City of Modesto

Kiernan Business Park Specific Plan Amendment #4 Project

EIR Volume I

State Clearinghouse No. 2007062071
Draft EIR Publication Date: December 17, 2008

Draft EIR Public Comment Period:
December 17, 2008 to February 2, 2009

Final EIR Certification Date:
September 1, 2009

City Council Resolution No. 2009-418

Community & Economic Development Department



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KIERNAN BUSINESS PARK SPECIFIC PLAN AMENDMENT #4 DRAFT EIR

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Print

MODESTO CITY COUNCIL
RESOLUTION NO. 2009-418

A RESOLUTION MAKING CERTAIN FINDINGS CONCERNING MITIGATION MEASURES, ADOPTING A MITIGATION MONITORING AND REPORTING PROGRAM, MAKING FINDINGS CONCERNING ALTERNATIVES, ADOPTING A STATEMENT OF OVERRIDING CONSIDERATIONS, AND CERTIFYING THE FINAL ENVIRONMENTAL IMPACT REPORT FOR THE KIERNAN BUSINESS PARK SPECIFIC PLAN AMENDMENT NO. 4 (SCH NO. 2007062071)

WHEREAS, on November 26, 2006, Dr. Aruna Chopra filed applications for amendments to the Kiernan Business Park Specific Plan and the Urban Area General Plan of the City of Modesto to re-designate property located in the Kiernan Carver Comprehensive Planning District from Business Park (BP) to Mixed Use (MU) and to amend the Kiernan Business Park Specific Plan to provide for mixed-use and medium-high-density residential development on the east side of Dale Road, between Kiernan Avenue and Bangs Avenue ("the Project"), and

WHEREAS, the City of Modesto ("the City"), on June 15, 2007, published an Initial Study and a Notice of Preparation for the Project, which identified potentially significant environmental impacts attributable to the Project, on which basis the City determined that an Environmental Impact Report ("EIR") was required for the Project, and

WHEREAS, the Notice of Preparation provided notice of the City's determination, and solicited public input on the proposed scope and content of the EIR for the Project, and

WHEREAS, on June 27, 2007, the City held a public scoping meeting to receive public comments on the scope and content of the EIR, and

WHEREAS, the City published and distributed a Draft EIR for the Kiernan Business Park Specific Plan Amendment #4 (SCH No. 2007062071) ("DEIR") for public comment on December 17, 2008,, in accordance with Section 21091 of the California Environmental Quality Act ("CEQA"), and

WHEREAS, the DEIR was available for public comment for a period of 45 days as required by Section 21091 of CEQA, the close of the public comment period being February 2, 2009, and

WHEREAS, during the 45-day public comment period the City received fifteen letters commenting on the DEIR, and

WHEREAS, the City prepared written responses to all written comments received on the DEIR, said responses being contained in a Final EIR for the Kiernan Business Park Specific Plan Amendment No. 4 (SCH No. 2007062071) ("FEIR") prepared pursuant to Section 15089 of the CEQA Guidelines, and

WHEREAS, the FEIR was published and distributed on June 26, 2009, and consists of the Draft EIR, a list of persons, organizations and public agencies commenting on the Draft EIR, copies of all written comments received, responses to those comments that raise environmental issues, and any revisions to the text of the Draft EIR made in response to the comments, as required by Section 15132 of the CEQA Guidelines, and

WHEREAS, the Project would include approval of the following: an amendment to the General Plan; an amendment to the Kiernan Business Park Specific Plan; annexation of a portion of the project site to the City of Modesto; adoption of a Facilities

Master Plan and an Infrastructure Finance Plan and the formation of an associated Community Facilities District; and subsequent entitlements, and

WHEREAS, CEQA requires that, in connection with the approval of a project for which an EIR has been prepared which identifies one or more significant environmental effects, the decision-making agency make certain findings regarding those effects, and

WHEREAS, a public hearing on the Project was held by the Planning Commission on July 20, 2009, in the Chambers, Tenth Street Place, 1010 Tenth Street, Modesto, California, at which hearing evidence both oral and documentary was received and considered, and

WHEREAS, after said public hearing, the Modesto City Planning Commission adopted Resolution No. 2009-21, recommending to the City Council adoption of certain findings and certification of the FEIR, and

WHEREAS, said matter was set for a public hearing of the City Council to be held on September 1, 2009, in the Tenth Street Place Chambers located at 1010 10th Street, Modesto, California, at which date and time said duly noticed public hearing of the Council evidence both oral and documentary was received and considered, and

WHEREAS, the City Council has received and considered the FEIR for the Kiernan Business Park Specific Plan Amendment No. 4 (SCH No. 2007062071) that analyzed the potential environmental effects of the proposed Project,

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Modesto that it hereby finds and determines in respect to the FEIR:

1. That the FEIR has been completed in compliance with CEQA; that the City Council has reviewed and analyzed the FEIR and other information in the record and has considered the information contained therein, including the written and oral comments received at the public hearings on the FEIR and the Project, prior to acting upon or approving the Project; and that the FEIR represents the independent judgment of the City of Modesto; and

2. That the Findings and Statements set forth in **Exhibit "A"**, and incorporated herein by reference, be made by the Council as the City's findings under the California Environmental Quality Act ("CEQA") (Pub. Resources Code § 21000 et seq.) and the CEQA Guidelines (Cal. Code Regs., title 14, §15000 et seq.) relating to the Project. The Findings provide the written analysis and conclusions of the Council regarding the Project's environmental impacts, mitigation measures and alternatives to the Project.

3. That pursuant to Public Resources Code Section 21081 and CEQA Guidelines Sections 15091 *et seq.*, the City Council of the City of Modesto adopts and makes the following statement of overriding considerations regarding the remaining unavoidable impacts of the Project and the anticipated economic, social and other benefits of the Project.

   a. Significant Unavoidable Impacts

      With respect to the foregoing findings, as set forth in Exhibit A, and in recognition of those facts which are included in the record, the City has determined the following:

      - that the Project will cause significant, unavoidable impacts to Agricultural Resources, Transportation and Circulation, Air Quality; and

      - that the Project will contribute to significant, unavoidable cumulative impacts to Agricultural Resources, Transportation and Circulation, Air Quality, and Noise; and

      These impacts cannot be avoided or substantially reduced by feasible changes or alterations to the Project, other than the changes or alterations already adopted.

   b. Overriding Considerations

      The City Council specifically adopts and makes this Statement of Overriding Considerations that this Project includes all feasible measures that would eliminate or substantially lessen the significant impacts of the Project on the environment, and that the remaining significant, unavoidable impacts of the Project are acceptable in light of the environmental, economic, social and other considerations set forth herein because the benefits of the

Project outweigh the significant and adverse impacts of the Project. The City Council finds that each of the overriding considerations set forth below constitutes a separate and independent ground for finding that the benefits of the Project outweigh its significant adverse environmental impacts and sets forth an overriding consideration warranting approval of the Project. These matters are supported by evidence in the record.

c. Benefits of Proposed Project

The City Council has considered the FEIR, the public record of proceedings on the proposed Project and other written materials presented to the City as well as oral and written testimony at all public hearings related to the Project, and does hereby determine that implementation of the Project as specifically provided in the Project documents would result in the substantial public benefits set forth below.

The City Council has weighed the benefits of the proposed Project against its unavoidable environmental risks and adverse environmental effects identified in the FEIR and hereby determines that those benefits outweigh the risks and adverse environmental effects and, therefore, further determines that these risks and adverse environmental effects are acceptable.

(i) The project would create a mixed use area adjacent to the Kaiser Modesto Medical Center which will serve the hospital and its visitors, the immediate business park area, and residential areas. Provide a vibrant village atmosphere which provides a safe, pedestrian-friendly environment.

(ii) The project would create an extended-hours community by balancing business park and medical center uses with residential and retail to provide greater safety through increased surveillance and activity.

(iii) The project would attract small businesses that provide support services to the hospital and business park uses.

(iv) The project would provide multi-family residential uses, both apartments and condominiums, to provide housing choices for doctors and nurses, hospital employees and support staff, visitors, single parents, business owners and employees, and independent seniors.

(v) The project would be designed as a healthy, smart growth development that increases physical activity via walking and bicycling, reduces dependence on automobiles, and increases transit use.

(vi) The project would provide incentives to reduce traffic through the use of shared parking and reduced automobile parking standards. Balance the supply and management of parking to address the needs of the businesses, residents, and employees.

(vii) The project would incorporate an efficient infrastructure system designed to accommodate all phases of development.

(viii) The project would provide for employment-intensive uses in an attractive "campus-like" setting that is consistent with the needs of the target industries identified in the Kiernan Business Park Specific Plan.

4. The Mitigation and Monitoring and Reporting Program for the Kiernan Business Park Specific Plan Amendment #4 is **attached** to this resolution as **Exhibit "B"** and is incorporated and adopted as part of this resolution herein. The Program identifies impacts of the Project, corresponding mitigation, designation of responsibility for mitigation implementation and the agency responsible for the monitoring action.

5. The City Council hereby finds and recognizes that the FEIR contains additions, clarifications, modifications and other information in its responses to comments on the Draft Environmental Impact Report for the Project ("DEIR") and also incorporates information obtained by the City since the DEIR was issued. This Council hereby finds and determines that such additions, clarifications, modifications and other information are not significant new information as that term is defined under the provisions of the California Environmental Quality Act, because such additions, clarifications, modifications and other information do not indicate that any new significant environmental impacts not already evaluated would result from the Project and do not reflect any substantial increase in the severity of any environmental impact; that no feasible mitigation measures considerably different from those previously analyzed in the DEIR have been proposed that would lessen significant environmental impacts of the Project; and that no feasible alternatives considerably different from those analyzed in the DEIR have been proposed that would lessen significant environmental impacts of the Project. Accordingly, this Council hereby finds and determines that recirculation of the FEIR for further public review and comment is not warranted; and

6. The City Council does hereby designate the Community and Economic Development Director of the City of Modesto, at his office at 1010 Tenth Street, Modesto, California 95354 as the custodian of documents and record of proceedings on which the decision is based; and

7. The City Council does hereby make the foregoing findings with respect to the significant effects on the environment of such Project, as identified in the FEIR, with the stipulations that all information in these findings is intended as a summary of the full administrative record supporting the FEIR, which full administrative record should be consulted for the full details supporting these findings, and that any mitigation measures and/or alternatives that were suggested by comments submitted on the DEIR and were not adopted as part of the FEIR are hereby expressly rejected for the reasons stated in the responses to the comments set forth in the FEIR and elsewhere in the record.

BE IT FURTHER RESOLVED by the Council that it hereby certifies the Final Environmental Impact Report for the Kiernan Business Park Specific Plan Amendment No. 4 (SCH No. 2007062071), on file in the office of the Community and Economic Development Department and incorporated herein by reference.

BE IT FURTHER RESOLVED that the project applicant shall indemnify, defend, and hold harmless the City of Modesto, its agents, officers, and employees from any and all claims, actions, or proceedings against the City of Modesto, its agents, officers, and employees to attack, set aside, void, or annul, any approval by the City of Modesto and its advisory agency, appeal board, or a legislative body concerning the environmental impact report for the Kiernan Business Park Specific Plan Amendment #4 Project (File No. EIR-06-001). The City of Modesto shall promptly notify the applicant of any claim, action, or proceeding and shall cooperate fully in the defense. If the City fails to do so, the applicant shall not thereafter be responsible to defend, indemnify, or hold City harmless.

The foregoing resolution was introduced at a regular meeting of the Council of the City of Modesto held on the 1st day of September, 2009, by Councilmember Marsh, who moved its adoption, which motion being duly seconded by Councilmember Hawn, was upon roll call carried and the resolution adopted by the following vote:

AYES:	Councilmembers:	Hawn, Keating, Lopez, Marsh, O'Bryant, Olsen, Mayor Ridenour
NOES:	Councilmembers:	None
ABSENT:	Councilmembers:	None

ATTEST: _____
STEPHANIE LOPEZ, City Clerk

(SEAL)

APPROVED AS TO FORM:

By: _____
SUSANA ACALA WOOD, City Attorney

Exhibit "A"

FINDINGS AND STATEMENTS ON THE KIERNAN BUSINESS PARK SPECIFIC PLAN AMENDMENT NO. 4 FEIR

KIERNAN BUSINESS PARK SPECIFIC PLAN AMENDMENT # 4 PROJECT ENVIRONMENTAL IMPACT REPORT (SCH# 2007062071)

FINDINGS AND STATEMENTS REQUIRED UNDER THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

(Public Resources Code, Section 21000 *et seq.*)

I. Introduction

On behalf of the City of Modesto (the "City"), and pursuant to the California Environmental Quality Act ("CEQA"), Turnstone Consulting prepared a Draft Environmental Impact Report (the "DEIR") for the Kiernan Business Park Specific Plan Amendment # 4 Project and other related approvals described below (collectively, the "Project"). The City of Modesto prepared a Final Environmental Impact Report (the "FEIR") in accordance with CEQA, which incorporated the DEIR prepared by Turnstone Consulting. The City is the lead agency for the FEIR.

To support its certification of the FEIR and approval of the Project, the City Council of the City of Modesto (the "City Council") makes the following findings of fact and statements of overriding considerations (collectively, the "Findings"). These Findings contain the City Council's written analysis and conclusions regarding the Project's environmental effects, mitigation measures, alternatives to the proposed Project, and the overriding considerations which, in the City Council's view, justify the approval of the Project despite its potential environmental effects. These Findings are based upon the entire record of proceedings for the FEIR, as described below.

The Project is Amendment #4 to the Kiernan Business Park Specific Plan setting out the framework for development of the 614-acre business park. Amendment #4 proposes the redesignation of approximately 39 acres of the existing 153-acre Business Park land use to 23 acres of Mixed Use and 16 acres of Medium High Density Residential Land uses. Development of the Mixed Use sub-area would include 80 dwelling units, 371,000 gross square feet (gsf) of retail area, including uses such as restaurants, pharmacies, and health clubs, 79,000 gsf of office area, and a 170-room hotel. The Medium High Density Residential sub-area would allow for 262 residential units. To support these new uses, the Project includes revisions to the Specific Plan's Circulation Plan to improve existing traffic and circulation conditions, including extensions and re-classification of existing bicycle paths and the additions of new bicycle paths. The Project also provides for new utilities as well as the extension of existing electrical, water, and sewer lines and storm drainage facilities.

The Project site location is partially within the City of Modesto (about 86 acres) and partially in an unincorporated area of Stanislaus County, within the City's Sphere of Influence (about 67 acres).

The approvals necessary for implementation of the Kiernan Business Park Specific Plan Amendment #4 include:

1. Adoption of Kiernan Business Park Specific Plan amendments to:

A. Change the land use designation for the 39-acre project area from Business Park (BP) to Mixed Use (MU) and Medium High Density Residential (MHDR);

B. Remove the Pelandale Expressway cross section;

C. Reclassify Dale Road from a four-lane minor arterial to a six-lane principal arterial between Kiernan Avenue and Bangs Avenue;

D. Reclassify Bangs Avenue from a two-lane industrial connector to a four-lane major collector;

E. Reclassify Healthcare Way from a two-lane industrial connector to a two-lane minor collector east of Dale Road;

F. Redesign cross sections for four-lane minor arterials;

G. Redesign cross sections for two-lane minor collectors;

H. Extend planned bicycle facilities and add new ones;

I. Change planned water, storm, and sanitary sewer pipeline alignments and add new ones consistent with the change in use from BP to MU and MHDP;

J. Implement new development standards and design guidelines for the MU and MHDR areas to provide a framework and direction for development within these areas;

K. Revise the Land Use Plan Diagram, the Circulation Plan Diagram, the Bike Paths Figure, and the Illustrative Public Facilities Plan Diagram in the Specific Plan to reflect the proposed changes to the Specific Plan.

2. Adoption of an amendment to the Urban Area General Plan to redesignate the 39-acre project area contained within the Kiernan/Carver Comprehensive Planning District of the General Plan from BP to MU.

3. Adoption of a resolution annexing a 67-acre portion of the project site into the City of Modesto, including approval by the Local Agency Formation Commission and, absent a negotiated agreement on service delivery and revenue sharing, simultaneous detachment of the 67 acres from the Salida Fire Protection District.

4. Adoption of a resolution to approve rezoning.

5. Adoption of a Facilities Master Plan and an Infrastructure Financing Plan for the project area.

6. Approval of a Development Agreement, if applicable, to guide development in the area.

7. Formation of a Community Facilities District to fund the construction of "backbone" public infrastructure, maintenance of applicable public facilities, and applicable public services.

8. Approval by the Modesto Irrigation District of the proposed storm water drainage system, and finalization of a Drainage Agreement between the Irrigation District and the City.

9. Subsequent entitlements, including approval of a Tentative Subdivision Map and/or tentative parcel map, if applicable.

II. General Findings and Overview

A. Record of Proceedings and Custodian of Record

The record of proceedings for the City's findings and determination is available for review by responsible agencies and interested members of the public during normal business hours at 1010 Tenth Street, Suite 4100, Modesto, California. The custodian of these documents is the City's Director of Community and Economic Development.

B. Preparation and Consideration of the FEIR and Independent Judgment Findings

The City Council finds, with respect to the City's preparation, review and consideration of the FEIR, that:

- The City retained the independent firm of Turnstone Consulting ("Turnstone") to prepare the DEIR, and Turnstone prepared the DEIR under the supervision and at the direction of the City of Modesto.

- The City circulated the DEIR for review by responsible agencies and the public and submitted it to the State Clearinghouse for review and comment by state agencies.

- The FEIR has been completed by the City of Modesto in compliance with CEQA.

- The Project will have significant, unavoidable impacts as described and discussed in the FEIR.

- The FEIR is adequate under CEQA to address the potential environmental impacts of the Project.

- The FEIR has been presented to the City Council, and the City Council has independently reviewed and considered information contained in the FEIR.

- The FEIR reflects the independent judgment of the City.

By these Findings, the City Council ratifies, adopts and incorporates the analyses, explanations, findings, responses to comments, and conclusions of the FEIR, except as specifically described in these Findings.

C. Findings Regarding Less-Than-Significant Impacts.

By these Findings, the City Council ratifies and adopts the FEIR's conclusions for the following potential environmental impacts which, based on the analyses in the FEIR, this City Council determines to be less than significant:

1. Land Use

- Impact A.1 – The proposed project would introduce new land use designations that would conflict with existing land use plans, policies, and/or regulations.

2. Agricultural Resources

- Impact B.2 – Development of the proposed project may burden continued agricultural operations surrounding the project site, and within the project site, prior to development under the proposed Specific Plan.

3. Air Quality

- Impact D.3 – Motor vehicle emissions would locally contribute to elevated concentrations of carbon monoxide.

- Impact D.4 – Implementation of the proposed project would cause sensitive receptors to be exposed to toxic air contaminants.

- Impact D.5 – Implementation of the proposed project would cause sensitive receptors to be exposed to objectionable odors.

4. Noise

- Impact E.1 – Project-related traffic could cause a substantial increase in noise levels for existing sensitive receptors adjacent to the project area.

5. Hazardous Materials

- Impact F.1 – Demolition of existing buildings could cause release of hazardous materials, causing potential hazards to the public and environment.

- Impact F.3 – Transportation of contaminated soil and/or building materials removed from the project site could result in accidental release of hazardous materials.

6. Hydrology and Water Quality

- Impact H.2 – Operation-phase use of the site could result in degradation of water quality in receiving waters by reducing the quality of storm water runoff.

- Impact H.4 – Implementation of the proposed project could place new development within an area potentially subject to dam failure inundation and/or inundation associated with spring/early summer snowmelt runoff.

- Impact H.5 – Implementation of the project could result in depletion of groundwater resources.

7. Community Services

- Impact I.1 – Development of the project site would result in an increased demand for Modesto Police Department officer hours due to the potential for increased on-site criminal activity and increased number of traffic incidents near the site.

- Impact I.2 – Development of the project site would result in an increase in the volume of emergency calls.

- Impact I.3 – Development of the mixed-use and high-density residential components of the proposed project with building heights over 30 feet could result in insufficient water pressure for firefighting.

- Impact I.4 – Build out of the Kiernan Business Park Specific Plan would result in an increase in the number of elementary (K-6), middle (7-8), and high (9-12) school students and could require the construction of new or physically altered school facilities.

8. Utility and Services Systems

- Impact J.1 – Development of the proposed Kiernan Business Park Specific Plan Amendment #4 area would result in an increased demand for wastewater collection, treatment, and disposal.

- Impact J.2 – Development of the proposed Kiernan Business Park Specific Plan Amendment #4 area would contribute to future cumulative increases in demand on the wastewater collection, treatment, and disposal system.

9. Water Supply

- Impact K.1 – Implementation of the Kiernan Business Park Specific Plan Amendment #4 could increase the demand for potable water.

- Impact K.3 – Development of the proposed project could contribute to cumulative demand for potable water in the City of Modesto water service area.

- Impact K.4 – Development of the proposed project would contribute to the potential for cumulative demand to result in overdraft of groundwater supplies.

III. Findings and Recommendations Regarding Significant Environmental Impacts

A detailed analysis of the potential environmental impacts and the proposed mitigation measures for the Kiernan Business Park Specific Plan Amendment #4 Project is set forth in Sections IV.A through IV.K of the DEIR, as incorporated into the FEIR. The DEIR evaluated the Project's potential environmental impacts in 11 separate categories, and also evaluated the Project's potential cumulative impacts. The City Council concurs with the conclusions in the DEIR, as incorporated into the FEIR, that: (i) a majority of the Project's significant and potentially significant impacts will be rendered less than significant by the mitigation measures described and discussed below; and (ii) for those impacts that will not be rendered less than significant by such mitigation measures, there are overriding considerations that make those impacts acceptable to the City.

IV.B. Agricultural Resources

Impact B.1 Implementation of the proposed project would directly result in the permanent loss of Prime Farmland.

a) **Potential Impact.** The impact identified above is described and discussed on page IV.B.7 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure B.1. (pp. IV.B.7 and IV.B.8 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Although it is possible that mitigation measure B.1, which provides that the City Council consider

creation of a farmland mitigation program that would require compliance as a condition precedent to the issuance of building permits, could partially compensate for the loss of Prime Farmland, it would not fully mitigate the loss resulting from the project to a less-than-significant level.

(ii) **Remaining Impacts.** As explained above, although implementation of Mitigation Measure B.1 could partially mitigate the environmental effects of the permanent loss of Prime Farmland, such impacts will remain significant even with mitigation. Because there are no feasible measures available to further mitigate this significant impact, it is considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project relating to the permanent loss of Prime Farmland, as set forth in the Statement of Overriding Considerations below.

Impact B.3 Implementation of the proposed project would incrementally contribute to the cumulative loss of Prime Farmland in Stanislaus County and in the Modesto area.

a) **Potential Impact.** The impact identified above is described and discussed on page IV.B.9 to IV.B.10 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure B.3 (the same as Mitigation Measure B.1, above).

c) **Findings**. Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Although it is possible that mitigation measure B.3, which provides that the City Council consider creation of a farmland mitigation program that would require compliance as a condition precedent to the issuance of building permits, could partially compensate for the loss of Prime Farmland, it would not fully mitigate the loss resulting from the project to a less-than-significant level.

(ii) **Remaining Impacts.** As explained above, although implementation of Mitigation Measure B.3 could partially mitigate the environmental effects of the permanent loss of Prime

Farmland, such impacts will remain significant even with mitigation. Because there are no feasible measures available to further mitigate this significant impact, it is considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project relating to the permanent loss of Prime Farmland, as set forth in the Statement of Overriding Considerations below.

IV.C. Transportation and Circulation

Impact C.1 Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the existing plus project scenario.

a) **Potential Impact.** The potential impacts to study intersections related to construction and occupancy of the project site at adjacent and nearby intersections are described and discussed on page IV.C.44 to IV.C.47of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures C.1b, c, d, f, and k (pp. IV.C.47 through IV.C.52 of the DEIR) shall be implemented in full. FEIR Mitigation Measures C.1a, e, g, h, i, j, and l are potentially infeasible, but shall be implemented to the extent that they later prove to be feasible.

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Mitigation Measures C.1b, c, d, f and k require construction or installation of various traffic improvements that would improve LOS at five different study intersections to less than significant levels. These five intersections are: Kiernan Avenue and Sisk Road; Kiernan Avenue and Stoddard Road; Kiernan Avenue and Dale Road; Bangs Avenue and American Avenue; Pelandale Avenue and Sisk Road.

Mitigation Measures C.1a, e, g, h, i, j and l also require construction or installation of traffic improvements that would improve LOS at seven additional intersections. These intersections are Kiernan Avenue and SR 99 Southbound Ramps; Kiernan Avenue and Carver Road; Bangs Avenue and Prescott

Road; Bangs Avenue and Carver Road; Bangs Avenue and Tully Road; Pelandale Avenue and SR 99 Southbound Ramps; Pelandale Avenue and Sisk Road; and Standiford Avenue and SR 99 Southbound Ramps.

However, as described below, these mitigation measures are potentially infeasible. Mitigation Measures C.1a and C.1e, involve intersections that are under the jurisdiction of CalTrans. While CalTrans has plans to construct some of these improvements, and is working with Stanislaus County to realize others, there is no guarantee that funding for construction will be available in time for the improvements to be completed for the proposed project, or that funding will become available within the near future. Mitigation Measures C.1j and C.1l are also under the jurisdiction of CalTrans. CalTrans has no funds to construct these improvements. The City and CalTrans are engaged in a joint effort to implement the improvements set out in C.1j, but design has not yet begun for that measure, or for those set out in Mitigation Measure C.1k. Since the City has no jurisdiction to design or implement these mitigation measures, they are infeasible, and the decrease in LOS is significant and unavoidable.

For Mitigation Measures C.1g, C.1h and C.1i, the City has no final designs that would allow these improvements to be completed by the time the proposed project is begun, and no guarantee of fair share contributions from other developments that would benefit from these improvements. The applicant for the proposed project will contribute its required fair share, but that would not be enough to fund the entire cost of the improvements. While it is anticipated that these improvements will be pursued by the City as it builds out, the City cannot guarantee their completion at this time. Therefore, these mitigation measures are infeasible and the decrease in LOS is significant and unavoidable.

The DEIR also identified potentially significant impacts at the intersection of Kiernan Avenue and American Avenue. However, these impacts will be eliminated by planned improvements to this intersection to be made by CalTrans, and no additional mitigation will be needed.

(ii) Remaining Impacts. As explained above, although implementation of Mitigation Measures C.1a through C.1l will reduce the impacts related to construction and occupancy of the project site, seven of these measures are not feasible, and impacts at seven study intersections would thus remain significant. Because there are no feasible measures available to further

mitigate these significant impacts, they are considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project relating to construction and occupancy of the project site, as set forth in the Statement of Overriding Considerations below.

Impact C.2 Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the existing plus project scenario.

a) **Potential Impact.** The potential impacts to freeway and roadway segments adjacent to and near the project site identified above are described and discussed on pages IV.C.52 through IV.C.56 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure C.2c (pp. IV.C.52 through IV.C.55 of the DEIR) shall be implemented in full. The lane construction specified in Mitigation Measure C.2e was completed after the preparation of the traffic impact analysis; therefore the adoption of that Mitigation Measure is not necessary. Mitigation Measures C.2a, 2b, and 2d are potentially infeasible but shall be implemented to the extent that they later prove to be feasible

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** For Mitigation Measures 2a and 2b (improvements to Kiernan Avenue in various locations and to Pelandale Avenue between the SR 99 Southbound Ramps and Northpointe Shopping Center), the recommended improvements are under the jurisdiction of CalTrans. CalTrans currently has plans to construct some of the improvements specified, and is working closely with the City to construct others, but the City cannot guarantee that the improvements will be funded or completed prior to construction of the proposed project, therefore these Mitigation Measures are infeasible. For Mitigation Measure 2c (improvements to Pelandale Avenue between Dale Road and Tully Road), the recommended improvement is currently under construction and will reduce the impact on this roadway segment to less than significant. For improvements recommended in Mitigation Measure 2d (improvements to Bangs

Avenue between American Avenue and Prescott Road), the construction is currently unfunded. Construction could be partially funded by a fair share contribution from the project applicant, but fair share contributions from other developments would be necessary to complete funding, and there is no assurance that this funding would become available prior to completion of the proposed project. This Mitigation Measure is therefore infeasible.

(ii) **Remaining Impacts.** Although the completion of Mitigation Measure C.2c will reduce the impact on Pelandale Avenue between Dale and Tully Roads to less than significant, the Mitigation Measures recommended to reduce the impact to Kiernan Avenue (C.2a), the Pelandale Avenue interchange with SR 99 (C.2b) and Bangs Avenue (C.2d) are considered infeasible. Because there are no feasible measures available to further mitigate these significant impacts, they are considered significant and unavoidable

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project relating to impacts on freeway and roadway segments adjacent to and near the project site, as set forth in the Statement of Overriding Considerations below.

Impact C.3 Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge interchanges near the project site under the existing plus project scenario.

a) **Potential Impact.** The potential impacts to freeway ramp merge/diverge interchanges near the project site related to construction and occupancy of the site identified above are described and discussed on page IV.C.56 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure C.3 (p. IV.C.56 of the DEIR) is potentially infeasible, but it shall be implemented to the extent that it later proves to be feasible.

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** While CalTrans has plans to improve the SR 99 merge/diverge interchanges identified in Impact C.3, the

improvements have not yet been designed or funded. The City does not have the authority to complete the improvements since these interchanges are under the jurisdiction of CalTrans, so this mitigation measure is considered potentially infeasible and the impact remains significant and unavoidable.

(ii) **Remaining Impacts.** As explained above, because there are no feasible measures available to mitigate this significant impact, it is considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project on freeway ramp merge/diverge interchanges near the Project site, as set forth in the Statement of Overriding Considerations below.

Impact C.4. Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the near-term baseline plus project scenario.

a) **Potential Impact.** The impact of construction and occupancy of the project site at study intersections adjacent to and near the site identified above is described and discussed on page IV.C.65 through IV.C.66 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures C.4.c and d (pp. IV.C.66 through IV.C.72 of the DEIR) shall be implemented in full. Mitigation Measures C.4 a, b, e, f, g, h, j, k, and l are potentially infeasible but shall be implemented to the extent that they later prove to be feasible. Mitigation Measure C.4.i is not physically feasible and will not be implemented.

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Mitigation Measures C.4a through C.4l provide for construction or installation of a set of traffic improvements that would improve LOS at the 12 affected intersections analyzed in the EIR. For two intersections (Dale Road and Kaiser Main Entrance; Bangs Avenue and American Avenue), the implementation of Mitigation Measures would improve the LOS so as to mitigate the impacts to less than significant levels (C.4c, C.4d). However, at nine of the remaining ten intersections the Mitigation Measures are

potentially infeasible due to issues relating to lack of funding and/or jurisdiction, and the impact would remain significant and unavoidable. Some of the Mitigation Measures are potentially infeasible because the location is outside the jurisdiction of the City of Modesto, but the City is working with the jurisdictions in question to try to see that the improvement is implemented (C.4a, C.4b, C.4h, C.4k). In some instances, the intersection is within the jurisdiction of the City, but the proposed project's fair share contribution to the recommended improvements is small in relation to the total cost and the City cannot legally require the project to fund the entire cost (C.4e, C.4f, C.4g, C.4i, C.4l). Mitigation Measure C.4j has received CalTrans approval, but also is still not adequately funded. And finally, for Mitigation Measure C.4i, the improvements cannot be constructed within the existing right of way and this measure is thus not physically feasible. Therefore, although the Mitigation Measures identified above would reduce the project impacts, most are infeasible, and the impacts at the following intersections remain significant and unavoidable:

Kiernan Avenue and SR 99 southbound ramps (C.4a)
Kiernan Avenue and Sisk Road (C.4b)
Bangs Avenue and Prescott Road (C.4e)
Bangs Avenue and Carver Road (C.4f)
Bang Avenue and Tully Road (C.4g)
Pelandale Avenue and SR 99 Southbound Ramps (C.4h)
Pelandale Avenue and Dale Road (C.4i)
Standiford Avenue and SR 99 Southbound Ramps (C.4j)
Standiford Avenue and SR 99 Northbound Ramps (C.4k)
Standiford Avenue and Sisk Road (C.4l)

(ii) **Remaining Impacts.** As explained above, although two of the Mitigation Measures set out above would reduce impacts to less than significant, the majority of the mitigation measures are potentially infeasible or actually infeasible. Because there are not feasible measures available to further mitigate these significant impacts, they are considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project on study intersections adjacent to and near the project site, as set forth in the Statement of Overriding Considerations below.

Impact C.5 Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the

project site under the near-term baseline plus project scenario.

a) **Potential Impact.** The impact of construction and occupancy of the project site on freeway and roadway segments adjacent to and near the site identified above is described and discussed on pages IV.C.72 through IV.C.73 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures C.5.a through C.5.d (pp. IV.C.73 through IV.C.75 of the DEIR) are potentially infeasible but shall be implemented to the extent they later prove to be feasible. Mitigation Measure C.5.e is not physically feasible and will not be implemented.

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Mitigation Measures C.5a through C.5e identify the addition of lanes to affected freeway and roadway segments that would reduce the project's impact on LOS to less than significant levels. However, these Mitigation Measures are infeasible for the following reasons: either the City does not have jurisdiction to design and construct improvements (Mitigation Measures C.5a and C.5b) or funding is not anticipated to be available to construct the improvements before project completion (Mitigation Measure C.5c, C.5d and C.5e). In addition, Mitigation Measure C.5e cannot be constructed within the existing right of way. Because the Mitigation Measures are considered potentially infeasible, the impacts on 14 roadway and freeway segments identified in the EIR remain significant and unavoidable.

(ii) **Remaining Impacts.** As explained above, although implementation of Mitigation Measures C.5a through C.5e to widen roadways and freeways would reduce the impacts identified above, these Mitigation Measures are infeasible. Because there are no other feasible measures that would mitigate these significant impacts, they are considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project on freeway and roadway segments adjacent to or near the Project site, as set forth in the Statement of Overriding Considerations below.

Impact C.6 Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge areas near the project site under the near-term baseline plus project scenario.

a) **Potential Impact.** The impact of construction and occupancy of the project site on freeway ramp merge/diverge areas near the site, identified above, is described and discussed on page IV.C.76 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure C.6 (p. IV.C.76 of the DEIR) is potentially infeasible but it shall be implemented to the extent it later proves to be feasible.

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Mitigation Measure C.6 identifies interchange improvements to SR 99 that will mitigate the impact of construction and occupancy of the project site. However, the improvements have not been approved, designed or funded by CalTrans. Since SR 99 is within CalTrans' jurisdiction, the City does not have the authority to implement this Mitigation Measure, and it is deemed infeasible.

(ii) **Remaining Impacts.** For the reasons identified above, this Mitigation Measure is potentially infeasible, and will not mitigate the impact identified above, which remains significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts on nearby freeway ramp merge/diverge areas related to construction and occupancy of the Project site, as set forth in the Statement of Overriding Considerations below.

Impact C.7 Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the cumulative baseline plus project scenario.

a) **Potential Impact.** The impact on freeway and roadway segments adjacent to and near the project site related to construction and occupancy of the site is described and discussed on page IV.C.77 through IV.C.80 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure C.7 (pp. IV.C.80 to IV.C.81 of the DEIR) shall be implemented.

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** The transportation demand management (TDM) program identified in Mitigation Measure C.7 would potentially minimize single occupant vehicle trips, thereby reducing the severity of project impacts. However, given the uncertainty of vehicle trip reductions associated with TDM programs, this impact would remain significant and unavoidable.

(ii) **Remaining Impacts.** Although implementation of the TDM program identified in Mitigation Measure C.7 could potentially lessen the impact of the project on adjacent and nearby freeway and roadway segments, it is impossible to identify the effect of this Mitigation Measure with certainty, and this impact remains significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts on freeway and roadway segments adjacent to and near the Project site, as set forth in the Statement of Overriding Considerations below.

Impact C.8 Construction-related traffic activity could have a significant although temporary impact.

a) **Potential Impact.** The impact of construction-related traffic activity identified above is described and discussed on page IV.C.81 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure C.8 (pp. IV.C.81 through IV.C.82 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Mitigation Measure C.8 will substantially lessen the temporary impact of construction-related traffic by requiring the project sponsor to develop a construction management plan to be

approved by the City Public Works Department and the Community Development Department.

IV.D. Air Quality

Impact D.1. Emissions of criteria pollutants during project construction would contribute to existing violations of the ambient air quality standards in the region.

a) **Potential Impact.** The impact of emissions of criteria pollutants during project construction identified above is described and discussed on pages IV.D.29 through IV.D.31 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure D.1 (pp. IV.D.32 through IV.D.33 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** The implementation of San Joaquin Valley Air Pollution Control District recommendations to minimize emission during construction phases required by Mitigation Measure D.1 would reduce impacts of construction related PM_{10} and ozone precursors from construction equipment exhaust, but would not prevent a net increase in emissions.

(ii) **Remaining Impacts.** As explained above, this Mitigation Measure would not prevent a net increase in the emissions of criteria pollutants, and this impact would not be reduced to a less-than-significant level. Because there are no feasible measures available to further mitigate the significant impact identified above, it is considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project relating to the emission of criteria pollutants during project construction, as set forth in the Statement of Overriding Considerations below.

Impact D.2 Emissions of criteria pollutants during project operation would contribute to existing violations of the ambient air quality standards in the region.

a) **Potential Impact.** The impact of the emission of pollutants during project operation identified above is described and discussed on page IV.D.33 through page IV.D.35 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures D.2a, D.2b and D.2c (pp. IV.D.35 through IV.D.37 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Mitigation Measure D.2a requires the project developers to incorporate into the site design a set of provisions to reduce emissions from motor vehicles. Mitigation Measure D.2b requires the project developers to prepare a trip reduction plan to reduce emissions from motor vehicle activity to be reviewed and approved by the City of Modesto. Mitigation Measure D.2c requires the project developers to incorporate into the site design a set of provisions to reduce emissions from energy consumption. Although implementation of these measures would reduce the impact identified above, it would not substantially lessen or avoid this impact, which would therefore remain significant even with mitigation.

(ii) **Remaining Impacts.** Because there are no feasible measures available to further mitigate the significant impact identified above, it is considered significant and unavoidable

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project relating to the contribution of criteria pollutants emitted during Project operation to existing violations of ambient air quality standards in the region, as set forth in the Statement of Overriding Considerations below.

Impact D.6. The project would cause a cumulatively considerable net increase of pollutants for which the San Joaquin Valley is designated as nonattainment.

a) **Potential Impact.** The impact identified above is described and discussed on page IV.D.39 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure D.6 (p. IV.D.39 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Mitigation Measure D.6 incorporates by reference Mitigation Measures D.2a and D.2b (requiring the project developers to incorporate into the site design provisions to reduce emissions from motor vehicles to prepare a trip reduction plan to reduce motor vehicle emissions). Although implementation of these measures would reduce the impact identified above, it would not substantially lessen or avoid this impact, which would therefore remain significant even with mitigation.

(ii) **Remaining Impacts.** Because there are no feasible measures available to further mitigate the significant impact identified above, it is considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project relating to the Project's potential contribution to a cumulatively considerable net increase of pollutants for which the San Joaquin Valley is designated as nonattainment, as set forth in the Statement of Overriding Considerations below.

Impact D.7 The proposed project, including annexation of the proposed parcels to the City of Modesto and changes to adopted community plans, could conflict with or obstruct implementation of the ozone and PM_{10} attainment plans.

a) **Potential Impact.** The impact identified above is described and discussed on pages IV.D.40 to IV.D.41 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure D.7 (p. IV.D.41 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Mitigation Measure D.7 incorporates by reference Mitigation Measures D.2a through D.2c (requiring the project developers to incorporate into the site design provisions to reduce emissions from motor vehicles and energy consumption and to prepare a trip reduction plan to reduce motor vehicle emissions). Although implementation of these measures would reduce the impact identified above, it would not

substantially lessen or avoid this impact, which would therefore remain significant even with mitigation.

(ii) **Remaining Impacts.** Because there are no feasible measures available to further mitigate the significant impact identified above, it is considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project relating to its contribution to delaying the region's progress in attaining the standards set out in the ozone and PM_{10} attainment plan, as set forth in the Statement of Overriding Considerations below.

Impact D.8 The proposed project, including annexation of the proposed parcels to the City of Modesto and changes to adopted community plans, could increase greenhouse gas emissions and potentially accelerate the effects of greenhouse gases on global climate change.

a) **Potential Impact.** The impact of the proposed project on greenhouse gas emissions identified above is described and discussed on pages IV.D.41 through IV.D.43 of the DEIR. Due to the global nature of greenhouse gas/climate change impacts, and the relatively small contribution of this Project to such global impacts, the City Council does not find that the Project's impacts, without mitigation, are significant. However, to ensure that greenhouse gas emissions are nonetheless reduced to the maximum extent practicable, the City Council is nonetheless imposing mitigation requirements for this impact.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure D.8 (page IV.D.43 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

The implementation of Mitigation Measure D.8, which requires energy-efficient lighting and other steps to minimize the use of fossil fuels, in combination with the proposed project's "Smart Growth" orientation, as well as other measures already incorporated into the project to reduce greenhouse gas emissions, will ensure that the Project's cumulative impacts relating to greenhouse gas emissions will be at a less-than-significant level.

IV.E. Noise

Impact E.2. Project-related traffic could cause a substantial increase in noise levels or an exceedence of "Normally Acceptable" noise levels for sensitive receptors within the project area.

a) **Potential Impact.** The impact of a potential increase in noise levels identified above is described and discussed on pages IV.E.16 through IV.E.18 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures E.2a and E.2b (p. IV.E.18 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Mitigation Measure E.2a requires the construction of noise barriers and the use of sound insulation, as determined by a qualified acoustical consultant. The use of such barriers and sound insulation would reduce this impact to a less-than-significant level.

Impact E.3. New stationary sources of noise associated with the proposed project could generate noise levels incompatible with ordinances or goals for the surroundings.

a) **Potential Impact.** The impact identified above is described and discussed on pages IV.E.19 to IV.E.20 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures E.3 (pp. IV.E.19 to IVE.20 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Implementation of Mitigation Measure E.3 will substantially lessen or avoid Project impacts related to new stationary sources of noise by requiring the developers of any project involving commercial uses or multi-family residential buildings that would include outdoor mechanical equipment to retain a qualified acoustical engineer to review and prepare a report on the project to ensure that noise levels will not exceed City Standards. The report shall be submitted to the City prior to approval of building permits. Implementation of this mitigation measure would reduce the impacts from stationary noise generated by the project site to a less-than-significant level.

Impact E.4. Pile-driving activities related to construction of taller buildings

in the Mixed Use area could temporarily generate noise and/or ground-borne vibration levels incompatible with ordinance or goals for the surroundings.

a) **Potential Impact**. The impact of pile-driving activities identified above is described and discussed on page IV.E.20 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure E.4 (p. IV.E.21 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Mitigation Measure E.4 requires limiting pile driving to typical working hours and requires monitoring of vibrations to protect the nearby use of vibration-sensitive equipment. Implementation of this mitigation measure would reduce the impacts from construction noise at the project site to a less-then-significant level.

Impact E.5. Non-stationary sources of noise associated with the proposed project could generate noise levels incompatible with ordinance or goals for the surroundings.

a) **Potential Impact.** The impact identified above is described and discussed on pages IV.E.21 to IV.E.22 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures E.5 (pp. IV.E.22 to IV.E.23 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Implementation of Mitigation Measure E.5 will substantially lessen or avoid Project impacts related to non-stationary sources of noise by requiring the project developers to retain a qualified acoustical engineer to review site plans and building designs for proposed commercial activities to be located adjacent to sensitive residential land uses and to identify a complete list of measures what will reduce noise levels at the nearest residential property line to an L_{dn} of 65 dB or less. Implementation of this mitigation measure would reduce the impacts from non-stationary sources of noise at the project site to a less-than-significant level.

Impact E.6. Cumulative development could lead to noise conflicts between incompatible land uses.

a) **Potential Impact.** The impact identified above is described and

discussed on page IV.E.23 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure E.6 (pp. IV.F.25 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that:

(i) **Effects of Mitigation.** Mitigation Measure E.6 incorporates by reference Mitigation Measures E.2a and E.2b, which include the performance of noise analyses conducted by qualified acoustical consultants. Mitigation Measure E.6 requires that such analyses include consideration of cumulative year 2025 conditions.

(ii) **Remaining Impacts.** Because there are no feasible measures available to further mitigate the significant impact identified above, it is considered significant and unavoidable.

(iii) **Overriding Considerations.** The environmental, economic, social and other benefits of the Project override any remaining significant adverse impacts of the Project relating to its contribution to cumulatively significant noise conflicts between incompatible land uses, as set forth in the Statement of Overriding Considerations below.

IV.F. Hazards

Impact F.2. Excavation for installation of utilities and other construction on the project site could encounter contaminated soil and/or groundwater and expose workers and the public to hazardous substances.

a) **Potential Impact.** The impact identified above is described and discussed on page IV.F.8 of the DEIR.

b) **Mitigation Measures.** The following mitigation measure is hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure F.2 (p. IV.F.8 to IV.F.9 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Implementation of Mitigation Measure F.2 will substantially lessen or avoid the impact identified above by requiring completion of Phase I Environmental Site Assessments for all parcels for which a Phase I has not yet been performed, Phase II studies for parcels where indicated, and remediation of any discovered

chemical contamination, underground storage tanks, abandoned drums, or other hazardous materials or wastes under the direction of the City and the County Health Services Department. With the implementation of Mitigation Measure F.2, the impact of potential release of, and exposure to, hazardous materials would be less than significant.

IV.G. Biological Resources

Impact G.1. Implementation of the Specific Plan would result in loss of occupied burrowing owl habitat.

a) **Potential Impact.** The impact identified above is described and discussed on pages IV.G.10 to IV.G.11 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures G.1a and G.1b (pp. IV.G.11 to IV.G.12 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Mitigation Measure G.1a requires preparation of a habitat assessment on the project site and within a 500-foot buffer zone prior to the start of construction. In the event that suitable Burrowing Owl habitat is discovered, the measure requires implementation of a set of mitigation measures designed by CDFG to avoid disturbance, injury or death of owls. In the event that it is infeasible to avoid development of areas containing occupied Burrowing Owl habitat, Mitigation Measure H.6b requires that the developers provide habitat compensation on off-site mitigation lands. Together, implementation of these mitigation measures will substantially lessen or avoid the Project's impacts related to the loss of occupied Burrowing Owl habitat.

Impact G.2. Implementation of the Specific Plan would result in disturbance of nesting raptors and migratory birds.

a) **Potential Impact.** The impact identified above is described and discussed on page IV.G.12 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures G.2a and G.2b (pp. IV.G.12 and IV.G.13 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Mitigation Measures G2a and G2b provide for a construction schedule that avoids the nesting season, or if that schedule is impracticable, provide for pre-construction surveys conducted by a qualified ornithologist or wildlife biologist to identify and create construction-free buffer zones around nests. These measures would reduce the potential for significant impact to a less-than-significant level.

Impact G.3. Implementation of the Specific Plan would result in cumulative loss of Swainson's hawk and burrowing owl habitat.

a) **Potential Impact.** The impact identified above is described and discussed on page IV.G.13 to IV.G.14 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures G.3 **(pp. ____ of the FEIR).**

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Implementation of Mitigation Measure G.3 (which incorporates by reference Mitigation Measures G.1a and G.1b) will reduce cumulative impacts on burrowing owl habitat to a less-than-significant level. Implementation of Mitigation Measure G.2, which requires providing suitable off-site habitat management (HM) lands protected by fee title acquisition or conservation easement to provide foraging habitat, as well as long-term management of HM lands through a management endowment funded by project sponsors, will reduce cumulative impacts on Swainson's hawk habitat to a less-than-significant level.

IV.H. Hydrology and Water Quality

Impact H.1. Construction activities could result in degradation of water quality in nearby surface water bodies by causing accidental spills and/or by reducing the quality of storm water runoff.

a) **Potential Impact.** The impact identified above is described and discussed on page IV.H.11 of the DEIR.

b) **Mitigation Measures.** The following mitigation measure is hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure H.1 (pp. IV.H.11 and IV.H.12 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City,

the City Council finds that: Implementation of Mitigation Measure H.1 will substantially lessen to a less-than-significant level or avoid the impact identified above by requiring the developers to prepare a Storm Water Pollution Prevention Plan (SWPPP) for each development project (or one master SWPPP for all development) designed to reduce potential impacts to surface water quality during the construction period. The mitigation measure requires that the SWPPP emphasize measures designed to minimize erosion and off-site sedimentation, include specific and detailed Best Management Practices to mitigate construction-related pollutants and reduce erosion, provide for regular meetings of site supervisors to discuss pollution prevention, and include provisions for a monitoring program.

Impact H.3. Implementation of the project could alter drainage patterns at the site, potentially causing runoff to exceed the capacity of existing conveyances and result in localized flooding.

a) **Potential Impact.** The impact identified above is described and discussed on pages IV.H.13 to IV.H.14 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measures H.3a and H.3b (pp. IV.H.14 and IV.H.15 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Mitigation Measure 1.3a requires the developer to acquire written approval from the Modesto Irrigation District to discharge runoff to the MID Lateral No. 6, or in the alternative, develop and alternative plan for disposal of storm water in accordance with the City of Modesto standards for storm water runoff. Mitigation Measure 1.3b requires that every proposed development: a) include adequately-sized detention facilities designed by a licensed professional engineer to accommodate anticipated runoff associated with a 100-year storm event, with such drainage plan to be reviewed and approved by the City of Modesto Department of Public Works; b) include drainage components designed in compliance with City of Modesto standards; and c) establish a funding mechanism for maintenance and annual inspections of the detention basin, drainage ditches, and drainage inlets, with an annual report of inspections and remedial action to be submitted to the City of Modesto Public Works Department. Implementation of Mitigation Measures 1.3a and 1.3b will substantially lessen to a less-than-significant level or avoid the impact described above.

