of the City of Tracy and the County of San Joaquin to fund these facilities. It is therefore anticipated that these agencies will create a cooperative agreement and traffic fee to fund their shares of the following improvements:

I-205/Paradise-Chrisman Interchange (local share not in Regional Fee)
I-205/MacArthur interchange improvements
MacArthur widening, from EB ramps to Arbor Avenue
Arbor Avenue widening, Paradise to MacArthur (local share not in Regional Fee)

Stewart Tract Traffic Monitoring Program

In 1996, the City of Lathrop and the Califia applicant established a monitoring program to determine, on an annual basis, an updated evaluation of the current status of circulation system operation and make a revised projection of near and long term circulation system improvement needs based upon current operating conditions and projected new development. This monitoring program was included in the approved Development Agreement for the prior Califia Project. That existing program established a process for projecting the need for transportation improvements in advance of the actual need occurring to allow the improvement to be constructed to avoid the potential impacts. This program (or a similar program) is being implemented by the River Islands developer and the City in accordance with the Development Agreement.

The timing of payments from the transportation fee programs noted above is at building permit issuance. Monies collected from the fees are used either to fund the construction of the affected improvements, if sufficient funds exist for such a purpose, or to provide reimbursement or credit for improvements "fronted" by the River Islands developer. It is envisioned that the timing for improvements will coincide with the necessary fund balance to construct those improvements. Should the timing of development slow or impacts from the development arise sooner than anticipated, the River Islands project applicant shall be required to fully fund the necessary improvements (other than main line freeway improvements) and receive either reimbursement or credit from the applicable fee program when paid by others benefiting from the improvements. Where the provision of a mainline freeway transportation improvement is required as a

mitigation below, payment of the Regional Transportation Fee will be considered to fulfill the mitigation requirement, so long as the improvement is included in the fee program calculation.

Similar to the provision in the adopted West Lathrop Specific Plan (WLSP) Regional Transportation Fee, it is anticipated that funds collected for the City of Lathrop Capital Facility Fee for Transportation Improvements and the City of Tracy/San Joaquin County/City of Lathrop Cooperative Agreement and Traffic Fee will be held by the City of Lathrop is separate interest bearing accounts for each fund. It is also anticipated that each fund will allow the City to determine what facility is built, and when.

APPENDIX C
AIR QUALITY DATA

Appendix Air

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\mossdale landing 2007.urb
Project Name: Mossdale Landing East 2007
Project Location: San Joaquin Valley
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	3.02	0.75	0.48	0.00	0.00
TOTALS (tpy, mitigated)	3.01	0.75	0.48	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	9.93	11.79	104.59	0.05	9.28
TOTALS (tpy, mitigated)	9.07	10.71	95.02	0.05	8.43

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	12.95	12.54	105.07	0.06	9.28
TOTALS (tpy, mitigated)	12.08	11.46	95.50	0.05	8.44

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\mossdale landing 2007.urb
Project Name: Mossdale Landing East 2007
Project Location: San Joaquin Valley
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.06	0.75	0.31	-	0.00
Wood Stoves	0.00	0.00	0.00	0.00	0.00
Fireplaces	0.00	0.00	0.00	0.00	0.00
Landscaping	0.02	0.00	0.17	0.00	0.00
Consumer Prdcts	2.95	-	-	-	-
TOTALS (tpy, unmitigated)	3.02	0.75	0.48	0.00	0.00

AREA SOURCE EMISSION ESTIMATES

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.06	0.75	0.31	-	0.00
Wood Stoves	0.00	0.00	0.00	0.00	0.00
Fireplaces	0.00	0.00	0.00	0.00	0.00
Landscaping	0.02	0.00	0.17	0.00	0.00
Consumer Prdcts	2.95	-	-	-	-
TOTALS (tpy, mitigated)	3.01	0.75	0.48	0.00	0.00

Area Source Mitigation Measures

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	1.01	1.32	11.75	0.01	1.09
Apartments low rise	2.04	2.53	22.51	0.01	2.08
Apartments high rise	0.72	0.86	7.64	0.00	0.71
Strip mall	6.15	7.08	62.68	0.03	5.41
TOTAL EMISSIONS (tons/yr)	9.93	11.79	104.59	0.05	9.28

Includes correction for passby trips.
Includes the following double counting adjustment for internal trips:
Residential trips: 24.99 % reduction. Nonresidential trips: 11.50 % reduction.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2007 Temperature (F): 85 Season: Annual

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Single family housing	10.73 trips / dwelling units	65.00	523.14
Apartments low rise	7.22 trips / dwelling units	185.00	1,001.88
Apartments high rise	5.67 trips / dwelling units	80.00	340.23
Strip mall	40.00 trips / 1000 sq. ft.	135.12	4,783.42

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.20	1.80	97.80	0.40
Light Truck < 3,750 lbs	15.10	3.30	94.00	2.70
Light Truck 3,751- 5,750	16.10	1.90	96.90	1.20
Med Truck 5,751- 8,500	7.10	1.40	95.80	2.80
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)				2.0	1.0	97.0
Strip mall						

MITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	0.95	1.22	10.89	0.01	1.01
Apartments low rise	1.91	2.34	20.86	0.01	1.93
Apartments high rise	0.68	0.80	7.09	0.00	0.65
Strip mall	5.54	6.34	56.18	0.03	4.85
TOTAL EMISSIONS (tons/yr)	9.07	10.71	95.02	0.05	8.43

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2007 Temperature (F): 85 Season: Annual

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Single family housing	10.73 trips / dwelling units	65.00	523.14
Apartments low rise	7.22 trips / dwelling units	185.00	1,001.88
Apartments high rise	5.67 trips / dwelling units	80.00	340.23
Strip mall	40.00 trips / 1000 sq. ft.	135.12	4,783.42

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	55.20	1.80	97.80	0.40
Light Truck < 3,750 lbs	15.10	3.30	94.00	2.70
Light Truck 3,751- 5,750	16.10	1.90	96.90	1.20
Med Truck 5,751- 8,500	7.10	1.40	95.80	2.80
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.40	0.00	50.00	50.00
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.10	0.00	0.00	100.00
Motorcycle	1.70	82.40	17.60	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.20	8.30	83.30	8.40

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Strip mall				2.0	1.0	97.0

ENVIRONMENTAL FACTORS APPLICABLE TO THE PROJECT

Pedestrian Environment

2.0 Side Walks/Paths: Most Destinations Covered
1.0 Street Trees Provide Shade: Moderate Coverage

2.0	Pedestrian Circulation Access: Some Destinations
3.0	Visually Interesting Uses: Moderate Number and Variety
1.0	Street System Enhances Safety: Some Streets
1.0	Pedestrian Safety from Crime: Moderate Degree of Safety
1.0	Visually Interesting Walking Routes: Moderate Level

11.0 <- Pedestrian Environmental Credit
11.0 /19 = 0.6 <- Pedestrian Effectiveness Factor

Transit Service

12.0	Transit Service: 31-60 Minute Bus within 1/4 Mile

12.0 <- Transit Effectiveness Credit
11.0 <- Pedestrian Factor
23.0 <-Total
23.0 /110 = 0.2 <-Transit Effectiveness Factor

Bicycle Environment

3.0	Interconnected Bikeways: Moderate Coverage
2.0	Bike Routes Provide Paved Shoulders: Some Routes
1.0	Safe Vehicle Speed Limits: Some Destinations
1.0	Safe School Routes: One School
1.0	Uses w/in Cycling Distance: Some Uses
1.0	Bike Parking Ordinance: Requires Unprotected Bike Racks

9.0 <- Bike Environmental Credit
9.0 /20 = 0.5 <- Bike Effectiveness Factor

MITIGATION MEASURES SELECTED FOR THIS PROJECT
(All mitigation measures are printed, even if
the selected land uses do not constitute a mixed use.)

Transit Infrastructure Measures

% Trips Reduced	Measure
15.0	Credit for Existing or Planned Community Transit Service
15.0	<- Totals

Pedestrian Enhancing Infrastructure Measures (Residential)

% Trips Reduced	Measure
2.0	Credit for Surrounding Pedestrian Environment
3.0	Mixed Use Project (Residential Oriented)
1.0	Provide Sidewalks and/or Pedestrian Paths
1.0	Provide Direct Pedestrian Connections
0.5	Provide Pedestrian Safety
0.5	Provide Street Lighting
0.5	Provide Pedestrian Signalization and Signage
8.5	<- Totals

Pedestrian Enhancing Infrastructure Measures (Non-Residential)

% Trips Reduced	Measure
2.0	Credit for Surrounding Pedestrian Environment
1.0	Mixed Use Project (Commercial Oriented)
1.0	Floor Area Ratio 0.75 or Greater
1.0	Provide Wide Sidewalks and Onsite Pedestrian Facilities
0.5	Provide Street Lighting
0.5	Project Provides Shade Trees to Shade Sidewalks
0.5	Provide Pedestrian Safety Designs/Infrastructure at Crossings
6.5	<- Totals

Bicycle Enhancing Infratructure Measures (Residential)

% Trips Reduced	Measure
7.0	Credit for Surrounding Bicycle Environment
2.0	Provide Bike Lanes/Paths Connecting to Bikeway System
9.0	<- Totals

Bike Enhancing Infrastructure Measures (Non-Residential)

% Trips Reduced	Measure
5.0	Credit for Surrounding Area Bike Environment
2.0	Provide Bike Lanes/Paths Connecting to Bikeway System
1.0	Provide Securre Bicycle Parking
8.0	<- Totals

Operational Measures (Applying to Commute Trips)

% Trips Reduced	Measure
1.5	Preferential Carpool/Vanpool Parking
1.0	Employee Rideshare Incentive Program
1.0	Day Care Center Onsite or Within 1/2 Mile
3.5	<- Totals

Operational Measures (Applying to Employee Non-Commute Trips)

% Trips Reduced	Measure
3.0	Some Frequently Needed Services Provided
3.0	<- Totals

Operational Measures (Applying to Customer Trips)

% Trips Reduced	Measure
0.0	<- Totals

Measures Reducing VMT (Non-Residential)

VMT Reduced	Measure
0.0	<- Totals

Measures Reducing VMT (Residential)

VMT Reduced	Measure
0.0	<- Totals

Total Percentage Trip Reduction

with Environmental Factors and Mitigation Measures

Travel Mode	Home-Work Trips	Home-Shop Trips	Home-Other Trips
Pedestrian	0.54	2.17	2.17
Transit	3.14	0.69	0.85
Bicycle	4.05	4.05	4.05
Totals	0.00	0.00	0.00

Travel Mode	Work Trips	Employee Trips	Customer Trips
Pedestrian	0.41	3.76	3.76
Transit	3.14	0.06	3.14
Bicycle	3.60	3.60	3.60
Other	0.02	0.01	0.00
Totals	0.00	0.00	0.00

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Area

The wood stove option switch changed from on to off.
The fireplcase option switch changed from on to off.
The area souce mitigation measure option switch changed from off to on.
The landscape year changed from 2004 to 2007.

Changes made to the default values for Operations

The pass by trips option switch changed from off to on.
The operational emission year changed from 2004 to 2007.

The operational winter selection item changed from 2 to 1.
The operational summer selection item changed from 7 to 6.
The travel mode environment settings changed from both to: both
The default/nodefault travel setting changed from nodefault to: nodefault
Side Walks/Paths: No Sidewalks
changed to: Side Walks/Paths: Most Destinations Covered
Street Trees Provide Shade: No Coverage
changed to:Street Trees Provide Shade: Moderate Coverage
Pedestrian Circulation Access: No Destinations
changed to:Pedestrian Circulation Access: Some Destinations
Visually Interesting Uses: No Uses Within Walking Distance
changed to:Visually Interesting Uses: Moderate Number and Variety
Street System Enhances Safety: No Streets
changed to: Street System Enhances Safety: Some Streets
Pedestrian Safety from Crime: No Degree of Safety
changed to:Pedestrian Safety from Crime: Moderate Degree of Safety
Visually Interesting Walking Routes: No Visual Interest
changed to:Visually Interesting Walking Routes: Moderate Level
Transit Service: Dial-A-Ride or No Transit Service
changed to: Transit Service: 31-60 Minute Bus within 1/4 Mile
Interconnected Bikeways: No Bikeway Coverage
changed to: Interconnected Bikeways: Moderate Coverage
Bike Routes Provide Paved Shoulders: No Routes
changed to:Bike Routes Provide Paved Shoulders: Some Routes
Safe Vehicle Speed Limits: No Routes Provided
changed to:Safe Vehicle Speed Limits: Some Destinations
Safe School Routes: No Schools
changed to: Safe School Routes: One School
Uses w/in Cycling Distance: No Uses w/in Cycling Distance
changed to:Uses w/in Cycling Distance: Some Uses
Bike Parking Ordinance: No Ordinance or Unenforceable
changed to:Bike Parking Ordinance: Requires Unprotected Bike Racks
Mitigation measure Mixed Use Project (Residential Oriented):3
has been changed from off to on.
Mitigation measure Provide Sidewalks and/or Pedestrian Paths:1
has been changed from off to on.
Mitigation measure Provide Direct Pedestrian Connections:1
has been changed from off to on.
Mitigation measure Provide Pedestrian Safety:0.5
has been changed from off to on.
Mitigation measure Provide Street Lighting:0.5
has been changed from off to on.
Mitigation measure Provide Pedestrian Signalization and Signage:0.5
has been changed from off to on.
Mitigation measure Mixed Use Project (Commercial Oriented):1
has been changed from off to on.
Mitigation measure Floor Area Ratio 0.75 or Greater:1
has been changed from off to on.
Mitigation measure Provide Wide Sidewalks and Onsite Pedestrian Facilities:1
has been changed from off to on.
Mitigation measure Provide Street Lighting:0.5
has been changed from off to on.
Mitigation measure Project Provides Shade Trees to Shade Sidewalks:0.5
has been changed from off to on.
Mitigation measure Provide Pedestrian Safety Designs/Infrastructure at Crossings:0.5
has been changed from off to on.
Mitigation measure Provide Bike Lanes/Paths Connecting to Bikeway System:2
has been changed from off to on.
Mitigation measure Provide Bike Lanes/Paths Connecting to Bikeway System:2

has been changed from off to on.
Mitigation measure Provide Securre Bicycle Parking:1
has been changed from off to on.
Mitigation measure Preferential Carpool/Vanpool Parking:1.5
has been changed from off to on.

Mitigation measure Employee Rideshare Incentive Program:1
has been changed from off to on.
Mitigation measure Day Care Center Onsite or Within 1/2 Mile:1
has been changed from off to on.
Mitigation measure Some Frequently Needed Services Provided:3
has been changed from off to on.
Mitigation measuremitop5: Park and Ride Lots
has been changed from on to off.

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\mossdale landing 2025.urb
Project Name: Mossdale Landing East 2025
Project Location: San Joaquin Valley
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	4.37	1.55	0.95	0.00	0.00
TOTALS (tpy, mitigated)	4.34	1.55	0.95	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	6.24	6.26	60.14	0.13	22.43
TOTALS (tpy, mitigated)	5.64	5.59	53.80	0.12	20.07

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	10.61	7.80	61.09	0.13	22.43
TOTALS (tpy, mitigated)	9.98	7.14	54.74	0.12	20.07

URBEMIS 2002 For Windows 7.4.2

File Name: C:\Program Files\URBEMIS 2002 For Windows\Projects2k2\mossdale landing 2025.urb
Project Name: Mossdale Landing East 2025
Project Location: San Joaquin Valley
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.12	1.54	0.64	-	0.00
Wood Stoves	0.00	0.00	0.00	0.00	0.00
Fireplaces	0.00	0.00	0.00	0.00	0.00
Landscaping	0.04	0.00	0.31	0.00	0.00
Consumer Prdcts	4.21	-	-	-	-
TOTALS (tpy, unmitigated)	4.37	1.55	0.95	0.00	0.00

AREA SOURCE EMISSION ESTIMATES Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.12	1.54	0.64	-	0.00
Wood Stoves	0.00	0.00	0.00	0.00	0.00
Fireplaces	0.00	0.00	0.00	0.00	0.00
Landscaping	0.04	0.00	0.31	0.00	0.00
Consumer Prdcts	4.21	-	-	-	-
TOTALS (tpy, mitigated)	4.34	1.55	0.95	0.00	0.00

Area Source Mitigation Measures

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	0.57	0.60	5.89	0.01	2.28
Apartments low rise	0.69	0.68	6.61	0.01	2.55
Apartments high rise	0.20	0.19	1.82	0.00	0.70
Strip mall	3.43	3.31	31.56	0.07	11.39
General office building	0.49	0.53	5.13	0.01	1.98
Office park	0.86	0.94	9.12	0.02	3.53
TOTAL EMISSIONS (tons/yr)	6.24	6.26	60.14	0.13	22.43

Includes correction for passby trips.
Includes the following double counting adjustment for internal trips:
Residential trips: 25.00 % reduction. Nonresidential trips: 6.40 % reduction.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2025 Temperature (F): 85 Season: Annual

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Single family housing	10.06 trips / dwelling units	146.00	1,101.63
Apartments low rise	6.70 trips / dwelling units	246.00	1,236.21
Apartments high rise	5.67 trips / dwelling units	80.00	340.22
Strip mall	40.00 trips / 1000 sq. ft.	270.25	10,117.66
General office building	13.74 trips / 1000 sq. ft.	86.03	1,106.38
Office park	13.20 trips / 1000 sq. ft.	147.45	1,821.72

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.50	0.00	100.00	0.00
Light Truck < 3,750 lbs	15.70	0.00	99.40	0.60
Light Truck 3,751- 5,750	16.50	0.00	100.00	0.00
Med Truck 5,751- 8,500	7.50	0.00	98.70	1.30
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	0.90	0.00	22.20	77.80
Heavy-Heavy 33,001-60,000	0.80	0.00	0.00	100.00
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.50	40.00	60.00	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	2.00	0.00	90.00	10.00

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)				2.0	1.0	97.0
Strip mall				35.0	17.5	47.5
General office building				48.0	24.0	28.0
Office park						

MITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	0.53	0.55	5.40	0.01	2.08
Apartments low rise	0.65	0.62	6.06	0.01	2.34
Apartments high rise	0.19	0.17	1.67	0.00	0.64
Strip mall	3.04	2.92	27.82	0.06	10.03
General office building	0.45	0.48	4.61	0.01	1.78
Office park	0.78	0.85	8.25	0.02	3.19
TOTAL EMISSIONS (tons/yr)	5.64	5.59	53.80	0.12	20.07

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2025 Temperature (F): 85 Season: Annual

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Trip Rate	Size	Total Trips
Single family housing	10.06 trips / dwelling units	146.00	1,101.63
Apartments low rise	6.70 trips / dwelling units	246.00	1,236.21
Apartments high rise	5.67 trips / dwelling units	80.00	340.22
Strip mall	40.00 trips / 1000 sq. ft.	270.25	10,117.66
General office building	13.74 trips / 1000 sq. ft.	86.03	1,106.38
Office park	13.20 trips / 1000 sq. ft.	147.45	1,821.72

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.50	0.00	100.00	0.00
Light Truck < 3,750 lbs	15.70	0.00	99.40	0.60
Light Truck 3,751- 5,750	16.50	0.00	100.00	0.00
Med Truck 5,751- 8,500	7.50	0.00	98.70	1.30
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	0.90	0.00	22.20	77.80
Heavy-Heavy 33,001-60,000	0.80	0.00	0.00	100.00
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.50	40.00	60.00	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	2.00	0.00	90.00	10.00

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)				2.0	1.0	97.0
Strip mall				35.0	17.5	47.5
General office building				48.0	24.0	28.0
Office park						

ENVIRONMENTAL FACTORS APPLICABLE TO THE PROJECT

Pedestrian Environment

2.0	Side Walks/Paths: Most Destinations Covered
1.0	Street Trees Provide Shade: Moderate Coverage
2.0	Pedestrian Circulation Access: Some Destinations
3.0	Visually Interesting Uses: Moderate Number and Variety
1.0	Street System Enhances Safety: Some Streets
1.0	Pedestrian Safety from Crime: Moderate Degree of Safety
1.0	Visually Interesting Walking Routes: Moderate Level

11.0 <- Pedestrian Environmental Credit
11.0 /19 = 0.6 <- Pedestrian Effectiveness Factor

Transit Service

20.0	Transit Service: 15-30 Minute Bus within 1/4 Mile

20.0 <- Transit Effectiveness Credit
11.0 <- Pedestrian Factor
31.0 <-Total
31.0 /110 = 0.3 <-Transit Effectiveness Factor

Bicycle Environment

3.0	Interconnected Bikeways: Moderate Coverage
2.0	Bike Routes Provide Paved Shoulders: Some Routes
1.0	Safe Vehicle Speed Limits: Some Destinations
1.0	Safe School Routes: One School
2.0	Uses w/in Cycling Distance: Moderate Number and Variety
1.0	Bike Parking Ordinance: Requires Unprotected Bike Racks

10.0 <- Bike Environmental Credit
10.0 /20 = 0.5 <- Bike Effectiveness Factor

MITIGATION MEASURES SELECTED FOR THIS PROJECT
(All mitigation measures are printed, even if the selected land uses do not constitute a mixed use.)

Transit Infrastructure Measures

% Trips Reduced	Measure
15.0	Credit for Existing or Planned Community Transit Service

15.0 <- Totals

Pedestrian Enhancing Infrastructure Measures (Residential)

% Trips Reduced	Measure
2.0	Credit for Surrounding Pedestrian Environment
3.0	Mixed Use Project (Residential Oriented)
1.0	Provide Sidewalks and/or Pedestrian Paths
1.0	Provide Direct Pedestrian Connections
0.5	Provide Pedestrian Safety
0.5	Provide Street Lighting
0.5	Provide Pedestrian Signalization and Signage

8.5 <- Totals

Pedestrian Enhancing Infrastructure Measures (Non-Residential)

% Trips Reduced	Measure
2.0	Credit for Surrounding Pedestrian Environment
1.0	Mixed Use Project (Commercial Oriented)

1.0	Floor Area Ratio 0.75 or Greater
1.0	Provide Wide Sidewalks and Onsite Pedestrian Facilities
0.5	Provide Street Lighting
0.5	Project Provides Shade Trees to Shade Sidewalks
0.5	Provide Pedestrian Safety Designs/Infrastructure at Crossings
6.5	<- Totals

Bicycle Enhancing Infratructure Measures (Residential)

% Trips Reduced	Measure
7.0	Credit for Surrounding Bicycle Environment
2.0	Provide Bike Lanes/Paths Connecting to Bikeway System
9.0	<- Totals

Bike Enhancing Infrastructure Measures (Non-Residential)

% Trips Reduced	Measure
5.0	Credit for Surrounding Area Bike Environment
2.0	Provide Bike Lanes/Paths Connecting to Bikeway System
1.0	Provide Employee Lockers and Showers
8.0	<- Totals

Operational Measures (Applying to Commute Trips)

% Trips Reduced	Measure
1.5	Preferential Carpool/Vanpool Parking
1.0	Employee Rideshare Incentive Program
1.0	Day Care Center Onsite or Within 1/2 Mile
3.5	<- Totals

Operational Measures (Applying to Employee Non-Commute Trips)

% Trips Reduced	Measure
3.0	Some Frequently Needed Services Provided
3.0	<- Totals

Operational Measures (Applying to Customer Trips)

% Trips Reduced	Measure
0.0	<- Totals

Measures Reducing VMT (Non-Residential)

VMT Reduced	Measure
0.0	<- Totals

Measures Reducing VMT (Residential)

VMT Reduced	Measure
0.0	<- Totals

Total Percentage Trip Reduction
with Environmental Factors and Mitigation Measures

Travel Mode	Home-Work Trips	Home-Shop Trips	Home-Other Trips
Pedestrian	0.54	2.17	2.17
Transit	4.23	0.93	1.14
Bicycle	4.50	4.50	4.50
Totals	0.00	0.00	0.00

Travel Mode	Work Trips	Employee Trips	Customer Trips
Pedestrian	0.41	3.76	3.76
Transit	4.23	0.08	4.23
Bicycle	4.00	4.00	4.00
Other	0.50	0.21	0.00
Totals	0.00	0.00	0.00

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Area

The wood stove option switch changed from on to off.
The fireplcase option switch changed from on to off.
The area souce mitigation measure option switch changed from off to on.
The landscape year changed from 2004 to 2007.

Changes made to the default values for Operations

The pass by trips option switch changed from off to on.
The operational emission year changed from 2004 to 2025.
The travel mode environment settings changed from both to: both
The default/nodefault travel setting changed from nodefault to: nodefault
Side Walks/Paths: No Sidewalks
changed to: Side Walks/Paths: Most Destinations Covered
Street Trees Provide Shade: No Coverage
changed to:Street Trees Provide Shade: Moderate Coverage
Pedestrian Circulation Access: No Destinations
changed to:Pedestrian Circulation Access: Some Destinations
Visually Interesting Uses: No Uses Within Walking Distance
changed to:Visually Interesting Uses: Moderate Number and Variety
Street System Enhances Safety: No Streets
changed to: Street System Enhances Safety: Some Streets
Pedestrian Safety from Crime: No Degree of Safety
changed to:Pedestrian Safety from Crime: Moderate Degree of Safety
Visually Interesting Walking Routes: No Visual Interest
changed to:Visually Interesting Walking Routes: Moderate Level
Transit Service: Dial-A-Ride or No Transit Service
changed to: Transit Service: 15-30 Minute Bus within 1/4 Mile
Interconnected Bikeways: No Bikeway Coverage
changed to: Interconnected Bikeways: Moderate Coverage
Bike Routes Provide Paved Shoulders: No Routes
changed to:Bike Routes Provide Paved Shoulders: Some Routes
Safe Vehicle Speed Limits: No Routes Provided
changed to:Safe Vehicle Speed Limits: Some Destinations
Safe School Routes: No Schools
changed to: Safe School Routes: One School
Uses w/in Cycling Distance: No Uses w/in Cycling Distance
changed to:Uses w/in Cycling Distance: Moderate Number and Variety
Bike Parking Ordinance: No Ordinance or Unenforceable
changed to:Bike Parking Ordinance: Requires Unprotected Bike Racks
Mitigation measure Mixed Use Project (Residential Oriented):3
has been changed from off to on.
Mitigation measure Provide Sidewalks and/or Pedestrian Paths:1
has been changed from off to on.
Mitigation measure Provide Direct Pedestrian Connections:1
has been changed from off to on.
Mitigation measure Provide Pedestrian Safety:0.5
has been changed from off to on.
Mitigation measure Provide Street Lighting:0.5
has been changed from off to on.
Mitigation measure Provide Pedestrian Signalization and Signage:0.5
has been changed from off to on.
Mitigation measure Mixed Use Project (Commercial Oriented):1
has been changed from off to on.
Mitigation measure Floor Area Ratio 0.75 or Greater:1
has been changed from off to on.
Mitigation measure Provide Wide Sidewalks and Onsite Pedestrian Facilities:1
has been changed from off to on.
Mitigation measure Provide Street Lighting:0.5
has been changed from off to on.
Mitigation measure Project Provides Shade Trees to Shade Sidewalks:0.5
has been changed from off to on.

Mitigation measure Provide Pedestrian Safety Designs/Infrastructure at Crossings:0.5
has been changed from off to on.
Mitigation measure Provide Bike Lanes/Paths Connecting to Bikeway System:2
has been changed from off to on.
Mitigation measure Provide Bike Lanes/Paths Connecting to Bikeway System:2
has been changed from off to on.
Mitigation measure Provide Employee Lockers and Showers:1
has been changed from off to on.
Mitigation measure Preferential Carpool/Vanpool Parking:1.5
has been changed from off to on.
Mitigation measure Employee Rideshare Incentive Program:1
has been changed from off to on.

Mitigation measure Day Care Center Onsite or Within 1/2 Mile:1
has been changed from off to on.
Mitigation measure Some Frequently Needed Services Provided:3
has been changed from off to on.
Mitigation measuremitop5: Park and Ride Lots
has been changed from on to off.

APPENDIX D
BIOLOGICAL STUDY

Biological Resources Inventory

MOSSDALE LANDING EAST
San Joaquin County, California

Prepared for:

Insite Environmental
6653 Embarcadero Dr., Ste. Q
Stockton, CA 95219
(209) 472-8650
Contact: Mr. Charlie Simpson

Prepared by:

Moore Biological Consultants
1300 West Lodi Avenue, Suite A
Lodi, CA 95242
(209) 365-6828

November, 2003

TABLE OF CONTENTS

TABLES

FIGURES

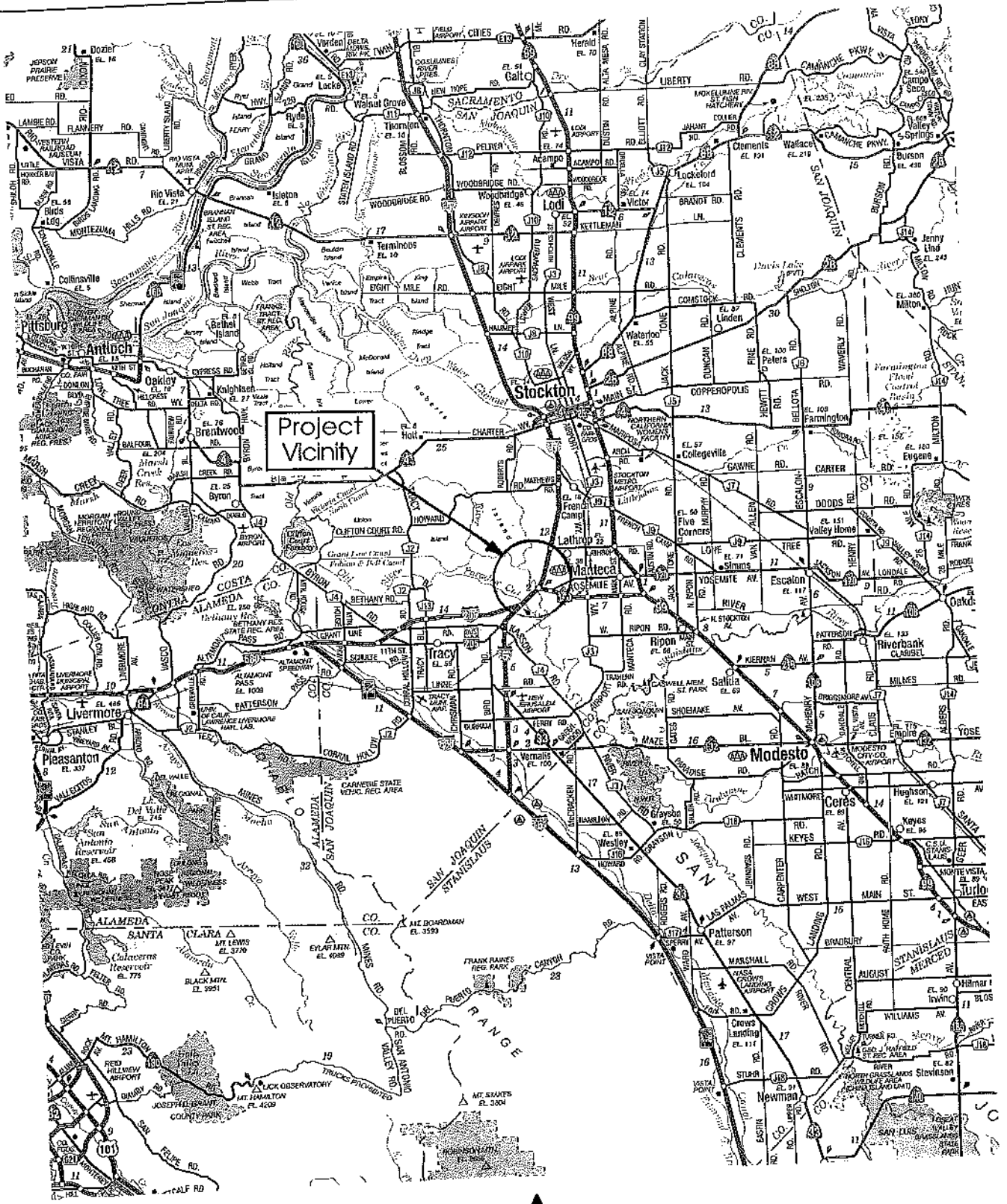
1. INTRODUCTION

The 151+/- acre project site is located just west of Lathrop, California (Figure 1). The site includes two separate parcels; the northern parcel is approximately 122 acres in size and the southern parcel is approximately 29 acres in size (Figure 2). Each of the sites are within a mosaic of existing alfalfa, oat, and row crop fields. This biological resources inventory was conducted in support of the ongoing California Environmental Quality Act (CEQA) review.

2. INVENTORY METHODS

Prior to each of the field surveys, the California Department of Fish and Game's (CDFG) California Natural Diversity Database (CNDDB) was searched. This information was used to identify species that have been previously documented in the project vicinity or have the potential to occur in the project vicinity based on suitable habitat. The United States Fish and Wildlife Service (USFWS) recent list of sensitive species that have been documented throughout San Joaquin County was also reviewed. Finally, a black and white aerial photograph was obtained from Insite Environmental to assist with the field surveys; this photograph was enlarged to a scale of 1 inch = 500 feet.

Field surveys were conducted on November 21, 2000, June 29, 2001, July 25, 2001 April 5, 2002, and November 7, 2003. The surveys consisted of walking and driving around the sites making observations of habitat conditions, surrounding land uses, and plant and wildlife species. We conducted a search for potential jurisdictional Waters of the U.S. (ACOE, 1987) and wetlands, sensitive species, and suitable habitat for sensitive species. The surveys also included searching the entire site for potential habitat for the riparian brush rabbit (*Sylvilagus bachmani riparius*), a focus species of regional interest, and searching the site and adjacent parcels for potential nest trees and/or active nests for Swainson's hawks (*Buteo swainsoni*).



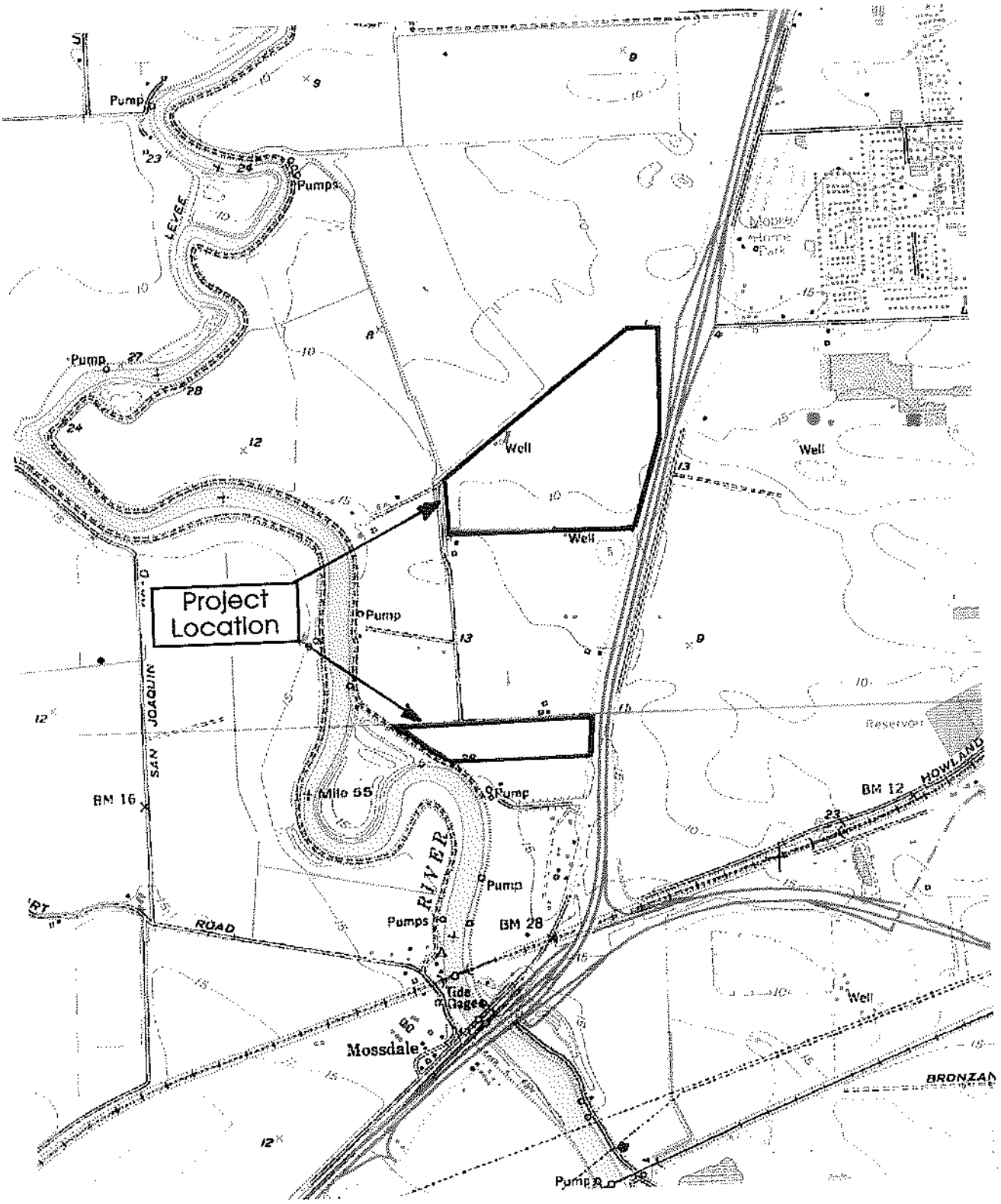
Scale: 1 inch = 9 miles

Source: Calif. State Automobile Association

N

FIGURE 1
PROJECT VICINITY

MOORE BIOLOGICAL



Scale: 1 inch = 2,000 feet
Source: USGS 7.5-minute Lathrop topographic quadrangle

N

MOORE BIOLOGICAL

FIGURE 2
PROJECT LOCATION

3. ENVIRONMENTAL SETTING

Location

The project site is located approximately 0.75 miles west of Lathrop between Interstate 5 and the San Joaquin River within unnumbered Sections within T1S and T2S, R6E of the USGS 7.5-minute Lathrop topographic quadrangle (Figure 2). Agricultural fields bound the northern parcel to the south, while there is residential development to the west and north of the site. Leveled agricultural fields bound the north and south sides of the southern parcel, while the San Joaquin River levee bounds the southern parcel to the west. Manthey Road is located to the east of both the northern and southern parcels; areas east of Manthey Road and Interstate 5 are commercial and industrial.

Vegetation

Both parcels that make up the project sites are agricultural fields that have been planted in alfalfa, oats, and various row crops during the past few years. All of these fields have been leveled for flood irrigation and are routinely maintained for weed and rodent control. The most notable vegetation at each of the sites are the discontinuous bands of native/non-native grass and weed species found along the edges of the sites, dirt roads, levees, and irrigation ditches. This vegetation represents a highly disturbed assemblage of species within the California Annual Grassland series (Sawyer and Keeler-Wolf, 1995). Dominant plant species in the native/non-native grassland at the site include bull thistle (*Cirsium vulgare*), wild radish (*Raphanus sativus*), yellow star thistle (*Centaurea solstitialis*), oats (*Avena* sp.), perennial ryegrass (*Lolium perenne*), soft chess brome (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), filaree (*Erodium* sp.), rose clover (*Trifolium hirtum*), and foxtail barley (*Hordeum murinum*). Plant species documented within the project sites are listed in Table 1.

There are very few trees in the site. The only relative large trees are some cottonwoods (*Populus fremontii*) and ornamental trees at the ranch house in the northern parcel; there are some willow saplings along the south edge of the north site. There are no notable trees or shrubs besides ornamentals within the southern parcel. No blue elderberry shrubs (*Sambucus mexicana*) were observed within or adjacent to the site.

TABLE 1

PLANT SPECIES OBSERVED DURING THE 2000-2003 SURVEYS

Scientific name	Common name
Alnus rhombifolia	white alder
Amaranthus albus	pigweed
Avena fatua	oats
Baccharis salicifolia	mule fat
Baccharis piluarlis	coyote bush
Arundo donax	giant reed
Brassica nigra	black mustard
Bromus diandrus	ripgut brome
Cardaria pubescens	white-top
Carduus pychnocephalus	Italian thistle
Celtis sinensis	hackberry
Centaurea solstitialis	yellow star thistle
Cirsium vulgare	bull thistle
Conium maculatum	poison hemlock
Convolvulus arvensis	morning glory
Conyza canadensis	horseweed
Cynodon dactylon	Bermuda grass
Cyperus eragrostis	umbrella sedge
Dactylis glomerata	orchard grass
Distichlis spicata	saltgrass
Epilobium brachycarpum	willow weed
Epilobium angustifolium	fireweed
Eremocarpus setigerus	doveweed
Erodium botrys	filaree
Helianthus annus	common sunflower
Heliotropium curassavicum	salt heliotrope
Hordeum marinum	barley
Hordeum murinum	Mediterranean barley
Juglans californica	black walnut
Juglans regia	English walnut
Lactuca serriola	prickly lettuce
Lolium perenne	perennial ryegrass
Malva neglecta	common mallow
Malva sativa	alkali mallow
Meldcago sativa	alfalfa
Morus alba	mulberry

TABLE 1 (continued)
PLANT SPECIES OBSERVED DURING THE 2000-2003 SURVEYS

Scientific name	Common name
Nicotiana glauca	tree tobacco
Oenothera hookeri	evening primrose
Picris echioides	bristly ox-tongue
Plantago lanceolata	English plantain
Plantago major	common plantain
Polypogon monspeliensis	annual beardgrass
Populus fremontii	Fremont cottonwood
Punica granatum	pomegranite
Quercus lobata	valley oak
Raphanus sativus	wild radish
Rubus discolor	Himalayan blackberry
Rumex cruspus	curly dock
Salix laevigata	red willow
Salsola tragus	tumbleweed
Scirpus acutus	bulrush
Silybum marianum	milk thistle
Sonchus asper	prickly sow thistle
Sorghum halepense	Johnsongrass
Typha latifolia	broad-leaved cattail
Urtica dioica	stinging nettle
Vitis californica	California wild grape
Washingtonia filifera	fan palm
Xanthium sturmarium	cocklebur

Wildlife

A variety of bird species were observed during the 200-2003 surveys; all of these are common species found in urban and agricultural areas of the Central Valley (Table 2). Several birds were flying around and over the site and perching in trees on-site or trees associated with off-site residences. Mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), yellow-billed magpie (*Pica nuttalli*), red-winged blackbird (*Agelaius phoeniceus*), American goldfinch (*Carduelis tristis*), western meadowlark

(*Sturnella neglecta*), and starling (*Sturnus vulgaris*) are representative of the bird species observed at the project site.

The limited number of trees within the project site were searched for raptor nests. No raptor stick nests were located in these trees and no sign of nesting raptors was observed during any of the surveys. Despite these negative findings, on-site trees could be used by nesting raptors and future use of on-site trees by raptors cannot be precluded.

A limited variety of mammals likely occur in the project sites. Coyote (*Canis latrans*) and California ground squirrel (*Spermophilus beecheyi*) were observed during the recent field surveys. Desert cottontail (*Sylvilagus audubonii*), raccoon (*Procyon lotor*) and striped skunk (*Mephitis mephitis*) are expected to occur in the project site. A number of species of small rodents including mice (*Mus musculus, Reithrodontomys megalotis,* and *Peromyscus maniculatus*) and voles (*Microtus californicus*) also likely occur.

Based on habitat types present, a limited number of amphibians and reptiles may use habitats in the project site. Western fence lizard (*Sceloporus occidentalis*) and Pacific chorus frog (*Pseudacris regilla*) are expected to occur. However, no reptiles or amphibians were observed in the project site during the recent surveys.

4. SENSITIVE SPECIES AND HABITATS

Waters of the U.S. and Wetlands

We observed no areas within the project site that appear to meet the technical and regulatory criteria of jurisdictional Waters of the U.S. or wetlands. The San Joaquin River, a navigable jurisdictional Waters of the U.S., is located adjacent to the southwestern corner of the southern parcel. This channel is bounded by a levee that is routinely maintained for weed control and is virtually devoid of any notable vegetation. This levee functionally isolates the river corridor from the parcel.