Impact H.6. Existing water supply wells within the Specific Plan area, if not

properly managed or decommissioned, could be damaged during construction, potentially resulting in impacts to groundwater quality.

a) **Potential Impact.** The impact on existing water supply wells identified above is described and discussed on page IV.H.16 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure H.6 (pp. IV.H.16 and IV.H.17 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Mitigation Measure H.6 requires that a survey shall be conducted to locate existing water supply wells and that each identified well shall be either properly abandoned or properly sealed in compliance with California Well Standards. Implementation of this Mitigation Measure will reduce this impact to a less-than-significant level.

IV.K. Water Supply

Impact K.2. Demand from the project would cause water pressure problems within the City's water distribution system.

a) **Potential Impact.** The impact identified above is described and discussed on page IV.K14 of the DEIR.

b) **Mitigation Measures.** The following mitigation measures are hereby adopted and will be implemented as provided by the Mitigation Monitoring and Reporting Program:

FEIR Mitigation Measure K.2 (p. IV.K.15 of the DEIR).

c) **Findings.** Based on the FEIR and the entire record before the City, the City Council finds that: Implementation of Mitigation Measure K.2, which requires the currently proposed project infrastructure be supplemented by the installation of an additional pipeline, and which recognizes system improvements currently planned to be installed by the City, will reduce this impact to a less-than-significant level.

IV. Findings Regarding Project Alternatives.

A. Identification of Project Objectives.

The CEQA Guidelines state that the "range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the

significant effects" of the Project. CEQA Guidelines § 15126.6(c). Thus, an evaluation of the Project objectives is key to determining which alternatives should be assessed in the EIR.

The DEIR lists eight specific objectives for the Project (pages III.2 and III.3):

1. Create a mixed-use area adjacent to the Kaiser Modesto Medical Center which will serve the hospital and its visitors, the immediate business park area, and residential areas. Provide a vibrant village atmosphere which provides a safe, pedestrian-friendly environment.

2. Create an extended hours community by balancing business park and medical center uses with residential and retail to provide greater safety through increased surveillance and activity.

3. Attract small businesses that provide support services to the hospital and business park uses.

4. Provide multi-family residential uses, both apartments and condominiums, to provide housing choices for doctors and nurses, hospital employees and support staff, visitors, single parents, business owners and employees, and independent seniors.

5. Design a healthy, smart growth development that increases physical activity via walking and bicycling, reduces dependence on automobiles, and increase transit use.

6. Provide incentives to reduce traffic through the use of shared parking and reduced automobile parking standards. Balance the supply and management of parking to address the needs of the businesses, residents, and employees.

7. Provide for employment-intensive uses in an attractive "campus-like" setting that is consistent with the needs of the target industries identified in the Kiernan Business Park Specific Plan.

B. Alternatives Analyzed in the FEIR.

The CEQA Guidelines state that the range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic purposes of the project and could avoid or substantially lessen one or more of the significant effects of the Project. The City evaluated the alternatives listed below.

1. No Project Alternative.

a) Findings. The No Project Alternative is discussed at pages VI.2 of the DEIR. The No Project Alternative is rejected as an alternative, because it would not feasibly achieve the objectives of the Project.

b) Explanation. Under the No Project Alternative, the Project site would not be developed in accordance with the proposed Kiernan Business

Park Specific Plan Amendment #4 and physical conditions on the project site would remain as they currently are. The 86 acres within City of Modesto limits would continue in existing agricultural, residential, and commercial uses. The 67 acres in the County's land use designation and zoning would not be incorporated into the City of Modesto's boundaries and would remain in current agricultural and residential land use. Although the No Project Alternative would avoid the Project's significant impacts, it would not further the City's Project objectives of: creating a safe, pedestrian-friendly and vibrant mixed-use area to serve the Kaiser Modesto Medical Center and the immediate business park area; attracting small business and promoting employment-intensive uses consistent with the needs identified in the Kiernan Business Park Specific Plan; and designing a healthy, smart growth development that reduces automobile dependence and traffic.

2. Existing Kiernan Business Park Specific Plan Alternative

a) Findings. The Existing Kiernan Business Park Specific Plan Alternative is discussed at pages VI.3 through VI.15 of the DEIR. The Existing Kiernan Business Park Specific Plan Alternative is rejected as an alternative, because it would not feasibly achieve the objectives of the Project.

b) Explanation. The Existing Kiernan Business Park Specific Plan Alternative would result in the site being developed in accordance with the existing Kiernan Business Park Specific Plan Business Park (BP) land use designation, which allows for business park, office, and regional commercial development, but no residential uses. Impacts resulting from development under the existing Business Park Specific plan would be slightly greater than, but similar to, those identified for the proposed project. Additional mitigation measures in the area of transportation and circulation would be necessary to alleviate the traffic impacts of the existing Business Park Specific plan, and yet the alternative would not achieve the proposed project's objectives that arise from including residential uses within the Business Park Specific Plan: creating a safer, extended hours community; smart growth development that reduces dependence on automobiles; and creating a mixed-use area in the immediate business park that provides a safe, pedestrian-friendly environment as well as housing for hospital and business park staff and business owners.

3. Reduced Intensity Alternative.

a) Findings. The Reduced Intensity Alternative is discussed at pages VI.15 through VI.28 of the DEIR. The Reduced Intensity Alternative is rejected as an alternative, because it would not feasibly achieve the objectives of the Project.

a) Explanation. Under the Reduced Intensity Alternative, the western portion of the project site would be developed with BP, MU and MHDR land uses. About 40 percent less land area would be developed than is proposed with the Kiernan Business Park Specific Plan Amendment #4. Compared to the proposed project, the Reduced Intensity Alternative would have roughly 40 percent less BP space, 40 percent less MU space, but 92 more residential units in the MHDR land use area. Although the Reduced Intensity Alternative would result in reduced, though similar, impacts as compared to the Project, and although the DEIR identifies this alternative as

the environmentally superior alternative, it would diminish the Project objectives of attracting small businesses that provide support services to Kaiser Modesto and the business park and providing for employment-intensive uses consistent with the needs of the target industries identified in the Kiernan Business Park Specific Plan. Reducing the MU space by 40 percent would substantially lessen the opportunity for development of small businesses that provide support services to Kaiser Modesto and the business park. Reducing the BP space by 40 percent would substantially reduce the project's ability to provide for employment-intensive uses and be inconsistent with the anticipated General Plan intensity of .40 FAR overall.

V. Statement of Overriding Considerations.

Pursuant to Public Resources Code Section 21081 and CEQA Guidelines Section 15093, this City Council adopts and makes the following Statement of Overriding Considerations regarding the remaining significant unavoidable impacts of the Project, as discussed above, and the anticipated economic, social and other benefits of the Project.

The City finds and determines that: (i) the majority of the significant impacts of the Project will be reduced to acceptable levels by the mitigation measures recommended in these Findings; (ii) the City's approval of the Project as proposed will result in certain significant adverse environmental effects that cannot be avoided even with the incorporation of all feasible mitigation measures into the Project; and (iii) there are no other feasible mitigation measures or other feasible Project alternatives that would further mitigate or avoid the remaining significant environmental effects. The significant effects that have not been mitigated to a less-than-significant level and are therefore considered significant and unavoidable are:

- IV.B.1 – Agricultural Resources – Implementation of the proposed project would directly result in the permanent loss of Prime Farmland.

- IV.B.3 – Agricultural Resources – Implementation of the proposed project would incrementally contribute to the cumulative loss of prime agricultural land in the Modesto area and in Stanislaus County.

- IV.C.1 – Transportation and Circulation – Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the existing plus project scenario.

- IV.C.2 – Transportation and Circulation – Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the existing plus project scenario.

- IV.C.3 – Transportation and Circulation – Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge interchanges near the project site under the existing plus project scenario.

- IV.C.4 – Transportation and Circulation – Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the near-term baseline plus project scenario.

- IV.C.5 – Transportation and Circulation – Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the near-term baseline plus project scenario.

- IV.C.6 – Transportation and Circulation – Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge areas near the project site under the near-term baseline plus project scenario.

- IV.C.7 – Transportation and Circulation – Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the cumulative baseline plus project scenario.

- IV.D.1 – Air Quality – Emissions of criteria pollutants during project construction would contribute to existing violations of the ambient air quality standards in the region.

- IV.D.2 – Air Quality – Emissions of criteria pollutants during project operation would contribute to existing violations of the ambient air quality standards in the region.

- IV.D.6 – Air Quality – The project would cause a cumulatively considerable net increase of pollutants for which the San Joaquin Valley is designated as nonattainment.

- IV.D.7 – Air Quality – The proposed project, including annexation of the proposed parcels to the City of Modesto and changes to adopted community plans, could conflict with or obstruct implementation of the ozone and PM_{10} attainment plans.

- IV.E.6 – Noise – Cumulative development could lead to noise conflicts between incompatible land uses.

The following statement identifies the reasons why, in the City's judgment, the benefits of the Project outweigh the significant and unavoidable effects. The substantial evidence supporting the enumerated benefits of the Project can be found in the preceding findings, which are herein incorporated by reference, in the Project itself, and in the record of proceedings as defined in Section II.A. Each of the overriding considerations set forth below constitutes a separate and independent ground for finding that the benefits of the Project outweigh its significant adverse environmental effects and is an overriding consideration warranting approval.

The City finds that the Project, as conditionally approved, would have the following economic, social, technological, and environmental benefits:

1. Growth Consistent With General Plan. The City's General Plan provides an overall framework for the City's growth. The Kiernan Business Park Specific Plan, as amended, provides an area-specific comprehensive framework for attractive and distinctive development within the Kiernan Avenue area that is consistent with the goals and policies of the General Plan.

2. Housing. The Kiernan Business Park Specific Plan Amendment #4 allows for 342 dwelling units in a variety of residential housing types and configurations. 262 of the dwelling units may be developed as Medium High Density Residential, at 18 to 24 units per acre. The variety and range of housing types allowed under the Specific Plan will increase opportunities for entry level and step-up housing, and provide for a balance of housing with business and retail to create a vibrant, extended-hours community.

3. Infrastructure Needs. The Kiernan Business Park Specific Plan Amendment #4 provides for the public facilities and infrastructure necessary to support smart growth in the Kiernan Avenue area, emphasizing pedestrian, bicycle and transit uses, and allowing for the incorporation of residences near work sites to minimize dependence on automobile usage.

4. Economic Development and Job Creation. The Kiernan Avenue area is a prime job-creating location because of it's proximity to Highway 99 and North Modesto. The Kiernan Business Park Specific Plan Amendment #4 provides for commercial and residential development that will serve enhance Modesto's local economy, generate jobs for residents, and create a better jobs/housing balance.

5. Public Revenues. The Kiernan Business Park Specific Plan Amendment #4 provides for new small business development opportunities on the north side of Modesto, which in turn will enhance the City's economic base through increased property and sales tax revenue.

Exhibit "B"

MITIGATION MONITORING AND REPORTING PROGRAM

KIERNAN BUSINESS PARK SPECIFIC PLAN AMENDMENT #4 PROJECT MITIGATION MONITORING AND REPORTING PROGRAM

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
Agricultural Resources				
B.1: Prior to any actual development in the Kiernan Business Park Specific Plan area, the City Council would consider creation of a farmland mitigation program to determine whether such a program could feasibly provide partial mitigation for the loss of prime farmland.	Project Developers and City of Modesto	City of Modesto shall finalize review and consideration of the adoption of a farmland mitigation program. Project Developers shall implement applicable portions of the program, if approved by City.	Community and Economic Development Department shall ensure farmland mitigation program is considered and instituted, if approved by the City Council.	The consideration of a farmland mitigation program shall be prior to issuance of certificate of occupancy for the first building within the plan area.
B.3: Prior to any actual development in the Kiernan Business Park Specific Plan area, the City Council would consider creation of a farmland mitigation program to determine whether such a program could feasibly provide partial mitigation for the loss of prime farmland. (Same as Mitigation Measure B.1)	Same as Mitigation Measure B.1	Same as Mitigation Measure B.1	Same as Mitigation Measure B.1	Same as Mitigation Measure B.1
Transportation and Circulation				
C.1b: Kiernan Avenue and Sisk Road: Widen Kiernan Avenue to provide two through lanes in each direction.	City of Modesto and Caltrans	The identified road improvements shall be completed by Caltrans and City of Modesto.	City Engineer shall verify completion of improvements.	Improvements shall be completed prior to issuance of a building permit for the final building within the first phase of development.
C.1c: Kiernan Avenue and Stoddard Road: Widen Kiernan Avenue to provide two through lanes in each direction. Signalize the intersection.	City of Modesto and Caltrans	The identified road improvements shall be completed by Caltrans and City of Modesto.	City Engineer shall verify completion of improvements.	Improvements shall be completed prior to issuance of a building permit for the final building within the first phase of development.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
C.1d: Kiernan Avenue and Dale Road: Widen Kiernan Avenue to provide two through lanes in each direction. Add turn pockets at all approaches. Signalize the intersection. Construct a second northbound left-turn lane and a northbound right-turn lane.	City of Modesto and Caltrans	The identified road improvements shall be completed by Caltrans and City of Modesto.	City Engineer shall verify completion of improvements.	Improvements shall be completed prior to issuance of a building permit for the final building within the first phase of development.
C.1f: Bangs Avenue and American Avenue: Install a two-lane roundabout with a northbound right-turn by-pass lane or install traffic signals and left-turn pockets on all approaches.	Project Developers and the City of Modesto	Project Developers shall either construct the improvements or pay their fair share and the improvements will be constructed by the City of Modesto	City Engineer shall verify completion of improvements per City specifications.	Improvements shall be completed prior to issuance of a building permit for the final building within the second phase of development.
C.1k: Pelendale Avenue and Sisk Road: Install a third westbound through lane, a second westbound left-turn lane, a second southbound through lane, and a second southbound left-turn lane.	City of Modesto	The identified road improvements shall be completed by the City of Modesto.	City Engineer shall verify completion of improvements.	Improvements shall be completed prior to issuance of a building permit for the final building within the first phase of development.
C.2c: Pelandale Avenue: Add an eastbound and westbound through lane between Dale Road and Tully Road.	City of Modesto	The identified road improvements shall be completed by the City of Modesto.	City Engineer shall verify completion of improvements.	Improvements shall be completed prior to issuance of a building permit for the final building within the first phase of development.
C.4c: Dale Road and Kaiser Main Entrance/The Plaza Way: Add a third southbound through lane; add a third northbound through lane.	Project Developers and Kaiser Modesto Medical Center	Kaiser Modesto Medical Center shall build the southbound lane. Project Developers shall construct the northbound lane.	City Engineer shall verify completion of improvements per City specifications.	Improvements shall be completed prior to issuance of a building permit for the final building within the first phase of development.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
C.4d: Bangs Avenue and American Avenue: Construct a two-lane roundabout with a northbound by-pass lane; or install a traffic signal and add an eastbound through lane, an eastbound left-turn pocket, a westbound through lane, a westbound left-turn pocket, a northbound left-turn lane, a northbound through lane, a northbound right-turn only lane, a southbound left-turn lane, and a southbound shared through/right-turn lane.	Project Developers	Project Developers shall either construct the improvements or pay their fair share and the improvements will be constructed by the City of Modesto	City Engineer shall verify completion of improvements per City specifications.	Improvements shall be completed prior to issuance of a building permit for the final building within the third phase of development.
C.7: Pelandale Avenue and Dale Road: No physical improvements are recommended for these roadways beyond the planned maximum cross-section. Other measures, such as signal timing coordination and transportation demand management measures, should be implemented to maximize through traffic efficiency and minimize single occupant vehicle trips. The project sponsor shall prepare a transportation demand management program to the satisfaction of City staff.	Project Developers	Project Developers shall prepare a transportation demand management program to the satisfaction of staff. Project Developers shall implement the provisions of the program in conjunction with development.	City Traffic Engineer and Transit Manager shall review and approve transportation demand management program, and monitor its use through the imposition of conditions of approval upon future development.	Transportation demand management program shall be instituted prior to development entitlement for any building within the plan area.
C.8: Construction-related traffic activity: The project sponsor shall develop a construction management plan for review and approval by the City Public Works Department and the Community Development Department.	Project Developers	Project Developers shall prepare a construction management plan to the satisfaction of staff. Project Developers shall implement the provisions of the program in conjunction with development.	Public Works Director and Community & Economic Development Director or designees shall review and approve a construction management plan, and monitor its provisions through the imposition of conditions of approval upon future development.	Construction management program shall be instituted prior to development entitlement for any building or tentative map within the plan area.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
C.9: **C.1a, e, g, h, i, j, and l, C.2a, 2b, and 2d, C.3, C.4 a, b, e, f, g, h, j, k, and l, C.5.a, b, c, d and e, C.6: Potentially Infeasible Mitigations:** Construct roadway segment, intersection and interchange improvements as specified in the subject sections of the EIR, where they become feasible.	City	The City shall ensure that these improvements are made when timing, jurisdictional and funding issues are resolved and shall require the project to provide a fair-share contribution to the off-site facilities, as specified in the FEIR, through payment to the project CFD.	C&ED Director	Prior to Adoption of the CFD by City Council and ongoing.
Air Quality				
D.1: The construction plans for each group of buildings shall incorporate the following recommendations from the District to minimize emissions during construction phases:				
• The project developers shall review Regulation VIII of the San Joaquin Valley Air Pollution Control District regulations and submit a compliance plan to the San Joaquin Valley Air Pollution Control District prior to commencing any phase of construction. The compliance plan must demonstrate that the current requirements of Regulation VIII will be implemented.	Project Developers	Project Developers shall review Regulation VIII and submit a compliance plan to the San Joaquin Valley Air Pollution Control District. The compliance plan shall be incorporated in construction contracts and implemented by developers.	Project Developers shall provide draft compliance plan to the Community and Economic Development Department for review and approval.	Compliance plan shall be submitted to and approved by the San Joaquin Valley Air Pollution Control District prior to the issuance of a grading or building permit, whichever occurs first.
• Prior to the issuance of construction contracts, the project developers shall perform a review of new technology, as it relates to heavy-duty equipment, to determine what, if any, advances in emissions reduction are available for use. It is anticipated that in the near future both NO_X and PM_{10} control equipment will be available. The San Joaquin Valley Air Pollution Control District should be consulted during this process.	Project Developers	Project Developers shall consult with SJVAPCD and identify available new technology and shall incorporate requirements for new technology in construction contracts. At minimum, future development shall achieve average emissions equal to or less than Tier II standards of 4.8 g/hp-hr for NOx, based on current	Project Developers shall report to the San Joaquin Valley Air Pollution Control District on new technology to be included.	The Project Developers shall incorporate available new technology in construction contracts.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
		SJVAPCD policies.		
• Dust suppression shall be implemented on all disturbed areas, including inactive outdoor storage piles, by application of water, chemical stabilizer/suppressant, or covering with a tarp, vegetative ground cover, or other suitable cover. *(cont'd.)*	Project Developers	Construction foreman or liaison shall implement necessary dust suppression activities in conjunction with project development	Construction foreman or liaison shall assign personnel to dust suppression duties and record techniques used in daily construction log and submit results in a monthly report to the San Joaquin Valley Air Pollution Control District.	Implement measures throughout the construction duration.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
• Dust suppression shall be implemented following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles using water or chemical stabilizer/suppressant.	Project Developers	Construction foreman or liaison shall implement necessary dust suppression activities in conjunction with project development	Construction foreman or liaison shall assign personnel to dust suppression duties and record techniques used in daily construction log and submit results in a monthly report to the San Joaquin Valley Air Pollution Control District.	Implement measures throughout the construction duration
• Dust suppression shall be implemented on all on-site unpaved roads, and off-site unpaved access roads used during the construction phase, using water or chemical stabilizer/suppressant. *(cont'd.)*	Project Developers	Construction foreman or liaison shall implement necessary dust suppression activities in conjunction with project development	Construction foreman or liaison shall assign personnel to dust suppression duties and record techniques used in daily construction log and submit results in a monthly report to the San Joaquin Valley Air Pollution Control District.	Implement measures throughout the construction duration

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
• All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions by application of water during the activity or by presoaking.	Project Developers	Construction foreman or liaison shall implement necessary dust suppression activities in conjunction with project development	Construction foreman or liaison shall assign personnel to dust suppression duties and record techniques used in daily construction log and submit results in a monthly report to the San Joaquin Valley Air Pollution Control District.	Implement measures throughout the construction duration
• When materials are transported off site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained. *(cont'd.)*	Project Developers	Construction foreman or liaison shall implement necessary dust suppression activities in conjunction with project development	Construction foreman or liaison shall assign personnel to dust suppression duties and record techniques used in daily construction log and submit results in a monthly report to the San Joaquin Valley Air Pollution Control District..	Implement measures throughout the construction duration

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
• The project developers shall limit traffic speed on unpaved roads to 15 miles per hour.	Project Developers	The construction foreman or liaison shall post speed limit signs and ensure that construction vehicle operators travel at or less than 15 mph.	The construction foreman or liaison shall monitor speed limits. Project Developers shall monitor compliance throughout the construction duration.	The Project Developers shall install speed limit signs as part of the site preparation process prior to issuance of a grading permit. Implement measures throughout the construction duration.
• The project developers shall install sandbags or other control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.	Project Developers	All slopes shall be measured by the Project Developers and identified on the building permit plan set submitted. The construction foreman or liaison shall oversee the placement of sandbags or other runoff control measure(s) on all slopes determined to have a slope greater than 1 percent.	The construction foreman or liaison shall monitor runoff control measure(s) and shall conduct weekly runoff control measure(s) inspections and shall submit results in a monthly report to the San Joaquin Valley Air Pollution Control District.	The building permit submittal shall identify slope measurements. Implement measures throughout the construction duration.
• The project developers shall install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site, to prevent track-out of soil to public roadways. *(cont'd.)*	Project Developers	The construction foreman or liaison shall ensure that wheel washers and/or equipment washers are in place at all points of exit from the site and are correctly implemented.	Construction foreman or liaison shall record inspections in a daily construction log and submit results in a monthly report to the San Joaquin Valley Air Pollution Control District.	The washers shall be provided prior to issuance of grading or building permit, whichever occurs first. Implement measures throughout the construction duration.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
• The project developers shall install windbreaks at windward sides of construction areas, if necessary to prevent wind-blown dust.	Project Developers	Windbreaks shall be installed by the Project Developers. The construction foreman or liaison shall ensure that windbreaks are correctly placed and implemented.	The construction foreman or liaison shall inspect installed windbreaks on a weekly basis and record inspections in the construction log. Inspection results shall be submitted in a monthly report to the San Joaquin Valley Air Pollution Control District.	Windbreaks shall be installed by the Project Developers prior to the issuance of grading or building permit, whichever occurs first. Implement measures throughout the construction duration.
• The project developers shall suspend excavation and grading activity when winds exceed 20 miles per hour. *(cont'd.)*	Project Developers	Project developers shall install wind speed measuring devices and ensure that these devices are correctly located and calibrated.	The construction foreman shall cease all excavating and grading activities when wind speed measuring devices indicate speeds over 20 mph. Suspension of construction activity due to wind speeds shall be recorded in the construction log. Construction reports shall be submitted to the San Joaquin Valley Air Pollution Control District. on a monthly basis.	Wind speed measuring devices shall be installed by the Project Developers prior to the issuance of grading or building permit, whichever occurs first. Implement measures throughout the construction duration.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
• The project developers shall limit the area subject to excavation, grading, and other construction activity at any one time. *(cont'd.)*	Project Developers	The project sponsor shall provide a written statement with any request for development permits or other permits involving movement of soil supporting a determination that the request minimizes the amount of exposed soil on the project site during the relevant construction period. The Community and Economic Development Director will either accept the report or require additional means to reduce the amount of exposed soil, such as hydroseeding or planting vegetation with irrigation, in areas that are proposed to be exposed for more than 20 days with no construction activity. Construction shall comply with the General Construction Permit.	The construction foreman or liaison shall ensure that construction activities do not exceed the allowable area of excavation and grading activity permitted on the site and shall oversee implementation of any required best management practices. The construction foreman or liaison shall record excavation and grading activities in a construction log on a daily basis and submit results in a monthly report to the San Joaquin Valley Air Pollution Control District.	Project Developer shall provide a plan to reduce soil exposure prior to the issuance of grading or building permit, whichever occurs first. Implement measures throughout the construction duration.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
• The project developers shall ensure that the accumulation of mud or dirt is expeditiously removed from adjacent public streets at least once every 24 hours when construction activities are occurring (the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions).	Project Developers	The construction foreman or liaison shall establish and implement a daily street sweeping schedule during construction activities that involve movement of soil.	The construction foreman or liaison shall monitor daily street sweeping and provide a daily log. Results shall be submitted in a monthly report to the San Joaquin Valley Air Pollution Control District.	Project Developer shall provide a daily street sweeping schedule prior to the issuance of grading or building permit, whichever occurs first. Implement measures throughout the construction duration.
• The project developers shall use alternative-fuel construction equipment, where feasible.	Project Developers	Project Developers shall consult with SJVAPCD to identify feasible goals for equipment use. These goals shall be incorporated into construction contracts. The Project Developers shall use alternative-fuel construction equipment throughout the construction duration, where feasible.	The Project Developers shall report to the San Joaquin Valley Air Pollution Control District. the alternative-fuel equipment to be used in each phase.	Project Developer shall provide a list of any alternative equipment prior to the issuance of grading or building permit, whichever occurs first. Implement measures throughout the construction duration.
• The project developers shall minimize idling time (e.g., to a 10-minute maximum). *(cont'd.)*	Project Developers	The construction foreman or liaison shall limit idling time on the construction site to a 10-minute maximum.	The construction foreman or liaison shall monitor idling.	Implement measures throughout the construction duration.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
• The project developers shall limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use to the minimum practical.	Project Developers	The construction foreman or liaison shall limit the hours of heavy-duty equipment and/or the amount of equipment in use on the construction site.	The construction foreman or liaison shall monitor hours and use of heavy-duty equipment.	Implement measures throughout the construction duration.
• The project developers shall replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set), where feasible.	Project Developers	Project Developers shall incorporate requirements to replace fossil-fueled equipment with electrically driven equivalents, where feasible.	Project Developers shall report to the San Joaquin Valley Air Pollution Control District. about electrically driven equipment to be used in each phase.	The Project Developers shall use electrically driven equipment throughout the construction duration, where feasible.
• The project developers shall take steps to curtail construction activity during periods of high ambient pollutant concentrations; this may include reducing construction activity during the peak hour of vehicular traffic on adjacent roadways or ceasing construction activity during days declared as Spare the Air days by the San Joaquin Valley Air Pollution Control District.	Project Developers	The construction foreman or liaison shall comply with traffic control programs to curtail construction activities during periods of high ambient pollution based on advisories from the the San Joaquin Valley Air Pollution Control District, such as on declared 'Spare the Air' days.	The construction foreman or liaison shall curtail or cease construction activity based on the San Joaquin Valley Air Pollution Control District advisories.	During advisory periods, such as 'Spare the Air' days, construction activity shall be curtailed or stopped.
• The project developers shall implement activity management to reduce cumulative short-term impacts.	Project Developers	Project Developers shall submit and implement an activity management plan.	The San Joaquin Valley Air Pollution Control District. shall review the activity management plan.	Activity management plan shall be submitted to and approved prior to the issuance of a grading or building permit, whichever occurs first. Implement measures throughout the construction duration.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
D.2a: Implementation of design features to reduce emissions from motor vehicle activity:				
• The project developers shall incorporate improvements for transit service, including bus turnouts, transit loading areas, and shelters.	Project Developers	Project Developers shall provide a plan for bus turnouts, loading and shelters along perimeter streets.	The Transit Manager shall review and approve the plan.	Review and approval of transit service improvements shall occur prior to development entitlement for any building or tentative map within the plan area. All improvements shall be completed prior to certificate of occupancy or recordation of tentative map, or as determined by the FMP and IFP.
• The project developers shall incorporate sidewalks and bicycle paths throughout the site and connect those facilities to any nearby pedestrian and bicycle facilities, including those located at open space areas, parks, schools, or commercial areas. *(cont'd.)*	Project Developers	Project Developers shall submit plans to the Community and Economic Development Department that identify the appropriate locations of all pedestrian and bicycle facilities elements and implement the plans.	The Community and Economic Development Department shall review and approve plans and ensure the improvements are constructed accordingly.	Review and approval of pedestrian and bicycle facilities shall occur prior to development entitlement for any building within the plan area. All improvements shall be completed prior to certificate of occupancy, or as determined by the FMP and IFP.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
• The project developers shall incorporate secure bicycle storage and parking facilities throughout the site.	Project Developers	Project Developers shall submit plans to the Community and Economic Development Department that identify all the bicycle storage and parking facilities on the project site and implement the plans.	The Community and Economic Development Department shall review and approve plans and ensure the improvements are constructed accordingly.	Review and approval of bicycle storage facilities shall occur prior to development entitlement for any building within the plan area. All improvements shall be completed prior to certificate of occupancy, or as determined by the FMP and IFP.
D.2b: The project developers shall prepare a trip reduction plan for review and approval by the City of Modesto prior to occupation of each phase of the proposed project. To be compliant with the policies of the *Urban Area General Plan*, the trip reduction plan shall address how the following features will be implemented: • Providing matching services (for participants in carpools and vanpools) by employers with over 100 weekday employees or coordination with Caltrans' "Commuter Computer" program; • Employer-based dissemination of commute information; • A program to guarantee rideshare participants a ride home in case of emergency; • Flex-time scheduling; • Site plan design which encourages pedestrian movement between adjacent land uses; • Incentives such as preferred location of four percent of parking for carpoolers and hybrid or other clean-fuel vehicles; • Encouraging submission of site plans featuring mixed land uses or "neo-traditional" design; and • Encouraging employers to experiment with telecommuting options, where feasible. *(cont'd.)*	Project Developers	Project Developers shall submit trip reduction plans to the Community and Economic Development Department for review and approval.	The Community and Economic Development Department shall review and approve a trip reduction plan for each phase of the project.	The trip reduction plans shall be submitted and approved prior to certificate of occupancy for each phase of the project.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
D.2c: The site design shall fulfill the following requirements to reduce emissions from energy consumption:				
• The project developers shall incorporate energy-efficient building design features including automated control systems for heating and air conditioning and energy efficiency to achieve a 20 percent reduction beyond the requirements of the Building Code (Title 24, California Code of Regulations), increased wall and ceiling insulation beyond Building Code requirements, light-colored roof materials to reflect heat, and energy-efficient lighting and lighting controls.	Project Developers	Project developers shall submit construction drawings showing energy efficient building design features and implement the measures	The Building Division shall review and approve all construction plans to ensure that all energy efficiency measures are included and implemented..	Prior to issuance of building permit for any building, construction plans shall show that all energy efficient measures are included. Prior to certificate of occupancy for any building, all energy efficient design features included in construction plans shall be implemented
• The project developers shall orient buildings to the north to maximize natural cooling and heating.	Project Developers	Project developers shall submit site plans demonstrating northern orientation of buildings and construct the buildings in accordance with the approved plans.	The Planning Division shall confirm appropriate building orientation in conjunction with development plan review. The Building Division shall ensure buildings are constructed in accordance with the approved plans.	Building orientation shall be reviewed prior to development plan approval for any building within the plan area.
• The project developers shall incorporate approved deciduous trees to provide shade on the south- and west-facing sides of buildings. *(cont'd.)*	Project Developers	Project Developers shall submit site plans showing shade trees on the south- and west-facing sides of buildings and implement the plans.	The Department of Parks, Recreation and Neighborhoods shall review and approve all landscape plans.	Prior to building permit issuance of each project, landscape plans shall be approved. Implement measures prior to certificate of occupancy.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
• Natural gas burning units for space and water heating in the residential units shall use low-NOx space heaters and water heaters.	Project Developers	Project developers shall show low-NOx space and water heaters in construction drawings for natural gas burning residential units and implement the measures.	The Building Divisions shall review and approve all construction plans to ensure that low-NOx space and water heaters are included..	Prior to issuance of building permit for any residential building, construction plans shall be provided demonstrating the use of low NOx space and water heaters.
• All access roads, driveways, and parking areas serving the Business Park (BP) shall be constructed with materials that minimize particulate emissions in accordance with the requirements of SJVAPCD Regulation VIII and are appropriate to the scale and intensity of use.	Project Developers	Project developers shall demonstrate access roads, driveways and parking areas are in compliance with the requirements of Regulation VIII for particulate emissions	The San Joaquin Valley Air Pollution Control District shall review and approve plans for access roads driveways and parking areas	Prior to the issuance of a grading permit improvements plans shall be reviewed and approved by the San Joaquin Valley Air Pollution Control District.
D.8: The project shall implement the following measures to reduce the project impacts on global climate change: • For lighting in public streets, parking areas, and recreation areas, use of energy-efficient light and mechanical, computerized, or photocell switches to reduce unnecessary energy use; • Use of alternative, non-fossil-fuel-based energy systems; • Orientation of lots to maximize natural energy conservation; • Provision of bike racks and changing rooms for commercial development; • Planting of large-canopy, deciduous shade trees that are designed to fit in planters that are large enough to contain them without disrupting public improvements at project buildout.	Project Developers	Project Developers shall provide plans demonstrating compliance with global climate change measures to the Community and Economic Development Department for review and approval.	The Planning Division shall review and approve the plans. The Building Division shall ensure development is constructed in accordance with the approved plans.	Plans demonstrating consistency with global climate change measures shall be reviewed and approved prior to development entitlement for any building within the plan area.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
Noise				
E.2a: To reduce noise levels at significantly impacted proposed residential land uses would require the construction of noise barriers up to approximately six feet in height and properly locating outdoor-use areas to be partially shielded by project proposed buildings. Specific noise barrier heights required to reduce noise levels to a less-than-significant noise level depend on the setback distance and exposure to the adjacent roadway and are to be determined by a qualified acoustical consultant. Noise barriers may need to be constructed at the following locations: • Along Healthcare Way • Along The Plaza Way • Along Dale Road Since noise barriers typically provide noise reduction for receivers at a first-story height, some façades at higher elevations would likely be exposed to noise levels that require sound-rated windows to meet Building Code requirements. With the additional sound insulation to be determined by a qualified acoustical consultant, interior noise levels would achieve the applicable standards of an L_{dn} less than 45 dB.	Project Developers	Project Developers shall submit plans demonstrating compliance with community noise standards by locating buildings and outdoor activity areas for residential land uses outside the 65dBA noise contour, as dimensioned on page IV.E.17 of the EIR; or Project Developers shall commission a noise study, if buildings or outdoor activity areas are proposed within the 65dBA contour, to determine appropriate sound attenuation measures. These measures shall be incorporated into the development plans	The Planning Division shall review development plans and noise studies, where required, to ensure buildings and outdoor activity areas meet community noise standards. The Building Division shall ensure development is constructed in accordance with the approved plans	Prior to development entitlement for any building, development plans demonstrating compliance with community noise standards shall be provided. Prior to building permit issuance for any building, construction plans shall show all noise control features. The noise control features shall be installed prior to certificate of occupancy.
E.2b: The City and state do not specify interior noise standards for commercial uses. Commercial land uses located more than approximately 130 feet from the Kiernan Avenue centerline, 50 to 70 feet of the Dale Road centerline (depending on location along Dale Road, see Table IV.E.4), and 45 feet from the Bangs Avenue centerline would be exposed to noise levels interpreted by the City as "Normally Acceptable", and would be considered less-than-significant impacts. A qualified acoustical consultant should prepare a supplemental noise analysis for any commercial building located at closer distances (i.e., exposed to greater than 70 dB L_{dn}) to these roadways. The noise analysis should include an interior noise goal specific to the building and mitigation necessary to meet the goal.	Project Developers	Project Developers shall submit plans demonstrating compliance with community noise standards by locating buildings for commercial land uses outside the 70dBA noise contour, as dimensioned on page IV.E.17 of the EIR; or Project Developers shall commission a noise study, if buildings are proposed within the 70dBA contour, to determine appropriate sound attenuation measures. These measures shall be incorporated into the development plans.	The Planning Division shall review development plans and noise studies, where required, to ensure buildings and outdoor activity areas meet community noise standards. The Building Division shall ensure development is constructed in accordance with the approved plans	Prior to development entitlement for any building, development plans demonstrating compliance with community noise standards shall be provided. Prior to building permit issuance for any building, construction plans shall show all noise control features. The noise control features shall be installed prior to certificate of occupancy..

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
E.3: Each development project that involves commercial uses or multi-family residential buildings that would include outdoor mechanical equipment shall carry out the following: • Retain a qualified acoustical engineer to prepare a noise study for submission to the City, ensuring that noise levels will not exceed City Standards. The following noise reduction measures should be considered by the acoustical engineer: o Use of acoustical silencers on inlet and discharge openings of mechanical equipment, o Installation of parapets or enclosures with louvers or other barriers to shield noise, o Orientation of equipment so that it faces away from sensitive receptors, and o Orientation or setback of buildings to increase distance from sensitive receptors.	Project Developers	Project Developers shall submit a noise report to the Community and Economic Development Department and implement the features where outdoor mechanical equipment is proposed.	The Community and Economic Development Department shall review and approve the noise report.	A noise report shall be provided and approved prior to development entitlement for any commercial or residential building within the plan area. Prior to building permit issuance of each project, construction plans shall show all noise reduction features are included. The noise reduction features shall be implemented prior to certificate of occupancy.
E.4: Construction-related pile driving activities shall be conducted in accordance with the following: • Limit the operation or use of pile-driving equipment to the hours between 7:00 a.m. and 9:00 p.m. daily (except Saturday and Sunday and state or federal holidays, when the prohibited time shall be before 9:00 a.m. and after 9:00 p.m.): • Perform vibration measurements at MRI locations during pile driving to assess the potential for interference with the equipment. This should be conducted as a "mock-up" test to assess the potential for vibration impacts. A compatible schedule may need to be developed for pile-driving activities that would allow for the non-impacted operation of the MRI equipment.	Project Developers	Project Developers shall limit operations of pile driving equipment to between the hours of 7:00 a.m. and 9:00 p.m. on weekdays, and 9:00 a.m. and 9:00 p.m. on holidays and weekends. Project Developers shall perform a vibration measurements test at MRI locations in coordination with Kaiser Medical Center, and, if interference would occur, schedule pile driving activities around the use of MRI equipment.	Project Developers shall perform a vibration measurement test at the location closest to MRI facilities to determine if interference would occur and establish a schedule for review and approval by the building division for pile driving activities. The construction foreman or liaison shall ensure that pile driving only occurs during approved hours.	A pile driving schedule shall be established prior to the issuance of a building permit for the first building within the project area. .

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
E.5: A qualified acoustical engineer shall be retained to review the site plans and building designs for proposed commercial activities when located adjacent to sensitive residential land uses. The acoustical engineer shall consider the following measures, and shall identify a complete list of measures that will reduce noise levels at the nearest residential property line to an L_{dn} of 65 dB: • Limiting loading and exterior warehouse activities to daytime hours from 7:00 a.m. to 9:00 p.m. • Requiring loading and trash compacting and collection activities to be fully enclosed. • Location and orientation of parking lot areas with respect to noise sensitive land uses. • Establishing minimum setback distances between common open space for multi-family residential buildings and locations of loading docks, warehousing activity areas, and trash compaction and collection areas in commercial developments.	Project Developers	Project Developers shall submit a noise report to the Community and Economic Development Department and implement the noise features.	The Community and Economic Development Department shall review and approve final noise report and building plans demonstrating compliance with the identified noise features.	Prior to development entitlement for any commercial building, a noise study shall be reviewed and approved Prior to building permit issuance, construction plans shall show all noise reduction features specified by the noise study. The noise reduction features shall be implemented prior to certificate of occupancy.
E.6: Acoustical recommendations prepared to address Impact E.2 should also consider cumulative year 2025 conditions.	Project Developers	Noise studies required as a result of mitigation measures E.2a and E.2b. shall include a cumulative 2025 analysis	The Planning Division shall ensure that a cumulative 2025 analysis is performed on required noise studies	Prior to development entitlement, a noise analysis including cumulative 2025 conditions shall be reviewed and approved by the Planning Division.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
Hazards				
F.2: Conduct Phase I Environmental Site Assessments, conduct site investigations, and implement remediation as necessary.	Project Developers	Project Developers shall retain a registered environmental assessor to conduct Phase I Environmental Site Assessments on properties where the assessment was not previously prepared, conduct further site investigations, where necessary, and implement the remediation.	The Community and Economic Development Department shall review and approve the Phase I Environmental Site Assessments, other needed site investigations and remediation in collaboration with the Stanislaus County Environmental Review Committee and County Health Services Department.	Conduct Phase I Environmental Site Assessments and other necessary site investigations prior to issuance of grading or building permit, whichever occurs first. Remediation shall be implemented prior to issuance of grading or building permit or as determined by the Phase I ESA and/or other site investigations.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
Biological Resources				
G.1a: Implementation of formal CDFG guidelines (Staff Report on Burrowing Owl Mitigation) to avoid and minimize impacts to Burrowing Owls. In conformance with federal and state regulations regarding the protection of raptors, a habitat assessment in accordance with CDFG guidelines for Burrowing Owls should be completed prior to the start of construction. Burrowing Owl habitat on the project site and within a 500-foot (150 m) buffer zone should be assessed. If the habitat assessment concludes that the site and immediate vicinity lack suitable Burrowing Owl habitat, no additional action would be warranted. However, if suitable habitat is located on, or immediately adjacent to, the site, all Burrowing Owl habitat should be mapped at an appropriate scale, and the following mitigation measures should be implemented: 1. In conformance with federal and state regulations regarding the protection of raptors, a pre-construction survey for Burrowing Owls, in conformance with CDFG guidelines, should be completed no more than 30 days prior to the start of construction within suitable habitat. Three additional surveys should also be completed per CDFG guidelines prior to construction. 2. No Burrowing Owls will be evicted from burrows during the nesting season (February 1 through August 31). Eviction outside the nesting season may be permitted pending evaluation of eviction plans and receipt of formal written approval from the CDFG authorizing the eviction. 3. A 250-foot (76 m) buffer, within which no new activity will be permissible, will be maintained between project activities and nesting Burrowing Owls during the nesting season. This protected area will remain in effect until August 31, or at the CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently. 4. If accidental take (disturbance, injury, or death of owls) occurs, the CDFG will be notified immediately.	Project Developers	Project Developer shall retain a qualified biologist to conduct pre-construction survey for breeding or resident burrowing owls in pastures, fallow fields, canal rights of way and other areas where ground squirrels occupy or have occupied burrows or pipes or other locations that could be used by burrowing owls. If found, establish and implement construction schedule to avoid nesting season, identify buffer areas, and report accidental take to CDFG.	CDFG shall review the habitat assessment and mitigation measures.	Complete survey and establish and implement construction schedule and buffer area prior to issuance of the first grading or building permit, whichever occurs first, and monitor during construction.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
G.1b: Compensation for loss of Burrowing Owl habitat. If pre-construction surveys determine that Burrowing Owls occupy the site and avoiding development of occupied areas is not feasible, then habitat compensation on off-site mitigation lands should be implemented. Habitat Management (HM) lands comprising existing Burrowing Owl foraging and breeding habitat should be acquired and preserved. An area of 6.5 acres (2.6 ha) (the amount of land found to be necessary to sustain a pair or individual owl) should be secured for each pair of owls, or individual in the case of an odd number of birds. As part of an agreement with the CDFG, the project applicant should secure the performance of its mitigation duties by providing the CDFG with security in the form of funds that would: • Allow for the acquisition and/or preservation of 6.5 acres (2.6 ha) of HM lands; • Provide initial protection and enhancement activities on the HM lands, potentially including, but not limited to, such measures as fencing, trash clean-up, artificial burrow creation, grazing or mowing, and any habitat restoration deemed necessary by CDFG; • Establish an endowment for the long-term management of the HM lands; and • Reimburse the CDFG for reasonable expenses incurred as a result of the approval and implementation of this agreement.	Project Developers and Project Biologist	If avoidance is not feasible, work with CDFG to secure a habitat mitigation agreement.	CDFG shall review and approve the habitat mitigation plan.	Habitat mitigation agreement shall be secured prior to issuance of the first grading or building permit, whichever occurs first.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
G.2a: Compensation for the disturbance of nesting raptors and migratory birds. To the extent practicable, construction should be scheduled to avoid the nesting season, January through August. **G.2b:** If it is not possible to avoid the nesting season, pre-construction surveys shall be conducted to ensure that no nests of rare or protected species would be disturbed during project implementation. Surveys shall be conducted no more than 14 days prior to construction during the early part of the breeding season (January through April) and no more than 30 days during the late part of the breeding season (May through August). Surveys shall include all potential nest substrates in and adjacent to the construction area. If an active nest is found close enough to a construction area to be disturbed, the project ornithologist, in conjunction with CDFG, shall determine the extent of a buffer-free zone around the nest .	Project Developers	Project Developers shall retain a qualified ornithologist or wildlife biologist to conduct a survey no more that 14 days prior to demolition or construction activities occurring January through April and no more than 30 days prior to demolition or construction activities occurring May through August. The ornithologist, in consultation with the CDFG, shall determine potential for demolition or construction impact to nesting raptors and migratory birds and establish a construction-free buffer zone accordingly in consultation with the CDFG.	CDFG shall review the habitat assessment and proposed construction buffer zone.	Construction-free buffer zone shall be established prior to issuance of the first grading or building permit, whichever occurs first.
G.3: Same as Mitigation Measures G.1a and G.1b for burrowing owls; the cumulative loss of habitat for Swainson's hawks should be mitigated by providing 0.25 acre of off-site HM lands comprising irrigated row crops, ruderal areas, fallow fields, and irrigated pasture. All HM lands protected under this requirement may be protected through fee title acquisition or conservation easement (acceptable to CDFG) on agricultural lands or other suitable habitats that provide foraging habitat for Swainson's hawks. Management Authorization holders/project sponsors shall provide for the long-term management of HM lands by funding a management endowment (the interest on which shall be used for managing the HM lands) at a rate agreed upon by CDFG.	Project Developers	Same as Mitigation Measures G1a and G1b, and Project Developers shall provide 0.25 acre of off-site HM lands comprising irrigated row crops, ruderal areas, fallow fields, and irrigated pasture through fee title acquisition or conservation easement, and provide a funding management endowment at a rate agreed upon by the CDFG.	CDFG shall review the habitat assessment and approve the mitigation measures.	Same as Mitigation Measures G.1a, G.1b, and provide 0.25 acre of off-site HM lands and management endowment prior to first grading or building permit, whichever occurs first.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
Hydrology and Water Quality				
H.1: The project proponent shall prepare an SWPPP for each development project under the Specific Plan (or one master SWPPP for all development) designed to reduce potential impacts to surface water quality through the construction period of all of the project components (whether or not the particular portion of the project disturbs more than 1 acre).The project SWPPP shall include and adequately address all elements in the State General Construction Permit (Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activity, State Water Resources Control Board Order Number 99-08-DWQ).	Project Developers	Project Developers shall prepare and implement SWPPP.	The City Engineer shall review and approve the SWPPP.	Complete the SWPPP prior to issuance of a grading or building permit, whichever occurs first, for each project. SWPPP measures shall be implemented during grading and construction for each project.
H.3a: As a condition of approval of the final grading and drainage plans for the first project proposed in the Specific Plan area, the developer must acquire written approval from the MID to discharge runoff to the MID Lateral No. 6 (up to 5.0 cubic feet per second), and provide this documentation to the City of Modesto Public Works Department. If approval from MID cannot be obtained then an alternative plan for disposal for stormwater would need to be developed and accepted in accordance with the City of Modesto standards for stormwater runoff.	Project Developers	Project Developers shall secure written approval from MID for discharge into canal Alternative stormwater drainage design must be approved if MID approval is not obtained.	City Engineer shall review and approve the agreement with MID or review and approve an alternative design if necessary.	The MID agreement or alternative design shall be in place prior to issuance of a grading permit for the first development within the plan area.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
H.3b: As a condition of approval of the final grading and drainage plans for all projects proposed within the Specific Plan area, detailed hydraulic analysis must demonstrate that implementation of the proposed drainage plans will: • Include adequately sized detention facilities to accommodate anticipated runoff associated with the 100-year storm event. A licensed professional engineer shall prepare the final drainage plan for the project and plans must be submitted to the City of Modesto Public Works Department for review and approval. • Include drainage components that are designed in compliance with City of Modesto standards. The grading and drainage plans shall be reviewed for compliance with these requirements by the Public Works Department. • Establish a funding mechanism for maintenance and annual inspections of the detention basin, drainage ditches, and drainage inlets. Any accumulation of sediment or other debris shall be promptly removed. An annual report documenting the inspection and any remedial action conducted shall be submitted to the City of Modesto Public Works Department for review.	Project Developers	Project Developers shall prepare a drainage plan that demonstrates compliance with City Standards and implement the plan.	The City Engineer shall review and approve the drainage plan.	Prior to issuance of a grading permit for any development within the plan area, or where appropriate as determined by the FMP and IFP, final grading and drainage plans meeting City Standards shall be reviewed and approved Grading and drainage facilities shall be developed and maintained in accordance with the approved plans.
H.6: Before a grading plan for development of a particular parcel within the plan area is approved, a well survey shall be conducted by a State-registered geologist or engineer to determine the location and characteristics of each well for that particular parcel. The survey results shall be submitted to the City for review. The water supply wells shall either be: 1. Properly abandoned in compliance with the California Department of Water Resources, California Well Standards and Stanislaus County Code, Chapter 9.36 prior to final approval of the grading plan, or 2. Inspected by a qualified professional to determine whether each well is properly sealed at the surface to prevent infiltration of water-borne contaminants into the well casing or surrounding gravel pack. The California Well Standards require an annular surface seal of at least 20 feet. If any of the wells are found not to comply with this requirement, the applicant shall retain a qualified well driller to install the required seal. Documentation of the inspections and seal installations, if any, shall be provided to the City prior to final approval of the grading plan.	Project Developers	Project Developers shall conduct a well survey to determine location and characteristics of each well. The survey shall be conducted by a state-registered geologist or engineer, and results shall be submitted to the City Engineer and implemented by the developers.	The City Engineer shall review the well survey and determine whether the well be abandoned or sealed.	The well survey shall be conducted prior to issuance of a grading permit for any development within the plan area and shall be implemented prior to certificate of occupancy.

Mitigation Measure	Mitigation Responsibility	Monitoring Actions	Monitoring / Reporting Responsibility	Schedule
Water Supply				
K.2: In order to maintain adequate water pressure in the City's delivery system, it would be necessary to design and construct project specific, local, and system-wide water facility improvements. There are three categories of improvements: • Project-specific improvements funded by the project sponsor, • Localized system improvements that would be funded by the City's Ongoing Strengthening and Repairing Water Pipelines Program, • System-wide Improvements funded by the City's Connection Fee Program. The localized system improvements and system-wide improvements are currently planned to be installed by the City. In addition to the project infrastructure currently proposed by the project sponsor (i.e., 10 inch to 12 inch water distribution pipelines would be installed following the alignments of Healthcare Way, The Plaza Way, Chopra Parkway, and other planned roads within the project site), a 12-inch diameter pipeline should be constructed in Kiernan Avenue along the entire northern boundary of the project site. This pipeline is recommended in order to enhance system reliability to the project by providing a system loop and an alternative route for delivery of water supplies. Installation of the recommended pipeline would not create any new impacts within the Kiernan Business Park Specific Plan Amendment #4 project site.	Project Developers and City of Modesto	Project Developers shall fund and install project specific water facility improvements. The project developer shall pay fair share of localized system improvements through payment of water fees. The City shall construct the localized system improvements and system-wide improvements necessary to serve the project.	City of Modesto Public Works Department	Project-specific improvements shall be approved prior to issuance of a grading permit for any development within the plan area. Project-specific improvements shall be installed prior to certificate of occupancy for any building within the plan area. Modesto Public Works Department to install system-wide improvements as needed
General Notes: The Capital Facilities Fee and other applicable fee programs identify regional infrastructure improvements (such as roads, sewer, water, etc.) that are based on the buildout of the City's *Urban Area General Plan*. These projects are identified in the City's Capital Improvement Program. If a development project occurs in the project area that requires infrastructure improvements be constructed in advance of the CIP schedule, then the development will be responsible to construct the identified improvement. The developer will enter into a reimbursement agreement with the City, construct the project, and will be reimbursed per the terms of the agreement.				

I. INTRODUCTION

A. PURPOSE OF THE EIR

This Environmental Impact Report (EIR) has been prepared by the City of Modesto as Lead Agency, pursuant to the California Environmental Quality Act (California Public Resources Code Sections 21000 *et seq*., "CEQA") and the State CEQA Guidelines (California Code of Regulations, Title 14, Sections 15000 *et seq*., "CEQA Guidelines"). The EIR has been prepared to address the potential impacts of a proposed project, the Kiernan Business Park Specific Plan Amendment #4. The proposed project is an amendment to the Kiernan Business Park Specific Plan to redesignate approximately 39 acres of Business Park land uses to 23 acres of Mixed Use and 16 acres of Medium High Density Residential land uses. The project would require an amendment to the Specific Plan Land Use Plan Diagram, Circulation Plan Diagram, Illustrative Public Facilities Plan Diagram, and Bike Paths Figure. A new street cross section for two-lane minor collectors would be introduced. Text of the existing Specific Plan would also be amended to accommodate the new land use designations. The approvals required for the project, listed in Chapter III, Project Description, address the entire project and all of its phases.

The City has prepared this program-level EIR to provide the City Council, the public, and Responsible Agencies under CEQA with information about the project's potential effects on the environment. The City Council and various agencies with regulatory authority over the project will use this EIR in the decision-making process. This EIR was prepared in compliance with CEQA and the State CEQA Guidelines.

B. CEQA PROCESS

The City of Modesto is the Lead Agency for the preparation of this EIR, and has the principal responsibility for carrying out or approving the proposed project. An Initial Study and Notice of Preparation of a Draft EIR were published on June 15, 2007, and circulated for public information and review through local public libraries, the State Clearinghouse in Sacramento, and direct mail to public agencies and interested individuals. They were also available for review at the City of Modesto Community and Economic Development Department. A formal public scoping meeting was held at Chambers at the City of Modesto and Stanislaus County Administrative Building on June 27, 2007, to receive public input on the information that should be included in the Draft EIR. Written comments on the scope of the Draft EIR were also received from public agencies and interested individuals.

The Draft EIR was published on December 17, 2008 and will be circulated for public review and comment for a period of 45 days, through February 2, 2009.

After the close of the comment period, a Final EIR will be prepared that contains the comments and/or summaries of comments received, responses to those comments that raise environmental issues, and any revisions to the Draft EIR made in response to comments. The Modesto City Council will use the information in the Final EIR in its deliberations on the project and consider its conclusions in conjunction with economic, social, community, and other considerations as to whether the project should be approved as proposed, approved but modified, or rejected.

The Final EIR, comprised of the Draft EIR, comments received, and responses to those comments, will be reviewed by the Modesto City Council for certification. The Council will certify the Final EIR when it believes the document to be accurate and complete. If the project is approved by the decision-makers, written findings will be prepared by the City of Modesto, as Lead Agency, for each significant impact identified in the EIR. These findings will identify each significant impact; determine whether the project has been changed to reduce significant impacts to less-than-significant levels; find that changes that would reduce significant impacts are within the jurisdiction of another public agency; or find that mitigation measures or alternatives that would reduce significant impacts are infeasible for identified legal, social, economic, technological or other reasons, as provided in Section 15091 of the CEQA Guidelines. If significant unavoidable impacts remain after all feasible mitigation measures are imposed on the project, in order to approve the project decision-makers must adopt a written statement of overriding considerations, explaining how they have balanced these significant unavoidable adverse environmental impacts against the benefits of the proposed project, based on all substantial evidence in the administrative record.

All mitigation measures included in the project by the project sponsor, and all mitigation measures imposed as conditions of approval by decision-makers, will be listed in a Mitigation Monitoring and Reporting Plan (MMRP). Feasible mitigation measures that would reduce but not eliminate significant impacts will also be identified. The MMRP will identify who will be responsible for implementing each measure and include an implementation and reporting schedule.

Following action by the City of Modesto, the EIR will be used by other Responsible Agencies (as defined in CEQA Section 21069) having jurisdiction over some aspect of the project, including the Stanislaus County Local Agency Formation Commission, in their approval processes for the proposed project.

II. SUMMARY

A. OVERVIEW OF THE PROPOSED PROJECT

The proposed project is an amendment to the Kiernan Business Park Specific Plan (Specific Plan). The Specific Plan sets out the framework for development of the 614-acre Kiernan Business Park Specific Plan area (the Specific Plan area). Kiernan Business Park-East is a 153-acre portion of the Specific Plan area (the project site). It is bounded on the west by Dale Road, on the north by Kiernan Avenue, on the east by a line extending south from American Avenue and parallel to Dale Road, and on the south by Bangs Avenue and Modesto Irrigation District (MID) Lateral No. 6. The proposed amendments to the Kiernan Business Park Specific Plan (hereinafter "Kiernan Business Park Specific Plan Amendment #4" (or "proposed project")) would include the following:

- Redesignation of a 39-acre portion of the 153-acre project site currently designated Business Park (BP) under the existing Specific Plan, to Mixed Use (MU) and Medium High Density Residential (MHDR).
- Removal of Pelandale Expressway cross section.
- Reclassification of Dale Road from a four-lane minor arterial to a six-lane principal arterial between Kiernan Avenue and Bangs Avenue.
- Reclassification of Bangs Avenue from a two-lane industrial connector to a four-lane major collector.
- Reclassification of Healthcare Way from a two-lane industrial connector to a two-lane minor collector east of Dale Road.
- Redesign of cross section for four-lane minor arterial.
- Redesign of cross sections for two-lane minor collectors.
- Implementation of new development standards and design guidelines for the MU and MHDR areas to provide a framework and direction for development within these areas.
- Revisions to the Land Use Plan Diagram, the Circulation Plan Diagram, the Bike Paths Figure, and the Illustrative Public Facilities Plan Diagram in the Specific Plan to reflect the proposed changes to the Specific Plan.

The remaining 114 acres of the project site would remain in the BP land use designation and under current development standards and design guidelines called out under the existing Kiernan Business Park Specific Plan. The Specific Plan otherwise remains unchanged in substance with respect to the rest of the Specific Plan area.

Consideration and adoption of the Kiernan Business Park Specific Plan Amendment #4 project would include the following actions:

- Review of the EIR pursuant to CEQA and adoption of a Mitigation Monitoring and Reporting Plan. The City of Modesto must certify an EIR prior to its approval of any of the project applications listed below. This EIR is being prepared to fulfill this requirement.
- Adoption of Kiernan Business Park Specific Plan amendments. Proposed amendments would amend the Land Use Plan Diagram to show the change in land use designation from BP to MU and MHDR; would amend the Circulation Plan Diagram to reflect changes to the planned roads and to show new roads; would amend the Bike Paths Figure to reflect changes to the planned bicycle facilities and to show new bicycle facilities; would amend the Illustrative Public Facilities Diagram to reflect changes to the planned water, storm, and sanitary sewer pipeline alignments and to show new water, storm, and sanitary sewer pipelines; would introduce a Street Cross Section Diagram for Healthcare Way, The Plaza Way, and Chopra Parkway; would amend the text of the Land Use chapter of the Specific Plan to include project-specific Development Standards and Design Guidelines; and would amend the text of the Circulation and Access and Public Facilities chapters of the Specific Plan to reflect the proposed changes.
- Adoption of an amendment to the *Urban Area General Plan*. The proposed amendment would redesignate the 39-acre area proposed to be modified in the Specific Plan of the Kiernan/Carver Comprehensive Planning District (CPD) of the *General Plan* from BP to MU.
- Approval of a Development Agreement, if applicable.
- Approval of a Tentative Subdivision Map and/or tentative parcel map, if applicable.
- Adoption of a resolution initiating annexation of a 67-acre portion of the project site.
- Adoption of a resolution to approve rezoning.
- Adoption of a Facilities Master Plan and an Infrastructure Financing Plan.
- Formation of a Community Facilities District.
- Approval by the Local Agency Formation Commission (LAFCO). LAFCO will review reorganization of the amended Kiernan Business Park Specific Plan, including the annexation of the 67-acre portion of the 153-acre project site to the City of Modesto and the Modesto Municipal Sanitary Sewer District No. 1, and simultaneously detach this portion of the project site from the Salida Fire Protection District.
- Approval by MID. MID must review the proposed storm water drainage system, which proposes discharge to MID Lateral No. 6. Upon acceptance of the proposed storm water drainage system, MID would enter into a Drainage Agreement with the City.

Construction of the Kiernan Business Park Specific Plan Amendment #4 project is anticipated to begin in mid- to late-2009. Project buildout is expected over approximately the next five years, between 2011 and 2016, depending on economic and market conditions.

B. ENVIRONMENTAL EFFECTS FOUND TO BE LESS THAN SIGNIFICANT

An Initial Study and Notice of Preparation for the proposed project were published on June 15, 2007. A full copy of the NOP/IS can be found in Appendix A. On the basis of the Initial Study, the City of Modesto determined that an environmental impact report (EIR) was required. The Initial Study determined that the effects of the project in the following issue areas would either be insignificant or would be reduced to a less-than-significant level by mitigation measures included in the project and thus required no further analysis: aesthetics, mineral resources, cultural resources, recreation, geology/soils, and population/housing. Therefore, these issues are not addressed in the EIR.

As shown in Table II.1, a number of project impacts identified in the EIR were found to be less than significant, requiring no mitigation. These impacts are listed below and are further discussed in this document.

- Introduce new land use designation, creating the potential for land use compatibility conflicts with existing land use plans, policies, and/or regulations;
- Burden continued agricultural operations surrounding the project site, and within the project site, prior to development under the proposed Specific Plan;
- Cause significant although temporary impact due to construction-related traffic activity;
- Locally contribute to elevated concentrations of carbon monoxide as a result of motor vehicle emissions;
- Cause sensitive receptors to be exposed to toxic air contaminants as a result of emissions during project operation;
- Cause sensitive receptors to be exposed to objectionable odors during project operation;
- Cause significant increase in noise levels for existing sensitive receptors adjacent to the project area due to project-related traffic.
- Cause release of hazardous materials, causing potential hazards to the public and environment as a result of demolition of existing buildings;
- Cause accidental release of hazardous materials as a result of transportation of contaminated soil and/or building materials removed from the project site;
- Result in degradation of water quality in receiving waters by reducing the quality of storm water runoff due to operation-phase use of the site;

- Place new development within an area potentially subject to dam failure inundation and/or inundation associated with spring/early summer snowmelt runoff;
- Result in depletion of groundwater resources.
- Cause an increased demand for Modesto Police Department officer hours due to the potential for increased on-site criminal activity and increased number of traffic incidents near the site;
- Result in an increase in the volume of emergency response calls;
- Cause insufficient water pressure for firefighting as a result of development of the mixed use and high-density residential components of the proposed project with building heights over 30 feet;
- Result in an increase in the number of elementary (K-6), middle (7-8), and high (9-12) school students and could require the construction of new or physically altered school facilities as a result of the buildout of the proposed project;
- Result in an increased demand for wastewater collection, treatment, and disposal;
- Contribute to future cumulative increases in demand on the wastewater collection, treatment, and disposal system;
- Increase the demand for potable water;
- Contribute to cumulative demand for potable water in the Modesto Water Service Area;
- Contribute substantially to the potential for regional cumulative demand to result in overdraft of groundwater supplies;

C. ENVIRONMENTAL IMPACTS AND MITIGATION

Under CEQA and the CEQA Guidelines, a significant effect on the environment is defined as a substantial, or potentially substantial, adverse change in any of the physical conditions within the areas affected by the project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. Significance criteria are based on standards identified in CEQA, the CEQA Guidelines, City and agency policy or regulation, and/or professional judgment. Implementation of the proposed project would result in potentially significant impacts on some of these resources.

The Initial Study and Notice of Preparation determined that the topics of land use and planning, agricultural resources, traffic and circulation, air quality, noise, biological resources, hazardous materials, hydrology and water quality, public services (police, fire, and schools), utilities and services systems (wastewater), and water supply were potentially significant and were to be

included in this EIR. The EIR discusses mitigation measures that could be implemented by the City and/or project sponsors to reduce significant impacts to a less-than-significant level. Such mitigation measures are noted in this report and are found in Chapter IV, Environmental Setting, Impacts and Mitigation.

D. PROJECT ALTERNATIVES

The alternatives to the Kiernan Business Park Specific Plan Amendment #4 project analyzed in this EIR are:

- No Project Alternative: Under the No Project alternative, the proposed Kiernan Business Park Specific Plan Amendment #4 would not be approved and development pursuant to the Specific Plan would not be constructed. The 153-acre project site would remain in agricultural, residential, and commercial uses under City and county land use designation and zoning.

- Existing General Plan Alternative: Under the Existing General Plan alternative, the Existing Kiernan Business Park Specific Plan would be developed pursuant to the existing Kiernan Business Park Specific Plan Business Park (BP) land use designation. Under this alternative, the 67-acre portion within County jurisdiction would be annexed into the City of Modesto limits. Up to 2,664,872 square feet (40 percent of 153 acres) of business park development would be permitted under this alternative. Allowable Business Park land uses would include new business park, office, and regional commercial uses.

- Reduced Intensity Alternative – Modified Kiernan Business Park Specific Plan Amendment #4: Under this alternative, the western portion of the project site would be developed with BP, MU, and MHDR land uses. This alternative would include about 55 acres of designated BP, allowing up to 878,932 square feet of development area; about 22 acres for MU development, allowing up to 420,354 square feet of development for combined residential and/or office above retail uses, detached residences, a hotel, restaurants, pharmacies, professional offices, art galleries, and athletic clubs; and 17 acres of MHDR, allowing maximum of 354 dwelling units in the form of townhouses, condominiums, garden apartments, and/or conventional apartments.

E. POTENTIAL AREAS OF CONCERN OR UNRESOLVED ISSUES

Section 15123 of the CEQA Guidelines requires the agency preparing an EIR to disclose any areas of controversy about the project that became known to it during the preparation of the EIR. Areas of controversy include the potential loss of agricultural land, biological resources, and impacts on the transportation and circulation system.

F. SUMMARY TABLE

Table II.1, Summary of Impacts and Mitigation Measures, summarizes the analyses contained in Chapter IV. Environmental impacts and their degree of significance are listed, followed by mitigation measures identified in this EIR and the level of significance after mitigation.

Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
Land Use				
A.1	The proposed project would introduce new land use designations that would conflict with existing land use plans, policies, and/or regulations.	**LS**	No mitigation necessary.	**LS**
Agricultural Resources				
B.1	Implementation of the proposed project would directly result in the permanent loss of Prime Farmland.	**S**	**B.1**: Prior to any actual development in the Kiernan Business Park Specific Plan area, the City Council would consider creation of a farmland mitigation program to determine whether such a program could feasibly provide partial mitigation for the loss of prime farmland.	**SU**
B.2	Development of the proposed project may burden continued agricultural operations surrounding the project site, and within the project site, prior to development under the proposed Specific Plan.	**LS**	No mitigation necessary	**LS**
B.3	Implementation of the proposed project would incrementally contribute to the cumulative loss of Prime Farmland in Stanislaus County and in the Modesto area.	**S**	**B.3**: Same as Mitigation Measure B.1.	**SU**
Transportation and Circulation				
C.1	Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the existing plus project scenario. (Significant and Unavoidable)	**S**	**C.1a Kiernan Avenue and SR 99 Southbound Ramps**: Restripe the shared southbound through/right-turn lane to a shared left/through/right-turn lane; restripe the eastbound right-turn lane to a shared through/right-turn lane; add a second eastbound receiving lane on the east leg of the intersection.	**SU**

LS = Less than Significant S = Significant SU = Significant and Unavoidable

Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
			C.1b Kiernan Avenue and Sisk Road: Widen Kiernan Avenue to provide two through lanes in each direction.	**LS**
			C.1c Kiernan Avenue and Stoddard Road: Widen Kiernan Avenue to provide two through lanes in each direction. Signalize the intersection.	**LS**
			C.1d Kiernan Avenue and Dale Road: Widen Kiernan Avenue to provide two through lanes in each direction. Add turn pockets at all approaches. Signalize the intersection. Construct a second northbound left-turn lane and a northbound right-turn lane.	**LS**
			C.1e Kiernan Avenue and Carver Road: Widen Kiernan Avenue to provide two through lanes in each direction. Signalize the intersection.	**SU**
			C.1f Bangs Avenue and American Avenue: Install a two-lane roundabout with a northbound right-turn by-pass lane or install traffic signals and left-turn pockets on all approaches.	**LS**
			C.1g Bangs Avenue and Prescott Road: Install a two-lane roundabout or install traffic signals on all approaches.	**SU**
			C.1h Bangs Avenue and Carver Road: Install a two-lane roundabout or install traffic signals and left-turn pockets on all approaches.	**SU**
			C.1i Bangs Avenue and Tully Road: Install a two-lane roundabout or install traffic signals and left-turn pockets on all approaches.	**SU**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
			C.1j Pelandale Avenue and SR 99 Southbound Ramps: Improvements at this interchange are currently under development by the City of Modesto and Caltrans. Potential improvements include loop ramps and modifications to Sisk Road, such as additional through lanes and turn lanes.	**SU**
			C.1k Pelandale Avenue and Sisk Road: Install a third westbound through lane, a second westbound left-turn lane, a second southbound through lane, and a second southbound left-turn lane.	**LS**
			C.1*l* Standiford Avenue and SR 99 Southbound Ramps: Add a second southbound left-turn lane.	**SU**
C.2	Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the existing plus project scenario.	**S**	**C.2a Kiernan Avenue**: Add an eastbound through lane between the SR 99 SB Ramps and McHenry Avenue. Add a westbound through lane between the SR 99 NB Ramps and Dale Road. Signalize Stoddard Road, Dale Road, and Carver Road intersections.	**SU**
			C.2b Pelandale Avenue: Add a westbound through lane between the SR 99 Southbound Ramps and Northpointe Shopping Center.	**SU**
			C.2c Pelandale Avenue: Add an eastbound and westbound through lane between Dale Road and Tully Road.	**LS**
			C.2d Bangs Avenue: Add an eastbound and westbound through lane between American Avenue and Prescott Road.	**SU**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
			C.2e Dale Road: Add a second northbound and second southbound through lane between Kiernan Avenue and Healthcare Way. *These lanes were constructed and placed into service after completion of the transportation impact analysis; therefore this mitigation measure is not necessary.*	**LS**
C.3	Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge interchanges near the project site under the existing plus project scenario.	**S**	**C.3:** The Kiernan, Pelandale, and Standiford Avenue SR 99 off-ramp diverge locations are under the jurisdiction of Caltrans. Caltrans envisions SR 99 as an eight-lane freeway and plans to improve the SR 99/Kiernan Avenue, SR 99/Pelandale Avenue and SR 99/Standiford Avenue freeway interchanges.	**SU**
C.4	Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the near-term baseline plus project scenario.	**S**	**C.4a Kiernan Avenue and SR 99 Southbound Ramps**: Add a second westbound left-turn lane and an associated receiving lane.	**SU**
			C.4b Kiernan Avenue and Sisk Road: Modify the eastbound right-turn lane to provide a shared eastbound through/right-turn lane (for a total of three through lanes) and associated receiving lane, and provide a third westbound through lane and modify the traffic signal to provide protected-permitted phasing for the northbound and southbound approaches.	**SU**
			C.4c Dale Road and Kaiser Main Entrance/The Plaza Way: Add a third southbound through lane; add a third northbound through lane.	**LS**
			C.4d Bangs Avenue and American Avenue: Construct a two-lane roundabout with a northbound by-pass lane; or install a traffic signal and add an	**LS**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
			eastbound through lane, an eastbound left-turn pocket, a westbound through lane, a westbound left-turn pocket, a northbound left-turn lane, a northbound through lane, a northbound right-turn only lane, a southbound left-turn lane, and a southbound shared through/right-turn lane.	
			C.4e Bangs Avenue and Prescott Road: Construct a two-lane roundabout; or maintain the traffic signal identified in the City's intersection improvement program and add a second westbound through lane and a second eastbound through lane.	**SU**
			C.4f Bangs Avenue and Carver Road: Construct a two-lane roundabout; or install traffic signals and left turn pockets at all approaches.	**SU**
			C.4g Bangs Avenue and Tully Road: Construct a two-lane roundabout; or install traffic signals and left turn pockets at all approaches and an eastbound right-turn only lane.	**SU**
			C.4h Pelandale Avenue and SR 99 Southbound Ramps: Improvements at this interchange are currently under development by the City of Modesto and Caltrans. Potential improvements include loop ramps and modifications to Sisk Road, such as additional through lanes and turn lanes.	**SU**
			C.4i Pelandale Avenue and Dale Road: Add a third northbound through lane and add eastbound and westbound free right-turn lanes.	**SU**
			C.4j Standiford Avenue and SR 99 Southbound Ramps: Add a second southbound left-turn lane.	**SU**
			C.4*k* Standiford Avenue and SR 99 Northbound Ramps: Install a free northbound right-turn only lane.	**SU**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
			C.4*l* Standiford Avenue and Sisk Road: Install a third westbound through lane.	**SU**
C.5	Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the near-term baseline plus project scenario.	**S**	**C.5a State Route 99**: Add a northbound and a southbound through lane between Hammet Road and Kiernan Avenue and between Pelandale Avenue and Briggsmore Avenue.	**SU**
			C.5b Kiernan Avenue: Add a third eastbound and a third westbound through lane between the SR 99 Southbound Ramp and Sisk Road.	**SU**
			C.5c Pelandale Avenue: Add eastbound and westbound through lanes between the SR 99 Southbound Ramps and Sisk Road and turn lanes on Sisk Road.	**SU**
			C.5d Bangs Avenue: Widen to two lanes in each direction between Dale Road and Tully Road.	**SU**
			C.5e Dale Road: Add a northbound and a southbound through lane between Healthcare Way and The Plaza Way; add a northbound through lane between Snyder Avenue and The Plaza Way; add a northbound and southbound through lane between Snyder Avenue and Veneman Avenue.	**SU**
C.6	Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge areas near the project site under the near-term baseline plus project scenario.	**S**	**C.6**: Caltrans' long range plan is to widen SR 99 from a six-lane to an eight-lane freeway in conjunction with interchange improvements including the SR 99/Standiford Avenue interchange.	**SU**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
C.7	Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the cumulative baseline plus project scenario.	**S**	**C.7: Pelandale Avenue and Dale Road**: No physical improvements are recommended for these roadways beyond the planned maximum cross-section. Other measures such as signal timing coordination and transportation demand management measures should be implemented to maximize through traffic efficiency and minimize single occupant vehicle trips. The project sponsor shall prepare a transportation demand management program to the satisfaction of City staff.	**SU**
C.8	Construction-related traffic activity could have a significant although temporary impact.	**S**	**C.8:** The project sponsor shall develop a construction management plan for review and approval by the City Public Works Department and the Community Development Department.	**LS**
Air Quality				
D.1	Emissions of criteria pollutants during project construction would contribute to existing violations of the ambient air quality standards in the region.	**S**	**D.1**: Implementation of District recommendations to minimize emissions during construction phases.	**SU**
D.2	Emissions of criteria pollutants during project operation would contribute to existing violations of the ambient air quality standards in the region.	**S**	**D.2a** Implementation of design features to reduce emissions from motor vehicle activity. **D.2b** Development and implementation of an approved trip reduction plan to reduce emissions from motor vehicle activity. **D.2c** Implementation of site design features to reduce emissions from energy consumption.	**SU**
D.3	Motor vehicle emissions would locally contribute to elevated concentrations of carbon monoxide.	**LS**	No mitigation necessary	**LS**
D.4	Implementation of the proposed project would cause sensitive receptors to be exposed to TACs.	**LS**	No mitigation necessary	**LS**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
D.5	Implementation of the proposed project would cause sensitive receptors to be exposed to objectionable odors.	**LS**	No mitigation necessary	**LS**
D.6	The project would cause a cumulatively considerable net increase of pollutants for which the San Joaquin Valley is designated as nonattainment.	**S**	**D.6:** See Mitigation Measures D.2a and D.2b.	**SU**
D.7	The proposed project, including annexation of the proposed parcels to the City of Modesto and changes to adopted community plans, could conflict with or obstruct implementation of the ozone and PM_{10} attainment plans.	**S**	**D.7:** See Mitigation Measures under Impact D.2.	**SU**
D.8	The proposed project, including annexation of the proposed parcels to the City of Modesto and changes to adopted community plans, could increase greenhouse gas emissions and potentially accelerate the effects of greenhouse gases on global climate change.	**S**	**D.8**: For lighting in public streets, parking areas, and recreation areas, use of energy-efficient light and mechanical, computerized, or photocell switches to reduce unnecessary energy use; use of alternative, non-fossil-fuel-based energy systems; orientation of lots to maximize natural energy conservation; provision of bike racks and changing rooms for commercial development; and planting of large-canopy, deciduous shade trees that are designed to fit in planters that are large enough to contain them without disrupting public improvements at project buildout. Also implement Mitigation Measures D.1 and D.2.a through c.	**LS**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
Noise				
E.1	Project-related traffic could cause a substantial increase in noise levels for existing sensitive receptors adjacent to the project area.	**S**	No mitigation necessary.	**LS**
E.2	Project-related traffic could cause a substantial increase in noise levels or an exceedence of "Normally Acceptable" noise levels for sensitive receptors within the project area.	**S**	**E.2a** To reduce noise levels at significantly impacted proposed residential land uses would require the construction of noise barriers up to approximately six feet in height and properly locating outdoor-use areas to be partially shielded by project proposed buildings. Specific noise barrier heights required to reduce noise levels to a less-than-significant noise level depend on the setback distance and exposure to the adjacent roadway and are to be determined by a qualified acoustical consultant. Noise barriers may need to be constructed at the following locations: • Along Healthcare Way • Along The Plaza Way • Along Dale Road Since noise barriers typically provide noise reduction for receivers at a first-story height, some façades at higher elevations would likely be exposed to noise levels that require sound-rated windows to meet Building Code requirements. With the additional sound insulation to be determined by a qualified acoustical consultant, interior noise levels would achieve the applicable standards of an L_{dn} less than 45 dB. **E.2b** The City and state do not specify interior noise standards for commercial uses. Commercial land uses located more than approximately 130 feet from	**LS**

LS = Less than Significant S = Significant SU = Significant and Unavoidable

Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
			the Kiernan Avenue centerline, 50 to 70 feet of the Dale Road centerline (depending on location along Dale Road, see Table IV.E.4), and 45 feet from the Bangs Avenue centerline would be exposed to noise levels interpreted by the City as "Normally Acceptable", and would be considered less-than-significant impacts. A qualified acoustical consultant should prepare a supplemental noise analysis for any commercial building located at closer distances (i.e., exposed to greater than 70 dB L_{dn}) to these roadways. The noise analysis should include an interior noise goal specific to the building and mitigation necessary to meet the goal.	
E.3	New stationary sources of noise associated with the proposed project could generate noise levels incompatible with ordinances or goals for the surroundings.	**S**	**E.3:** Each development project that involves commercial uses or multi-family residential buildings that would include outdoor mechanical equipment shall carry out the following: • Retain a qualified acoustical engineer to prepare a noise study for submission to the City, ensuring that noise levels will not exceed City Standards, as described above. The following noise reduction measures should be considered by the acoustical engineer: o Use of acoustical silencers on inlet and discharge openings of mechanical equipment, o Installation of parapets or enclosures with louvers or other barriers to shield noise, o Orientation of equipment so that it faces away from sensitive receptors, and o Orientation or setback of buildings to increase distance from sensitive receptors.	**LS**

LS = Less than Significant S = Significant SU = Significant and Unavoidable

Table II.1: Summary of Impacts and Mitigation Measures

	Impact	Level of Significance Prior to Mitigation	Mitigation Measure(s)	Level of Significance After Mitigation
E.4	Pile-driving activities related to construction of taller buildings in the Mixed Use area could temporarily generate noise and/or ground-borne vibration levels incompatible with ordinances or goals for the surroundings.	**S**	**E.4:** Construction-related pile driving activities shall be conducted in accordance with the following: • Limit the operation or use of pile-driving equipment to the hours between 7:00 a.m. and 9:00 p.m. daily (except Saturday and Sunday and state or federal holidays, when the prohibited time shall be before 9:00 a.m. and after 9:00 p.m.): • Perform vibration measurements at MRI locations during pile driving to assess the potential for interference with the equipment. This should be conducted as a "mock-up" test to assess the potential for vibration impacts. A compatible schedule may need to be developed for pile-driving activities that would allow for the non-impacted operation of the MRI equipment.	**LS**
E.5	Non-stationary sources of noise associated with the proposed project could generate noise levels incompatible with ordinance or goals for the surroundings.	**S**	**E.5:** A qualified acoustical engineer shall be retained to review the site plans and building designs for proposed commercial activities when located adjacent to sensitive residential land uses. The acoustical engineer shall consider the following measures, and shall identify a complete list of measures that will reduce noise levels at the nearest residential property line to an L_{dn} of 65 dB: • Limiting loading and exterior warehouse activities to daytime hours from 7:00 a.m. to 9:00 p.m. • Requiring loading and trash compacting and collection activities to be fully enclosed. • Location and orientation of parking lot areas with respect to noise sensitive land uses.	**LS**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
			• Establishing minimum setback distances between common open space for multi-family residential buildings and locations of loading docks, warehousing activity areas, and trash compaction and collection areas in commercial developments.	
E.6	Cumulative development could lead to noise conflicts between incompatible land uses.	**S**	**E.6:** Acoustical recommendations prepared to address Impact E.2 should also consider cumulative year 2025 conditions.	**SU (exterior noise)** **LS (interior noise)**
Hazardous Materials				
F.1	Demolition of existing buildings could cause release of hazardous materials, causing potential hazards to the public and environment.	**LS**	No mitigation necessary	**LS**
F.2	Excavation for installation of utilities and other construction on the project site could encounter contaminated soil and/or groundwater and expose workers and the public to hazardous substances.	**S**	**F.2:** Conduct Phase I Environmental Site Assessments, conduct site investigations, and implement remediation as necessary.	**LS**
F.3	Transportation of contaminated soil and/or building materials removed from the project site could result in accidental release of hazardous materials.	**LS**	No mitigation necessary	**LS**
Biology				
G.1	Implementation of the Specific Plan would result in loss of occupied burrowing owl habitat.	**S**	**G.1a** Implement CDFG guidelines to avoid and minimize impacts to burrowing owls. (See p. IV.G.11 for more detail) **G.1b** Compensate for loss of burrowing owl habitat.	**LS**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
G.2	Implementation of the Specific Plan would result in disturbance of nesting raptors and migratory birds.	**S**	**G.2a** Avoidance. **G.2b** Pre-construction Surveys.	**LS**
G.3	Implementation of the Specific Plan would result in cumulative loss of Swainson's hawk and burrowing owl habitat.	**S**	**G.3:** Same as Mitigation Measures G.1a and G.1b.	**LS**
Hydrology and Water Quality				
H.1	Construction activities could result in degradation of water quality in nearby surface water bodies by causing accidental spills and/or by reducing the quality of storm water runoff.	**S**	**H.1**: The project proponent shall prepare an SWPPP for each development project under the Specific Plan (or one master SWPPP for all development) designed to reduce potential impacts to surface water quality through the construction period of all of the project components (whether or not the particular portion of the project disturbs more than 1 acre).	**LS**
H.2	Operation-phase use of the site could result in degradation of water quality in receiving waters by reducing the quality of storm water runoff.	**LS**	No mitigation necessary.	**LS**
H.3	Implementation of the project could alter drainage patterns at the site, potentially causing runoff to exceed the capacity of existing conveyances and result in localized flooding.	**S**	**H.3a** As a condition of approval of the final grading and drainage plans for the first project proposed in the Specific Plan area, the developer must acquire written approval from the MID to discharge runoff to the MID Lateral No. 6 (up to 5.0 cubic feet per second), and provide this documentation to the City of Modesto Public Works Department. **H.3b** As a condition of approval of the final grading and drainage plans for all projects proposed within the Specific Plan area, detailed hydraulic analysis must demonstrate that implementation of the proposed drainage plans will: • Include adequately sized detention facilities to	**LS**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
			accommodate anticipated runoff associated with the 100-year storm event. A licensed professional engineer shall prepare the final drainage plan for the project and plans must be submitted to the City of Modesto Public Works Department for review and approval. • Include drainage components that are designed in compliance with City of Modesto standards. The grading and drainage plans shall be reviewed for compliance with these requirements by the Public Works Department. • Establish a funding mechanism for maintenance and annual inspections of the detention basin, drainage ditches, and drainage inlets. Any accumulation of sediment or other debris shall be promptly removed. An annual report documenting the inspection and any remedial action conducted shall be submitted to the City of Modesto Public Works Department for review.	
H.4	Implementation of the proposed project could place new development within an area potentially subject to dam failure inundation and/or inundation associated with spring/early summer snowmelt runoff.	**LS**	No mitigation necessary.	**LS**
H.5	Implementation of the project could result in depletion of groundwater resources.	**LS**	No mitigation necessary.	**LS**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
H.6	Existing water supply wells within the Specific Plan area, if not properly managed or decommissioned, could be damaged during construction, potentially resulting in impacts to groundwater quality.	**S**	**H.6:** Before a grading plan for development of a particular parcel of the Specific Plan area is approved, a well survey shall be conducted by a State-registered geologist or engineer to determine the location and characteristics of each well for that particular parcel. The survey results shall be submitted to the City for review. The water supply wells shall either be: 1. Properly abandoned in compliance with the California Department of Water Resources, California Well Standards and Stanislaus County Code, Chapter 9.36 prior to final approval of the grading plan, or 2. Inspected by a qualified professional to determine whether each well is properly sealed at the surface to prevent infiltration of water-borne contaminants into the well casing or surrounding gravel pack. The California Well Standards require an annular surface seal of at least 20 feet. If any of the wells are found not to comply with this requirement, the applicant shall retain a qualified well driller to install the required seal. Documentation of the inspections and seal installations, if any, shall be provided to the City prior to final approval of the grading plan.	**LS**

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Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
Community Services - Police				
I.1	Development of the project site would result in an increased demand for Modesto Police Department officer hours due to the potential for increased on-site criminal activity and increased number of traffic incidents near the site.	**LS**	No mitigation necessary	**LS**
Community Services – Fire				
I.2	Development of the project site would result in an increase in the volume of emergency calls.	**LS**	No mitigation necessary	**LS**
I.3	Development of the mixed-use and high-density residential components of the proposed project with building heights over 30 feet could result in insufficient water pressure for firefighting.	**LS**	No mitigation necessary	**LS**
Community Services – Schools				
I.4	Buildout of the Kiernan Business Park Specific Plan would result in an increase in the number of elementary (K-6), middle (7-8), and high (9-12) school students and could require the construction of new or physically altered school facilities.	**LS**	No mitigation necessary	**LS**
Utilities and Services Systems – Wastewater				
J.1	Development of the proposed Kiernan Business Park Specific Plan Amendment #4 area would result in an increased demand for wastewater collection, treatment, and disposal.	**LS**	No mitigation necessary	**LS**

LS = Less than Significant S = Significant SU = Significant and Unavoidable

Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
J.2	Development of the proposed Kiernan Business Park Specific Plan Amendment #4 area would contribute to future cumulative increases in demand on the wastewater collection, treatment, and disposal system.	**LS**	No mitigation necessary	**LS**
Water Supply				
K.1	Implementation of the Kiernan Business Park Specific Plan Amendment #4 could increase the demand for potable water.	**LS**	No mitigation necessary	**LS**
K.2	Demand from the project would cause water pressure problems within the City's water distribution system.	**S**	**K.2**: In order to maintain adequate water pressure in the City's delivery system, it would be necessary to design and construct project specific, local, and system-wide water facility improvements. There are three categories of improvements: • Project-specific improvements funded by the project sponsor, • Localized system improvements that would be funded by the City's Ongoing Strengthening and Repairing Water Pipelines Program, • System-wide Improvements funded by the City's Connection Fee Program. The localized system improvements and system-wide improvements are currently planned to be installed by the City. In addition to the project infrastructure currently proposed by the project sponsor (i.e., 10 inch to 12 inch water distribution pipelines would be installed following the alignments of Healthcare Way, The Plaza Way, Chopra Parkway, and other planned roads within the project site), a 12-inch diameter pipeline should be	**LS**

LS = Less than Significant S = Significant SU = Significant and Unavoidable

Table II.1: Summary of Impacts and Mitigation Measures				
Impact		**Level of Significance Prior to Mitigation**	**Mitigation Measure(s)**	**Level of Significance After Mitigation**
			constructed in Kiernan Avenue along the entire northern boundary of the project site. This pipeline is recommended in order to enhance system reliability to the project by providing a system loop and an alternative route for delivery of water supplies. Installation of the recommended pipeline would not create any new impacts within the Kiernan Business Park Specific Plan Amendment #4 project site.	
K.3	Development of the proposed project could contribute to cumulative demand for potable water in the City of Modesto water service area.	**LS**	No mitigation necessary	**LS**
K.4	Development of the proposed project would contribute to the potential for cumulative demand to result in overdraft of groundwater supplies.	**LS**	No mitigation necessary	**LS**

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III. PROJECT DESCRIPTION

A. INTRODUCTION

The proposed project is an amendment to the Kiernan Business Park Specific Plan (Specific Plan).[1] The Specific Plan sets out the framework for development of the 614-acre Kiernan Business Park Specific Plan area (the Specific Plan area). The Specific Plan has been assessed in accordance with the California Environmental Quality Act (CEQA).[2]

Kiernan Business Park-East is a 153-acre portion of the Specific Plan area (the project site). It is bounded on the west by Dale Road, on the north by Kiernan Avenue, on the east by a line extending south from American Avenue and parallel to Dale Road, and on the south by Bangs Avenue and Modesto Irrigation District (MID) Lateral No. 6. The proposed amendments to the Specific Plan would include the following:

- Redesignation of a 39-acre portion of the 153-acre project site currently designated Business Park (BP) under the existing Specific Plan, to Mixed Use (MU) and Medium High Density Residential (MHDR).
- Removal of Pelandale Expressway cross section.
- Reclassification of Dale Road from a four-lane minor arterial to a six-lane principal arterial between Kiernan Avenue and Bangs Avenue.[3]
- Reclassification of Bangs Avenue from a two-lane industrial connector to a four-lane major collector.[4]
- Reclassification of Healthcare Way from a two-lane industrial connector to a two-lane minor collector east of Dale Road.
- Redesign of cross section for four-lane minor arterial.
- Redesign of cross sections for two-lane minor collectors.
- Implementation of new development standards and design guidelines for the MU and MHDR areas to provide a framework and direction for development within these areas.

[1] City of Modesto, *Kiernan Business Park Specific Plan*, adopted on April 1, 1997 and amended on August 10, 2004.
[2] City of Modesto, *Kiernan Business Park and Carver-Bangs Specific Plans Focused Environmental Impact Report* (SCH # 94082005), February 20, 1997, and the *Kaiser Modesto Medical Center / Cornerstone Business Park Project Final Environmental Impact Report* (SCH # 2003072085), August 10, 2004.
[3] The updated *Urban Area General Plan* (October 2008) designates Dale Road as a six-lane principal arterial between Kiernan and Standiford Avenues. (See Figure V.1.)
[4] The updated *Urban Area General Plan* (October 2008) designates Bangs Avenue as four-lane major collector between Dale Road and McHenry Avenue. (See Figure V.1.)

- Revisions to the Land Use Plan Diagram, the Circulation Plan Diagram, the Bike Paths Figure, and the Illustrative Public Facilities Plan Diagram in the Specific Plan to reflect the proposed changes to the Specific Plan.

The remaining 114 acres of the project site would remain in the BP land use designation and under current development standards and design guidelines called out under the existing Kiernan Business Park Specific Plan. The Specific Plan otherwise remains unchanged in substance with respect to the rest of the Specific Plan area.[5]

The Specific Plan Amendment includes formation of a Facilities Master Plan (FMP), an Infrastructure Financing Plan (IFP), and the formation of a Community Facilities District (CFD). The proposed project does not include any specific development proposal implementing the proposed changes to the Specific Plan. As such, this environmental review is programmatic in scope. Subsequent activities implementing the proposed amendments to the Specific Plan will be reviewed in light of this program-level Environmental Impact Report (EIR) to determine the type of additional project-level environmental review that would be required for a specific development project.

B. PROJECT OBJECTIVES

The following objectives have been identified as part of the Kiernan Business Park Specific Plan Amendment #4 project:

- Create a mixed use area adjacent to the Kaiser Modesto Medical Center which will serve the hospital and its visitors, the immediate business park area, and residential areas. Provide a vibrant village atmosphere which provides a safe, pedestrian-friendly environment.
- Create an extended-hours community by balancing business park and medical center uses with residential and retail to provide greater safety through increased surveillance and activity.
- Attract small businesses that provide support services to the hospital and business park uses.
- Provide multi-family residential uses, both apartments and condominiums, to provide housing choices for doctors and nurses, hospital employees and support staff, visitors, single parents, business owners and employees, and independent seniors.
- Design a healthy, smart growth development that increases physical activity via walking and bicycling, reduces dependence on automobiles, and increases transit use.

[5] The proposed revisions to the Specific Plan include reformatting and restructuring in conformance with the *City of Modesto Specific Plan Procedures and Preparation Guide*, dated October 2004. This is not a substantive revision to the Specific Plan requiring additional environmental review.

- Provide incentives to reduce traffic through the use of shared parking and reduced automobile parking standards. Balance the supply and management of parking to address the needs of the businesses, residents, and employees.
- Incorporate an efficient infrastructure system designed to accommodate the future phases of development.
- Provide for employment-intensive uses in an attractive "campus-like" setting that is consistent with the needs of the target industries identified in the Kiernan Business Park Specific Plan.

C. PROJECT LOCATION AND EXISTING CONDITIONS

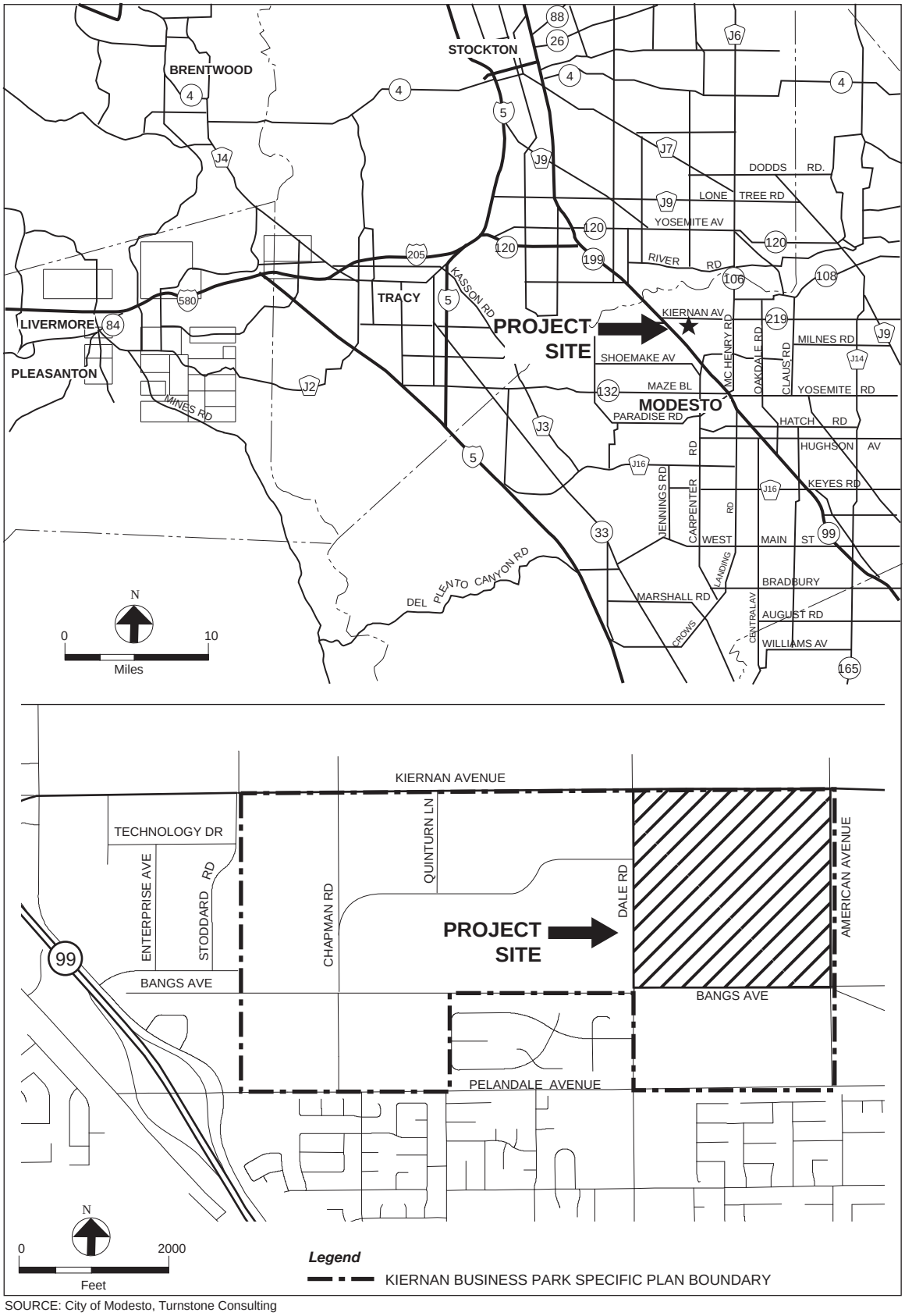
REGIONAL LOCATION

Stanislaus County is located within the northern San Joaquin Valley and is bounded by San Joaquin County to the north; Calaveras, Tuolumne, and Mariposa Counties to the east; Merced County to the south; and Santa Clara and Alameda Counties to the west. Modesto is located approximately 45 miles east of Livermore and 30 miles southeast of Stockton. Nearby Central Valley communities include Patterson to the west; Salida, Ripon, and Manteca to the northwest; Riverbank to the northeast; and Ceres, Turlock, and Merced to the south.

The Kiernan Business Park Specific Plan area is located about five miles north of Modesto's downtown core. Highway 99 is located about two miles to the west. Kiernan Avenue (State Route 219) and Pelandale Avenue, both of which are planned future expressways, are located to the north and south of the Specific Plan area, respectively. The eastern and western boundaries of the Specific Plan area are a line even with American Avenue and parallel to Dale Road, and Stoddard Avenue, respectively.