There is a network of created dirt- and concrete-lined irrigation ditches within the sites. Most of these ditches are routinely maintained, however there are some ditches with

TABLE 2

WILDLIFE SPECIES OBSERVED DURING THE 2000-2003 SURVEYS

Birds	
Green-backed heron	*Butorides striatus*
Aleutian Canada goose	*Branta canadensis*
Turkey vulture	*Cathartes aura*
Northern harrier	*Circus cyaneus*
Red-shouldered hawk	*Buteo lineatus*
Swainson's hawk	*Buteo swainsoni*
Red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
Ring-necked pheasant	*Phasianus colchicus*
California quail	*Callipepla californica*
Killdeer	*Charadrius vociferus*
California gull	*Larus californica*
Rock dove	*Columba livia*
Mourning dove	*Zenaida macroura*
Downy woodpecker	*Picoides pubescens*
Northern flicker	*Colaptes auratus*
Black phoebe	*Sayornis nigricans*
Western kingbird	*Tyrannus verticalus*
Western scrub jay	*Aphelocoma coerulescens*
Yellow-billed magpie	*Pica nuttalli*
American crow	*Corvus brachyrhynchos*
Ruby-crowned kinglet	*Regulus calendula*
American robin	*Turdus migratorius*
Northern mockingbird	*Mimus polyglottos*
Loggerhead shrike	*Lanius ludovicianus*
European starling	*Sturnus vulgaris*
Savannah sparrow	*Passerculus sandwichensis*
White-crowned sparrow	*Zonotrichia leucophrys*
Red-winged blackbird	*Agelaius phoeniceus*
Western meadowlark	*Sturnella neglecta*
Brewer's blackbird	*Euphagus cyanocephalos*

TABLE 2 (continued)
WILDLIFE SPECIES OBSERVED DURING THE 2000-2003 SURVEYS

Birds	
House finch	*Carpodacus mexicanus*
House sparrow	*Passer domesticus*
Mammals	
Virginia opossum	*Didelphis virginiana*
Desert cottontail	*Sylvilagus audubonii*
Black-tailed hare	*Lepus californicus*
California ground squirrel	*Spermophilus beecheyi*
Botta's pocket gopher	*Thomomys bottae*
Coyote	*Canis latrans*

small patches of emergent wetland vegetation. It is considered unlikely that these created and maintained ditches would fall under the jurisdiction of state or federal agencies.

Sensitive Species

The likelihood of occurrence of listed, candidate, and other sensitive species in the project site is considered low. Tables 3 and 4 provide a summary of the listing status and habitat requirements of sensitive species that have been documented in the greater project vicinity or for which there is potentially suitable habitat somewhere in San Joaquin County. While the variety of habitat types throughout the County results in the USFWS species list being lengthy, very few of these species have any potential to occur on site. Tables 3 and 4 also include an assessment of the likelihood of occurrence of each of these species in the project site.

While the project site may have provided habitat for a subset of the sensitive species listed in Tables 3 and 4 at some time in the past, agriculture and development have

TABLE 3
SPECIAL-STATUS PLANT SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY.

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Likeliness of Occurrence
Valley spearscale	*Atriplex joaquiniana*	SC	none	1B	Valley/foothill grassland, meadows, chenopod scrub	None: considered extinct in San Joaquin County (CNPS, 1994). Not recorded in the CNDDB (2003) in the Lathrop topographic quadrangle.
Heartscale	*Atriplex cordulata*	SC	none	1B	Valley and foothill grassland, chenopod scrub	None: considered extinct in San Joaquin County (CNPS, 1994). Not recorded in the CNDDB (2003) in the Lathrop topographic quadrangle.
Alkali milk-vetch	*Astragalus tener ssp. tener*	SC	none	1B	Valley and foothill grassland, vernal pools	None: considered extinct in San Joaquin County (CNPS, 1994). Not recorded in the CNDDB (2003) in the Lathrop topographic quadrangle.
Interior California larkspur	*Delphinium californicum ssp. interius*	SC	none	1B	Cismontane woodland	None: habitat not present; intensive farming at the project site precludes the existence of this species (CNPS, 1994). Not recorded in the CNDDB (2003) in the Lathrop topographic quadrangle.
Slough thistle	*Cirsium crassicaule*	SC	none	1B	Riparian scrub, marshes and swamps, chenopod scrub	Low: the San Joaquin River and its levees, which bounds the site to the west, provides marginal habitat. The nearest occurrence listed in the CNDDB (2003) is 1-mile northwest of the site.
Suisun marsh aster	*Aster lentus*	SC	none	1B	Freshwater and brackish marsh	None: marsh habitats not present within or adjacent to the project site. Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Delta tule pea	*Lathyrus jepsonii ssp. jepsonii*	SC	none	1B	Brackish and freshwater marshes restricted to the Sacramento/San Joaquin Delta	Very low: the San Joaquin River and its levees, which bounds the site to the west, provides marginal habitat. This species was not observed during the 2000-2003 surveys. Further, this species is not reported within the CNDDB (2003) Lathrop topographic quadrangle.
Delta button-celery	*Eryngium racemosum*	SC	E	1B	Riparian scrub associated with seasonally inundated floodplain.	Very low: the San Joaquin River and its levees, which bounds the site to the west, provides marginal habitat. The nearest occurrence listed in the CNDDB (2003) is 0.5 mile south of the site. Not observed within the site during the 2000-2003 surveys.

TABLE 3
SPECIAL-STATUS PLANT SPECIES DOCUMENTED OR POTENTIALLY-OCCURRING IN THE PROJECT VICINITY.

Common Name	Scientific Name	Federal Status[1]	State Status[2]	CNPS List[3]	Habitat	Likeliness of Occurrence
Fleshy owls clover	*Castelleja campestris ssp. succulenta*	T	none	1B	Vernal pools	None: there are no vernal pools located within the project site.; the nearest occurrence is listed in eastern Stanislaus County (CNPS, 1994). Not recorded in the CNDDB (2003) in the Lathrop topographic quadrangle.
Greene's tuctoria	*Tuctoria greenei*	E	R	1B	Vernal pools	None: there are no vernal pools located within the project site. Not recorded in the CNDDB (2003) in the Lathrop topographic quadrangle.
Large-flowered fiddleneck	*Amsinckia grandiflora*	E	E	1B	Cismontane woodland, valley and foothill grassland	None: habitat not present; only known from foothills of western San Joaquin County (CNPS, 1994). Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Mason's lilaeopsis	*Lilaeopsis masonii*	SC	R	1B	Marshes and swamps (brackish or fresh), riparian scrub	None: the San Joaquin River Delta system, which bounds the site to the west, provides marginal habitat. However, this species was not observed within the site during the 2000-2003 surveys.
Palmate-bracted bird's beak	*Cordylanthus palmatus*	E	E	1B	Chenopod scrub, valley and foothill grassland (alkaline)	None: there is no habitat for this species within the project site. Not recorded in the CNDDB (2003) in the Lathrop topographic quadrangle.
Sanford's arrowhead	*Sagittaria sanfordii*	SC	none	1B	Marshes and swamps (freshwater)	None: there is no habitat for this species within the project site. Not recorded in the CNDDB (2003) in the Lathrop topographic quadrangle.
Wright's trichocoronis	*Trichocoronis wrightii var. wrightii*	none	none	2	Marshes and swamps, riparian forests, meadows and seeps, vernal pools	Low to none: the San Joaquin River system, which provides marginal habitat, bounds the site to the west. The nearest occurrence listed in the CNDDB (2003) is 0.5-mile southwest of the project site. This species was not observed within the project site during the 2000-2003 surveys.

1 E = Endangered; T = Threatened; SC=Species of Concern.

2 E = Endangered; R = Rare

3 CNPS List 1B includes species that are rare, threatened, or endangered in California and elsewhere; list 2 includes plants that are limited in California, but are more common elsewhere in the United States.

TABLE 4
SENSITIVE WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat	Likeliness of Occurrence
BIRDS					
Bald eagle	*Haliaeetus leucocephalus*	T	E	Ocean shorelines, lake margins, and river courses for both nesting and wintering	Very low: no occurrences listed in CNDDB (2003) within the Lathrop topographic quadrangle. However, this species may occasionally fly over or forage near the project site.
Swainson's hawk	*Buteo swainsoni*	none	T	Nesting: large trees, usually within riparian corridors; foraging: agricultural fields and grassland	Present: uses agricultural fields in the project site and greater project vicinity for foraging. The are also a few suitable nest trees within the project site. The nearest known nest territories in the CNDDB (2003) are located approximately 0.5 miles south and southwest of the project site.
Aleutian Canada goose	*Branta canadensis leucopareia*	T	none	Forages in cultivated grain fields or pasture; loafs on lakes, reservoirs , and ponds	Very low: Aleutian Canada goose may migrate through area in winter months and use nearby fields for foraging. There are no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle. This species was seen flying over the site while conducting the survey.
American peregrine falcon	*Falco peregrinus*	E	E	Breeds on cliffs; forages in dry, open hilly or flat grasslands	Very low: no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle. This species may occasionally fly over project site.
Mountain plover	*Charadrius montanus*	PT	E	Winters on grasslands and plowed fields; avoids dense cover.	Very low: no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle. This species may occasionally fly over project site.
Tricolored blackbird	*Agelaius tricolor*	SC	none	Seeks cover in wetland vegetation, especially tulles and cattails; also in trees and shrubs	Very low: agricultural ditches in the project site provide marginal nesting habitat, but may forage in nearby fields. Location information is suppressed (CNDDB, 2003).
Western yellow-billied cuckoo	*Coccyzus americanus occidentalis*	C	E	Riparian forest nester, along broad bottoms of larger river systems. Prefers willows mixed with cottonwoods with an understory of blackberries and nettle.	Low to none: this species was not observed during the 2003-2003 surveys. Not listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Burrowing owl	*Athene cunicularia*	SC	none	Uses ground squirrel or other small mammal burrows for roosting and nesting cover.	Low: this species was not observed during the 2000-2003 surveys. The nearest occurrence is located approximately 2 miles east of the project site (CNDDB, 2003).

TABLE 4
SENSITIVE WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat	Likeliness of Occurrence
MAMMALS					
San Joaquin kit fox	*Vulpes macrotis mutica*	E	T	Inhabits open, dry annual or perennial grasslands and scrublands with loose soil for denning.	None: the site is just outside of this species range. It occurs in grassland habitats in southwest San Joaquin County foothills. There are no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Riparian (=San Joaquin Valley) woodrat	*Neatoma fuscipes riparia*	E	SC	Riparian areas along valley rivers.	Very low to none: there is no suitable habitat for this species in the project site; no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Riparian brush rabbit	*Sylvilagus bachmani riparius*	E	E	Riparian areas along the Sacramento-San Joaquin Delta system; require very dense thickets of willows, wild rose, and/or blackberry for cover; usually found in mature, moderately open-canopy riparian woodlands with dense understory vegetation.	Very low to none: there is no suitable habitat for this species in the project site; A new occurrence was just sited less than 0.5 miles from the site CNDDB (2003).
REPTILES					
Alameda whipsnake	*Masticophus lateralis euryxanthus*	T	T	A mosaic of shrub and scrub habitats within Alameda, Contra Costa, San Joaquin, and Santa Clara Counties.	Very low: the habitat within the project site is unsuitable for this species. This species has not been documented within the Lathrop topographic quadrangle and is known only from the extreme western edge of San Joaquin County
Giant garter snake	*Thamnophis gigas*	T	T	Freshwater marsh and low gradient streams; adapted to Central Valley drainage canals and irrigation ditches	Very low: the San Joaquin River provides very little usable habitat due to extensive use of rip-rap and lack of resting and basking sites required for this species. No occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
FISH					

TABLE 4
SENSITIVE WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat	Likeliness of Occurrence
Central Valley steelhead	*Oncorhynchus mykiss*	T	none	Deep flowing pools with water temperatures less than 27 degrees Celsius.	Extremely low to none: The re is no habitat on site. However, the San Joaquin River, which bounds the project site to the west, provides seasonal habitat for this species. No occurrences are listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Winter-run chinook salmon	*Oncorhynchus tshawytscha*	E	E	Deep flowing pools with water temperatures less than 27 degrees Celsius.	Extremely low to none: The re is no habitat on site. However, the San Joaquin River, which bounds the project site to the west, provides seasonal habitat for this species. No occurrences are listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Fall/late fall run chinook salmon	*Onchorhynchus tshawytscha*	T	T	Deep flowing pools with water temperatures less than 27 degrees Celsius.	Extremely low to none: The re is no habitat on site. However, the San Joaquin River, which bounds the project site to the west, provides seasonal habitat for this species. No occurrences are listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
Green sturgeon	*Acipenser medirostris*	C	None	Estuarine and riverine habitats with water temperature that ranges from 5 to 16 degrees C.	None: the project site is well outside this species range. No occurrences of this species are recorded in the CNDDB (2003) search area.
Delta smelt	*Hypomesus transpacifcus*	T	T	Main channels of the Sacramento-San Joaquin Delta in low to moderate salinities (2 ppt - 10 ppt).	Extremely low to none: The re is no habitat on site. However, the San Joaquin River, which bounds the project site to the west, provides seasonal habitat for this species. No occurrences are listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
AMPHIBIANS					
California tiger salamander	*Ambystoma californiense*	PT	None	Underground refuges. Ground squirrel burrows and vernal pools or other seasonal water sources for breeding.	Low to none. There is no suitable habitat on site for breeding. The closest occurrence in the CNDDB (2003) is approximate 1 mile south east of the project soie.
California red-legged frog	*Rana aurora draytonii*	T	SC	Perennial water bodies (i.e., streams and ponds) with abundant riparian vegetation.	None: considered extinct on floor of the Central Valley; no occurrences listed in the CNDDB (2003) within the Lathrop topographic quadrangle.
INVERTEBRATES					

TABLE 4
SENSITIVE WILDLIFE SPECIES DOCUMENTED OR POTENTIALLY OCCURRING IN THE PROJECT VICINITY

Common Name	Scientific Name	Federal Status[1]	State Status[2]	Habitat	Likeliness of Occurrence
Vernal pool invertebrates	*Branchinecta lynchi; B. longiantennae, B. conservatio; Lepidurus packardi,*	E & T	SC	Vernal pools	None: there is no suitable habitat for these species. No vernal pools were observed within the project site during the 2000-2003 surveys. Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T	E	Elderberry shrubs, usually in Central Valley riparian habitats	None: there are no elderberry shrubs located at either site or along any of the utility alignments. Not recorded in the CNDDB (2003) within the Lathrop topographic quadrangle.

1 T= Threatened; E = Endangered; PT= Proposed Threatened; C= Candidate; SC=Species of Concern.

2 T = Threatened; E = Endangered; SC=State of California Species of Special Concern

substantially modified natural habitats in the project vicinity. Through reviewing Tables 3 and 4, it is apparent that the likelihood of occurrence of listed, candidate, and other sensitive species in the project site is considered low. Other than Swainson's hawk, no sensitive species were observed during the recent surveys. The intensively cultivated fields and bands of highly maintained ruderal vegetation along field edges, dirt roads, and ditches provide mostly low-quality habitat to a limited subset of the species listed in Tables 3 and 4.

SENSITIVE PLANTS: Sensitive plants generally occur in relatively undisturbed areas and are largely found within unique vegetation communities not present within the project site. Consequently, the likelihood of occurrence within the ditches, fields, or disturbed ruderal areas along the edges of these routinely maintained fields, roads, and ditches is considered very low to none.

SENSITIVE WILDLIFE: The potential for intensive use of habitats within the project site by sensitive wildlife species is considered low. There are only two species with what is considered a moderate potential to occur on more than an "occasional" basis: Swainson's hawk and burrowing owl (*Athene cunnicularia*). These species could be adversely affected by site activities if they nested in or near ongoing construction.

SWAINSON'S HAWK: Trees within the greater project vicinity may be used by nesting Swainson's hawks and on-site agricultural fields represent foraging habitat for this species. There are potential nest trees on the margins of the project sites for this species, as well as nearby surrounding areas. While no active nests were located during the recent surveys, a Swainson's hawk was observed soaring above the site and foraging within both of the project sites. While this hawk likely nests within a few miles of the site, the CNDDB (2003) does not contain records of Swainson's hawks nesting in trees within the sites, the potential use of on-site trees by nesting Swainson's hawks in the future can not be precluded. The nearest occurrence of a nesting Swainson's hawk is located approximately 1 mile south of the southern parcel.

BURROWING OWL: No burrowing owls were observed within the project site during the 2000-2003 surveys. There is a moderate concentration of ground squirrel burrows located in the southern parcel and along the levee, but few burrows elsewhere on the site, primarily due to the intensity of farming. Burrowing owls are often migratory and could use burrows within the sites on a seasonal basis for nesting. However, the limited amount

of suitable habitat and the intensity of farming substantially reduce the likelihood of owls using burrows within the sites for nesting in the future.

RIPARIAN BRUSH RABBIT: Although not reported in the CNDDB (2003) within the Lathrop topographic quadrangle, the federally-listed riparian brush rabbit is known to occur along the heavily vegetated riparian corridors associated with the San Joaquin and Stanislaus Rivers and was raised as a potential issue at the sites due to their geographical location and proximity to the San Joaquin River. Until recently, the only known riparian brush rabbit population is located at Caswell State Park, 9.5 air-miles southeast of the project site. However, a second population was recently located in a riparian habitat corridor along Stewart Tract.

The riparian brush rabbit requires very dense thickets of willows, wild rose, and/or blackberry for cover and is usually found in mature, moderately open-canopy riparian woodlands with dense understory vegetation. This species rarely ventures out in to the open more than 1.5 feet from dense cover (USFWS, 2000). The open fields of row crops and essentially barren quarry due not contain the dense cover required by this species. While the riparian brush rabbit may occur in riparian habitats Stewart Tract, they are geographically isolated from the site by levees, roads, and irrigation ditches that surround the site. These surrounding levees, roads, and irrigation ditches are regularly maintained for weeds by use of herbicide and mowing, resulting in the creation of open strips of land that the riparian brush rabbit would not be expected to traverse. The likelihood of occurrence of this species in the project site is considered remote.

SENSITIVE FISH: Federally-threatened delta smelt may occur within or downstream of the portion of the San Joaquin River bordering the project site during various times of the year. Delta smelt is a small fish (2 to 3 inches in length) which is known from the Lower Sacramento-San Joaquin River Delta. Delta smelt are usually found at the mixing zone where fresh water and salt water come together, and in the freshwater areas immediately upstream of the mixing zone. The position of the mixing zone shifts upstream and downstream is usually in the vicinity of Honker Bay, just east of Suisun Bay. During February through June, delta smelt swim upstream to spawn in the sloughs and shallow edge-waters of channels in the upper Delta waterways. On occasion, delta smelt have been documented in the San Joaquin River just downstream of the project site. However, the site is not within designated critical habitat of the species.

In addition to delta smelt, there are other aquatic species of concern that may occur in the San Joaquin River in the Lathrop area. For example, fall/late-fall run and winter-run chinook salmon (*Oncorhynchus tshawytscha*) and Central Valley steelhead (*O. mykiss*) occur in delta waterways on a seasonal basis. The project site is located within the Central Valley California Steelhead ESU (i.e., Evolutionarily Significant unit) which supports both winter-run Chinook salmon and steelhead trout. The designation of critical habitat triggers a mandatory consultation between ACOE and the National Marine Fisheries Service (NMFS) during any Section 10 and/or Section 404 permit process.

A number of other sensitive fish species occur in Delta waterways during various times of the year. These include green sturgeon (*Acipenser medirostris*), river lamprey (*Lampetra ayersi*), Pacific lamprey (*Lampetra tridentata*), and longfin smelt (*Spirinchus thaleichthys*). Some of these fish species may move through or occur in the San Joaquin River on an occasional basis. However, the project site is not within designated or proposed critical habitat of any of these species.

5. CONCLUSIONS AND RECOMMENDATIONS

- We observed no areas within the project site that appear to meet the technical and regulatory criteria of jurisdictional Waters of the U.S. or wetlands. There are some irrigation and roadside ditches within the project site that exhibit some wetlands attributes (i.e., they support small patches of emergent wetland vegetation). However, it is considered highly unlikely that these created and maintained ditches would fall under the jurisdiction of state or federal agencies.

- The project is not expected to result in adverse impacts to water qlaity of or sensitive aquatic species in the San Joaquin River or downstream waterways. As the project will be discharging storm water into a regional storm drain system that includes storm water treatment systems (e.g., detention of first flush flows, sediment and petroleum filters). Thus any project-generated contribution of pollutants into the San Joaquin River system is expected to be undetectable.

- Due to past and ongoing farming and other disturbance, the likelihood of occurrence of sensitive plants within the sites is considered remote.

- On-site trees could be used by nesting raptors and other protected birds. Any trees that need to be removed to facilitate future development should be felled outside of the general bird nesting season (February 1 through August 31) or a nesting bird survey should be conducted immediately prior to tree removal. If active nests are found, tree felling should be delayed until the young have fledged.

- There are no Swainson's hawks or burrowing owls currently occupying the project site. Although considered unlikely, these species could nest in or near the site in the future.

- Mitigation for loss of Swainson's hawk foraging habitat would be best accomplished through participation in the San Joaquin County Multispecies Habitat Conservation Plan (HCP). The HCP would also provide mitigation for cumulative loss of Open Space.

- If the project participates in the HCP, standard Take Avoidance measures outlined in the HCP for nesting Swainson's hawks should be undertaken. Alternately, pre-construction surveys for nesting Swainson's hawks could be conducted annually for construction activities between March 1 and September 15 pursuant to CDFG (1994). In the event an active nest is found, the need for construction setbacks should be developed in consultation with recommendations from the Swainson's Hawk Technical Advisory Committee (SHTAC, 2000).

- If the project participates in the HCP, standard Take Avoidance measures outlined in the HCP for nesting burrowing owls should be undertaken. Alternately, pre-construction surveys for nesting burrowing owls could be conducted annually for construction activities between February 1 through August 31. In the event an active nest is found, the need for construction setbacks should be developed in consultation with recommendations from CDFG (1995).

- We observed no other sensitive species or biological issues of concern within the project site.

6. REFERENCES

ACOE (U.S. Army Corps of Engineers). 1987. Technical Report Y87-1. U.S. Army Corps of Engineers Waterways Experiment Station, Vicksburg, MI.

CDFG (California Department of Fish and Game). 1994. Staff Report regarding Mitigation for Impacts to Swainson's Hawks (*Buteo Swainsoni*) in the Central Valley of California. November.

CDFG. 1995. Staff Report on Burrowing Owl Mitigation. California Department of Fish and Game, Sacramento, California. September 25.

CNDDB (California Natural Diversity Database). 2003. California Department of Fish and Game's Natural Heritage Program, Sacramento, California.

Sawyer, J.O. and T. Keeler-Wolf. 1995. A Manual of California Vegetation. California Native Plant Society, Sacramento. California.

SHTAC (Swainson's Hawk Technical Advisory Committee). 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. May 31.

USFWS (United States Fish and Wildlife Service). 2000. News Release: "Federal and State Agencies Propose Reintroduction of Endangered Riparian Brush Rabbit". July 28.

APPENDIX E
CULTURAL STUDY

THIS SECTION AVAILABLE FOR REVIEW AT CITY OF LATHROP COMMUNITY DEVELOPMENT DEPARTMENT, 16775 HOWLAND RD. LATHROP, CA

APPENDIX F
FISCAL IMPACTS STUDY

FISCAL IMPACT ANALYSIS

MOSSDALE LANDING
CITY OF LATHROP

11/21/03

Goodwin Consulting Group, Inc.
701 University Avenue, Suite 225
Sacramento, California 95825
Phone (916) 561-0890
Fax (916) 561-0891

Mossdale Landing Fiscal Analysis

Table of Contents

Chapter 1

INTRODUCTION

OBJECTIVE

This report analyzes the potential recurring fiscal impacts to the City of Lathrop and the Lathrop-Manteca Fire Protection District from the Mossdale Landing development proposal. As described more fully below, the proposed Mossdale Landing East development is also incorporated into the analysis. The fiscal analysis compares the annual costs of providing public services against the annual revenues that will be generated by new development to determine the net fiscal impact. The City's General Fund and the Fire District's General Fund are analyzed. Other districts and funds supported by development fees and user charges (e.g., enterprise funds), state funding (e.g., school districts), or a specific allocation of property taxes (e.g., school districts, flood control districts, reclamation districts) are not analyzed in this study.

PROJECT DESCRIPTION

The Mossdale Landing Urban Design Concept (UDC) area is an irregularly shaped site comprised of approximately 477 acres. The site is located within an incorporated portion of the City of Lathrop known as the West Lathrop Specific Plan area, in a section of that plan area commonly referred to as Mossdale Village. The Mossdale Landing East Urban Design Concept (UDC) area is also located within Mossdale Village, and consists of approximately 151 acres adjacent to the Mossdale Landing project. In addition to their geographic contiguity, these two projects are being processed on fairly similar time lines and a public financing district to fund specific City services is being established to cover both projects together. Combining the projects make sense from a fiscal impact perspective as well. Mossdale Landing is comprised primarily of residential development with only a small portion of the project designated for commercial development; Mossdale Landing East is Mossdale Landing's complement, since it is slated for significantly more commercial development and much less residential development than Mossdale Landing. In other words, the retail development in Mossdale Landing East will be supported in part by the residential development in Mossdale Landing. Consequently, for purposes of this fiscal analysis, the two projects are combined and hereinafter are referred to together as "the combined project."

The combined project's western boundary is formed in part by the San Joaquin River, while portions of its eastern boundary are formed by Interstate 5. Areas to the north and south of the project are predominantly farmland interspersed with farmsteads and various outbuildings. The project site is somewhat bisected by Louise Avenue, which extends westerly from Interstate 5.

Under the combined project, 2,173 residential units would be built on 387 acres, including 1,389 low density units, 582 medium density units, and 202 high density units. A significant amount of non-residential land uses are proposed for the combined project. Village commercial acreage would total 14.0, producing approximately 210,832 square feet of regional-oriented retail and office development. Approximately 658,584 square feet of service and highway commercial offering local-serving retail and office development would occur on 60.5 acres. There would be 19.1 acres of landscaped open space, along with 43.1 acres set aside for neighborhood parks (22.9 acres) and community parks (20.2 acres).

Chapter 2

METHODOLOGY AND ASSUMPTIONS

SCOPE AND METHODOLOGY

Fiscal impacts arising from land development can be categorized broadly into one of two types: 1) one-time impacts; or 2) recurring impacts. These two types of impacts generally contain a revenue component and an expense component. For example, a project may create the need for a police substation, and the one-time construction cost of the station may be offset by a development impact fee; this type of analysis would be included as part of a discussion of financial feasibility. Likewise, the annual expenses associated with staffing and maintaining the police substation may be offset by annual property taxes and other revenues generated by new development to the City. The fiscal impacts compared below are the annual, or recurring, revenues and expenses that affect the City of Lathrop and Lathrop-Manteca Fire Protection District as a result of development associated with the combined project.

Two methodologies are employed in estimating recurring fiscal impacts. First, the Case Study method is used to estimate recurring revenues and expenses by applying defined service standards, existing tax and fee rates, and suggested operating and maintenance costs to the land uses and services proposed in the combined project. The second is the Multiplier method, which assumes that fiscal impacts will result from proposed development at forecasted rates per person served based on the City's fiscal year 2002-2003 budget. The Multiplier and Case Study methods are generally used under the following conditions:

Multiplier Method

1. Average cost is a reasonable approximation of the actual costs to provide similar services to specific developments in future years.

2. Specific revenues and expenses are generated based on population (e.g., gas taxes, social services).

3. Service standards and other information are not available or accurate.

Case Study Method

1. Marginal cost is a better approximation of the actual costs to provide similar services.

2. The land use distribution of the project being analyzed does not resemble the land use distribution within the public agency's area.

3. Service standards and estimated future costs for new projects are anticipated to be different than they are now.

Table 1 in the Appendix presents the estimated resident and employee population for the City as of January 1, 2003. The Multiplier method often relies on a "persons served" factor, which is the sum of all residents plus 50% of employees. The exact relationship of service demands and revenue potential between residents and employees is difficult to measure, but a service population comprised of all residents and 50% of employees is standard fiscal practice. This relationship suggests that a resident generally has twice the impact of an employee (e.g., a resident is home 16 hours per day, while an employee is at work eight hours per day). An estimate of the total persons served within the Fire District service area is also shown in Table 1 of the Appendix.

The Case Study and Multiplier approaches are used to estimate different recurring fiscal impacts for the combined project as listed in the following table:

CITY OF LATHROP	
Case Study Method	***Multiplier Method***
Recurring Revenues	
Property Tax: Secured and Unsecured	State Motor Vehicle In-Lieu
Real Property Transfer Tax	Franchise Fees
Sales & Use Tax	Licenses and Permits
Public Safety Sales Tax	Fines & Penalties
Property Assessment (Fire District)	Charges for Current Services
	Gas Tax & Street Maintenance Revenues
	Other Revenue
	General Fund Revenues (Fire District)
Recurring Expenses	
Fire District Services	General Government
Storm Drainage and Street Lighting	Community Development
Landscaping	Animal Control
Trail Maintenance	Public Works Administration
Open Space Maintenance	Culture and Leisure
Park Maintenance	Police Services
Depreciation	
Street Maintenance	

MAJOR ASSUMPTIONS

Many assumptions are factored into the analysis of fiscal impacts. Some of the most critical assumptions in terms of their affect on revenues and expenses are delineated below:

1. The analysis is presented in 2003 dollars. Phasing and timing assumptions are included in this analysis, but the projected fiscal impacts are presented in current dollars for easy comparison across time periods.

2. Legal actions taken at the state level in the 1990s diverted a percentage of the 1.00% property tax into the Educational Revenue Augmentation Fund (ERAF). It is assumed that this situation will continue in future years for purposes of the fiscal analysis.

3. The City's share of the 1.00% property tax for the proposed area is 11.77%. Since the project area has already been annexed and is within the incorporated City limits, the exact post-ERAF property tax allocation to the City can be determined based on the distribution of property tax revenues to taxing entities in Tax Rate Area (TRA) 007-014, which covers the combined project area.

4. Fiscal expense and service standards do not reflect existing expense and service levels. Instead, the City conducted a thorough evaluation of current staffing and maintenance levels, and projected future staffing and maintenance needs based on anticipated residential and non-residential development in Lathrop over the next 25 years. In some cases, economies of scale can be achieved and average costs may decrease over time; in other cases, staffing and maintenance levels are currently deficient and average costs may increase over time. For example, current general government costs amount to $154 per person served in Lathrop. Based on expected development and corresponding staffing requirements, general government costs are projected to be $78 per person served by the time the combined project is completed, and $67 per person served 25 years from now.

5. Certain revenue items such as building permits will not have a significant impact on the City or the Fire District after buildout of the combined project. These revenues are included in the analysis during development, but are excluded in the final analysis after buildout.

6. Many of the fiscal revenues are based on budgeted revenues as provided in the 2002-2003 budget for the City of Lathrop and the 2002-2003 budget for the Lathrop-Manteca Fire Protection District.

7. A summary of the land use data and assumptions that are incorporated into the fiscal analysis is presented in Table 2. Acreage, land use densities, population and employment densities, values, and other pertinent factors are included in this table. An important assumption that affects property tax and sales tax projections is the estimated value of dwelling units in the combined project. Current sales figures support average prices approximately 10% higher than $300,000 for a low density unit and $200,000 for a medium density unit, but these values are included in the analysis to be conservative and to account for home sales during a potential real estate down cycle.

8. Annual and cumulative absorption and phasing rates are presented in Tables 3 and 4, which assume a nine-year development horizon for the combined project with buildout estimated to occur in 2013. Most of the remaining undeveloped land at the end of the buildout schedule is located within Mossdale Landing Phase 6 (EIR Project Description) and is currently dedicated to wastewater land disposal uses. Originally, it was thought that wastewater generated within the project would be treated at Wastewater Recycling Plant #1 (WRP #1) and then returned to the project site for disposal. Land disposal will occur through the use of spray fields and irrigation water in public areas of the proposed project. However, during winter months, a reduced demand for irrigation water will require the temporary storage of excess treated wastewater. The land in Phase 6 associated with service commercial parcels and Neighborhood 16 will be used as on-site storage ponds for treated wastewater until demand returns later in the year. Now, the Lathrop Water, Wastewater, and Recycled Water Master Plan calls for river discharge of treated wastewater associated with WRP #1 in 2007. The fiscal analysis assumes that this occurs as scheduled, or alternatively, that other sites are found for the land disposal of treated wastewater, which would eliminate the need for the on-site spray fields and storage ponds and would allow Phase 6 land to be developed with residential and service commercial uses.

9. Although the UDC does not require it, it is assumed that the Fire District will require that a fire station be constructed to serve the combined project and surrounding areas. Based on the estimated absorption schedule for the combined project, a fire station would likely be constructed sometime toward the end of 2005 and the first full year of operation would be 2006. If home construction occurs faster than anticipated, the fire station would likely be needed sooner; if construction occurs more slowly, the station may be needed later than projected. The initial number of firefighters required to staff the station is estimated to be seven, but a total of 10 firefighters will ultimately be required to operate out of the new station. Call volume will dictate when the station will need to transition from seven to 10 firefighters, but it is difficult to predict at this time when that would occur. For purposes of this analysis, it is assumed that the station will move from seven to 10 firefighters toward the end of 2009, after approximately 80% of the homes and 50% of the commercial property in the combined project have been developed.

10. In addition to serving the combined project and future development surrounding the combined project, the new fire station will also serve the Crossroads Commerce Center. Crossroads is located adjacent to the combined project, but on the east side of the I-5 freeway. Consisting of approximately 450 acres of general industrial and 48 acres of highway commercial, Crossroads is roughly 50% built out at this time. It is estimated that another 200 acres of general industrial and 28 acres of highway commercial land uses will be constructed over the next eight years. This future development will generate additional property tax and assessment revenue to the Fire District, which can be applied against the annual costs of providing service out of the new fire station.

Chapter 3

FISCAL IMPACT ANALYSIS

FISCAL REVENUES

The City of Lathrop will provide the vast majority of public services to the area proposed to be developed in Mossdale Landing and Lathrop Station. The City and Fire District General Funds are the primary discretionary funds that will be impacted by new development proposed as part of the combined project, and as a result are the only two funds estimated in this study. Table 14 shows the annual fiscal revenues generated by the combined project as they apply to the City after buildout to be approximately $3.07 million. Sales taxes are the largest single source of projected City revenues, accounting for 44% of the total. The second largest source of revenue comes from property taxes, which represent approximately 25% of all revenue. Table 15 depicts the same calculations for the Fire District. Total revenue generated by the combined project at buildout is estimated to be $843,000, with property tax accounting for 71% of the total. The fourteen City revenue sources and four Fire District revenue sources are explained in the following text.

Fiscal Revenues Estimated by the Multiplier Method

Of the fourteen revenue sources itemized in the fiscal analysis for the City, nine are calculated using the multiplier method, as noted above and shown in Table 8. These multipliers are applied to the appropriate residents, employees, or persons served estimate for each calculation.

- Franchise tax revenues generated from services for gas, electricity, and solid waste relate to residential and non-residential customers; therefore, a persons served estimator is used to estimate these additional revenues generated for the City. However, revenue from the cable franchise is derived solely from residential customers, and thus is estimated on a per resident basis.

- Business licenses are based strictly on employees. Animal licenses and registration apply solely to residents, but are deducted from animal control costs to produce a net cost for animal control and, therefore, are not included among the revenues.

- Construction, transportation, and encroachment permits are applied on a persons served basis until buildout of the combined project. At that time, these items generate nominal, if any, revenue for the City and are therefore excluded at buildout.

- The combined project is not expected to include a hotel; therefore, no revenue from this source is considered in the analysis.

- Fines and forfeitures are based on persons served since residents and businesses generate various permit, fee, and fine revenues.

- State motor vehicle in-lieu revenues along with gas tax and street maintenance revenues are based on the number of residents within the City. Note that motor vehicle in-lieu revenues are currently 67% back-filled by the State; since that 67% amount is not a secure source of revenue and may be terminated by the State, that amount is not included.

- Gas tax and street maintenance revenues are calculated using a per resident multiplier.

- Transfers into the General Fund are assumed to increase in proportion to the number of additional residents added to the City, but there are currently no transfers into the General Fund that relate to new development.

- Charges for services are estimated on a persons served basis.

- Other revenue is similarly calculated on a persons served basis.

- The only revenue calculated by the multiplier method for the Fire District falls under the heading of general fund revenue, which is calculated on a persons served basis.

Secured Property Tax

Property taxes are allocated to public agencies and special districts based on the assessed valuation within a Tax Rate Area (TRA). One TRA, 007-014, covers the combined project area. Table 5 illustrates the allocation factors for the various districts, funds, and agencies in the TRA after revenues have been shifted to the Education Revenue Augmentation Fund (ERAF). It is assumed that this shift will continue into the future for purposes of the fiscal analysis. The property tax allocation of 11.77% of the 1% basic property tax is applied to the estimated assessed value created by the project as shown in Tables 11-A through 11-C. Total secured property tax revenues for the City General Fund are shown in Table 12. The Fire District receives 9.33% of secured property tax revenue, which is also presented in Table 5. Total secured property tax revenues for the Fire District General Fund are shown in Table 13.

Unsecured Property Tax

Unsecured property includes items such as boats and mobile homes in residential areas and computers, furniture, machinery, and equipment in non-residential areas. Unsecured property taxes are typically calculated as a percentage of secured property taxes based on the historical relationship between the two. Commercial property tends to generate significantly higher unsecured property taxes than residential property. As Table 6 indicates, unsecured property tax revenues are assumed to be 1.0% of secured property tax revenues for residential property and 15.0% for commercial property.

Real Property Transfer Tax

When a residential dwelling unit or non-residential structure is sold within a city, a tax representing a small percentage of the value is generally transferred to a fund to be split between the city and the county in which it resides. As shown in Table 6, the current rate in Lathrop is $1.10 per $1,000 of value. The City currently receives 50.0% of the money from real property transfers. The revenue the City receives from real property transfers is shown on Table 7.

Sales and Use Tax

Several methodologies can be used to estimate taxable sales. One method measures taxable sales based on the supply of retail square footage. Under this approach, a taxable sales per square foot estimate is multiplied by the total retail square footage planned for the project. Another approach looks at the demand side of the equation. Under that approach, household income, percentage of household income spent on taxable goods and services, and a taxable sales capture rate for the City are estimated to determine taxable sales. Often, a combination of both approaches is utilized.

Since there does not appear to be capacity at existing retail establishments in Lathrop to capture retail sales generated by new residential development, the supply-side approach is used rather than the demand-side approach. Of course, a significant portion of the taxable sales captured by the retail square footage developed in the combined project will be generated by new residential development that occurs in the combined project.

Data provided by Claritas Inc. and compiled by the City of Lathrop indicate that taxable sales from retail outlets in Lathrop average approximately $250 per square foot. As noted above, though, Lathrop currently has a small supply of retail square footage relative to its population, and retail businesses are likely operating at maximum capacity to produce a $250 average taxable sales-per-square-foot ratio. As more retail development occurs, the taxable sales-per-square-foot factor will probably stabilize between $200 and $250, which is more in line with typical assumptions based on Urban Land Institute data for these types of land uses. To be conservative, the fiscal analysis assumes taxable sales of $200 per square foot for retail uses in village commercial and $225 per square foot for retail uses in service/highway commercial. Office commercial uses are assumed to produce only minimal taxable sales (from a few point-of-sale businesses operating out of office space) estimated to be $10 per square foot. These assumptions are presented in Table 6.

As noted above, a total of 14.0 acres of village commercial and 60.5 acres of service commercial development is planned for the combined project. This acreage includes 1.6 acres in Mossdale Landing and 1.9 acres in Mossdale Landing East related to a more narrow than anticipated Golden Valley Parkway. While the Project Description allows development of these commercial areas to occur at a floor-to-area ratio (FAR) of 0.60, the types of uses likely to emerge there based on the retail and office marketplace in and around Lathrop, as well as realistic parking requirements, are anticipated to be less intense. As shown in Table 2, projected FARs of 0.45 for village commercial and 0.30 for service commercial are assumed in Mossdale Landing. Mossdale Landing East is comprised of several different projected FARs: 28.2 acres of highway commercial at a 0.22 FAR, 1.5 acres of service commercial at a 0.20 FAR, and 12.5 acres of service commercial and 7.3 acres of village commercial at a 0.25 FAR. In Table 2, Mossdale Landing East's FARs are shown as 0.25 for village commercial and 0.23 for service and highway commercial (a weighted average of the FARs and acreage that make up the total service and highway commercial development in Mossdale Landing East). In addition, it is assumed that 50% of the village commercial building square footage will be developed as retail space, with the other 50% developed as office; 75% of the service commercial building square footage is assumed to be retail and 25% office. Based on these assumptions, Table 7 presents estimated sales tax revenues during development of the combined project.

In addition to the 1.0% local sales tax, the City also receives a portion of the County's and State's pooled tax revenues. The point of origin for these sales transactions is not known and, therefore, these pooled sales tax revenues are distributed to cities and counties on a proportional basis. Based on data from the State Board of Equalization, Lathrop's share of revenues from these pooled funds is approximately 11.86% of its local sales tax revenue. This factor is presented in Table 6. It is assumed that this percentage will continue to be received in the future and, therefore, these revenues are incorporated into this analysis as shown in Table 7.

Public Safety Sales Tax

Proposition 172 created a one-half cent sales tax for local public safety. A figure of 0.22% of base sales tax revenue (Table 6) was obtained from the local tax department of the State Board of Equalization and is used to calculate the public safety sales tax revenue accrued to the City, which is shown in Table 7. The Fire District does not receive Prop 172 monies.

Property Assessment

Revenues were calculated for the Fire District based on the appropriate residential and commercial assessment rates specified in the District's Resolution to Set Tax Rates for Fiscal Year 2002-2003. The assessment rates ($0.03 per residential square foot and $0.06 per commercial square foot) are shown in the fiscal analysis on Table 8 and the resulting assessment amounts are displayed on Table 13.

FISCAL EXPENSES

Development plans for the combined project will increase operation and maintenance costs for the City and Fire District as they provide for the demands of the increased population. Table 14 delineates the impact the development would have on the City's General Fund expenses after buildout, estimated to be $2.76 million annually. The largest expense category is the police department, accounting for approximately 39% of the total General Fund expenditures related to the combined project. Table 15 summarizes the buildout costs for the Fire District, which total approximately $1.18 million per year.

Fiscal Expenses Estimated by the Multiplier Method

Of the nine expense categories, all but three (depreciation, street maintenance, and all the costs associated with a services financing district) are calculated using a multiplier method. These multipliers are applied to the appropriate residents, employees, or persons served estimate for each category. The staffing and maintenance projections that determine the multipliers used each year during development of the combined project are shown in Table 10, while the multipliers applied after buildout are shown in Table 9 (which are taken from the last column of Table 10).

- The General Government category includes the City Council, City Clerk, City Attorney, City Hall, City Manager, Personnel, Information Systems, Central Services, and the Finance Department and are calculated with a persons served estimate.

- Police services are calculated utilizing a per resident multiplier.
- Community Development is composed of costs associated with building and planning, and is estimated on a persons served basis.
- As noted above, animal licenses and registration revenue is deducted from total animal control expenses to determine net animal control costs, which are calculated with a per resident multiplier.
- Culture and leisure expenses are also estimated on a per resident basis.
- Public works administration is accounted for by a persons served multiplier.

Depreciation Expense

A depreciation expense is incorporated into the analysis to account for the ongoing equipment replacement needs of each department. However, equipment replacement costs are factored into the cost multiplier for police services. Depreciation costs are estimated to be 3% of all General Fund expenses included in the analysis, excluding police service expenses, as shown in Table 9.

Street Maintenance

Street maintenance is also a cost estimated by the case study method. Major street mileage in the combined project is an estimate based on expanding the width of the existing roads running through or adjacent to the property as well as constructing new roads proposed for the development. Local street mileage is derived based on the amount of acreage within the residential land use designations that will be devoted to interior streets. Table 2 shows these assumptions while Table 9 shows the cost per lane mile and cost per signalized intersection for each type of street maintenance expense (i.e., pavement maintenance, street sweeping, and signalized intersections). These cost factors are used to calculate the additional street-related expenses that can be expected to affect the General Fund due to development of the combined project.

Services Financing District

The case study approach is used to calculate an average cost per dwelling unit to provide funding through some form of land-secured financing district for drainage and lighting, landscaping, trail and open space maintenance, and park maintenance. Cost factors are estimated to reflect the costs of providing these services within a newly developed community. These cost factors, whether they are per mile, square foot, or pole, are then multiplied by the number of applicable units in the combined project to determine the annual costs. The cost factors are shown in Table 9, while the square feet, miles, and poles are shown in Table 2. Note that there are no landscaped acres shown in Table 2 associated with interior streets; it is assumed that homeowners will maintain parkways adjacent to their homes. Also, note that park maintenance involves maintaining several proposed neighborhood parks and one proposed community park. The community park, though, is larger than that required pursuant to City park standards. Based

on its fair share of the community park acreage, the combined project is responsible for 88% of the community park maintenance costs.

Fire Protection

The Fire District has determined that a new fire station will be required in the southwestern portion of the City to adequately respond to fire-related emergencies that may occur in that area. Since the combined project is anticipated to be the first development in that area, it is assumed that land will be set aside and a fire station will be constructed within the combined project. The fiscal methodology reflects this condition, and a case study approach is used to estimate the annual fiscal impacts of the new fire station on the Fire District.

Based on the assumed pace of residential unit development in the combined project, it is expected that a new fire station will be constructed in the later part of 2005 and will be fully operational in 2006. The station will be staffed initially with seven firefighters, the minimum amount required for a three-person engine company to function effectively. A total of 10 firefighters will ultimately be based out of the new fire station; the three additional firefighters will not be needed until the workload warrants, which is estimated to be in late 2009. Given the mix of supervisory and subordinate personnel required to staff the new fire station, the fully-burdened annual cost for the initial seven firefighters is estimated to be $841,000 and for all 10 firefighters is $1.05 million. Fire station operation and maintenance (O&M) costs are estimated to be $129,000 per year. These assumptions are presented on Table 9.