PROJECT VICINITY

The 153-acre Kiernan Business Park-East project site is bounded on the west by Dale Road, on the north by Kiernan Avenue, on the east by a line extending south from American Avenue and parallel to Dale Road, and on the south by Bangs Avenue and MID Lateral No. 6. (See Figure III.1: Project Location.) There is a mix of medical, agricultural, commercial, and residential land uses in the vicinity of the project site. Directly west across Dale Road is the Kaiser Modesto Medical Center and the Cornerstone Business Park. Unincorporated Stanislaus County lands to the north across Kiernan Avenue are primarily in agricultural use, and there is a produce market and gift shop at the northeast corner of Kiernan Avenue and Dale Road. To the east, between the proposed north-south extension of American Avenue and existing Morrow Road, are agricultural parcels with some individual home sites. Immediately south of the project site across Bangs Avenue and MID Lateral No. 6 are an event center/catering business and two



SOURCE: City of Modesto, Turnstone Consulting

FIGURE III.1: PROJECT LOCATION

churches. Low-density residential neighborhoods and commercial uses are located further south of the project site across Pelandale Avenue. The Fleur de Ville residential neighborhood is located south and west of the project site, south of MID Lateral No. 6.

PROJECT SITE

The Kiernan Business Park Specific Plan Amendment #4 project site consists of 16 parcels (see Table III.1). Of these, nine parcels, generally comprising the southwest portion of the project site, are within the existing City limits (about 86 acres). The remaining seven parcels, generally comprising the northeast portion of the project site, are outside of the existing City limits (about 67 acres). These parcels are in unincorporated Stanislaus County within the City's Sphere of Influence.

Table III.1: Parcels on the Project Site

Parcel	Location
Parcels Within Existing City Limits	
Parcel 078-015-001	Kiernan Avenue
Parcel 078-015-003	4754 Dale Road
Parcel 078-015-007	4620 Dale Road
Parcel 078-015-020	4506 Dale Road
Parcel 078-015-023	2719 Bangs Avenue
Parcel 078-015-024	Bangs Avenue
Parcel 078-015-025	Dale Road
Parcel 078-015-026	2931 Bangs Avenue
Parcel 078-015-028	2731 Bangs Avenue
Parcels Outside Existing City Limits	
Parcel 078-015-002	2866 Kiernan Avenue
Parcel 078-015-005	2572 Kiernan Avenue
Parcel 078-015-010	2573 Bangs Avenue
Parcel 078-015-012	2706 Kiernan Avenue
Parcel 078-015-013	2742 Kiernan Avenue
Parcel 078-015-015	2506 Kiernan Avenue
Parcel 078-015-017	2472 Kiernan Avenue

Source: Thompson-Hysell Engineers & Velthoen Associates (Kiernan Ave. Business Park East Exhibit No. A); City of Modesto GIS, 2006; Stanislaus County Assessor's Office.

Currently, the majority of parcels that make up the project site are in agricultural production. Some of these parcels also include single-family homes and/or structures related to agricultural production. There are 10 separate farmhouse sites, 1 with access to Dale Road, 6 with access to Kiernan Avenue, and 3 with access to Bangs Avenue. A commercial nursery and landscaping service is located on a 4.2-acre parcel at the northeast corner of Dale Road and Bangs Avenue; a welding company is located at the northeastern corner of a 9.8-acre parcel fronting Kiernan Avenue near its intersection with American Avenue; and the MID's Bangs Substation is

located on the southeast corner of a 19.6-acre parcel fronting Bangs Avenue near its intersection with American Avenue. When surveyed in July 2008, irrigated row crops were the dominant agricultural use, representing approximately 34 percent of the project site, with ruderal fields (23 percent of the project site), orchards (20 percent of the project site area), fallow fields (6 percent), and irrigated pastures (5 percent). About 12 percent of the project site area is developed (or disturbed) land.

D. EXISTING KIERNAN BUSINESS PARK SPECIFIC PLAN

EXISTING LAND USE PLAN

The City of Modesto's 17,600-acre Planned Urbanizing Area is divided into Comprehensive Planning Districts (CPDs) that are expected to absorb much of the City's future population and employment growth.[6] Comprehensive Planning Districts are developed through implementation of Comprehensive Plans and Specific Plans. The Kiernan Business Park Specific Plan area is situated within the western portion of the 1,385-acre Kiernan/Carver CPD and consists of approximately 614 acres adjacent to the City's northern boundary, east of Highway 99 and south of Kiernan Avenue. The 153-acre project site is located on the eastern portion of the Specific Plan area, east of Dale Road. The approximately 86-acre portion within City limits is pre-zoned as SP-O (Specific Plan-Overlay) and the approximately 67-acre portion outside of City limits is pre-zoned as SP-H (Specific Plan-Holding), consistent with the existing Specific Plan.

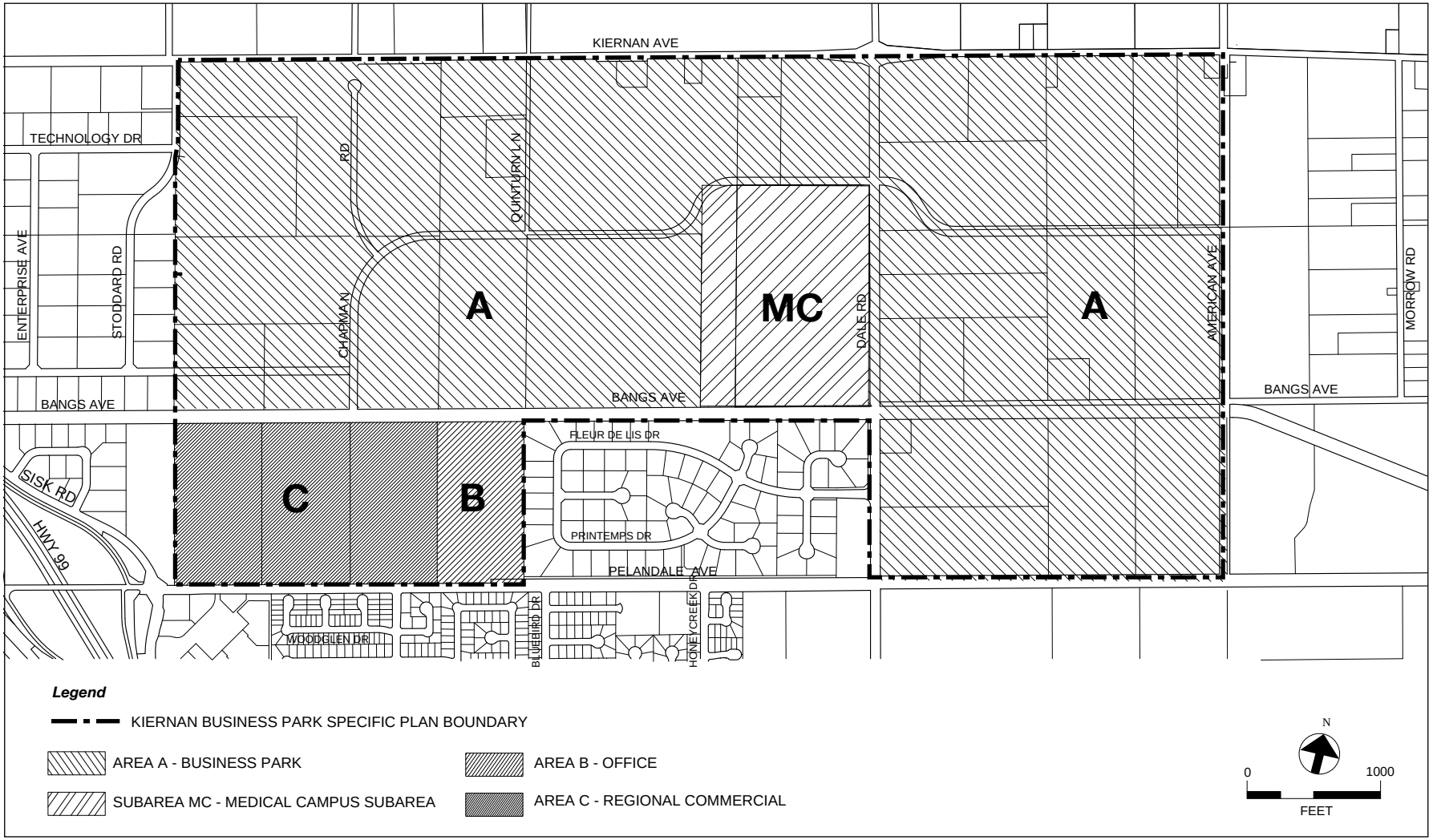
Under the Specific Plan, area planning promotes the development of new business park, office, and regional commercial land uses, as well as compatible institutional land uses such as medical campus and office uses, in the vicinity of Kiernan Avenue. The existing Land Use Diagram identifies three development areas: Area A (Business Park); Area B (Office); and Area C (Regional Commercial). Area A includes a Medical Campus area. As shown in Figure III.2: Existing Kiernan Business Park Specific Plan – Land Use Diagram, most of the Specific Plan area (540 acres of the 614-acre Specific Plan area), including the entire project site, is designated as "Business Park." (See also Table III.2.)

EXISTING CIRCULATION PLAN

The Specific Plan includes provisions to enhance the existing traffic and circulation system with improvements to existing roadways and construction of new arterial and collector streets.

Kiernan Avenue (State Route 219) to the north is an existing east-west, two-lane rural arterial proposed to become a six-lane Class B expressway. Pelandale Avenue to the south is an existing

[6] City of Modesto, *Urban Area General Plan*, Figure II-1, Growth Strategy Diagram, October 2008.



SOURCE: City of Modesto, Turnstone Consulting

FIGURE III.2: EXISTING KIERNAN BUSINESS PARK SPECIFIC PLAN-LAND USE DIAGRAM

Table III.2: Existing Land Use Summary

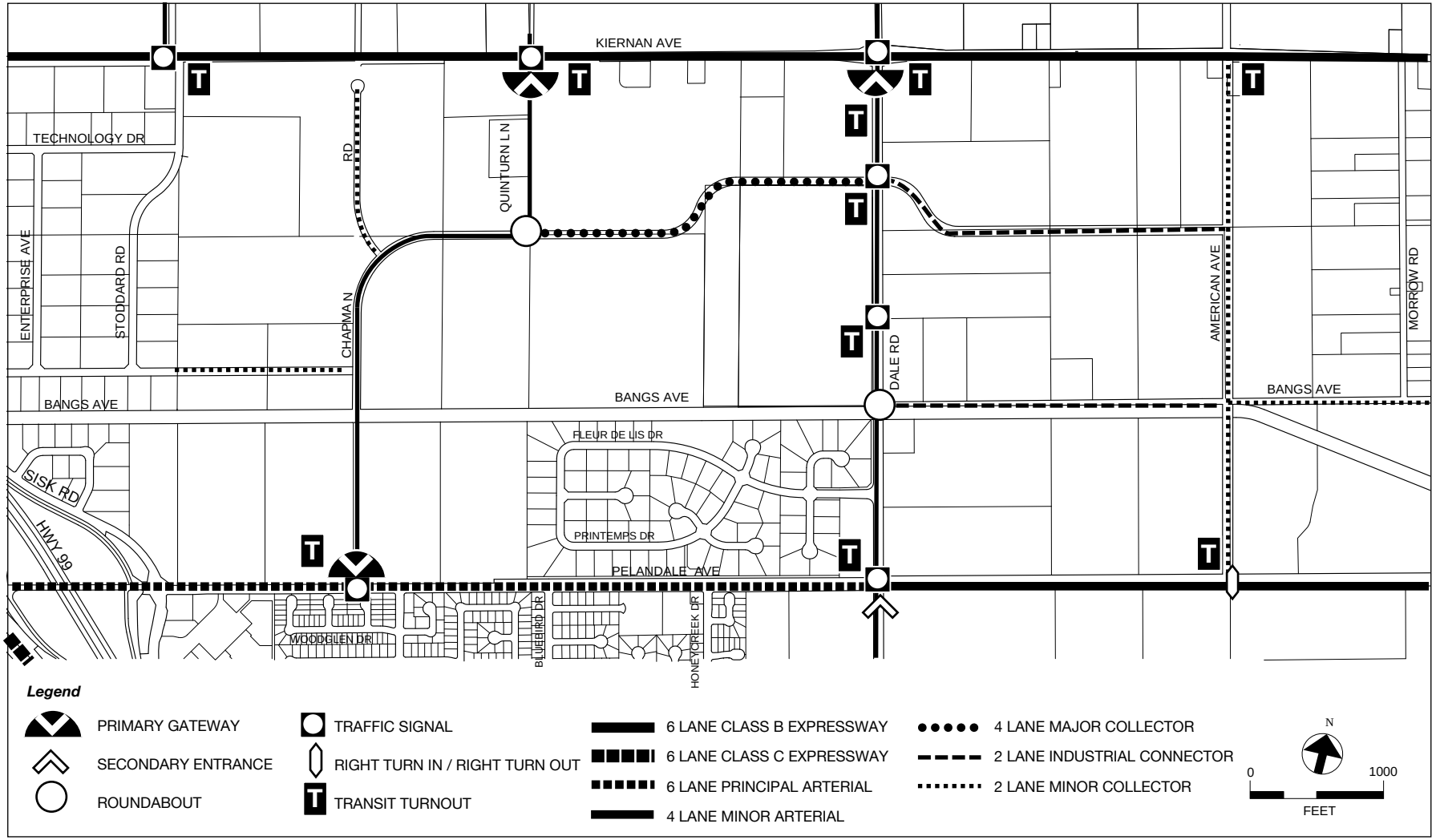
Development Area	Land Use Designation	Acres[1]	Maximum Development Allowed (square feet)
Area A (Business Park)	Business Park	491	8,555,184
	Medical Campus	49	1,425,000
Subtotal		**540**	**9,980,184**
Area B (Office)	Office	19	282,100
Area C (Regional Commercial)	Regional Commercial	55	965,300
Total		**614**	**11,227,584**

Notes:
[1] Acres are approximate.

Source: City of Modesto, Kiernan Business Park Specific Plan, as amended in 2004.

east-west, six-lane principal arterial between Sisk Road and Dale Road. East of Dale Road, Pelandale Avenue is a two-lane roadway that is proposed to become a six-lane Class B expressway. Dale Road is a rural, north-south, two-lane roadway north of Kiernan Avenue. Under the existing Specific Plan it is classified as a four-lane minor arterial. Currently, between Kiernan Avenue and Pelandale Avenue, Dale Road varies from four lanes to six lanes and provides local access. Along the eastern boundary of the Specific Plan area, the Specific Plan calls for a southerly extension of American Avenue. The internal circulation program under the existing Specific Plan is shown in Figure III.3: Existing Kiernan Business Park Specific Plan - Circulation Diagram, and is comprised of the following roadways:

- Quinturn Lane is an existing north-south access road. It is proposed to be a four-lane minor arterial that would extend south from a proposed signalized intersection at Kiernan Avenue to a proposed roundabout with Technology Drive.
- Technology Drive is a proposed internal east-west, four-lane major collector that parallels Kiernan Avenue. From a roundabout with Quinturn Lane, Technology Drive is proposed to extend east for about ¼ mile to the western boundary of the Kaiser Modesto Medical Center. At this boundary Technology Drive is shown to shift to the north a short distance and continue east to a signalized intersection at Dale Road. This stretch of Technology Drive is identified as Healthcare Way and defines the northern boundary of the Kaiser Modesto Medical Center property. The Healthcare Way portion of the roadway was recently constructed as part of the Kaiser Modesto Medical Center.
- Healthcare Way is shown to shift south a short distance east of the Dale Road/Healthcare Way signalized intersection, is classified as a two-lane industrial connector, and is shown to extend east to an intersection at American Avenue, a proposed north-south, two-lane minor collector.
- Technology Drive is proposed to extend west for about ¼ mile from a proposed roundabout with Quinturn Lane. This stretch of Technology Drive is classified as a four-lane minor arterial. Technology Drive is shown to turn into Chapman Road at the midpoint of a southerly curve.



SOURCE: City of Modesto, Turnstone Consulting

FIGURE III.3: EXISTING KIERNAN BUSINESS PARK SPECIFIC PLAN-CIRCULATION DIAGRAM

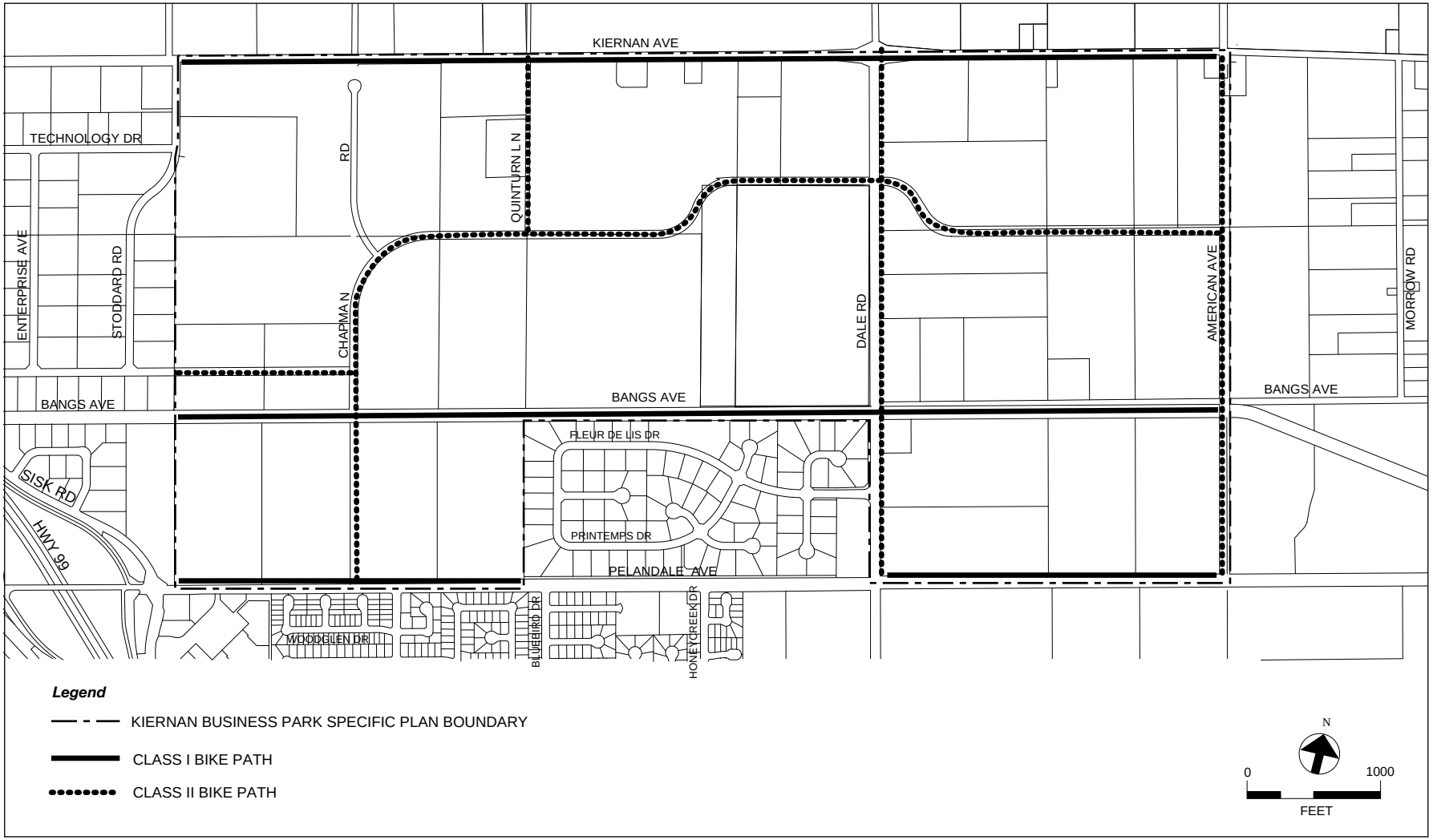
- American Avenue is proposed to be extended from Kiernan Avenue south to Pelandale Avenue. This north-south extension is proposed as a two-lane minor collector.
- Chapman Road is an existing north-south access road that is proposed to become a four-lane minor arterial from the point where it changes over from Technology Drive (the midpoint of the southerly curve) to its intersection with Pelandale Avenue. A portion of Chapman Road extends north from the midpoint of the southerly curve and is proposed to become a two-lane minor collector that ends as a cul-de-sac. The existing intersection of Chapman Road and Kiernan Avenue is proposed to be removed.
- Bangs Avenue is an existing east-west roadway that is proposed to be extended east from the western boundary of the Specific Plan area as a two-lane minor collector. This extension of Bangs Avenue would terminate at Chapman Road. Bangs Avenue is also an existing east-west roadway on the eastern portion of the Specific Plan area. This segment of Bangs Avenue is classified as a two-lane industrial connector from its western terminus at Dale Road east to American Avenue. East of American Avenue, Bangs Avenue is classified as a two-lane minor collector.

Access to the Specific Plan area is through a mix of primary and secondary gateways. Primary gateways on the north are planned at the existing intersections of Kiernan Avenue/Quinturn Lane and Dale Road/Kiernan Avenue and on the south at the proposed intersection of Chapman Road/Pelandale Avenue. A secondary gateway is identified at the signalized intersection of Dale Road/Pelandale Avenue. Two access points to the Kaiser Modesto Medical Center – Healthcare Way and Kaiser Way – are located along Dale Road between Kiernan Avenue and Bangs Avenue. The existing Specific Plan includes a variety of street cross sections including one for two-lane minor collectors. The two-lane minor collector currently provides the following widths for the pedestrian zone, the transition zone, and the vehicular zone within a 64-foot-wide public right-of-way: 4-foot-wide sidewalks, 8-foot-wide landscape strips, 6-foot-wide bike paths, and 14-foot-wide travel lanes (40-foot-wide traveled way).

EXISTING BICYCLE CIRCULATION PLAN

Two east-west Class II[7] bicycle lanes (a striped lane in the roadway) are shown in Figure III.4: Existing Kiernan Business Park Specific Plan – Proposed Bike Paths, and are discussed in the existing Specific Plan: one follows the Technology Drive/Healthcare Way alignment and the other follows the Bangs Avenue right-of-way from the western boundary of the Specific Plan area to Chapman Road. Under the existing Specific Plan, north-south Class II bicycle lanes are proposed along Dale Road between Pelandale Avenue and Kiernan Avenue, along American Avenue between Pelandale Avenue and Kiernan Avenues, and along Quinturn Lane/Chapman Road.

[7] Often referred to as a "bike lane," a Class II bikeway provides a striped and stenciled lane for one-way bicycle travel on either side of a street or highway.



SOURCE: City of Modesto, Turnstone Consulting

FIGURE III.4: EXISTING KIERNAN BUSINESS PARK SPECIFIC PLAN-PROPOSED BIKE PATHS

In addition, east-west Class I[8] bike paths (separated from the roadway) are proposed along Kiernan Avenue between Stoddard Road and American Avenue and along Bangs Avenue (parallel to MID Lateral No. 6) between Stoddard and American Avenue. Both the Kiernan Avenue and Bangs Avenue bike paths would extend from the eastern boundary of the Specific Plan area to its western boundary.

EXISTING PUBLIC FACILITIES PLAN

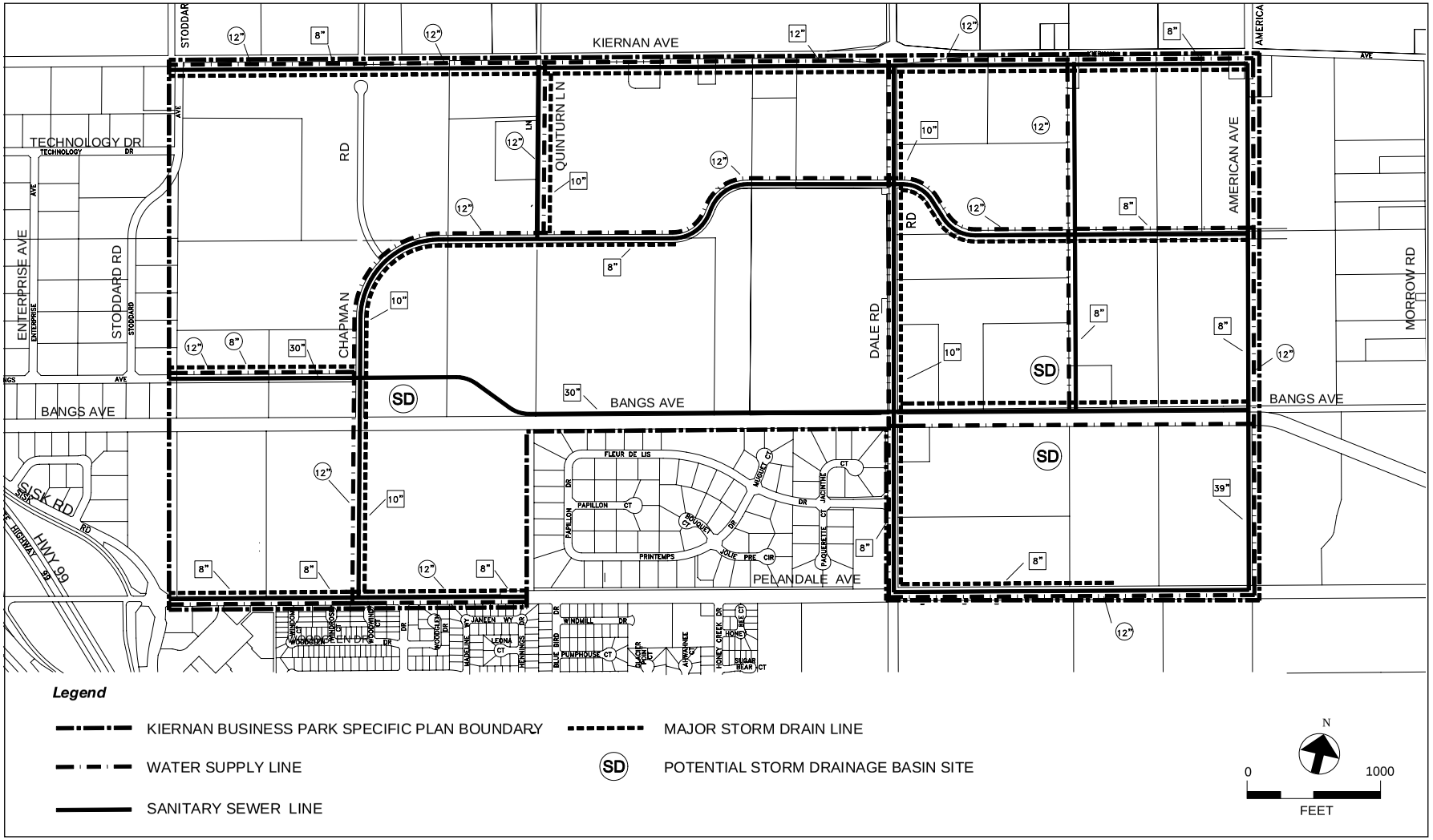
The Specific Plan includes provisions to enhance the existing water supply, storm water, and sanitary sewer distribution and collection systems, with improvements planned along existing and proposed roadways and other rights-of-way. (See Figure III.5: Existing Kiernan Business Park Specific Plan – Illustrative Public Facilities Plan Diagram.) Future development of the existing Specific Plan land uses – Business Park, Medical Campus, Office, and Regional Commercial – would require the installation of new utilities and incremental expansion of the service areas. New connections to water, storm water, and sanitary sewer collection and distribution systems would occur on a project-by-project basis and would be extended from existing City pipelines along Dale Road and Bangs Avenue.

E. PROPOSED PROJECT

SPECIFIC PLAN AMENDMENT

The proposed Kiernan Business Park Specific Plan Amendment #4 project is an amendment to the Kiernan Business Park Specific Plan to redesignate an approximately 39-acre portion of the existing Business Park (BP) land use to approximately 23 acres of Mixed Use (MU) and approximately 16 acres of Medium High Density Residential (MHDR) land uses (see Table III.3). An amendment to the Specific Plan Land Use Plan Diagram would be necessary to accommodate the proposed mix of land uses, and therefore is also proposed with the project. Specific Plan text amendments include development standards and design guidelines for the following areas: an MU area for retail, commercial, and residential uses; and an MHDR area characterized by attached multi-family units at a density of 15 to 24 units per net acre. In addition, the Specific Plan's Circulation Plan Diagram, Two-Lane Minor Collector Cross Street Diagram, Bike Paths Figure, and Illustrative Public Facilities Plan Diagram would be amended to reflect proposed changes to the Specific Plan. The reclassification of Dale Road from Kiernan Avenue to Bangs Avenue (from a four-lane minor arterial to a six-lane principal arterial), Bangs Avenue (from a two-lane industrial connector to a four-lane major collector), and Healthcare Way (from a two-lane

[8] Typically called a "bike path" or "shared use path," a Class I bikeway provides bicycle travel on a paved right-of-way completely separated from any street or highway. The recommended width of a shared use path is dependent upon anticipated usage.



SOURCE: City of Modesto, Turnstone Consulting

FIGURE III.5: EXISTING KIERNAN BUSINESS PARK SPECIFIC PLAN-ILLUSTRATIVE PUBLIC FACILITIES PLAN DIAGRAM

Table III.3: Proposed Specific Plan Land Use Changes

Development Area	Land Use Designation	Acres			Maximum Development Allowed (square feet)
		Existing	Proposed	Change	
Area A (Business Park)	Business Park	491	452	-39	7,875,648
	Medical Campus	49	49	0	1,425,000
	Mixed Use	0	23	+23	684,000
	Medium High Density Residential	0	16	+16	400,000
Subtotal		**540**	**540**	**0**	**10,384,648**
Area B (Office)	Office	19	19	0	282,100
Area C (Regional Commercial)	Regional Commercial	55	55	0	965,300
Total		**614**	**614**		**11,632,048**

Notes:
[1] Acres are approximate.

Source: City of Modesto, Kiernan Business Park Specific Plan, as amended in 2004; Kiernan Business Park Specific Plan, 2008.

industrial connector to a two-lane minor collector, following a 500-foot transition east of Dale as a four-lane major collector), as well as a new street cross section for two-lane minor collectors north of Bangs and a new street cross section for two-lane minor collectors south of Bangs, would be included as part of the amendments to the Specific Plan. The redesign of the street crossing sections for the four lane minor arterial and the two-lane minor collector are also included as part of the amendment to the Specific Plan, as well as the deletion of the Pelendale Avenue cross section. The proposed land use changes to the Specific Plan would require an amendment to the Kiernan/Carver CPD of the *Urban Area General Plan.*

The proposed amendments to the Specific Plan provide a framework under which the 153-acre project site would be developed. Future steps would include the review, process, and approval of Final Development Plans and Tentative Maps. Final Development Plans are site-specific development proposals and must be consistent with the Tentative Subdivision Map (or Tentative Parcel Map), as well as the Specific Plan and the *Urban Area General Plan*. A Final Development Plan and Tentative Map may be submitted together by a project applicant and reviewed concurrently by the City.

PROPOSED LAND USE PLAN

The proposed project would redesignate an approximately 23-acre area immediately east of Dale Road from BP to MU. The proposed project would use the MU designation to promote the development of a retail/commercial center with residential/office and hotel uses immediately east

of Dale Road. This mixed use area is proposed to serve doctors and nurses, hospital employees, hospital support staff, and visitors from the Kaiser Modesto Medical Center located on the west side of Dale Road, as well as local businesses and residents. The proposed project would also redesignate an approximately 16-acre area immediately east of the proposed MU area from BP to MHDR. Approximately 114 acres would remain in the BP land use identified in the existing Specific Plan. The two new land use designations proposed for the project site (MU and MHDR), and the continued BP land use designation are described below. (See Figure III.6: Proposed Land Use Diagram.)

Mixed Use

An MU land use generally refers to a blend of various compatible uses such as retail, professional office, and residential within a distance and configuration conveniently traversed by pedestrians. Allowed land uses in the MU area include, but are not limited to, residential and/or office above retail; separate residential; hotels; restaurants; pharmacies; professional office; art galleries; athletic clubs; and any other uses required to be allowed by state law.

The proposed project would amend the Specific Plan to include specific development standards for the MU portion of the project site. Development standards would govern building density, building orientation and setbacks, building height, residential configurations, and signage.

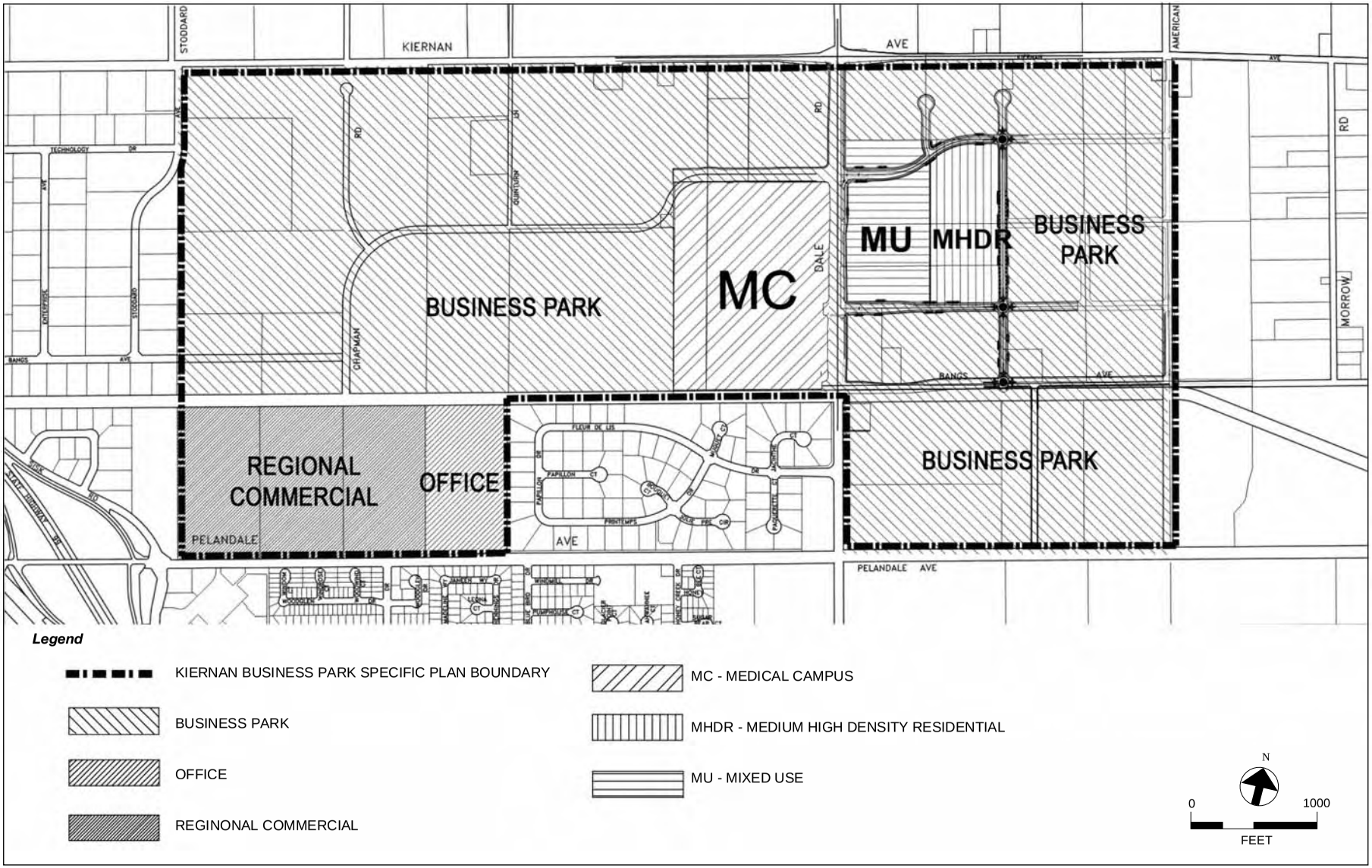
Specific design guidelines for the MU area are also proposed as part of the project to encourage high-quality design and materials, and create streetscapes that are both cohesive and varied.

Specific design guidelines would provide design direction for buildings and development sites, including guidelines related to building articulation, rooflines, entries, rear and side elevations, screening of service areas and equipment, building materials, landscaping, and lighting.

Medium High Density Residential

The MHDR area is an approximately 16-acre area east of the MU area and west of the proposed alignment of “new” Chopra Parkway. Allowed uses in the MHDR area include townhouses, condominiums, garden apartments, conventional apartments, and all other uses permitted by City ordinances, resolutions, and other documents at a density of 15 to 24 dwelling units per net acre (excluding public rights-of-way).

The MHDR area would provide housing in close proximity to BP land uses, the Kaiser Modesto Medical Center, and the MU area and would be developed to a maximum of 262 dwelling units with an average dwelling unit size of approximately 1,500 gross square feet.



SOURCE: Dahlin Group, Turnstone Consulting

FIGURE III.6: PROPOSED LAND USE DIAGRAM

The proposed project would amend the Specific Plan to include specific development standards for the MHDR area. Development standards would govern dwelling unit density, lot size, building orientation and setbacks, building height, building size and mix, and provision of private and public open space.

Specific design guidelines for the MHDR area are also proposed as part of the project to encourage high-quality design and materials and create streetscapes that are both cohesive and varied. Specific design guidelines would provide design direction for buildings and sites in the MHDR area, including guidelines related to building articulation, porches and entries, rooflines, garage doors, rear and side elevations, screening of mechanical equipment, building materials, building colors, fencing, parking, signage, landscaping, and lighting.

Business Park

BP land uses would continue as the prevailing land use in the Specific Plan area and on the project site. The BP land use designation is intended to accommodate the development of modern, employment-intensive office and non-nuisance light industrial space. The principal development and employment-generating uses allowed within this designation are characterized by research, product development, professional office, limited manufacturing and distribution, and commercial business services intended to support the immediate area. Development within this district should support the creation of a campus-like environment for office, light production, and other employment-intensive uses in high-quality single, or multiple-occupant buildings. Approximately 114 acres of the 153-acre project site would remain under the BP land use designation. BP land uses would surround the MU and MHDR areas on the north, east, and south.

The specific development standards and design guidelines for the BP designation, established under the existing Specific Plan (as amended in 2004), continue to apply to the portion of the project site that would remain designated as BP under the proposed project.

Maximum Buildout Land Use Scenario

The maximum amount of development that is likely to be accommodated under the proposed land use plan would include 1,498,224 gross square feet of BP land uses, 684,000 gross square feet of MU development (which could include a 170,000-square-foot, 175-room hotel; 80 apartment units [totaling 64,000 gross square feet]; 79,000 gross square feet of office space; and 371,000 gross square feet of retail), and up to 262 MHDR units, for a maximum total of 517 dwelling units (which could include up to 80 apartment units and 170 hotel rooms described in the MU area) (see Table III.4).

Table III.4: Maximum Buildout Land Use Scenario Summary

Land Use	Gross Acres	Net Acres	DU/Acre[1]	Gross Square Feet[2]	DU/Rooms
Business Park	114.79	95.47		1,498,224	
Mixed Use	23	20.3		684,000	
Residential				*64,000*	80
Hotel				*170,000*	175
Retail				*371,000*	
Office				*79,000*	
Medium High Density Residential	16	13.75	15-24	400,000	262
Substation		2.80			
Rights-of-Way	(21.58)				
TOTAL	**153.79**	**132.32**		**2,582,224**	**517**

Notes:
[1] Dwelling units per acre.
[2] Calculated with net acres.

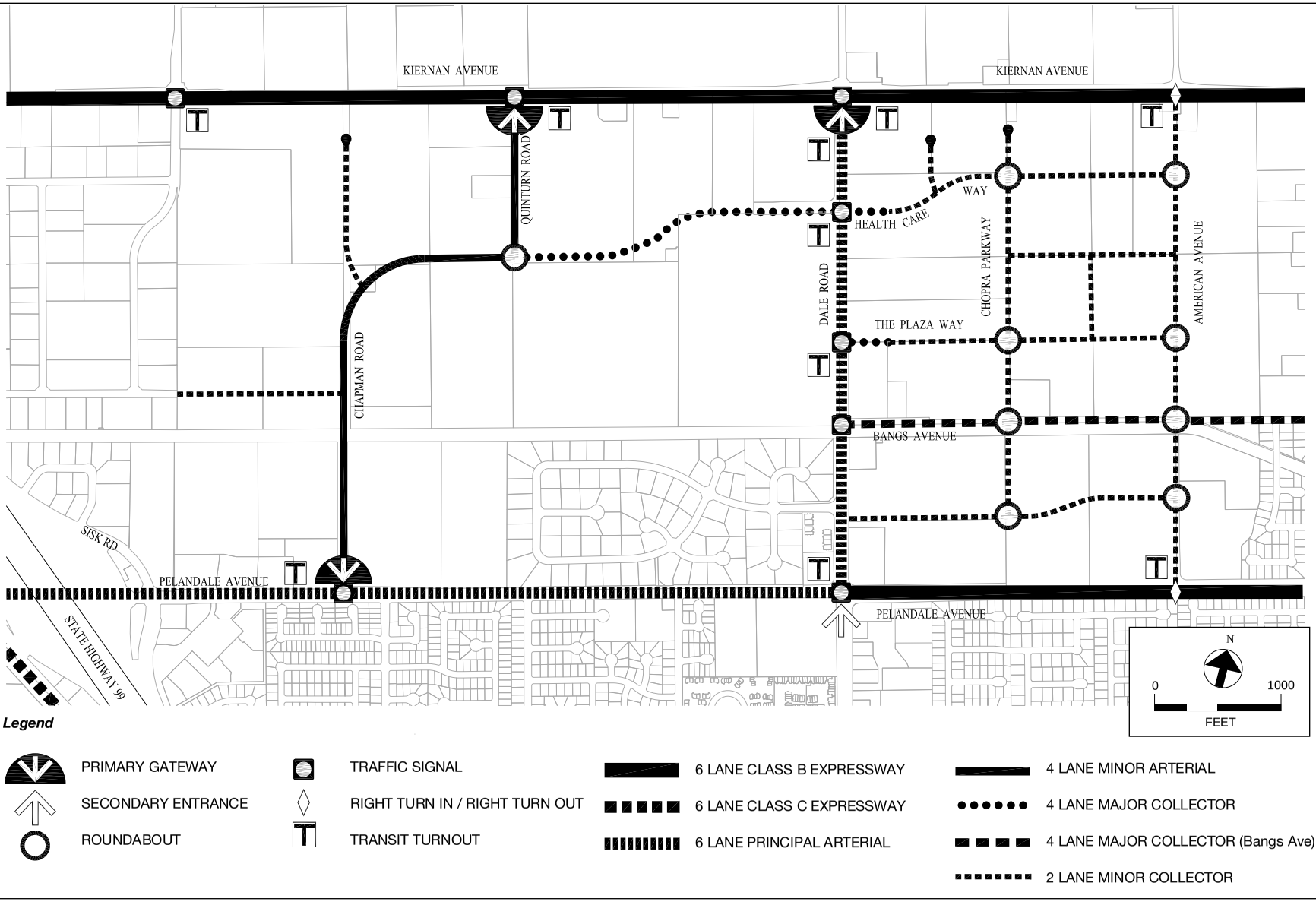
Source: A.C. Martin Partners, Inc., 2006.

PROPOSED CIRCULATION PLAN

The proposed project would include revisions to the Circulation Plan Diagram (see Figure III.7: Proposed Circulation Plan), Street Cross Section Diagrams (see Figure III.8: Proposed Street Cross Section for 2 Lane Minor Collector [East], Figure III.9: Proposed Street Cross Section for 4 Lane Minor Arterial, and Figure III.10: Proposed Street Cross Section for 2 Lane Minor Collector [South]), and to the Bike Paths Figure (see Figure III.11: Proposed Bike Paths) to reflect the proposed changes in the Specific Plan.

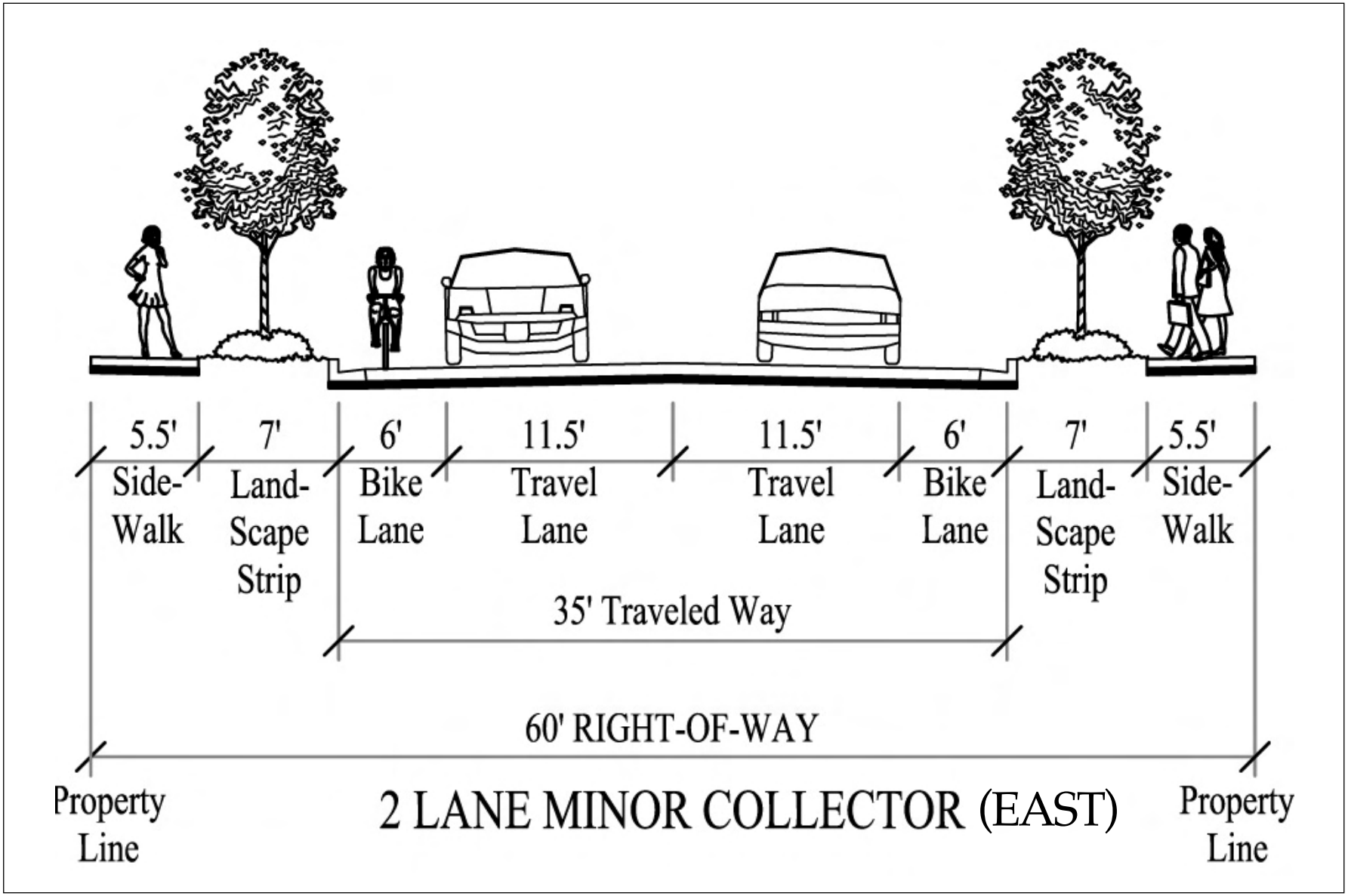
Truck and Automobile Circulation

Existing perimeter roadways that would be changed as part of the proposed project include the reclassification of Dale Road from a four-lane minor arterial to a six-lane principal arterial between Kiernan Avenue and Pelandale Avenue and the reclassification of Bangs Avenue from a two-lane industrial connector to a four-lane major collector. In addition, American Avenue would be extended as a two-lane minor collector from Kiernan Avenue to Bangs Avenue. Internal roads proposed to serve the MU, MHDR, and BP land uses include a planned extension of Healthcare Way and the development of The Plaza Way and Chopra Parkway. Two points of vehicular access for the MU area would be developed between Kiernan Avenue and Bangs Avenue along Dale Road: one at the signalized intersection of Dale Road and Healthcare Way, and the other at a proposed signalized intersection of Dale Road and The Plaza Way. An



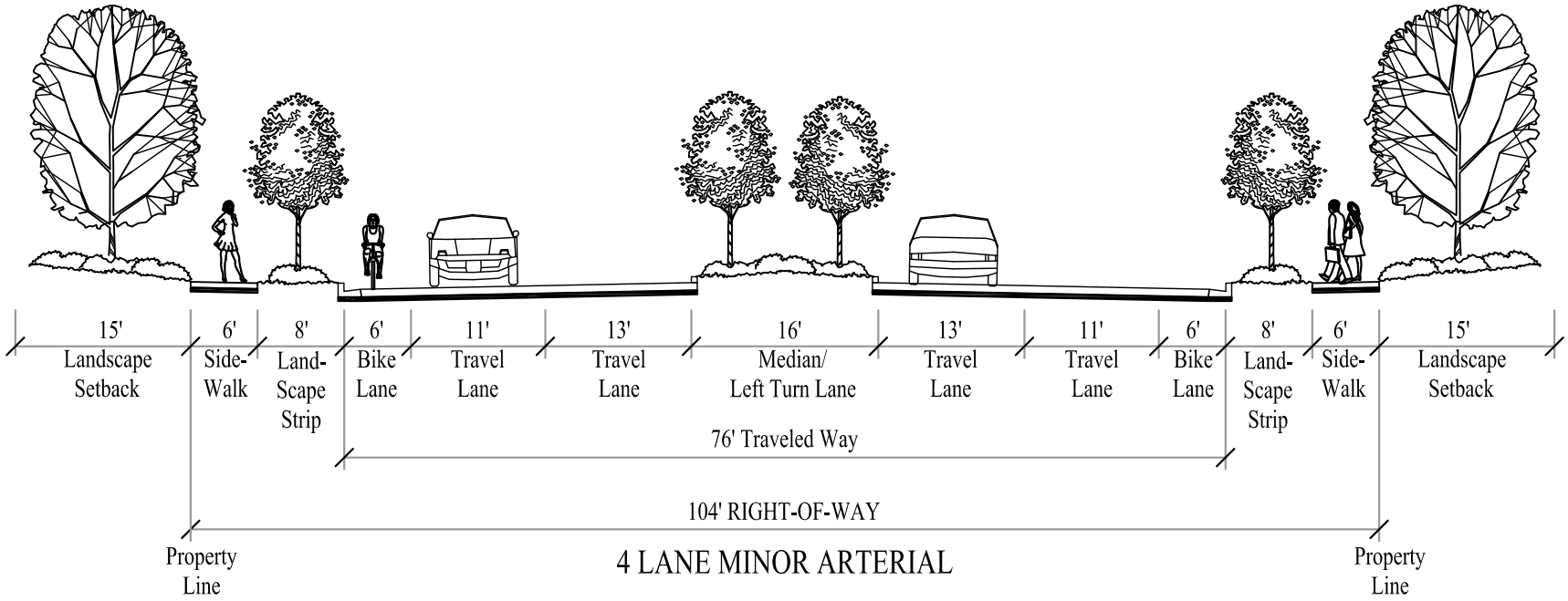
SOURCE: Dahlin Group, Turnstone Consulting

FIGURE III.7: PROPOSED CIRCULATION PLAN



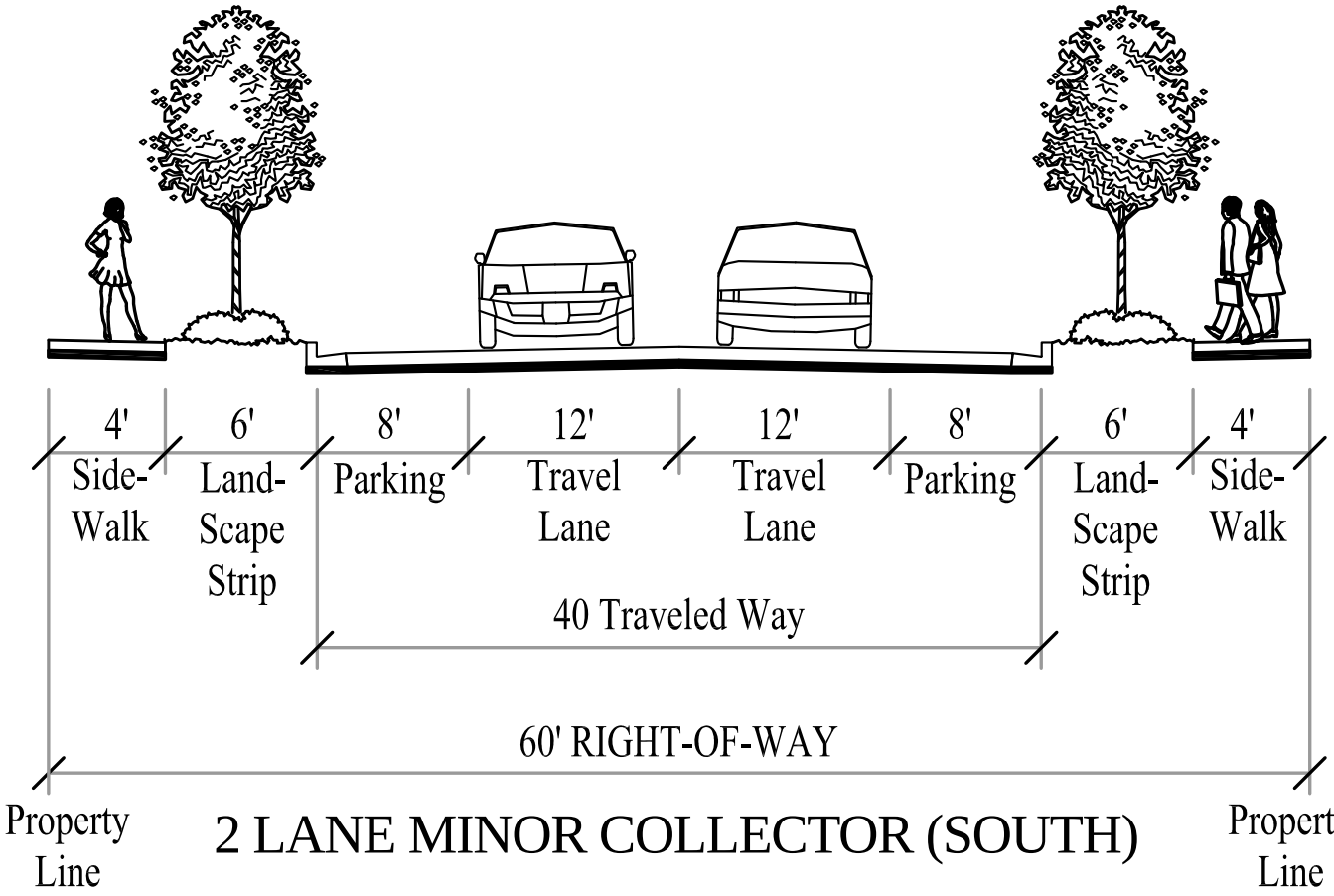
SOURCE: Dahlin Group, Turnstone Consulting

FIGURE III.8: PROPOSED STREET CROSS SECTION FOR 2 LANE MINOR COLLECTOR (EAST)



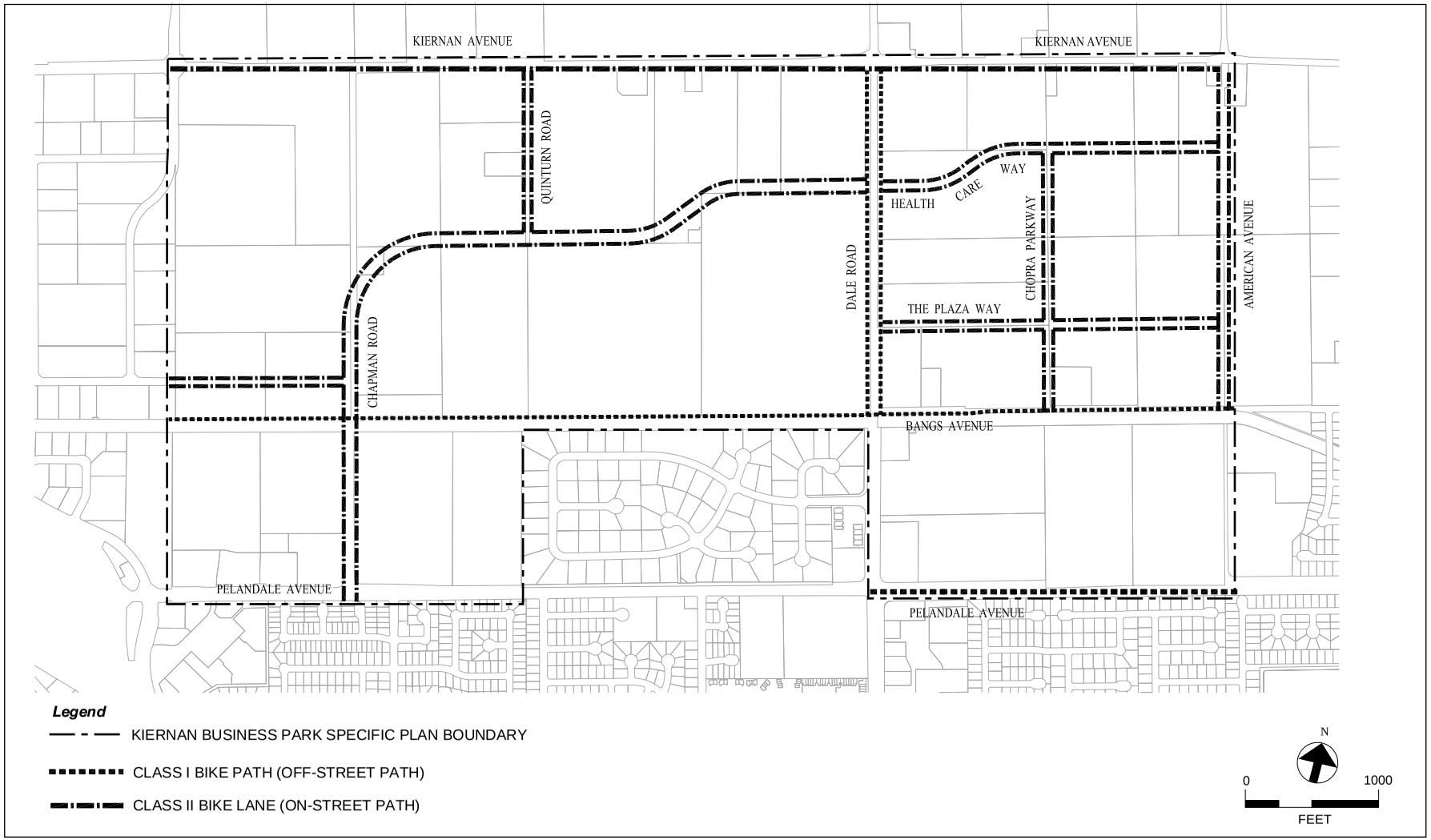
SOURCE: Dahlin Group, Turnstone Consulting

FIGURE III.9: PROPOSED STREET CROSS SECTION FOR 4 LANE MINOR ARTERIAL



SOURCE: Dahlin Group, Turnstone Consulting

FIGURE III.10: PROPOSED STREET CROSS SECTION FOR 2 LANE MINOR COLLECTOR (SOUTH)



SOURCE: Dahlin Group, Turnstone Consulting

FIGURE III.11: PROPOSED BIKE PATHS

additional access point would be developed at the intersection of Bangs Avenue and Chopra Parkway.

Healthcare Way is proposed to extend east from the signalized intersection at Dale Road/Healthcare Way for a short distance before shifting north prior to a roundabout with the proposed Chopra Parkway. Healthcare Way would be reclassified from a two-lane industrial connector to a two-lane minor collector, following a 500-foot transition east of Dale Road from a four-lane major collector. A north-south, two-lane minor collector would extend north for a short distance from Healthcare Way between Dale Road and Chopra Parkway and terminate at a cul-de-sac. The Plaza Way is a proposed east-west, two-lane minor collector extending east from Dale Road, following a 500-foot transition from a four-lane major collector, to a roundabout with Chopra Parkway. The Plaza Way would be aligned opposite Kaiser Way, the southern entry from Dale Road to the Kaiser Modesto Medical Center. Chopra Parkway is proposed as a north-south, two-lane minor collector extending north from Bangs Avenue, through a roundabout with The Plaza Way, to a roundabout with Healthcare Way and terminating at a cul-de-sac north of the roundabout with Healthcare Way. The street cross section for Healthcare Way, the new The Plaza Way, the new Chopra Parkway, and the unnamed collector streets, as shown on Figure III.8, is proposed as a redesign to the existing cross section for two-lane minor collectors. This amendment would alter the widths of the public right-of-way, the traveled way, the pedestrian zone, the transition zone, and the vehicular zone from a 64-foot-wide public right-of-way, a 40-foot-wide traveled way, 4-foot-wide sidewalks, 8-foot-wide landscape strips, 6-foot-wide bike lanes, and 14-foot-wide travel lanes to a 60-foot-wide public right-of-way, a 35-foot-wide traveled way, 5.5-foot-wide sidewalks, 7-foot-wide landscape strips, 6-foot-wide bike lanes, and 11.5-foot-wide travel lanes.

In addition, Healthcare Way and The Plaza Way would extend east from the roundabouts at Chopra Parkway and terminate at the roundabouts at American Avenue. An east-west, two-lane minor collector would be developed to connect American Avenue and Chopra Parkway starting at the midpoint between the roundabouts of Healthcare Way and The Plaza Way with American Avenue. A north-south, two-lane minor collector would connect The Plaza Way and this collector.

The amendment to the Specific Plan also includes the redesign of other roadways within the Specific Plan area but outside of the 153-acre area designated as Kiernan Business Park-East, including the redesign of the cross section for a four lane minor arterial and the redesign of the cross section for two lane minor collectors south of Bangs. The four lane minor arterial (Chapman Road) would be redesigned to alter the widths of the public right-of-way, the traveled way, the pedestrian zone, and the vehicular zone from a 106-foot-wide public right-of-way, a 80-foot-wide traveled way, 5-foot-wide sidewalks, 12-foot-wide travel lanes to a 104-foot-wide right-of-way, 76-foot-wide traveled way, 6-foot-wide sidewalks, 11-foot-wide outside travel lanes

and 13-foot-wide inside travel lanes, as shown on Figure III.10: Proposed Street Cross Section for 2 Lane Minor Collector (South). The two lane minor collectors south of Bangs would be redesigned to alter the width of the public right-of-way, the transition zone, and the travel lanes and to expand the bike lanes into parking lanes from a 64-foot-wide public right-of-way, 8-foot-wide landscape strip, 14-foot-wide travel lanes and 6-foot-wide bike lanes to a 60-foot-wide public right-of-way, 6-foot-wide landscape strips, 12-foot wide travel lanes, and 8-foot-wide parking lanes (see Figure III.9: Proposed Street Cross Section for 4 Lane Minor Arterial).

The Specific Plan amendment also includes the deletion of the Pelendale Avenue cross section, as full buildout of this facility per city standards is currently under construction.

Public Transportation

There are no proposed changes to the location of bus stops or turnouts resulting from the amendments to the existing Specific Plan. In addition, all streets within the Specific Plan area and project site would continue to or would be constructed to accommodate bus routes in accordance with City standards.

Pedestrian and Bicycle Circulation

The east-west Class I bicycle lane that follows the Kiernan Avenue alignment under the existing Specific Plan would be amended to reflect a change of design for the SR 219 (Kiernan Avenue) Widening Project. This bicycle facility would be amended to a Class II bicycle lane.

The east-west Class II bicycle lane that follows the Technology Drive/Healthcare Way alignment under the existing Specific Plan would be amended to reflect the change in alignment of Healthcare Way east of Dale Road and the change in street design for two-lane minor collectors on the project site – Healthcare Way, The Plaza Way, and Chopra Parkway. A new east-west Class II bicycle path is proposed for The Plaza Way, and a new north-south Class II bicycle path is proposed for Chopra Parkway.

The east-west Class II bicycle path on The Plaza Way is proposed to extend east from the proposed intersection of Dale Road/The Plaza Way to the American Avenue/The Plaza Way roundabout. The east-west Class II bicycle path on Healthcare Way is proposed to extend east from the proposed intersection of Dale Road/Healthcare Way to the American Avenue/Healthcare Way roundabout to follow the new alignment of Healthcare Way. The new north-south Class II bicycle path on Chopra Parkway is proposed to extend north from the proposed intersection of Bangs Avenue/Chopra Parkway through roundabouts with The Plaza Way and Healthcare Way to the northern terminus of Chopra Parkway. A new pedestrian circulation program is not proposed as part of the project.

PROPOSED PUBLIC FACILITIES PLANS

Development of the BP, MU, and MHDR land uses on the project site would require the installation of new utilities and the extension of existing services. Electric service lines would be extended onto the project site from existing lines along Dale Road, Bangs Avenue, and Kiernan Avenue. New connections to water and sanitary sewer pipelines would be extended from existing City lines along Dale Road and Bangs Avenue. New storm drainage facilities would be installed throughout the BP area and discharge to detention (infiltration) basins. Details of the specific water, sewer, and storm drainage components proposed as part of the Specific Plan amendment are described below.[9]

Water System

Connections to the existing domestic water system would occur at newly constructed points of connection along Dale Road at the intersections of Healthcare Way and The Plaza Way, and along Bangs Avenue at the intersections of Chopra Parkway and American Avenue. (See Figure III.12: Proposed Water Facilities System.) Proposed 10-inch to 12-inch water distribution pipelines would be installed following the alignments of Healthcare Way, The Plaza Way, Chopra Parkway, and other planned roads within the project site.

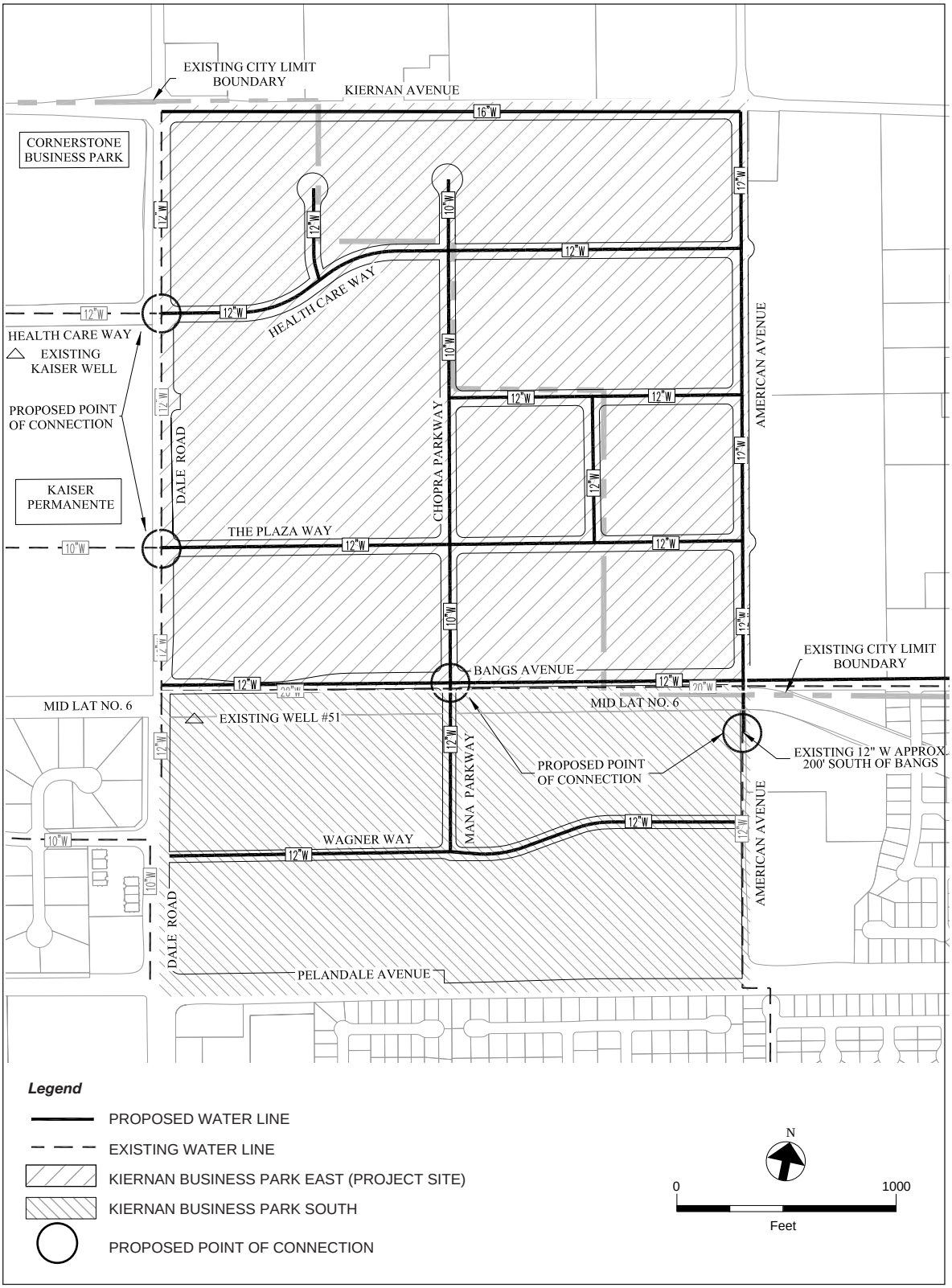
Sanitary Sewer System

Connections to the existing 12-inch to 30-inch sanitary sewer system along Dale Road and Bangs Avenue are part of the proposed Specific Plan Amendment. (See Figure III.13: Proposed Sanitary Sewer Facilities System.) Proposed sanitary sewer facilities serving the project site area would consist of eight-inch pipelines that follow the alignments of Healthcare Way, The Plaza Way, Chopra Parkway, and other roads on the project site.

Storm Drainage System

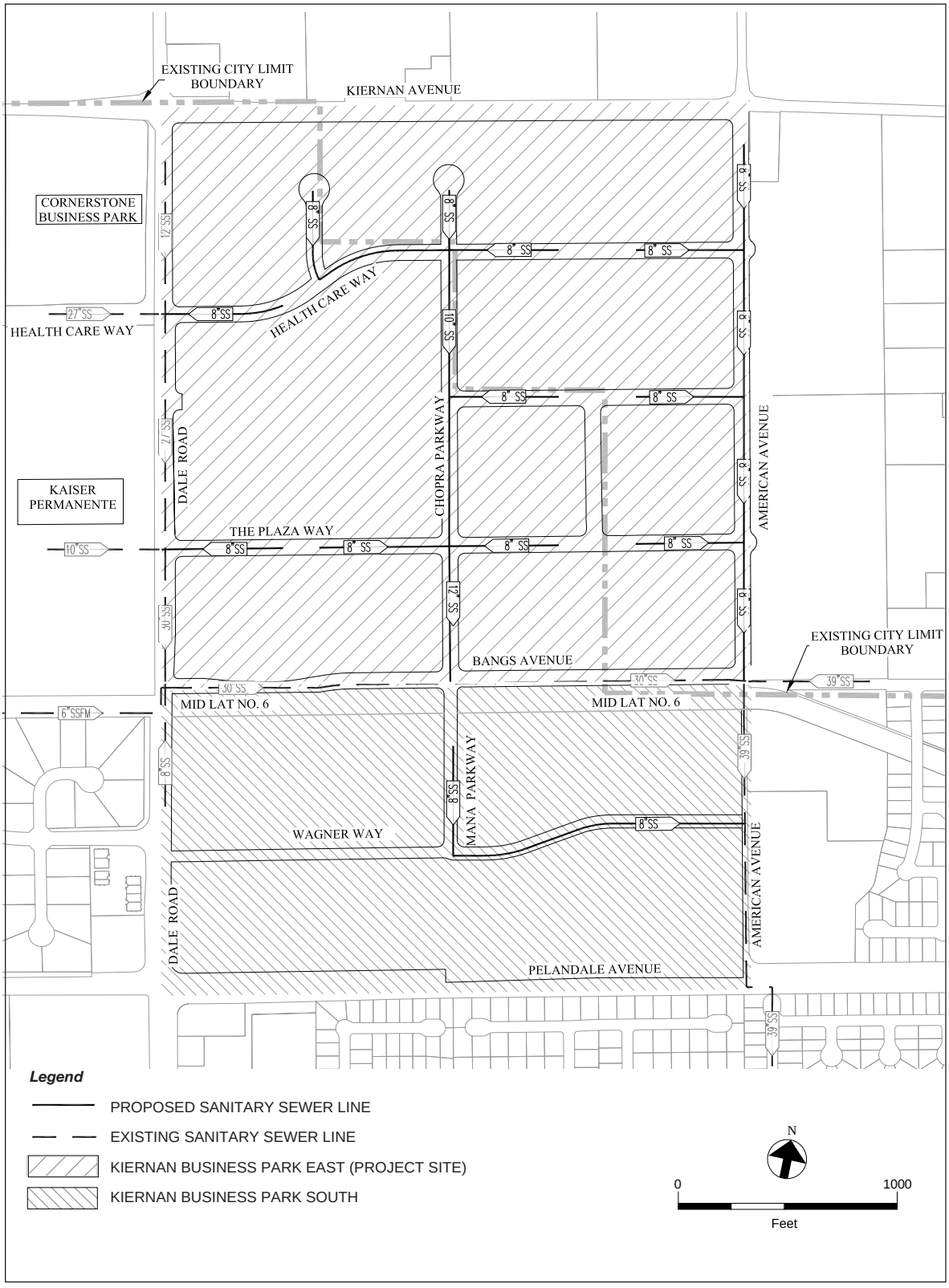
Storm drainage on the project site would be served by a combination of on-site detention (infiltration) basins, linear detention (infiltration) basins adjacent to public streets, a 15-acre

[9] The Specific Plan area has been subdivided into three sub-areas for the purposes of infrastructure planning and installation. These are Kiernan West, which is west of Dale Road and consists of the Kaiser Modesto Medical Center; Kiernan East, KBPE (the project site), which is east of Dale Road and north of Bangs Avenue; and Kiernan South, KBPS, which is south of Bangs Avenue and east of Dale Road. Fair share infrastructure requirements based on the proposed land uses have been considered for these sub-areas. KBPE and KBPS will share in roadway and storm drainage improvements and their associated costs. In addition, KBPE and KBPS will be required to participate in reimbursement to Kaiser based on Community Facilities District 2007-1 for the Kaiser-built roadway improvements that benefit these two sub-areas.



SOURCE: Dahlin Group, Turnstone Consulting

FIGURE III.12: PROPOSED WATER FACILITIES SYSTEM



SOURCE: Dahlin Group, Turnstone Consulting

FIGURE III.13: PROPOSED SANITARY SEWER FACILITIES SYSTEM

shared terminal detention basin, and drainage discharge into MID Lateral No. 6. (See Figure III.14: Proposed Storm Drainage Facilities System.)

In addition, low-impact infiltration drainage facilities are proposed throughout the project site to promote infiltration of stormwater and to increase the quality of the stormwater runoff. Typical infiltration drainage facilities may include, but not be limited to, the following:

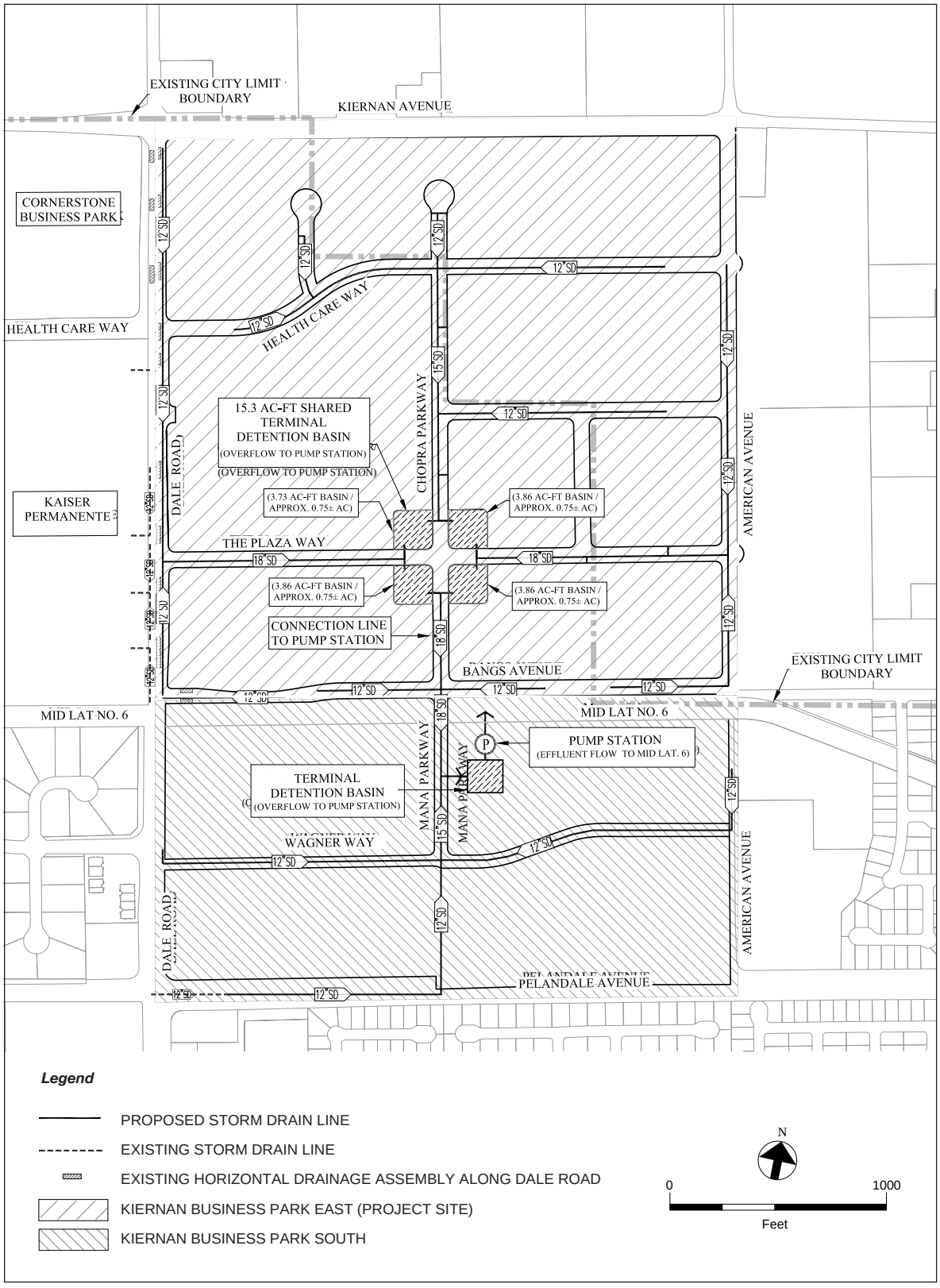
- Roof drains on buildings that would direct water to a settlement basin prior to discharge to an infiltration bed or directly to green swales;
- Slotted curbs and green swales parallel to each side of public roadways;
- Green swales parallel to each side of private roads;
- Rainfall gardens, green medians, or green swales adjacent to or within parking areas; and
- Small depressions or swales within open spaces.

LANDSCAPING AND EXTERIOR LIGHTING

Development of the BP, MU, and MHDR land uses on the project site would introduce landscaping, screening, and exterior lighting at different locations. These areas would include, but would not be limited to, vehicular and pedestrian building entrances, outdoor storage and loading areas, utility areas, refuse areas, the perimeter of properties, areas along sidewalks and trails, in parking lots, and areas along new and improved roads. The development standards for landscaping, screening, and exterior lighting established under the existing Specific Plan would be applicable throughout the 614-acre Specific Plan area including the project site, and would be applied when specific development proposals are brought forward. These standards would ensure that landscaping and lighting improvements along roadways would be consistent with City standards. In addition, exterior lighting would be shielded to avoid substantial light and glare while providing minimum safe lighting levels.

FACILITIES MASTER PLAN AND INFRASTRUCTURE FINANCING PLAN

The proposed project also includes adoption of a Facilities Master Plan (FMP) and Infrastructure Financing Plan (IFP). The FMP will provide a detailed analysis and description of the public facilities required to serve the Specific Plan. The FMP identifies the size and capacity of public facilities and the layout of these facilities in relation to the properties. The public facilities within the scope of the FMP are the street system, sewer, water, storm drainage, and public utilities. The IFP will provide the cost basis and funding mechanisms necessary to construct the public facilities. The primary funding mechanism to construct and maintain certain public infrastructure, as well as certain public services and amenities, is a special taxing district commonly known as a Community Facilities District (CFD). The IFP coordinates the developer's improvement responsibility, fees from the CFD, and other existing City fees.



SOURCE: Dahlin Group, Turnstone Consulting

FIGURE III.14: PROPOSED STORM DRAINAGE FACILITIES SYSTEM

E. PROJECT SCHEDULE

Construction is anticipated to begin in mid- to late-2009. Project buildout is expected over approximately the next five years, between 2011 and 2016, depending on economic and market conditions.

F. PROJECT APPROVALS

CITY OF MODESTO

- Review of the EIR pursuant to CEQA and adoption of a Mitigation Monitoring and Reporting Plan. The City of Modesto must certify an EIR prior to its approval of any of the project applications listed below. This EIR is being prepared to fulfill this requirement.
- Adoption of Kiernan Business Park Specific Plan amendments. Proposed amendments would amend the Land Use Plan Diagram to show the change in land use designation from BP to MU and MHDR; would amend the Circulation Plan Diagram to reflect changes to the planned roads and to show new roads; would amend the Bike Paths Figure to reflect changes to the planned bicycle facilities and to show new bicycle facilities; would amend the Illustrative Public Facilities Diagram to reflect changes to the planned water, storm, and sanitary sewer pipeline alignments and to show new water, storm, and sanitary sewer pipelines; would introduce a Street Cross Section Diagram for Healthcare Way, The Plaza Way, and Chopra Parkway; would amend the text of the Land Use chapter of the *Specific Plan* to include project-specific Development Standards and Design Guidelines; and would amend the text of the Circulation and Access and Public Facilities chapters of the Specific Plan to reflect the proposed changes.
- Adoption of an amendment to the *Urban Area General Plan*. The proposed amendment would redesignate the 39-acre area proposed to be modified in the Specific Plan of the Kiernan/Carver CPD of the *General Plan* from BP to MU.
- Approval of a Development Agreement, if applicable.
- Approval of a Tentative Subdivision Map and/or tentative parcel map, if applicable.
- Adoption of a resolution initiating annexation of a 67-acre portion of the project site.
- Adoption of a resolution to approve rezoning.
- Adoption of an FMP and an IFP.
- Formation of a CFD.

STANISLAUS LOCAL AGENCY FORMATION COMMISSION

- Approval by the Local Agency Formation Commission (LAFCO). LAFCO will review reorganization of the amended Kiernan Business Park Specific Plan, including the annexation of the 67-acre portion of the 153-acre project site to the City of Modesto and the Modesto Municipal Sanitary Sewer District No. 1, and simultaneously detach this portion of the project site from the Salida Fire Protection District.

MODESTO IRRIGATION DISTRICT

- Approval by MID. MID must review the proposed storm water drainage system, which proposes discharge to MID Lateral No. 6. Upon acceptance of the proposed storm water drainage system, MID would enter into a Drainage Agreement with the City.

IV. ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

A. LAND USE AND PLANNING

This section describes the existing land uses in the vicinity of the project site, reviews the land use regulatory setting of the project area, and evaluates the general land use compatibility of the Kiernan Business Park Specific Plan Amendment #4 with respect to surrounding existing land uses. The Initial Study found that the project would have a potentially significant impact as it could conflict with an applicable land use plan, policy, or regulation of environmental effect (Appendix A, pp. 50-52). Therefore, this topic is discussed in this EIR section.

SETTING

EXISTING LAND USES

Regional and Local Setting

The City of Modesto is located within California's San Joaquin Valley, approximately 30 miles south of Stockton, 70 miles south of Sacramento, and 80 miles east of Oakland. Nearby Central Valley cities include Patterson to the west; Salida, Ripon, and Manteca to the northwest; Riverbank to the northeast; and Ceres, Turlock, and Merced to the south. Fertile soils, the availability of water, and a nearly year-round growing season make this region one of the most productive agricultural areas in the nation, supporting a diverse assortment of crops sold in markets around the world. Modesto is located in the center of these rich agricultural lands. With a current population of 208,107,[1] Modesto is the economic and social center of Stanislaus County.

Project Vicinity

The 153-acre Kiernan Business Park-East site is located in both the City of Modesto and Stanislaus County, adjacent to the northern city limit of the City of Modesto. It is situated about five miles north of Modesto's downtown core, in the eastern portion of the Kiernan Business Park Specific Plan area, a 614-acre area in the western portion of the 1,385-acre Kiernan/Carver Comprehensive Planning District (CPD). The majority of land in this CPD is outside of the Modesto city boundary, and it has been designated by the City of Modesto as an area that will absorb future urban development.

[1] State of California, Department of Finance, E-1 City / County Population Estimates with Annual Percent Change, Stanislaus County in May 31, 2007.

The project site is bounded on the west by Dale Road, on the north by Kiernan Avenue, on the east by a line extending south from American Avenue and parallel to Dale Road, and on the south by Bangs Avenue and Modesto Irrigation District (MID) Lateral No. 6. There is a mix of medical, agricultural, commercial, and residential land uses in the vicinity of the project site. Directly west across Dale Road is the Kaiser Modesto Medical Center and the Cornerstone Business Park. Unincorporated Stanislaus County lands to the north across Kiernan Avenue are primarily in agricultural use, and there is a produce market and gift shop at the northeast corner of Kiernan Avenue and Dale Road. To the east, between the proposed north-south extension of American Avenue and existing Morrow Road, are agricultural parcels with some individual home sites. Immediately south of the project site across Bangs Avenue and MID Lateral No. 6 are an event center/catering business and two churches. Low-density residential neighborhoods and commercial uses are located further south of the project site across Pelandale Avenue. The Fleur de Ville residential neighborhood is located south and west of the project site, south of MID Lateral No. 6.

Project Site

The project site consists of 16 parcels. Of these, nine parcels, generally comprising the southwest portion of the project site, are within the existing City limits (about 86 acres). The remaining seven parcels, generally comprising the northeast portion of the project site, are outside of the existing City limits (about 67 acres). These parcels are in unincorporated Stanislaus County within the City's Sphere of Influence.

Currently, the majority of parcels that make up the project site are in agricultural production. Some of these parcels also include single-family homes and/or structures related to agricultural production. There are 10 separate farmhouse sites, 1 with access to Dale Road, 6 with access to Kiernan Avenue, and 3 with access to Bangs Avenue. A commercial nursery and landscaping service is located on a 4.2-acre parcel at the northeast corner of Dale Road and Bangs Avenue; a welding company is located at the northeastern corner of a 9.8-acre parcel fronting Kiernan Avenue near its intersection with American Avenue; and the MID's Bangs Substation is located on the southeast corner of a 19.6-acre parcel fronting Bangs Avenue near its intersection with American Avenue. When surveyed in July 2008, irrigated row crops were the dominant agricultural use (approximately 54 acres) with some parcels used for orchard (approximately 32 acres). Other uses include approximately 8 acres of irrigated pasture, approximately 36 acres of disturbed land (ruderal and developed) that is not in agricultural production, and 10 acres of fallow land.

REGULATORY FRAMEWORK

Stanislaus County

Upon annexation, the County's *General Plan*, zoning, and other land use designations would cease to apply. Because the project sponsors contemplate annexation of the seven parcels located in Stanislaus County, conformity with the *Stanislaus County General Plan* and Zoning Ordinance, which regulates land uses in unincorporated Stanislaus County, is not evaluated. However, the County *General Plan* and Zoning Ordinance are discussed below for informational purposes.

County General Plan and Zoning

The County's *General Plan* is a comprehensive, long-term plan for the development of Stanislaus County, consisting of a statement of goals, policies, and implementation measures. The County *General Plan* identifies the proposed location, character, and extent of land uses within the County through *General Plan* land use designations. The County's zoning ordinance implements the County's *General Plan* by establishing and defining zoning districts and the specific regulations and standards that apply to each one, including the regulations and standards that govern uses of land, density, dimensions of structures, and sites.[2] County zoning district maps establish and indicate the location and boundaries of the zoning districts and are incorporated as part of the County zoning ordinance by reference. The County parcels in the project area will retain their existing *General Plan* and zoning until the County zoning district maps are amended to rezone the parcels, under specific development proposals, or until they are annexed by the City of Modesto (at which point, County zoning would cease to apply).

The project site parcels located in Stanislaus County are zoned A-2-10-UT (General Agriculture – Urban Transition) under the Stanislaus County zoning ordinance. This establishes agriculture as the primary use for such designated lands. The purpose of the Urban Transition designation is to ensure that land remains in agricultural use until urban development consistent with a city's (or unincorporated community's) general plan designation is approved. The Urban Transition designation is appropriate for undeveloped land located within a city or town's sphere of influence.[3] Section 21.12.20 of the County zoning ordinance defines "agriculture" as "the tilling of the soil, raising of crops, horticulture, viticulture, small livestock farming, dairying, or animal husbandry, including all uses customarily incidental thereto." The Agriculture designation recognizes the value and importance of agriculture by acting to preclude incompatible urban development within agricultural areas. It is intended for areas of land that are currently or

[2] Stanislaus County, *Stanislaus County Code*, Title 21-Zoning Ordinance.
[3] Stanislaus County, *Stanislaus County General Plan*, 1994, p. I-25.

potentially desirable for agricultural use by virtue of their location, topography, parcel size, soil classification, and water availability, as well as land uses adjacent to them. The Agriculture designation also allows dwelling units, limited commercial services, and light industrial uses related to agriculture, provided these do not conflict with the primary agricultural use.

City of Modesto

Urban Area General Plan (2008)

Modesto's *General Plan* contains growth strategy policies relevant to the proposed project. These policies help define the quality, quantity, and direction of future urban growth, and are summarized below. The *General Plan* identifies three distinct concentric areas: the Redevelopment Area, which generally includes the historic downtown core; the Baseline Developed Area, which generally includes areas that are substantially developed with urban uses; and the Planned Urbanizing Area, which forms the outer perimeter of Modesto's *General Plan* Urban Area. The *General Plan* identifies policies specific to each of these areas.

The project site is located within the Planned Urbanizing Area. The Planned Urbanizing Area is defined in the *General Plan* as a 19,500-acre area where future development "will occur on land which is predominantly flat, vacant and/or developed with agricultural uses, and minimally if at all served with urban services and infrastructure including roads."[4] The Planned Urbanizing Area is expected to absorb substantial urban development in a comprehensively planned manner.

To ensure that growth in the Planned Urbanizing Area occurs in a planned manner, the *General Plan* designates 25 CPDs within the Planned Urbanizing Area, through which the *General Plan* policies associated with each CPD are implemented. CPDs are implemented through preparation and adoption of a Comprehensive Plan. The project site is located within the Kiernan/Carver CPD.

The *Urban Area General Plan* (2008) contains a number of policies applicable to land use within the project site area, as described below.

> Chapter II. Community Growth Strategy
>
> Policy II-B.1[b]: Provide timely infrastructure.
> As the City expands and vacant land becomes developed, infrastructure such as roads, sewer, water, and storm drainage is necessary to support that development. As the City directs the extension of this infrastructure, economic development opportunities within the City's limits should receive the highest priority for receiving such infrastructure. The City shall establish the timely provision of infrastructure to support the policies in Section II-B.2.

[4] City of Modesto, *Urban Area General Plan*, October 2008, p. II-2.

Policy II-C.1 [a]: In general, maintenance of a five-year supply of available vacant and agricultural land served with urban infrastructure will be desirable.

Policy II-C.1 [b]: Urban development should be kept as contiguous as possible in order to avoid premature urbanization of valuable farm land, foster resident convenience, and provide for economy in City services.

Policy II-C.1 [d]: Urban growth should be directed, as long as economically feasible, to areas currently served with City services.

Chapter III. Community Development Policies

Policy III-C.1[b]: Section 65803 of the Government Code indicates that in charter cities such as Modesto, zoning need not be consistent with the General Plan. Notwithstanding, development plans within the Baseline Developed Area may be found consistent with the General Plan if they are consistent with the Zoning Code and Map and the various policies of the General Plan. Zone changes may be approved anywhere in the General Plan Area, if the following findings are made:

(1) The requested zone change is required by public convenience or necessity.
(2) The requested change will result in an orderly planning use of land resources.
(4) Adequate environmental mitigation has been provided through the implementation of appropriate mitigation measures established by the Master Environmental Impact Report and any supplements to the MEIR. Traffic and public facility issues are particularly relevant in this analysis.

Policy III-C.1[c]: Additional vehicles to guide future development, in both the Baseline Developed Area and the Planned Urbanizing Area, include: Neotraditional Planning policies (C-3, below) and the Neighborhood Plan Prototype policies (C-2, below).

Policy III-C.1[d]: Specific Plans, adopted pursuant to Section 65450 et seq. of the California Government Code, may be used for the systematic implementation of the General Plan for all or part of the area covered by the General Plan. Accordingly, each Specific Plan shall include a text and a diagram or diagrams which specify all of the following in detail: (1) The distribution, location, and extent of the uses of land, including open space, within the area covered by the plan. (2) The proposed distribution, location, and extent and intensity of major components of public and private transportation, sewage, water, drainage, solid waste disposal, energy, and other essential facilities proposed to be located within the area covered by the plan and needed to support the land uses described in the plan. (3) Standards and criteria by which development will proceed, and standards for the conservation, development, and utilization of natural resources, where applicable. (4) A program of implementation measures including regulations, programs, public works projects, and financing measures necessary to carry out the preceding items (1), (2), and (3).

Specific Plans may incorporate any of the Land Use Designations presented on the Land Use Diagram, and they may be used within any Growth Strategy Designation: Redevelopment Area, Baseline Developed Area, or Planned Urbanizing Area. Where the Neighborhood Plan Prototype is applied to a Comprehensive Planning District, it shall be implemented by a

Specific Plan. Any such Specific Plan shall cover a minimum of approximately 480 acres of area or be based on a logical unit of infrastructure, such as an elementary school service area or park planning area.

Policy III-C.3[a]: Communities or neighborhoods should be compact so that housing, jobs, daily needs, and other activities are within easy walking distance of each other. Communities should include a mix of compatible land uses within close proximity.

Policy II-C.3[c]: Roadways should be designed to allow for safe and convenient pedestrian accessibility.

Policy II-C.3[d]: Communities or neighborhoods should contain a diversity of housing types to enable citizens from a wide range of economic levels and age groups to live within their boundaries.

Policy II-C.3[e]: Businesses within a community or neighborhood should provide a range of job types for the community's or neighborhood's residents.

Policy II-C.3[f]: The location and character of the community or neighborhood should be consistent with a larger transit network.

Policy II-C.3[g]: Each community or neighborhood should have a center focus that combines commercial, civic, cultural, and recreational uses.

Policy II-C.3[h]: Each community or neighborhood should contain an ample supply of specialized open space in the form of squares, greens, and parks whose frequent use is encouraged through placement and design. Linkages should be provided between recreational facilities and surrounding neighborhoods.

Policy II-C.3[i]: Streets, pedestrian paths, and bike paths should contribute to a system of fully connected and interesting routes to all destinations. Their design should encourage pedestrian and bicycle use by being small and spatially defined by buildings, trees, and lighting; and by discouraging high speed traffic. Wherever possible, natural terrain, drainage, and vegetation should be preserved with superior examples contained within parks or greenbelts.

Policy II-C.3[j]: The City will implement minimum lighting and reflective surfaces standards for new development, to minimize the impact of the proposed plan's contribution to introduced or increased light and glare. These standards are reflected in the adopted Small Lot Development Guidelines and Design Guidelines for Commercial and Industrial Development.

Policy III-D.1[a]: Since each Comprehensive Planning District contains a number of properties, unified direction from affected property owners should be encouraged, particularly for privately-initiated applications. In the case of disparate or unknown development intentions, the City may proactively seek consensus from affected property owners.

Policy III-D.1[b]: The Specific Plan(s) within each Comprehensive Planning District should establish clear and comprehensive implementation tools and shall follow the policies and procedures as outlined in the City of Modesto's adopted Specific Plan Procedures and Preparation Guide, which identify all subsequent land use approvals required to be consistent with the Comprehensive Plan.

Policy III-D.1[d]: The City may adopt guidelines for development projects as directed by City Council. These guidelines shall serve as minimum expectations.

Policy III-D.1[f]: Specific Plans, as defined in Chapter VIII, shall be used for the implementation of the Comprehensive Planning Districts presented in Figure III-1. Specific Plans, as defined in Section 65450 et seq. of the California Government Code, are particularly suited for this purpose.

Kiernan/Carver Comprehensive Planning District

The Kiernan/Carver CPD is a 1,385-acre Comprehensive Planning District intended to create a business park, village residential, medical campus use, and regional commercial development adjacent to the northeast boundary of Modesto. About 660 acres are designated for Business Park that would front along Pelandale Avenue and Kiernan Avenue. About 650 acres are designated for Village Residential uses east of future American Avenue, within the eastern half of the CPD. An approximately 75-acre regional commercial center area is designated on Pelendale Avenue, in the CPD's southwestern corner. The project site is located in the central area of the Kiernan/Carver CPD, in an area designated Business Park (BP).

The entire project site is currently designated BP under the General Plan Land Use Diagram. Modesto's *General Plan* establishes the general definition and policy direction for the BP designation. According to the *General Plan*, the BP designation provides for the development of areas of light industrial and employment-intensive uses, and opportunities to produce an environment conducive to industries and employers seeking an aesthetically attractive "campus-like" setting. Regional Commercial uses are also permitted in Business Parks. BP designation areas should be adjacent to and have access to major transportation corridors. The recommended overall Floor Area Ratio (FAR) in the BP land use designation should be no greater than 0.40 square feet of building area per square foot of gross area of the site.

The following *General Plan* policies for the Kiernan/Carver CPD apply to the project site:

Policy III-D. Exhibit III-11, 1 – Overview:

This 1,385-acre Comprehensive Planning District proposes a 570-acre Business Park fronting on the future Pelandale Avenue and Kiernan Avenue expressways, and 730 acres of Village Residential uses on the eastern half of the Comprehensive Planning District. Also are 80 acres of Regional Commercial on Pelandale Avenue.