Chapter 4

QUALITATIVE IMPACTS RELATED TO MOSSDALE VILLAGE

Combined, Mossdale Landing and Mossdale Landing East have a substantial amount of commercial development to accompany their various residential components. With nearly 870,000 square feet of commercial development, there is more retail supply (assumed to be approximately 600,000 square feet of the total) than the residential portion of the combined project will be able to support. Currently, however, there is pent-up demand for retail space within the City in retail categories such as apparel, general merchandise, food stores, eating and drinking establishments, and home furnishings and building materials. The latent demand in Lathrop, when coupled with demand created by the additional residential units of the combined project, may be enough to support the proposed retail commercial component of the combined project. Nonetheless, retail commercial development in the combined project may need to rely on the development of other projects in the greater Mossdale Village area.

Nearby projects such as the Central Lathrop Specific Plan, areas slated for development north of the Central Lathrop Specific Plan, and other portions of Mossdale Village all have residential development incorporated in their proposals that consist of almost 4,000 units. It is important to note that these projects, including the Farmworld project, all have their own commercial components as well. The Central Lathrop Specific Plan is proposing nearly 400,000 square feet of big box and village commercial retail development, which would support demand from approximately 3,000 residential units. The remaining 1,000 residential units would create demand for another 150,000 square feet of retail space. However, the greater Mossdale Village area includes another 550,000 square feet of various commercial development (not identified specifically as office commercial), suggesting that only 25% to 30% (150,000 divided by 550,000) of that could be constructed as retail commercial. This indicates that the cumulative commercial square footage proposed for all of these projects will be more than Mossdale Village area residential development will be able to support, unless a significant amount of non-retail, office uses are constructed.

As a result, cumulative fiscal impacts to the City associated with all development in the greater Mossdale Village area will probably be somewhat balanced rather than significantly positive since sales tax revenues may not be as high as the amount of proposed commercial development might suggest. Cumulative fiscal impacts to the Fire District should be positive as more development generates property taxes and assessments to offset ongoing fire station costs associated with a new station that are already fully incorporated into this analysis.

Chapter 5

CONCLUSIONS

CITY FISCAL IMPACTS

The proposed plans for the Mossdale Landing and Mossdale Landing East developments are projected to have a positive net fiscal impact on the City of Lathrop. Fiscal deficits are projected from 2005 until 2009, as shown in Table 12. However, starting in 2010 annual fiscal surpluses are anticipated to range from approximately $30,000 to $600,000. With revenues totaling $3.07 million annually and expenses totaling $2.76 million annually after buildout as shown in Table 14, a surplus of approximately $310,000 is anticipated to be experienced by the City annually. This amounts to approximately $140 per dwelling unit. Note that these results are based on the assumption that WRP #1 will be online or another wastewater disposal solution will be found to allow future development of areas currently designated for spray fields and storage ponds.

Drainage and lighting, landscaping, trail and open space maintenance, and park maintenance services are assumed to be included in a land-secured financing district. Table 12 demonstrates that the costs to provide these services will increase from roughly $94,000 to $1.1 million per year, or from $240 to $520 per dwelling unit. Deducting the portion of community park maintenance that is not the combined project's responsibility (approximately $40,000) results in a cost of $500 per dwelling unit at buildout. The annual burden of $500 on a typical low density dwelling unit associated with a services financing district is approximately 0.17% of the anticipated home value.

One or more financing mechanisms will be established by the City and the developers to fund annual drainage, lighting, landscaping, and trail, open space, and park maintenance costs. Measures to fund these costs may include a Mello-Roos district, a landscaping and lighting district, a homeowners association, development impact fees, or other alternatives. A financing district could generate annual revenues to offset the deficits, impact fees could be pooled in an account and used to generate interest revenue that, together with the fee revenue, would offset the deficits, or a combination of mechanisms could be implemented. The City and landowners are discussing the actual measures that will be established.

FIRE DISTRICT FISCAL IMPACTS

The Fire District is expected to experience an overall neutral to slightly positive net fiscal impact due to development of the combined project. Annual fiscal deficits range from $505,000 to $23,000 generally during the first half of the project, except for the first year of development before the new fire station is fully operational, as shown in Table 13. After that, fiscal surpluses range from approximately breakeven to $15,000. At buildout, as presented in Table 15, the combined project is projected to generate a $9,000 positive annual fiscal impact on the Fire District, or approximately $4 per dwelling unit. Table 13-A provides the assumptions and calculations to estimate the annual revenues to the Fire District generated by new development in the Crossroads Commerce Center. These additional revenues are incorporated into the revenues presented in Tables 13 and 15.

A fiscal mitigation measure may need to be implemented to ensure that the Fire District is not adversely impacted during the early years of new development in the combined project. Measures to mitigate projected Fire District fiscal deficits may include a Mello-Roos financing district, development impact fees, or other alternatives.

SOURCES LIST

California Department of Finance
California Employment Development Department
City of Lathrop
City of Lathrop, Current Development Projects List, September 2002
City of Lathrop Police Department
City of Lathrop 2002-03 Budget
EDAW, Inc.
Goodwin Consulting Group, Inc.
Insite Environmental
Lamphier-Gregory
Lathrop-Manteca Fire Protection District
Lathrop-Manteca Fire Protection District 2002-03 Budget
Mossdale Landing UDC Project Description
Pacific Union Homes
San Joaquin County Assessor's Office
San Joaquin County Auditor's Office
San Joaquin County Recorder's Office
State Board of Equalization, Local Tax Department
Urban Land Institute, *Dollars and Cents of Shopping Centers*
William Lyon Homes Stonebridge Sales Sheets

APPENDIX

FISCAL IMPACT ANALYSIS TABLES

Table 1
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
General Assumptions

Year of Study	2003
Constant Dollar Analysis (2003 $)	
Inflation Assumptions for Property Tax Calculations	
Annual Inflation Rate	3.0%
Annual Property Appreciation Rate	4.0%
Annual Legislated Property Tax Escalation Rate	2.0%
City of Lathrop Statistics	
2003 Estimated Total Population (as of Jan. 1)	11,646
2003 Estimated Employee Population	3,296
2003 Persons Served (Residents + 50% of Employees)	13,294
Lathrop-Manteca Fire District	
2003 Total Population in Service Area	17,346
2003 Estimated Employee Population /1	3,296
2003 Persons Served in Service Area (Residents + 50% of Employees)	18,994

/1 Employees served by the Lathrop-Manteca Fire District work almost exclusively within the City of Lathrop, according to Fire District personnel.

Source: California Department of Finance; Employment Development Department; Lathrop-Manteca Fire District; Goodwin Consulting Group, Inc.

11/21/03

Table 2
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Land Use, Demographics, and Related Assumptions

Residential Land Uses	*Adjusted Gross Acres*	*Estimated Density (Units per Acre)*	*Dwelling Units*	*Average Sq. Ft. per Unit*	*Population per Household*	*Population (Including 4.0% Vacancy)*	*Assessed Value per Unit*	*Annual Turnover Rate*
Low Density Residential	298.8	4.6	1,389	2,800	3.20	4,267	$300,000	10.0%
Medium Density Residential	77.9	7.5	582	1,700	2.00	1,117	$200,000	10.0%
High Density Residential	10.0	20.2	202	1,000	2.00	388	$100,000	5.0%
Total	386.7		2,173			5,772		

Non-Residential Land Uses	*Adjusted Gross Acres*	*Floor to Area Ratio (FAR) /1*	*Land Use Distribution*		*Estimated Square Feet*	*Sq. Ft. per Employee*	*Total Jobs (Including 10.0% Vacancy)*	*Assessed Value per Sq Ft*	*Annual Turnover Rate*
Village Commercial	14.0	0.45 / 0.25	Office	50%	105,416	500	379	$100	5.0%
			Retail	50%	105,416				
Service / Highway Commercial	60.5	0.30 / 0.23	Office	25%	164,646	500	1,185	$100	5.0%
			Retail	75%	493,938				
Total	74.5				869,416		1,565		

Streets, Parks, and Open Space	*Acres*
Open Space	19.1
Parks	
Neighborhood Park	22.9
Community Park	20.2
Subtotal	43.1
Major Streets	69.4
Total Streets, Parks, and Open Space	131.6

Bike / Pedestrian Trails	50,000 sq ft		
Signalized Intersections	6		
Street Light Poles	611		
		Lanes per Street /2	**Land-scaped Acres**
Storm Drain and Street Miles			
Major Streets	5.7	4.5	12.2
Local Streets	18.4	2	0
Total	24.1		12.2

/1 Mossdale Landing and Mossdale Landing East's estimated square footage calculations are based on different FARs - 0.45 and 0.30 for Mossdale Landing and 0.25 and 0.23 (a weighted average) for Mossdale Landing East.

/2 Major street lane miles assumes six lanes for Golden Valley Parkway and Gold Rush Boulevard, and four lanes for other major streets.

11/21/03

Source: Mossdale Landing UDC Project Description; EDAW, Inc.; William Lyon Homes Stonebridge Sales Sheets; Pacific Union Homes; Lamphier-Gregory; Insite Environmental; Goodwin Consulting Group, Inc.

Table 3
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Annual Development Assumptions

Land Use and Demographics	Project Year --> / Fiscal Year -->	1 2005	2 2006	3 2007	4 2008	5 2009	6 2010	7 2011	8 2012	9 2013	10 2014	Total
Residential Development (Units)												
Low Density Residential		272	272	272	192	192	191	0	0	0	0	1,389
Medium Density Residential		117	117	117	77	77	77	0	0	0	0	582
High Density Residential		0	40	40	61	61	0	0	0	0	0	202
Total Annual Dwelling Units		388	428	428	330	330	268	0	0	0	0	2,173
Non-Residential Development (Square Feet)												
Village Commercial		0	0	33,323	16,335	49,658	16,335	49,658	45,521	0	0	210,831
Service / Highway Commercial		0	135,123	60,113	47,386	107,499	47,386	107,499	106,192	47,387	0	658,584
Annual Square Footage Developed		0	135,123	93,436	63,721	157,157	63,721	157,157	151,713	47,387	0	869,416
Non-Residential Development (Acres)												
Village Commercial		0.0	0.0	1.7	1.5	3.2	1.5	3.2	3.1	0	0	14.0
Service / Highway Commercial		0.0	14.1	4.6	4.7	9.3	4.7	9.3	9.2	4.9	0	60.5
Annual Acres Developed		0.0	14.1	6.3	6.1	12.4	6.1	12.4	12.2	4.9	0.0	74.5
Resident Population		1,059	1,135	1,135	854	854	734	0	0	0	0	5,772
Employee Population		0	243	168	115	283	115	283	273	85	0	1,565
Persons Served (Residents + 50% Employees)		1,059	1,257	1,219	912	996	792	141	137	43	0	6,555
Signalized Intersections		0	1	1	1	1	1	1	0	0	0	6
Street Light Poles		119	118	118	91	91	74	0	0	0	0	611
Storm Drain and Street Miles												
Major Streets		1.4	1.0	1.0	0.8	0.8	0.6	0.0	0.0	0.0	0.0	5.7
Local Streets		3.3	3.6	3.6	2.8	2.8	2.3	0.0	0.0	0.0	0.0	18.4
Total Street Miles		4.7	4.7	4.7	3.6	3.6	2.9	0.0	0.0	0.0	0.0	24.1
Street Landscaping Acres		3.1	2.2	2.2	1.7	1.7	1.4	0.0	0.0	0.0	0.0	12.2
Bike / Pedestrian Trail Sq Ft		0	12,500	12,500	12,500	12,500	0	0	0	0	0	50,000
Open Space and Park Acres												
Open Space		0.0	4.8	4.8	4.8	4.8	0.0	0.0	0.0	0.0	0.0	19.1
Neighborhood Park		0.0	4.6	4.6	4.6	4.6	4.5	0.0	0.0	0.0	0.0	22.9
Community Park		0.0	0.0	0.0	0.0	20.2	0.0	0.0	0.0	0.0	0.0	20.2
Total Park Acres		0.0	4.6	4.6	4.6	24.8	4.5	0.0	0.0	0.0	0.0	43.1

11/21/03

Source: Mossdale Landing UDC Project Description; EDAW, Inc.; Pacific Union Homes; Lamphier-Gregory; Insite Environmental; Goodwin Consulting Group, Inc.

Table 4
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Cumulative Development Assumptions

Land Use and Demographics	Project Year --> / Fiscal Year -->	1 2005	2 2006	3 2007	4 2008	5 2009	6 2010	7 2011	8 2012	9 2013	10 2014
Residential Development (Units)											
Low Density Residential		272	543	815	1,007	1,198	1,389	1,389	1,389	1,389	1,389
Medium Density Residential		117	233	350	427	505	582	582	582	582	582
High Density Residential		0	40	80	141	202	202	202	202	202	202
Total Cumulative Units		388	817	1,245	1,575	1,905	2,173	2,173	2,173	2,173	2,173
Non-Residential Development (Sq Ft)											
Village Commercial		0	0	33,323	49,658	99,317	115,652	165,310	210,831	210,831	210,831
Service / Highway Commercial		0	135,123	195,236	242,622	350,121	397,507	505,005	611,197	658,584	658,584
Cumulative Sq Ft Developed		0	135,123	228,559	292,280	449,437	513,158	670,316	822,029	869,416	869,416
Non-Residential Development (Acres)											
Village Commercial		0.0	0.0	1.7	3.2	6.3	7.8	10.9	14.0	14.0	14.0
Service / Highway Commercial		0.0	14.1	18.7	23.4	32.6	37.3	46.5	55.7	60.5	60.5
Cumulative Acres Developed		0.0	14.1	20.4	26.5	38.9	45.0	57.4	69.7	74.5	74.5
Resident Population		1,059	2,194	3,329	4,184	5,038	5,772	5,772	5,772	5,772	5,772
Employee Population		0	243	411	526	809	924	1,207	1,480	1,565	1,565
Persons Served (Residents + 50% Employees)		1,059	2,316	3,535	4,447	5,443	6,234	6,376	6,512	6,555	6,555
Signalized Intersections		0	1	2	3	4	5	6	6	6	6
Street Light Poles		119	237	355	446	537	611	611	611	611	611
Storm Drain and Street Miles											
Major Streets		1.4	2.5	3.5	4.3	5.1	5.7	5.7	5.7	5.7	5.7
Local Streets		3.3	6.9	10.5	13.3	16.1	18.4	18.4	18.4	18.4	18.4
Total Street Miles		4.7	9.4	14.0	17.6	21.2	24.1	24.1	24.1	24.1	24.1
Street Landscaping Acres		3.1	5.2	7.4	9.1	10.8	12.2	12.2	12.2	12.2	12.2
Bike / Pedestrian Trail Sq Ft		0	12,500	25,000	37,500	50,000	50,000	50,000	50,000	50,000	50,000
Cumulative Open Space and Park Acres											
Open Space		0.0	4.8	9.6	14.3	19.1	19.1	19.1	19.1	19.1	19.1
Neighborhood Park		0.0	4.6	9.2	13.8	18.4	22.9	22.9	22.9	22.9	22.9
Community Park		0.0	0.0	0.0	0.0	20.2	20.2	20.2	20.2	20.2	20.2
Total Park Acres		0.0	4.6	9.2	13.8	38.6	43.1	43.1	43.1	43.1	43.1

Source: Mossdale Landing UDC Project Description; EDAW, Inc.; Pacific Union Homes; Lamphier-Gregory; Insite Environmental; Goodwin Consulting Group, Inc.

11/21/03

Table 5
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Property Tax Allocation Assumptions

Property Tax Fund	Allocation After ERAF /1
County General Fund	0.18387921
County Library	0.01729030
Manteca Unified School District	0.28415097
San Joaquin Delta Community College	0.03846919
County Office of Education	0.01192232
Lathrop-Manteca Fire Protection District	0.09331515
San Joaquin County Flood Control	0.00168711
Mosquito Abatement Center	0.00757227
Reclamation District # 17	0.00921937
City of Lathrop	0.11774391
ERAF	0.23475020
Total	**1.00000000**

/1 The reallocation of property taxes away from counties, cities, and other agencies to the Education Revenue Augmentation Fund (ERAF) is based on certain formulas; the allocations to the various funds shown in the table represent allocations after ERAF reduction factors were applied.

Source: San Joaquin County Auditor's Office; Goodwin Consulting Group, Inc.

11/21/03

Table 6
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Revenue Assumptions (Case Study Method)

Unsecured Property Tax	
Unsecured Property Tax as a Percentage of Commercial Secured Property Tax	15.00%
Unsecured Property Tax as a Percentage of Residential Secured Property Tax	1.00%
Real Property Transfer Tax	
Rate = $1.10 per $1,000	0.0011
Percentage Allocated to City	50.00%
Sales and Use Tax	
Basic Sales Tax Rate	1.00%
Countywide and State Pooled Tax Revenue as a Percentage of Basic Sales Tax Revenue	11.86%
Safety (Prop. 172) Sales Tax Revenue as a Percentage of Basic Sales Tax Revenue	0.22%
Taxable Sales per Improved Square Foot	
Retail Village Commercial	$200
Retail Service Commercial	$225
Office Commercial	$10

Source: City of Lathrop 2002-03 Budget; San Joaquin County Recorder's Office; State Board of Equalization; Urban Land Institute Dollars and Cents of Shopping Centers; Goodwin Consulting Group, Inc.

11/21/03

Table 7
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Sales and Transfer Tax Analysis

Taxable Sales	*Project Year -->* / *Fiscal Year -->*	*1* *2005*	*2* *2006*	*3* *2007*	*4* *2008*	*5* *2009*	*6* *2010*	*7* *2011*	*8* *2012*	*9* *2013*
Commercial /1										
Village Office Commercial Taxable Sales		$0	$0	$149,955	$223,463	$446,926	$520,433	$743,896	$948,741	$948,741
Village Retail Commercial Taxable Sales		$0	$0	$2,999,106	$4,469,256	$8,938,512	$10,408,662	$14,877,918	$18,974,826	$18,974,826
Service / Highway Office Commercial Taxable		$0	$304,027	$439,281	$545,899	$787,771	$894,390	$1,136,262	$1,375,194	$1,481,815
Service / Highway Retail Commercial Taxable		$0	$20,521,806	$29,651,437	$36,848,186	$53,174,566	$60,371,315	$76,697,695	$92,825,605	$100,022,506
Total Taxable Sales		$0	$20,825,832	$33,239,779	$42,086,804	$63,347,775	$72,194,800	$93,455,771	$114,124,367	$121,427,888
Direct Sales and Use Tax		$0	$208,258	$332,398	$420,868	$633,478	$721,948	$934,558	$1,141,244	$1,214,279
Countywide Pooled Sales Tax		$0	$24,699	$39,422	$49,915	$75,130	$85,623	$110,839	$135,351	$144,013
Total Sales and Use Tax		$0	$232,958	$371,820	$470,783	$708,608	$807,571	$1,045,396	$1,276,595	$1,358,292
Prop 172 Sales Tax		$0	$458	$731	$926	$1,394	$1,588	$2,056	$2,511	$2,671
Real Property Transfer Tax		$0	$5,822	$11,869	$18,127	$22,695	$27,447	$31,996	$32,453	$32,903

/1 Includes vacancy factors of 10.0% for the office and retail categories.

11/21/03

Source: Goodwin Consulting Group, Inc.

Table 8
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Other Revenue Assumptions

General Fund

Franchise Fees

Electric Fee	$150,000
Gas Fee	$50,000
Solid Waste Fee	$110,000
Total Revenue	$310,000
Average Revenue per Person Served	**$23.32**
Cable Fees	$47,250
Average Revenue per Resident	**$4.06**

Licenses & Permits

Business Licenses	$50,000
Average Revenue per Employee	**$15.17**
Animal Licenses and Registration	NA
Average Revenue per Resident	**$0.00**
Construction Permits - Bldg. Inspection	$252,900
Encroachment	$1,200
Transportation Permits	$1,100
Total Revenue	$255,200
Average Revenue per Person Served /1	**$19.20**

Hotel Tax

Total Revenue	$150,000
Average Revenue per Employee /2	NA
Amount Retained by City (8/9)	88.89%

Fines and Forfeitures

Vehicle Code Fines	$2,000
Parking Violations - Police	$35,000
Other Fines - Police	$3,000
Vehicle Forfeit	$3,000
Impound Vehicle Fee	$9,500
Total Revenues	$52,500
Average Revenue per Person Served	**$3.95**

State Motor Vehicle

Motor Vehicle In Lieu, Less 67% Backfill	$140,000
Average Revenue per Resident	**$12.02**

Gas Tax & Street Maintenance

Gas Tax 2105	$48,000
Gas Tax 2106	$35,000
Gas Tax 2107	$65,000
Gas Tax 2107.5	$2,000
Traffic Safety	$27,000
Streets	$17,600
Total Revenues	$192,600
Average Revenue per Resident	**$16.54**

Transfers In

Net Transfers In to the General Fund	NA
Average Revenue per Resident	**0.00**

Charges for Current Services

Service Charge - City Manager	$50,000
Service Charges - Finance	$10,000
Service Charge - City Building	$3,000
Service Charge - Planning	$180,000
Service Charges - Police (CALIFIA only)	$0
Service Charge - Engineering	$87,000
Sales of Maps - Planning	$1,500
Sales of Maps - Building	$100
Return Check Charge	$700
Parks and Recreation Program Fees	$63,400
Parks and Rec. Fees - Senior Center	$14,500
Parks and Rec. Fees - Camps and Children	$178,825
Total Revenues	$589,025
Average Revenue per Person Served	**$44.31**
Zone & Sub-Division Fee Planning	$29,755
Plan Checking - Building Inspection	$92,000
Plan Checking - Engineering	$195,000
Inspection Fee - Engineering	$27,000
Microfiche Fees Building Inspection	$1,900
DFIA Engineering	$1,000
Total Revenues	$346,655
Average Revenue per Person Served	**$26.08**

Other Revenue

State Mandated Reimburse Finance	$10,000
SMIP Education Fee Building Inspection	$4,800
Misc. - City Attorney	$70,000
Misc. - Finance	$1,000
Misc. - Planning	$100
Contributions - Senior Center	$2,000
Contributions - Recreation Programs	$1,500
Contributions - City Council	$10,000
Total Revenues	$99,400
Average Revenue per Person Served	**$7.48**

Lathrop-Manteca Fire Protection District

General Fund

Plan Check Fees	$40,000
Average Revenue per Person Served	**$2.11**
Interest	$0
Fire Inspection Permits	$25,000
Miscellaneous	$0
Total	$25,000
Average Revenue per Person Served	**$1.32**
Residential Assessment Rate per sq. ft.	$0.03
Commercial Assessment Rate per sq. ft.	$0.06

/1 The City does not expect to receive significant revenue from these items upon buildout; revenues after buildout are assumed to be zero.

/2 The Project is not expected to include a hotel.

Source: City of Lathrop 2002-03 Budget; Lathrop-Manteca Fire District 2002-03 Budget; Goodwin Consulting Group, Inc.

Table 9
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Expense Assumptions

General Fund Expenditures	After Buildout
General Government	
City Council	
City Manager	
City Attorney	
City Clerk	
City Hall	
Personnel	
Information Systems	
Central Services	
Finance/Admin.	
Net Expense per Person Served	**$67**
Community Development	
Planning	
Building	
Net Expense per Person Served	**$28**
Animal Control	
Net Expense per Resident	**$20**
Depreciation as % of General Fund Expenses (Excluding Police Services)	**3%**
Street Maintenance	
Pavement Maintenance Cost (excluding reconstruction) per Lane Mile	**$5,000**
Street Sweeping Cost per Lane Mile	**$175**
Traffic Signals Cost per Signalized Intersection	**$16,000**
Services Financing District Costs	
Drainage Cost per Mile	**$3,000**
Street Light Cost per Pole	**$170**
Landscaping Cost per Square Foot	**$0.45**
Trail Maintenance Cost per Square Foot	**$0.20**
Open Space Maintenance Cost per Sq Ft	**$0.05**
Park Maintenance Cost per Square Foot	**$0.35**
Community Park Fair Share (17.8 acres required divided by 20.2 acres provided)	**88%**

	After Buildout
Public Works	
Public Works - Administration	
Net Expense per Person Served	**$36**
Culture and Leisure	
Administration	
Community Center	
Senior Center	
Recreation Programs	
Kid Club & Day Camp	
Net Expense per Resident	**$41**
Police Services	
Net Expense per Resident	**$188**

Lathrop-Manteca Fire Protection District	
Initial Number of Fire Fighters Required	7
Fully Burdened Annual Cost for Initial Fire Fighters	$841,030
Annual Station Operation and Maintenance Cost	$129,380
First Year Station is Fully Operational	2006
Total Number of Fire Fighters Required	10
Fully Burdened Annual Cost for Total Fire Fighters	$1,051,287
First Full Year All Fire Fighters Required	2010

11/21/03

Source: City of Lathrop 2002-03 Budget; City of Lathrop Public Works Department; Fire District Staff; Lathrop-Manteca Fire District 2002-03 Budget; Goodwin Consulting Group, Inc.

Table 10
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Expense Multiplier Projection

Project Year -->	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	Project Buildout *9*	*10*	*11*	*12*
Citywide Residents	12,887	15,485	18,199	21,100	23,699	25,720	27,540	29,289	31,197	33,000	34,705	36,416
Citywide Resident EDUs	4,049	4,898	5,849	6,861	7,789	8,534	9,222	9,882	10,696	11,478	12,228	12,978
Residents per EDU	3.18	3.16	3.11	3.08	3.04	3.01	2.99	2.96	2.92	2.88	2.84	2.81
Citywide Persons Served	12,887	15,485	18,236	21,219	24,058	26,160	28,536	30,643	33,069	35,542	37,758	40,091
Citywide Total EDUs	4,049	4,898	5,862	6,903	7,917	8,691	9,578	10,366	11,365	12,386	13,318	14,291
Persons Served per EDU	3.18	3.16	3.11	3.07	3.04	3.01	2.98	2.96	2.91	2.87	2.84	2.81
General Government	$1,983,642	$2,024,864	$2,300,609	$2,345,628	$2,372,542	$2,400,516	$2,480,752	$2,510,993	$2,583,875	$2,714,912	$2,936,444	$2,971,887
Cost per Total EDU	$490	$413	$392	$340	$300	$276	$259	$242	$227	$219	$220	$208
Cost per Person Served	$154	$131	$126	$111	$99	$92	$87	$82	$78	$76	$78	$74
Police Services	$1,834,394	$1,853,798	$2,266,340	$2,581,991	$3,100,411	$3,315,677	$3,761,643	$4,120,567	$4,520,627	$4,779,877	$5,190,826	$5,545,375
Cost per Resident EDU	$453	$378	$387	$376	$398	$389	$408	$417	$423	$416	$425	$427
Cost per Resident	$142	$120	$125	$122	$131	$129	$137	$141	$145	$145	$150	$152
Animal Control Costs	$189,757	$193,974	$198,569	$203,579	$209,040	$214,992	$221,479	$385,644	$443,352	$501,753	$560,911	$620,893
Cost per Resident EDU	$47	$40	$34	$30	$27	$25	$24	$39	$41	$44	$46	$48
Cost per Resident	$15	$13	$11	$10	$9	$8	$8	$13	$14	$15	$16	$17
Animal Control Revenues	$25,300	$29,945	$32,640	$35,578	$38,780	$42,270	$46,075	$50,221	$54,741	$59,868	$65,038	$70,892
Revenue per Resident EDU	$6	$6	$6	$5	$5	$5	$5	$5	$5	$5	$5	$5
Revenue per Resident	$2	$2	$2	$2	$2	$2	$2	$2	$2	$2	$2	$2
Net Animal Control Costs	$164,457	$164,029	$165,929	$168,001	$170,260	$172,722	$175,404	$335,423	$388,611	$442,085	$495,873	$550,001
Net Cost per Resident EDU	$41	$33	$28	$24	$22	$20	$19	$34	$36	$39	$41	$42
Net Cost per Resident	$13	$11	$9	$8	$7	$7	$6	$11	$12	$13	$14	$15
Public Works Administration	$499,820	$788,814	$869,851	$870,209	$870,577	$1,073,527	$1,073,918	$1,074,321	$1,074,736	$1,195,535	$1,235,417	$1,235,870
Cost per Resident EDU	$123	$161	$148	$126	$110	$124	$112	$104	$95	$97	$93	$86
Cost per Resident	$39	$51	$48	$41	$36	$41	$38	$35	$32	$34	$33	$31
Community Development	$889,139	$891,651	$990,318	$992,880	$1,063,571	$1,066,185	$1,124,539	$1,127,205	$1,185,613	$1,188,333	$1,191,080	$1,279,998
Cost per Resident EDU	$220	$182	$169	$144	$134	$123	$117	$109	$104	$96	$89	$90
Cost per Resident	$69	$58	$54	$47	$44	$41	$39	$37	$36	$33	$32	$32
Culture and Leisure	$679,079	$665,510	$771,761	$782,834	$788,485	$887,325	$893,320	$1,395,257	$1,401,617	$1,452,522	$1,488,293	$1,516,032
Cost per Resident EDU	$168	$136	$132	$114	$101	$104	$97	$141	$131	$127	$122	$117
Cost per Resident	$53	$43	$42	$37	$33	$34	$32	$48	$45	$44	$43	$42

Shaded areas indicate figures used in Fiscal Analysis.

Source: City of Lathrop; Goodwin Consulting Group, Inc.

11/21/03

Table 10
Mossdale Landing / Mossdale Landing E
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Expense Multiplier Projection

Project Year —>	*13*	*14*	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*
Citywide Residents	38,084	39,795	41,463	43,137	44,427	45,695	46,529	46,529	46,529	46,529	46,529	46,529	46,529
Citywide Resident EDUs	13,728	14,478	15,226	15,978	16,478	16,978	17,328	17,328	17,328	17,328	17,328	17,328	17,328
Residents per EDU	2.77	2.75	2.72	2.70	2.70	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69
Citywide Persons Served	42,271	44,493	46,728	48,915	50,698	52,424	53,790	54,248	54,705	55,162	55,620	55,818	55,818
Citywide Total EDUs	15,223	16,156	17,108	18,042	18,718	19,381	19,921	20,085	20,248	20,411	20,575	20,645	20,645
Persons Served per EDU	2.78	2.75	2.73	2.71	2.71	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
General Government	$3,008,786	$3,088,637	$3,128,659	$3,170,355	$3,172,378	$3,300,520	$3,347,736	$3,396,974	$3,489,758	$3,543,340	$3,599,255	$3,657,619	$3,718,553
Cost per Total EDU	$198	$191	$183	$176	$169	$170	$168	$169	$172	$174	$175	$177	$180
Cost per Person Served	$71	$69	$67	$65	$63	$63	$62	$63	$64	$64	$65	$66	$67
Police Services	$5,967,659	$6,394,262	$6,671,104	$7,138,792	$7,564,317	$7,775,137	$8,180,487	$8,529,403	$8,634,353	$8,673,526	$8,863,205	$8,702,520	$8,738,336
Cost per Resident EDU	$435	$442	$438	$447	$459	$458	$472	$492	$498	$501	$511	$502	$504
Cost per Resident	$157	$161	$161	$165	$170	$170	$176	$183	$186	$186	$190	$187	$188
Animal Control Costs	$661,773	$703,633	$746,560	$790,650	$851,009	$902,750	$955,997	$1,010,887	$1,062,567	$1,086,198	$1,111,955	$1,149,730	$1,149,730
Cost per Resident EDU	$48	$49	$49	$49	$52	$53	$55	$58	$61	$63	$64	$66	$66
Cost per Resident	$17	$18	$18	$18	$19	$20	$21	$22	$23	$23	$24	$25	$25
Animal Control Revenues	$77,272	$84,226	$91,807	$100,069	$109,076	$118,892	$129,593	$141,256	$153,969	$167,826	$182,931	$199,394	$217,340
Revenue per Resident EDU	$6	$6	$6	$6	$7	$7	$7	$8	$9	$10	$11	$12	$13
Revenue per Resident	$2	$2	$2	$2	$2	$3	$3	$3	$3	$4	$4	$4	$5
Net Animal Control Costs	$584,501	$619,407	$654,753	$690,581	$741,933	$783,858	$826,404	$869,631	$908,598	$918,372	$929,024	$950,336	$932,390
Net Cost per Resident EDU	$43	$43	$43	$43	$45	$46	$48	$50	$52	$53	$54	$55	$54
Net Cost per Resident	$15	$16	$16	$16	$17	$17	$18	$19	$20	$20	$20	$20	$20
Public Works Administration	$1,236,337	$1,257,026	$1,488,309	$1,793,680	$1,575,487	$1,669,604	$1,694,369	$1,694,943	$1,932,106	$1,938,651	$1,939,279	$1,939,925	$2,034,166
Cost per Resident EDU	$81	$78	$87	$99	$84	$86	$85	$84	$95	$95	$94	$94	$99
Cost per Resident	$29	$28	$32	$37	$31	$32	$31	$31	$35	$35	$35	$35	$36
Community Development	$1,282,800	$1,366,321	$1,387,487	$1,390,375	$1,393,291	$1,534,658	$1,537,633	$1,540,638	$1,543,673	$1,546,738	$1,549,833	$1,552,960	$1,556,118
Cost per Resident EDU	$84	$85	$81	$77	$74	$79	$77	$77	$76	$76	$75	$75	$75
Cost per Resident	$30	$31	$30	$28	$27	$29	$29	$28	$28	$28	$28	$28	$28
Culture and Leisure	$1,549,103	$1,569,432	$1,606,050	$1,638,001	$1,646,057	$1,683,379	$1,691,925	$1,726,642	$1,781,233	$1,790,571	$1,800,190	$1,855,622	$1,895,747
Cost per Resident EDU	$113	$108	$105	$103	$100	$99	$98	$100	$103	$103	$104	$107	$109
Cost per Resident	$41	$39	$39	$38	$37	$37	$36	$37	$38	$38	$39	$40	$41

Source: City of Lathrop; Goodwin Consulting Group, Inc.

Shaded areas indicate figures used in Fiscal Analysis.

11/21/03

Table 11-A
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Assessed Valuation Analysis
(In Year 2003 Dollars)

Assessed Value	Project Year --> / Fiscal Year -->	1 2005	2 2006	3 2007	4 2008	5 2009	6 2010	7 2011	8 2012	9 2013
Residential Development										
Low Density Residential		$81,500,000	$163,158,252	$245,125,020	$302,830,791	$361,057,364	$419,557,262	$418,092,565	$417,215,846	$416,867,331
Medium Density Residential		$23,333,333	$46,711,974	$70,178,942	$85,675,243	$101,318,659	$117,126,589	$116,725,225	$116,487,258	$116,396,085
High Density Residential		$0	$4,038,835	$8,081,591	$14,294,137	$20,520,736	$20,365,421	$20,229,595	$20,112,205	$20,012,258
Total Residential		$104,833,333	$213,909,061	$323,385,554	$402,800,171	$482,896,760	$557,049,272	$555,047,385	$553,815,309	$553,275,674
Non-Residential Development										
Village Commercial		$0	$0	$3,397,360	$5,049,215	$10,169,775	$11,803,000	$16,978,985	$21,728,466	$21,580,505
Service / Highway Commercial		$0	$13,643,487	$19,639,597	$24,326,883	$35,264,170	$39,894,938	$50,899,093	$61,767,184	$66,287,009
Total Non-Residential		$0	$13,643,487	$23,036,957	$29,376,098	$45,433,944	$51,697,939	$67,878,078	$83,495,650	$87,867,514
Total		$104,833,333	$227,552,549	$346,422,510	$432,176,269	$528,330,704	$608,747,211	$622,925,463	$637,310,958	$641,143,188

Assessed Value (Start of Period)	Project Year --> / Fiscal Year -->	1 2005	2 2006	3 2007	4 2008	5 2009	6 2010	7 2011	8 2012	9 2013
Residential Development										
Low Density Residential		$0	$81,500,000	$163,158,252	$245,125,020	$302,830,791	$361,057,364	$419,557,262	$418,092,565	$417,215,846
Medium Density Residential		$0	$23,333,333	$46,711,974	$70,178,942	$85,675,243	$101,318,659	$117,126,589	$116,725,225	$116,487,258
High Density Residential		$0	$0	$4,038,835	$8,081,591	$14,294,137	$20,520,736	$20,365,421	$20,229,595	$20,112,205
Total Residential		$0	$104,833,333	$213,909,061	$323,385,554	$402,800,171	$482,896,760	$557,049,272	$555,047,385	$553,815,309
Non-Residential Development										
Village Commercial		$0	$0	$0	$3,397,360	$5,049,215	$10,169,775	$11,803,000	$16,978,985	$21,728,466
Service / Highway Commercial		$0	$0	$13,643,487	$19,639,597	$24,326,883	$35,264,170	$39,894,938	$50,899,093	$61,767,184
Total Non-Residential		$0	$0	$13,643,487	$23,036,957	$29,376,098	$45,433,944	$51,697,939	$67,878,078	$83,495,650
Total		$0	$104,833,333	$227,552,549	$346,422,510	$432,176,269	$528,330,704	$608,747,211	$622,925,463	$637,310,958

11/21/03

Source: Goodwin Consulting Group, Inc.

Table 11-B
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Assessed Valuation Analysis
(In Year 2003 Dollars)

Market Value (End of Period)	Project Year --> / Fiscal Year -->	1 2005	2 2006	3 2007	4 2008	5 2009	6 2010	7 2011	8 2012	9 2013
Residential Development										
Low Density Residential		$0	$82,291,262	$166,180,413	$251,690,722	$313,900,062	$377,293,625	$441,570,639	$445,857,732	$450,186,448
Medium Density Residential		$0	$23,559,871	$47,577,214	$72,058,694	$88,834,410	$105,929,077	$123,347,306	$124,544,852	$125,754,026
High Density Residential		$0	$0	$4,078,047	$8,235,279	$14,655,599	$21,199,809	$21,405,632	$21,613,454	$21,823,293
Total Residential		$0	$105,851,133	$217,835,674	$331,984,695	$417,390,071	$504,422,511	$586,323,576	$592,016,038	$597,763,767
Non-Residential Development										
Village Commercial		$0	$0	$0	$3,430,344	$5,161,515	$10,423,253	$12,265,445	$17,687,744	$22,777,403
Service / Highway Commercial		$0	$0	$13,775,948	$20,097,767	$25,218,211	$36,744,999	$42,123,169	$54,034,212	$66,031,386
Total Non-Residential		$0	$0	$13,775,948	$23,528,110	$30,379,726	$47,168,252	$54,378,613	$71,721,957	$88,808,789
Total		$0	$105,851,133	$231,611,623	$355,512,806	$447,769,797	$551,590,763	$640,702,190	$663,737,995	$686,572,556

Assessed Value of Non-Turnover Property	Project Year --> / Fiscal Year -->	1 2005	2 2006	3 2007	4 2008	5 2009	6 2010	7 2011	8 2012	9 2013
Residential Development										
Low Density Residential		$0	$72,637,864	$145,416,773	$218,470,649	$269,901,618	$321,796,758	$373,935,501	$372,630,072	$371,848,686
Medium Density Residential		$0	$20,796,117	$41,632,614	$62,547,834	$76,359,100	$90,301,485	$104,390,494	$104,032,773	$103,820,683
High Density Residential		$0	$0	$3,799,642	$7,602,973	$13,447,591	$19,305,431	$19,159,314	$19,031,532	$18,921,093
Total Residential		$0	$93,433,981	$190,849,028	$288,621,456	$359,708,309	$431,403,673	$497,485,309	$495,694,377	$494,590,462
Non-Residential Development										
Village Commercial		$0	$0	$0	$3,196,157	$4,750,184	$9,567,487	$11,103,988	$15,973,433	$20,441,635
Service / Highway Commercial		$0	$0	$13,511,026	$19,448,921	$24,090,700	$34,921,799	$39,507,609	$50,404,927	$61,167,502
Total Non-Residential		$0	$0	$13,511,026	$22,645,078	$28,840,884	$44,489,286	$50,611,597	$66,378,361	$81,609,137
Total		$0	$93,433,981	$204,360,055	$311,266,534	$388,549,193	$475,892,959	$548,096,906	$562,072,738	$576,199,599

11/21/03

Source: Goodwin Consulting Group, Inc.

Table 11-C
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Assessed Valuation Analysis
(In Year 2003 Dollars)

Assessed Value of Turnover Property	Project Year --> Fiscal Year -->	1 2005	2 2006	3 2007	4 2008	5 2009	6 2010	7 2011	8 2012	9 2013
Residential Development										
Low Density Residential		$0	$8,229,126	$16,618,041	$25,169,072	$31,390,006	$37,729,363	$44,157,064	$44,585,773	$45,018,645
Medium Density Residential		$0	$2,355,987	$4,757,721	$7,205,869	$8,883,441	$10,592,908	$12,334,731	$12,454,485	$12,575,403
High Density Residential		$0	$0	$203,902	$411,764	$732,780	$1,059,990	$1,070,282	$1,080,673	$1,091,165
Total Residential		$0	$10,585,113	$21,579,665	$32,786,706	$41,006,227	$49,382,261	$57,562,076	$58,120,931	$58,685,212
Non-Residential Development										
Village Commercial		$0	$0	$0	$171,517	$258,076	$521,163	$612,772	$884,387	$1,138,870
Service / Highway Commercial		$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Non-Residential		$0	$0	$0	$171,517	$258,076	$521,163	$612,772	$884,387	$1,138,870
Total		$0	$10,585,113	$21,579,665	$32,958,223	$41,264,303	$49,903,423	$58,174,848	$59,005,318	$59,824,082

Assessed Value of New Development	Project Year --> Fiscal Year -->	1 2005	2 2006	3 2007	4 2008	5 2009	6 2010	7 2011	8 2012	9 2013
Residential Development										
Low Density Residential		$81,500,000	$82,291,262	$83,090,206	$59,191,070	$59,765,740	$60,031,142	$0	$0	$0
Medium Density Residential		$23,333,333	$23,559,871	$23,788,607	$15,921,540	$16,076,118	$16,232,197	$0	$0	$0
High Density Residential		$0	$4,038,835	$4,078,047	$6,279,400	$6,340,365	$0	$0	$0	$0
Total Residential		$104,833,333	$109,889,968	$110,956,861	$81,392,010	$82,182,224	$76,263,338	$0	$0	$0
Non-Residential Development										
Village Commercial		$0	$0	$3,397,360	$1,681,541	$5,161,515	$1,714,351	$5,262,225	$4,870,645	$0
Service / Highway Commercial		$0	$13,643,487	$6,128,571	$4,877,962	$11,173,470	$4,973,139	$11,391,484	$11,362,257	$5,119,507
Total Non-Residential		$0	$13,643,487	$9,525,930	$6,559,503	$16,334,985	$6,687,490	$16,653,709	$16,232,902	$5,119,507
Total		$104,833,333	$123,533,455	$120,482,791	$87,951,513	$98,517,209	$82,950,828	$16,653,709	$16,232,902	$5,119,507

11/21/03

Source: Goodwin Consulting Group, Inc.