Policy III-D. Exhibit III-11, 3[a]: Land Use Types:

- 730 acres designated "Village Residential"
- 570 acres designated "Business Park" which lie outside the City's Sphere of Influence
- 80 acres designated "Regional Commercial"

Approximately 21,970 jobs

Approximately 4,620 dwelling units

Policy III-D. Exhibit III-11, 4[b]: Supplemental Land Use Policies:

In addition, the Comprehensive Plan shall also address the following land use policies which apply to this particular Comprehensive Planning District:

1) Adequate buffering should be provided between the Business Park uses and Residential use to the south and east.
2) Notwithstanding the land use intensities presented in Section III-B, this Comprehensive Planning District shall contain a maximum of 4,620 dwelling units.

Kiernan Business Park Specific Plan

The Kiernan Business Park Specific Plan area encompasses the western portion of the Kiernan/Carver CPD. The Specific Plan designates a total of 614 acres of land for business park, office, and limited commercial development. The intent of the Specific Plan is to provide for the development of new business park, industrial use, and a medical campus in the vicinity of Kiernan Avenue, because of its location to Highway 99 and north Modesto.

The BP designation in the Kiernan Business Park Specific Plan area is intended to accommodate the development of modern, employment-intensive office, and non-nuisance light industrial space. The principal development and employment-generating uses within the BP designation area are characterized by research, product development, professional office, limited manufacturing and distribution, and commercial business services intended to support the immediate area.[5] Allowable land uses include manufacturing of electronic machinery, photographic and optical goods, furniture, apparel, fabricated plastics and rubber products; research and development laboratories, printing and publishing, and records processing centers; wholesale and retail sale of goods produced on the premises; and business and personal services, with retail trade and services to serve the needs of industries.

[5] Kiernan Business Park Specific Plan, August 10, 2004, pp. 14-15.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

A project's effects on land use are deemed significant if they would:

- Physically divide an established community.
- Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect .
- Conflict with any applicable habitat conservation plan or natural community conservation plan.

These environmental issues were considered in the Initial Study for the project (see Appendix A). As discussed below in Impact A.1, the Initial Study found that the project would have a potentially significant impact as it could conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating and environmental effect. The first and third bulleted items were found to have no impact and are not further discussed.

ASSUMPTIONS

The project site's existing *General Plan* and Specific Plan land use designation is BP. The proposed project is an amendment entailing the redesignation of 39 acres of Business Park land uses to 23 acres of Mixed Use and 16 acres of Medium High Density Residential land uses. The remaining 114 acres of the project site area would remain under BP designation. If approved, the proposed Kiernan Business Park Specific Plan Amendment #4 would serve to guide development that occurs within the project area, as described above.

Land use development standards in the proposed Kiernan Business Park Specific Plan Amendment #4 are summarized as follows:

> Business Park. The Business Park designation is intended to accommodate the development of modern, employment-intensive office and non-nuisance light industrial space. The principal development and employment generating uses allowed within this designation are characterized by research, product development, professional office, limited manufacturing and distribution, and commercial business services intended to support the immediate area. Development within this district should support the creation of a campus-like environment for office, light production, or warehouse uses in high quality single- or multiple-occupant buildings. The recommended FAR in the BP designation area is 0.40 square feet of building area per square foot of gross area of the site. Buildings would not exceed three stories in height (up to 45 feet tall).
>
> The Specific Plan Amendment #4 introduces two new land use designations on the project site. These include the Mixed Use (MU) and Medium High Density Residential (MHDR) designations.

Mixed Use (MU). Allowable land uses proposed in the MU designation include office, retail, and residential uses . The MU designation would allow up to 64,000 gsf of residential building area containing 80 residential units; up to 170,000 gsf of building area would designated for hotel and hospitality use containing up to 175 hotel rooms, and up to 450,000 gsf of retail and office building area. Buildings for residential, office, and retail uses would not exceed four stories in height (up to 55 feet tall). The maximum height for the hotel use would be seven stories (up to 75 feet tall).

Medium High Density Residential (MHDR). Land uses allowed in the MHDR designation include townhouses, condominiums, garden apartments, conventional apartments, and all other uses permitted by City ordinances, resolutions and other documents, with a density of up to 15-24 dwelling units per acre. A maximum of 16 dwelling units would be allowed per building. Buildings in the MHDR area would not exceed three stories in height (up to 40 feet tall).

The maximum amount of development proposed that is likely to be accommodated under the proposed land use plan would include 1,498,224 gross square feet of BP land uses, 684,000 gross square feet of mixed use development (which could include a 170,000-square-foot, 175-room hotel; 80 apartment units [totaling 64,000 square feet]; 79,000 square feet of office space; and 371,000 square feet of retail), and 400,000 gsf of MHDR, with up to 262 dwelling units. In total, the project proposes 2,582,224 gsf of development area and up to 517 dwelling units (of which 175 would be provided in hotel rooms).

This impacts analysis for Land Use and Planning discusses the general compatibility of the land uses proposed under the project in relation to nearby existing land uses.

PROJECT IMPACTS AND MITIGATION

Impact A.1. The proposed project would introduce new land use designations that would conflict with existing land use plans, policies, and/or regulations. (Less than Significant)

Implementation of the proposed project would not conform to certain policies and requirements of the *Urban Area General Plan,* the Kiernan/Carver CPD, and the existing Kiernan Business Park Specific Plan. Therefore, amendments would be required in order to redesignate an approximately 39-acre portion of the existing BP land use to approximately 23 acres of MU and approximately 16 acres of MHDR land uses. Approximately 114 acres of the 153-acre project site would remain under the BP land use designation. BP land uses would thus continue as the prevailing land use in the Specific Plan area and on the project site. The new MU designation would promote the development of a retail/commercial center with residential/office and hotel uses immediately east of Dale Road. This retail/commercial center is proposed to serve doctors and nurses, hospital employees, hospital support staff, and visitors from the Kaiser Modesto Medical Center, located on the west side of Dale Road. The retail and commercial elements of the center would serve the residents of Modesto and surrounding communities, including local

businesses and residential populations. The new MHDR designation would allow for townhouses, condominiums, garden apartments, and conventional apartments, and all other uses permitted by City ordinances, resolutions, and other documents. This MHDR area would provide housing in close proximity to BP land uses and the Kaiser Modesto Medical Center.

The specific development standards and design guidelines for the BP designation are established under the existing Specific Plan (as amended in 2004), and would continue to apply to the portion of the project site that would remain under the BP designation. Standards and guidelines are proposed with the project and would provide design and development direction for the MU and MDHR areas. They would encourage high-quality design and materials, and create streetscapes that are both cohesive and varied, as well as govern dwelling unit, lot size, building orientation and setbacks, building height, building size and mix, and the provision of private and public open space.

The MU and MDHR types of land uses were not anticipated for the Kiernan/Carver CPD in the *Urban Area General Plan*; however, the proposed project's new designations would facilitate services and provide housing in proximity to existing Business Park and Medical Center land uses in the vicinity. Inconsistency with existing land use plans and policies does not, in itself, constitute a significant environmental impact under CEQA, unless such plans and policies have been locally adopted as thresholds for significant impacts. The City of Modesto has not adopted plans and policies as thresholds for significant impacts.

Mitigation Measure. No mitigation necessary.

B. AGRICULTURAL RESOURCES

This section describes the existing agricultural setting of the region, project vicinity, and project site to establish a baseline against which impacts of the project may be compared. It also reviews the relevant regulatory framework related to agricultural resources. The Initial Study found that the project could potentially convert Prime Farmland to non-agricultural use, conflict with existing zoning under a Williamson Act contract, and involve changes in the existing environment which could result in the conversion of farmland to non-agricultural use (see Appendix A, pp. 25-27). Therefore, these topics are discussed in this EIR section. The discussion of impacts identifies the significance criteria by which impacts on agricultural resources are evaluated, identifies impacts on agricultural resources, and applies the significance criteria to evaluate the significance of impacts on agricultural resources under CEQA. The discussion identifies mitigation measures for significant impacts.

SETTING

REGIONAL AND LOCAL

The City of Modesto is in Stanislaus County, centrally located within California's San Joaquin Valley. Agriculture is a leading industry in Stanislaus County due to flat land with good to excellent soil quality, a favorable climate, and the availability of water. In addition, the region has low-cost power and a good transportation system. In 2002, Stanislaus County generated 1.23 billion dollars from its agricultural products, ranking sixth among the nation's 3,075 counties and sixth among California's 58 counties.[1] Almonds are currently the leading crop commodity in Stanislaus County.[2]

The City of Modesto is located in the center of these rich agricultural lands. Since the City's incorporation in 1884 and establishment of the Modesto Irrigation District (MID), agriculture has been the Modesto area's largest industry. The MID was among the first irrigation districts organized under the 1887 California Irrigation District Law. The main employers in the City of Modesto and Stanislaus County continue to be agricultural, with Del Monte, E & J Gallo, and

[1] United States Department of Food and Agriculture, California Agricultural Statistics Service, *2002 Census of Agriculture - County Profile*, p. 2. The census is conducted every five years. Accessed online at http://www.nass.usda.gov.

[2] California Department of Food and Agriculture, *Summary of County Agricultural Commissioners' Reports, Gross Values by Commodity Groups, Leading Commodities for Gross Value of Agricultural Production by County, 2006*, October 2005-2006, p. 15. Accessed online on July 24, 2008 at http://www.nass.usda.gov/Statistics_by_State/California/Publications/AgComm/200608cavtb00.pdf

Foster Farms among the best known names. Principal agricultural products in the Modesto area include dairy products, almonds, poultry and grapes.

PROJECT VICINITY AND PROJECT SITE

Agricultural lands in the project vicinity have been in agricultural production since the early 1900s and are characterized by rich soils and flat topography. Unincorporated Stanislaus County lands to the north across Kiernan Avenue are primarily in agricultural use. To the east of the project site, between the proposed north-south extension of American Avenue and existing Morrow Road, are agricultural parcels with some individual home sites.

The proposed project site is comprised of 16 parcels: 9 parcels located within City limits and 7 parcels located outside of City limits in unincorporated Stanislaus County. All the parcels are within the City of Modesto's Sphere of Influence. The parcels within City limits are zoned as Specific Plan-Overlay (SP-O). The parcels in Stanislaus County are zoned A-2-10-UT (Urban Transition) under the County's zoning ordinance.[3] The purpose of the County Urban Transition designation is to ensure that land remains in agricultural use until urban development consistent with a city's general plan designation is approved.[4] The parcels on County land would retain their existing zoning until they are annexed by the City of Modesto, at which point County zoning would cease to apply. The project site has been specifically prezoned for conversion from agricultural land to developed use.

Currently, the majority of parcels that make up the project site are in agricultural production. Some of these parcels also include single-family homes and/or structures related to agricultural production. There are 10 separate farmhouse sites, 1 with access to Dale Road, 6 with access to Kiernan Avenue, and 3 with access to Bangs Avenue. A commercial nursery and landscaping service is located on a 4.2-acre parcel at the northeast corner of Dale Road and Bangs Avenue; a welding company is located at the northeastern corner of a 9.8-acre parcel fronting Kiernan Avenue near its intersection with American Avenue; and the MID's Bangs Substation is located on the southeast corner of a 19.6-acre parcel fronting Bangs Avenue near its intersection with American Avenue. When surveyed in July 2008, irrigated row crops were the dominant agricultural use, representing approximately 34 percent of the project site, with some lands designated for ruderal fields (23 percent of the project site), orchards (20 percent of the project site area), fallow fields (6 percent), and irrigated pastures (5 percent). About 12 percent of the project site area is developed (or disturbed) land.

[3] These parcels are zoned as Planned Specific Plan-Overlay (P-SP-O) on the Modesto zoning map.
[4] Stanislaus County, *Stanislaus County General Plan*, 1994, p. I-25.

The predominant soil types on the 153-acre project site are Hanford Sandy Loam (HdA) and Dinuba Fine Sandy Loam (DmA).[5] The United States Department of Agriculture (USDA) Storie index assesses the general suitability of soils for agriculture based on four factors that represent the inherent characteristics and qualities of the soils.[6] Both Hanford Sandy Loam and Dinuba Fine Sandy Loam are rated "1" on the Storie index, indicating that they are the finest soils for agriculture.[7]

REGULATORY FRAMEWORK

Prime Farmland

The California Department of Conservation, Division of Land Resource Protection administers state programs relating to agricultural conservation. The California Department of Conservation defines Prime Farmland as follows:[8]

> Prime Farmland has the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce high yields. Land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

Most of the undeveloped land that surrounds the developed areas of Modesto, including the project site, is classified and mapped as Prime Farmland by the Farmland Mapping and Monitoring Program of the California Department of Conservation. This means that expansion of the City's boundaries frequently results in conversion of Prime Farmland.

The California Department of Conservation Farmland Mapping and Monitoring Program has classified all of the land within the project site as Prime Farmland.

Williamson Act

The California Land Conservation Act of 1965 (Williamson Act, Government Code Section 51200 et seq.) encourages the conservation of agricultural lands by providing a property tax incentive to owners who restrict land uses to agriculture and compatible uses. It is a voluntary

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[5] United States Department of Agriculture, Soil Conservation Service, *Soil Survey of the Eastern Stanislaus Area, California*, September 1964 (hereinafter "*Soil Survey of the Eastern Stanislaus Area*"), Map Sheet Number 5.
[6] *Soil Survey of the Eastern Stanislaus Area*, p. 84.
[7] *Soil Survey of the Eastern Stanislaus Area*, p. 80.
[8] California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program website, accessed September 14, 2007, 1984-2002 TIME SERIES maps, Modesto Area, Stanislaus County, http://www.consrv.ca.gov.

program administered through local governments, which are responsible for contracting with landowners. Properties subject to Williamson Act contracts must remain in agricultural use for the duration of the contract, a minimum of 10 years. The contracts are self-renewing unless the property owner or a city or county has filed a Notice of Non-renewal. Filing a Notice of Non-renewal initiates an approximately nine-year period, after which the contract expires.

A Williamson Act contract may also be terminated through contract cancellation. A local government may only approve a request for immediate cancellation of a contract by making specific findings under state law of either consistency with the purposes of the Williamson Act or as a cancellation in the public interest (Cal. Government Code Section 51282(a)). The California Department of Conservation must be notified of a petition for cancellation. The Department may submit comments advising the local government on the required findings regarding the proposed cancellation and the local government must consider these comments before acting on the proposed cancellation (Cal. Government Code Section 51284.1).

A 19.3-acre parcel (APN 078-015-012) on the northwest portion of the project site is subject to a California Land Conservation Act, also known as the Williamson Act, contract. This parcel came under contract in 1975. In 2004, the property owner filed for Non-Renewal. The Williamson Act contract is set to expire on January 1, 2014.[9] Development pursuant to the proposed project on this parcel before that time would require cancellation of the Williamson Act contract.

Local Agency Formation Commission

The Cortese-Knox-Hertzberg Local Government Reorganization Act (Cal. Government Code Section 56000 et seq.) empowers each Local Agency Formation Commission (LAFCO) to consider incorporation of new cities, annexation of lands to existing cities and special districts, and other changes to city and district boundaries. Through its responsibilities to govern the approval of annexations and the establishment of spheres of influence, LAFCO considers soil quality and the availability of irrigation water when assessing the impacts of annexation proposals on agricultural land. LAFCO policies direct that development or use of land for other than open space shall be guided away from existing prime agricultural land, unless that action would not promote the planned, orderly, efficient development of an area.[10]

[9] Stanislaus County, Land Use and Zoning Counter staff, telephone conversation, March 12, 2007.
[10] California Government Code Section 56377.

Stanislaus County General Plan

The *Stanislaus County General Plan* provides policy direction for unincorporated lands outside the jurisdiction of the City of Modesto, as described below.[11]

Agricultural Element, Goal 1: The Agricultural Element policies state that proposals will be reviewed on a case-by-case basis. Factors to be considered include soil types, potential for agricultural production, availability of irrigation water, ownership and parcelization patterns, uniqueness and flexibility of use, the existence of Williamson Act contracts, existing uses, and the contributions to the agricultural sector of the local economy. Setbacks from agricultural areas shall be established to minimize adverse impacts of adjacent uses on agriculture.

Agricultural Element, Goal 2: The County recognizes the right of cities and unincorporated communities to grow and prosper and shall not oppose reasonable requests to expand Spheres of Influence of cities or community service districts and sanitary districts serving unincorporated communities to accommodate growth. However, the County shall discourage the expansion of Spheres of Influence of cities or communities into its most productive agricultural areas. To the greatest extent feasible, the County shall require mitigation of the impacts of farmland conversion.

New areas for urban development (as opposed to expansion of existing areas) shall be limited to less productive agricultural areas. Agriculture, as the primary industry of the County, shall be promoted and protected.

Land Use Element, Goal 1, Policy 2: The Land Use Element states that designated agricultural lands shall be restricted to uses that are compatible with agricultural practices, including natural resources management, open space, outdoor recreation, and enjoyment of scenic beauty.[12]

City of Modesto Urban Area General Plan

The update to the *Urban Area General Plan* contains a number of goals and policies aimed at minimizing impacts to agricultural lands in its Baseline Developed Area and Planned Urbanizing Area, as described below.[13]

General Plan Agriculture Resource Goal VII-D.2[a]: The *General Plan* should attempt to minimize the loss of agricultural land by having future development be relatively compact and of reasonable high density.

General Plan Policy VII-D.3[a]: If a subsequent project is within the Baseline Developed Area or Redevelopment Area as identified on the General Plan Growth Strategy Diagram, the project shall be considered to have minimal effect on the conversion of agricultural lands, and no mitigation for that impact is required.

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[11] Stanislaus County, *Agricultural Element of the Stanislaus County General Plan*, April 23, 1992.
[12] Stanislaus County, *Stanislaus County General Plan, 1994*, Chapter 1 - Land Use Element.
[13] City of Modesto, *Urban Area General Plan*, October 2008 (hereinafter "*Urban Area General Plan*"), pp. VII-7 - VII-8.

General Plan Policy VII-D.4[a]: The City will not annex agricultural land unless urban development consistent with the General Plan has been approved by the City.

General Plan Policy VII-D.4[b]: The City shall support the continuation of agricultural uses on lands designated for urban uses until urban development is imminent.

General Plan Policy VII-D.4[c]: The City shall encourage the County to retain agricultural uses on lands surrounding the Urban Area General Plan area and on lands within the Urban Area General Plan area pending their annexation to the City or development by mutual agreement with the County.

General Plan Policy VII-D.4[d]: Where necessary to promote planned City growth, the City shall encourage development of those agricultural lands that are already compromised by adjacent urban development or contain property required for the extension of infrastructure or other public facilities, before considering urban development on agricultural lands that are not subject to such urban pressures.

General Plan Policy VII-D.4[e]: For any subsequent project that is adjacent to an existing agricultural use, the project proponent may incorporate measures to reduce the potential for conflicts with the agricultural use. Potential measures to be implemented may include the following: 1. Include a buffer zone of sufficient width between the proposed residences and the agricultural use; 2. Restrict the intensity of residential uses adjacent to agricultural lands; 3. Inform residents about the possible exposure to agricultural chemicals; and 4. Where feasible and permitted by law, explore opportunities for agricultural operators to cease the aerial spraying of chemicals and use of heavy equipment near proposed residential uses.

IMPACTS AND MITIGATION

This analysis assumes the proposed project would be developed to its full planned capacity, permanently converting the entire project site to non-agricultural use.

SIGNIFICANCE CRITERIA

The City of Modesto has adopted the following Significance Standards for Agricultural Conversion: [14]

> Project impacts will be significant if they convert any areas of prime agricultural land to urban uses, impair the agricultural productivity of prime agricultural land, or result in substantial pesticide overspray, dust, and noise at urban uses.

[14] City of Modesto, *Final Master Environmental Impact Report for the Urban Area General Plan Update*, July 2008 (hereinafter "*Final Master Environmental Impact Report*"), p. IV-4-10.

PROJECT IMPACTS AND MITIGATION

Impact B.1. Implementation of the proposed project would directly result in the permanent loss of Prime Farmland. (Significant and Unavoidable)

Development of the project to its contemplated capacity would result in the conversion of approximately 153 acres of Prime Farmland to urban development, resulting in the permanent loss of the land as Prime Farmland.

Significant, unavoidable impacts resulting from the loss of Prime Farmland within the Planned Urbanizing Area are anticipated in the update to the *Urban Area General Plan*,[15] and in the *Final Master Environmental Impact Report for the Urban Area General Plan Update*.[16]

Annexation and development of the project site would be generally consistent with Stanislaus County, LAFCO, and City of Modesto policies that provide for orderly urban growth and compact development patterns to minimize impacts to agricultural lands. Development of the site would extend the urbanized area incrementally northward and would maintain compact urban boundaries. Although development of the site would take place in an anticipated and orderly fashion, consistency with these policies would not reduce the direct impact of the loss of Prime Farmland to less-than-significant levels.

Therefore, the direct impact of the loss of Prime Farmland would be a significant and unavoidable impact of the project.

Mitigation Measure B.1. Prior to any actual development in the Kiernan Business Park Specific Plan area, the City Council would consider creation of a farmland mitigation program to determine whether such a program could feasibly provide partial mitigation for the loss of prime farmland.

It is possible that the City Council could find that the project's contribution to the direct loss of prime farmland in Stanislaus County could be partially mitigated through the creation and implementation of a farmland mitigation program. Compliance with any adopted farmland mitigation program would be a condition precedent to the issuance of building permits for the project but would not fully mitigate the direct loss of Prime Farmland resulting from the project to a less-than-significant level. Therefore, the direct loss of Prime Farmland would remain a significant, irreversible and unavoidable impact of the project.

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[15] *Urban Area General Plan Update*, p. VII-7.
[16] *Final Master Environmental Impact Report*, p. V-4-11.

Reducing the amount of Prime Farmland converted to urban uses is discussed in Chapter VI, Alternatives, of this report, rather than here as mitigation.

Impact B.2. Development of the proposed project may burden continued agricultural operations surrounding the project site, and within the project site, prior to development under the proposed Specific Plan. (Less than Significant)

The proposed project would place residential and commercial uses in close proximity to existing ongoing agricultural operations surrounding the project site, potentially burdening continued agricultural operations. Aspects of agricultural operations (like dust, noise, livestock, odors, chemicals, aircraft and other machinery, and hours of operation) may be perceived as a nuisance to new residents and employees within the project site, giving rise to complaints and increased public support for conversion of agricultural lands. Placement of urban land uses at the edge of agricultural land uses may also increase the potential for trespass on agricultural land, and crop pilfering, crop damage, and potential personal injury liability associated with trespass.

New urban uses adjacent to continued agricultural uses are a common and accepted condition at Modesto's urbanizing edge. Until development of parcels under the Kiernan Business Park Specific Plan, existing agricultural activities within the project site and surrounding the project site would be allowed to continue as Nonconforming Uses. City of Modesto General Plan Policy VII-D.3[b] states that "the City shall support the continuation of agricultural uses on land designated for urban uses until urban development is imminent." Likewise, General Plan Policy VII-D.3[c] states that "the City shall encourage the County to retain agricultural uses on lands within the Urban Area General Plan area pending their annexation to the City or development by mutual agreement with the County." In keeping with the intent of City policies supporting the continuation of agricultural uses on these lands, the City of Modesto would encourage developers to provide an active farm notice to all tenants and residences within the project area.

The proposed Kiernan Business Park Specific Plan would not create islands of new urban development within farmland or extend "fingers" of new development into farmland. Rather, it would move an existing urban edge incrementally northward and eastward, creating a compact new urban boundary. This growth pattern would not hinder the continuance of agricultural operations to the north and east of the project site or increase the potential for conflicts between urban and agricultural uses.

Use of pesticides on nearby agricultural land would continue to be subject to the permitting and reporting requirements of California's pesticide regulatory program, administered at the local

level by the County Agricultural Commissioner.[17] Urban runoff from the project would be contained on site, as discussed in Section IV.H, Hydrology and Water Quality, of this EIR.

The project would not hinder the continued use of the agricultural lands to the north and east of the project site; therefore, the project's impacts on surrounding ongoing agricultural operations would be considered less than significant.

Mitigation Measure. No mitigation necessary.

Impact B.3. Implementation of the proposed project would incrementally contribute to the cumulative loss of Prime Farmland in Stanislaus County and in the Modesto area. (Significant and Unavoidable)

The California Department of Conservation, Division of Land Resource Protection, monitors the conversion of California's agricultural lands in two-year increments. Among all of the regions of California, the San Joaquin Valley region has led the state in conversion of irrigated farmland to urban uses.[18] Stanislaus County is within commute distance of major San Francisco Bay Area urban centers, by present commuting standards. In recent years, Stanislaus County has experienced a period of population growth, as newcomers seek affordable housing and a more rural atmosphere. Over most of the last decade, Stanislaus County has seen an increasing rate of conversion of Prime Farmland to urban development (from 588 acres in 1992-1994, 695 acres in 1994-1996, 1,648 acres in 1996-1998, 703 acres in 1998-2000, 2,044 acres in 2000-2002, 3,096 acres in 2002-2004, and 1,259 acres in 2004-2006).[19]

The City of Modesto *Final Master Environmental Impact Report for the Urban Area General Plan Update* projected past, present, and probable future development from 1995-2025. During that time period, it is anticipated that approximately 22,600 acres of Prime Farmland in the Planned Urbanizing Area would be converted to urban uses, resulting in a significant and unavoidable impact.[20]

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[17] California Department of Pesticide Regulation, *Pesticide Use Reporting*, May 2000. Accessed online at www.cdpr.ca.gov.

[18] California Department of Conservation, Division of Land Resource Protection, *California Farmland Conversion Report 2002-2004*, December 2006, p. 14. Accessed online at http://www.consrv.ca.gov.

[19] California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program website, accessed June 25, 2008, "Land Use Conversion Tables, 1992-1994, 1994-1996, 1996-1998, 1998-2000, 2000-2002, 2002-2004, 2004-2006" http://www.consrv.ca.gov. Other losses of Prime Farmland were due to construction of ranchettes (low-density rural residences), ecological restoration projects, and long-term land idling.

[20] *Final Master Environmental Impact Report*, p. V-4-10.

In addition to the proposed project, five other currently pending Specific Plans along the perimeter of Modesto's developed area (Tivoli, Pelandale/McHenry, Fairview, Johansen/Empire North, and Woodglen) are located on Prime Farmland.[21]

The roughly 153 acres of Prime Farmland to be converted under the proposed project represents a relatively small portion of the cumulative acreage already lost to urban development in Stanislaus County from 1992-2006 (10,033 acres), the cumulative loss of Prime Farmland projected for the Modesto area in the updated *Urban Area General Plan* from 1995-2025 (22,600 acres), and the cumulative acreage proposed for conversion under currently pending Specific Plan proposals in Modesto (up to 2,105 acres). However, the project's incremental contribution to the cumulative loss of Prime Farmland in eastern Stanislaus County and in the Modesto area is cumulatively considerable and is therefore considered a significant impact under CEQA. The cumulative loss of farmland is an impact of regional and statewide scope.

Mitigation Measure B.3. Same as Mitigation Measure B.1.

It is possible that the City Council could find that the project's contribution to the direct loss of Prime Farmland in Stanislaus County could be partially mitigated through the creation and implementation of a farmland mitigation program. Compliance with any adopted farmland mitigation program would be a condition precedent to the issuance of building permits for the project but would not fully mitigate the direct loss of Prime Farmland resulting from the project to a less-than-significant level. Therefore, the direct loss of Prime Farmland would remain a significant, irreversible, and unavoidable impact of the project.

[21] City of Modesto, Map entitled *City of Modesto Private Sector Development Projects*, May 1, 2008.

C. TRANSPORTATION AND CIRCULATION

This section describes existing traffic conditions on local roads and highways, more generally discusses bicycle and pedestrian conditions, and quantifies the traffic impacts of the proposed Amendment #4 to the Kiernan Business Park Specific Plan. This section summarizes the results of a detailed transportation impact analysis prepared by Fehr & Peers in the *Transportation Impact Analysis for Kiernan Business Park Specific Plan Amendment #4 Project*, November 2008. A copy of the text of this report is provided in Appendix B; detailed traffic calculations for this report are available for review at City of Modesto offices in the Community and Economic Development Department.

SETTING

AREA ROADWAYS

Regional access to the project site is provided by State Route 99 (SR 99), while local access is provided via Kiernan Avenue (SR 219), Pelandale Avenue, Dale Road, and Bangs Avenue. (See Figure IV.C.1: Study Intersection Locations, p. IV.C.6, for locations of these and other streets discussed in this section.) Many of these local roadways are not yet built out to their ultimate widths and are being widened incrementally as adjacent properties develop and in response to increasing traffic volumes. The roadways in the vicinity of the project site are described below.

SR 99 is a six-lane, north-south freeway located to the west of the project site. This freeway extends throughout the length of California's Central Valley. Interchanges at Kiernan Avenue, Pelandale Avenue, and Standiford Avenue provide indirect access to the project site. The speed limit on SR 99 is generally 65 miles per hour (mph).

Kiernan Avenue (SR 219) is an east-west state highway that extends from west of SR 99 to McHenry Avenue, where it becomes Claribel Avenue. Near the site, Kiernan Avenue is currently a two-lane rural road. California Department of Transportation (Caltrans) plans to begin upgrading the road to a four-lane Class B expressway in 2008. However, with numerous existing side streets and driveways, Kiernan Avenue west of Stoddard Road will be unable to function as an expressway.

Pelandale Avenue is an east-west arterial/expressway that extends from SR 99 east to McHenry Avenue, where it becomes Claratina Avenue. It varies in width from two to six lanes, and is being widened as adjacent development occurs. The speed limit on Pelandale Avenue is 50 mph east of Dale Road and 45 mph west of Dale Road.

Dale Road is a north-south minor arterial providing direct access to the project site. It extends from Ladd Road south to Standiford Avenue. In the northbound direction, one to three travel

lanes are provided from Standiford Avenue to Kiernan Avenue. North of Kiernan Avenue, Dale Road is a two-lane rural road. In the southbound direction, one to three lanes are provided from Kiernan Avenue to Standiford Avenue. The speed limit is 40 mph north of Veneman Avenue and 35 mph south of Veneman Avenue.

Standiford Avenue is a four-lane, east-west principal arterial that extends from west of SR 99 east to McHenry Avenue, where it becomes Sylvan Avenue. The speed limit on Standiford Avenue is 40 mph east of Prescott Road and 45 mph west of Prescott Road.

Bangs Avenue is a two-lane minor collector that extends from Dale Road east to McHenry Avenue. The speed limit on Bangs Avenue is 45 mph.

Salida Boulevard is a four-lane, north-south minor arterial that extends south from Kiernan Avenue to south of Pelandale Avenue and serves as a frontage road on the west side of SR 99. The speed limit on Salida Boulevard is 40 mph.

Prescott Road is a four-lane, north-south minor arterial that extends south from Bangs Avenue to south of Standiford Avenue with a speed limit of 40 mph.

Carver Road is a minor north-south collector that extends from north of Kiernan Avenue to south of Standiford Avenue. The speed limit on Carver Road is 35 mph south of Pelandale Avenue and 40 mph north of Pelandale Avenue.

Tully Road is a north-south minor arterial that extends south from north of Kiernan Avenue to south of Standiford Avenue. This roadway varies in width from two to four lanes, with a speed limit of 45 mph in the vicinity of the project site.

American Avenue is a north-south minor collector that currently extends south from Ladd Road to Kiernan Avenue. South of the project site, American Avenue extends north from Pelandale Avenue to Bangs Avenue. Only northbound traffic is permitted on this portion of the roadway.

TRANSIT SERVICE

Modesto Area Express (MAX) and Stanislaus Regional Transit (StaRT) provide bus services within the City of Modesto.

Modesto Area Express

Currently, MAX Route 28 provides limited service to the project site with a timed stop at the Pelandale Avenue/Dale Road intersection. MAX Route 31 has a timed stop at the intersection of Pelandale Avenue and Dale Road south of the project site. These routes connect to downtown Modesto and the Vintage Faire Mall, where transfer facilities are provided. MAX also provides

direct service to the Dublin/Pleasanton Bay Area Rapid Transit (BART) and Lathrop/Manteca Altamont Commuter Express (ACE) stations. Bike racks are available on all MAX routes except on the BART express route.

Route 28 is a two-loop route (the Kiernan Loop and the Salida-Pelandale Loop) that serves the northwest portion of the City of Modesto. The Kiernan Loop provides service to Dale Road, Nightingale Drive, Bluebird Drive, Vintage Drive, Sisk Road, and Kiernan Avenue. The Salida-Pelandale Loop provides service to Dale Road, Nightingale Drive, Bluebird Drive, Vintage Drive, Sisk Road, and Pelandale Avenue. Service to the Dale Road and Kiernan Avenue stop is provided Monday through Saturday between 7:00 AM and 7:00 PM with 60-minute headways.

Route 31 connects the Vintage Faire Mall and downtown Modesto via Pelandale Avenue, Tully Road, and 9th Street on Monday through Saturday and via Standiford Avenue, Tully Road, and 9th Street on Sunday. There is a timed stop at the Dale Road/Pelandale Avenue intersection, the closest stop to the project site. Monday through Saturday service is provided from 6:00 AM through 8:00 PM with 30-minute headways. Saturday service is provided from 8:00 AM through 7:20 PM with 60-minute headways. Sunday service is provided from 9:45 AM to 5:40 PM with 60-minute headways.

Modesto ACE Shuttle transfers passengers from Modesto (at the Vintage Faire Mall Park-and-Ride Lot) to the Lathrop/Manteca ACE train station. ACE provides passenger rail service between San Joaquin Valley and Santa Clara Valley. There are three morning trips to the ACE station and three evening return trips. The shuttle times are coordinated with the three AM and three PM scheduled ACE trains. This is a weekday-only service.

Modesto BART Express connects Modesto to the Dublin/Pleasanton BART station with two pick-up/drop-off locations: the Modesto Downtown Transportation Center and the Orchard Supply Hardware on Sisk Road, just south of West Rumble Road. BART provides commuter rail service to San Francisco (including the San Francisco International Airport), Millbrae, Fremont, Richmond, and Pittsburg/Bay Point. There are two morning trips in each direction (to and from the BART station) and two evening trips in each direction.

Stanislaus Regional Transit

Stanislaus Regional Transit (StaRT) provides regional transit service throughout Stanislaus County. Route 60 connects Modesto to Oakdale and Riverbank. Weekday and Saturday service is provided to downtown Modesto, with Saturday service to the Vintage Faire Mall. Service to the project site is provided only on Saturdays.

StaRT also operates runabouts, a transit service that combines fixed-route service (with fixed stops) and dial-a-ride service (with curb-to-curb service). Passengers can use this service

between the fixed stops without making prior arrangements. Advanced reservations must be made for curbside service. The Turlock/Modesto, Waterford/Modesto, and Eastside runabouts operate on Pelandale Avenue near the project site.

Dial-A-Ride

The City of Modesto also provides dial-a-ride service to the general public, with fares comparable to those for a standard bus ride. Only the disabled and seniors are served from 4:45 AM to 6:00 PM Monday through Friday and 8:00 AM to 7:00 PM on Saturdays; the general public (including the disabled and seniors) is served 6:00 PM through 11:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Sundays.

PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. Sidewalks are being constructed on the west side of Dale Road as part of the improvements associated with construction of the Kaiser Medical Center. More sidewalks will be constructed as adjacent parcels develop. On typical weekdays and weekends, pedestrian activity in the immediate vicinity of the project site is light, although the unimproved pathway along the Modesto Irrigation District (MID) Lateral No. 6 canal is used for running and jogging.

Bike paths, lanes, and routes make up the City of Modesto's bicycle facilities. Bike paths (Class I) are typically paved trails that are separated from roadways. Bike lanes (Class II) are typically lanes on roadways designated for use by bicycles through striping, pavement legends, and signs. Bike routes (Class III) are signed roadways designated for bicycle use and may or may not include additional pavement width for cyclists. Bicycle facilities in the vicinity of the project site include the 3-mile Hetch-Hetchy Class I bike path that extends along the Hetch-Hetchy power and water right-of-way between Sisk Road and Semallon Drive south of the project site.[1] Class II bike lanes are provided on Prescott Road south of Standiford Avenue, and on Tully Road south of Pelandale Avenue. On typical weekdays and weekends, bicycle activity in the immediate vicinity of the proposed project is light throughout the day.

[1] City of Modesto, *Modesto Non-Motorized Transportation Master Plan*, 2006, Figure 5-1, Existing and Proposed Bikeways.

EXISTING TRAFFIC CONDITIONS

Traffic conditions were analyzed at key intersections and freeway and roadway segments adjacent to and in the vicinity of the project site. Thirty-one existing intersections and segments along one freeway and four roadways were analyzed. A ramp merge-diverge analysis was also completed at three interchanges with SR 99: Kiernan Avenue, Pelandale Avenue, and Standiford Avenue. The intersection analysis locations were selected based on their proximity to the project site, geographic constraints, and an examination of the expected dispersion of project traffic on the area's roadway network. The intersections analyzed are shown on Figure IV.C.1 and listed below in Table IV.C.1.

Table IV.C.1: Traffic Analysis Locations

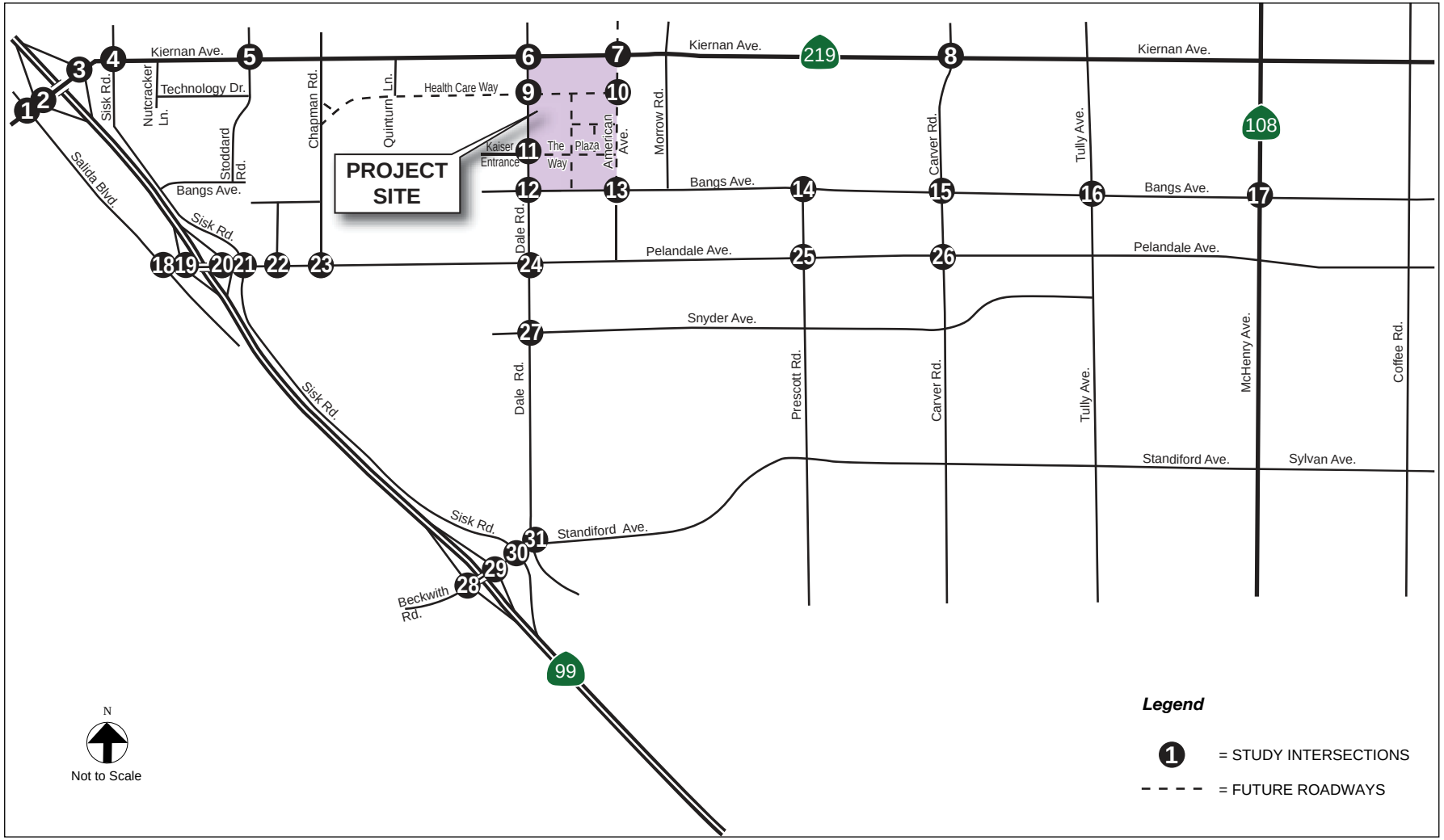
	Intersection		Intersection
1.	Kiernan Avenue/Salida Boulevard	17.	Bangs Avenue/McHenry Avenue
2.	Kiernan Avenue/SR 99 Southbound Ramps	18.	Pelandale Avenue/Salida Boulevard
3.	Kiernan Avenue/SR 99 Northbound Ramps	19.	Pelandale Avenue/SR 99 Southbound Ramps
4.	Kiernan Avenue/Sisk Road	20.	Pelandale Avenue/SR 99 Northbound Ramps
5.	Kiernan Avenue/Stoddard Road	21.	Pelandale Avenue/Sisk Road
6.	Kiernan Avenue/Dale Road	22.	Pelandale Avenue/Northpointe Shopping Center
7.	Kiernan Avenue/American Avenue	23.	Pelandale Avenue/Chapman Road
8.	Kiernan Avenue/Carver Road	24.	Pelandale Avenue/Dale Road
9.	Healthcare Way/Dale Road	25.	Pelandale Avenue/Prescott Road
10.	Healthcare Way/American Avenue*	26.	Pelandale Avenue/Carver Road
11.	Kaiser Main Entrance/Dale Road	27.	Snyder Avenue/Dale Road
12.	Bangs Avenue/Dale Road	28.	Standiford Avenue/SR 99 Southbound Ramps
13.	Bangs Avenue/American Avenue	29.	Standiford Avenue/SR 99 Northbound Ramps
14.	Bangs Avenue/Prescott Road	30.	Standiford Avenue/Sisk Road
15.	Bangs Avenue/Carver Road	31.	Standiford Avenue/Dale Road
16.	Bangs Avenue/Tully Road		

Note: * Future Intersection Location

Source: Fehr and Peers, 2008.

The segments along the freeway and roadways analyzed are listed below and shown on Figure IV.C.1:

- SR 99 between Hammet Road and Briggsmore Avenue
- Kiernan Avenue between Salida Boulevard and McHenry Avenue
- Bangs Avenue between Dale Road and McHenry Avenue
- Pelandale Avenue between Salida Boulevard and McHenry Avenue
- Dale Road between Kiernan Avenue and Standiford Avenue



SOURCE: Fehr & Peers, Turnstone Consulting

FIGURE IV.C.1: STUDY INTERSECTION LOCATIONS

Methodology

The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. LOS ranges from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays. Typically, LOS E and LOS F represent unacceptable levels of service. As described below, specific criteria and methodologies were used to assess operating conditions for each type of facility analyzed, including signalized, stop-controlled, and roundabout intersections, as well as freeway and roadway segments.

Signalized Intersections

Traffic conditions at signalized intersections were evaluated using the Transportation Research Board's 2000 *Highway Capacity Manual* methodology. This operations analysis methodology uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. Table IV.C.2 presents the level of service descriptions for signalized intersections.

Table IV.C.2: Level of Service Criteria for Signalized Intersections

Level of Service	Description	Average Control Delay per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	< 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55.0 to 80.0
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80.0

Note: < means less than; > means greater than.

Source: Transportation Research Board, *Highway Capacity Manual*, 2000.

Unsignalized Intersections

Traffic conditions at unsignalized (all-way STOP-controlled and side street STOP-controlled) intersections were also evaluated using the methodology from Chapter 17 of the 2000 *Highway Capacity Manual*. With this methodology, operations are defined by the average control delay per vehicle (measured in seconds) for each movement. At all-way STOP-controlled intersections, the average control delay is calculated for the intersection as a whole. At two-way or side street STOP-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left-turn movement from the major street, and for the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. Table IV.C.3 presents the LOS criteria and the relationship between delay and LOS for unsignalized intersections.

Table IV.C.3: Level of Service Criteria for Unsignalized Intersections

Level of Service	Description	Average Control Delay per Vehicle (Seconds)
A	Little or no delays	< 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	> 50.0

Note: < means less than; > means greater than.

Source: Transportation Research Board, *Highway Capacity Manual*, 2000.

To assess the need for signalization, stop-controlled intersections were evaluated using the 2000 *Manual of Uniform Traffic Control*, which presents eight signal warrants. The Peak Hour Volume Warrant (Warrant 3) was used as a supplemental analysis tool to assess operations at unsignalized intersections.

Roundabouts

Roundabout analyses, to evaluate the planned roundabouts on Bangs Avenue, were conducted using the aaSIDRA roundabout level of service software.[2] This software is consistent with *Highway Capacity Manual* methods. The level of service criteria for roundabout intersections are the same as the criteria for unsignalized intersections (see Table IV.C.3).

[2] The aaSIDRA software is a tool for analyzing roundabouts with moderate to low levels of congestion, i.e., volume to capacity ratios less than 0.85. The environmental factor in the software was modified for use in this assessment to reflect American driver behavior, as recommended by the software developer.

Roadway and Freeway Segments

The existing operations of the freeway and roadway segments were evaluated by comparing roadway segment volumes to capacities to develop peak-hour and daily volume to capacity (v/c) ratios. Peak hour v/c ratios were used for the existing and near-term analyses. Daily v/c ratios were used for the cumulative analysis. The capacity of each segment was based on the type of facility (freeway, expressway, arterial, or collector), number of lanes, type of traffic control at the downstream intersection, and maximum per lane capacities from the City's *General Plan*. The *General Plan* defines the classes of arterials and collectors as major and minor according to their number of travel lanes, design speed, and right-of-way width. Roadway segment capacities remain constant within classes for each type of roadway facility and do not take into consideration the added capacity of turning lanes at intersections. The roadway segment LOS criteria are presented in Table IV.C.4.

Table IV.C.4: Level of Service Criteria for Roadway Segments

Level of Service	Volume / Capacity Ratio
A	< 0.60
B	> 0.60 to 0.70
C	> 0.70 to 0.80
D	> 0.80 to 0.90
E	> 0.90 to 1.00
F	> 1.00

Note: < means less than; > means greater than.

Source: City of Modesto, *Urban Area General Plan*, March 2003.

Freeway Interchange Ramps

Freeway ramp merging and diverging operations were analyzed using the freeway ramp merging and diverging evaluation methodology presented in Chapter 25 of the 2000 *Highway Capacity Manual*. This methodology considers peak hour traffic volumes, free-flow speeds, percentage of heavy vehicles[3], and the number of travels lanes, as well as the interaction between the merge and diverge areas and the freeway mainline. These factors are used to correlate the LOS ratings to computed vehicle densities (passenger cars per mile per lane). Table IV.C.5 summarizes the relationship between vehicular density and LOS for freeway ramps.

[3] Heavy vehicles are known for their significant effect on traffic due to their larger dimensions (in general) and inferior performance compared with an average automobile. These vehicles include trucks, buses, and recreational vehicles.

Table IV.C.5: Level of Service Criteria for Freeway Ramp Merges and Diverges

Level of Service	Density (passenger cars per mile per lane)
A	< 10
B	10.1 to 20.0
C	20.1 to 28.0
D	28.1 to 35.0
E	> 35.1
F	Demand Exceeds Capacity

Note: < means less than; > means greater than.

Source: Transportation Research Board, *Highway Capacity Manual*, 2000.

Existing Traffic Levels of Service

Roadway and intersection operations were analyzed for weekday morning (between 7:00 and 9:00 AM) and evening (between 4:00 and 6:00 PM) peak hour traffic conditions on clear days with area schools in session. Traffic operations at each intersection were analyzed for the peak hour during these periods. The peak hour data is used as the basis for intersection and roadway segment operations analysis. Existing traffic volumes from counts conducted in May and June 2006 were used, along with the existing lane configurations and signal information, as inputs to the LOS calculations to evaluate current operations of the 31 existing study intersections, six freeway merge and diverge areas, and five freeway and roadway segments.

Peak period traffic counts were conducted for the SR 99 freeway mainline at the Pelandale Avenue overcrossing in November 2006. No accidents or major construction was observed that would affect the traffic counts. Traffic volumes at other mainline locations were estimated by adding on-ramp volumes and subtracting off-ramp volumes. Truck traffic on SR 99 was estimated from the 2005 Annual Average Daily Truck Traffic (AADTT) on the California State Highway System prepared by Caltrans. These counts indicate that heavy vehicles make up about 14 percent of the traffic on SR 99 on a daily basis.