Table 12
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
City of Lathrop Annual Net Fiscal Impacts

Fiscal Impacts	*Project Year →* / *Fiscal Year →*	*1* *2005*	*2* *2006*	*3* *2007*	*4* *2008*	*5* *2009*	*6* *2010*	*7* *2011*	*8* *2012*	*9* *2013*
Lathrop General Fund										
Revenues										
Property Tax: Secured		$123,435	$267,929	$407,891	$508,861	$622,077	$716,763	$733,457	$750,395	$754,907
Property Tax: Unsecured		$1,234	$4,928	$7,876	$9,931	$13,710	$15,690	$18,524	$21,267	$22,033
Real Property Transfer Tax		$0	$5,822	$11,869	$18,127	$22,695	$27,447	$31,996	$32,453	$32,903
Sales and Use Tax		$0	$232,958	$371,820	$470,783	$708,608	$807,571	$1,045,396	$1,276,595	$1,356,292
Public Safety Sales Tax		$0	$458	$731	$926	$1,394	$1,588	$2,056	$2,511	$2,671
Franchise Fees		$28,979	$62,897	$95,939	$120,666	$147,355	$168,792	$172,090	$175,274	$176,268
Licenses & Permits		$20,321	$48,140	$74,101	$93,343	$116,751	$133,687	$140,693	$147,457	$149,569
Hotel Tax		$0	$0	$0	$0	$0	$0	$0	$0	$0
Fines and Forfeitures		$4,180	$9,144	$13,960	$17,561	$21,494	$24,620	$25,178	$25,717	$25,886
State Motor Vehicle		$12,725	$26,374	$40,022	$50,293	$60,564	$69,390	$69,390	$69,390	$69,390
Gas Tax & Street Maintenance		$17,506	$36,283	$55,059	$69,189	$83,319	$95,461	$95,461	$95,461	$95,461
Transfers In		$0	$0	$0	$0	$0	$0	$0	$0	$0
Charges for Current Services		$74,505	$162,975	$248,805	$312,977	$383,068	$438,781	$448,736	$458,346	$461,348
Other Revenue		$7,915	$17,313	$26,431	$33,248	$40,694	$46,613	$47,671	$48,691	$49,010
Subtotal		$290,801	$875,222	$1,354,506	$1,705,907	$2,221,730	$2,546,402	$2,830,648	$3,103,559	$3,197,741
Expenses										
General Government		($162,940)	($302,786)	($445,965)	($491,558)	($536,733)	($572,062)	($554,255)	($533,625)	($512,162)
Community Development		($73,035)	($133,332)	($191,970)	($208,072)	($240,609)	($254,080)	($251,247)	($239,549)	($235,006)
Police Department		($150,680)	($262,647)	($414,599)	($511,954)	($659,105)	($744,131)	($788,427)	($812,083)	($836,438)
Animal Control		($13,509)	($23,240)	($30,355)	($33,311)	($36,195)	($38,764)	($36,764)	($66,105)	($71,904)
Street Maintenance		($67,218)	($144,660)	($222,083)	($285,412)	($348,742)	($403,179)	($419,179)	($419,179)	($419,179)
Depreciation		($12,406)	($24,488)	($36,005)	($40,678)	($45,805)	($51,692)	($50,659)	($52,852)	($51,318)
Public Works		($41,056)	($117,954)	($168,617)	($182,364)	($196,948)	($255,830)	($239,937)	($228,310)	($213,028)
Culture and Leisure		($55,781)	($94,290)	($141,184)	($155,219)	($167,621)	($199,141)	($187,237)	($274,978)	($259,337)
Subtotal		($576,625)	($1,103,386)	($1,650,777)	($1,908,569)	($2,231,758)	($2,518,677)	($2,527,704)	($2,626,681)	($2,598,372)
Net Fiscal Impact		**($285,824)**	**($228,164)**	**($296,272)**	**($202,662)**	**($10,028)**	**$27,525**	**$302,944**	**$476,878**	**$599,369**
Fiscal Mitigation Surplus per Dwelling Unit		**($736)**	**($279)**	**($238)**	**($129)**	**($5)**	**$13**	**$139**	**$219**	**$276**
Mossdale Landing / Mossdale Landing East Services Financing District										
Drainage		($14,140)	($28,099)	($42,058)	($52,812)	($63,566)	($72,300)	($72,300)	($72,300)	($72,300)
Street Lighting		($20,314)	($40,368)	($60,422)	($75,872)	($91,323)	($103,870)	($103,870)	($103,870)	($103,870)
Landscaping		($59,786)	($102,833)	($145,881)	($179,046)	($212,211)	($239,144)	($239,144)	($239,144)	($239,144)
Trail Maintenance		$-0	($2,500)	($5,000)	($7,500)	($10,000)	($10,000)	($10,000)	($10,000)	($10,000)
Open Space Maintenance		$-0	($10,400)	($20,800)	($31,200)	($41,600)	($41,600)	($41,600)	($41,600)	($41,600)
Total Park Maintenance		$-0	($70,132)	($140,263)	($210,395)	($568,496)	($657,103)	($657,103)	($657,103)	($657,103)
Total Expenses		($94,240)	($254,332)	($414,423)	($556,824)	($1,007,195)	($1,124,017)	($1,124,017)	($1,124,017)	($1,124,017)
Average Cost per Dwelling Unit		**($243)**	**($311)**	**($333)**	**($354)**	**($529)**	**($517)**	**($517)**	**($517)**	**($517)**
Fair Share Cost per Dwelling Unit /1		**($243)**	**($311)**	**($333)**	**($354)**	**($509)**	**($500)**	**($500)**	**($500)**	**($500)**
Unfunded Community Park Maintenance		**$0**	**$0**	**$0**	**$0**	**$36,956**	**$36,956**	**$36,956**	**$36,956**	**$36,956**

/1 Excludes a portion of Community Park Maintenance.

Source: Goodwin Consulting Group, Inc.

11/21/03

Table 13
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Lathrop-Manteca FPD Annual Net Fiscal Impacts

Fiscal Impacts	*Project Year -->* / *Fiscal Year -->*	*1* *2005*	*2* *2006*	*3* *2007*	*4* *2008*	*5* *2009*	*6* *2010*	*7* *2011*	*8* *2012*	*9* *2013*
Revenues										
Property Tax: Secured		$97,825	$212,341	$323,265	$403,286	$493,013	$568,053	$581,284	$594,708	$598,284
Property Tax: Unsecured		$978	$3,906	$6,242	$7,871	$10,866	$12,434	$14,681	$16,855	$17,462
Property Assessment		$28,770	$66,847	$102,424	$128,121	$159,424	$183,208	$192,637	$201,740	$204,583
General Fund Revenues		$3,623	$7,924	$12,097	$15,217	$18,625	$21,334	$21,818	$22,285	$22,431
Subtotal		$131,196	$291,018	$444,028	$554,495	$681,928	$785,029	$810,419	$835,588	$842,760
Crossroads Commerce Center		$130,119	$173,492	$216,865	$260,238	$303,612	$346,985	$346,985	$346,985	$346,985
Total		$261,315	$464,511	$660,893	$814,733	$985,539	$1,132,014	$1,157,404	$1,182,572	$1,189,745
Expenses										
Staffing Costs		$0	($841,030)	($841,030)	($841,030)	($841,030)	($1,051,287)	($1,051,287)	($1,051,287)	($1,051,287)
Operations and Maintenance Costs		$0	($129,380)	($129,380)	($129,380)	($129,380)	($129,380)	($129,380)	($129,380)	($129,380)
Subtotal		$0	($970,410)	($970,410)	($970,410)	($970,410)	($1,180,667)	($1,180,667)	($1,180,667)	($1,180,667)
Net Fiscal Impact		**$261,315**	**($505,899)**	**($309,517)**	**($155,677)**	**$15,129**	**($48,653)**	**($23,263)**	**$1,905**	**$9,078**
Average Surplus / (Cost) per Dwelling Unit		**$673**	**($619)**	**($249)**	**($99)**	**$8**	**($22)**	**($11)**	**$1**	**$4**

11/21/03

Source: Goodwin Consulting Group, Inc.

Table 13-A
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Lathrop-Manteca FPD
Crossroads Commerce Center Revenues

	FAR	Total	Developed	Unde-veloped	Annual Absorption
Acres					
General Industrial		450	250	200	25.0
Highway Commercial		48	20	28	3.5
Square Feet					
General Industrial	0.30	5,881,000	3,265,000	2,616,000	327,000
Highway Commercial	0.25	523,000	219,000	304,000	38,000
Current and Projected Value					
General Industrial			$191,331,149		
Highway Commercial			$20,743,341		
Value per Square Foot					
General Industrial			$60		
Highway Commercial			$100		
Fire District Share of Property Tax			9.169%		

Project Year --> / Fiscal Year -->	*1 2005*	*2 2006*	*3 2007*	*4 2008*	*5 2009*	*6 2010*	*7 2011*	*8 2012*	*9 2013*
Property Tax Revenue									
General Industrial	$53,967	$71,956	$89,945	$107,934	$125,923	$143,912	$143,912	$143,912	$143,912
Highway Commercial	$10,452	$13,936	$17,421	$20,905	$24,389	$27,873	$27,873	$27,873	$27,873
Subtotal	$64,419	$85,892	$107,365	$128,838	$150,312	$171,785	$171,785	$171,785	$171,785
Assessment Revenue									
General Industrial	$58,860	$78,480	$98,100	$117,720	$137,340	$156,960	$156,960	$156,960	$156,960
Highway Commercial	$6,840	$9,120	$11,400	$13,680	$15,960	$18,240	$18,240	$18,240	$18,240
Subtotal	$65,700	$87,600	$109,500	$131,400	$153,300	$175,200	$175,200	$175,200	$175,200
Total Crossroads Revenues	$130,119	$173,492	$216,865	$260,238	$303,612	$346,985	$346,985	$346,985	$346,985

Source: City of Lathrop Current Development Projects List, September 2002; San Joaquin County Assessor's Office; Goodwin Consulting Group, Inc.

11/21/03

Table 14
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
City of Lathrop Summary of Net Fiscal Impacts

Revenues/Expenses	*Annual Impacts after Buildout*	*per Capita Impacts*	*Percent of Total*
Revenues			
Property Tax: Secured	$754,907	$131	24.6%
Property Tax: Unsecured	$22,033	$4	0.7%
Real Property Transfer Tax	$32,903	$6	1.1%
Sales and Use Tax	$1,358,292	$235	44.2%
Public Safety Sales Tax	$2,671	$0	0.1%
Franchise Fees	$176,268	$31	5.7%
Licenses & Permits	$23,740	$4	0.8%
Hotel Tax	$0	$0	0.0%
Fines and Forfeitures	$25,886	$4	0.8%
State Motor Vehicle	$69,390	$12	2.3%
Gas Tax & Street Maintenance	$95,461	$17	3.1%
Transfers In	$0	$0	0.0%
Charges for Current Services	$461,348	$80	15.0%
Other Revenue	$49,010	$8	1.6%
Subtotal	$3,071,912	$532	100.0%
Expenses			
General Government	($436,673)	($76)	15.8%
Community Development	($182,736)	($32)	6.6%
Police Department	($1,084,059)	($188)	39.3%
Animal Control	($115,670)	($20)	4.2%
Street Maintenance	($419,179)	($73)	15.2%
Depreciation	($48,849)	($8)	1.8%
Public Works	($238,874)	($41)	8.7%
Culture and Leisure	($235,182)	($41)	8.5%
Subtotal	($2,761,224)	($478)	100.0%
Net Fiscal Impact	**$310,688**	**$54**	
Fiscal Mitigation Annual Surplus per Dwelling Unit	**$143**		
Mossdale Landing / Mossdale Landing East Services Financing District			
Drainage	($72,300)	($13)	6.7%
Street Lighting	($103,870)	($18)	9.6%
Landscaping	($239,144)	($41)	22.0%
Trail Maintenance	($10,000)	($2)	0.9%
Open Space Maintenance	($41,600)	($7)	3.8%
Park Maintenance (Fair Share)	($620,146)	($107)	57.0%
Total Expenses	($1,087,060)	($188)	100.0%
Average Annual Cost Per Dwelling Unit	**($500)**		

11/21/03

Source: Goodwin Consulting Group, Inc.

Table 15
Mossdale Landing / Mossdale Landing East
Fiscal Analysis
Scenario 1: No Spray Fields at Buildout
Summary of Lathrop-Manteca FPD Net Fiscal Impacts

Revenues/Expenses	*Annual Impacts at Buildout*	*per Capita Impacts*	*Percent of Total*
Revenues			
Property Tax: Secured	$598,284	$104	71.0%
Property Tax: Unsecured	$17,462	$3	2.1%
Property Assessment	$204,583	$35	24.3%
General Fund Revenues	$22,431	$4	2.7%
Subtotal	$842,760	$146	100.0%
Crossroads Commerce Center	$346,985		
Total	$1,189,745		
Expenses			
Staffing Costs	($1,051,287)	($182)	89.0%
Operations and Maintenance Costs	($129,380)	($22)	11.0%
Subtotal	($1,180,667)	($205)	100.0%
Net Fiscal Impact	**$9,078**		
Average Surplus per Dwelling Unit	**$4**		

Source: Goodwin Consulting Group, Inc.

11/21/03

APPENDIX G
GEOTECHNICAL STUDIES

PRELIMINARY GEOTECHNICAL SERVICES REPORT MOSSDALE LANDING DEVELOPMENT LATHROP, CALIFORNIA

PREPARED FOR: SCHULER HOMES OF CALIFORNIA, INC.
1250 PINE STREET, SUITE 305
WALNUT CREEK, CA 94596

BY: KLEINFELDER, INC.
2825 E. MYRTLE STREET
STOCKTON, CA 95205

DATE: AUGUST 3, 2000

KLEINFELDER
An employee owned company

File No. 20-4326-02.G01
August 3, 2000

Mr. Vince Fletcher
Schuler Homes of California, Inc.
1250 Pine Street, Suite 305
Walnut Creek, California 94596

Subject: **PRELIMINARY GEOTECHNICAL SERVICES REPORT**
MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

Dear Mr. Flethcher:

Kleinfelder is pleased to present the results of our preliminary geotechnical services performed for the proposed Mossdale Landing Development to be located in Lathrop, California. The accompanying report includes background information regarding the anticipated construction, purpose of our services, and scope of services provided. In addition, discussions regarding our investigative procedures and the site conditions encountered during our field exploration are presented. Finally, preliminary geotechnical conclusions and recommendations are provided for preliminary layout, costing, and design. The appendix of the report includes logs of borings and results of laboratory tests. We have also included an information sheet published by the American Society of Foundation Engineers (ASFE). Our firm is a member of ASFE, and we feel this sheet will help you better understand geotechnical engineering reports.

We appreciate the opportunity of providing our services for this project. If you have questions regarding this report or if we may be of further assistance, please contact our office.

Sincerely,
KLEINFELDER

Gary H. Gulseth, G.E.
Senior Engineer

Ron Heinzen, G.E.
Regional Manager/Senior Principal

GHG/RTH:lr Attachment
cc: Thompson-Hysell Engineers

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one—not even you*—should apply the report for any purpose or project except the one originally contemplated.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions *only* at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an *opinion* about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

Important Information About Your

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one—not even you*—should apply the report for any purpose or project except the one originally contemplated.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions *only* at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an *opinion* about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

TABLE OF CONTENTS

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

PRELIMINARY GEOTECHNICAL SERVICES REPORT
MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

1. INTRODUCTION

In this report we present the results of our preliminary geotechnical services performed for the proposed Mossdale Landing Development to be located in Lathrop, California. The site location relative to existing streets is shown on Plate 1.

We understand that design of the proposed development is currently in the conceptual stage, and final grading or structural details are not available as of this writing. On a preliminary basis, however, we understand the approximate 200-acre project site will include 500 to 600 single-family residential homes and commercial highway frontage lots on the east side of the property. Appurtenant construction will include paved interior streets, paved parking and driveways, various concrete flatwork, buried utilities, and treated effluent storage pond located in the northwest portion of the site. We anticipate the homes will be one and two story, wood frame structures supported by shallow spread foundations and concrete slab-on-grade floor systems. Structural loading is anticipated to be relatively light, typical for small to moderately sized residences. We anticipate the proposed commercial buildings could range from lightly loaded, wood frame retail buildings to larger, masonry block/metal frame anchor structures supported by moderate to heavily loaded bearing wall and interior column footings.

Since grading plans were not available at the time this report was prepared, cuts and fills during earthwork are not known. However, given the relatively level site is depressed below adjacent street grade, we anticipate that building pads will be raised 2 to 3 feet above existing site grade to providing vehicular access and positive site drainage. Excavations for underground utilities are not anticipated to exceed 10 feet below final site grade.

A plot plan showing the proposed site layout is presented on Plate 1. In the event these structural or grading details are inconsistent with the final design criteria, our firm should be contacted prior to final design in order that we may update our preliminary recommendations as needed.

2. PURPOSE AND SCOPE OF SERVICES

The purpose of our services was to explore and evaluate the subsurface conditions at various locations on the site in order to develop preliminary recommendations related to the geotechnical aspects of project design.

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

The scope of our services was outlined in our proposal dated May 12, 2000 (File No. 20-YP0-148) and included the following:

- A visual site reconnaissance to investigate the surface conditions at the project site;
- A field investigation that consisted of drilling borings within the area of the proposed development to explore the subsurface conditions at the project site;
- Review of previous geotechnical engineering reports performed by Kleinfelder for nearby project sites;
- Laboratory testing of representative samples obtained during the field investigation to evaluate relevant physical and engineering parameters of the subsurface soils;
- Evaluation of the data obtained and an engineering analysis to develop our preliminary geotechnical conclusions and recommendations;
- Preparation of this report which includes:
  - ➢ A description of the proposed project;
  - ➢ A description of the field and laboratory investigations;
  - ➢ A description of the surface and subsurface conditions encountered during our field investigation;
  - ➢ Preliminary conclusions and recommendations related to the geotechnical aspects of:
    - Loose/soft soils
    - Expansive clays;
    - Shallow groundwater;
    - Geologic hazards;
    - Spread foundations;
    - Concrete floor slabs and exterior flatwork;
    - Earth retaining walls;
    - Asphalt concrete pavements;
    - Soil corrosion potential;
    - Percolation tests; and
    - General earthwork.
  - ➢ An appendix that includes logs of borings and results of laboratory tests.

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

3. FIELD AND LABORATORY INVESTIGATIONS

3.1 Field Investigation

The subsurface conditions at the site were explored on July 6, 2000 by drilling seven borings to depths ranging from about 9.5 to 15.5 feet below existing grade. At several locations the borings were terminated due to heaving and/or caving sands in the bore holes. The borings were drilled using a Simco 2400 truck-mounted drill rig equipped with 4-inch O.D. solid-stem auger. The approximate boring locations are presented on Plate 1.

During the drilling operations, penetration tests were performed at regular intervals using a Modified California Sampler to evaluate soil relative density (cohesionless soils) or consistency (cohesive soils), obtain information regarding the engineering properties of the subsoils, and to retain soil samples for laboratory testing. The penetration tests were performed by initially driving the sampler 6 inches into the bottom of the bore hole using a 140 pound trip-hammer falling 30 inches to penetrate loose soil cuttings and "seat" the sampler. Thereafter, the sampler was progressively driven an additional 12 inches, with the results recorded as the corresponding number of blows required to advance the sampler 12 inches, or any part thereof. A representative of our firm maintained a log of the borings and visually classified soils encountered according to the Unified Soil Classification System (see Plate A-1 of the Appendix). Soil samples obtained from the borings were packaged and sealed in the field to reduce moisture loss and disturbance, and brought to our Stockton laboratory for further testing.

A key to the Logs of Borings is presented on Plate A-2 of the Appendix. Logs of Borings are presented on Plates A-3 through A-9 of the Appendix. Please note the borings were located in the field by visual sighting and/or pacing from existing site features. Therefore, the locations of borings shown on Plate 1 should be considered highly approximate and may vary from that indicated on the plate.

3.2 Laboratory Investigation

Laboratory tests were performed in accordance with current ASTM standards on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory testing program was formulated with emphasis on the evaluation of natural moisture content, in-place density, grain-size distribution, and plasticity of the materials encountered. Four Resistance Value (R-value) tests were performed on composite samples of the subgrade soils to evaluate preliminary pavement sections. In addition, two pH, minimum resistivity, sulfate and chloride tests were performed on near-surface soil samples to evaluate the corrosivity of the soils to buried concrete and ferrous metals.

The results of laboratory tests are summarized on Plate A-10 in the Appendix. This information, along with the field observations, was used to prepare the final test boring logs.

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

4. SITE CONDITIONS

4.1 Surface

The approximate 200-acre site is bound by Louise Avenue and agricultural property to the north, fallow fields and residential properties to the south, Mathey Road and Highway I-5 to the east, and agricultural property and the San Joaquin River levee to the west.

At the time of our field investigation, the project area was essentially level and depressed about 1 to 3 feet or more below adjacent street grade. An irrigated alfalfa field that had been recently harvested covered the northern portion of the site. The central and southern areas of the site consisted predominately of fallow fields covered by a moderate to heavy growth of grass and weeds. A mature orchard occupied the southwest-central portion of the site. A farm house and various equipment sheds and barns were noted near the north-central portion of the site adjacent to Louise Avenue. From the corner of the farm complex, an unpaved road traversed east to Mathey Road. A buried irrigation pipe runs parallel the north side of the road as indicated by numerous standpipes. A second residence with an access road from Mathey Road and an adjacent east-west trending drainage ditch was located in the central portion of the site. A mobile home and third residence with access from Mathey Road were located in the southern portion of the site. A standpipe, storm drain manhole and old well were noted on site near the west terminus of Louise Avenue. Three stockpiles of soil were located near the northern, east-central, and west-central portions of the site.

4.2 Subsurface

The near-surface soils encountered appeared relatively consistent with the soils identified by the Soil Survey of San Joaquin County, California (USDA, 1992) for the project area and our previous findings at nearby project sites. In general, the soils encountered in the northern and eastern portions of the site consisted of interbedded loose to medium dense silty sands and low plastic silts to the depths explored. In the southern and western portions of the site, the sands and silts were overlain by a 1 to 4 foot strata of medium to high plastic, medium stiff to stiff silty clays. At boring B-7, located in the southern portion of the site, a 2.5 foot thick layer of medium stiff, organic silt was encountered at a depth of about 3.5 feet below site grade. The approximate transition between the surface sands/silts and clays as identified by our borings and the Soil Survey is shown on Plate 1.

Test borings were checked for the presence of groundwater during and immediately following drilling operations. Groundwater was encountered at the following approximate depths below existing site grade:

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

Boring Location	Groundwater Depth, ft.
B-1	4.1
B-2	6.2
B-3	5.0
B-4	4.5
B-5	7.7
B-6	7.6
B-7	8.6

It should be noted that groundwater elevations and soil moisture conditions within the project area will vary depending on seasonal rainfall, stage and duration of stage in the nearby San Joaquin River, irrigation practices, land use, and/or runoff conditions not apparent at the time of our field investigation. The evaluation of such factors is beyond the scope of this investigation.

Detailed descriptions of the subsurface conditions encountered during our field investigation are presented on the Logs of Borings, Plates A-3 through A-9 of the Appendix. A summary of laboratory tests is presented on Plate A-10 of the Appendix.

5. PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

5.1 General

It is our professional opinion that the site should be suitable from a geotechnical standpoint for support of the proposed residential and commercial developments provided the preliminary recommendations contained herein are incorporated into the project design. Given our findings, the primary geotechnical considerations from a development standpoint are: 1) the soft/loose consistency of the near-surface soils; 2) the shrink-swell (expansion) potential of the near-surface clays in the western and southern portions of the site; and 3) the potential impact of shallow groundwater. Preliminary conclusions and recommendations addressing these geotechnical considerations, as well as general recommendations regarding the geotechnical aspects of preliminary design are presented in the following sections.

5.2 Soft/Loose Soils

Our findings indicate that a majority of the sands, silts and clays underlying the site are soft/loose, relatively weak, and moderately compressible under structural loading. In addition, a 2.5 foot thick strata of highly compressible organic silt was encountered in boring B-7 at a depth of about 3.5 feet below site grade. For residential homes and lightly loaded retail buildings, these conditions should not pose a significant consideration provided net allowable bearing pressures (dead-plus-live) are held to 1,750 pounds per square foot or less. In larger retail building areas, however, this material in its current condition will probably not be suitable for support of more than incidental foundation loads due to settlement considerations. The

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

most direct method to improve the subgrade conditions is to support the foundations on a 3- to 4-foot layer of compacted engineered fill by overexcavating and compacting the native soils, raising the building pads above existing site grade, or a combination of these methods. This procedure would serve to provide a firm, uniform base immediately below the structure where stresses are highest, thus reducing the potential for total and differential settlement. Furthermore, the compacted soil layer would spread and reduce stresses on the underlying compressible soils. In areas where the retail floor slabs will support large rack loads, heavy concentrated loads, heavy equipment, or used for storage, the slabs should be underlain by at least 2 feet of engineered fill. The zone of engineered fill should extend horizontally at least 5 feet outside the perimeter of all slabs.

Alternatives to engineered fill include supporting larger retail buildings on a deep foundation system consisting of driven piles or other proprietary deep foundation system, such as geopiers or pin piles. Because of shallow groundwater and the potential for loose/caving sands, drilled piers would probably not be cost-effective due to construction difficulties. The soils also appear amendable to improvement in-place using deep dynamic compaction (DDC). This procedure was used successfully at the nearby Sharpe Army Depot for a cogeneration project. DDC consists of dropping a heavy weight (typically 10 to 40 tons) from a crane in a closely spaced grid pattern to compact the soils in-place. The effective depth of this procedure can extend to greater than 30 feet, however, the dampening effects of shallow groundwater at the site will probably reduce its effectiveness to the upper 10 feet unless the site is dewatered.

5.3 Expansive Clays

As previously discussed, the near-surface clays encountered in the western and southern portions of the site are moderate to highly plastic and may exhibit significant shrink-swell (expansion) characteristics with variations in moisture content. Accordingly, floor slabs, lightly loaded foundations, exterior flatwork, and pavements could be susceptible to post-construction heave, cracking, and increased maintenance. To reduce this risk, the residences could be supported on post-tensioned concrete slab foundations designed to resist and/or span the expansive soils. Because of their large size, post-tensioned slabs are often not practical for large retail buildings. Preliminary recommendations for post-tensioned slabs are presented herein. As an alternative, the subgrade conditions can be modified or improved so that structures could be supported on a system of conventional spread foundations and concrete slabs-on-grade. Typical improvement alternatives include: 1) moisture conditioning and compacting the native soils during earthwork under strict quality control guidelines, then wetting or pre-soaking the building pads prior to slab placement; 2) supporting the proposed buildings on a layer of non-expansive fill; or 3) stabilizing the native clays by mixing with lime. All three alternatives would require that foundations be deepened to a minimum depth of 18 inches below lowest adjacent soil subgrade. At this depth, foundations should be supported at or below the critical zone of seasonal moisture fluctuations where soil shrink-swell cycles are most severe.

The first alternative, moisture conditioning/compaction control, is generally the least costly improvement alternative but, since it relies greatly on contractor performance during and following earthwork and the efficiency/uniformity for the pre-soaking, this alternative also

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

represents the greatest risk for post-construction movement and cosmetic cracking. This procedure consists of uniformly increasing the moisture content of the upper 12 to 18 inches of subgrade soils to at least 3 percentage points above the optimum moisture content during earthwork, and compacting the soils to between 85 and 95 percent relative compaction. Since the soils often dry soon after earthwork, the subgrade soils usually require pre-soaking using liberal sprinkling, flooding, or other suitable method prior to placement of slab concrete to again raise the moisture content of the soil. The intent of this alternative is to reduce swell pressures in the clays by remolding the material and decreasing its dry density during earthwork, then reducing the clays swell potential by promoting swelling or expansion of the soils prior to placement of slab concrete, thus reducing post-construction movement. It should be noted that as compaction increases from 85 to 95 percent relative compaction, it will become more difficult for water to uniformly infiltrate the soils during pre-soaking. Accordingly, the amount of time required for pre-soaking prior to concrete placement will increase.

If a higher performance standard is required, the proposed buildings should be supported on at least 12 inches of non-expansive, engineered fill (Alternative 2) by removing and replacing the native clays, raising the building pads above existing site grade, or a combination of both. The layer of non-expansive fill would serve to replace the near-surface clays most susceptible to expansion, increase the dead-load imposed on the underlying clays to resist up-lift forces, and produce a more uniform heave pattern, resulting in less differential movement, should the lower clays shrink or swell. Prior to placement of the non-expansive fill, the exposed native clays should be scarified to a minimum depth of 6 inches, uniformly moisture conditioned to at least 3 percentage points above the optimum moisture content, and compacted as engineered fill.

Lime stabilization (alternative 3) generally represents the median in regards to cost and risk between the three alternatives. Lime, however, substantially increases the pH of the stabilized soils, making it unsuitable for growth of landscaping or trees. Accordingly, this alternative is usually reserved for street areas and retail or similar type developments. Lime stabilization consists of mixing the upper 16 inches of subgrade soils within the proposed building pad areas with either high calcium or dolomitic quick lime and compacting the soil as engineered fill. For estimating purposes, 4 percent lime by dry weight of soil may be assumed. The zone of lime stabilized soils should extend laterally at least 5 feet outside the perimeter of the structures. Preliminary recommendations regarding lime stabilization in pavement areas are presented in Section 5.11.

5.4 Shallow Groundwater

Shallow groundwater may prove to be the most significant consideration from a construction and maintenance standpoint. At the time of our field explorations, groundwater was encountered at depths as shallow as about 4.1 feet in the northern portion of the site (Boring B-1), decreasing to depths of about 8.5 feet in the southern portion (Boring B-7). In discussions with local farmers and San Joaquin County representatives, groundwater has frequently risen and day-lighted at the surface for extended periods when the near-by San Joaquin River is at high stage levels. We have occasionally observed a large area of ponding water around the mobile home located in the southern portion of the site for extended periods during the winter

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

and spring months. We suspect this water, at least partially, can be attributed to day-lighting groundwater.

In addition to problems associated with uncontrolled nuisance water, groundwater as it encroaches within about 2 feet of street pavements could lead to subgrade instability and, consequently, pavement failure and increased maintenance. From a construction standpoint, the loose sands underlying the site will be highly susceptible to caving/loss of ground and undercutting where trenches extend below groundwater. Accordingly, a permanent dewatering system will likely be required in street and parking lot areas to lower groundwater levels when the San Joaquin River is at high stage levels and temporary dewatering may be necessary during construction. Temporary dewatering is typically the responsibility of the underground contractor and usually consists of installing well points and/or a trench drain system. Based on past experience, a temporary trench drain system can often be converted to a permanent dewatering system by installing sumps to pump water into the storm drain system during high groundwater periods. Otherwise, a perforated drain pipe enclosed in Caltrans Class 2 permeable rock and/or clean gravel and geotextile filter fabric is often placed at a depth of 5 to 8 feet in utility trenches. Similar to trench drains, the water collected is then diverted to sumps or gravity feed to the storm drain system. Depending on the number and location of utility trenches, additional permanent drain trenches outside the utility trenches are often required in retail parking areas.

5.5 Seismic Hazards

The project site and its vicinity are located in an area traditionally characterized by low to moderate seismic activity. Historical records indicate, however, the site will be subject to strong seismic shaking at least once during the design life of the project. A Seismic Shaking Hazards Map (1999) developed by the California Department of Mines and Geology (Map Sheet 48) places the project site in an area with a peak horizontal ground acceleration (10 percent probability of exceedence in 50 years) of between 0.2g and 0.3g. The results of a site-specific deterministic analysis performed using an attenuation relationship developed by Joyner, Boore and Fumal (1994) for Site Class C comparably places the site in an area with a peak ground acceleration of 0.17g.

Earthquakes are caused by the sudden displacement of earth along faults with a consequent release of stored strain energy. The fault slippage can often extend to the ground surface where it is manifested by sudden and abrupt relative ground displacement. Damage resulting from fault rupture occurs only where structures are located astride the fault traces that move. The subject site is not located within, nor is it adjacent to any Fault-Rupture Hazard Zones (formerly Alquist-Priolo Special Studies Zones) (Hart, 1990). The closest known active fault to the site is the Greenville fault, located about 23 miles to the southwest.

A common secondary hazard as a result of strong ground shaking is the potential for soil liquefaction and subsidence. Liquefaction describes a phenomenon in which saturated soil loses shear strength and deforms as a result of increased pore water pressure induced by strong ground shaking during an earthquake. Dissipation of the excess pore pressures will produce volume changes within the liquefied soil layer, which can manifest at the ground surface as

settlement of structures, floating of buried structures, and failure of retaining walls. Factors known to influence liquefaction include soil type, grain size, relative density, confining pressure, depth to groundwater, and the intensity and duration of ground shaking. Soils most susceptible to liquefaction are saturated, loose sandy soils.

Based on our findings and evaluation, the fine grained, loose sands encountered at the site are vulnerable to liquefaction in the event of strong seismic ground shaking. However, given the nearest fault to the site located about 15 miles to the southwest (Segment 8 of the Great Valley Fault), we estimate the ground acceleration generated by a maximum magnitude event (M=6.7) along the fault segment would not be sufficient to initiate liquefaction. However, further study, beyond the scope of this investigation, will be required during design level investigations to fully evaluate liquefaction potential at the site.

5.6 Spread Foundations

As discussed in Section 5.2, the near-surface sands, silts and clays encountered are relatively loose/soft and have a limited capacity to support structural loads due to settlement considerations. Residential structures and lightly loaded retail buildings may be supported on shallow, reinforced concrete, spread footings founded on undisturbed native soil provided they are designed using a net allowable bearing pressure of 1,750 pounds per square foot (psf) or less for dead plus sustained live loading. Continuous and isolated spread footings should have minimum widths of 12 and 24 inches, respectively. Footings supporting one and two story residences should be embedded at least 12 and 18 inches below the lowest final adjacent subgrade[1], respectively. In areas were structures are supported on or within 1.5 feet of expansive clays, all footings should be embedded at least 18 inches below lowest final adjacent subgrade. A one-third increase in allowable bearing pressure may be applied when considering short-term loading due to wind or seismic forces.

Foundations supporting moderate to heavily loaded retail buildings should be underlain by compacted engineered fill. The depth of engineered fill will rely greatly on the structural loading supported by footings and sensitivity of planned structures to total and differential settlement. However, for typical masonry block "box" structures we estimate the depth of engineered fill below the base of footing should be limited to 3 or 4 feet. The zone of engineered fill should extend laterally a distance equal to at least 3 feet or one-half the footing width, whichever is greater, outside the perimeter of the footings on all sides. Given this procedure, a net allowable bearing pressure of about 2,500 to 3,000 psf (dead plus sustained live loading) should be suitable for design.

[1] *Within this report, subgrade refers to the top surface of undisturbed native soil, native soil compacted during site preparation, or engineered fill.*

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

5.7 Post-Tensioned Slabs

The proposed residences may be supported by post-tensioned slab foundations. In accordance with procedures presented in Section 1816 of the 1997 Uniform Building Code (UBC), the following design parameters are recommended:

	Swelling Mode	
	Center Lift	Edge Lift
Edge Moisture Variation Distance (e_m), ft.	5.4	2.6
Differential Soil Movement (y_m), inches	2.4	0.52
Slab-Subgrade Friction Coefficient	0.75	
Net Allowable Bearing Capacity (dead-plus-live)	1,500 psf	

Post-tensioned slabs should have a minimum thickness of 10 inches with edges and beams thickened to at least 12 inches. Point or line loads imposed on the center or interior of the slab should be underlain by a thickened slab bearing directly on the prepared building pad surface. Thickened slabs under point loads should be a minimum of 2 feet wide on a side and line loads should be a minimum of 12 inches wide.

Prior to placement of slab concrete, the upper 6 to 12 inches of subgrade soils below the slab foundations should be moisture conditioned and pre-soaked as discussed under alternative 1 in Section 5.3. Slab foundations should be underlain by a rock capillary break, vapor barrier, and fine to medium grained sand as recommended in Section 5.8 - Concrete Floor Slabs. The rock capillary break can be omitted under post-tensioned slabs provided a second vapor barrier is placed over the first and precautions are taken to carefully overlap, seal, and repair the vapor barrier during construction. As an alternative, the vapor barrier can be substituted using a moisture proofing membrane, such as "Moiststop," or an equivalent substitute, installed per the manufacturer's recommendations.

5.8 Concrete Floor Slabs

Interior concrete floor slabs that will be covered with moisture-sensitive floor coverings should be underlain by a capillary break to reduce the potential for soil moisture vapor migrating upwards toward the slab. This capillary break should consist of at least 4 inches of "clean" coarse sand or compact, free draining crushed rock. The gravel or sand capillary break should then be overlain by a moisture proofing membrane (such as minimum 10-mil polyethylene sheeting, "Moiststop," or similar product) to further reduce the potential for upward migration of water vapor through the slab. To promote uniform curing of the slab, protection of the membrane during construction, and provide a leveling coarse for concrete slabs, a 1- to 2-inch thick layer of fine-to-medium-grained sand should be placed immediately below the floor slab prior to placing slab concrete.

From a geotechnical standpoint, floor slabs should have a minimum nominal thickness of 4 inches and should be reinforced as a minimum with 6"x6"/10x10 welded wire mesh. Where

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

structures overly expansive clays, consideration should be given to stiffening the slabs using No. 4 reinforcement bars at 24 inches on-center each way within the middle-third of the floor slab to reduce the potential for post-construction movement and cracking. Thicker floor slabs with increased reinforcement may be required wherever large rack loads, vehicular traffic, heavy concentrated loads, heavy equipment, or machinery is anticipated. The final design floor slab thickness and reinforcement should be provided by the Structural Engineer.

5.9 Exterior Flatwork

Like interior floor slabs, exterior concrete flatwork supported directly on native clays may be subject to the same shrink-swell cycles and potential distress. Some of the adverse effects of swelling and shrinking can be reduced with proper moisture treatment or pre-soaking (see Section 5.3) prior to concrete placement. However, the flatwork will be subject to edge effects and cracking caused by seasonal wetting and drying of the subgrade soils or man-made water sources. To protect against edge effects, lateral cutoffs such as inverted curbs should be considered. To further reduce the risk of post-construction movement, consideration should be given to increasing the thickness of the flatwork and placement of at least 12 inches of non-expansive fill or lime stabilized native soils below the flatwork. Cutoffs should extend at least 4 inches below the depth of non-expansive fill or moisture-conditioned native soils. Consideration should be given to reinforcing exterior concrete slabs with steel bars rather than wire mesh. The level of risk that would be acceptable should be evaluated by the project owner.

5.10 Retaining Walls

Retaining and loading dock walls should be designed to resist the earth pressure exerted by the retained, compacted backfill plus any additional lateral force due to surcharge loading, i.e., construction equipment, foundations, roadways, etc., at or near the wall. The following equivalent fluid earth pressures are recommended assuming wall heights of 10 feet or less and a fully drained backfill condition:

Earth Pressure Condition	Backfill Slope	Lateral Earth Pressure (pcf)
Active	Level	35
At-Rest	Level	55

Retaining walls capable of deflecting a minimum of 0.1 percent of their height at the top may be designed using the active earth pressure. Retaining walls incapable of this deflection or are fully constrained against deflection should be designed for the at-rest earth pressure. Where uniform surcharge loads are located within a lateral distance from constrained and unconstrained retaining walls equal to the wall height, 30 and 45 percent of the surcharge load, respectively, should be applied uniformly over the entire height of the wall.

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

Retaining wall backfill should be free draining, and provisions should be made to collect and dispose of excess water away from the wall. Wall drainage may be provided by either a minimum 1-foot wide layer of clean drainrock/gravel enclosed by geosynthetic filter fabric or by prefabricated drainage panels (such as Miradrain, Enkadrain, or an equivalent substitute) installed per the manufacturer's recommendations. In either case, drainage should be collected by perforated pipes and directed to a sump, storm drain, weep holes, or other suitable location for disposal. The upper 12 inches of engineered backfill above the wall drainage should consist of native soils, concrete, asphalt-concrete, or similar backfill to reduce surface drainage into the wall drain system. If retaining walls are 4 feet or less in height, the perforated pipe may be omitted in lieu of weep holes on 4 feet center-to-center maximum spacing.

5.11 Asphalt Concrete Pavements

The results of our investigation indicate the native clays encountered in the southern and western areas of the site are potentially expansive and will provide poor support for pavements as indicated by three laboratory R-values ranging from 3 to 13. Accordingly, relatively thick pavement sections are warranted in these areas. The sands and silts, however, located in the northern and eastern portions of the site are non-expansive and exhibit good support for pavements as indicated by an R-value of 58.

To reduce the effects of expansive clays, the upper 12 inches subgrade soils in pavement areas should be moisture conditioned as discussed in Section 5.3 and compacted to at least 93 percent relative compaction. As an alternative to moisture-conditioning, the upper 12 inches of subgrade soils in pavement areas could be stabilized with lime and compacted as engineered fill to at least 95 percent relative compaction as discussed in Section 5.3. Lime stabilization not only reduces the expansive characteristics of the near surface soils, but lime also tends to improve the support characteristics of the subgrade soils. Accordingly, a fraction of the costs for the lime stabilization may be offset by the reduction in required baserock thickness or concrete. If lime stabilization is considered, approval by the City should be obtained, and our firm should be consulted to perform additional laboratory tests and develop final pavement sections.

Pavement sections[2] are presented below based on a laboratory obtained R-value of 5 for pavements supported on the native clays and an R-value of 50 for pavements supported on native sands/silts and lime stabilized clays. Current Caltrans design procedures and traffic indices ranging from 4 to 8 were used in developing the pavements sections. The traffic index (TI) is a measure of traffic wheel loading frequency and intensity of anticipated traffic. For

[2] *Asphalt concrete pavement sections are provided in units of inches, rounded up to the nearest 1/2-inch. Sections provided above for traffic indices ranging from 4.0 to 6.5 include no Gravel Equivalent Safety Factor (per County Engineers Association and the League of California Cities criteria). Sections provided for traffic indices ranging from 7.0 to 8.0 include a Gravel Equivalent Safety Factor of 0.2 (per Caltrans criteria). Some cities and counties may require a greater Gravel Equivalent Safety Factor for design of all pavements within public streets. If required, the pavement sections should be reevaluated The aggregate base for sections developed based on an R-value of 5 have been increased by about 15 percent to account for the recommended reduction in subgrade compaction and to increase the dead load to resist soil expansion.*

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

comparison, TI's of between 4 and 5 are often suitable for design of automobile parking areas, average residential streets, and minor or secondary collectors. TI's of between 5 and 6.5 are commonly used for design of fire truck access lanes, areas subject to channelized flow with light delivery trucks, and major or primary collectors between minor collectors and major arterials. TI's greater than 6.5 are common for design of pavements supporting light to moderate bus traffic, delivery truck traffic, and design of commercial roads, connector roads and major streets with heavy traffic. Traffic indices assumed above should be reviewed by the project Owner, Architect, and/or Civil Engineer to evaluate their suitability for this project. The use of rigid concrete pavement is favored where trash pick-up or truck traffic necessitates short radius maneuvering and/or heavy metal bin movement on rollers.

R-value	Traffic Index	Asphalt Concrete (inch)	Class 2 Aggregate Base (inch)	Class 2 Aggregate Subbase (inch)
5	4.0	2.0	10.0	--
	4.0	2.0	5.0	5.5
	4.5	2.0	12.0	--
	4.5	2.0	5.5	7.0
	5.0	2.0	14.0	--
	5.0	2.0	6.0	9.0
	5.5	2.0	16.0	--
	5.5	2.0	7.0	10.0
	6.0	2.5	17.0	--
	6.0	2.5	8.0	11.0
	6.5	2.5	19.0	--
	6.5	2.5	9.0	11.0
	7.0	4.0	17.5	--
	7.0	4.0	8.5	10.0
	7.5	4.5	19.0	--
	7.5	4.5	9.5	10.5
	8.0	5.0	20.0	--
	8.0	5.0	9.5	11.5
50	4.0	2.0	4.0	--
	4.5	2.0	4.5	--
	5.0	2.0	5.0	--
	5.5	2.0	5.5	--
	6.0	2.5	5.5	--
	6.5	2.5	6.5	--
	7.0	4.0	4.5	--
	7.5	4.5	5.0	--
	8.0	5.0	5.0	--

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

5.12 Site Drainage

The ground surface should slope away from building pad and pavement areas toward appropriate drop inlets or other surface drainage devices with grades maintained for the life of the project. Adjacent exterior grades in proposed building areas should be sloped a minimum of 2 percent for a minimum lateral distance of 5 feet away from the perimeter of proposed structures. Subgrade soils in pavement areas should be sloped a minimum of 1 percent and drainage gradients maintained to carry all surface water to collection facilities and off the site.

5.13 Corrosion Potential

Tests performed on two subgrade samples indicated pH's of 6.6 and 8.0 and minimum resistivities of 495 and 923 ohm-centimeters. A commonly accepted correlation between soil resistivity and corrosivity towards ferrous metals is provided below:

Soil Resistivity	Corrosivity
0 to 1,000 ohm-cm	- severely corrosive
1,000 to 2,000 ohm-cm	- corrosive
2,000 to 10,000 ohm-cm	- moderately corrosive
Over 10,000 ohm-cm	- mildly corrosive

Kleinfelder has performed these soil corrosivity tests as requested by the client. These tests are only an indicator of soil corrosivity. A competent corrosion engineer should be retained to design corrosion protection systems appropriate for the project.

5.14 Percolation Tests

Two percolation tests were performed during our investigation at locations indicated by Thompson-Hysell Engineers at depths ranging from between about 2 to 3 feet below the existing ground surface. The approximate locations of the percolation tests are shown on Plate 1. At each location the soil conditions appeared relatively consistent, consisting of silty sands and sandy silt. Groundwater was encountered at a depth of about 5 feet below existing grade.

The percolation tests were performed in accordance with accepted guidelines using clear potable water. The procedure calls for pre-soaking the test holes for 24 hours and then installing a perforated pipe and about 2 inches of clean gravel at the bottom. Thereafter, an approximate 6 inch head of water is placed over the gravel. From a fixed reference point, the water level in the test holes is measured at approximate 30 minute intervals for four hours, refilling as necessary to maintain the 6-inch head of water. The last 30 minute measurement is used to determine the percolation rate in minutes per inch. The percolation rates determined at each test location are as follows:

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

Test Number	*Depth, ft.*	*Percolation Rate (min/inch)*	*Soil Type*
P-1	3	60	Silty Sand
P-2	2	300	Sandy Silt

5.15 General Earthwork

The following presents preliminary recommendations for general earthwork criteria. Previous sections should be reviewed for specific or supplemental earthwork recommendations related to soft/loose soils, expansive clays, retaining walls and pavements.

Prior to general site grading, surface vegetation, organic topsoil, and any debris should be removed and disposed of outside the construction limits. The remaining roots can be disced into the surface during subgrade preparation provided the organic content of the soil (as determined by loss-on-ignition tests) does not exceed 5 percent by weight. Deep stripping may be required where concentrations of organic soils or tree roots, i.e., orchard area, are encountered during site grading.

Given several structures are located on-site, it is possible buried objects, such as abandoned utility lines, septic tanks, cesspools, wells, foundations, etc., may exist on site. If encountered within the area of construction, these items should be removed and disposed of off-site. Existing wells should be abandoned in accordance with applicable regulatory requirements. Existing utility pipelines that extend beyond the limits of the proposed construction and will be abandoned in-place should be plugged with cement grout to prevent migration of soil and/or water.

Following site stripping, all areas to receive engineered fill or to be used for the future support of structures or concrete slabs should be scarified to a depth of at least 6 inches, uniformly moisture-conditioned to between 1 and 4 percentage points above the optimum moisture content, and compacted as engineered fill to at least 90 percent relative compaction. Within pavement areas, the scarified subgrade should be compacted to at least 95 percent relative compaction.

The native soils encountered in our borings, minus organics, debris and/or other deleterious materials, should be suitable for use as engineered fill in proposed building areas. However, the native clays are also considered potentially expansive and should be addresses as discussed in Section 5.3 - Expansive Clays.

All import fill soils should be nearly free of organic or other deleterious debris, essentially non-plastic, and less than 3 inches in maximum dimension. In general, well-graded mixtures of gravel, sand, non-plastic silt, and small quantities of cobbles, rock fragments, and/or clay are acceptable for use as import fill. Specific requirements for import fill are provided below.

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

Gradation (ASTM C136)		Plasticity (ASTM D4318)		Organic Content (ASTM D2974
Sieve Size	Percent Passing	Liquid Limit	Plasticity	
3 inch	100	Less than 30	Less than 12	Less than 3 percent
No. 4	50 – 100			
No. 200	15 - 70			

Trench backfill and bedding placed within existing or future city/county right-of-ways should meet or exceed the requirements outlined in the current city/county specifications. Trench backfill or bedding placed outside existing or future right-of-ways could consist of native or imported soil which meets the requirements for fill material provided above. If import fill is used for pipe or trench zone backfill, the material should consist of fine-grained sand. Coarse-grained sand and/or gravel should be avoided, unless approved by the Geotechnical Engineer, due to the potential for soil migration into the materials and "loss of ground" or settlement adjacent the trenches due to water seepage or soil piping along the trenches.

Trench backfill recommendations provided above should be considered minimum requirements only. More stringent material specifications may be required to fulfill bedding requirements for specific types of pipe. The project Civil Engineer should develop these material specifications based on planned pipe types, bedding conditions, and other factors beyond the scope of this study.

All fill soils, either native or imported, required to bring the site to final grade should be compacted as engineered fill. Engineered fill should be uniformly moisture-conditioned to between 1 and 4 percentage points above the optimum moisture content, placed in horizontal lifts less than 8 inches in loose thickness, and compacted to at least 90 percent of the maximum dry density as determined by ASTM (American Society for Testing and Materials) Test Method D 1557[3]. Fills exceeding 5 feet in thickness should be compacted to at least 95 percent relative compaction for their full depth.

6. ADDITIONAL SERVICES

The preliminary conclusions and recommendations contained herein are intended for preliminary layout, costing and design. Once development and structural details are known, design level geotechnical studies should be performed prior to final design. If Kleinfelder, Inc. is not retained for these services, the client agrees to assume Kleinfelder, Inc.'s responsibility for any potential claims that may arise during and following construction. The design level geotechnical studies would be additional services provided by our firm. The costs for these services are not included in our current fee arrangements.

[3] *This test procedure should be used wherever relative compaction, maximum dry density, or optimum moisture content is referenced within this report.*

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

7. LIMITATIONS

1. The preliminary conclusions and recommendations of this report are for preliminary layout, costing and design for the proposed Mossdale Landing Development project as described in the text of this report. The preliminary conclusions and in this report are invalid if:

   - The assumed structural or grading details change
   - The report is used for adjacent or other property
   - Changes of grades and/or groundwater occur between the issuance of this report and construction
   - Any other change is implemented which materially alters the project from that proposed at the time this report was prepared

2. The preliminary conclusions and recommendations in this report are based on the borings drilled for this investigation. It is possible that variations in the soil conditions exist between or beyond the points of exploration, or the groundwater elevation may change, both of which may require additional investigations, consultation, and possible design revisions.

3. We are not corrosion engineers and have not been requested to perform corrosion testing. A competent corrosion engineer should be retained to design corrosion protection systems appropriate for the project.

4. This report was prepared in accordance with the generally accepted standard of practice that existed in San Joaquin County at the time the report was written. No warranty, express or implied, is made.

5. It is the CLIENT'S responsibility to see that all parties to the project are made aware of this report in its entirety.

6. This report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify Kleinfelder, Inc. of such intended use. Based on the intended use of the report, Kleinfelder, Inc. may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder, Inc. from any liability resulting from the use of this report by any unauthorized party.

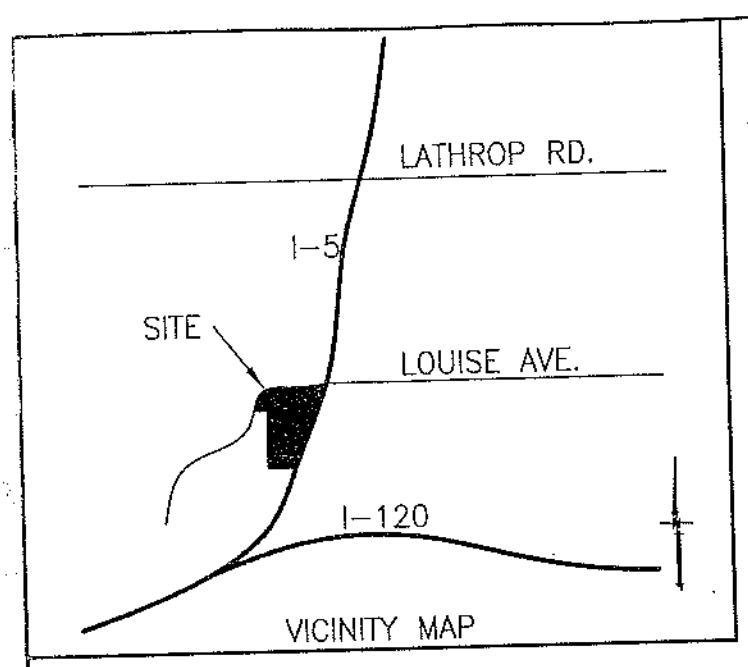
KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax

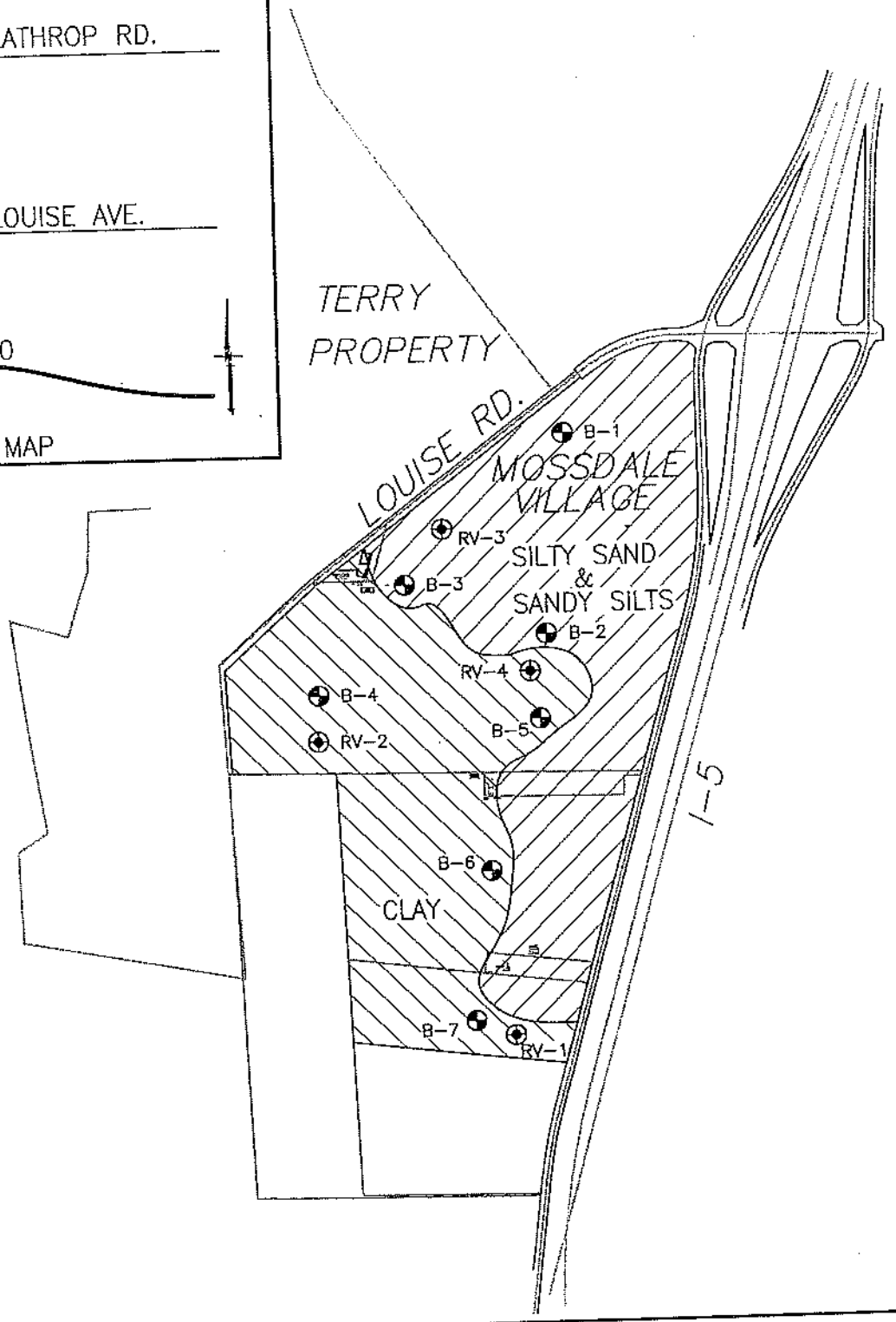
APPENDIX
LOGS OF BORINGS AND
SUMMARY OF LABORATORY TESTS

LIST OF ATTACHMENTS

The following plates are attached and complete this appendix.

KLEINFELDER 2825 East Myrtle Street, Stockton, CA 95205-4794 (209) 948-1345 (209) 948-0621 fax





APPROXIMATE BOUNDARY BETWEEN SURFACE SAND/SILT AND CLAYS BASED ON U.S.D.A. SOIL SURVEY FOR SAN JOAQUIN COUNTY AND FINDING OF OUR FIELD EXPLORATIONS

DENOTES NUMBERS AND LOCATIONS OF BORINGS DRILLED FOR THIS INVESTIGATION

DENOTES NUMBER AND APPROXIMATE LOCATIONS OF RESISTANCE-VALUE TESTS PERFORMED FOR THIS INVESTIGATION

NOT TO SCALE

KLEINFELDER
2825 EAST MYRTLE STREET STOCKTON, CA 95205-4794

SITE AND VICINITY MAP
MOSSDALE VILLAGE
LATHROP, CALIFORNIA

DATE PRODUCED:7/26/2000	DATE REVIEWED:	PLATE 1
PROJ. No.:20-4326-02.G01	FILE NAME:2000D357.CAD	

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			USCS SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	GRAVELS (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)		ML	INORGANIC SILTS & VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid limit greater than 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY
LOAMS				UNDER USDA SOIL CLASSIFICATION SYSTEM, SOIL OF APPROXIMATELY EQUAL SAND/SILT/CLAY

KLEINFELDER

Drafted By: D. Ross
Date: 8/3/2000

Project No.: 20-432602/G01
File Number: 20432602

UNIFIED SOIL CLASSIFICATION SYSTEM
MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE
A-1

USCS 20432602.GPJ 8/3/00

LOG SYMBOLS

	BULK / BAG SAMPLE	-4	PERCENT FINER THAN THE NO. 4 SIEVE (ASTM Test Method C 136)
	MODIFIED CALIFORNIA SAMPLER (2-1/2 inch outside diameter)	-200	PERCENT FINER THAN THE NO. 200 SIEVE (ASTM Test Method C 117)
	CALIFORNIA SAMPLER (3 inch outside diameter)	LL	LIQUID LIMIT (ASTM Test Method D 4318)
	STANDARD PENETRATION SPLIT SPOON SAMPLER (2 inch outside diameter)	PI	PLASTICITY INDEX (ASTM Test Method D 4318)
	CONTINUOUS CORE	EI	EXPANSION INDEX (UBC STANDARD 29-2)
	SHELBY TUBE (3 inch outside diameter)	COL	COLLAPSE POTENTIAL
	WATER LEVEL (level where first encountered)	UC	UNCONFINED COMPRESSION (ASTM Test Method D 2166)
	WATER LEVEL (level after completion)	MC	MOISTURE CONTENT (ASTM Test Method D 2216)
	SEEPAGE		

GENERAL NOTES

1. *Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual.*
2. *No warranty is provided as to the continuity of soil conditions between individual sample locations.*
3. *Logs represent general soil conditions observed at the point of exploration on the date indicated.*
4. *In general, Unified Soil Classification System designations presented on the logs were evaluated by visual methods only. Therefore, actual designations (based on laboratory tests) may vary.*

LOG_KEY 20432602.GPJ 8/3/00

KLEINFELDER

Drafted By: D. Ross
Date: 8/3/2000

Project No.: 20-432602/G01
File Number: 20432602

LOG KEY
MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE
A-2

Surface Conditions: Cut Alfalfa, level.

Groundwater: Groundwater encountered at a depth of about 4.1 feet below existing site grade.

Date Completed: 7/6/2000

Logged By: J.M.S.

Total Depth: 15 (feet)

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing # 200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
													Approximate Surface Elevation (feet) (msl)
													Silty SAND (SM): Brown, moist, medium dense,
													Sandy SILT (ML): Light gray-brown, moist, stiff, high plasticity
		1-1-1	13		111	16				56			**Silty SAND** (SM): Light gray-brown, moist, loose
													white-gray to brown, very moist to wet, with interbedded clean sand zones and layers
5		1-4-1	7		87	24							light brown, fine to medium grained,
													light gray-brown, fine grained
													silt fraction increasing
10													**Sandy SILT** (ML): Light gray-brown, very moist to wet, soft to moderately stiff, very fine grained, high plasticity
													Clayey SILT (ML): Light gray-brown, very moist to wet, sot to moderately stiff, low plasticity
15													Boring completed at a depth of 15 feet below existing site grade.
20													
25													

KLEINFELDER

Drafted By: D. Ross
Date: 8/3/2000

Project No.: 20-432602/G01
File Number: 20432602

LOG OF BORING B-1

MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE
1 of 1
A-3

GEOTEC_LOG 20432602.GPJ 8/3/00

Surface Conditions: Cut Alfalfa, level.

Groundwater: Groundwater encountered at a depth of about 6.2 feet below existing site grade.

Date Completed: 7/6/2000

Logged By: J.M.S.

Total Depth: 15 (feet)

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	LABORATORY: Dry Density (pcf)	LABORATORY: Moisture Content (%)	LABORATORY: Liquid Limit	LABORATORY: Plasticity Index	LABORATORY: Passing #4 Sieve (%)	LABORATORY: Passing # 200 Sieve (%)	LABORATORY: Other Tests	Lithography	DESCRIPTION
													Approximate Surface Elevation (feet) (msl)
		2-0-1	4		111	12							Silty SAND (SM): Light brown, moist, loose, fine grained
													light gray-brown
		2-3-1	11		85	34							wet
5		NR	6										
		2-7-1	6		87	32				41			light brown
10													Boring completed at a depth of 10 feet below existing site grade.
15													
20													
25													

KLEINFELDER

LOG OF BORING B- 2

MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE
1 of 1
A-4

Drafted By: D. Ross
Date: 8/3/2000

Project No.: 20-432602/G01
File Number: 20432602

GEOTEC_LOG 20432602.GPJ 8/3/00

Surface Conditions: Cut Alfalfa, level.

Groundwater: Groundwater encountered at a depth of about 5 feet below existing site grade.

Date Completed: 7/6/2000

Logged By: J.M.S.

Total Depth: 15 (feet)

Depth (feet)	FIELD: Sample Type	Sample No.	Blows/ft	Pen (tsf)	LABORATORY: Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing # 200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
													Approximate Surface Elevation (feet) (msl)
		3-1-1	15		102	15							**Silty SAND** (SM): Light gray-brown, moist, medium dense, fine grained
													light brown
													silt fraction decreasing, very moist
													Sandy SILT (ML): Light brown, wet, soft, high plasticity
5		3-4-1	4		89	28							**Silty SAND** SM): Light gray-brown, wet, loose, fine grained, with silt lenses
		3-7-1	5										
													Clayey SILT(ML) with Sand: Light gray-brown, wet, low plasticity
10													**SAND with Silt** (SP-SM): Light gray-brown, wet, fine grained,
													Sandy SILT (ML): Light brown, wet, high to low plasticity
													Silty SAND (SM): Light brown, wet, fine grained,
15													Boring completed at a depth of 15 feet below existing site grade.
20													
25													

KLEINFELDER

Drafted By: D. Ross
Date: 8/3/2000

Project No.: 20-432602/G01
File Number: 20432602

LOG OF BORING B-3

MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE
1 of 1
A-5

GEOTEC_LOG 20432602.GPJ 8/3/00

Surface Conditions: Cut Alfalfa, level.

Groundwater: Groundwater encountered at a depth of about 4.5 feet below existing site grade.

Date Completed: 7/6/2000

Logged By: J.M.S.

Total Depth: 9-1/2 (feet)

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing # 200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
													Approximate Surface Elevation (feet) (msl)
		4-1-2											Silty CLAY (CH): Dark gray-brown, moist, soft to moderately stiff, high plasticity
		4-1-1	5		103	20							Silty SAND (SM): Light gray-brown, moist, loose, fine grained
													very moist
5		4-4-1	5		85	33				82			Clayey SILT (ML): Light gray-brown, wet, moderately stiff, low plasticity
													Silty SAND (SM): Light gray-brown, wet, loose, fine grained
													Clayey SILT (ML): Light gray-brown, wet, moderately stiff, low plasticity
		4-8-1	7										Sandy SILT (ML): Light brown, wet, moderately stiff, very fine grained, high plasticity
10													Boring completed at a depth of 9-1/2 feet below existing site grade.
15													
20													
25													

FIELD

LABORATORY

KLEINFELDER

Drafted By: D. Ross
Date: 8/3/2000

Project No.: 20-432602/G01
File Number: 20432602

LOG OF BORING B- 4

MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE
1 of 1
A-6

GEOTEC_LOG 20432602.GPJ 8/3/00

Surface Conditions: Old stubble field with weeds, level.

Groundwater: Groundwater encountered at a depth of about 7.8 feet below existing site grade.

Date Completed: 7/6/2000

Logged By: J.M.S.

Total Depth: 10-1/2 (feet)

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing # 200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
													Approximate Surface Elevation (feet) (msl)
													Silty CLAY (CL): with Sand: Light gray-brown, moist, stiff, fine grained, moderate plasticity
		5-0-1	8		105	11							**Silty SAND** (SM): Light gray-brown, moist, loose, fine grained
		5-3-1	9		98	26							stiff
5		5-6-1	7										
													Sandy SILT (ML): Light gray-brown, moist, moderately stiff, low plasticity
													Silty SAND (SM): Light gray-brown, wet, loose, fine grained
10		5-9-1	4										**Clayey SILT** (ML): Light gray-brown, wet, moderately stiff, low plasticity
													Boring completed at a depth of 10-1/2 feet below existing site grade.
15													
20													
25													

FIELD

LABORATORY

KLEINFELDER

Drafted By: D. Ross
Date: 8/3/2000

Project No.: 20-432602/G01
File Number: 20432602

LOG OF BORING B-5

MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE
1 of 1
A-7

GEOTEC_LOG 20432602.GPJ 8/3/00

Surface Conditions: Disced field with weeds.

Groundwater: Groundwater encountered at a depth of about 7.6 feet below existing site grade.

Date Completed: 7/6/2000

Logged By: J.M.S.

Total Depth: 15-1/2 (feet)

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing # 200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
													Approximate Surface Elevation (feet) (msl)
													Silty CLAY (CL): Gray-brown, moist, moderately stiff, moderate plasticity
		6-2-1	6		97	21				68			**Sandy SILT** (ML): Light gray-brown, very moist, moderately stiff, low plasticity
5		6-5-1	9		91	31							**Silty SAND** (SM): Light gray-brown, wet, loose, fine grained
													Sandy SILT (ML): Light brown, wet, moderately stiff, low plasticity
													Silty SAND (SM): Light gray, wet, loose, fine grained
10		6-9-1	7										**Sandy SILT** (ML): Light gray, wet, moderately stiff, very fine grained, low plasticity
													Clayey SAND (SC): Light gray, wet, loose, fine grained, low plasticity
15		6-14-1	11		96	21							**Silty SAND** (SM): Light gray, wet, loose, fine grained
20													
25													

FIELD | LABORATORY

KLEINFELDER

Drafted By: D. Ross
Date: 8/3/2000

Project No.: 20-432602/G01
File Number: 20432602

LOG OF BORING B-6

MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE
1 of 1
A-8

GEOTEC_LOG 20432602.GPJ 8/3/00

Surface Conditions: Disced field.

Groundwater: Groundwater encountered at a depth of about 8.6 feet below existing site grade.

Date Completed: 7/6/2000

Logged By: J.M.S.

Total Depth: 11-1/2 (feet)

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing # 200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
													Approximate Surface Elevation (feet) (msl)
		7-1-1	13	4.7	88	23	56	28					**Silty CLAY** (CH): Gray-brown, moist, stiff, high plasticity
5		7-4-1	8		64	38							**Organic SILT** (ML): Dark gray-brown, very moist, moderately stiff, low plasticity
		7-7-1	13										**Silty CLAY** (CL): Gray-brown,, very moist, moderately stiff, moderate plasticity
													Silty SAND (SM): Light gray-brown, very moist, fine grained
10		7-10-1	7										wet, sand fraction decreasing
15													
20													
25													

FIELD

LABORATORY

KLEINFELDER

Drafted By: D. Ross
Date: 8/3/2000

Project No.: 20-432602/G01
File Number: 20432602

LOG OF BORING B-7

MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE
1 of 1
A-9

GEOTEC_LOG 20432602.GPJ 8/3/00

BORING NO.	SAMPLE DEPTH (ft)	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (% of dry weight)	PARTICLE SIZE SIEVE SIZE (percent passing)						ATTERBERG LIMITS		OTHER TESTS
				3"	3/4"	#4	#10	#40	#200	L.L.	P.I.	
B- 1	2.0	111.0	16.0						56			
B- 1	5.0	87.0	24.0									
B- 2	1.0	111.0	12.0									
B- 2	4.0	85.0	34.0									
B- 2	8.0	87.0	32.0						41			
B- 3	2.0	102.0	15.0									
B- 3	5.0	89.0	28.0									
B- 4	2.0	103.0	20.0									
B- 4	5.0	85.0	33.0						82			
B- 5	1.0	105.0	11.0									
B- 5	4.0	98.0	26.0									
B- 6	3.0	97.0	21.0						68			
B- 6	6.0	91.0	31.0									
B- 6	15.0	96.0	21.0									
B-7	2.0	88.0	23.0							56	28	
B-7	5.0	64.0	38.0									

LABSUM-01 20432602.GPJ 8/3/00

KLEINFELDER

Drafted By: D. Ross
Date: 7/27/2000

Project No.: 20-432602/G01
File Number: 20432602

SUMMARY OF LABORATORY TESTS

MOSSDALE LANDING DEVELOPMENT
LATHROP, CALIFORNIA

PLATE

A-10

GEOTECHNICAL SERVICES REPORT
PROPOSED LATHROP ASSOCIATES SUBDIVISION
LATHROP, CALIFORNIA

PREPARED FOR: WESTERN PACIFIC HOUSING
1210 CENTRAL BOULEVARD
BRENTWOOD, CA 94513

BY: KLEINFELDER, INC.
2825 E. MYRTLE STREET
STOCKTON, CA 95205

DATE: OCTOBER 28, 2003

KLEINFELDER
An employee owned company

File No. 35179.G01
October 28, 2003

Mr. John Campaglia
Western Pacific Housing
1210 Central Boulevard
Brentwood, CA 94513

Western Pacific Housing
6658 Owens Drive
Pleasanton, CA 94588-3285

Subject: **GEOTECHNICAL SERVICES REPORT**
PROPOSED LATHROP ASSOCIATES SUBDIVISION
LATHROP, CALIFORNIA

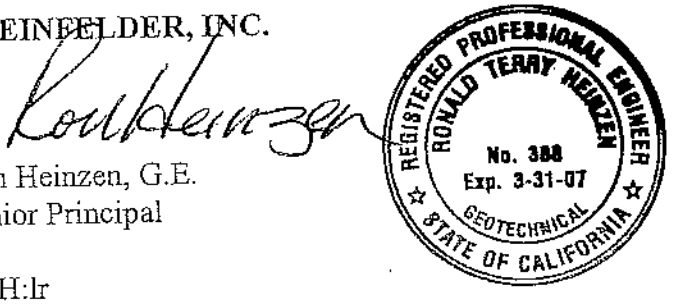
Dear Mr. Campaglia:

Kleinfelder is pleased to present the results of our geotechnical services performed for the proposed Lathrop Associates subdivision to be located in Lathrop, California. The accompanying report includes background information regarding the anticipated construction, the purpose of our services, and scope of services provided. In addition, discussions regarding our investigative procedures and the site conditions encountered during our field exploration are presented. Finally, geotechnical conclusions and recommendations are provided for project design and construction. The appendix of the report includes logs of borings, percolation test results, and a summary of laboratory tests. We have also included an information sheet published by ASFE. Our firm is a member of ASFE, and we feel this sheet will help you better understand geotechnical engineering reports.

We appreciate the opportunity of providing our services for this project. If you have questions regarding this report or if we may be of further assistance, please contact our office.

Respectfully submitted,

KLEINFELDER, INC.



Ron Heinzen, G.E.
Senior Principal

RTH:lr
4c: Client

Important Information About Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

The following information is provided to help you manage your risks.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. *No one except you* should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one—not even you*—should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, *do not rely on a geotechnical engineering report* that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions *only* at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an *opinion* about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

TABLE OF CONTENTS

GEOTECHNICAL SERVICES REPORT
PROPOSED LATHROP ASSOCIATES SUBDIVISION
LATHROP, CALIFORNIA

1. INTRODUCTION

In this report we present the results of our geotechnical services performed for the proposed Lathrop Associates subdivision to be located west of Interstate 5 (I-5) in Lathrop, California. The site location relative to existing streets and topographic features is shown on Plate 1A. An overall map of this area of Lathrop is shown on Plate 1.

We understand that design of the proposed project is currently underway and final details are not available as of this writing. On a preliminary basis, we understand that the 28-acre development will include approximately 66 individual lots for single-family residences and a storm water detention basin in the northwestern portion. The site encompasses parcel numbers 241-020-01 and 241-020-40.

Preliminary grading plans indicate cuts and fills during earthwork on the order of 2 feet or less, with the exception of the storm drainage detention pond which may extend approximately 6 feet below grade. Excavations for underground utilities are not anticipated to exceed 15 feet below final site grade.

We anticipate the proposed houses will be one- and/or two-story, wood-frame structures with concrete slab-on-grade floor systems. Structural loading is anticipated to be relatively light, typical for small to medium-sized residential structures. Accordingly, we anticipate shallow spread foundations will provide structural support. For the purpose of our evaluation, maximum column and bearing wall loads (dead-plus-live) in the range of 20 kips and 1 kip per linear foot, respectively, were assumed. In the event these structural or grading details are inconsistent with the final design criteria, our firm should be contacted prior to final design in order that we may update our recommendations as needed.

2. PURPOSE AND SCOPE OF SERVICES

The purpose of our services was to explore and evaluate the subsurface conditions at various locations on the site in order to develop recommendations related to the geotechnical aspects of project design and construction.

The scope of our services was outlined in our proposal dated August 28, 2003. Our scope of services included the following:

- A visual site reconnaissance to investigate the surface conditions at the project site

- A review of previous investigations in the project area
- A field investigation that consisted of drilling four borings and performing 2 percolation tests within the area of the proposed development to explore the subsurface conditions at the project site
- Laboratory testing of representative samples obtained during the field investigation to evaluate relevant physical and engineering parameters of the subsurface soils
- Evaluation of the data obtained and an engineering analysis to develop our geotechnical conclusions and recommendations
- Preparation of this report which includes:
  - A description of the proposed project
  - A description of the field and laboratory investigations
  - A description of the surface and subsurface conditions encountered during our field investigation
  - Conclusions and recommendations related to the geotechnical aspects of:
    - Concrete floor slabs
    - Foundation design and construction
    - Exterior concrete flatwork
    - UBC seismic design criteria
    - Earth retaining walls
    - Asphalt concrete pavements
    - Corrosion potential
    - Storm water basins
    - Site surface drainage, and
    - General earthwork addressing site preparation, soil shrinkage, fill materials, engineered fill, temporary excavations, and wet/unstable subgrade conditions.
- An appendix that includes logs of borings and a summary of laboratory tests.

3. FIELD AND LABORATORY INVESTIGATIONS

3.1 Previous Studies

The proposed Lathrop Associates site is sandwiched between several previously studied projects to the north, west, and east and the nearly completed geotechnical study for the

Vallentyne property to the south. Reference is made to the Harris Property report dated July 23, 2003 (also known as a part of Mossdale Landing) and the Luckey Property report dated May 30, 2003, both of which are north of the site, the FEMA levee study for Reclamation District 17 to the west, and the Nestle Distribution facility immediately across I-5 to the east.

In completing our work, we have also reviewed the Lathrop Station project by Schuler Homes which included measurements and analytical testing on six monitoring wells and two large-scale percolation tests. Similar but more extensive geotechnical and groundwater studies have been performed for the River Islands project to the west and the Crossroads Industrial project immediately east of I-5.

3.2 Field Investigation

The subsurface conditions at the site were initially explored on September 24, 2003, by drilling four borings to a depth of about 16½ feet below existing site grade. This work was followed on October 24, 2003, by the completion of two percolation tests. The approximate boring and percolation test locations are presented on Plates 1 and 1A.

The borings were drilled using a Simco 2400 truck-mounted drill rig equipped with 4-inch O.D. solid-stem auger. During the drilling operations, penetration tests were performed in accordance with ASTM D1586 at regular intervals using a Modified California Sampler to evaluate the relative density of coarse-grained (cohesionless) soil, estimate the consistency of fine-grained (cohesive) soils, and to retain soil samples for laboratory testing. The penetration tests were performed by initially driving the sampler 6 inches into the bottom of the bore hole using a 140 pound trip-hammer falling 30 inches to penetrate loose soil cuttings and "seat" the sampler. Thereafter, the sampler was progressively driven an additional 12 inches, with the results recorded as the corresponding number of blows required. A representative with our firm maintained a log of the borings and visually classified soils encountered according to the Unified Soil Classification System (see Plate A-1 of the appendix). Soil samples obtained from the borings were packaged and sealed in the field to reduce moisture loss and disturbance and brought to our Stockton laboratory for further testing.

A key to the Logs of Borings is presented on Plate A-2 of the appendix. The Logs of Borings are presented on Plates A-3 through A-6.

3.3 Laboratory Investigation

Laboratory tests were performed in accordance with current ASTM standards on selected soil samples to evaluate their physical characteristics and engineering properties. The laboratory-testing program was formulated with emphasis on the evaluation of natural moisture content, in-place density, grain-size distribution, plasticity, and undrained shear strength of the materials encountered.

The results of laboratory tests are summarized on Plate A-7 in the appendix. This information, along with the field observations, was used to prepare the final test boring logs.

4. SITE CONDITIONS

4.1 Surface

At the time of our investigation, the Lathrop Associates property was predominantly agricultural fields which were disced or in various states of growth/harvest. The various fields were bordered by dirt farm roads and irrigation ditches. Several residences were located in the eastern portion of the site and were not included as a part of this investigation. The Lathrop Associates property was bordered by agricultural fields to the north and south, Manthey Road to the east, and the San Joaquin River to the west.

4.2 Subsurface

Based on our findings, the near-surface soils varied across the site, although clay soils were the predominate type in the western portion of the property, and the surface soils in the eastern portion consisted of silty sand. The subsurface soils in the eastern portion consisted of interbedded strata of medium-stiff to stiff silty to sandy clay, sandy to clayey silt, and loose silty and clayey sand to the maximum depths explored. For the adjacent Terry, Harris, and Vallentyne Properties, similar soil conditions were encountered, with surface sandy silt encountered in borings B-7 (Luckey) and B-9 and B-10 (Harris).

At the time of our field investigation, free groundwater was encountered at depths ranging from about 10 to 15 feet below existing site grade. A very similar depth to groundwater profile was noted during our field tests for the adjacent Luckey Property. Groundwater was encountered in boring B-7 located some distance from the river at about 15½ feet in June 2003, while the depth to groundwater was only about 10½ feet in boring B-5 located approximately the same distance from the river as boring B-4 for this study. On the Harris Property (northeast of the Lathrop Associates site), groundwater was encountered on the southern portion at the approximate 12-foot depth in 2001 and on the northern portion at the approximate 11-foot depth in 2003. All these readings were taken during the winter months. We have been asked to evaluate the historic fluctuations in groundwater near the site. Sounding domestic and agricultural wells is not a standard practice, and very few of the landowners contacted regarding this project provided much useful information. Presented on Plate A-8 in the appendix is the summary of twenty-three contour maps showing lines of equal depth to groundwater in the area of the site. The closest contour line is shown adjacent to the date of report (i.e., Spring 1999). Without exception, from 1981 to 1999, the San Joaquin Flood Control and Water Conservation District has shown this general area to have a groundwater depth of 10 to 20 feet or less. All contours shown were also the last lines before encountering the San Joaquin River. In summary, there is very little published data regarding the first aquifer in this area, and we have therefore based our recommendations on the monitoring completed by our firm over the past three years.

We have not prepared contour maps such as provided for the Terry Property report since this area appears to have lower groundwater. In other words, the depth to groundwater for borings bordering the site on the Luckey, Harris, and Vallentyne Properties were all between 10 to 15 feet in depth even during the winter months, and the four borings on the Lathrop Associates site indicated the same range. We would anticipate more shallow groundwater conditions near the levee during the winter months; however, much of the increased seepage would be picked up by the recommended levee toe drain, thus helping to maintain a more depressed groundwater table.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 General

Based on our findings, it is our professional opinion that the site should be suitable from a geotechnical standpoint for support of the proposed development provided the recommendations contained herein are incorporated into the project design. Given the site conditions encountered, the near-surface soils are likely to vary from expansive clay in the approximate western half to non-expansive silts and sands in the approximate eastern portion. We anticipate that conventional spread foundations should provide adequate support for the assumed structural loading for either of these soil conditions. The primary consideration from a geotechnical standpoint is the shrink-swell (expansion) characteristics of the near-surface moderately plastic clay, where present, and the associated potential for post-construction movement and cracking of floor slabs, flatwork, pavements, and lightly-loaded foundations. Specific conclusions and recommendations addressing this consideration, as well as general recommendations regarding the geotechnical aspects of design and construction, are presented in the following sections.

5.2 Concrete Floor Slabs

Subgrade Preparation

Based on our findings, portions of the near-surface soils underlying principally the western portion of the site consist of moderately-plastic clays. Our experience has been that these soils can exhibit significant shrink-swell (expansion) characteristics with variations in moisture content and pose a risk for post-construction heave and cracking of concrete slabs, as well as lightly loaded foundations and pavements. Several floor slab support options are available for the areas with clay soil, depending on the degree of risk assumed by the developer among other factors.

A common option, representing the highest risk/lowest cost procedure, is to moisture condition the upper 18 inches of subgrade soils during earthwork to a moisture content at or above the optimum moisture content. During or following moisture conditioning, the soils should be

compacted to between 85 and 95 percent relative compaction. The zone of moisture-conditioned soils should extend laterally at least 5 feet outside the perimeter of the structures. Following earthwork, the subgrade soils usually dry because the building pads are exposed to sun and wind for a period of time. Accordingly, it is often necessary to wet or pre-soak the subgrade soils in order to uniformly raise the soil's moisture content to at least 5 percentage points above its optimum moisture content or at least 1 percentage point above its plastic limit, whichever is less. Pre-soaking is usually performed using liberal sprinkling, flooding, or other suitable method. A representative of our firm should perform a field check of the soil's moisture content and consistency prior to placement of slab concrete. The moisture conditioning/compaction control during earthwork serves to reduce the expansion characteristics of the upper clays, and the pre-soaking swells the soils prior to placement of slab concrete thus decreasing the potential for post-construction movement.

Weather conditions at the time of construction will determine the amount of time allowed between the pre-soaking and slab placement. Generally, slab concrete should be placed no more than three days after the final field-testing. In hot and/or windy weather, slab concrete should be placed within 24 hours of the final field-testing. The time required for pre-soaking could vary from a few days to over a week depending on the condition of the subgrade soils. If the building pads are kept moist or wet following earthwork, the amount and time required for pre-soaking is often reduced. Likewise, restricting vehicle or equipment traffic on the pads following earthwork will decrease the potential for over-compacting the soils and reducing the ability for water to penetrate.

Even with close quality control, it is sometimes difficult to uniformly moisture condition and completely pre-swell the soils. Accordingly, with the first option there is a modest risk for isolated heaving with consequent movement and cosmetic cracking of floor slabs and wall finishes. If a higher performance standard and reduced level of risk is desired, many developers have chosen to use post tension or mat slabs in this area. Recommendations for these foundation types are included in Sections 5.5 and 5.6.

Another option less frequently used is to support the proposed building slabs on at least 12 inches of imported non-expansive soil that is placed and compacted as engineered fill. This procedure serves to replace the near-surface clays most susceptible to expansion, increase the dead-load imposed on the underlying clays to resist up-lift forces, and produce a more uniform heave pattern with less differential movement should the underlying clays swell. The non-expansive soil pad could be prepared by removing and replacing the native clays, raising the building pads above existing site grade, or a combination of both. The zone of non-expansive engineered soil should extend laterally at least 5 feet outside the perimeter of the structures. Prior to placement of the non-expansive soil, the exposed native clays should be scarified to a minimum depth of 6 inches, uniformly moisture conditioned at least 5 percentage points above the optimum moisture content, and compacted to between 85 and 95 percent relative compaction. The moisture content of the native clays should be maintained until placement of the non-expansive soil.

Slab Support

In accordance with industry standards, conventional floor slabs that will be covered with moisture-sensitive floor coverings should be underlain by at least 4 inches of compacted crushed rock or "clean" coarse sand. In the event that omission of the crushed rock layer is considered, Kleinfelder should evaluate the proposed "clean" coarse sand to assess its suitability for use in slab support. Furthermore, the gravel or "clean" coarse sand layer should be overlain by a moisture-proofing membrane, such as minimum 10-mil polyethylene sheeting, "Moiststop," or similar product, that is properly lapped and sealed to provide a vapor-tight barrier. The membrane should in turn be overlain by a 1- to 2-inch thick layer of fine-to-medium-grained sand to promote uniform curing of the slab concrete, protect the membrane during construction, and provide a leveling course. This sand should be moistened prior to concrete placement. However, if the sand has been allowed to become wet (due to precipitation or excessive moistening) or if standing water is present above the membrane, the concrete should not be placed. We acknowledge that several developers have elected to eliminate the sand cushion above the vapor barrier, believing that the moisture trapped in the sand cushion might eventually lead to the development of mold on the surface of the slab. This is a relatively new practice, and long-term performance data is not available. It is recognized, however, that more extensive curing procedures, such as soaked burlap or ponding, is necessary due to the non-uniform curing environment of the concrete.

If the crushed gravel or "clean" coarse sand layer will serve as a capillary break, the layer should be free draining and graded so that 100 percent passes the 1-inch sieve and less than 5 percent passes the No. 4 sieve.

As noted, the slab support discussed above is currently the industry standard. This system, however, may not be completely effective in preventing floor slab moisture vapor transmission. Furthermore, this system will not necessarily assure that floor slab moisture transmission rates will meet floor-covering manufacturer standards and that indoor humidity levels will not inhibit mold growth. These post-construction conditions should be addressed separately by a qualified specialist with local knowledge of slab moisture protection systems, flooring design and other potential components that may be influenced by moisture. Our study addresses present subgrade conditions only and does not evaluate future potential conditions for support of slabs unless specifically stated otherwise.

Additional Considerations

The project Structural Engineer should provide the final design floor slab thickness and reinforcement requirements. Care should be taken to place and cure all concrete in accordance with American Concrete Institute (ACI) standards and criteria. As previously discussed, the subgrade soils are anticipated to consist of moderately expansive clay. The intent of the subgrade preparation recommendations presented above is to provide alternatives that are typically considered cost effective and that reduce associated risks to generally acceptable performance standards. The degree of risk varies depending on the alternative selected. The

level of risk can be reduced and a higher performance standard can be achieved by stiffening the floor slab, e.g., thickening the slab and/or reinforcing it with steel bars, or isolating the floor slab from potential soil movement. For example; some projects have specified the use of 5- to 7-inch thick slabs and/or the placement of No. 3 or 4 reinforcement bars placed at 18- to 24-inches on-center each way within the middle third of the slabs. Kleinfelder can provide alternative recommendations and design criteria if it is desired to pursue these options further.

We have found that construction and trenching activities following rough grading often loosen or disturb the subgrade soils. On occasion, this disturbance can lead to isolated movement of the subgrade soils following construction and cracking of the overlying slabs. Accordingly, loose/disturbed areas should be repaired and trench backfill should be properly compacted prior to placement of concrete. The level of risk can be further reduced and a higher performance standard can be achieved by stiffening the floor slab, e.g., thickening the slab and/or reinforcing it with steel bars. Kleinfelder can provide alternative recommendations and design criteria if it is desired to pursue these options further.

5.3 Exterior Flatwork

Like interior floor slabs, exterior concrete flatwork supported directly on native clay may be subject to the same shrink-swell cycles and potential distress. Incorporating the subgrade preparation options discussed above in Section 5.2 can reduce some of the adverse effects of swelling soils. Moisture conditioning is the most common/least costly option used in the Lathrop area, but this option also carries a modest to moderate risk for post-construction cracking and movement. The non-expansive fill option is more costly but will provide a higher performance standard, less maintenance and, thus, less risk in areas with clayey near-surface soils.

Even with proper subgrade preparations, edge effects, i.e., modest differential heave and cracking along the outside portions of flatwork can and often does develop following construction. Unlike interior floor slabs, exterior flatwork is typically not provided with perimeter footings that serve as a cutoff or barrier to reduce seasonal or man-made wetting and drying below the slabs. Several supplemental options can be considered to reduce this risk depending on the performance level desired by the developer among other factors. Consideration could be given to increasing the strength of the flatwork by thickening the sidewalks and/or reinforcing the slabs with steel bars rather than wire mesh. As a minimum, smooth dowels should be provided at all joints to reduce tripping hazards. The dowels should be at least 24 inches in length, greased or sleeved at one end, and spaced at a maximum lateral spacing of 18 inches. Expansion joints should also be frequent within the slabs, typically 6 to 8 feet spacing horizontally. Where flatwork is located adjacent to exposed soils or irrigated lawn and planters, lateral cutoffs, such as inverted curbs, heavy plastic membranes, or manufactured composite drains, have proven successful in the past for reducing wetting and drying of the subgrade soils below the flatwork. Cutoffs should be located along the outside edge of the flatwork and extend below the depth of non-expansive fill or moisture-conditioned native soils. Prior to finalization, our firm should review cutoff details.

Flatwork, such as sidewalks, patios, stairs, and planter boxes, should not be attached to the proposed buildings. These structures should be allowed to "float" with the changes in volume of the soil.

5.4 Spread Foundations

The proposed structures may be supported on shallow, reinforced concrete spread footings founded on undisturbed native soil, engineered fill, or a combination of both. A net allowable bearing pressure of 2,000 pounds per square foot (psf) for dead plus sustained live loading may be used to size column and continuous footings supported by these materials. A one-third increase in the allowable bearing pressure may be applied when considering short-term loading due to wind or seismic forces. Even though computed footing dimensions may be less, continuous and column spread footings should have minimum widths of 12 and 24 inches, respectively, to facilitate hand cleaning of the footing excavations and reduce the potential for localized punching shear failure. Due to expansive soil considerations as discussed in Section 5.2, footings should be embedded at least 18 inches below the lowest final adjacent subgrade[1] where clay soils are present. At this depth, foundations should be supported below the critical zone of seasonal moisture fluctuations where soil shrink-swell cycles are most severe. In addition, perimeter continuous foundations would serve as a horizontal moisture break, reducing the potential for seasonal or man-made wetting and drying below the structures. Accordingly, continuous foundations or thickened slab edges should extend the entire perimeter of the buildings, including door, garage, and bay openings. In areas where non-expansive silt and sand soils are the predominate soil type, the recommended minimum footing depth can be reduced to 12 inches for one-story structures.