Existing Intersection Levels of Service

The LOS analysis results for existing traffic operations are presented in Table IV.C.6. Locations where existing peak hour levels of service exceed the City standard of LOS D or the County standard of LOS C are shown in bold. Two delay values are reported for each unsignalized intersection (side street stop controlled intersections): (1) the highest controlled movement delay, and (2) the intersection average delay. For four-way STOP controlled intersections, the highest approach delay is reported. Unsignalized intersections operating at LOS F have reported delays of greater than 50 seconds. Signalized intersections operating at LOS F have reported delays of

Table IV.C.6: Existing Intersection LOS Conditions

	Intersection	Traffic Control	AM		PM		Meets Signal Warrant AM/PM
			Delay[1,2]	LOS[1,2]	Delay	LOS	
1.	Kiernan Avenue/Salida Boulevard[3]	Signalized	26	C	17	B	
2.	Kiernan Avenue/SR 99 SB Ramps[3]	Signalized	**48**	**D**	**45**	**D**	
3.	Kiernan Avenue/SR 99 NB Ramps[3]	Signalized	15	B	19	B	
4.	Kiernan Avenue/Sisk Road[3]	Signalized	24	C	**41**	**D**	
5.	Kiernan Avenue/Stoddard Road[3]	Unsignalized	7 **(69)**	A **(F)**	**128 (>50)**	**F (F)**	**Y/Y**
6.	Kiernan Avenue/Dale Road	Unsignalized	**55**	**F**	**83**	**F**	**Y/Y**
7.	Kiernan Avenue/American Avenue	Unsignalized	1 (18)	A (C)	1 (18)	A (C)	
8.	Kiernan Avenue/Carver Road	Unsignalized	8	A	**60**	**F**	
9.	Healthcare Way/Dale Road	Signalized	4	A	7	A	
10.	Healthcare Way/American Avenue	Unsignalized	–	–	–	–	
11.	Kaiser Main Entrance/Dale Road	Signalized	5	A	8	A	
12.	Bangs Avenue/Dale Road	Signalized	8	A	10	A	
13.	Bangs Avenue/American Avenue	Unsignalized	0 (9)	A (A)	1 (11)	A (B)	
14.	Bangs Avenue/Prescott Road	Unsignalized	10	A	12	B	
15.	Bangs Avenue/Carver Road	Unsignalized	13	B	16	C	
16.	Bangs Avenue/Tully Road	Unsignalized	15	B	**69**	**F**	
17.	Bangs Avenue/McHenry Avenue	Signalized	21	C	19	B	
18.	Pelandale Avenue/Salida Boulevard	Signalized	24	C	18	B	
19.	Pelandale Avenue/SR 99 SB Ramps	Signalized	29	C	**90**	**F**	
20.	Pelandale Avenue/SR 99 NB Ramps	Signalized	19	B	15	B	
21.	Pelandale Avenue/Sisk Road	Signalized	26	C	**72**	**E**	
22.	Pelandale Avenue/Northpointe Shopping Center	Signalized	10	A	30	C	
23.	Pelandale Avenue/Chapman Road	Signalized	5	A	8	A	
24.	Pelandale Avenue/Dale Road	Signalized	22	C	31	C	
25.	Pelandale Avenue/Prescott Road	Signalized	17	B	21	C	
26.	Pelandale Avenue/Carver Road	Signalized	16	B	16	B	
27.	Snyder Avenue/Dale Road	Signalized	18	B	22	C	
28.	Standiford Avenue/SR 99 SB Ramps	Signalized	40	D	**187**	**F**	
29.	Standiford Avenue/SR 99 NB Ramps	Signalized	19	B	34	C	
30.	Standiford Avenue/Sisk Road	Signalized	26	C	46	D	
31.	Standiford Avenue/Dale Road	Signalized	21	C	28	C	

Notes:

[1] Delay is in seconds per vehicle. For unsignalized intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement).

[2] Intersections operating at unacceptable levels of service (LOS E or F – City of Modesto; LOS D, E or F – Stanislaus County) are shown in **bold**.

[3] These locations are evaluated against Stanislaus County LOS standards where LOS D, E, or F are considered deficient levels of service.

Source: Fehr & Peers, 2008.

greater than 80 seconds. Existing AM and PM peak hour turning movement traffic volumes are shown in Appendix B, Figure 3, pp. 15-16.

During the AM and PM peak hours, the majority of study intersections operate at acceptable levels (LOS D or better for City of Modesto or LOS C or better for Stanislaus County). Five signalized intersections currently operate at unacceptable LOS during the PM peak hour or during both the AM and PM peak hours:

- Kiernan Avenue and SR 99 Southbound (SB) Ramps (AM and PM peak hours)
- Kiernan Avenue and Sisk Road (PM peak hour)
- Pelandale Avenue and SR 99 SB Ramps (PM peak hour)
- Pelandale Avenue and Sisk Road (PM peak hour)
- Standiford Avenue and SR 99 SB Ramps (PM peak hour)

Four stop-controlled intersections currently operate at unacceptable LOS during the PM peak hour or during both the AM and PM peak hours:

- Kiernan Avenue and Stoddard Road (PM peak hour)
- Kiernan Avenue and Dale Road (AM and PM peak hours)
- Kiernan Avenue and Carver Road (PM peak hour)
- Bangs Avenue and Tully Road (PM peak hour)

In addition, the need for signalization at unsignalized intersections was assessed. The traffic signal warrant analysis indicated that the following two intersections meet the criteria to have traffic signals installed:

- Kiernan Avenue and Stoddard Road (LOS F at the worst approach in the AM peak hour; LOS F in PM peak hour)
- Kiernan Avenue and Dale Road (LOS F in the AM and PM peak hours)

Existing Freeway and Roadway Segment Levels of Service

Roadway segment v/c ratios were calculated based on the existing traffic volumes and the carrying capacities of the segments analyzed. Roadway segment capacity calculations are inherently conservative in that they are based on the number of lanes on the mainline segment and do not consider additional turn lanes, with their added capacity, at approaches to intersections. Freeway segments along SR 99 and roadway segments along Kiernan Avenue, Pelandale Avenue, Bangs Avenue, and Dale Road were analyzed. Existing freeway and roadway segment v/c ratios and peak hour levels of service are shown in Table IV.C.7.

Table IV.C.7: Existing Freeway and Roadway Segment LOS Conditions

Freeway or Roadway Segment[1]	Direction	AM		PM	
		v/c	LOS	v/c	LOS
SR 99	NB	0.75	C	0.73	C
Hammett Rd to Kiernan Ave	SB	0.72	C	0.84	D
SR 99	NB	0.76	C	0.73	C
Kiernan Ave to Pelandale Ave	SB	0.73	C	0.83	D
SR 99	NB	0.79	C	0.73	C
Pelandale Ave to Standiford Ave	SB	0.75	C	0.82	D
SR 99	NB	0.80	C	0.77	C
Standiford Ave to Briggsmore Avenue	SB	0.77	C	0.80	C
Kiernan Avenue	WB	0.36	A	0.42	A
Salida Blvd to SR 99 SB Ramps[2]	EB	0.51	A	0.46	A
Kiernan Avenue	WB	0.51	A	0.50	A
SR 99 SB Ramps to SR 99 NB Ramps[2]	EB	**1.19**	**F**	**1.16**	**F**
Kiernan Avenue	WB	**1.20**	**F**	**1.37**	**F**
SR 99 NB Ramps to Sisk Road[2]	EB	**1.44**	**F**	**1.49**	**F**
Kiernan Avenue	WB	0.72	C	**0.93**	**E**
Sisk Road to Stoddard Road[2]	EB	**0.94**	**E**	**0.97**	**E**
Kiernan Avenue	WB	0.78	C	0.72	C
Stoddard Road to Dale Road[2]	EB	0.67	B	**0.98**	**E**
Kiernan Avenue	WB	0.55	A	0.59	A
Dale Road to American Avenue	EB	0.51	A	0.64	B
Kiernan Avenue	WB	0.55	A	0.65	B
American Avenue to Carver Road	EB	0.46	A	0.61	B
Kiernan Avenue	WB	0.18	A	0.63	B
Carver Road to McHenry Avenue	EB	0.16	A	0.62	B
Pelandale Avenue	WB	0.32	A	0.47	A
Salida Blvd to SR 99 SB Ramps	EB	0.66	B	0.68	B
Pelandale Avenue	WB	0.48	A	0.84	D
SR 99 SB Ramps to SR 99 NB Ramps	EB	0.43	A	0.75	C
Pelandale Avenue	WB	0.76	C	**1.24**	**F**
SR 99 NB Ramps to Sisk Road	EB	0.54	A	0.78	C
Pelandale Avenue	WB	0.79	C	0.85	D
Sisk Road to Northpointe Shopping Center	EB	0.44	A	0.81	D
Pelandale Avenue	WB	0.54	A	0.54	A
Northpointe Shopping Ctr. to Chapman Rd.	EB	0.39	A	0.70	B
Pelandale Avenue	WB	0.55	A	0.59	A
Chapman Road to Dale Road	EB	0.38	A	0.73	C
Pelandale Avenue	WB	0.74	C	**1.08**	**F**
Dale Road to American Avenue	EB	0.69	B	**1.40**	**F**
Pelandale Avenue	WB	0.77	C	**1.05**	**F**
American Avenue to Prescott Road	EB	0.62	B	**1.26**	**F**

(cont'd.)

Table IV.C.7 (continued)

Freeway or Roadway Segment	Direction	AM		PM	
		v/c	LOS	v/c	LOS
Pelandale Avenue	WB	0.75	C	**1.04**	**F**
Prescott Road to Carver Road	EB	0.66	B	**1.25**	**F**
Pelandale Avenue	WB	0.58	A	0.83	D
Carver Road to Tully Road	EB	0.51	A	**1.00**	**E**
Bangs Avenue	WB	0.23	A	0.35	A
Dale Road to American Avenue	EB	0.17	A	0.29	A
Bangs Avenue	WB	0.23	A	0.35	A
American Avenue to Prescott Road	EB	0.23	A	0.36	A
Bangs Avenue	WB	0.31	A	0.39	A
Prescott Road to Carver Road	EB	0.41	A	0.44	A
Bangs Avenue	WB	0.22	A	0.38	A
Carver Road to Tully Road	EB	0.39	A	0.48	A
Bangs Avenue	WB	0.43	A	0.46	A
Tully Road to McHenry Avenue	EB	0.37	A	0.48	A
Dale Road	NB	0.39	A	0.51	A
Kiernan Avenue to Healthcare Way	SB	0.47	A	0.68	B
Dale Road	NB	0.21	A	0.27	A
Healthcare Way to The Plaza Way	SB	0.22	A	0.35	A
Dale Road	NB	0.22	A	0.30	A
The Plaza Way to Bangs Avenue	SB	0.14	A	0.24	A
Dale Road	NB	0.26	A	0.33	A
Bangs Avenue to Pelandale Ave	SB	0.20	A	0.29	A
Dale Road	NB	0.38	A	0.57	A
Pelandale Avenue to Snyder Avenue	SB	0.25	A	0.45	A
Dale Road	NB	0.25	A	0.56	A
Snyder Avenue to Veneman Avenue	SB	0.38	A	0.59	A
Dale Road	NB	0.28	A	0.56	A
Veneman Avenue to Standiford Ave.	SB	0.30	A	0.62	B

Notes:
[1] Freeway and roadway segments operating at unacceptable levels (LOS E or F if within the City's jurisdiction or LOS D, LOS E, or LOS F if within the County's jurisdiction) are indicated in **bold**.
[2] These segments are evaluated against Stanislaus County LOS standards where LOS D, E, or F are considered deficient levels of service.

Source: Fehr & Peers, 2008.

All of the freeway segments and most of the roadway segments currently have capacity to accommodate additional vehicles, i.e., LOS D or better if within the City's jurisdiction or LOS C or better if within the County's jurisdiction. Many of the segments with oversaturated conditions, i.e., LOS E or LOS F if within the City's jurisdiction or LOS D, LOS E, or LOS F if within the County's jurisdiction, occur near SR 99. Roadway segments that currently operate at unacceptable LOS during the AM peak hour, the PM peak hour, or both are as follows:

- Eastbound Kiernan Avenue between SR 99 SB Ramps and SR 99 Northbound (NB) Ramps (AM and PM peak hours)
- Eastbound Kiernan Avenue between SR 99 NB Ramps and Sisk Road (AM and PM peak hours)
- Westbound Kiernan Avenue between SR 99 NB Ramps and Sisk Road (AM and PM peak hours)
- Eastbound Kiernan Avenue between Sisk Road and Stoddard Road (AM and PM peak hours)
- Westbound Kiernan Avenue between Sisk Road and Stoddard Road (PM peak hour)
- Eastbound Kiernan Avenue between Stoddard Road and Dale Road (PM peak hour)
- Westbound Pelandale Avenue between SR 99 NB Ramps and Sisk Road (PM peak hour)
- Eastbound Pelandale Avenue between Dale Road and American Avenue (PM peak hour)
- Westbound Pelandale Avenue between Dale Road and American Avenue (PM peak hour)
- Eastbound Pelandale Avenue between American Avenue and Prescott Road (PM peak hour)
- Westbound Pelandale Avenue between American Avenue and Prescott Road (PM peak hour)
- Eastbound Pelandale Avenue between Prescott Road and Carver Road (PM peak hour)
- Westbound Pelandale Avenue between Prescott Road and Carver Road (PM peak hour)
- Eastbound Pelandale Avenue between Carver Road and Tully Road (PM peak hour)

Freeway Interchange Ramp Levels of Service

Existing freeway interchange ramp peak hour levels of service were determined for three on-ramps and three off-ramps on SR 99 that would serve project-generated traffic entering and exiting the regional freeway network. Table IV.C.8 presents the ramp merging (on-ramp) and diverging (off-ramp) analysis results for the AM and PM peak hour conditions. The following merge/diverge interchanges operate at an unacceptable LOS E or F:

- Kiernan Avenue Northbound Off-ramp Diverge (AM and PM peak hours)
- Pelandale Avenue Southbound Off-ramp Diverge (AM and PM peak hours)
- Standiford Avenue Southbound Off-ramp Diverge (PM peak hour)

The remaining merge/diverge interchanges at Kiernan Avenue, Pelandale Avenue, and Standiford Avenue currently operate at acceptable service levels (LOS C or LOS D) during the weekday AM and PM peak hours.

Table IV.C.8: Existing SR 99 Ramp Merge/Diverge LOS Conditions

Ramp Merge/Diverge	AM		PM	
	Density[1]	LOS	Density[1]	LOS
Kiernan Avenue Southbound Off-ramp Diverge	31.0	D	35.0	D
Kiernan Avenue Southbound On-ramp Merge	28.0	D	34.0	D
Kiernan Avenue Northbound Off-ramp Diverge	**36.0**	**E**	**38.0**	**E**
Kiernan Avenue Northbound On-ramp Merge	27.0	C	27.0	C
Pelandale Avenue Southbound Off-ramp Diverge	**38.0**	**E**	**41.0**	**F**
Pelandale Avenue Southbound On-ramp Merge	27.0	C	31.0	D
Pelandale Avenue Northbound Off-ramp Diverge	33.0	D	32.0	D
Pelandale Avenue Northbound On-ramp Merge	29.0	D	28.0	D
Standiford Avenue Southbound Off-ramp Diverge	32.0	D	**36.0**	**E**
Standiford Avenue Southbound On-ramp Merge	29.0	D	30.0	D
Standiford Avenue Northbound Off-ramp Diverge	34.0	D	33.0	D
Standiford Avenue Northbound On-ramp Merge	29.0	D	27.0	C

Note:
[1] Density is presented in passenger cars per mile per lane (pc/mi/ln).

Source: Fehr & Peers, 2008.

REGULATORY FRAMEWORK

City of Modesto

The City of Modesto's 2008 *Urban Area General Plan* provides the following policies that guide the analysis of new development and identify conditions when additional traffic studies are required:

> Policy V-B.5[b]: Streets in Specific Plans. Any Specific Plan may propose modifications to right-of-way and cross-section standards for the five Circulation and Transportation Designations. Design modifications must be approved by the City's Public Works Director prior to implementation.
>
> Policy V-B.6[a]: The streets and highways system should be coordinated with Caltrans', the County's, and other jurisdictions' existing facilities and plans. The adoption of a regional expressway system by Stanislaus Council of Governments (StanCOG) should be supported, and the components of the regional system which lie within the City's Sphere of Influence shall be incorporated into the City's Circulation and Transportation Diagram. The expressway system shall be designed to accommodate mass transit. The City shall develop an efficient and well-coordinated multi-modal (rail/air/bus/bicycle/pedestrian) transportation system.
>
> Policy V-B.6[b]: Transportation Control Measures (TCMs) shall be implemented where feasible or mandated by other agencies, to reduce vehicle miles traveled, vehicle idling, or traffic congestion. Alternatives to the drive-alone auto mode, such as mass transit, ride sharing, non-motorized transportation, and telecommuting should be encouraged.
>
> In addition, the City shall encourage innovative means to reduce traffic congestion and enhance air quality, such as teleconferencing centers, fiber optic communication networks,

internet commerce and education, and alternative fuels and vehicles; traffic flow improvements, including: implementation of Intelligent Transportation Systems (ITS), coordination of traffic signals, reducing congestion at major intersections, and alternative traffic controls such as roundabouts; increased transit service including: regional express bus service, transit access to airports, and railroad stations, expansion of public transportation, bus pullouts and transit shelters, bicycle racks on buses; trip reduction programs including transit oriented development, sustainable development, and preferential parking and financial incentives for carpools and vanpools; encouragement of pedestrian and bicycle travel including development of the non-motorized transportation system as outlined in the December 2006 *Non-Motorized Transportation Plan* and development of pedestrian and bicycle overpasses where feasible and appropriate; development of safe routes to school and other measures as identified in the latest Modesto City Council resolution regarding Reasonably Available Control Measures.

Policy V-B.6[c]: Transportation Demand Management (TDM) measures are encouraged to directly affect trip makers' choice of travel mode and the routes and time of day for trips. Transportation Demand Management has as its purpose the reduction in the number of vehicle trips being made on the street network. Typical types of TDM measures would be promotion of transit, car pooling or van pooling, non-motorized transportation, and pricing of parking to make these alternative modes of transportation more attractive and cost competitive.

Policy V-B.6[d]: The City shall prepare a citywide transportation improvement plan to accommodate peak hour traffic flow on arterial streets and major collector streets while considering transit, bicycle and pedestrian travel. This plan may include traffic signal coordination and low-cost intersection and roadway segment improvements, such as striping and restriping to add turning lanes. This plan should also consider Transit Oriented Development (TOD), Smart Growth principles, transit enhancements and non-motorized transportation networks as means to reduce vehicle trips and maximize the efficiency of the existing and planned roadway system.

Policy V-B.6[e]: The City hereby defines and authorizes the use of a "Plan Line." The Plan Line is a process that specifically defines the location of center lines, alignments, rights-of-way, cross-sections and intersections for future or proposed roadways and non-motorized transportation right-of-ways. The purpose of a Plan Line is to provide adequate right-of-way for future growth needs and to protect the right-of-way from encroachment. Adopted Plan Lines shall be incorporated into development plans to define specific requirements for dedicating the right-of-way for street purposes and to implement Circulation and Transportation Policies of the General Plan.

Policy V-B.6[f]: The highest possible levels of traffic service for all transportation modes (vehicle, transit, pedestrian and bicycle) should be maintained on City roadways, consistent with the financial resources reasonably available to the City and without unreasonably burdening property owners or developers with excessive roadway improvement costs.

On roadways where the LOS is expected to exceed level F, the City should consider mitigation measures other than road widening, such as the addition of bicycle lanes, improved pedestrian access, improved transit service, and the establishment of walkable development patterns.

Data from the General Plan Traffic Analysis, described in [Appendix A of the Master EIR, as updated from time to time,] shall be used to evaluate the effectiveness of traffic mitigation measures adopted by the City Council.

Policy V-B.6[h]: The City's circulation system shall facilitate a rapid response by emergency vehicles and shall accommodate school buses. Factors shall include adequate road widths and corner radii in street designs to ensure that the appropriate fire equipment and school buses can negotiate City streets.

Policy V-B.6[i]: Development shall be designed to encourage walking as an alternative mode to the automobile for transportation by creating safe and convenient pedestrian facilities and connections through landscaping, frontage improvements, and pedestrian walkways through parking areas and over major barriers such as freeways or canals. Development of cul-de-sacs should be discouraged; however when proposed, through cul-de-sacs shall, to the greatest extent possible, provide pedestrian connections to schools and other community facilities. Sound wall designers, where warranted and appropriate for new and existing development, shall consider pedestrian access to the adjacent roadway.

Policy V-B.6[j]: Non-motorized transportation, such as the bicycle, shall be promoted as an alternative mode of transportation. An adequate and safe non-motorized transportation system in accordance with the City of Modesto Non-Motorized Transportation Plan (updated December 2006 and adopted as part of the Modesto Urban Area General Plan, January 2007, P-GPA-06-001) shall be provided to connect residential areas with shopping and employment areas in and adjacent to the City for present and future transportation needs. Right-of-way for non-motorized usage shall be considered in the planning of new streets and in street improvements. Facilities for mode transfer from non-motorized travel to park-and-ride lots, transit, and rail shall be considered and provided when necessary.

Policy V-B.6[l]: Street networks in new development shall be developed to permit non-motorized and vehicle trips within the development be completed without the use of collector streets and arterial streets.

Policy V-B.6[n]: The City has developed guidelines for private property access to the expressway, arterial and collector street system. These guidelines provide for reasonable, safe and coordinated access while maintaining smooth and safe traffic flow along the City's major streets. These guidelines address the number, location, design and operation of access driveways for each class of roadway.

Policy V-B.6[o]: The City shall provide a balanced, feasible and well-maintained system of transportation for motorized and non-motorized modes.

Policy V-B.6[p]: In the case of conflict between motorized and non-motorized transportation modes, roadway and right-of-way features will be added or altered to protect pedestrians and bicyclists, as well as provide for improved safety for motorized traffic consistent with Urban Area General Plan goals. Features could include pedestrian and bicycle bridges over roadways.

Policy V-B.6[q]: The City of Modesto *Roundabout Policy* (dated September 2004) provides guidelines and policies that pertain to the development of the roundabouts and is hereby adopted and into the Modesto Urban Area General Plan. The use and design of roundabouts shall conform to these requirements.

Policy V-B.6[r]: New roadways and roadway connections shall conform to the most recent City of Modesto Roadway Design Standards, as detailed in *Standard Specifications*, City of Modesto Public Works Department or to the standards authorized under a specific plan, whichever is applicable. Shared and consolidated access to arterial roadways shall be encouraged to minimize curb cuts.

Policy V-B.6[s]: New roadways and roadway connections should be designed to provide a grid street system to improve connectivity, accessibility of all modes, increase route choice, better accommodate public transit services, and reduce trip length, traffic congestion, and pollution.

Policy V-B.6[t]: The City of Modesto shall update and maintain a Capital Facilities Fee program to contribute to transportation improvement projects of local and regional significance.

Policy V-B.6[u]: Bus pullouts are to be added to new developments to support transit passenger loading and unloading.

Policy V-B.8[a]: Prior to the adoption of each Specific Plan, a "Comprehensive Traffic Study" shall be prepared, to the satisfaction of the Public Works Director, and be included in an EIR for each respective Specific Plan.

Policy V-B.8[b]: The Comprehensive Traffic Study shall include the following components:

1) Sufficient analysis and mitigation measures to ensure that the Level of Service "D" Standard is maintained on all Specific Plan area roadways and intersections. A determination of which external links and intersections require study and impact assessment shall be made by the Public Works Director.
2) If the identified mitigation measures cannot feasibly achieve the traffic performance standard for internal and external roadways in the opinion of the Public Works Director, then the Comprehensive Traffic Study shall include appropriate measures to update the General Plan Traffic Analysis and findings for all subsequent Specific Plans, and for development within the Baseline Developed Area and Redevelopment Area.

Policy V-B.8[c]: For individual proposed projects that conform to a Specific Plan's land use designations (for amount and type of land use) a subsequent Site Access Study may be required. Each Site Access Study should, at a minimum, focus on the following issues:

1) Impacts to roadway intersections that are adjacent to the project site.
2) Impacts to and design needs for access between internal and off-site vehicular circulation, and linkages to bicycle/pedestrian circulation systems and transit services.
3) On-site parking needs.
4) Other safety-related concerns.

Conceivably, the Comprehensive Traffic Study may contain sufficient detail to obviate some or all portions of a "Site Access Study."

Policy V-B.8[d]: Data from the General Plan Traffic Analysis, described in [Appendix A] of the Master EIR, shall be utilized to evaluate the effectiveness of the Policies presented above.

Policy V-B.8[e]: Projects that do not conform to the General Plan-approved land use may need supplemental environmental review, in accordance with Section 21157.1(d) of the Public Resources Code.

Policy V-I.2[e]: The City transit system shall strive to provide service on a one-half-mile grid where feasible to make the service as accessible as possible. Newly developing areas should provide a street pattern capable of accommodating transit service on a one-half-mile grid. Sidewalks to transit facilities shall be provided in the development of new roadway systems to minimize walking distance.

Policy V-I.2[h]: In major new development areas, the transit operators shall be encouraged to have service available when the first resident or employer moves in.

The following circulation policies are included as part of the Kiernan Business Park Specific Plan:

Policy C-1: Develop Class I Bike Paths along Pelandale, Dale, and along the north side of the MID Lateral No. 6 and Class II Bike Lanes on minor arterial and collector streets. All subsequent development shall conform to these planned bike facilities.

Policy C-2: Provide for development of a bicycle system that will provide a safe and convenient means of transportation for bicyclists that encourages commuting by bicycle.

Policy C-3: Future development shall provide for bicycle parking and related facilities such as lockers and showers, in accordance with the Bicycle Master Plan.

Local streets should be planned to encourage low speeds and minimize cut-through traffic so that bikes can safely share the road with vehicular traffic.

Policy C-4: Roadways shall be developed according to Figure III-2, Circulation Plan Diagram that is hereby adopted into this Specific Plan. All subsequent development shall conform to this diagram.

Policy C-5: The City shall promote the improvement and development of Kiernan Avenue and Pelandale Avenue and their connection to Highway 99 to accommodate future development in the Kiernan Business Park area.

Policy C-6: Property owners shall be required, through the discretionary permit process, to provide necessary right-of-way for Kiernan Avenue expressway and Pelandale Avenue expressway.

Policy C-7: Direct Collector Street, local street or driveway connections to expressways will be allowed only under the following criteria:

a. For connections to Kiernan Avenue and Pelandale Avenue east of Dale Road (Class B Expressway):
    1. No driveway connections are permitted.
    2. Only collector street connections with right-turn-in/right-turn-out treatment are allowed at a minimum spacing of one-quarter mile.
b. For connections to Pelandale Avenue west of Dale Road (Principal Arterial):
    1. Driveway connections with right-turn-in/right turn-out treatment are allowed at a minimum spacing of 350 feet.

2. Local and collector street connections are allowed with permitted right-turns in, right-turns out and left-turns in (when left turn pockets are provided in the median) and a minimum spacing of one-half mile.

Policy C-8: The City shall promote the development of local road circulation facilities that connect to collector and arterial streets shown in the Circulation Plan Diagram to adequately serve the planned land uses in the Kiernan Business Park.

Policy C-9: Concurrent with the submittal of each Tentative Map (Chapter 4 of the Modesto Municipal Code), each Conditional Use Permit (Section 10-2.250 et seq.), and/or any other 'development' as defined by Section 66418.1 of the State Government Code, applicants shall provide a commitment to construct the necessary and feasible street and intersection improvements to meet the following standards. A Site Access Study as described in Chapter V of the Modesto General Plan may be used as the method for providing this analysis.

All access to the existing street network shall be through the dedication of right-of-way and improvement of public streets, consistent with the standards contained in the Specific Plan and/or Section 7-1.701 (Street Dedication and Improvements) of the Modesto Municipal Code.

All necessary and feasible street improvements shall be constructed to ensure that the street segments and intersections presented in Table IV-A-11 (in Section IV-A (III)(B) of the Final EIR) meet the following standards:

1. Individual development projects that could affect conditions on traffic facilities predicted by the General Plan Traffic Analysis (Appendix II-A of the General Plan Master EIR) to operate at LOS "D" or better in the year 2025 shall not cause conditions to be worse that LOS "D" at any time prior to the year 2025.
2. Individual development projects that could affect conditions on traffic facilities predicted by the General Plan Traffic Analysis to operate at LOS "E" in the year 2025 shall not cause conditions on those facilities to exceed LOS "E" at any time prior to year 2025.
3. Individual development projects that could affect conditions on traffic facilities predicted by the General Plan Traffic Analysis to operate at LOS "F" shall not cause further substantial degradation of conditions. Further substantial degradation shall be defined as an increase in the peak hour volume/capacity (V/C) ratio of 0.05 or greater for roadway segments or intersections whose V/C ratio is estimated to be 1.00 or higher in year 2025 by the traffic model. In making these determinations, this list of transportation facility improvements presented in Table IV-A-12 (in Section IV-A (III)(B) of the Final Focused EIR) shall be consulted, and the improvements needed to meet the above standards shall be drawn from this list. Table IVA-9 (in Section IV-A(II)(C) of the Final Focused EIR) provides a preliminary basis for determining the degree to which development enabled under the Kiernan Business Park and Carver-Bangs Specific Plans could contribute to funding for the required intersection improvements. A more refined method could be developed at the time a Mello-Roos District is established.

Policy C-10: All roadways shall be developed in accordance with the sections shown in Figure III-5 through III-8 Cross Sections, which are hereby adopted into this Specific Plan. All subsequent development shall conform to these street sections.

Policy C-11: Public and private road design shall be required to follow all road standards of this Specific Plan and the Modesto General Plan.

The City of Modesto's *Modesto Non-Motorized Transportation Master Plan* includes policies that are applicable to the project as follows:

Chapter II, Goal 1: Continue developing a City-wide non-motorized transportation system that serves the following uses as alternatives to motorized transportation:

- Commuter bicyclists;
- Recreational on-road bicyclist;
- Recreational off-road bicyclist;
- Walkers;
- Runners;
- Wheelchairs;
- Skateboarders; and
- Skaters.

Chapter V. First Priority: Development on an initial core of non-motorized transportation facilities on a two-mile grid east to west and north to south throughout the City.

Chapter V, A. First Priority: Initial Core Grid. Modesto's citizens have expressed a clear desire for an initial core of cross-town non-motorized transportation facilities that provides bicyclists and others a clear, efficient, safe, and pleasant way to travel east to west and north to south through the City of Modesto. This master plan responds to this by recommending the development of a core grid of facilities about two miles apart.

The recommended phasing of this initial first priority core system is as follows:

- An east to west corridor along Sylvan Avenue, part of Standiford Road and the Hetch-Hetchy Aqueduct.
- A north to south corridor along Roselle, Lakewood, and Lincoln Avenues (using the proposed pedestrian Lincoln Avenue bridge) and along McClure and Finch Roads.

Chapter VI.B.8.a: Bicycle Parking for New Development. Establish minimum standards for bicycle parking for all new public, semi-public, commercial and industrial development. Consider the provision of bicycle parking in lieu of a portion of required automobile parking. Incorporate these standards into development codes.

Stanislaus County

Stanislaus County's *General Plan* provides the following relevant policies and implementation measures.

Policy Two

Circulation systems shall be designed and maintained to promote safety and minimize traffic congestion.

Implementation Measures

1. The County shall maintain LOS C or better for all County roadways and intersections, except, within the sphere of influence of a city that has adopted a lower level of service standard, the City standard shall apply. The County may adopt either a higher or lower level of service standard for roadways and intersections within urban areas such as Community Plan areas, but in no case shall the adopted LOS fall below LOS D.
2. The County will annually review and update its transportation funding mechanisms and, as necessary, adjust its traffic impact fee in compliance with Section 66000 of the Government Code to ensure that adequate funds are collected from local, State, and federal sources to implement improvements required to maintain the County's level of service standard on all County roads. Within six (6) months of adopting the Focused General Plan Update (April 18, 2006), the County shall prepare cost estimates for the State Highway projects identified in this Circulation Element.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

In general, a project would have a significant effect on the environment if it would cause an increase in traffic which is substantial in relation to the existing or future baseline traffic load and capacity of the street system (i.e., result in a substantial increase in either the v/c ratio on roads or congestion at intersections), or change the condition of an existing street (e.g., through street closure or change in direction of travel) in a manner that would substantially affect access or traffic load and capacity of the street system. Specifically, based on criteria used by the City of Modesto and on accepted transportation engineering practices, a project-generated increase in traffic is considered to be significant if it would result in any of the following:

- Deterioration of a signalized intersection from LOS D (or better) to LOS E or LOS F, or a deterioration from LOS E to LOS F, or an increase in the service volume of any approach by five percent or more for a signalized intersection operating at LOS E or LOS F under baseline conditions, or an increase in average delay of five or more seconds for a signalized intersection operating at LOS E or LOS F under Baseline conditions.
- Deterioration of a controlled movement at an unsignalized intersection from LOS E or better to LOS F, or at intersections where a controlled movement already operates at LOS F, resulting in one of the following:
    1. satisfaction of the peak hour volume signal warrant (supporting the need for a traffic signal) as a result of *project* traffic;
    2. an increase in minor movement delay of 30 seconds or more as a result of *project* traffic;
    3. if the peak hour volume signal warrant is already met without project traffic and delay cannot be measured, an increase in traffic of 10 or more vehicles per lane on the controlled approach.

- Deterioration of a roadway segment from LOS D or better to LOS E or LOS F, or a deterioration from LOS E to LOS F, or an increase in the volume to capacity ratio of 0.05 or more for a segment operating at LOS E or LOS F under baseline conditions.
- Deterioration of the v/c ratio of a roundabout approach from 0.85 or better to greater than 0.85 or an increase in the v/c ratio of 0.05 or more for a roundabout approach operating with a v/c ratio greater than 0.85 under baseline conditions.

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities (*Guide for the Preparation of Traffic Studies*, Caltrans, December 2002), however, Caltrans recognizes that achieving LOS C/LOS D may not always be feasible. Consistent with the City of Modesto level of service policy for roadways, a standard of LOS D or better on a peak hour basis was used as the planning objective for the evaluation potential freeway impacts of this development. The following criteria were use to evaluate potential freeway impacts:

- If a Caltrans facility (freeway mainline, ramp merge/diverge) is projected to operate acceptably (i.e., LOS D or better) without project and the project is expected to cause the facility to operate at an unacceptable service level (i.e., LOS E or F), the impact is considered significant.
- If a Caltrans facility is projected to operate unacceptably (i.e., LOS E or F) without project and the project is expected to increase the mainline V/C ratio by 0.05 or more or increase ramp merge/diverge area traffic volumes by 5 percent or more, the impact is considered significant.

Stanislaus County considers LOS C or better to be acceptable and LOS D or below to be unacceptable for intersections and roadways located in the County. This EIR uses City of Modesto LOS criteria for all intersections and roadways within the City of Modesto's Sphere of Influence, including freeway segments and ramp junctions under Caltrans jurisdiction, and Stanislaus County LOS criteria for intersections and roadways located in the County and beyond the City's Sphere of Influence. The following intersections and roadway segment are outside of the City's Sphere of Influence:

- Kiernan Avenue and Salida Boulevard
- Kiernan Avenue and State Route 99 SB Ramps
- Kiernan Avenue and State Route 99 NB Ramps
- Kiernan Avenue and Sisk Road
- Kiernan Avenue and Stoddard Road
- Kiernan Avenue between Salida Boulevard and west of Dale Road

METHODOLOGY AND ASSUMPTIONS

The impacts of traffic from the proposed project on the surrounding transportation system were assessed by establishing project trip generation, trip distribution, and trip assignment, in order to assign the project-generated traffic to roadway segments and intersections. This information was used in traffic computer models to compare traffic conditions without and with the project to determine the effects of project-generated traffic on the study intersections and roadways. The impact analysis was carried out for two future scenarios in addition to the existing scenario: Near-Term and Cumulative (2025). For each scenario, a baseline and a baseline plus project scenario was developed and analyzed.

PROJECT TRIP GENERATION

The amount of traffic generated by the proposed project was estimated by applying trip generation rates from the Institute of Transportation Engineers' (ITE's) *Trip Generation, 7th Edition*. The ITE trip rates represent standard engineering practice for estimating how much traffic would be generated at the driveways into and out of the project site. For projects that contain a mixture of uses, internal trips are assumed because office workers, hotel guests, and residents would likely patronize the retail portions of the project. Information contained in the June 2004 ITE *Trip Generation Handbook* was used to estimate internal, pass-by[4], and diverted-link trips[5]. Using the procedures outlined in Chapter 7 of the *Trip Generation Handbook*, it is estimated that approximately nine percent of project traffic would remain internal to the site on a daily basis, with approximately two percent during the AM peak hour and approximately eight percent during the PM peak hour. Pass-by trips were assumed for the retail and restaurant portions of the project and, based on rates presented by ITE, City staff selected a 15 percent pass-by trip reduction to weekday daily traffic volumes and a 20 percent reduction to PM peak hour traffic volumes for the retail portion and a 40 percent pass-by trip reduction to weekday daily traffic volumes and the AM and PM peak hour traffic volumes for the restaurant portion. No reductions for diverted-link trips are included in the analysis, as they would be new trips to the study area immediately surrounding the project site. As shown in Table IV.C.9, below, the proposed project is estimated to generate approximately 37,900 weekday daily trips, including 2,890 AM peak hour trips and 3,798 PM peak hour trips. Approximately 3,530 vehicle trips are expected to remain internal to the development on a daily basis, with 68 trips remaining internal during the AM peak hour and 320 trips remaining internal during the PM peak hour. After

[4] Traffic that would otherwise already be on the adjacent roadways, but the driver decides to stop at the site (e.g., to purchase an item on their way home from work).
[5] Traffic on other nearby roadways, but the driver decides to take a short detour to stop at the site.

Table IV.C.9: Project Trip Generation Estimates (Vehicle Trips)

Land Use	Units	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Business Park	1,498,224 sf[1]	16,850	1,705	325	2,030	419	1,402	1,821
Mixed Use								
General Office	79,000 sf	870	108	14	122	20	97	117
Regional Commercial	360,000 sf	15,610	226	145	371	700	758	1,458
Apartments	80 du[2]	540	8	33	41	24	26	50
Restaurant	11,000 sf	1,400	66	61	127	73	47	120
Suites Hotel	175 rooms	1,090	56	28	84	40	56	96
Townhomes (MHDR)	262 du	1,540	20	95	115	91	45	136
Sub-total		**37,900**	**2,189**	**701**	**2,890**	**1,367**	**2,431**	**3,798**
Less Internal Trips		(3,530)	(34)	(34)	(68)	(160)	(160)	(320)
Less Retail Pass-By Trips		(2,100)				(132)	(132)	(264)
Less Restaurant Pass-By Trips		(500)	(24)	(24)	(48)	(22)	(22)	(44)
Total		**31,770**	**2,131**	**643**	**2,774**	**1,053**	**2,117**	**3,170**

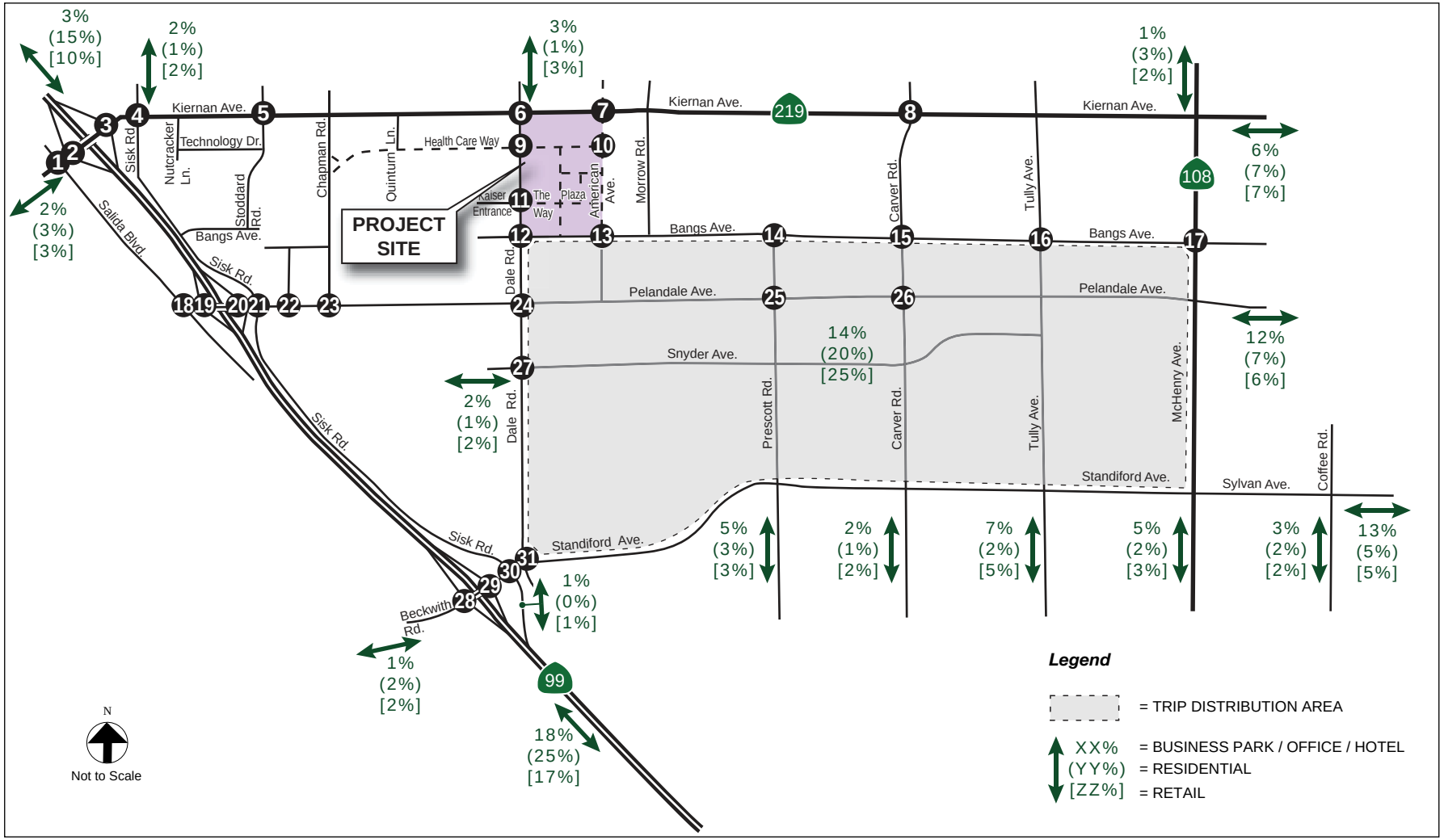
Notes:
[1] sf refers to square footage and trip generation rates are calculated per 1,000 square feet.
[2] du refers to dwelling units.

Source: Institute of Transportation Engineers and Fehr & Peers, 2008.

accounting for the internal trips, retail pass-by trips, and restaurant pass-by trips, the proposed project is expected to generate 31,770 net-new daily trips, 2,774 net-new AM peak hour trips, and 3,170 net-new PM peak hour trips.

PROJECT TRIP DISTRIBUTION

Trip distribution for the proposed project was determined through a review of existing vehicle turning movement volumes near the project site and the City of Modesto Travel Demand Model. The projected trip distribution for the proposed business park, mixed use, and medium high density residential land uses is presented on Figure IV.C.2 as percentages which take into consideration existing travel patterns and the locations of complementary land uses. PM peak hour project trips were assigned through the study intersections based on these percentages (see Figure 6 in Appendix B, pp. 33-34).



SOURCE: Fehr & Peers, Turnstone Consulting

FIGURE IV.C.2: PROJECT TRIP DISTRIBUTION

NEAR-TERM BASELINE SCENARIO

The near-term baseline scenario represents traffic conditions over a 5- to 10- year horizon depending on the timing of planned transportation system improvements and traffic volume increases due to approved and pending development projects plus traffic increases to account for regional growth. Traffic volumes for the near-term baseline conditions were estimated by adding traffic generated by approved and pending development projects (not yet constructed) in the City and in the County to the existing traffic volumes with existing traffic volumes increased by 10 percent to account for regional growth in the near-term period.

Transportation System Improvements

Several roadway improvements in the study area were included in the analysis of near-term conditions, as these improvements are conditions of approval for projects in the area, or are funded projects that have a reasonable expectation of being constructed over a 5- to 10- year time horizon:

- Construction of the Kiernan Avenue Class B Expressway.
- Construction of the Pelandale Avenue Class B Expressway.
- Construction of a second eastbound left-turn lane, a second southbound through lane, a second southbound left-turn lane, a second westbound left-turn lane, a westbound right-turn lane, and the conversion of the existing northbound right-turn lane to a combined through and right-turn lane at the Pelandale Avenue intersection with Sisk Road.
- Construction of a westbound right-turn lane to SR 99 at the Pelandale Avenue intersection with the SR 99 Northbound Ramps.
- Construction of a third northbound and a third southbound through lane on Dale Road from Braden Avenue to Standiford Avenue. *(This improvement was completed in 2007.)*
- Widening Standiford Avenue at Dale Road to provide three westbound through lanes and a free westbound right-turn lane. *(This improvement was completed in 2007.)*
- Installation of a traffic signal at the Bangs Avenue/Prescott Road intersection.

Caltrans will be widening and upgrading Kiernan Avenue to a four-lane Class B expressway from SR 99 to McHenry Avenue (SR 108). Construction is anticipated to start in 2008. As part of the widening project, traffic signals will be installed at Stoddard Road, Dale Road, Carver Road, and Tully Road with roadway and intersection improvements east of Morrow Road projected to be completed as part of the second phase.

The lane configurations at these intersections will include a left-turn lane, a through lane, and a shared through/right-turn lane on the Kiernan Avenue approaches. Lane configurations on the side streets will contain a left-turn lane and a shared through/right-turn lane. In addition,

improvements at the Kiernan Avenue/SR 99 southbound and northbound ramp intersections will be constructed.

The City of Modesto is upgrading Pelandale Avenue from Dale Road to McHenry Avenue to a six-lane expressway in conjunction with intersection improvements on Pelandale Avenue at Prescott Road, Carver Road, Tully Road, and McHenry Avenue. Kaiser Medical Center is also funding planned improvements at the Kiernan Avenue/Dale Road and Pelandale Avenue/Dale Road intersections. The near-term baseline intersection lane configurations are presented on Figure 7 in Appendix B, pp. 37-38.

Near-Term Baseline Intersection Levels of Service

Service levels were calculated for the study intersections for near-term baseline conditions with roadway improvements and projected traffic volumes. The LOS analysis results are presented in Table IV.C.10. Locations where near-term baseline peak hour levels of service exceed the City standard of LOS D (LOS C if a county road) are shown in bold. Traffic volume increases added by approved and pending projects and projected regional growth would result in the following intersections operating at unacceptable LOS under City criteria during the weekday AM peak hour, the PM peak hour, or both.

- Bangs Avenue and Carver Road (AM and PM peak hours)
- Bangs Avenue and Tully Road (AM and PM peak hours)
- Pelandale Avenue and SR 99 SB Ramps (PM peak hour)
- Pelandale Avenue and Sisk Road (PM peak hour)
- Pelandale Avenue and Dale Road (PM peak hour)
- Standiford Avenue and SR 99 SB Ramps (PM peak hour)
- Standiford Avenue and SR 99 NB Ramps (PM peak hour)
- Standiford Avenue and Sisk Road (PM peak hour)

The following county locations would operate at an unacceptable LOS under County criteria:

- Kiernan Avenue and SR 99 SB Ramps (AM and PM peak hours)
- Kiernan Avenue and Sisk Road (AM and PM peak hours)

In addition, the need for signalization at stop-controlled intersections was assessed, and the following two intersections were shown to meet the criteria for traffic signalization:

- Bangs Avenue and Carver Road
- Bangs Avenue and Tully Road

Table IV.C.10: Near-Term Baseline Intersection LOS Conditions

	Intersection	Traffic Control	AM		PM		Meets Signal Warrant AM/PM
			Delay[1,2]	LOS[1,2]	Delay	LOS	
1.	Kiernan Avenue/Salida Boulevard[3]	Signalized	16	B	17	B	
2.	Kiernan Avenue/SR 99 SB Ramps[3]	Signalized	**52**	**D**	**40**	**D**	
3.	Kiernan Avenue/SR 99 NB Ramps[3]	Signalized	20	B	23	C	
4.	Kiernan Avenue/Sisk Road[3]	Signalized	**40**	**D**	**70**	**E**	
5.	Kiernan Avenue/Stoddard Road[3]	Signalized	32	C	29	C	
6.	Kiernan Avenue/Dale Road	Signalized	41	D	48	D	
7.	Kiernan Avenue/American Avenue	Unsignalized	1 (13)	A (B)	0 (12)	A (B)	
8.	Kiernan Avenue/Carver Road	Signalized	14	B	19	B	
9.	Healthcare Way/Dale Road	Signalized	23	C	26	C	
10.	Healthcare Way/American Avenue	Unsignalized	–	–	–	–	
11.	Kaiser Main Entrance/Dale Road	Signalized	18	B	28	C	
12.	Bangs Avenue/Dale Road	Signalized	24	C	26	C	
13.	Bangs Avenue/American Avenue	Unsignalized	3 (23)	A (C)	7 (**36**)	A (**E**)	
14.	Bangs Avenue/Prescott Road	Signalized	14	B	27	C	
15.	Bangs Avenue/Carver Road	Unsignalized	**141**	**F**	**257**	**F**	**Y/Y**
16.	Bangs Avenue/Tully Road	Unsignalized	**113**	**F**	**300**	**F**	**Y/Y**
17.	Bangs Avenue/McHenry Avenue	Signalized	25	C	36	D	
18.	Pelandale Avenue/Salida Boulevard	Signalized	25	C	21	C	
19.	Pelandale Avenue/SR 99 SB Ramps	Signalized	29	C	**188**	**F**	
20.	Pelandale Avenue/SR 99 NB Ramps	Signalized	29	C	22	C	
21.	Pelandale Avenue/Sisk Road	Signalized	30	C	**98**	**F**	
22.	Pelandale Avenue/Northpointe Shopping Center	Signalized	8	A	36	D	
23.	Pelandale Avenue/Chapman Road	Signalized	6	A	9	A	
24.	Pelandale Avenue/Dale Road	Signalized	40	D	**74**	**E**	
25.	Pelandale Avenue/Prescott Road	Signalized	25	C	30	C	
26.	Pelandale Avenue/Carver Road	Signalized	24	C	31	C	
27.	Snyder Avenue/Dale Road	Signalized	26	C	31	C	
28.	Standiford Avenue/SR 99 SB Ramps	Signalized	53	D	**320**	**F**	
29.	Standiford Avenue/SR 99 NB Ramps	Signalized	29	C	**179**	**F**	
30.	Standiford Avenue/Sisk Road	Signalized	31	C	**212**	**F**	
31.	Standiford Avenue/Dale Road	Signalized	24	C	41	D	

Notes:

[1] For unsignalized intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement).