Total settlement of an individual foundation will vary depending on the plan dimensions of the foundation and the actual load supported. Based on the anticipated/assumed foundation dimensions and loads, we estimate maximum total and differential foundation settlements should be on the order of 1/2 inch.

Prior to placing steel or concrete, footing excavations should be cleaned of all debris, loose or soft soil, and water. If shrinkage cracks appear in the footing excavations, the excavations should be thoroughly moistened to close all cracks prior to placement of concrete. All footing excavations should be observed by the project Geotechnical Engineer just prior to placing steel or concrete to confirm that the recommendations contained herein are implemented during construction.

The structural engineer should evaluate footing configurations and reinforcement requirements to account for loading, shrinkage, and temperature stresses. As a minimum, continuous

[1] *Within this report, subgrade refers to the top surface of undisturbed native soil, native soil compacted during site preparation, or engineered fill.*

footings should be reinforced with at least two No. 4 reinforcement bars, one top and one bottom, to provide structural continuity and permit spanning of local subgrade irregularities.

5.5 Post-Tensioned Slab Foundations

In lieu of modifying the subgrade conditions (Section 5.2) and using conventional spread foundations and floor slabs, the proposed structures may be supported by minimum 10-inch thick post-tensioned slab foundations. Slab edges and beams should be thickened to at least 12 inches. In accordance with procedures presented in Section 1816 of the 1997 Uniform Building Code (UBC), the following design parameters are recommended:

	Swelling Mode	
	Center Lift	Edge Lift
Edge Moisture Variation Distance (e_m), ft.	5.4	2.6
Differential Soil Movement (y_m), inches	1.7	0.4
Slab-Subgrade Friction Coefficient	0.75	
Net Allowable Bearing Capacity (dead-plus-live)	1,500 psf	

Prior to placement of slab concrete, the upper 12 inches of subgrade soils below the slab foundations should be uniformly moisture conditioned to between 3 and 5 percentage points above the optimum moisture content and compacted to between 85 and 95 percent relative compaction. Following earthwork, it is often necessary to wet or pre-soak the subgrade soils in order to again raise the soils moisture content to at least 3 percentage points above its optimum moisture content or at least 1 percentage point above its plastic limit, whichever is less. Pre-soaking is usually performed using liberal sprinkling, flooding, or other suitable method. A representative of our firm should perform a field check of the soil's moisture content and consistency within three days of concrete placement. The moisture conditioning/compaction control during earthwork serves to reduce the expansion characteristics of the upper clays, and the pre-soaking swells the soils prior to placement of slab concrete, thus reducing the potential for post-construction movement. The time required for pre-soaking could vary from a few days to over a week depending on the condition of the subgrade soils. If the building pads are kept moist or wet following earthwork, the amount and time required for pre-soaking is often reduced. Likewise, restricting vehicle or equipment traffic on the pads following earthwork will decrease the potential for over-compacting the soils and reducing the ability for water to penetrate.

A rock capillary break, vapor barrier, and fine to medium-grained sand should underlie slab foundations as recommended in Section 5.2. The rock capillary break can be omitted provided a second vapor barrier is placed over the first and precautions are taken to carefully overlap, seal, and repair the vapor barrier during construction. As an alternative, the vapor barrier can be substituted using a moisture proofing membrane, such as "Moistop" or an equivalent substitute, installed per the manufacturer's recommendations.

5.6 Structural Slab Foundations

In lieu of modifying the subgrade conditions (Section 5.2) and using conventional spread foundations and floor slabs, the proposed residences may be supported by reinforced structural slab foundations. Structural slabs should have a minimum thickness of 8 inches with thickened slab edges and beams at least 12 inches wide and embedded at least 12 inches below adjacent site grade. A thickened slab bearing directly on the prepared building pad surface should underlie line or point loads imposed on the interior of the slab. Thickened slabs under point loads should be a minimum of 2 feet wide on a side, and line loads should be a minimum of 12 inches wide. In accordance with procedures presented in Sections 1815 of the 1997 Uniform Building Code (UBC) and our experience with this site and adjacent projects, the following design parameters are recommended:

	Design Criteria
Effective Plasticity Index	22
Overconsolidation Coefficient (Co)	0.85
Soil Slope Coefficient (Cs)	1.0
Climatic Rating (Cw)	15
Min. Edge Cantilever length (lc), feet	3.6
Min. Interior Clear Span, feet	6.0
Net Allowable Bearing Capacity (dead-plus-live)	1,500 psf

Prior to placement of slab concrete, the upper 12 inches of subgrade soils below the slab foundations should be uniformly moisture conditioned to between 3 and 5 percentage points above the optimum moisture content and compacted to between 85 and 95 percent relative compaction. Following earthwork, it is often necessary to wet or pre-soak the subgrade soils in order to again raise the soils moisture content to at least 3 percentage points above its optimum moisture content or at least 1 percentage point above its plastic limit, whichever is less. Pre-soaking is usually performed using liberal sprinkling, flooding, or other suitable method. A representative of our firm should perform a field check of the soil's moisture content and consistency within three days of concrete placement. The moisture conditioning/compaction control during earthwork serves to reduce the expansion characteristics of the upper clays, and the pre-soaking swells the soils prior to placement of slab concrete, thus reducing the potential for post-construction movement. The time required for pre-soaking could vary from a few days to over a week depending on the condition of the subgrade soils. If the building pads are kept moist or wet following earthwork, the amount and time required for pre-soaking is often reduced. Likewise, restricting vehicle or equipment traffic on the pads following earthwork will decrease the potential for over-compacting the soils and reducing the ability for water to penetrate.

A rock capillary break, vapor barrier, and fine to medium-grained sand should underlie slab foundations as recommended in Section 5.2. The rock capillary break can be omitted provided a second vapor barrier is placed over the first and precautions are taken to carefully overlap,

seal, and repair the vapor barrier during construction. As an alternative, the vapor barrier can be substituted using a moisture proofing membrane, such as "Moistop" or an equivalent substitute, installed per the manufacturer's recommendations.

5.7 Lateral Resistance

Resistance to lateral loads (including those due to wind or seismic forces) may be determined using an at-rest coefficient of friction of 0.50 between the bottom of concrete foundations and the underlying soils. Lateral resistance for foundations can alternatively be provided by the passive soil pressure acting against the vertical face of the footings. The passive pressures available in engineered fill and undisturbed native soil may be taken as equivalent to pressures exerted by fluids weighing 400 and 350 pounds per cubic foot (pcf), respectively. These two modes of resistance can be combined. However, since horizontal movement is required to mobilize passive resistance, the allowable at-rest frictional resistance should be reduced by 50 percent.

Lateral resistance parameters provided above are ultimate values. Therefore, a suitable factor of safety should be applied for design purposes. For static and seismic loading conditions, factors of safety of at least 1.5 and 1.15, respectively, should be used for design. The appropriate factor of safety will depend on the design condition and should be determined by the project Structural Engineer.

5.8 Retaining Walls

Retaining walls should be designed to resist the earth pressure exerted by the retained, compacted backfill plus any additional lateral force due to surcharge loading, i.e., construction equipment, foundations, roadways, etc., at or near the wall. The following equivalent fluid earth pressures are recommended assuming wall heights of 10 feet or less and a fully drained backfill condition:

Earth Pressure Condition	Backfill Slope	Lateral Earth Pressure (pcf)
Active	Level	35
At-Rest	Level	55

Retaining walls capable of deflecting a minimum of 0.1 percent of their height at the top may be designed using the active earth pressure. Retaining walls incapable of this deflection or that are fully constrained against deflection should be designed for the at-rest earth pressure. Where uniform surcharge loads are located within a lateral distance from constrained and unconstrained retaining walls equal to the wall height, 45 and 30 percent of the surcharge load, respectively, should be applied uniformly over the entire height of the wall.

Retaining wall backfill should be free draining, and provisions should be made to collect and dispose of excess water away from the wall. Wall drainage may be provided by either a minimum 1-foot wide layer of clean drainrock/gravel enclosed by geosynthetic filter fabric or by prefabricated drainage panels (such as Miradrain, Enkadrain, or an equivalent substitute) installed per the manufacturer's recommendations. In either case, drainage should be collected by perforated pipes and directed to a sump, storm drain, weep holes, or other suitable location for disposal. Drainrock should consist of clean, durable stone having 100 percent passing the 1-inch sieve and zero percent passing the No. 4 sieve. Synthetic filter fabric should conform to the requirement in Section 88 "Engineering Fabrics" of the Caltrans Standard Specifications. Caltrans Class 2 Permeable Material meeting the requirements of Section 68-1.025 of the Standard Specifications can be substituted for the clean drainrock and filter fabric following review and approval by the Geotechnical Engineer. The upper 12 inches of engineered backfill above the wall drainage should consist of native soils, concrete, asphalt-concrete, or similar backfill to reduce surface drainage into the wall drain system.

If retaining walls are 4 feet or less in height, the perforated pipe may be omitted in lieu of weep holes on 4-foot, center-to-center maximum spacing. The weep holes should consist of 4-inch or larger diameter holes (concrete walls) or unmortered head joints (masonry walls). They should be placed as low as possible but not be higher than 18 inches above the lowest adjacent grade. Two 8-inch square overlapping patches of geosynthetic filter fabric should be affixed to the rear wall openings of each weep hole to retard soil piping.

All backfill should be placed and compacted in accordance with recommendations provided herein for engineered fill. During grading and backfilling adjacent to any walls, heavy equipment should not be allowed to operate within a lateral distance of 5 feet from the wall or within a lateral distance equal to the wall height, whichever is greater, to avoid overstressing of the wall. Within this zone, only hand operated equipment ("whackers," vibratory plates, or pneumatic compactors) should be used to compact backfill soils.

Expansive soils, i.e., clays, plastic silts, and/or clayey sands, should not be used for backfill against retaining walls unless approved by the geotechnical engineer. The wedge of nonexpansive backfill material should extend from the bottom of each retaining wall outward and upward at a slope of 1(h):1(v) or flatter.

5.9 Asphalt Concrete Pavements

Subgrade Preparation

As discussed in Section 5.2, the near-surface soils encountered in a portion of the site consisted of potentially expansive clays that pose a risk for post-construction heave and cracking of pavements. To improve the pavements service life, the subgrade soils in pavement areas should be scarified to a minimum depth of 12 inches below the finished subgrade elevation and uniformly moisture conditioned to between 2 and 4 percentage points above the optimum moisture content. During or following moisture conditioning, the upper 6 inches of soil should

be compacted as engineered fill to at least 95 percent relative compaction. The underlying 6 inches of soil should be compacted to at least 90 percent relative compaction. The subgrade soils should be in a stable, non-pumping condition at the time aggregate base materials are placed and compacted. The moisture content of the soils should be maintained until placement of aggregate base by liberal sprinkling with water or other suitable method. To further reduce drying, the aggregate base should also be periodically sprinkled or wetted prior to placement of asphalt-concrete. A representative from our firm should perform a field check of the soil moisture content and relative compaction prior to placement of aggregate base.

In areas with non-expansive near-surface soils, following site stripping, all subgrade soils to support pavements should be scarified to a minimum depth of 6 inches below the finished subgrade elevation, uniformly moisture conditioned to between 1 and 4 percentage points above the optimum moisture content, and compacted as engineered fill to at least 95 percent relative compaction. The subgrade soils should be in a stable, non-pumping condition at the time aggregate base materials are placed and compacted.

Pavement Sections

Based on the results of laboratory tests for adjacent developments, the subgrade soils are likely to exhibit poor to moderate support characteristics for pavements as represented by R-value test results that have varied from 5 to over 50 for the adjacent Luckey, Harris, and Terry Properties. Pavements for a particular area are generally designed using the lowest R-Value obtained for that site. We understand that the initial design required by the City of Lathrop is based on an R-value = 5. We anticipate that this design value will be appropriate for the approximate western half of the property. For the eastern portion of the site, much higher R-values, on the order of 30 to 50, are expected due to the predominant silty sand and sandy silt materials. These values will likely decrease as the underlying fine-grained soils are mixed in during backfilling operations for utilities. Therefore, we suggest a preliminary design R-value of 20 for the eastern half. For your information, this value was recommended for the preliminary design of streets for the Terry and Harris Properties. Once rough grading is completed and utilities installed, the City of Lathrop will require that a number of confirming R-Value tests be performed. The following preliminary pavement sections[2] are based on R-values of 5 (per the City of Lathrop), 10, 20, and 30, current Caltrans design procedures, and traffic indices ranging from 4 to 10.. The traffic index (TI) is a measure of traffic wheel loading frequency and intensity of anticipated traffic. For comparison, TI's between 4.0 and 5.0 are often suitable for design of average residential streets and minor or secondary collectors. TI's of between 5.5 and 6.5 are commonly used for design of major or primary collectors between minor collectors and major arterials. TI's of 7.0 and greater are common for design of commercial roads,

[2] *Caltrans design procedures for asphalt concrete pavements provide sections in units of inches, rounded up to the nearest 1/2-inch. Sections provided for TI's up to 7.0 include no Gravel Equivalent Safety Factor (per County Engineers Association and the League of California Cities criteria). Some cities and counties may require a Gravel Equivalent Safety Factor for design of pavements within public streets. If required, the pavement sections should be reevaluated.*

connector roads, or major streets with heavy traffic. The TI's assumed above should be reviewed by the project Owner, Architect, and/or Civil Engineer to evaluate their suitability for this project. The use of rigid concrete pavement is favored where trash pick-up or truck traffic necessitates short radius maneuvering and/or heavy metal bin movement on rollers. This normally only applies to commercial areas.

PAVEMENT SECTIONS

R-Value	Assumed Traffic Index	Minimum Thickness of Asphaltic Concrete (inches)	Minimum Thickness of Class II Aggregate Base (inches)	Minimum Thickness of Aggregate Subbase (inches)
30	4.0	2	5½	-
	4.5	2	6½	-
	5.0	2	8	-
	5.5	2	9½	-
	6.0	2½	9½	-
	6.5	2½	11	-
		2½	6½	5
	7.0	3	11½	-
		3	6½	5½
	8	5	10½	-
	10	6½	14	-
		6½	9	6
20	4.0	2	7	-
	4.5	2	8½	-
	5.0	2	10	-
	5.5	2	11½	-
		2	5	7
	6.0	2½	12	-
		2½	5	7½
	6.5	2½	13½	-
		2½	6½	7½
	7.0	3	14	-
		3	6½	8½
	8.0	5	13½	-
		5	8	6
	10	6½	7½	-
		6½	9	9½

R-Value	Assumed Traffic Index	Minimum Thickness of Asphaltic Concrete (inches)	Minimum Thickness of Class II Aggregate Base (inches)	Minimum Thickness of Aggregate Subbase (inches)
10	4.0	2	8	-
	4.5	2	9½	-
	5.0	2	11	-
		2	4	8
	5.5	2	13	-
		2	5	8½
	6.0	2½	13½	-
		2½	5	9½
	6.5	2½	15½	-
		2½	6½	9½
	7.0	3	16	-
		3	6½	10½
	8.0	5	16½	-
		5	8	9
	10.0	6½	21	-
		6½	9	13
5	5.0	2	12	-
		2	4	9
	6.0	2½	15	-
		2½	5	11
	11.0	7	26	-
		7	10½	17

Pavement sections provided above are contingent on the following recommendations being implemented during and following construction.

- Aggregate base materials should be compacted as engineered fill to at least 95 percent relative compaction.
- Adequate drainage (both surface and subsurface) should be provided such that the subgrade soils and aggregate base materials are not allowed to become wet. We recommend that a minimum 3-foot separation from top of pavement to groundwater be maintained. Our records indicate that groundwater elevations at the site will be well below this level.
- All concrete curbs separating pavement and landscaped areas should extend into the subgrade and below the bottom of adjacent, aggregate base materials. Depending on the degree of risk assumed by the owner/developer among other factors, the potential for soil heaving and edge cracking can be reduced by constructing vertical cutoffs between the pavement and adjacent landscape areas or

areas that may pond water. The cutoffs could consist of inverted curbs, polyethylene membranes, or manufactured composite drains that serve to reduce the horizontal migration of water below the pavements. Cutoffs should extend at least 4 inches below the depth of the aggregate base. Additional details regarding vertical cutoffs can be provided upon request.

- Aggregate base materials should meet current Caltrans specifications for Class 2 aggregate.
- Asphalt paving materials and placement methods should meet current Caltrans specifications for asphalt concrete.
- Periodic maintenance should be performed to repair degraded areas and seal cracks with appropriate filler.

Pavement sections provided above are preliminary and based on the soil conditions encountered during our field investigation, our assumptions regarding final site grades, and limited laboratory testing. Due to grading operations, the actual pavement subgrade materials may be significantly different than those tested for this study.

5.10 Soil Shrinkage

In order to evaluate soil shrinkage, Teichert Construction completed a 1-acre test pad at the west end of Louise Avenue on March 27, 2003 on the adjacent Terry Property. The procedure included first stripping the test pad as well as an adjoining 1-acre parcel which would be used for borrow. Before any compaction equipment operated over the test pad, field density tests were taken at five locations at the surface and at 1 foot below existing site grade. After this testing was completed, a Caterpillar 815 compacter was used to compact the original ground. Another series of compaction tests were taken at approximately the same areas as before. Finally, a 1-foot thick layer of similar clay fill material from the adjoining parcel was placed and compaction tests taken at +1.0 foot and at original grade. The results of the compaction tests indicated an approximate 11 percent loss due to recompacting original grade and an additional 3.6 percent shrinkage when 1 foot of fill was placed. The average in-place density was 90 pounds per cubic foot (pcf) before any compacting operations on the test pad. A laboratory compaction curve was performed on a composite sample from the site that indicated a maximum dry density of 117.4 pcf. Assuming that this material is compacted to approximately 90 percent relative density, the in-place dry density would be 105.7 pcf that would correspond to an approximate 16 percent shrinkage if this material were excavated, taken to a different location on the site, and compacted. It was interesting that the native soil at the subgrade –1.0 level was less dense, with an average dry density of 85 pcf versus 90 pcf on original grade. If lower material were excavated and compacted to an average of 90 percent compaction, the theoretical shrinkage would increase to 21 percent. We note that this is opposite of what we typically find. Normally, the top 12 inches is usually "fluffed up" due to repetitive discing and plowing and the introduction of organics. It is possible, in our opinion,

that the equipment used to strip the site may have, in fact, compressed the upper material. It is more likely, based on our experience, that the theoretical shrinkage in the upper 12 inches of grade is also about 20 percent.

We would expect slightly more shrinkage, possibly 5 percent or so, if the native materials were more sandy in nature. Consideration must also be given to roadway areas where the City of Lathrop will require 95 percent compaction versus 90 percent that will be the standard for building pads. As shown in the Soil Condition section of this report, the near-surface soils are variable. We understand that Teichert experienced an approximate 30 percent shrinkage of material for the Stonebridge project east of I-5. In our opinion, that site was more sandy than the Terry, Harris, and Luckey Properties, or even the eastern portion of this site; therefore, we would expect a higher shrinkage value. Depending on the consequences of being long or short on material during grading operations, it may be prudent to use a shrinkage value on the order of 25 percent. There are many variables that must be considered when evaluating soil shrinkage. In order for the site to balance, we expect there may be some adjustments to final pad elevations.

5.11 Site Drainage

Foundation and slab performance depends greatly on how well runoff water drains from the site. Accordingly, positive drainage should be provided away from building pad and pavement areas toward appropriate drop inlets or other surface drainage devices without ponding. The drainage should be maintained both during construction and over the life span of the project. Landscaping after construction should not promote ponding of water adjacent to the structures. Roof draining should be installed with appropriate downspout extensions outfalling on splash blocks so that water is directed a minimum of 5 feet horizontally away from the structures or be connected to the storm drain system for the development. This method of roof runoff containment has the advantage of protection from owner alterations. Potential man-made water sources such as buried pipelines, drains, swimming pools, garden ponds and the like should be periodically tested and/or examined for signs of leakage or damage. Any such leakage or damage should be promptly repaired.

5.12 Storm Water Basin

We understand that the western portion of the property may be used for a storm water detention basin. With varying seasonal groundwater depths and a 5-foot separation required by local agencies, the maximum depth of cut may be limited. We understand that an exception would be if the basins are lined, in which case the excavation could extend to within 2 feet of groundwater. In order to generate sufficient storage, we anticipate that a depth of 6 to 8 feet below original grade may be needed.

If a clay liner is considered, we recommend a minimum thickness of 12 inches of material having permeability of at least $1x10^{-6}$cm/sec. In addition, since the water level in the ponds may

fluctuate, we recommend that the clay liner be covered with at least 12 inches of native soil, preferably a fine-grained clayey silt, clayey sand, and silty clay to protect the clay liner from excessive moisture loss. The clay liner should be compacted to a minimum of 90 percent of the maximum dry density based on the ASTM D-1557 test procedure at a moisture content at least 4 percent over optimum. Based on our test borings and the percolation tests described in Section 5.13, there are clay soils in the western portion of the site that meet this criteria. Since both test borings (B-3 and B-4) and percolation tests (P-1 and P-2) encountered clay soils, there is a possibility that clay soils exist over the majority, if not all, of the basin. If this condition occurs, the liner is effectively "in place" and would need only to be compacted.

5.13 Percolation Tests

Numerous percolation tests have been performed for the adjacent properties. Due to soil variations, the measured percolation rates have also varied. Near-surface clay soils have indicated relatively-low percolation rates, while the more-sandy materials have indicated higher percolation rates. Two percolation tests were located within the basin area in the northwest corner of the site. The depth of test varied from 5 feet for P-1 to 6 feet for P-2. Clay soils were countered in both test locations. The tests were run for approximately 4 hours, and no percolation was noted over the last 20 minutes of the test at location P-1 and only 1 inch drop in 30 minutes was noted at location P-2. With 2 feet of water maintained in each hole, we conclude that very little percolation should be anticipated from this area of the site.

5.14 Levee Toe Drains

Relatively high groundwater conditions are common in the south Lathrop area and in other parts of Reclamation District 17, most notably Weston Ranch. Our firm has provided the majority of geotechnical studies in the Weston Ranch area as summarized in our letter dated June 3, 2002. In our opinion, the varied soil conditions for this and adjacent properties are generally similar to those encountered in the Weston Ranch area. In other words, there are areas within Weston Ranch where moisture conditioning is required to mitigate the potential of heaving of surface clay soils as well as areas blanketed with silty sand and sandy silts. The majority of challenges with high groundwater appeared to occur primarily during the winter months when the adjacent San Joaquin River was at elevated water levels. The units mostly affected were also those adjacent to the Reclamation District 17 levees.

On March 22, 2001, our firm issued a report entitled "Results of Seepage Study and Comments Regarding Subgrade Stability, Weston Ranch Subdivisions." Several computer models were prepared with generalized soil profiles based primarily on test borings and test pits in those units located near the San Joaquin River. The soil profiles for the levee however, were based on soil borings completed in 1988 and 1989 for the Reclamation District 17 levee study for FEMA. Since the soil conditions are generally similar in the north as well as the south part of Reclamation District 17, it is our opinion that the results of the seepage study are still applicable for this study.

In our March 2001 report, we used the computer program SEEPW which relies on finite element techniques. In this study, a toe drain was placed at depths of 4 to 6 feet, which for the Weston Ranch study was the approximate average depth to allow a gravity flow to storm lines in the streets. Our analysis indicated that the majority, over 95 percent, of water traveling through the relatively sandy Reclamation District 17 levee was intercepted by the toe drain. Additional flow may occur below our model; however, the impact on near-surface water elevations would be minimal. Without the presence of the toe drain, there would definitely be levee seepage near the toe, as well as higher groundwater levels within the subdivisions closest to the levees. These results are consistent with our observations made during periods of peak river flow along Reclamation District 17. In summary, it is our opinion that a levee toe drain extending 4 to 6 feet below grade is a reasonable approach to significantly reduce the risk of high groundwater near the levees. Consequently, we do not anticipate that separate drains, such as under curbs, would be needed within the subdivisions themselves. For preliminary design purposes, drain pipe approximately 6 inches in diameter can be used for the toe drain.

5.15 UBC Seismic Design Criteria

The project site lies within Seismic Zone 3 as shown on Figure 16-2 of the 1997 UBC. The nearest Seismic Source Type A fault is mapped greater than 15 kilometers (km) from the project site and the nearest Seismic Source Type B fault is mapped greater than 10 km from the site. Accordingly, near-source amplification factors do not need to be considered for design per Table 16-S and 16-T of the 1997 UBC. The upper 100 feet of soil underlying the site should meet the criteria for soil profile type S_D as defined in Table 16-J of the 1997 UBC.

5.16 Preliminary Liquefaction Evaluation

The project site and its vicinity are located in an area traditionally characterized by low seismic activity. Historical records suggest that the site will likely be subject to moderate seismic shaking at least once during the design life of the project. A Seismic Shaking Hazards Map (1999) developed by the California Department of Mines and Geology (Map Sheet 48) places the project site in an area with a peak horizontal ground acceleration (10 percent probability of exceedence in 50 years) of between 0.15g and 0.20g. A deterministic evaluation using an attenuation relationship developed by Boore, Joyner, Fomal (1993,1994) indicated the potential for a peak ground acceleration of 0.19g.

Earthquakes are caused by the sudden displacement of earth along faults with a consequent release of stored strain energy. The fault slippage can often extend to the ground surface where it is manifested by sudden and abrupt relative ground displacement. Damage resulting from fault rupture occurs only where structures are located astride the fault traces that move. The subject site is not located within, nor is it adjacent to any Fault-Rupture Hazard Zones (formerly Alquist-Priolo Special Studies Zones) (Hart, 1990). The closest known active fault to the site is the Greenville fault, located about 35 miles to the southwest.

A common secondary hazard as a result of strong ground shaking is the potential for soil liquefaction and subsidence. Liquefaction describes a phenomenon in which saturated soil loses shear strength and deforms as a result of increased pore water pressure induced by strong ground shaking during an earthquake. Dissipation of the excess pore pressures will produce volume changes within the liquefied soil layer, which can manifest at the ground surface as settlement of structures, floating of buried structures, and failure of retaining walls. Factors known to influence liquefaction include soil type, grain size, relative density, confining pressure, depth to groundwater, and the intensity and duration of ground shaking. Soils most susceptible to liquefaction are saturated, loose sandy soils.

The potential for an earthquake with the intensity and duration characteristics capable of promoting liquefaction is a possibility during the design life of the project. A majority of the subsurface soils encountered during our investigation are generally high in silt/clay content and/or relatively dense, and subsequently not susceptible to liquefaction. However, discontinuous or localized strata of loose to medium dense silty sands were encountered in many of the thirteen deeper CPT soundings completed for adjacent properties at locations shown on Plate 1. Results of our evaluation (NCEER, 1997) indicate these sand strata, where located below groundwater, may have a potential for liquefaction in the event of a large magnitude earthquake along the CRSBBZ or Greenville faults. Presented in the appendix on Plates A-9 through A-13 is a summary of our calculations for the adjacent Luckey Property. The potential for liquefaction generated by the more distant faults to the west and southwest is considered remote. Based on empirical procedures developed by Seed and Tokimatsu (1984), we estimate that seismically-induced settlement at the top of the liquefiable sand layers could be in the range of 1.3 inch or less. Liquefaction is not expected to be widespread since potentially liquefiable sand layers are discontinuous and confined. As the site is developed, we anticipate the groundwater level to drop as rainwater is diverted into drainage features and flood irrigation of the fields is discontinued, reducing the probability of liquefaction in the near-surface soils that are currently saturated. This phenomenon has been observed in the Spanos Park, Weston Ranch, Mountain House, and west Tracy areas where construction dewatering initially lowered the relatively high groundwater table, then the absence of flood irrigation and the reduction in percolation of rainfall has created a reduction in groundwater levels. For these reasons, we have reduced the groundwater levels in our analysis. Ground surface settlements should also be significantly less due to bridging effects within the overlying soil. In summary, with the data available, we do not feel that any mitigation measures are warranted. Additional field studies may disclose pockets of less dense sand that may exceed the seismically induced settlement limit for spread foundations. If this condition occurs, post-tensioned slabs may be an option.

5.17 Corrosion Potential

Chemical and resistivity tests have been performed on numerous samples from adjacent projects. In general, the pH has been near neutral and water-soluble sulfate and chloride concentrations have been low. Resistivity tests have often varied from 1,000 to over 3,000

ohm-cm. The lower resistivity values would most likely occur with soils in the western portion of the project. The ACI Manual of Concrete Practice, Section 201.2R-92, recommends using a Type I or II cement for foundations placed in these soils. In accordance with California Test 532, "if the chloride concentration is determined to be less than 500 ppm (parts-per-million)," "the influence of the chloride-ion at this level is considered to be non-corrosive." A commonly accepted correlation between soil resistivity and corrosivity towards ferrous metals is provided below:

Soil Resistivity	Corrosivity
0 to 1,000 ohm-cm	Severely corrosive
1,000 to 2,000 ohm-cm	Corrosive
2,000 to 10,000 ohm-cm	Moderately corrosive
Over 10,000 ohm-cm	Mildly corrosive

We note that the tests described above are only an indicator of soil corrosivity. A competent corrosion engineer should be retained to design corrosion protection systems appropriate for the project.

5.18 General Earthwork

The following presents recommendations for general earthwork criteria. Previous sections should be reviewed for specific or supplemental earthwork recommendations.

5.18.1 Site Stripping

Prior to general site grading, tall or heavy surface vegetation, organic topsoil and any debris should be removed and disposed of outside the construction limits. The remaining roots, stubble, and short grasses can be disced into the surface during subgrade preparation provided the organic content of the soil (as determined by loss-on-ignition tests) does not exceed 5 percent by weight. Deep stripping may be required where concentrations of organic soils or tree roots are encountered during site grading. The depth of stripping should be determined in the field by a representative of our firm prior to earthwork. Stripped topsoil (less any debris) may be stockpiled and reused for landscape purposes. This material, however, should not be incorporated into any engineered fill.

Buried objects such as utility lines, septic tanks, cesspools, wells, foundations, etc., exist on site. If encountered within the area of construction, these items should be removed and disposed of off-site. Existing wells should be abandoned in accordance with applicable regulatory requirements. Existing utility pipelines that extend beyond the limits of the proposed construction and will be abandoned in-place should be plugged with cement grout to prevent migration of soil and/or water. All excavations resulting from removal activities should be cleaned of loose or disturbed material and dish-shaped with sides sloped 3(h):1(v) or flatter to permit access for compaction equipment.

5.18.2 Subgrade Preparation

Previous sections discuss specific subgrade preparation recommendations related to concrete floor slabs, foundations, exterior flatwork, and pavements. Where not specifically addressed by these previous sections, all subgrade areas that will receive engineered fill or support of structures should be scarified to a depth of at least 6 inches, uniformly moisture conditioned to between 2 and 4 percentage points above the optimum moisture content, and compacted as engineered fill to at least 90 percent relative compaction. If the soils are found to be predominantly clayey, the compaction standard should be changed to a minimum of 85 percent and a maximum of 95 percent. Eventually these clay soils should be moisture conditioned to a minimum of 5 percent over optimum if conventional slab on grade floors are used.

In-place scarification and compaction may not be adequate to densify all disturbed soil within areas grubbed or otherwise disturbed below a depth of about 6 inches. Therefore, overexcavation of disturbed soil, scarification and compaction of the exposed subgrade, and replacement with engineered fill may be required to sufficiently densify all disturbed soil.

5.18.3 Temporary Excavations

Construction site safety generally is the sole responsibility of the Contractor, who shall also be solely responsible for the means, methods, and sequencing of construction operations. The Contractor should be aware that slope height, slope inclination, or excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, and/or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations). Flatter slopes and/or trench shields may be required if loose, cohesionless soils and/or water are encountered along the slope face. Heavy construction equipment, building materials, excavated soil, and vehicular traffic should not be allowed within a lateral distance equal to 1/3 the slope height from the top of any excavation. During wet weather, earthen berms or other methods should be used to prevent runoff water from entering all excavations. All runoff water, seepage and/or groundwater encountered within excavations should be collected and disposed of outside the construction limits.

5.18.4 Fill Materials

The native soils encountered in our borings, minus organics, debris and/or other deleterious materials, should be suitable for use as engineered fill in proposed building areas. However, the native clays are considered potentially expansive. Therefore, clay fill placed in building, flatwork, retaining wall, or pavement areas should be prepared per the subgrade preparation recommendations presented in Section 5.2 - Concrete Floor Slabs.

All import fill soils should be nearly free of organic or other deleterious debris, essentially non-plastic, and less than 3 inches in maximum dimension. In general, well-graded mixtures of

gravel, sand, non-plastic silt, and small quantities of cobbles, rock fragments, and/or clay are acceptable for use as import fill. All imported fill materials to be used for engineered fill should be sampled and tested by the project Geotechnical Engineer prior to being transported to the site. Specific requirements for import fill are provided below.

Gradation (ASTM C136)	
Sieve Size	**Percent Passing**
3-inch	100
No. 4	50 – 100
No. 200	15 – 70
Plasticity (ASTM D4318)	
Liquid Limit	**Plasticity Index**
Less than 30	Less than 12
Organic Content (ASTM D2974)	
Less than 3 percent	

Trench backfill and bedding placed within existing or future city right-of-ways should meet or exceed the requirements outlined in the current city specifications. Trench backfill or bedding placed outside existing or future right-of-ways could consist of native or imported soil that meets the requirements for fill material provided above. However, coarse-grained sand and/or gravel should be avoided for pipe bedding or trench zone backfill unless the material is fully enclosed in a geotextile filter fabric such as Mirafi 140N or an equivalent substitute. In a very moist or saturated condition, fine-grained soil can migrate into the coarse sand or gravel voids and cause "loss of ground" or differential settlement along and/or adjacent to the trenches; thereby leading to pipe joint displacement and pavement distress. Consideration should be given to using watertight joints where pipes and culverts are placed below groundwater and in highly erodible soils, i.e., silty sands and silts.

Where access for compaction testing in deep trenching operations is limited by trench stability, safety, and other access concerns, a cement slurry backfill or controlled low strength material may be used for backfill as long as adequate pipe anchoring measures to prevent pipe floating are employed. The slurry should be adequately vibrated into position under the spring line of the pipe.

Utility trenches backfilled with sand or other permeable material can act as a conduit for exterior surface water to enter below structures. Accordingly, native clayey soils or lean concrete should be used as backfill for a minimum lateral distance of 2 feet on each side of the exterior building line to act as a "plug."

Trench backfill recommendations provided above should be considered minimum requirements only. More stringent material specifications may be required to fulfill bedding requirements for specific types of pipe. The project Civil Engineer should develop these material specifications

based on planned pipe types, bedding conditions, and other factors beyond the scope of this study.

5.18.5 Engineered Fill

All fill soils, either native or imported, required to bring the site to final grade should be compacted as engineered fill. Fill soils or native subgrade composed of non-expansive sands, silts and import fill should be uniformly moisture conditioned to between 1 and 3 percentage points above the optimum moisture content, placed in horizontal lifts less than 8 inches in loose thickness, and compacted to at least 90 percent of the maximum dry density as determined by ASTM Test Method D 1557[3]. Unless otherwise noted in previous sections, fill soils or native subgrade composed of potentially expansive clay should be uniformly moisture conditioned to between 3 and 5 percentage points above the optimum moisture content in deep fill areas (>18 inches) and to at least optimum moisture content in shallow fill areas, placed in horizontal lifts less than 8 inches in loose thickness, and compacted to between 90 and 95 percent of the maximum dry density in deep fill areas and between 85 to 95 percent in the upper 18 inches. Additional moisture conditioning prior to slab placement. Additional fill lifts should not be placed if the previous lift did not meet the required dry density or if soil conditions are not stable. Discing and/or blending may be required to uniformly moisture condition soils used for engineered fill.

The upper 12 inches of subgrade soils in pavement areas should be uniformly moisture conditioned to between 2 and 4 percentage points above the optimum moisture content. The upper 6 inches of subgrade soils should be compacted to at least 95 percent relative compaction, and the lower 6 inches should be compacted to at least 90 percent relative compaction.

All trench backfill in building or other structural areas should be placed and compacted in accordance with recommendations provided above for engineered fill. During backfill, mechanical compaction of engineered fill is recommended. Jetting may be performed on trench backfill placed outside the building areas. This procedure typically consists of filling the utility trenches with backfill soils to within 3 feet of finished grade. The soils are then thoroughly jetted with water by inserting the jetting rods at a spacing of about 4 to 6 feet along the trench. The jetted soils are then allowed to "rest" for a period of time (typically 2 to 3 days) to allow excess water to drain and consolidation to occur. Following the rest period, the backfill soils are then rolled with a sheepsfoot attached to the arm of an excavator to further consolidate the upper few feet of soil and detect any excessively soft or pliant areas. Once the jetted trench backfill has adequately consolidated, the upper 3 feet of trench backfill should be placed at a moisture content of at least 2 percent above the optimum moisture content and mechanically compacted as engineered fill.

[3] *This test procedure should be used wherever relative compaction, maximum dry density, or optimum moisture content is referenced within this report.*

The density of the jetted backfill will not typically meet compaction standards, i.e., 90 percent relative compaction. Where tested, we have found that the compaction of jetted backfill typically falls between about 84 and 90 percent. Accordingly, we recommend that a performance criterion rather than a compaction standard be specified for jetted trench backfill. The project Geotechnical Engineer or designated representative should observed the jetting operation and consolidation to document that the procedure has been adequately performed and ready for final backfill.

5.18.6 Wet/Unstable Subgrade Conditions

Based on our findings and historical records, groundwater levels are not anticipated to rise near surface or impede grading operations at the site. However, if site grading is performed during or following extended periods of rainfall, the moisture content of the near-surface soils may be significantly above optimum. This condition, if encountered, could seriously delay grading by causing an unstable subgrade condition. Typical remedial measures include discing and aerating the soils during dry weather, mixing the soils with dryer materials, removing and replacing the soils with an approved fill material, stabilization with a geotextile fabric or grid, or mixing the soils with an approved hydrating agent such as a lime or cement product. In the Weston Ranch area when unstable street subgrade was observed, a typical approach has been to treat the unstable soil with between 3 to 4 percent high calcium quicklime or a combination of quicklime and flyash, depending on the severity of the pumping. Normally, the depth of treatment is between 12 and 16 inches. Each unstable area is usually evaluated separately, and there have been some areas with minor movement where the City of Stockton has allowed a reinforcing geofabric (such as Mirafi 600X® or equivalent) to be used in lieu of lime treatment. Our firm should be consulted prior to implementing any remedial measure to observe the unstable subgrade condition and provide site-specific recommendations.

If construction is to proceed during the winter and spring months, one way to reduce the exposure of the pad and potential repairs is to leave the subgrade at least 1 foot above the proposed subgrade elevation, cutting it down immediately before placing the capillary break and floor slab. The cut areas should be proof-rolled at the discretion of the geotechnical engineer to identify whether undercutting of any remaining wet/unstable soils is required. Cut soils can be placed in landscape areas or disced and aerated (dried) during dry weather for placement in pavement, future pad, or other areas.

6. ADDITIONAL SERVICES

The review of plans and specifications, field observations, and testing by Kleinfelder, Inc. is an integral part of the conclusions and recommendations made in this report. If Kleinfelder, Inc. is not retained for these services, the client agrees to assume Kleinfelder, Inc.'s responsibility for any potential claims that may arise during construction. The actual tests and observations by Kleinfelder, Inc. during construction will vary depending on type of project and soil conditions.

The tests and observations would be additional services provided by our firm. The costs for these services are not included in our current fee arrangements.

As a minimum, our construction services should include observation and testing during site preparation, grading, and placement of engineered fill and observation of foundation excavations prior to placement of reinforcing steel. Many of our clients are finding it helpful to have a density test, moisture test (given the soils are expansive), and concrete compressive tests on each lot even though this information is not required by any agency. Since the site is underlain by expansive soils, we recommend that a letter describing the risks of expansive soils and the need for proper subgrade preparation prior to placing any exterior concrete be provided to future home owners. This letter should also stress the importance of maintaining positive drainage and should encourage the use of properly placed drains to transport excess landscape water and run off away from the structures. Our firm can help draft the appropriate letter, if desired.

7. LIMITATIONS

1. The conclusions and recommendations of this report are for design purposes for the Lathrop Associates subdivision project as described in the text of this report. The conclusions and recommendations in this report are invalid if:

   - The assumed structural or grading details change
   - The report is used for adjacent or other property
   - Changes of grades and/or groundwater occur between the issuance of this report and construction
   - Any other change is implemented which materially alters the project from that proposed at the time this report was prepared

2. The conclusions and recommendations in this report are based on the borings drilled and percolation tests performed for this investigation. It is possible that variations in the soil conditions exist between or beyond the points of exploration, or the groundwater elevation may change, both of which may require additional investigations, consultation, and possible design revisions.

3. We are not corrosion engineers. A competent corrosion engineer should be retained to design corrosion protection systems appropriate for the project.

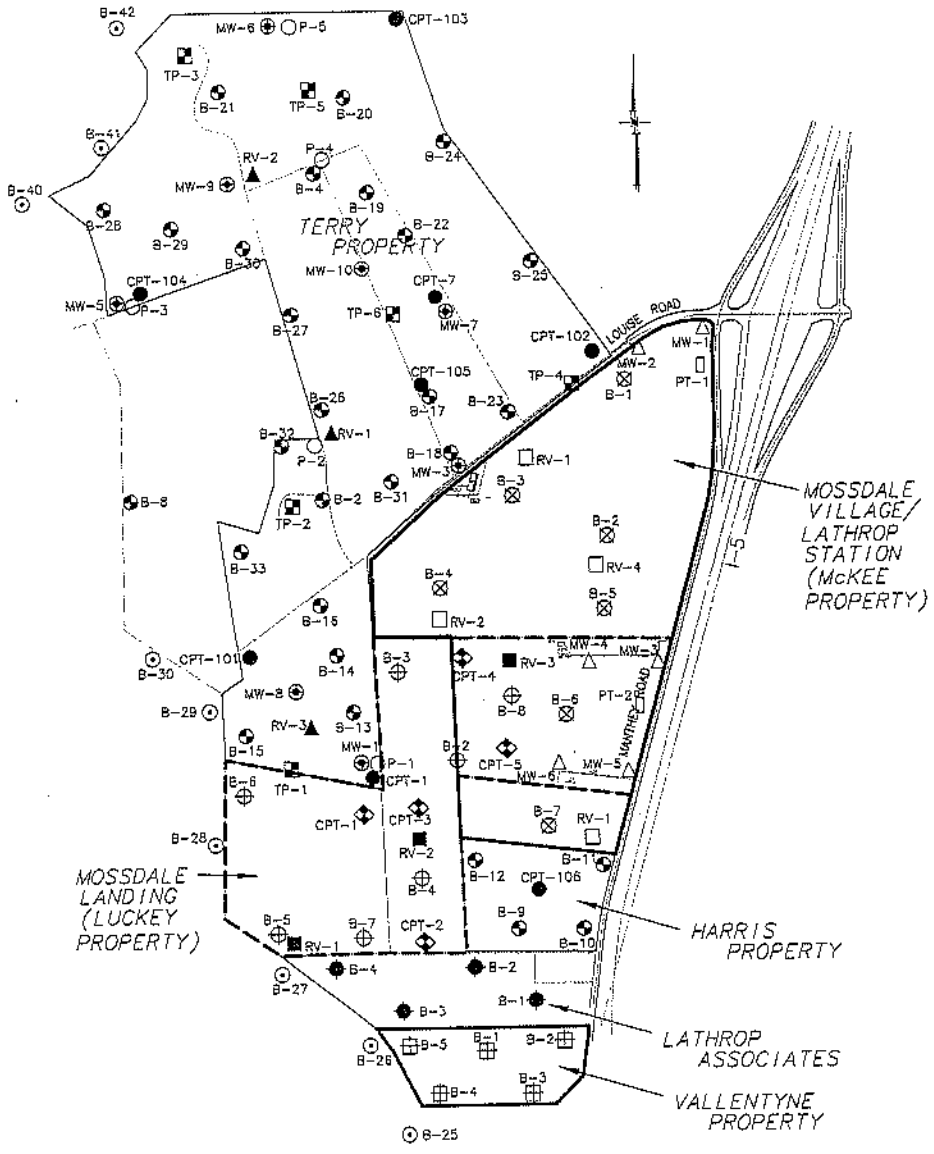
4. It is emphasized that we are not floor moisture proofing experts. We make no guarantee nor provide any assurance that the slab underlayment discussed in Section 5.2 will reduce concrete slab-on-grade floor moisture penetration to any specific rate or level, particularly

those required by floor covering manufacturers. Qualified specialists with local knowledge of slab moisture protection systems, flooring design, and other potential components that may be influenced by moisture should be consulted.

5. This report was prepared in accordance with the generally accepted standard of practice that existed in San Joaquin County at the time the report was written. No warranty, expressed or implied, is made.

6. It is the CLIENT'S responsibility to see that all parties to the project, including the designer, contractor, subcontractor, etc., are made aware of this report in its entirety.

7. This report may be used only by the client and only for the purposes stated, within a reasonable time from its issuance. Land use, site conditions (both on site and off site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify Kleinfelder, Inc. of such intended use. Based on the intended use of the report, Kleinfelder, Inc. may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Kleinfelder, Inc. from any liability resulting from the use of this report by any unauthorized party.



LATHROP ASSOCIATES

B-1 DENOTES NUMBERS AND LOCATIONS OF BORINGS DRILLED FOR THIS INVESTIGATION

VALLENTYNE PROPERTY

B-1 DENOTES NUMBERS AND LOCATIONS OF BORINGS DRILLED FOR THIS INVESTIGATION

MOSSDALE VILLAGE/LATHROP STATION/McKEE PROPERTY

B-1 DENOTES NUMBERS AND LOCATIONS OF BORINGS DRILLED FOR PRIOR INVESTIGATION

RV-1 DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF R-VALUE TESTS PERFORMED FOR PRIOR INVESTIGATION

MW-1 MONITORING WELLS COMPLETED FOR PRIOR INVESTIGATION

PT-1 PERCOLATION TESTS COMPLETED FOR PRIOR INVESTIGATION

MOSSDALE LANDING (LUCKEY PROPERTY)

B-1 DENOTES NUMBERS AND LOCATIONS OF BORINGS DRILLED FOR PRIOR INVESTIGATION

RV-1 DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF R-VALUE TESTS PERFORMED FOR PRIOR INVESTIGATION

CPT-1 DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF CONE PENETROMETER TESTS PERFORMED FOR PRIOR INVESTIGATION

TERRY & HARRIS PROPERTIES

RV-1 DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF R-VALUE TESTS PERFORMED FOR THIS INVESTIGATION

B-11 DENOTES NUMBERS AND LOCATIONS OF BORINGS DRILLED FOR THIS INVESTIGATION

CPT-101 DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF CONE PENETROMETER TESTS PERFORMED FOR THIS INVESTIGATION

B-1 DENOTES NUMBERS AND LOCATIONS OF BORINGS DRILLED FOR PRIOR INVESTIGATION

MW-1 DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF MONITORING WELLS PERFORMED FOR PRIOR INVESTIGATION

CPT-1 DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF CONE PENETROMETER TESTS PERFORMED FOR PRIOR INVESTIGATION

TP-1 DENOTES NUMBERS AND LOCATIONS OF TEST PITS EXCAVATED FOR PRIOR INVESTIGATION

P-1 DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF PERCOLATION TESTS PERFORMED FOR PRIOR INVESTIGATION

RECLAMATION DISTRICT 17 FEMA LEVEE STUDY

B-40 DENOTES NUMBERS AND LOCATIONS OF BORINGS DRILLED FOR PRIOR INVESTIGATION

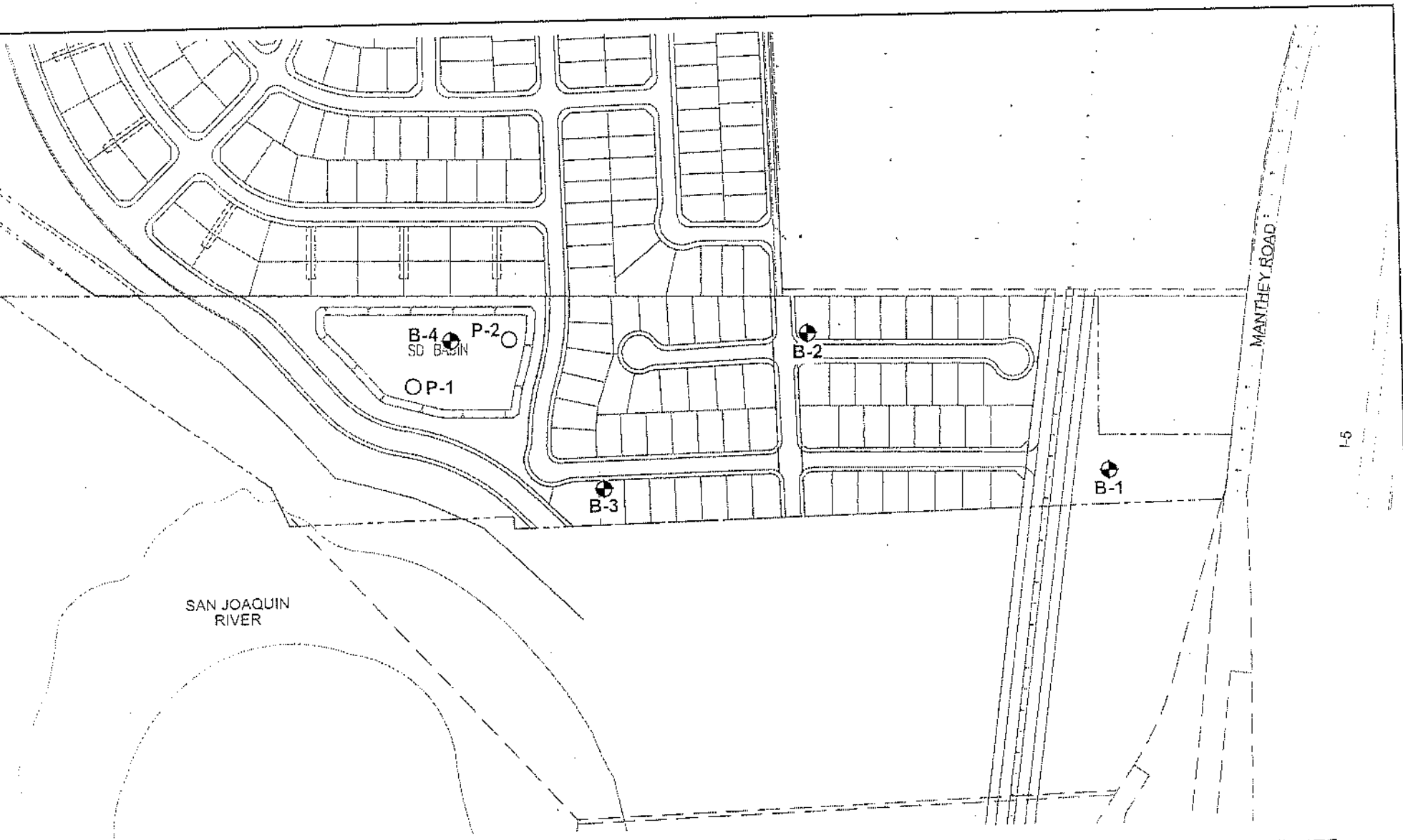
APPROXIMATE LOCATIONS OF MONITORING WELLS, TEST BORINGS, TEST PITS, PERCOLATION HOLES & CPT PROBES
PROPERTY, WEST OF I-5
LATHROP, CALIFORNIA

DATE PRODUCED: 9/15/2003
PROJ. No.: 20-4099-04.G01

DATE REVIEWED:
FILE NAME: STG30694.CAD

PLATE 1

KLEINFELDER
7825 EAST MARIE STREET STOCKTON, CA 95206-1794



◆ DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF BORINGS DRILLED FOR THIS INVESTIGATION

○ DENOTES NUMBERS AND APPROXIMATE LOCATIONS OF PERCOLATION TESTS PERFORMED FOR THIS INVESTIGATION

NOT TO SCALE

KLEINFELDER

DATE PRODUCED:10/28/2003	DATE REVISED:
PROJ. NO.:35179.G01	FILENAME:STO3D830.FH9

BORING LOCATION MAP
PROPOSED SUBDIVISION
LATHROP ASSOCIATES
LATHROP, CALIFORNIA

PLATE No.

1A

APPENDIX
LOGS OF BORINGS AND CPT'S AND SUMMARY OF LABORATORY TESTS

LIST OF ATTACHMENTS

The following plates are attached and complete this appendix.

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			USCS SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (More than half of material is larger than the #200 sieve)	GRAVELS (More than half of coarse fraction is larger than the #4 sieve)	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, GRAVEL-SILT-SAND MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS (More than half of coarse fraction is smaller than the #4 sieve)	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, SAND-GRAVEL MIXTURES WITH LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, SAND-GRAVEL-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-GRAVEL-CLAY MIXTURES
FINE GRAINED SOILS (More than half of material is smaller than the #200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)		ML	INORGANIC SILTS & VERY FINE SANDS, SILTY OR CLAYEY FINE SANDS, CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS (Liquid limit greater than 50)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILT
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS & ORGANIC SILTS OF MEDIUM-TO-HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENT

KA-USCS STO3G251.GPJ 10/28/03

KLEINFELDER

Drafted By: GDG
Date: 10/28/2003
Project No.: 35179.G01
File Number: STO3G251

UNIFIED SOIL CLASSIFICATION SYSTEM
PROPOSED SUBDIVISION
LATHROP ASSOCIATES
LATHROP, CALIFORNIA

PLATE
A-1

LOG SYMBOLS

	BULK / BAG SAMPLE	-4	PERCENT FINER THAN THE NO. 4 SIEVE (ASTM Test Method C 136)
	MODIFIED CALIFORNIA SAMPLER (2-1/2 inch outside diameter)	-200	PERCENT FINER THAN THE NO. 200 SIEVE (ASTM Test Method C 117)
	CALIFORNIA SAMPLER (3 inch outside diameter)	LL	LIQUID LIMIT (ASTM Test Method D 4318)
	STANDARD PENETRATION SPLIT SPOON SAMPLER (2 inch outside diameter)	PI	PLASTICITY INDEX (ASTM Test Method D 4318)
	CONTINUOUS CORE	TXCU	CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (EM 1110-1-1906)
	SHELBY TUBE	EI	EXPANSION INDEX (UBC STANDARD 18-2)
	ROCK CORE	COL	COLLAPSE POTENTIAL
	WATER LEVEL (level where first encountered)	UC	UNCONFINED COMPRESSION (ASTM Test Method D 2166)
	WATER LEVEL (level after completion)		
	SEEPAGE	MC	MOISTURE CONTENT (ASTM Test Method D 2216)

GENERAL NOTES

1. *Lines separating strata on the logs represent approximate boundaries only. Actual transitions may be gradual.*

2. *No warranty is provided as to the continuity of soil conditions between individual sample locations.*

3. *Logs represent general soil conditions observed at the point of exploration on the date indicated.*

4. *In general, Unified Soil Classification System designations presented on the logs were evaluated by visual methods. Where laboratory tests were performed, the designations reflect the laboratory test results.*

KLEINFELDER

Drafted By: GDG
Date: 10/28/2003

Project No.: 35179.G01
File Number: STO3G251

LOG KEY
PROPOSED SUBDIVISION
LATHROP ASSOCIATES
LATHROP, CALIFORNIA

PLATE
A-2

A-LOG_KEY STO3G251.GPJ 10/29/03

Surface Conditions: Field with low dry grass

Groundwater: Groundwater encountered at a depth of approximately 15 feet below existing site grade.

Date Completed: 9/24/2003

Logged By: RL

Total Depth: 17 feet

Depth (feet)	FIELD: Sample Type	Sample No.	Blows/ft	Pen (tsf)	LABORATORY: Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
													(SM) SILTY SAND - Light brown, dry to wet, fine grained
		1-2-1	6		88	13							(ML/SM) ALTERNATE LAYERS OF CLAYEY SILT AND SILTY SAND - Light brown, dry to moist, medium stiff, fine grained
5													Grades more sand, stiff
		1-5-1	8	1.5						59	Direct Shear = PHI 39 degrees		
													(CL/ML) SANDY CLAY/SANDY SILT - Dark brown, moist, soft, moderate plasticity
													Grades more sand
10		1-10-1	10										(SC/SM) CLAYEY SAND/SILTY SAND - Brown, moist, loose, fine grained
15			8										Wet
													Boring completed at a depth of approximately 17 feet below existing site grade.
20													
25													

KLEINFELDER

Drafted By: GDG
Date: 10/28/2003
Project No.: 35179.G01
File Number: STO3G251

LOG OF BORING B-1
PROPOSED SUBDIVISION
LATHROP ASSOCIATES
LATHROP, CALIFORNIA

PLATE
1 of 1
A-3

A 3001 STO3G251.GPJ 10/28/03

Surface Conditions: Field with low dry grass

Date Completed: 9/24/2003

Logged By: RL

Groundwater: Groundwater encountered at a depth of approximately 14.8 feet below existing site grade.

Total Depth: 16.5 feet

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
													(SM) SILTY SAND - Light brown, moist to dry, fine grained
		2-2-1	9	2.5	84	19							(ML) CLAYEY SILT - Brown, moist, very stiff, fine grained, low to moderate plasticity
5		2-5-1	8	0.75	82	29							Medium stiff
													Grades with more sand, very stiff
10		2-10-1	9	2.25	96	23							
15			8										(ML) SANDY SILT - Gray, wet, medium stiff to stiff, low plasticity
													Boring completed at a depth of approximately 16.5 feet below existing site grade.
20													
25													

KLEINFELDER

Drafted By: GDG

Date: 10/28/2003

Project No.: 35179.G01

File Number: ST03G251

LOG OF BORING B-2
PROPOSED SUBDIVISION
LATHROP ASSOCIATES
LATHROP, CALIFORNIA

PLATE
1 of 1
A-4

A 2001 ST03G251.GPJ 10/28/03

Surface Conditions: Field with low dry grass

Groundwater: Groundwater encountered at a depth of approximately 14.8 feet below existing site grade.

Date Completed: 9/24/2003

Logged By: RL

Total Depth: 17 feet

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
													(ML) SILT - Light brown, dry to moist, low to moderate plasticity, hard
		3-2-1	15	>4.5	93	12	39	12					
													Grades with more sand, moist
5		3-5-1	10	4.0	59	56					UC = 3.6 ksf		(OL) ORGANIC CLAY - Dark brown, moist, very stiff to hard, moderate plasticity
10			8										Grades more sand, moist to wet
													(CL) SILTY CLAY - Gray, moist to wet, moderate plasticity
15		3-15-1	16	2.5									Grades very stiff
													Boring completed at a depth of approximately 17 feet below existing site grade.
20													
25													

KLEINFELDER

Drafted By: GDG
Date: 10/28/2003

Project No.: 35179.G01
File Number: STO3G251

LOG OF BORING B-3
PROPOSED SUBDIVISION
LATHROP ASSOCIATES
LATHROP, CALIFORNIA

PLATE
1 of 1
A-5

A 2001 STO3G251.GPJ 10/28/03

Surface Conditions: Field with low dry grass

Date Completed: 9/24/2003

Logged By: RL

Groundwater: Groundwater encountered at a depth of approximately 10.8 feet below existing site grade.

Total Depth: 17 feet

Depth (feet)	Sample Type	Sample No.	Blows/ft	Pen (tsf)	Dry Density (pcf)	Moisture Content (%)	Liquid Limit	Plasticity Index	Passing #4 Sieve (%)	Passing #200 Sieve (%)	Other Tests	Lithography	DESCRIPTION
			12										(CL) SILTY CLAY - Light brown, dry to moist, moderate plasticity, stiff
5		4-5-1	11	2.0	107	13							Grades brown, fine grained, moist
													Grades with sand, very stiff to hard
10			5										Grades medium stiff
													(CL) SANDY CLAY - Brown, wet, moderate plasticity
15		4-15-1	17	4.0	91	29							(ML) CLAYEY SILT - Red-brown, wet, very stiff to hard, low plasticity
													Boring completed at a depth of approximately 17 feet below existing site grade.
20													
25													

KLEINFELDER

Drafted By: GDG

Date: 10/28/2003

Project No.: 35179.G01

File Number: STO3G251

LOG OF BORING B-4
PROPOSED SUBDIVISION
LATHROP ASSOCIATES
LATHROP, CALIFORNIA

PLATE
1 of 1
A-6

BORING NO.	SAMPLE DEPTH (ft)	DRY UNIT WEIGHT (pcf)	MOISTURE CONTENT (% of dry weight)	PARTICLE SIZE SIEVE SIZE (percent passing)						ATTERBERG LIMITS		OTHER TESTS
				3"	3/4"	#4	#10	#40	#200	L.L.	P.I.	
B-1	2.0	88	13									
B-1	5.0								59			Direct Shear = PHI 39 degrees
B-2	2.0	84	19									
B-2	5.0	82	29									
B-2	10.0	96	23									
B-3	2.0	93	12							39	12	
B-3	5.0	59	56									UC = 3.6 ksf
B-4	5.0	107	13									
B-4	15.0	91	29									

KA-LASSUM STO3G251.GPJ 10/28/03

KLEINFELDER

Drafted By: GDG
Date: 10/28/2003

Project No.: 35179.G01
File Number: STO3G251

SUMMARY OF LABORATORY TESTS
PROPOSED SUBDIVISION
LATHROP ASSOCIATES
LATHROP, CALIFORNIA

PLATE
1 of 1
A-7

SAN JOAQUIN COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT NEAREST CONTOUR OF EQUAL DEPTH TO WATER IN WELLS

Time of Year	Year	Depth, Feet
Spring	1999	10
Fall	1998	20
Spring	1998	10
Fall	1997	20
Spring	1997	10
Fall	1996	20
Spring	1996	20
Fall	1995	20
Spring	1995	10
Fall	1994	20
Spring	1994	20
Spring	1993	10
Spring	1992	20
Spring	1991	20
Spring	1990	10
Spring	1989	10
Spring	1988	10
Spring	1987	10
Spring	1986	10
Spring	1985	10
Spring	1984	10
Spring	1982	10
Spring	1981	10

LIQUEFACTION ANALYSIS USING CPT DATA (NCEER, 1997)

Project: Luckey Property | Earthquake Magnitude: 6.70 | PGA = 0.32 | WT Depth (ft): 10.00 | Limiting FOS: 1.1

CPT Location: CPT-1 | MSF: 1.33 | Surcharge (psf): 100 | Total Soil Unit Weight (psf): 115

Depth (ft)	Depth (ft) From	Depth (ft) To	Thickness (ft)	SBT	Soil Description	Total Stress	Effective Stress (psf)	Rf (tsf)	qc (tsf)	Cq n=1.5	qc1n n=0.5	Q n=1	Corr. fact. F	Corrected Ic	FC %	(qc1n)cs n=0.5	rd	CSR	CSR corrected	$CRR_{7.5}$	FOS		N60	Cn	N1,60	For Liq. N1,60-cs	Residual Strength (psf)	For Sett. N1,60-cs	Vol. Strain %	Settlement In	Total Settlement In
0.49	0.00	0.99	0.99	5	Sandy Clay to Clayey Silt	136	136	0.32	13	1.700	22.309	165.294	2.476	2.50	30.890	61.703	1.00	0.208	0.156	0.102	0.65	Above WT	2.36	1.70	5.7	11.7	375.8	11.4	0.000	0.00	
1.48	0.99	1.97	0.99	3	Clay	270	270	0.79	15.7	1.700	26.690	115.210	5.076	2.79	45.638	126.395	1.00	0.207	0.155	0.267	1.72	Above WT	4.70	1.70	8.0	13.5	650.0	14.6	0.000	0.00	
2.46	1.97	2.95	0.98	6	Sandy Silt to Silty Sand	383	383	0.78	32.1	1.700	54.570	166.668	2.444	2.36	24.938	118.544	0.99	0.207	0.155	0.235	1.52	Above WT	7.77	1.70	13.2	17.5	950.0	19.0	0.000	0.00	
3.44	2.95	3.94	0.98	8	Sand to Silty Sand	496	496	0.42	58.5	1.700	99.450	236.077	0.721	1.83	4.659	111.898	0.99	0.206	0.155	0.210	1.36	Above WT	11.41	1.70	19.4	20.3	1300.0	20.3	0.000	0.00	
4.43	3.94	4.92	0.99	8	Sand to Silty Sand	609	609	0.67	74.9	1.700	127.330	244.795	0.898	1.80	8.173	140.916	0.99	0.206	0.154	0.340	2.21	Above WT	14.40	1.70	24.6	25.3	>1600	25.3	0.000	0.00	
5.41	4.92	5.91	0.99	8	Sand to Silty Sand	722	722	0.98	89.9	1.664	149.444	247.702	1.096	1.81	6.272	166.149	0.99	0.205	0.154	0.507	3.29	Above WT	17.60	1.66	29.0	29.7	>1600	29.7	0.000	0.00	
6.4	5.91	6.85	0.94	8	Sand to Silty Sand	836	836	1.36	104.4	1.547	161.479	248.761	1.308	1.84	8.955	183.369	0.99	0.205	0.154	0.653	4.26	Above WT	20.46	1.55	31.6	32.6	>1600	32.7	0.000	0.00	
7.3	6.85	7.75	0.90	6	Sandy Silt to Silty Sand	940	940	2.17	100.9	1.459	158.889	230.825	2.924	2.11	16.116	234.092	0.98	0.204	0.150	1.273	8.31	Above WT	23.67	1.46	34.5	37.1	>1600	39.2	0.000	0.00	
8.2	7.75	8.70	0.95	10	Gravelly Sand to Sand	1043	1043	1.05	178.3	1.385	246.902	340.898	6.136	2.28	21.920	468.460	0.98	0.204	0.153	9.641	63.07	Above WT	41.66	1.38	57.7	61.6	>1600	66.9	0.000	0.00	
9.10	8.70	9.68	0.98	10	Gravelly Sand to Sand	1157	1157	6.31	79.7	1.315	104.794	136.748	7.975	2.57	35.897	339.696	0.98	0.204	0.152	3.413	22.38	Above WT	21.24	1.31	27.9	34.7	>1600	38.1	0.000	0.00	
10.17	9.68	10.66	0.98	3	Clay	1271	1261	2	35.6	1.360	48.618	60.227	5.268	2.95	55.000	300.945	0.98	0.205	0.153	1.615	17.94	Ic > 2.6	12.65	1.26	15.9	22.9	>1600	34.1	0.000	0.00	
11.15	10.66	11.65	0.98	5	Sandy Clay to Clayey Silt	1394	1333	2.07	54.3	1.330	66.777	81.066	3.862	2.44	28.230	166.925	0.97	0.224	0.160	0.513	3.20	qc > 160	13.63	1.23	16.8	22.2	>1600	33.7	0.000	0.00	
12.14	11.65	12.63	1.03	6	Sandy Silt to Silty Sand	1518	1385	1.89	64.8	1.307	77.874	92.490	2.936	2.31	22.928	154.512	0.97	0.221	0.166	0.423	2.55		15.32	1.20	18.4	23.6	>1600	24.3	0.000	0.00	
13.21	12.63	13.74	1.03	8	Sand to Silty Sand	1651	1452	2.34	198.5	1.174	217.691	234.332	1.267	1.74	6.911	231.978	0.97	0.229	0.171	1.241	7.23	qc > 160	35.11	1.17	41.2	41.7	>1600	41.7	0.000	0.00	
14.27	13.74	14.77	1.03	8	Sand to Silty Sand	1784	1519	1.39	108.2	1.147	124.154	141.213	1.295	1.91	10.367	149.443	0.97	0.236	0.177	0.390	2.21		21.81	1.15	25.0	26.4	>1600	26.8	0.000	0.00	
15.26	14.77	15.75	0.98	7	Silty Sand	1908	1581	1.99	108.7	1.125	122.244	136.369	1.847	2.03	13.779	163.985	0.98	0.241	0.181	0.494	2.70	qc > 160	22.89	1.12	25.7	27.8	>1600	28.9	0.000	0.00	
16.24	15.75	16.73	0.98	10	Gravelly Sand to Sand	2030	1643	4.02	76.7	1.103	84.621	92.124	5.311	2.48	29.931	226.948	0.96	0.247	0.185	1.167	6.30	qc > 160	10.60	1.10	21.6	27.4	>1600	29.6	0.000	0.00	
17.22	16.73	17.72	0.99	4	Silty Clay to Sandy Clay	2152	1705	2.36	45.7	1.083	49.498	52.349	4.840	2.96	55.516	309.874	0.96	0.252	0.189	2.447	15.08	Ic > 2.6	15.04	1.08	16.3	23.3	>1600	24.5	0.000	0.00	
18.21	17.72	18.70	0.99	10	Gravelly Sand to Sand	2276	1767	4.99	95.1	1.064	101.169	106.338	5.311	2.44	27.866	240.016	0.96	0.257	0.192	1.556	7.89	qc > 160	23.77	1.06	25.3	30.6	>1600	33.3	0.000	0.00	
19.19	18.70	19.69	0.98	7	Silty Sand	2399	1829	2.63	118.9	1.046	124.335	128.707	2.234	2.09	15.409	177.930	0.96	0.261	0.195	0.604	3.09	qc > 160	25.60	1.05	26.8	29.2	>1600	30.7	0.000	0.00	
20.18	19.69	20.67	0.98	8	Sand to Silty Sand	2523	1891	1.97	136.6	1.028	140.469	143.114	1.456	1.91	10.723	168.874	0.95	0.264	0.198	0.527	2.66	qc > 160	27.52	1.03	28.3	29.6	>1600	30.1	0.000	0.00	
21.16	20.67	21.66	0.98	8	Sand to Silty Sand	2645	1953	2.27	155.4	1.012	157.256	157.779	1.473	1.83	10.007	184.618	0.95	0.268	0.201	0.665	3.32	qc > 160	30.06	1.01	31.3	32.5	>1600	32.9	0.000	0.00	
22.15	21.66	22.64	0.98	8	Sand to Silty Sand	2769	2015	2.64	202.8	0.996	201.021	199.832	1.311	1.77	7.565	219.753	0.95	0.272	0.203	1.067	5.26	qc > 160	38.63	1.00	38.7	39.3	>1600	39.3	0.000	0.00	
23.13	22.64	23.62	0.98	9	Sand	2891	2077	2.28	202.7	0.981	198.898	193.736	1.133	1.73	6.707	210.553	0.95	0.274	0.205	0.948	4.63	qc > 160	38.23	0.98	37.5	37.9	>1600	37.9	0.000	0.00	
24.11	23.62	24.61	0.99	8	Sand to Silty Sand	3014	2139	2.60	207.8	0.967	200.938	192.994	1.299	1.77	7.536	216.343	0.96	0.277	0.207	1.049	5.06	qc > 160	39.77	0.97	38.5	39.0	>1600	39.1	0.000	0.00	
25.1	24.61	25.59	0.98	9	Sand	3138	2201	2.2	217.3	0.953	207.126	196.060	1.020	1.69	5.845	212.909	0.94	0.279	0.209	0.978	4.67	qc > 160	40.35	0.95	38.5	38.7	>1600	38.6	0.000	0.00	
26.08	25.59	26.58	0.99	9	Sand	3260	2263	1.76	233.7	0.940	219.699	205.096	0.758	1.58	3.969	219.699	0.94	0.281	0.211	1.066	5.06	qc > 160	41.82	0.94	39.3	39.3	>1600	39.3	0.000	0.00	
27.07	26.58	27.56	0.99	9	Sand	3384	2325	2.12	280.2	0.927	259.856	239.535	0.761	1.53	3.303	259.856	0.94	0.284	0.212	1.712	8.06	qc > 160	48.32	0.93	45.7	45.7	>1600	45.7	0.000	0.00	
28.05	27.56	28.55	0.98	10	Gravelly Sand to Sand	3506	2387	1.47	281.2	0.915	257.389	234.126	0.576	1.42	3.733	257.389	0.93	0.286	0.214	1.655	7.79	qc > 160	47.81	0.92	43.8	43.8	>1600	43.8	0.000	0.00	
29.04	28.55	29.53	0.98	9	Sand	3630	2450	1.03	253.6	0.904	229.152	205.579	0.727	1.55	3.564	229.152	0.93	0.287	0.215	1.199	5.57	qc > 160	44.90	0.90	40.7	40.7	>1600	40.7	0.000	0.00	
30.02	29.53	30.51	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
31	30.51	31.50	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
31.99	31.50	32.48	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
32.97	32.48	33.47	0.99	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
33.96	33.47	34.45	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
34.94	34.45	35.43	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
35.92	35.43	36.42	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
36.91	36.42	37.40	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
37.89	37.40	38.39	0.99	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	0.00
38.88	38.39	39.37	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
39.86	39.37	40.36	0.99	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
40.85	40.36	41.34	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
41.83	41.34	42.32	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
42.81	42.32	43.31	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
43.8	43.31	44.29	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
44.78	44.29	45.28	0.99	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
45.77	45.28	46.26	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	
46.75	46.26	47.25	0.98	[illegible]	FALSE			[illegible]	[illegible]																				0.000	0.00	

PLATE A-9

LIQUEFACTION ANALYSIS USING CPT DATA (NCEER, 1997)

Project: Luckey Property

CPT Location: CPT-2

Earthquake Magnitude: 6.70 | PGA = 0.32 | MSF: 1.33

WT Depth (ft): 9.50 | Surcharge (psf): 360 | Limiting FOS: 1.5 | Total Soil Unit Weight (pcf): 115

Depth (ft)	Depth (ft) From	To	Thickness (ft)	SBT	Soil Description	Total Stress	Effective Stress (psf)	fs (tsf)	qc (tsf)	Cq n=0.5	qc1n n=0.5	Q n=1	Corr. fact. F	Corrected Ic
0.49	0.00	0.99	0.99	1	FALSE	156	156	0.03	7.0	1.700	13.430	100.055	0.384	2.49
1.48	0.99	1.97	0.99	3	Clay	270	270	0.45	10.9	1.700	18.530	39.681	4.180	2.92
2.46	1.97	2.95	0.98	3	Clay	383	383	0.5	12.6	1.700	21.420	64.814	4.029	2.86
3.44	2.95	3.94	0.98	3	Clay	496	496	0.72	17.8	1.700	30.260	70.857	4.102	2.84
4.43	3.94	4.92	0.99	3	Clay	609	609	1.37	26.3	1.700	44.710	85.307	5.770	2.87
5.41	4.92	5.91	0.99	3	Clay	722	722	1.4	31.1	1.664	51.756	85.132	4.554	2.57
6.4	5.91	6.85	0.94	3	Clay	836	836	1.37	27.1	1.547	41.916	63.833	5.135	2.93
7.3	6.85	7.75	0.90	3	Clay	940	940	1.18	21.1	1.459	30.786	43.918	5.720	2.69
8.2	7.75	8.70	0.95	3	Clay	1043	1043	1.07	16.7	1.385	23.125	31.023	6.614	2.84
9.19	8.70	9.68	0.98	6	Sandy Silt to Silty Sand	1157	1157	0.6	26.5	1.315	34.844	44.854	2.315	2.50
10.17	9.68	10.66	0.98	6	Sandy Silt to Silty Sand	1276	1235	0.7	36.3	1.273	46.200	57.766	1.963	2.36
11.15	10.66	11.65	0.98	6	Sandy Silt to Silty Sand	1399	1296	0.59	33.8	1.242	41.981	51.063	1.382	2.36
12.14	11.65	12.68	1.03	5	Sandy Clay to Clayey Silt	1523	1359	0.48	17.8	1.213	21.595	25.079	2.317	2.66
13.21	12.68	13.74	1.07	3	Clay	1656	1426	1.07	21.8	1.184	25.579	29.128	5.151	2.78
14.27	13.74	14.77	1.03	3	Clay	1789	1493	1.72	36.5	1.157	42.245	47.696	4.831	2.61
15.26	14.77	15.75	0.98	3	Clay	1913	1555	1.27	20.6	1.134	23.360	25.259	6.465	2.90
16.24	15.75	16.73	0.98	5	Sandy Clay to Clayey Silt	2035	1617	0.96	29.3	1.112	32.585	34.939	3.394	2.60
17.22	16.73	17.72	0.99	8	Sand to Silty Sand	2158	1679	1.13	91	1.091	99.323	107.122	1.257	1.98
18.21	17.72	18.70	0.99	8	Sand to Silty Sand	2281	1741	2.08	130.2	1.073	139.540	148.239	1.612	1.99
19.19	18.70	19.69	0.98	8	Sand to Silty Sand	2404	1803	3.29	181.2	1.053	190.844	199.661	1.828	1.90
20.18	19.69	20.67	0.98	7	Silty Sand	2528	1865	3.56	177.5	1.035	183.795	188.959	2.014	1.94
21.16	20.67	21.66	0.98	8	Sand to Silty Sand	2650	1927	2.88	186.1	1.019	189.213	191.010	1.748	1.92
22.15	21.66	22.64	0.98	8	Sand to Silty Sand	2774	1989	3.57	191.9	1.003	192.408	191.523	1.874	1.91
23.13	22.64	23.62	0.98	7	Silty Sand	2896	2051	3.39	175.1	0.987	172.901	169.318	1.952	1.95
24.11	23.62	24.61	0.99	8	Sand to Silty Sand	3019	2113	3.72	213.4	0.973	207.619	200.566	1.756	1.86
25.1	24.61	25.59	0.98	8	Sand to Silty Sand	3143	2175	4.46	235.6	0.959	225.908	215.169	1.906	1.87
26.08	25.59	26.58	0.98	8	Sand to Silty Sand	3265	2237	4.59	272.8	0.946	257.943	242.434	1.693	1.79
27.07	26.58	27.56	0.99	8	Sand to Silty Sand	3389	2299	3.66	252.7	0.933	235.674	218.322	1.458	1.77
28.05	27.56	28.55	0.98	8	Sand to Silty Sand	3511	2361	2.27	195.8	0.920	180.021	164.195	1.171	1.77
29.04	28.55	29.53	0.98	9	Sand	3635	2424	1.96	202.1	0.908	183.594	165.782	0.979	1.71
30.02	29.53	30.51	0.98	8	Sand to Silty Sand	3758	2485	3.53	219	0.897	196.460	174.727	1.626	1.85
31	30.51	31.50	0.98	8	Sand to Silty Sand	3880	2547	3.27	250.8	0.886	222.243	195.414	1.314	1.75
31.99	31.50	32.48	0.98	8	Sand to Silty Sand	4004	2609	4.2	259.4	0.875	227.100	197.188	1.637	1.81
32.97	32.48	33.47	0.99	8	Sand to Silty Sand	4126	2671	3.32	256.2	0.865	221.691	190.286	1.306	1.75
33.96	33.47	34.45	0.98	9	Sand	4250	2733	3	258	0.855	220.683	187.216	1.172	1.72
34.94	34.45	35.43	0.98	9	Sand	4373	2795	2.1	253.4	0.846	214.345	179.745	0.836	1.63
35.92	35.43	36.42	0.98	8	Sand to Silty Sand	4495	2857	4.64	242.7	0.837	203.064	168.328	1.930	1.90
36.91	36.42	37.40	0.98	8	Sand to Silty Sand	4619	2919	4.55	233.7	0.828	193.434	158.523	1.966	1.92
37.89	37.40	38.39	0.99	8	Sand to Silty Sand	4741	2981	3.67	210.2	0.819	172.086	143.458	1.810	1.92
38.88	38.39	39.37	0.98	8	Sand to Silty Sand	4865	3043	3.35	200.8	0.811	162.776	130.357	1.689	1.92
39.86	39.37	40.36	0.98	[illegible]	FALSE			[illegible]	[illegible]					
40.85	40.36	41.34	0.98	[illegible]	FALSE			[illegible]	[illegible]					
41.83	41.34	42.32	0.98	[illegible]	FALSE			[illegible]	[illegible]					
42.81	42.32	43.31	0.98	[illegible]	FALSE			[illegible]	[illegible]					
43.8	43.31	44.29	0.99	[illegible]	FALSE			[illegible]	[illegible]					
44.78	44.29	45.28	0.99	[illegible]	FALSE			[illegible]	[illegible]					
45.77	45.28	46.26	0.98	[illegible]	FALSE			[illegible]	[illegible]					
46.75	46.26	47.25	0.98	[illegible]	FALSE			[illegible]	[illegible]					

Depth (ft)	FC %	(qc1n)cs n=0.5	rd	CSR	CSR corrected	$CRR_{7.5}$	FOS		N60	Cn	N1,60	For Liq. N1,60-cs	Residual Strength (psf)	For Sett. N1,60-cs	Vol. Strain %	Settlement in	Total Settlement in
0.49	29.623	35.597	1.00	0.208	0.156	0.080	0.51	Above WT	2.01	1.70	3.4	9.2	250.0	8.6	0.000	0.00	
1.48	47.115	91.762	1.00	0.207	0.155	0.152	0.98	Above WT	3.31	1.70	5.6	12.5	450.0	11.1	0.000	0.00	
2.46	49.322	113.185	0.99	0.207	0.155	0.215	1.39	Above WT	3.91	1.70	6.6	13.6	550.0	13.8	0.000	0.00	
3.44	48.398	155.641	0.99	0.206	0.155	0.431	2.79	Above WT	5.48	1.70	9.3	16.3	800.0	16.2	0.000	0.00	
4.43	50.210	242.345	0.99	0.206	0.154	1.404	9.10	Above WT	8.23	1.70	14.0	21.0	1350.0	21.8	0.000	0.00	
5.41	33.979	163.353	0.99	0.205	0.154	0.485	3.15	Above WT	8.30	1.66	13.8	20.6	1350.0	21.3	0.000	0.00	
6.4	53.778	250.654	0.99	0.205	0.154	1.545	10.06	Above WT	8.77	1.55	13.6	20.6	1350.0	21.7	0.000	0.00	
7.3	40.054	133.340	0.98	0.204	0.153	0.246	1.61	Above WT	5.99	1.46	8.7	15.7	750.0	15.5	0.000	0.00	
8.2	48.459	119.169	0.98	0.204	0.153	0.237	1.55	Above WT	5.14	1.38	7.1	14.1	600.0	13.5	0.000	0.00	
9.19	30.480	95.666	0.98	0.204	0.152	0.161	1.06	Liquefy	6.81	1.31	9.4	14.9	650.0	15.1	0.019	0.22	
10.17	24.633	98.849	0.98	0.210	0.157	0.170	1.08	Liquefy	8.75	1.27	11.1	15.7	750.0	16.6	0.018	0.21	
11.15	24.856	90.710	0.97	0.219	0.164	0.149	0.91	Liquefy	8.17	1.24	10.1	14.8	650.0	15.6	0.019	0.22	
12.14	38.367	80.226	0.97	0.226	0.170	0.128	0.75	Ic > 2.6	4.97	1.21	6.0	13.0	500.0	12.1	0.000	0.00	
13.21	45.121	119.104	0.97	0.234	0.175	0.237	1.35	Ic > 2.6	6.44	1.18	7.6	14.6	650.0	14.1	0.000	0.00	
14.27	36.062	144.296	0.97	0.241	0.180	0.359	1.99	Ic > 2.6	9.95	1.16	11.5	18.5	1100.0	18.8	0.000	0.00	
15.26	51.869	132.642	0.96	0.247	0.185	0.297	1.61	Ic > 2.6	6.55	1.13	7.4	14.4	800.0	13.9	0.000	0.00	
16.24	35.502	108.991	0.96	0.252	0.189	0.200	1.06	Ic > 2.6	7.94	1.11	8.8	15.8	750.0	15.6	0.000	0.00	
17.22	17.344	116.290	0.96	0.257	0.192	0.267	1.39		18.78	1.09	20.5	22.2	1550.0	22.8	0.000	0.00	
18.21	13.575	172.657	0.96	0.261	0.195	0.539	2.86	qc > 160	28.57	1.07	30.5	30.4	>1600	30.7	0.003	0.00	
19.19	10.396	216.913	0.96	0.265	0.198	1.167	5.88	qc > 160	36.32	1.05	38.3	39.5	>1600	40.2	0.003	0.00	
20.18	11.465	216.545	0.95	0.269	0.201	1.161	5.77	qc > 160	36.16	1.04	37.4	38.9	>1600	39.0	0.000	0.00	
21.16	10.847	204.191	0.95	0.272	0.204	0.872	4.28	qc > 160	33.52	1.02	34.1	35.5	>1600	36.7	0.000	0.00	
22.15	10.547	229.913	0.95	0.275	0.206	1.330	5.87	qc > 160	36.55	1.00	36.7	40.0	>1600	40.6	0.000	0.00	
23.13	11.617	214.251	0.95	0.278	0.208	0.995	4.78	qc > 160	35.75	0.99	35.3	36.8	>1600	37.1	0.000	0.00	
24.11	9.536	240.101	0.94	0.280	0.210	1.367	6.51	qc > 160	42.21	0.97	41.1	41.1	>1600	47.6	0.000	0.00	
25.1	9.675	262.471	0.94	0.283	0.211	1.760	8.31	qc > 160	46.70	0.96	44.8	45.9	>1600	46.4	0.000	0.00	
26.08	7.996	284.349	0.94	0.285	0.214	2.118	10.35	qc > 160	52.61	0.95	49.7	50.4	>1600	50.7	0.000	0.00	
27.07	7.417	255.184	0.94	0.287	0.215	1.625	7.55	qc > 160	48.26	0.93	45.0	45.6	>1600	45.7	0.000	0.00	
28.05	7.510	195.490	0.93	0.289	0.217	0.775	3.58	qc > 160	37.42	0.92	34.4	35.0	>1600	35.0	0.000	0.00	
29.04	6.286	191.647	0.93	0.291	0.218	0.735	3.37	qc > 160	37.53	0.91	34.4	34.7	>1600	34.6	0.000	0.00	
30.02	9.285	225.400	0.93	0.292	0.219	1.145	5.23	qc > 160	43.14	0.90	38.7	39.7	>1600	40.0	0.000	0.00	
31	7.035	237.759	0.92	0.293	0.219	1.330	6.08	qc > 160	47.58	0.89	42.2	42.6	>1600	42.7	0.000	0.00	
31.99	8.431	253.785	0.92	0.292	0.218	1.600	7.32	qc > 160	50.40	0.88	44.1	44.9	>1600	45.2	0.000	0.00	
32.97	7.010	236.983	0.93	0.291	0.218	1.319	6.04	qc > 160	48.58	0.87	42.0	42.5	>1600	42.5	0.000	0.00	
33.96	6.340	230.791	0.90	0.290	0.217	1.222	5.63	qc > 160	48.34	0.86	41.4	41.7	>1600	41.6	0.000	0.00	
34.94	4.576	214.345	0.89	0.289	0.217	0.996	4.59	qc > 160	45.91	0.85	38.8	38.8	>1600	38.8	0.000	0.00	
35.92	10.443	241.794	0.88	0.289	0.216	1.395	6.45	qc > 160	48.68	0.84	40.7	42.0	>1600	42.7	0.000	0.00	
36.91	10.915	233.993	0.87	0.287	0.215	1.271	5.90	qc > 160	47.22	0.83	39.3	40.5	>1600	41.3	0.000	0.00	
37.89	10.815	213.502	0.87	0.286	0.215	0.985	4.59	qc > 160	43.61	0.82	35.7	37.1	>1600	37.8	0.000	0.00	
38.88	10.835	196.369	0.86	0.285	0.214	0.784	3.67	qc > 160	40.52	0.81	32.8	34.2	>1600	34.6	0.000	0.00	0.66
39.86															0.000	0.00	
40.85															0.000	0.00	
41.83															0.000	0.00	
42.81															0.000	0.00	
43.8															0.000	0.00	
44.78															0.000	0.00	
45.77															0.000	0.00	
46.75															0.000	0.00	

PLATE A-10

LIQUEFACTION ANALYSIS USING CPT DATA (NCEER, 1997)

Project: Luckey Property

CPT Location: CPT-3

Earthquake Magnitude: 6.70 | PGA = 0.32 | MSF: 1.33

WT Depth (ft): 10.00 | Surcharge (psf): 100 | Limiting FOS 1.1 | Total Soil Unit Weight (psf) 115

Depth (ft)	Depth (ft) From	To	Thickness (ft)	SBT	Soil Description	Total Stress	Effective Stress (psf)	fs (tsf)	qt (tsf)	Cq n=0.5	qc1n n=0.5	Q n=1	Corr. fact. F	Corrected Ic
0.49	0.00	0.99	0.99	3	Clay	156	156	0.03	2.2	1.700	3.740	27.147	1.414	2.81
1.48	0.99	1.97	0.99	3	Clay	270	270	0.3	5.2	1.700	8.840	37.499	5.923	2.95
2.46	1.97	2.95	0.98	3	Clay	383	383	0.02	9.7	1.700	16.490	49.666	6.520	2.70
3.44	2.95	3.94	0.98	4	Silty Clay to Sandy Clay	496	496	0.04	23.2	1.700	39.440	92.624	4.095	2.72
4.43	3.94	4.92	0.99	6	Sandy Silt to Silty Sand	609	609	0.89	33	1.700	56.100	107.394	2.692	2.38
5.41	4.92	5.91	0.99	7	Silty Sand	722	722	0.6	41.9	1.664	69.729	115.042	1.444	2.13
6.4	5.91	6.85	0.94	5	Sandy Clay to Clayey Silt	836	836	0.84	29.9	1.547	46.247	70.531	2.849	2.46
7.3	6.85	7.75	0.90	3	Clay	940	940	0.82	15.5	1.459	24.074	34.125	5.729	2.77
8.2	7.75	8.70	0.95	5	Sandy Clay to Clayey Silt	1043	1043	1.09	31.8	1.385	44.035	59.978	3.485	2.54
9.18	8.70	9.68	0.98	8	Sandy Silt to Silty Sand	1157	1157	0.8	32.9	1.315	43.259	55.879	2.475	2.44
10.17	9.68	10.66	0.98	5	Sandy Clay to Clayey Silt	1271	1261	0.86	28.8	1.260	36.274	44.680	3.054	2.56
11.15	10.66	11.65	0.98	7	Silty Sand	1394	1322	0.81	48.4	1.230	59.521	72.144	1.279	2.15
12.14	11.65	12.60	1.03	7	Silty Sand	1518	1385	0.75	63.4	1.203	76.192	90.458	1.197	2.06
13.21	12.68	13.74	1.07	7	Silty Sand	1651	1452	0.75	56.9	1.174	66.774	77.225	1.338	2.13
14.27	13.74	14.77	1.03	6	Sandy Silt to Silty Sand	1784	1519	0.66	25.7	1.147	29.490	31.664	2.660	2.59
15.26	14.77	15.75	0.98	3	Clay	1908	1581	0.56	14.7	1.125	16.532	17.385	4.074	2.84
16.24	15.75	16.73	0.99	3	Clay	2030	1643	0.91	21.3	1.103	23.500	24.691	4.486	2.80
17.22	16.73	17.72	0.99	3	Clay	2153	1705	0.62	13.4	1.083	14.514	14.457	5.031	3.00
18.21	17.72	18.70	0.99	3	Clay	2276	1767	0.24	4.8	1.064	5.106	4.146	6.554	3.50
19.19	18.70	19.69	0.98	8	Sand to Silty Sand	2399	1829	0.28	61.9	1.046	64.730	66.377	0.461	1.86
20.18	19.89	20.67	0.98	9	Sand	2523	1891	0.95	138.2	1.028	143.143	145.864	0.689	1.69
21.16	20.67	21.66	0.98	9	Sand	2645	1953	1.15	160.2	1.012	171.120	171.911	0.663	1.62
22.15	21.66	22.64	0.98	9	Sand	2769	2015	0.92	132.9	0.996	132.390	130.507	0.700	1.72
23.13	22.64	23.62	0.98	9	Sand	2891	2077	0.68	129.8	0.981	127.365	123.585	0.530	1.66
24.11	23.62	24.61	0.99	8	Sand to Silty Sand	3024	2139	0.56	97.8	0.967	94.570	90.039	0.581	1.79
25.1	24.61	25.59	0.98	8	Sand to Silty Sand	3138	2201	0.79	106.4	0.953	101.418	95.245	0.754	1.83
26.08	25.59	26.58	0.98	9	Sand	3260	2263	1.3	207.5	0.940	195.068	181.941	0.631	1.56
27.07	26.58	27.56	0.99	9	Sand	3384	2325	1.53	236.2	0.927	218.124	200.832	0.655	1.53
28.05	27.56	28.55	0.98	9	Sand	3506	2387	1.84	240.4	0.915	220.044	199.943	0.771	1.53
29.04	28.55	29.53	0.98	9	Sand	3630	2450	1.4	248	0.904	224.092	201.007	0.569	1.48
30.02	29.53	30.51	0.98		FALSE									
31	30.51	31.50	0.98		FALSE									
31.99	31.50	32.48	0.98		FALSE									
32.97	32.48	33.47	0.99		FALSE									
33.96	33.47	34.45	0.98		FALSE									
34.94	34.45	35.43	0.98		FALSE									
35.92	35.43	36.42	0.98		FALSE									
36.91	36.42	37.40	0.98		FALSE									
37.89	37.40	38.39	0.99		FALSE									
38.88	38.39	39.37	0.98		FALSE									
39.86	39.37	40.36	0.98	[illegible]	FALSE			[illegible]	[illegible]					
40.85	40.36	41.34	0.98	[illegible]	FALSE			[illegible]	[illegible]					
41.83	41.34	42.32	0.98	[illegible]	FALSE			[illegible]	[illegible]					
42.81	42.32	43.31	0.98	[illegible]	FALSE			[illegible]	[illegible]					
43.8	43.31	44.29	0.98	[illegible]	FALSE			[illegible]	[illegible]					
44.78	44.29	45.28	0.99	[illegible]	FALSE			[illegible]	[illegible]					
45.77	45.28	46.26	0.98	[illegible]	FALSE			[illegible]	[illegible]					
46.75	46.26	47.25	0.98	[illegible]	FALSE			[illegible]	[illegible]					

Depth (ft)	FC %	(qc1n)cs n=0.5	rd	CSR	CSR corrected	$CRR_{7.5}$	FOS		N60	Cn	$N_1$60	For Liq. $N_1$60-cs	Residual Strength (psf)	For Sett. $N_1$60-cs	Vol. Strain %	Settlement in	Total Settlement in
0.49	46.688	18.278	1.00	0.208	0.156	0.065	0.41	Above WT	3.67	1.70	[illegible]	[illegible]	200.0	6.4	0.000	0.00	
1.48	43.196	38.710	1.00	0.207	0.155	0.082	0.55	Above WT	1.52	1.70	2.6	9.6	275.0	8.1	0.000	0.00	
2.46	40.406	65.787	0.99	0.207	0.155	0.106	0.69	Above WT	2.76	1.70	4.7	11.7	375.0	10.6	0.000	0.00	
3.44	44.820	181.919	0.99	0.206	0.155	0.640	4.14	Above WT	6.90	1.70	11.7	18.7	1100.0	19.1	0.000	0.00	
4.43	25.772	126.173	0.99	0.206	0.156	0.267	1.33	Above WT	8.06	1.70	13.7	18.5	1100.0	19.7	0.000	0.00	
5.41	16.821	105.820	0.99	0.205	0.154	0.190	1.24	Above WT	9.10	1.66	15.3	18.1	1000.0	19.2	0.000	0.00	
6.4	29.022	119.526	0.99	0.205	0.154	0.239	1.56	Above WT	7.57	1.55	11.7	17.3	900.0	18.5	0.000	0.00	
7.3	44.239	168.984	0.98	0.204	0.153	0.200	1.31	Above WT	4.88	1.46	7.1	14.1	600.0	13.5	0.000	0.00	
8.2	33.400	130.644	0.98	0.204	0.153	0.283	1.85	Above WT	8.35	1.38	11.6	17.9	950.0	18.4	0.000	0.00	
9.18	28.189	107.947	0.98	0.204	0.152	0.193	1.29	Above WT	8.25	1.31	10.9	16.3	800.0	16.9	0.000	0.00	
10.17	33.460	112.203	0.98	0.205	0.153	0.211	1.38		7.64	1.26	9.6	16.3	800.0	16.3	0.000	0.00	
11.15	17.449	93.776	0.97	0.214	0.160	0.154	0.96	Liquefy	10.70	1.23	13.2	16.1	800.0	17.1	0.018	0.21	
12.14	14.374	104.602	0.97	0.221	0.166	0.186	1.12		13.40	1.20	16.2	18.4	1000.0	19.2	0.000	0.00	
13.21	16.605	109.417	0.97	0.229	0.172	0.174	1.01	Liquefy	12.45	1.17	14.6	17.3	900.0	18.4	0.017	0.21	
14.27	34.863	96.183	0.97	0.236	0.177	0.163	0.92	Liquefy	8.92	1.15	7.9	14.9	650.0	14.5	0.020	0.25	
15.26	51.043	91.738	0.96	0.242	0.183	0.153	0.84	Ic > 2.6	4.64	1.12	5.2	13.2	400.0	11.3	0.000	0.00	
16.24	45.785	111.707	0.96	0.247	0.185	0.210	1.13	Ic > 2.6	6.39	1.10	7.1	14.3	600.0	13.5	0.000	0.00	
17.22	58.904	98.647	0.96	0.252	0.189	0.169	0.90	Ic > 2.6	4.55	1.08	4.9	15.9	375.0	10.9	0.000	0.00	
18.21	100.000	72.398	0.96	0.257	0.192	0.115	0.60	Ic > 2.6	2.37	1.06	2.5	9.5	225.0	8.0	0.000	0.00	
19.19	9.909	75.754	0.96	0.261	0.195	0.120	0.62	Liquefy	12.31	1.05	12.9	14.0	600.0	14.0	0.011	0.14	
20.18	5.179	147.320	0.95	0.264	0.198	0.377	1.91		25.86	1.03	26.6	26.8	>1600	26.7	0.000	0.00	
21.16	4.625	171.220	0.95	0.268	0.201	0.547	2.73	qc > 160	30.68	1.01	31.1	31.1	>1600	31.1	0.000	0.00	
22.15	6.154	139.001	0.95	0.271	0.203	0.330	1.62		24.96	1.00	24.9	25.2	>1600	25.1	0.000	0.00	
23.13	5.386	138.659	0.95	0.274	0.205	0.278	1.36		23.89	0.98	23.4	23.5	>1600	23.5	0.000	0.00	
24.11	7.898	103.939	0.94	0.277	0.207	0.184	0.89	Liquefy	18.83	0.97	18.2	18.9	1100.0	18.7	0.017	0.20	
25.1	8.760	124.472	0.94	0.279	0.209	0.220	1.05	Liquefy	20.78	0.95	19.8	20.7	1150.0	20.6	0.015	0.17	
26.08	3.721	195.064	0.94	0.281	0.211	0.770	3.65	qc > 160	36.94	0.94	34.7	34.7	>1600	34.7	0.000	0.00	
27.07	3.334	218.124	0.94	0.284	0.212	1.043	4.91	qc > 160	41.52	0.93	38.5	38.5	>1600	38.5	0.000	0.00	
28.05	4.041	220.044	0.93	0.286	0.214	1.072	5.01	qc > 160	43.08	0.92	39.4	39.4	>1600	39.4	0.000	0.00	
29.04	2.620	224.092	0.93	0.287	0.215	1.127	5.23	qc > 160	43.08	0.90	38.9	38.9	>1600	38.9	0.000	0.00	
30.02															0.000	0.00	
31															0.000	0.00	
31.99															0.000	0.00	
32.97															0.000	0.00	
33.96															0.000	0.00	
34.94															0.000	0.00	
35.92															0.000	0.00	
36.91															0.000	0.00	
37.89															0.000	0.00	
38.88															0.000	0.00	1.29
39.86															0.000	0.00	
40.85															0.000	0.00	
41.83															0.000	0.00	
42.81															0.000	0.00	
43.8															0.000	0.00	
44.78															0.000	0.00	
45.77															0.000	0.00	
46.75															0.000	0.00	

PLATE A-11

LIQUEFACTION ANALYSIS USING CPT DATA (NCEER, 1997)

Project: Luckey Property | Earthquake Magnitude: 6.70 | PGA = 0.32 | WT Depth (ft): 8.50 | Limiting FOS: 1.1

CPT Location: CPT-4 | MSF: 1.31 | Surcharge (psf): 100 | Total Soil Unit Weight (pcf): 115

Depth (ft)	Depth (ft) From	To	Thickness (ft)	SBT	Soil Description	Total Stress	Effective Stress (psf)	fs (tsf)	qc (tsf)	Cq n=0.5	qc1n n=0.5	Q n=1	Corr. fac. F	Corrected Ic
0.49	0.00	0.99	0.99	5	Sandy Clay to Clayey Silt	156	156	0.44	17.2	1.700	29.240	119.419	2.570	2.58
1.48	0.99	1.97	0.99	4	Silty Clay to Sandy Clay	270	270	2.07	47	1.700	79.900	346.890	4.417	2.44
2.46	1.97	2.95	0.98	3	Clay	383	383	1.73	33	1.700	56.100	131.369	5.273	2.59
3.44	2.95	3.94	0.98	4	Silty Clay to Sandy Clay	496	496	1.23	28.8	1.700	48.620	114.424	4.338	2.57
4.43	3.94	4.92	0.99	3	Clay	609	609	0.72	17.1	1.700	29.070	55.316	4.187	2.91
5.41	4.92	5.91	0.99	3	Clay	722	722	0.83	16.9	1.664	28.125	45.806	4.333	2.94
6.4	5.91	6.85	0.94	6	Sandy Silt to Silty Sand	836	836	0.69	33	1.547	51.047	77.947	3.116	2.34
7.3	6.85	7.75	0.90	5	Sandy Clay to Clayey Silt	940	940	0.82	26.1	1.459	38.081	54.561	3.199	2.56
8.2	7.75	8.70	0.95	4	Silty Clay to Sandy Clay	1043	1043	0.60	17.7	1.385	24.510	32.941	3.435	2.63
9.19	8.70	9.68	0.98	8	Sand to Silty Sand	1164	1121	0.52	59.7	1.336	79.743	105.477	0.880	1.95
10.17	9.68	10.66	0.98	8	Sand to Silty Sand	1286	1183	0.68	101.9	1.300	132.519	171.229	0.849	1.77
11.15	10.66	11.65	0.98	8	Sand to Silty Sand	1409	1244	1	110.2	1.268	139.734	175.974	0.913	1.77
12.14	11.65	12.68	1.03	8	Sand to Silty Sand	1533	1307	1.12	110.4	1.237	136.577	167.787	1.022	1.81
13.21	12.68	13.74	1.07	9	Sand to Silty Sand	1666	1374	1.01	110.9	1.206	133.788	160.187	0.918	1.79
14.27	13.74	14.77	1.03	9	Sand	1799	1441	1.28	157.5	1.178	185.550	217.348	0.805	1.63
15.26	14.77	15.75	0.98	9	Sand	1923	1503	1.62	182.1	1.153	210.034	240.975	0.894	1.64
16.24	15.75	16.73	0.98	9	Sand	2045	1565	1.58	181.2	1.130	204.833	230.241	0.882	1.64
17.22	16.73	17.72	0.99	9	Sand	2168	1627	0.94	188.9	1.109	209.446	230.894	0.500	1.47
18.21	17.72	18.70	0.99	9	Sand	2291	1689	0.87	174.6	1.088	189.983	205.365	0.502	1.51
19.19	18.70	19.68	0.98	9	Sand	2414	1751	0.82	198.7	1.069	210.223	223.297	0.431	1.45
20.18	19.68	20.67	0.98	9	Sand	2538	1813	0.80	159.2	1.050	167.193	174.188	0.564	1.58
21.16	20.67	21.66	0.98	9	Sand	2660	1875	0.93	150.2	1.033	155.123	158.738	0.635	1.63
22.15	21.66	22.64	0.98	7	Silty Sand	2784	1937	1.06	58.5	1.016	59.437	58.952	1.909	2.16
23.13	22.64	23.62	0.98	5	Sandy Clay to Clayey Silt	2906	1999	0.88	21.9	1.000	21.904	20.455	3.336	2.77
24.11	23.62	24.61	0.99	5	Sandy Silt to Silty Sand	3029	2061	1.23	51.5	0.985	50.733	48.543	2.461	2.39
25.1	24.61	25.59	0.98	9	Sand	3151	2123	0.77	145.8	0.971	141.309	135.666	0.535	1.63
26.08	25.59	26.58	0.98	8	Sand to Silty Sand	3275	2185	1.22	120.4	0.957	115.189	108.705	1.037	1.87
27.07	26.58	27.56	0.99	8	Sandy Silt to Silty Sand	3399	2247	2.72	98.4	0.943	92.843	85.788	2.811	2.25
28.05	27.56	28.55	0.98	9	Sand	3521	2309	0.81	160.8	0.931	149.463	137.574	0.573	1.62
29.04	28.55	29.53	0.98	9	Sand	3645	2372	0.92	119.4	0.918	109.649	99.158	0.782	1.81
30.02	29.53	30.51	0.98	10	Gravelly Sand to Sand	3768	2433	0.56	248	0.907	224.839	202.293	0.390	1.38
31	30.51	31.50	0.98	10	Gravelly Sand to Sand	3890	2495	1.27	258.4	0.895	231.351	206.575	0.495	1.44
31.99	31.50	32.48	0.98	10	Gravelly Sand to Sand	4014	2557	0.91	264.5	0.884	233.907	205.284	0.347	1.34
32.97	32.48	33.47	0.99	10	Gravelly Sand to Sand	4136	2619	1.13	261.4	0.874	228.425	198.031	0.436	1.40
33.96	33.47	34.45	0.98	10	Gravelly Sand to Sand	4260	2681	1.28	261.7	0.864	226.012	193.607	0.493	1.44
34.94	34.45	35.43	0.98	10	Gravelly Sand to Sand	4383	2743	1.1	245.6	0.854	209.707	177.662	0.452	1.44
35.92	35.43	36.42	0.98	10	Gravelly Sand to Sand	4505	2805	1.16	253.6	0.844	214.142	179.216	0.462	1.44
36.91	36.42	37.40	0.98	9	Sand	4629	2867	1.12	238.8	0.835	197.602	163.417	0.478	1.48
37.89	37.40	38.39	0.99	10	Gravelly Sand to Sand	4751	2929	1.12	244.9	0.826	202.367	165.598	0.462	1.46
38.88	38.39	39.37	0.98	10	Gravelly Sand to Sand	4875	2991	0.86	238.9	0.818	195.340	158.093	0.364	1.41
39.86	39.37	40.36	0.98	[illegible]	FALSE			[illegible]	[illegible]					
40.85	40.36	41.34	0.98	[illegible]	FALSE			[illegible]	[illegible]					
41.83	41.34	42.32	0.98	[illegible]	FALSE			[illegible]	[illegible]					
42.81	42.32	43.31	0.98	[illegible]	FALSE			[illegible]	[illegible]					
43.8	43.31	44.29	0.98	[illegible]	FALSE			[illegible]	[illegible]					
44.78	44.29	45.28	0.99	[illegible]	FALSE			[illegible]	[illegible]					
45.77	45.28	46.26	0.98	[illegible]	FALSE			[illegible]	[illegible]					
46.75	46.26	47.24	0.98	[illegible]	FALSE			[illegible]	[illegible]					

Depth (ft)	FC %	(qc1n)cs n=0.5	rd	CSR	CSR corrected	$CRR_{7.5}$	FOS		N60	Cn	N_1,60	For Liq. N_1,60-cs	Residual Strength (psf)	For Sett. N_1,60-cs	Vol. Strain %	Settlement in	Total Settlement in
0.49	34.341	94.303	1.00	0.208	0.154	0.158	1.02	Above WT	4.82	1.70	7.8	14.7	656.0	14.3	0.000	0.00	
1.48	23.912	197.097	1.00	0.207	0.155	0.792	5.10	Above WT	11.76	1.70	20.0	25.5	>1600	27.3	0.000	0.00	
2.46	35.109	184.889	0.99	0.207	0.155	0.668	4.31	Above WT	8.91	1.70	15.1	22.1	>1600	23.2	0.000	0.00	
3.44	34.138	154.400	0.98	0.206	0.155	0.422	2.73	Above WT	7.64	1.70	13.0	19.4	1250.0	20.4	0.000	0.00	
4.43	51.680	168.774	0.99	0.206	0.154	0.527	3.42	Above WT	5.48	1.70	9.3	16.3	800.0	16.1	0.000	0.00	
5.41	54.662	172.548	0.99	0.205	0.154	0.555	3.61	Above WT	5.52	1.66	9.2	16.2	800.0	16.0	0.000	0.00	
6.4	24.189	109.098	0.99	0.205	0.154	0.194	1.27	Above WT	7.82	1.55	12.2	16.5	850.0	17.8	0.000	0.00	
7.3	33.165	177.339	0.98	0.204	0.153	0.230	1.50	Above WT	8.92	1.46	13.0	16.7	850.0	16.8	0.000	0.00	
8.2	36.627	85.490	0.98	0.206	0.153	0.138	0.90	Ic > 2.6	4.85	1.38	6.7	13.3	550.0	13.1	0.000	0.00	
9.19	11.717	99.153	0.98	0.211	0.158	0.171	1.08	Liquefy	12.21	1.34	16.3	17.9	950.0	18.3	0.017	0.20	
10.17	7.516	143.431	0.98	0.221	0.165	0.357	2.16		10.49	1.30	25.1	25.9	>1600	25.8	0.000	0.00	
11.15	7.586	152.063	0.97	0.229	0.172	0.407	2.37		21.11	1.27	26.8	27.4	>1600	27.3	0.000	0.00	
12.14	8.433	151.604	0.97	0.237	0.178	0.421	2.31		21.45	1.24	26.5	27.3	>1600	27.3	0.000	0.00	
13.21	7.908	147.067	0.97	0.244	0.183	0.376	2.05		21.30	1.21	25.6	26.4	>1600	26.4	0.000	0.00	
14.27	5.147	185.691	0.97	0.251	0.188	0.675	3.59	qc > 160	28.86	1.18	34.0	34.0	>1600	34.1	0.000	0.00	
15.26	5.036	209.721	0.96	0.257	0.192	0.932	4.85	qc > 160	33.20	1.15	38.4	38.4	>1600	38.5	0.000	0.00	
16.24	5.097	204.563	0.96	0.261	0.196	0.876	4.47	qc > 160	33.17	1.13	37.5	37.5	>1600	37.6	0.000	0.00	
17.22	2.441	209.446	0.96	0.266	0.199	0.934	4.69	qc > 160	32.68	1.11	36.2	36.2	>1600	36.2	0.000	0.00	
18.21	2.913	189.983	0.96	0.270	0.202	0.718	3.55	qc > 160	30.53	1.09	33.2	33.2	>1600	33.2	0.000	0.00	
19.19	2.205	210.223	0.96	0.274	0.205	0.944	4.60	qc > 160	33.03	1.07	36.2	36.2	>1600	36.2	0.000	0.00	
20.18	4.043	167.193	0.95	0.277	0.208	0.515	2.48	qc > 160	28.58	1.05	30.0	30.0	>1600	30.0	0.000	0.00	
21.16	4.923	155.331	0.95	0.281	0.210	0.427	2.03		27.40	1.03	28.3	28.3	>1600	28.3	0.000	0.00	
22.15	21.232	109.374	0.95	0.283	0.212	0.202	0.95	Liquefy	13.56	1.02	13.8	17.6	950.0	18.4	0.017	0.20	
23.13	44.522	100.087	0.95	0.286	0.214	0.173	0.81	Ic > 2.6	6.40	1.00	6.5	13.5	300.0	13.9	0.008	0.00	
24.11	24.985	115.165	0.94	0.288	0.216	0.222	1.03	Liquefy	12.87	0.99	12.4	17.3	400.0	18.5	0.017	0.20	
25.1	4.779	141.309	0.94	0.291	0.218	0.342	1.57		26.49	0.97	25.7	25.7	>1600	25.7	0.000	0.00	
26.08	9.709	133.944	0.94	0.293	0.219	0.303	1.38		23.88	0.96	22.8	23.9	>1600	24.1	0.000	0.00	
27.07	20.628	165.783	0.94	0.295	0.221	0.504	2.28	qc > 160	22.57	0.94	21.3	24.9	>1600	26.3	0.000	0.00	
28.05	4.748	149.463	0.93	0.296	0.222	0.391	1.76		29.20	0.93	27.2	27.2	>1600	27.2	0.000	0.00	
29.04	4.088	122.344	0.93	0.298	0.223	0.250	1.12		23.33	0.92	21.3	22.1	1550.0	22.0	0.000	0.00	
30.02	1.301	224.839	0.93	0.299	0.224	1.137	5.07	qc > 160	41.70	0.91	37.8	37.8	>1600	37.8	0.000	0.00	
31	1.961	231.351	0.92	0.299	0.224	1.232	5.50	qc > 160	44.18	0.90	39.6	39.6	>1600	39.6	0.000	0.00	
31.99	0.806	233.907	0.91	0.298	0.223	1.270	5.68	qc > 160	43.85	0.88	38.9	38.9	>1600	38.8	0.000	0.00	
32.97	1.580	228.425	0.91	0.297	0.223	1.188	5.33	qc > 160	44.27	0.87	38.7	38.7	>1600	38.7	0.000	0.00	
33.96	2.047	226.012	0.90	0.297	0.222	1.154	5.19	qc > 160	44.84	0.86	38.7	38.7	>1600	38.7	0.000	0.00	
34.94	2.073	209.707	0.89	0.296	0.221	0.938	4.23	qc > 160	42.11	0.85	36.0	36.0	>1600	36.0	0.000	0.00	
35.92	2.052	214.142	0.88	0.295	0.221	0.993	4.50	qc > 160	43.46	0.84	36.7	36.7	>1600	36.7	0.000	0.00	
36.91	2.545	197.602	0.87	0.293	0.220	0.798	3.63	qc > 160	41.03	0.84	34.3	34.3	>1600	34.3	0.000	0.00	
37.89	2.110	202.367	0.87	0.292	0.219	0.851	3.89	qc > 160	42.23	0.83	34.9	34.9	>1600	34.9	0.000	0.00	
38.88	1.698	195.340	0.86	0.291	0.218	0.773	3.55	qc > 160	40.58	0.82	33.2	33.2	>1600	33.1	0.000	0.00	0.59
39.86															0.000	0.00	
40.85															0.000	0.00	
41.83															0.000	0.00	
42.81															0.000	0.00	
43.8															0.000	0.00	
44.78															0.000	0.00	
45.77															0.000	0.00	
46.75															0.000	0.00	

PLATE A-12

LIQUEFACTION ANALYSIS USING CPT DATA (NCEER, 1997)

Project: Luckey Property — Earthquake Magnitude: 6.70 — PGA = 0.31 — WT Depth (ft): 8.50 — Limiting FOS 1.1

CPT Location: CPT-5 — MSF: 1.33 — Surcharge (psf): 100 — Total Soil Unit Weight (pcf) 115

Depth (ft)	Depth (ft) From	To	Thickness (ft)	SBT	Soil Description	Total Stress	Effective Stress (psf)	fs (tsf)	qc (tsf)	Cq n=0.5	qc1n n=0.5	Q n=1	Curr. fact. F	Corrected Ic
0.49	0.00	0.99	0.99	3	Clay	156	156	0.62	15.7	1.700	26.690	199.831	3.969	2.40
1.48	0.99	1.97	0.99	3	Clay	270	270	0.67	11.5	1.700	19.550	84.122	5.895	2.91
2.46	1.97	2.95	0.98	3	Clay	383	383	1.24	25	1.700	42.500	129.582	4.998	2.76
3.44	2.95	3.94	0.98	3	Clay	496	496	1.63	28	1.700	47.600	111.994	5.873	2.84
4.43	3.94	4.92	0.99	3	Clay	609	609	1.13	17.8	1.700	30.430	57.741	6.422	2.65
5.41	4.92	5.91	0.99	3	Clay	722	722	0.8	17	1.664	28.291	46.082	4.803	2.62
6.4	5.91	6.85	0.94	3	Clay	836	836	1.31	24.5	1.547	38.049	57.852	5.417	2.97
7.3	6.85	7.75	0.90	3	Clay	940	940	0.68	11.8	1.459	17.217	24.120	6.062	2.89
8.2	7.75	8.70	0.95	5	Sandy Clay to Clayey Silt	1043	1043	0.98	25.2	1.385	34.896	47.322	3.666	2.90
9.19	8.70	9.68	0.98	5	Sandy Clay to Clayey Silt	1164	1121	0.83	29.7	1.336	39.671	51.952	3.456	2.53
10.17	9.68	10.66	0.98	8	Sandy Silt to Silty Sand	1286	1183	1.05	48.2	1.300	62.679	80.420	2.292	2.30
11.15	10.66	11.65	0.98	7	Silty Sand	1409	1244	1.41	72.8	1.268	92.037	115.546	1.961	2.13
12.14	11.65	12.68	1.03	7	Silty Sand	1533	1307	2.49	87.0	1.237	121.113	144.657	2.563	2.14
13.21	12.68	13.74	1.07	7	Silty Sand	1666	1374	2.27	103.5	1.206	124.861	149.437	2.333	2.08
14.27	13.74	14.77	1.03	7	Silty Sand	1799	1441	3.03	146.5	1.178	172.591	202.066	2.085	1.97
15.26	14.77	15.75	0.98	7	Silty Sand	1921	1503	3.51	141.3	1.153	162.745	186.432	2.505	2.05
16.24	15.75	16.73	0.98	7	Silty Sand	2045	1565	2.77	133.0	1.130	151.251	169.675	2.086	2.01
17.22	16.73	17.72	0.99	7	Silty Sand	2168	1627	4.08	181.4	1.109	201.130	221.674	2.263	1.96
18.21	17.72	18.70	0.99	7	Silty Sand	2291	1689	3.46	156.4	1.088	170.184	183.817	2.229	2.00
19.19	18.70	19.69	0.98	7	Silty Sand	2414	1751	2.85	130.2	1.069	139.151	147.339	2.209	2.05
20.18	19.69	20.67	0.98	7	Silty Sand	2538	1813	3.05	185.6	1.050	194.939	203.306	1.940	1.92
21.16	20.67	21.66	0.98	8	Sand to Silty Sand	2660	1875	3.05	165.4	1.033	170.821	175.001	1.859	1.94
22.15	21.66	22.64	0.98	8	Sand to Silty Sand	2784	1937	2.36	159.3	1.016	161.851	163.006	1.444	1.87
23.13	22.64	23.62	0.98	8	Sand to Silty Sand	2906	1999	1.37	96.9	1.000	96.910	95.486	1.435	2.02
24.11	23.62	24.61	0.99	8	Sand to Silty Sand	3029	2061	0.65	100.1	0.985	98.609	95.671	0.964	1.90
25.1	24.61	25.59	0.98	8	Sand to Silty Sand	3153	2123	3.86	214.2	0.971	207.881	200.277	1.721	1.46
26.08	25.59	26.58	0.98	9	Sand	3275	2185	2.29	231.8	0.957	221.768	210.673	0.995	1.66
27.07	26.58	27.56	0.99	8	Sand to Silty Sand	3399	2247	3.59	196.7	0.943	185.553	173.534	1.841	1.91
28.05	27.56	28.55	0.98	9	Sand	3521	2309	2.24	250.6	0.931	233.233	215.525	0.900	1.61
29.04	28.55	29.53	0.98	9	Sand	3645	2371	1.64	245.6	0.918	225.543	205.588	0.796	1.59
30.02	29.53	30.51	0.98		FALSE									
31	30.51	31.50	0.98		FALSE									
31.99	31.50	32.48	0.98		FALSE									
32.97	32.48	33.47	0.99		FALSE									
33.96	33.47	34.45	0.98		FALSE									
34.94	34.45	35.43	0.98		FALSE									
35.92	35.43	36.42	0.98		FALSE									
36.91	36.42	37.40	0.98		FALSE									
37.89	37.40	38.39	0.99		FALSE									
38.88	38.39	39.37	0.98		FALSE									
39.86	39.37	40.36	0.98	[illegible]	FALSE			[illegible]	[illegible]					
40.85	40.36	41.34	0.98	[illegible]	FALSE			[illegible]	[illegible]					
41.83	41.34	42.32	0.98	[illegible]	FALSE			[illegible]	[illegible]					
42.81	42.32	43.31	0.98	[illegible]	FALSE			[illegible]	[illegible]					
43.8	43.31	44.29	0.98	[illegible]	FALSE			[illegible]	[illegible]					
44.78	44.29	45.28	0.99	[illegible]	FALSE			[illegible]	[illegible]					
45.77	45.28	46.26	0.98	[illegible]	FALSE			[illegible]	[illegible]					
46.75	46.26	47.25	0.98	[illegible]	FALSE			[illegible]	[illegible]					

Depth (ft)	FC %	(qc1n)cs n=0.5	rd	CSR	CSR corrected	$CRR_{7.5}$	FOS		N60	Cn	N_1,60	For Liq. N_1,60-cs	Residual Strength (psf)	For Sett. N_1,60-cs	Vol. Strain %	Settlement in	Total Settlement in
0.49	35.355	88.780	1.00	0.208	0.156	0.145	0.93	Above WT	4.25	1.70	7.2	14.2	600.0	13.7	0.000	0.00	
1.48	51.451	132.798	1.00	0.207	0.155	0.213	1.37	Above WT	2.68	1.70	4.5	13.3	500.0	13.5	0.000	0.00	
2.46	43.935	190.534	0.99	0.207	0.155	0.723	4.67	Above WT	7.37	1.70	12.5	19.5	1250.0	20.0	0.000	0.00	
3.44	48.535	146.109	0.99	0.206	0.155	1.466	9.49	Above WT	8.50	1.70	14.3	21.7	1475.0	22.6	0.000	0.00	
4.43	37.929	111.356	0.99	0.206	0.154	0.208	1.35	Above WT	4.97	1.70	8.5	15.5	700.0	15.1	0.000	0.00	
5.41	36.498	98.209	0.99	0.205	0.154	0.168	1.09	Above WT	4.65	1.66	7.7	14.7	650.0	14.3	0.000	0.00	
6.4	56.203	142.379	0.99	0.205	0.154	1.404	9.15	Above WT	8.15	1.55	12.5	19.6	1250.0	20.1	0.000	0.00	
7.3	51.366	96.407	0.98	0.204	0.153	0.163	1.07	Above WT	3.73	1.46	5.4	15.4	400.0	11.5	0.000	0.00	
8.2	51.779	197.652	0.98	0.204	0.153	0.798	5.22	Ic > 2.6	6.01	1.38	11.5	18.1	1000.0	18.5	0.000	0.00	
9.19	31.201	113.174	0.98	0.211	0.158	0.211	1.33		7.70	1.34	10.3	16.4	800.0	16.8	0.000	0.00	
10.17	23.566	112.190	0.98	0.221	0.165	0.250	1.51		11.35	1.30	14.8	18.9	1100.0	20.2	0.000	0.00	
11.15	16.869	139.957	0.97	0.229	0.171	0.335	1.95		15.94	1.27	20.3	23.0	>1600	24.4	0.000	0.00	
12.14	17.019	185.350	0.97	0.233	0.176	0.673	3.79	qc > 160	21.53	1.24	26.6	29.4	>1600	31.3	0.000	0.00	
13.21	15.271	177.681	0.97	0.244	0.183	0.602	3.29	qc > 160	22.24	1.21	26.8	35.2	>1600	30.7	0.000	0.00	
14.27	12.188	218.228	0.97	0.251	0.188	1.047	5.57	qc > 160	30.16	1.18	35.5	37.2	>1600	38.3	0.000	0.00	
15.26	14.352	223.233	0.98	0.257	0.193	1.115	5.80	qc > 160	29.95	1.15	34.5	36.7	>1600	38.4	0.000	0.00	
16.24	13.183	198.350	0.96	0.261	0.196	0.806	4.11	qc > 160	27.94	1.13	31.6	33.5	>1600	34.7	0.000	0.00	
17.22	11.882	251.554	0.96	0.266	0.199	1.560	7.83	qc > 160	37.18	1.11	41.3	47.8	>1600	44.0	0.000	0.00	
18.21	12.909	220.905	0.96	0.270	0.203	1.083	5.35	qc > 160	32.54	1.09	35.4	37.2	>1600	38.5	0.000	0.00	
19.19	14.369	190.998	0.96	0.274	0.205	0.728	3.55	qc > 160	27.64	1.07	29.5	31.7	>1600	33.2	0.000	0.00	
20.18	10.923	235.857	0.95	0.277	0.208	1.300	6.26	qc > 160	37.50	1.05	39.4	40.8	>1600	41.6	0.000	0.00	
21.16	11.286	209.263	0.95	0.281	0.210	0.931	4.44	qc > 160	33.60	1.03	34.7	36.2	>1600	37.0	0.000	0.00	
22.15	9.657	187.897	0.95	0.283	0.212	0.697	3.28	qc > 160	31.57	1.02	32.3	33.2	>1600	33.5	0.000	0.00	
23.13	13.610	129.174	0.95	0.286	0.214	0.280	1.31		20.56	1.00	20.4	23.4	>1600	23.3	0.000	0.00	
24.11	14.508	117.679	0.94	0.288	0.216	0.232	1.07	Liquefy	20.13	0.99	19.8	22.1	1400.0	21.3	0.014	0.17	
25.1	4.775	239.181	0.94	0.291	0.218	1.353	6.21	qc > 160	42.25	0.97	41.0	41.6	>1600	42.4	0.000	0.00	
26.08	3.538	233.655	0.94	0.293	0.219	1.120	5.11	qc > 160	42.63	0.96	40.8	40.9	>1600	40.9	0.000	0.00	
27.07	14.641	222.418	0.94	0.295	0.221	1.103	5.00	qc > 160	39.50	0.94	37.3	38.7	>1600	39.3	0.000	0.00	
28.05	4.536	233.222	0.93	0.296	0.222	1.260	5.67	qc > 160	45.37	0.93	42.2	42.2	>1600	42.2	0.000	0.00	
29.04	4.074	225.543	0.93	0.298	0.223	1.147	5.14	qc > 160	44.04	0.92	40.4	40.4	>1600	40.4	0.000	0.00	
30.02															0.000	0.00	
31															0.000	0.00	
31.99															0.000	0.00	
32.97															0.000	0.00	
33.96															0.000	0.00	
34.94															0.000	0.00	
35.92															0.000	0.00	
36.91															0.000	0.00	
37.89															0.000	0.00	
38.88															0.000	0.00	0.17
39.86															0.000	0.00	
40.85															0.000	0.00	
41.83															0.000	0.00	
42.81															0.000	0.00	
43.8															0.000	0.00	
44.78															0.000	0.00	
45.77															0.000	0.00	
46.75															0.000	0.00	

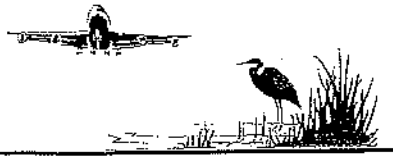
PLATE A-13

APPENDIX H
NOISE APPENDICES

Appendix A

Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of an acoustic signal.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
Ldn	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
Leq	Equivalent or energy-averaged sound level.
Lmax	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Masking	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
Noise	Unwanted sound.
Peak Noise	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
RT_{60}	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
Sabin	The unit of sound absorption. One square foot of material absorbing 100% of incident sound has an absorption of 1 sabin.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.
Impulsive	Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.
Simple Tone	Any sound which can be judged as audible as a single pitch or set of single pitches.



Appendix B-2
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2001-160
Desciption: Existing Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	Interstate 5	Highway 120	Louise Ave	101000	65		35	3	32	65	100	-5

Appendix B-3
FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project # : 2001-160
Description: Existing Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	Interstate 5	Highway 120	Louise Ave	71.9	64.6	78.4	79.4

Appendix B-4
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2001-160
Description: Existing Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

	Roadway	Segment Description		-- Distances to Traffic Noise Contours --				
Segment	Name	From	To	75	70	65	60	55
1	Interstate 5	Highway 120	Louise Ave	197	424	913	1968	4240

Appendix B-5
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2001-160
Desciption: Year 2007 Base Case
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	McKee Blvd	North of River Island Pkwy		2800	85		15	2.5	1	35	100	
2	McKee Blvd	South of River Island Pkwy		3550	85		15	2.5	1	35	100	
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	N/A	85			2.5	1	35	100	
4	Golden Valley Pkwy	South of River Island Pkwy		N/A	85			2.5	1	35	100	
5	I-5	Louise Ave	Hwy 120	109250	65		35	3	32	65	100	-5

Appendix B-6
FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project # : 2001-160
Description: Year 2007 Base Case
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	McKee Blvd	North of River Island Pkwy		52.8	46.6	47.8	54.7
2	McKee Blvd	South of River Island Pkwy		53.8	47.6	48.9	55.7
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd				
4	Golden Valley Pkwy	South of River Island Pkwy					
5	I-5	Louise Ave	Hwy 120	72.2	65.0	78.7	79.8

Appendix B-7
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2001-160
Description: Year 2007 Base Case
Ldn/CNEL: Ldn
Hard/Soft: Soft

	Roadway	*Segment Description*		*-- Distances to Traffic Noise Contours --*				
Segment	*Name*	*From*	*To*	*75*	*70*	*65*	*60*	*55*
1	McKee Blvd	North of River Island Pkwy		4	10	21	44	96
2	McKee Blvd	South of River Island Pkwy		5	11	24	52	112
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	0	0	0	0	0
4	Golden Valley Pkwy	South of River Island Pkwy		0	0	0	0	0
5	I-5	Louise Ave	Hwy 120	207	447	963	2074	4468

Appendix B-8
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2001-160
Desciption: Year 2007 Base Case Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	McKee Blvd	North of River Island Pkwy		3240	85		15	2.5	1	35	100	
2	McKee Blvd	South of River Island Pkwy		4540	85		15	2.5	1	35	100	
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	7500	85		15	2.5	1	35	100	
4	Golden Valley Pkwy	South of River Island Pkwy		2250	85		15	2.5	1	35	100	
5	I-5	Louise Ave	Hwy 120	111500	65		35	3	32	65	100	-5

Appendix B-9
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project # : 2001-160
Description: Year 2007 Base Case Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	McKee Blvd	North of River Island Pkwy		53.4	47.2	48.5	55.4
2	McKee Blvd	South of River Island Pkwy		54.9	48.7	49.9	56.8
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	57.1	50.9	52.1	59.0
4	Golden Valley Pkwy	South of River Island Pkwy		51.8	45.7	46.9	53.8
5	I-5	Louise Ave	Hwy 120	72.3	65.1	78.8	79.8

Appendix B-10
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2001-160
Description: Year 2007 Base Case Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	-- Distances to Traffic Noise Contours -- 75	70	65	60	55
1	McKee Blvd	North of River Island Pkwy		5	11	23	49	106
2	McKee Blvd	South of River Island Pkwy		6	13	28	61	132
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	9	18	40	86	185
4	Golden Valley Pkwy	South of River Island Pkwy		4	8	18	38	83
5	I-5	Louise Ave	Hwy 120	210	453	976	2102	4529

Appendix B-11
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2001-160
Desciption: Year 2025 Base Case Without Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	McKee Blvd	North of River Island Pkwy		6850	85		15	2.5	1	35	100	
2	McKee Blvd	South of River Island Pkwy		4050	85		15	2.5	1	35	100	
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	28350	85		15	2.5	1	35	100	
4	Golden Valley Pkwy	South of River Island Pkwy		33100	85		15	2.5	1	35	100	
5	I-5	Louise Ave	Hwy 120	155150	65		35	3	32	65	100	-5

Appendix B-12
FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Predicted Levels

Project # : 2001-160
Description: Year 2025 Base Case Without Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	McKee Blvd	North of River Island Pkwy		56.7	50.5	51.7	58.6
2	McKee Blvd	South of River Island Pkwy		54.4	48.2	49.4	56.3
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	62.8	56.7	57.9	64.8
4	Golden Valley Pkwy	South of River Island Pkwy		63.5	57.3	58.6	65.4
5	I-5	Louise Ave	Hwy 120	73.7	66.5	80.3	81.3

Appendix B-13
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2001-160
Description: Year 2025 Base Case Without Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

	Roadway	Segment Description		-- Distances to Traffic Noise Contours --				
Segment	Name	From	To	75	70	65	60	55
1	McKee Blvd	North of River Island Pkwy		8	17	37	81	174
2	McKee Blvd	South of River Island Pkwy		6	12	26	57	122
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	21	45	97	208	448
4	Golden Valley Pkwy	South of River Island Pkwy		23	50	107	231	497
5	I-5	Louise Ave	Hwy 120	262	564	1216	2620	5645

Appendix B-14
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2001-160
Desciption: Year 2025 Base Case Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	ADT	Day %	Eve %	Night %	% Med. Trucks	% Heavy Trucks	Speed	Distance	Offset
1	McKee Blvd	North of River Island Pkwy		8250	85		15	2.5	1	35	100	
2	McKee Blvd	South of River Island Pkwy		6850	85		15	2.5	1	35	100	
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	30700	85		15	2.5	1	35	100	
4	Golden Valley Pkwy	South of River Island Pkwy		40550	85		15	2.5	1	35	100	
5	I-5	Louise Ave	Hwy 120	155700	65		35	3	32	65	100	-5

Appendix B-15
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Predicted Levels

Project # : 2001-160
Description: Year 2025 Base Case Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	Autos	Medium Trucks	Heavy Trucks	Total
1	McKee Blvd	North of River Island Pkwy		57.5	51.3	52.5	59.4
2	McKee Blvd	South of River Island Pkwy		56.7	50.5	51.7	58.6
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	63.2	57.0	58.2	65.1
4	Golden Valley Pkwy	South of River Island Pkwy		64.4	58.2	59.4	66.3
5	I-5	Louise Ave	Hwy 120	73.7	66.5	80.3	81.3

Appendix B-16
FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Noise Contour Output

Project # : 2001-160
Description: Year 2025 Base Case Plus Project
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description From	To	-- Distances to Traffic Noise Contours -- 75	70	65	60	55
1	McKee Blvd	North of River Island Pkwy		9	20	42	91	197
2	McKee Blvd	South of River Island Pkwy		8	17	37	81	174
3	River Island Pkwy	Golden Valley Pkwy	McKee Blvd	22	47	102	219	473
4	Golden Valley Pkwy	South of River Island Pkwy		26	57	123	264	569
5	I-5	Louise Ave	Hwy 120	263	566	1219	2626	5658