[2] Intersections operating at unacceptable levels of service are shown in **bold** (LOS E or worse for City roads and LOS D or worse for County roads).

[3] These locations are evaluated against Stanislaus County LOS standards where LOS D, E, or F are considered deficient levels of service..

Source: Fehr & Peers, 2008.

Near-Term Baseline Freeway and Roadway Segment Levels of Service

Roadway segment v/c ratios were calculated based on the near-term baseline traffic volumes and the carrying capacities of the segments analyzed. The near-term baseline freeway and roadway segment v/c ratios and peak hour levels of service are shown in Table IV.C.11. Freeway and roadway segments that would operate at unacceptable LOS during the AM peak hour, the PM peak hour, or both are as follows:

- Northbound SR 99 between Pelandale Avenue and Standiford Avenue (AM peak hour)
- Northbound SR 99 between Standiford Avenue and Briggsmore Avenue (AM and PM peak hours)
- Southbound SR 99 between Hammet Road and Kiernan Avenue (PM peak hour)
- Southbound SR 99 between Kiernan Avenue and Pelandale Avenue (PM peak hour)
- Southbound SR 99 between Pelandale Avenue and Standiford Avenue (PM peak hour)
- Southbound SR 99 between Standiford Avenue and Briggsmore Avenue (PM peak hour)
- Eastbound Kiernan Avenue between SR 99 SB Ramps and SR 99 NB Ramps (AM and PM peak hours)
- Eastbound Kiernan Avenue between SR 99 NB Ramps and Sisk Road (AM and PM peak hours)
- Westbound Kiernan Avenue between SR 99 NB Ramps and Sisk Road (AM and PM peak hours)
- Eastbound Pelandale Avenue between SR 99 SB Ramps and SR 99 NB Ramps (PM peak hour)
- Eastbound Pelandale Avenue between SR 99 NB Ramps and Sisk Road (PM peak hour)
- Eastbound Pelandale Avenue between Sisk Road and Northpointe Shopping Center (PM peak hour)
- Eastbound Pelandale Avenue between Chapman Road and Dale Road (PM peak hour)
- Westbound Pelandale Avenue between SR 99 SB Ramps and SR 99 NB Ramps (PM peak hour)
- Westbound Pelandale Avenue between SR 99 NB Ramps and Sisk Road (PM peak hour)
- Eastbound Bangs Avenue between American Avenue and Prescott Road (PM peak hour)
- Northbound Dale Road from The Plaza Way to Bangs Avenue (AM peak hour)
- Northbound Dale Road from Bangs Avenue to Pelandale Avenue (AM peak hour)
- Southbound Dale Road between Snyder Avenue and Veneman Avenue (PM peak hour)

Table IV.C.11: Near-Term Baseline Freeway and Roadway Segment LOS Conditions

Freeway or Roadway Segment[1]	Direction	AM		PM	
		v/c	LOS	v/c	LOS
SR 99	NB	0.88	D	0.88	D
Hammett Rd to Kiernan Ave	SB	0.86	D	**1.00**	**E**
SR 99	NB	0.90	D	0.85	D
Kiernan Ave to Pelandale Ave	SB	0.84	D	**0.98**	**E**
SR 99	NB	**0.94**	**E**	0.84	D
Pelandale Ave to Standiford Ave	SB	0.85	D	**0.98**	**E**
SR 99	NB	**1.00**	**E**	**0.92**	**E**
Standiford Ave to Briggsmore	SB	0.90	D	**1.01**	**F**
Kiernan Avenue	WB	0.48	A	0.57	A
Salida Blvd to SR 99 SB Ramps[2]	EB	0.70	B	0.60	A
Kiernan Avenue	WB	0.70	B	0.76	C
SR 99 SB Ramps to SR 99 NB Ramps[2]	EB	**1.01**	**F**	**0.86**	**D**
Kiernan Avenue	WB	**0.91**	**E**	**1.12**	**F**
SR 99 NB Ramps to Sisk Road[2]	EB	**1.29**	**F**	**1.09**	**F**
Kiernan Avenue	WB	0.44	A	0.59	A
Sisk Road to Stoddard Road[2]	EB	0.69	B	0.54	A
Kiernan Avenue	WB	0.51	A	0.49	A
Stoddard Road to Dale Road[2]	EB	0.48	A	0.54	A
Kiernan Avenue	WB	0.44	A	0.36	A
Dale Road to American Avenue	EB	0.30	A	0.43	A
Kiernan Avenue	WB	0.44	A	0.39	A
American Avenue to Carver Road	EB	0.28	A	0.42	A
Kiernan Avenue	WB	0.25	A	0.37	A
Carver Road to McHenry Avenue	EB	0.16	A	0.40	A
Pelandale Avenue	WB	0.37	A	0.55	A
Salida Blvd to SR 99 SB Ramps	EB	0.78	C	0.83	D
Pelandale Avenue	WB	0.60	A	**1.13**	**F**
SR 99 SB Ramps to SR 99 NB Ramps	EB	0.56	A	**0.99**	**E**
Pelandale Avenue	WB	0.66	B	**1.12**	**F**
SR 99 NB Ramps to Sisk Road	EB	0.74	C	**1.00**	**E**
Pelandale Avenue	WB	0.69	B	0.81	D
Sisk Road to Northpointe Shopping Center	EB	0.62	B	**1.01**	**F**
Pelandale Avenue	WB	0.71	C	0.78	C
Northpointe Shopping Ctr. to Chapman Rd.	EB	0.56	A	0.90	D
Pelandale Avenue	WB	0.72	C	0.83	D
Chapman Road to Dale Road	EB	0.56	A	**0.92**	**E**
Pelandale Avenue	WB	0.35	A	0.37	A
Dale Road to American Avenue	EB	0.22	A	0.53	A
Pelandale Avenue	WB	0.41	A	0.35	A
American Avenue to Prescott Road	EB	0.20	A	0.50	A

(cont'd)

Table IV.C.11 (continued)

Freeway or Roadway Segment	Direction	AM		PM	
		v/c	LOS	v/c	LOS
Pelandale Avenue	WB	0.35	A	0.32	A
Prescott Road to Carver Road	EB	0.20	A	0.46	A
Pelandale Avenue	WB	0.30	A	0.28	A
Carver Road to Tully Road	EB	0.17	A	0.40	A
Bangs Avenue	WB	0.66	B	0.64	B
Dale Road to American Avenue	EB	0.55	A	0.70	C
Bangs Avenue	WB	0.70	B	0.53	A
American Avenue to Prescott Road	EB	0.40	A	**0.98**	**E**
Bangs Avenue	WB	0.65	B	0.53	A
Prescott Road to Carver Road	EB	0.54	A	0.88	D
Bangs Avenue	WB	0.46	A	0.51	A
Carver Road to Tully Road	EB	0.50	A	0.82	D
Bangs Avenue	WB	0.55	A	0.55	A
Tully Road to McHenry Avenue	EB	0.45	A	0.67	B
Dale Road	NB	0.37	A	0.71	C
Kiernan Avenue to Healthcare Way	SB	0.65	B	0.59	A
Dale Road	NB	0.68	B	0.72	C
Healthcare Way to The Plaza Way	SB	0.60	A	0.88	D
Dale Road	NB	**1.10**	**F**	0.77	C
The Plaza Way to Bangs Avenue	SB	0.36	A	0.76	C
Dale Road	NB	**1.11**	**F**	0.74	C
Bangs Avenue to Pelandale Ave	SB	0.37	A	0.88	D
Dale Road	NB	0.78	C	0.83	D
Pelandale Avenue to Snyder Avenue	SB	0.35	A	0.72	C
Dale Road	NB	0.54	A	0.81	D
Snyder Avenue to Veneman Avenue	SB	0.52	A	**0.93**	**E**
Dale Road	NB	0.44	A	0.60	A
Veneman Avenue to Standiford Ave.	SB	0.28	A	0.72	C

Notes:
[1] Freeway and roadway segments operating at unacceptable levels (LOS E or F if within the City's jurisdiction or LOS D, LOS E, or LOS F if within the County's jurisdiction) are indicated in **bold**.
[2] These segments are evaluated against Stanislaus County LOS standards where LOS D, E, or F are considered deficient levels of service.

Source: Fehr & Peers, 2008.

Near-Term Baseline Freeway Interchange Ramp Levels of Service

Near-term baseline freeway on-ramp and off-ramp peak hour levels of service were determined for three on-ramps and three off-ramps on SR 99. Under the near-term baseline scenario most merge/diverge areas would operate at an unacceptable LOS E or LOS F. Table IV.C.12 presents the ramp merging (on-ramp) and diverging (off-ramp) analysis results for the AM and PM peak hour conditions. The following merge/diverge areas would operate at unacceptable LOS during the AM peak hour, the PM peak hour, or both:

- Kiernan Avenue Southbound Off-ramp Diverge (AM and PM peak hours)
- Kiernan Avenue Southbound On-ramp Merge (PM peak hour)
- Kiernan Avenue Northbound Off-ramp Diverge (AM and PM peak hours)
- Pelandale Avenue Southbound Off-ramp Diverge (AM and PM peak hours)
- Pelandale Avenue Southbound On-ramp Merge (PM peak hour)
- Pelandale Avenue Northbound Off-ramp Diverge (AM and PM peak hours)
- Pelandale Avenue Northbound On-ramp Merge (AM peak hour)
- Standiford Avenue Southbound Off-ramp Diverge (AM and PM peak hours)
- Standiford Avenue Southbound On-ramp Merge (PM peak hour)
- Standiford Avenue Northbound Off-ramp Diverge (AM and PM peak hours)

Table IV.C.12: Near-Term Baseline SR 99 Ramp Merge/Diverge LOS Conditions

Ramp Merge/Diverge[1]	AM		PM	
	Density[2]	LOS	Density	LOS
Kiernan Avenue Southbound Off-ramp Diverge	**36**	**E**	**39**	**E**
Kiernan Avenue Southbound On-ramp Merge	33	D	**43**	**F**
Kiernan Avenue Northbound Off-ramp Diverge	**44**	**F**	**47**	**F**
Kiernan Avenue Northbound On-ramp Merge	32	D	33	D
Pelandale Avenue Southbound Off-ramp Diverge	**44**	**F**	**50**	**F**
Pelandale Avenue Southbound On-ramp Merge	31	D	**37**	**E**
Pelandale Avenue Northbound Off-ramp Diverge	**38**	**E**	**36**	**E**
Pelandale Avenue Northbound On-ramp Merge	**36**	**E**	34	D
Standiford Avenue Southbound Off-ramp Diverge	**36**	**E**	**42**	**F**
Standiford Avenue Southbound On-ramp Merge	34	D	**38**	**F**
Standiford Avenue Northbound Off-ramp Diverge	**40**	**E**	**38**	**E**
Standiford Avenue Northbound On-ramp Merge	34	D	31	D

Notes:
[1] Ramp merge/diverge interchanges operating at unacceptable levels (LOS E or F) are indicated in **bold**.
[2] Density is presented in passenger cars per mile per lane (pc/mi/ln).

Source: Fehr & Peers, 2008.

CUMULATIVE (2025) BASELINE SCENARIO

The cumulative baseline scenario represents year 2025 conditions with buildout of the City of Modesto according to the City's *General Plan* land use designations and planned transportation system. The Transportation Planning Partnership Group Countywide Travel Demand Model was used to develop future traffic forecasts for City of Modesto buildout in 2025. The travel demand model, modified to include the proposed project's land uses and roadway network, was used to develop daily cumulative roadway segment forecasts. The proposed project's land uses were then removed to generate daily roadway segment forecasts for the cumulative baseline scenario.

Transportation System Improvements

The City of Modesto and Caltrans would make the following roadway improvements in the vicinity of the project site:

- Widen SR 99 to eight lanes[6]
- Widen Bangs Avenue to four lanes between Dale Road and McHenry Avenue
- Widen Standiford Avenue to six lanes
- Improve the SR 99/Kiernan Avenue, SR 99/Pelandale Avenue, and SR 99/Standiford Avenue interchanges

Cumulative Baseline Freeway and Roadway Segment Levels of Service

Cumulative baseline freeway and roadway segment v/c ratios were calculated based on the comparison of projected daily traffic volumes to the carrying capacities of the segments. Weekday daily conditions were evaluated for consistency with the traffic analysis in the *Final Master Environmental Impact Report for the Urban Area General Plan* and to reflect the traffic projections (daily roadway segment volumes) produced by the City's travel demand model. The cumulative baseline freeway and roadway segment v/c ratios and levels of service are shown in Table IV.C.13. The following freeway and roadway segments would operate at unacceptable LOS E or LOS F:

- SR 99 between Standiford Avenue and Briggsmore Avenue
- Kiernan Avenue between SR 99 SB Ramps and Stoddard Road
- Pelandale Avenue between Sisk Road and Chapman Road
- Bangs Avenue between Tully Road and McHenry Avenue
- Dale Road between Veneman Avenue and Standiford Avenue

[6] California Department of Transportation – District 10, *Transportation Concept Report State Route 99*, November 2002, p. 75

Table IV.C.13: Cumulative Baseline Freeway and Roadway Segment LOS Conditions

Freeway or Roadway Segment[1]	Weekday Daily	
	v/c	LOS
SR 99 - Hammett Road to Kiernan Avenue	0.74	C
SR 99 - Kiernan Avenue to Pelandale Avenue	0.71	C
SR 99 - Pelandale Avenue to Standiford Avenue	0.72	C
SR 99 - Standiford Avenue to Briggsmore Avenue	**0.91**	**E**
Kiernan Avenue - Salida Boulevard to SR 99 SB Ramps[2]	0.64	B
Kiernan Avenue - SR 99 SB Ramps to SR 99 NB Ramps[2]	**1.14**	**F**
Kiernan Avenue - SR 99 NB Ramps to Sisk Road[2]	**1.44**	**F**
Kiernan Avenue - Sisk Road to Stoddard Road[2]	**1.39**	**F**
Kiernan Avenue - Stoddard Road to Dale Road[2]	0.76	C
Kiernan Avenue - Dale Road to American Avenue	0.77	C
Kiernan Avenue - American Avenue to Carver Road	0.80	C
Kiernan Avenue - Carver Road to McHenry Avenue	0.86	D
Pelandale Avenue - Salida Boulevard to SR 99 SB Ramps	0.67	B
Pelandale Avenue - SR 99 SB Ramps to SR 99 NB Ramps	0.60	A
Pelandale Avenue - SR 99 NB Ramps to Sisk Road	0.79	C
Pelandale Avenue - Sisk Road to Northpointe Shopping Center	**1.11**	**F**
Pelandale Avenue - Northpointe Shopping Center to Chapman Road	**0.99**	**E**
Pelandale Avenue - Chapman Road to Dale Road	0.86	D
Pelandale Avenue - Dale Road to Prescott Road	0.56	A
Pelandale Avenue - Prescott Road to Carver Road	0.78	C
Pelandale Avenue - Carver Road to Tully Road	0.71	C
Bangs Avenue - Dale Road to American Avenue	0.27	A
Bangs Avenue - American Avenue to Prescott Road	0.36	A
Bangs Avenue - Prescott Road to Carver Road	0.46	A
Bangs Avenue - Carver Road to Tully Road	0.51	A
Bangs Avenue - Tully Road to McHenry Avenue	**0.94**	**E**
Dale Road - Kiernan Avenue to Healthcare Way	0.68	B
Dale Road - Healthcare Way to The Plaza Way	0.69	B
Dale Road - The Plaza Way to Bangs Avenue	0.76	C
Dale Road - Bangs Avenue to Pelandale Ave	0.87	D
Dale Road - Pelandale Avenue to Snyder Avenue	0.87	D
Dale Road - Snyder Avenue to Veneman Avenue	0.87	D
Dale Road - Veneman Avenue to Standiford Avenue	**1.02**	**F**

Notes:
[1] Freeway and roadway segments operating at unacceptable levels (LOS E or F if within the City's jurisdiction or LOS D, LOS E, or LOS F if within the County's jurisdiction) are indicated in **bold**.
[2] These segments are evaluated against Stanislaus County LOS standards where LOS D, E, or F are considered deficient levels of service.

Source: Fehr & Peers, 2008.

PROJECT IMPACTS AND MITIGATION

The results of the intersection and roadway segment traffic analysis are presented for each of the following three scenarios: existing plus project, near-term baseline plus project, and cumulative baseline plus project. The baseline intersection and roadway traffic conditions for the existing, near-term, and cumulative scenarios have been discussed and are compared to the results of the analysis with project-generated traffic. Significant environmental impacts from project-generated traffic are described for each scenario based on the Significance Criteria listed above on pp. IV.C.23-IV.C.24, and mitigation measures are identified where appropriate.

EXISTING PLUS PROJECT SCENARIO

The existing plus project scenario represents existing conditions with project-specific transportation system improvements and traffic volume increases. The peak hour project-specific traffic volumes were added to the existing traffic volumes to determine the existing plus project traffic volumes. Roadway improvements identified as part of the project would include:

- The extension of American Avenue as a north-south two-lane minor collector from Kiernan Avenue to Bangs Avenue
- The extension of Healthcare Way as an east-west two-lane minor collector between Dale Road and American Avenue including a roundabout at American Avenue
- Construction of The Plaza Way as an east-west two-lane minor collector between Dale Road and the new Chopra Parkway
- Construction of Chopra Parkway as a north-south two-lane minor collector

The improved intersections are shown in Appendix B, Figure 10 on p. 57.

Intersection Levels of Service

Service levels were calculated for all 31 study intersections for existing plus project conditions based on the project-related improvements to the internal and perimeter roadway network and projected traffic volumes. In general, traffic generated by the proposed project would increase delays at both signalized and unsignalized intersections, resulting in an increase in the number of study intersections that would operate at unacceptable LOS under the existing plus project scenario. Existing and existing plus project peak hour LOS analysis results are presented in Table IV.C.14. Locations where peak hour levels of service exceed the City's LOS D (or the County's LOS C) are shown in bold and indicate a significant impact.

Table IV.C.14: Intersection LOS Conditions – Existing and Existing Plus Project

Intersection		Traffic Control	Existing				Traffic Control	Existing Plus Project				Significant Impact Y/N?
			AM		PM			AM		PM		
			Delay[1,2]	LOS[1,2]	Delay	LOS		Delay	LOS	Delay	LOS	
1.	Kiernan Avenue/Salida Boulevard	Signalized	26	C	17	B	Signalized	26	C	17	B	N
2.	Kiernan Avenue/SR 99 SB Ramps	Signalized	**48**	**D**	**45**	**D**	Signalized	**63**	**E**	**51**	**D**	Y[3&6]
3.	Kiernan Avenue/SR 99 NB Ramps	Signalized	15	B	19	B	Signalized	15	B	20	B	N
4.	Kiernan Avenue/Sisk Road	Signalized	24	C	**41**	**D**	Signalized	26	C	**53**	**D**	Y[6]
5.	Kiernan Avenue/Stoddard Road	Unsignalized	7 **(69)**	A **(F)**	**128 (>50)**	**F (F)**	Unsignalized	11 **(140)**	B **(F)**	**>150 (>50)**	**F (F)**	Y[4&6]
6.	Kiernan Avenue/Dale Road	Unsignalized	**55**	**F**	**83**	**F**	Unsignalized	**95**	**F**	**158**	**F**	Y[3]
7.	Kiernan Avenue/American Avenue	Unsignalized	1 (18)	A (C)	1 (18)	A (C)	Unsignalized	2 (30)	A (D)	8 **(>50)**	A **(F)**	Y[5]
8.	Kiernan Avenue/Carver Road	Unsignalized	8	A	**60**	**F**	Unsignalized	11	B	**223**	**F**	Y[3]
9.	Healthcare Way/Dale Road	Signalized	4	A	7	A	Signalized	29	C	24	C	N
10.	Healthcare Way/American Avenue	Unsignalized	–	–	–	–	Roundabout	4	A	5	A	N
11.	Kaiser Main Entrance/Dale Road	Signalized	5	A	8	A	Signalized	19	B	31	C	N
12.	Bangs Avenue/Dale Road	Signalized	8	A	10	A	Signalized	9	A	11	B	N
13.	Bangs Avenue/American Avenue	Unsignalized	0 (9)	A (A)	1 (11)	A (B)	Roundabout	**>150 (>50)**	**F (F)**	**>150 (>50)**	**F (F)**	Y[4&5]
14.	Bangs Avenue/Prescott Road	Unsignalized	10	A	12	B	Unsignalized	21	C	**152**	**F**	Y[3]
15.	Bangs Avenue/Carver Road	Unsignalized	13	B	16	C	Unsignalized	**37**	**E**	**74**	**F**	Y[3]
16.	Bangs Avenue/Tully Road	Unsignalized	15	B	**69**	**F**	Unsignalized	35	D	**164**	**F**	Y[3]
17.	Bangs Avenue/McHenry Avenue	Signalized	21	C	19	B	Signalized	23	C	22	C	N
18.	Pelandale Avenue/Salida Boulevard	Signalized	24	C	18	B	Signalized	24	C	18	B	N
19.	Pelandale Avenue/SR 99 SB Ramps	Signalized	29	C	**90**	**F**	Signalized	30	C	**102**	**F**	Y[3]
20.	Pelandale Avenue/SR 99 NB Ramps	Signalized	19	B	15	B	Signalized	31	C	22	C	N
21.	Pelandale Avenue/Sisk Road	Signalized	26	C	**72**	**E**	Signalized	27	C	**84**	**F**	Y[3]
22.	Pelandale Avenue/Northpointe Shopping Center	Signalized	10	A	30	C	Signalized	10	A	30	C	N
23.	Pelandale Avenue/Chapman Road	Signalized	5	A	8	A	Signalized	5	A	8	A	N
24.	Pelandale Avenue/Dale Road	Signalized	22	C	31	C	Signalized	30	C	38	D	N
25.	Pelandale Avenue/Prescott Road	Signalized	17	B	21	C	Signalized	27	C	37	D	N

(cont'd.)

Table IV.C.14 (continued)

Intersection		Traffic Control	Existing				Traffic Control	Existing Plus Project				Significant Impact Y/N?
			AM		PM			AM		PM		
			Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	
26.	Pelandale Avenue/Carver Road	Signalized	16	B	16	B	Signalized	20	B	19	B	N
27.	Snyder Avenue/Dale Road	Signalized	18	B	22	C	Signalized	18	B	26	C	N
28.	Standiford Avenue/SR 99 SB Ramps	Signalized	40	D	**187**	**F**	Signalized	42	D	**198**	**F**	Y[3]
29.	Standiford Avenue/SR 99 NB Ramps	Signalized	19	B	34	C	Signalized	29	C	42	D	N
30.	Standiford Avenue/Sisk Road	Signalized	26	C	46	D	Signalized	26	C	51	D	N
31.	Standiford Avenue/Dale Road	Signalized	21	C	28	C	Signalized	29	C	36	D	N

Notes:

[1] For unsignalized intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement).

[2] Intersections operating at unacceptable levels of service (LOS E or worse-City of Modesto or LOS D or worse-Stanislaus County) are shown in **bold**.

[3] Project increases delay by more than 5.0 seconds at an intersection operating at LOS E or F or results in LOS E or F conditions.

[4] Project increases side street delay by more than 30 seconds or delay increase is immeasurable and project adds more than 10 vehicles to stop-controlled approach.

[5] Project results in LOS F conditions for worst movement.

[6] This intersection is located in the County where LOS C is the standard.

Source: Fehr & Peers, 2008.

Under existing conditions, a total of five signalized intersections operate at unacceptable LOS. Compared to existing conditions, the five signalized intersections that currently operate at LOS E or worse (LOS D or worse for county roads) would experience an increase in the average delay of more than five seconds with project-generated traffic. The proposed project could impact five signalized intersections.

The project would not cause other signalized intersections to degrade below LOS D, to degrade from LOS E to LOS F, or, for locations already at LOS E or F, would not increase the average delay by five seconds or more.

Under existing conditions, a total of four stop-controlled intersections operate at unacceptable LOS. Compared to existing conditions, the four stop-controlled intersections that currently operate at LOS F would experience either an increase in minor movement delay by more than 30 seconds or an increase in traffic by 10 or more vehicles per lane on the controlled approach. Four additional stop-controlled intersections would operate at LOS E or LOS F during the AM peak hour, the PM peak hour, or both with project-generated traffic. The proposed project could impact eight stop-controlled intersections.

The project would not cause controlled movements at other unsignalized intersections to degrade from LOS E or better to LOS F; or, for locations already at LOS F, would not satisfy the peak hour volume traffic signal warrant, would not increase the minor movement delay by more than 30 seconds, and would not result in a traffic increase of 10 or more vehicles per lane on the controlled approach for locations where the intersection already meets the traffic signal warrant prior to the addition of project traffic and delay cannot be measured.

In summary, 13 intersections would experience increased delays with project-generated traffic. For a list of impacted intersections, please see Impact C.1 on p. IV.C.46.

Freeway and Roadway Segment Levels of Service

Freeway and roadway segment v/c ratios were calculated based on the comparison of existing traffic volumes plus project-generated traffic to the carrying capacities of the segments analyzed. The existing and existing plus project freeway and roadway segment v/c ratios, peak hour levels of service, and change in v/c ratios resulting from implementation of the proposed project are shown in Table IV.C.15.

Under existing conditions, a total of 14 roadway segments operate at LOS E or worse during the AM peak hour, the PM peak hour, or both. Compared to existing conditions, all 14 roadway segments that currently operate at an unacceptable LOS would experience an increase in the v/c ratio of more than 0.05 with project-generated traffic. Nine additional roadway segments would experience a deterioration of service and would operate at LOS E or worse (LOS D or worse if a county road) during the AM peak hour, the PM peak hour, or both with project-generated traffic.

Table IV.C.15: Freeway and Roadway Segment LOS Conditions – Existing and Existing Plus Project

Freeway or Roadway Segment	Dir	Lane	Type	Existing				Existing Plus Project				v/c change		Significant Impact Y/N?
				AM		PM		AM		PM				
				v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	AM	PM	
SR 99	NB	3	FWY[2]	0.75	C	0.73	C	0.76	C	0.75	C	0.01	0.02	N
Hammett Road to Kiernan Avenue	SB	3		0.72	C	0.84	D	0.73	C	0.85	D	0.01	0.01	
SR 99	NB	3	FWY	0.76	C	0.73	C	0.76	C	0.73	C	0.00	0.00	N
Kiernan Avenue to Pelandale Avenue	SB	3		0.73	C	0.83	D	0.73	C	0.83	D	0.00	0.00	
SR 99	NB	3	FWY	0.79	C	0.73	C	0.83	D	0.75	C	0.04	0.02	N
Pelandale Avenue to Standiford Avenue	SB	3		0.75	C	0.82	D	0.76	C	0.86	D	0.01	0.04	
SR 99	NB	3	FWY	0.80	C	0.77	C	0.87	D	0.80	C	0.07	0.03	N
Standiford Avenue to Briggsmore Avenue	SB	3		0.77	C	0.80	C	0.79	C	0.87	D	0.02	0.07	
Kiernan Avenue	WB	2	SA[3]	0.36	A	0.42	A	0.37	A	0.44	A	0.01	0.02	N
Salida Blvd to SR 99 SB Ramps[5]	EB	2		0.51	A	0.46	A	0.52	A	0.47	A	0.01	0.01	
Kiernan Avenue	WB	2	SA	0.51	A	0.50	A	0.51	A	0.52	A	0.00	0.02	**Y**
SR 99 SB Ramps to SR 99 NB Ramps[5]	EB	1		**1.19**	**F**	**1.16**	**F**	**1.33**	**F**	**1.29**	**F**	**0.14**	**0.13**	
Kiernan Avenue	WB	1	SA	**1.20**	**F**	**1.37**	**F**	**1.26**	**F**	**1.55**	**F**	**0.06**	**0.18**	**Y**
SR 99 NB Ramps to Sisk Road[5]	EB	1		**1.44**	**F**	**1.49**	**F**	**1.58**	**F**	**1.61**	**F**	**0.14**	**0.12**	
Kiernan Avenue	WB	1	RR[4]	0.72	C	**0.93**	**E**	0.79	C	**1.13**	**F**	0.07	**0.20**	**Y**
Sisk Road to Stoddard Road[5]	EB	1		**0.94**	**E**	**0.97**	**E**	**1.10**	**F**	**1.09**	**F**	**0.16**	**0.12**	
Kiernan Avenue	WB	1	RR	0.78	C	0.72	C	**0.85**	**D**	**0.92**	**E**	**0.07**	**0.20**	**Y**
Stoddard Road to Dale Road[5]	EB	1		0.67	B	**0.98**	**E**	**0.83**	**D**	**1.11**	**F**	**0.16**	**0.13**	
Kiernan Avenue	WB	1	RR	0.55	A	0.59	A	0.74	C	0.70	B	0.19	0.11	N
Dale Road to American Avenue	EB	1		0.51	A	0.64	B	0.58	A	0.67	B	0.07	0.03	
Kiernan Avenue	WB	1	RR	0.55	A	0.65	B	0.74	C	0.75	C	0.19	0.10	**Y**
American Avenue to Carver Road	EB	1		0.46	A	0.61	B	0.59	A	**1.02**	**F**	0.13	**0.41**	
Kiernan Avenue	WB	1	RR	0.18	A	0.63	B	0.37	A	0.73	C	0.19	0.10	**Y**
Carver Road to McHenry Avenue	EB	1		0.16	A	0.62	B	0.26	A	**0.94**	**E**	0.10	**0.32**	
Pelandale Avenue	WB	2	SA	0.32	A	0.47	A	0.32	A	0.48	A	0.00	0.01	N
Salida Boulevard to SR 99 SB Ramps	EB	1		0.66	B	0.68	B	0.69	B	0.69	B	0.03	0.01	

(cont'd.)

Table IV.C.15 (continued)

Freeway or Roadway Segment	Dir	Lane	Type	Existing				Existing Plus Project				v/c change		Significant Impact Y/N?
				AM		PM		AM		PM				
				v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	AM	PM	
Pelandale Avenue	WB	2	SA	0.48	A	0.84	D	0.55	A	**1.03**	**F**	0.07	**0.19**	**Y**
SR 99 SB Ramps to SR 99 NB Ramps	EB	2		0.43	A	0.75	C	0.44	A	0.76	C	0.01	0.01	
Pelandale Avenue	WB	2	SA	0.76	C	**1.24**	**F**	**0.83**	**D**	**1.44**	**F**	0.07	**0.20**	**Y**
SR 99 NB Ramps to Sisk Road	EB	3		0.54	A	0.78	C	0.67	B	0.84	D	0.13	0.06	
Pelandale Avenue	WB	2	SA	0.79	C	0.85	D	0.86	D	**1.04**	**F**	0.07	**0.19**	**Y**
Sisk Road to Northpointe Shopping Ctr.	EB	3		0.44	A	0.81	D	0.57	A	0.88	D	0.13	0.07	
Pelandale Avenue	WB	3	SA	0.54	A	0.54	B	0.59	A	0.67	B	0.05	0.13	N
Northpointe Shopping Ctr. to Chapman Rd.	EB	3		0.39	A	0.70	A	0.52	A	0.77	C	0.13	0.07	
Pelandale Avenue	WB	3	SA	0.55	A	0.59	A	0.60	A	0.72	C	0.05	0.13	N
Chapman Road to Dale Road	EB	3		0.38	A	0.73	C	0.51	A	0.79	C	0.13	0.06	
Pelandale Avenue	WB	1	SA	0.74	C	**1.08**	**F**	**1.04**	**F**	**1.23**	**F**	**0.30**	**0.15**	**Y**
Dale Road to American Avenue	EB	1		0.69	B	**1.40**	**F**	0.81	C	**1.76**	**F**	0.12	**0.36**	
Pelandale Avenue	WB	1	SA	0.77	C	**1.05**	**F**	**1.53**	**F**	**1.40**	**F**	**0.76**	**0.35**	**Y**
American Avenue to Prescott Road	EB	1		0.62	B	**1.26**	**F**	0.73	C	**1.62**	**F**	0.11	**0.36**	
Pelandale Avenue	WB	1	SA	0.75	C	**1.04**	**F**	**1.32**	**F**	**1.28**	**F**	**0.57**	**0.24**	**Y**
Prescott Road to Carver Road	EB	1		0.66	B	**1.25**	**F**	0.77	C	**1.61**	**F**	0.11	**0.36**	
Pelandale Avenue	WB	1	SA	0.58	A	0.83	D	**1.19**	**F**	**1.09**	**F**	**0.61**	**0.26**	**Y**
Carver Road to Tully Road	EB	1		0.51	A	**1.00**	**E**	0.63	B	**1.40**	**F**	0.12	**0.40**	
Bangs Avenue	WB	1	RR	0.23	A	0.35	A	0.70	B	0.66	B	0.47	0.31	N
Dale Road to American Avenue	EB	1		0.17	A	0.29	A	0.39	A	0.64	B	0.22	0.35	
Bangs Avenue	WB	1	RR	0.23	A	0.35	A	0.76	C	0.59	A	0.53	0.24	N
American Avenue to Prescott Road	EB	1		0.23	A	0.36	A	0.39	A	**0.94**	**E**	0.16	**0.58**	
Bangs Avenue	WB	1	RR	0.31	A	0.39	A	0.63	B	0.51	A	0.32	0.12	N
Prescott Road to Carver Road	EB	1		0.41	A	0.44	A	0.47	A	0.66	B	0.06	0.22	
Bangs Avenue	WB	1	RR	0.22	A	0.38	A	0.46	A	0.46	A	0.24	0.08	N
Carver Road to Tully Road	EB	1		0.39	A	0.48	A	0.44	A	0.66	B	0.05	0.18	

(cont'd.)

Table IV.C.15 (continued)

Freeway or Roadway Segment	Dir	Lane	Type	Existing				Existing Plus Project				v/c change		Significant Impact Y/N?
				AM		PM		AM		PM				
				v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	AM	PM	
Bangs Avenue	WB	1	RR	0.43	A	0.46	A	0.55	A	0.50	A	0.12	0.04	N
Tully Road to McHenry Avenue	EB	1		0.37	A	0.48	A	0.40	A	0.59	A	0.03	0.11	
Dale Road	NB	1	RR	0.39	A	0.51	A	0.51	A	**0.91**	**D**	0.12	**0.40**	Y
Kiernan Avenue to Healthcare Way	SB	1		0.47	A	0.68	B	0.89	D	**0.97**	**E**	0.42	**0.29**	
Dale Road	NB	2	RR	0.21	A	0.27	A	0.44	A	0.44	A	0.23	0.17	N
Healthcare Way to The Plaza Way	SB	3		0.22	A	0.35	A	0.39	A	0.64	B	0.17	0.29	
Dale Road	NB	2	RR	0.22	A	0.30	A	0.71	C	0.56	A	0.49	0.26	N
The Plaza Way to Bangs Avenue	SB	3		0.14	A	0.24	A	0.26	A	0.60	A	0.12	0.36	
Dale Road	NB	3	SA	0.26	A	0.33	A	0.87	D	0.62	B	0.61	0.29	N
Bangs Avenue to Pelandale Ave	SB	3		0.20	A	0.29	A	0.33	A	0.72	C	0.13	0.43	
Dale Road	NB	3	SA	0.38	A	0.57	A	0.65	B	0.70	B	0.27	0.13	N
Pelandale Avenue to Snyder Avenue	SB	3		0.25	A	0.45	A	0.30	A	0.63	B	0.05	0.18	
Dale Road	NB	2	SA	0.25	A	0.56	A	0.47	A	0.66	B	0.22	0.10	N
Snyder Avenue to Veneman Avenue	SB	2		0.38	A	0.59	A	0.45	A	0.80	C	0.07	0.21	
Dale Road	NB	2	SA	0.28	A	0.56	A	0.50	A	0.67	B	0.22	0.11	N
Veneman Avenue to Standiford Ave.	SB	2		0.30	A	0.62	B	0.37	A	0.83	D	0.07	0.21	

Notes:

[1] Freeway and roadway segments operating at unacceptable levels (LOS E or F if within the City and its Sphere of Influence (SOI) or LOS D, E, or F if within the County and outside of the City's SOI) are indicated in **bold**.

[2] Freeway

[3] Signalized Arterial

[4] Rural Road

[5] This road segment is within the county and is evaluated against Stanislaus County LOS standards where LOS D, E, or F are considered deficient levels of service.

Source: Fehr & Peers, 2008.

For a list of impacted freeway and roadway segments, see Impact C.2 on pp. IV.C.52 – IV.C.53.

The project would not cause other freeway or roadway segments to degrade below LOS D or to degrade from LOS E to LOS F, or, for locations already at LOS E or F, would not increase the v/c ratio by five percent or more.

Freeway Interchange Ramp Levels of Service

Existing freeway on-ramp and off-ramp peak hour levels of service were determined for three on-ramps and three off-ramps on SR 99 that would serve project-generated traffic entering and exiting the regional freeway network. Table IV.C.16 presents the ramp merging (on-ramp) and diverging (off-ramp) analysis results for the AM and PM peak hour conditions.

Under existing conditions, a total of five merge/diverge areas operate at an unacceptable LOS E or LOS F during the AM peak hour, the PM peak hour, or both. Compared to existing conditions, the five merge/diverge areas would continue to operate at an unacceptable LOS E or LOS F with project-generated traffic. As a result of project-generated traffic, one of the five merge/diverge areas would experience an increase in volume of five percent or more. Three additional merge/diverge areas would experience a deterioration of LOS D or better to LOS E or LOS F during the AM or PM peak hour with project-generated traffic.

For a list of impacted merge/diverge areas, please see Impact C.3 on p. IV.C.56.

The project would not cause other merge/diverge interchanges at Kiernan Avenue, Pelandale Avenue, and Standiford Avenue to degrade below LOS D or to degrade from LOS E to LOS F, or, for locations already at LOS E or F, would not increase traffic volume by five percent or more.

Impact C.1. Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the existing plus project scenario. (Significant and Unavoidable)

Project traffic would result in an increase in delay by five seconds or more at each of the five signalized intersections currently operating at unacceptable levels during the AM peak hour, the PM peak hour, or both. At each of the four unsignalized intersections currently operating at unacceptable levels the addition of project-generated traffic would result in an increase in delay of 30 seconds or more for the minor movement, an increase in traffic by 10 or more vehicles per lane on the controlled approach, or an increase in the average delay by five seconds or more during the AM or the PM peak hour. Three additional unsignalized intersections would operate at LOS E or LOS F during the AM peak hour, the PM peak hour, or both with project-generated traffic. A fourth unsignalized intersection, at Kiernan and American Avenues, would operate at

Table IV.C.16: SR 99 Ramp Merge/Diverge LOS Conditions – Existing and Existing Plus Project

Ramp Merge/Diverge	Existing				Existing Plus Project				Percent Project Volume Increase through Merge/Diverge Area		Significant Impact Y/N?
	AM		PM		AM		PM				
	Density[1]	LOS[2]	Density[1]	LOS[2]	Density[1]	LOS[2]	Density[1]	LOS[2]	AM	PM	
Kiernan Avenue Southbound Off-ramp Diverge	31.0	D	35.0	D	32.0	D	***36.0***	***E***	1.8%	1.5%	**Y**
Kiernan Avenue Southbound On-ramp Merge	29.0	D	34.0	D	29.0	D	34.0	D	0%	0%	N
Kiernan Avenue Northbound Off-ramp Diverge	**36.0**	**E**	**38.0**	**E**	**36.0**	**E**	**38.0**	**E**	0%	0%	N
Kiernan Avenue Northbound On-ramp Merge	27.0	C	27.0	C	28.0	C	28.0	C	0.9%	2.4%	N
Pelandale Avenue Southbound Off-ramp Diverge	**38.0**	**E**	**41.0**	**F**	**38.0**	**E**	**41.0**	**F**	0%	0%	N
Pelandale Avenue Southbound On-ramp Merge	27.0	C	31.0	D	29.0	D	33.0	D	2%	5.5%	N
Pelandale Avenue Northbound Off-ramp Diverge	33.0	D	32.0	D	***36.0***	***E***	33.0	D	**5.8%**	3.2%	**Y**
Pelandale Avenue Northbound On-ramp Merge	29.0	D	29.0	D	29.0	D	29.0	D	0%	0%	N
Standiford Avenue Southbound Off-ramp Diverge	32.0	D	**36.0**	**E**	33.0	D	***38.0***	***E***	2%	**5.5%**	**Y**
Standiford Avenue Southbound On-ramp Merge	29.0	D	30.0	D	29.0	D	32.0	D	2.8%	8%	N
Standiford Avenue Northbound Off-ramp Diverge	34.0	D	33.0	D	***36.0***	***E***	34.0	D	**8.1%**	4.3%	**Y**
Standiford Avenue Northbound On-ramp Merge	29.0	D	27.0	C	31.0	D	28.0	C	5.8%	3.2%	N

Notes:
[1] Density is presented in passenger cars per mile per lane (pc/mi/ln).
[2] Unacceptable service levels are shown in **bold**; project-related significant impacts on LOS are shown in ***bold italics*****.**

Source: Fehr & Peers, 2008.

LOS F in the PM peak hour. Although this intersection is expected to become a right-in/right-out intersection as part of Caltrans improvements along Kiernan Avenue, removing the movement that would experience LOS F, this intersection is listed below as one of the intersections that would operate at an unacceptable LOS until changes occur. In sum, the proposed project would cause significant impacts at 13 of the 31 study intersections. The following signalized and stop-controlled intersections would operate at unacceptable levels of service with project-generated traffic:

Signalized

- Kiernan Avenue and SR 99 Southbound Ramps (AM and PM peak hours)
- Kiernan Avenue and Sisk Road (PM peak hour)
- Pelandale Avenue and SR 99 Southbound Ramps (PM peak hour)
- Pelandale Avenue and Sisk Road (PM peak hour)
- Standiford Avenue and SR 99 Southbound Ramps (PM peak hour)

Unsignalized

- Kiernan Avenue and Stoddard Road (AM and PM peak hours)
- Kiernan Avenue and Dale Road (AM and PM peak hours)
- Kiernan Avenue and American Avenue (PM peak hour)
- Kiernan Avenue and Carver Road (PM peak hour)
- Bangs Avenue and American Avenue (AM and PM peak hours)
- Bangs Avenue and Prescott Road (PM peak hour)
- Bangs Avenue and Carver Road (AM and PM peak hours)
- Bangs Avenue and Tully Road (PM peak hour)

Where applicable, project sponsors would contribute their fair share of the cost of improvements into the City's Capital Facilities Fee (CFF) program, Stanislaus County's Public Facility Fee (PFF) program, or the City's Community Facilities District No. 2007-2 (Kiernan Business Park West CFD). Mitigation measures are available that would result in improved levels of service for all of the impacted intersections. Implementation of identified mitigation measures would improve service levels to LOS D or better, which would meet the City of Modesto criterion for acceptable operations (or LOS C or better if a county road). However, in many instances these mitigation measures are infeasible and the impact would remain significant and unavoidable. There are several reasons why mitigation measures may be found infeasible. Among these reasons are a) the location may be outside the jurisdiction of the City of Modesto; b) although an approved project is identified, improvements have not been constructed and the City of Modesto cannot provide assurances regarding the timing of the improvements; c) although a location may

potentially be included in the City's Capital Improvement Program, funding is not guaranteed and improvements cannot be assured, d) although there may be an existing CFF program, funding may be fully committed and some intersections may operate at unacceptable service levels for a substantial period of time before mitigation measures could be funded and implemented, e) the proposed project's fair share contribution is relatively small in relation to the overall cost of the improvements, and f) the improvements cannot be constructed within the existing right-of-way. Therefore, while mitigation measures would improve LOS at all 13 intersections, many are identified as significant and unavoidable impacts because implementation of identified mitigation measures is not assured.

No mitigation is listed for the intersection of Kiernan and American Avenues. It is assumed that the Caltrans improvements along Kiernan Avenue will result in right turns into and out of this intersection, eliminating left turns from American Avenue. This will eliminate the movement that is predicted to operate at LOS F with project traffic and no additional mitigation is needed.

Mitigation Measure C.1a

Kiernan Avenue and SR 99 Southbound Ramps: Restripe the shared southbound through/right-turn lane to a shared left/through/right-turn lane; restripe the eastbound right-turn lane to a shared through/right-turn lane; add a second eastbound receiving lane on the east leg of the intersection.

Implementation of this measure would result in LOS C in the AM and PM peak hours, reducing the project's impact to a less-than-significant level.

Both Kiernan Avenue and SR 99 are under the jurisdiction of Caltrans. As part of the regionally funded Caltrans SR 219 widening project, the second eastbound receiving lane would be provided. The project sponsor would be required to provide its fair share contribution toward the cost of this improvement. The other improvements identified under this mitigation measure are not part of the Caltrans SR 219 project; however, Caltrans, in cooperation with Stanislaus County, may receive funding from state and regional sources that could be allocated for the construction of the remaining intersection improvements. If these improvements are constructed as a joint Caltrans/County project and included in the County's PFF program, the project sponsor would be required to contribute their fair share cost to the County's PFF program.

While construction of these improvements is anticipated to occur as the City, the community of Salida, and unincorporated Stanislaus County build out, there can be no assurance that sufficient funds would be available for Caltrans to construct the improvements. This could result in unacceptable intersection operations for a substantial period of time. Furthermore, the City does

not have the authority to design and construct improvements at this location. Therefore, the mitigation measure is infeasible and this impact would remain significant and unavoidable.

Other Caltrans improvements under evaluation at the SR 99/Kiernan Avenue intersection include the potential reconstruction of the overpass to provide three through lanes in each direction, turn pockets, and expanded on-ramp and off-ramp capacity. The project sponsor would be required to provide its fair share contribution toward the ultimate planned improvements at this intersection.

Mitigation Measure C.1b

Kiernan Avenue and Sisk Road: Widen Kiernan Avenue to provide two through lanes in each direction.

Implementation of this measure would result in LOS C in the PM peak hour, reducing the project's impact to a less-than-significant level.

Kiernan Avenue is under the jurisdiction of Caltrans. These improvements would be provided as part of the regionally funded Caltrans SR 219 widening project to upgrade Kiernan Avenue to a four-lane Class B expressway. With construction of these improvements, expected to begin in 2008, intersection impacts would be reduced to a less-than-significant level.

Mitigation Measure C.1c

Kiernan Avenue and Stoddard Road: Widen Kiernan Avenue to provide two through lanes in each direction. Signalize the intersection.

Implementation of this measure would result in LOS B for the worst movement during the AM peak hour and in LOS B during the PM peak hour, reducing the project's impact to a less-than-significant level.

Kiernan Avenue is under the jurisdiction of the Caltrans. These improvements would be provided as part of the regionally funded Caltrans SR 219 widening project to upgrade Kiernan Avenue to a four-lane Class B expressway. With construction of these improvements, expected to begin in 2008, intersection impacts would be reduced to a less-than-significant level.

Mitigation Measure C.1d

Kiernan Avenue and Dale Road: Widen Kiernan Avenue to provide two through lanes in each direction. Add turn pockets at all approaches. Signalize the intersection. Construct a second northbound left-turn lane and a northbound right-turn lane.

Implementation of this measure would result in LOS C in the AM and PM peak hours, reducing the project's impact to a less-than-significant level.

Kiernan Avenue is under the jurisdiction of Caltrans. The widening improvements would be provided as part of the regionally funded Caltrans SR 219 widening project to upgrade Kiernan Avenue. Additional improvements at this intersection would be constructed concurrent with the Caltrans SR 219 widening project. The City of Modesto will construct a second northbound left-turn lane and northbound right-turn lane at this intersection. The City-build intersection improvement and signalization project is funded in large part by State Transportation Improvement Program (STIP) funds, the Kaiser Modesto Medical Center, and to a lesser degree by funds from a Congestion Mitigation and Air Quality (CMAQ) improvement program grant. The project applicant would be required to pay their fair share contribution towards the planned Caltrans and City of Modesto improvements through payment into the Kiernan Business Park West CFD. With construction of these improvements, expected to be completed in June 2009, intersection impacts would be reduced to a less-than-significant level.

Mitigation Measure C.1e

Kiernan Avenue and Carver Road: Widen Kiernan Avenue to provide two through lanes in each direction. Signalize the intersection.

Implementation of this measure would result in LOS B in the PM peak hour, reducing the project's impact to a less-than-significant level.

Kiernan Avenue is under the jurisdiction of the Caltrans. These improvements would be provided as part of the second phase of the Caltrans SR 219 widening project to upgrade Kiernan Avenue to a four-lane Class B expressway. Caltrans has indicated that the second phase of the widening project would be a high priority project when funds from the STIP are programmed; however, there is no assurance that funding would be available prior to completion of the proposed project. Furthermore, the City does not have the authority to design and construct these improvements to the Kiernan Avenue/Carver Road intersection. As a result, the City cannot assure implementation of this mitigation measure, and the intersection could operate poorly for a substantial period of time. This mitigation measure is infeasible, and the impact would remain significant and unavoidable.

Mitigation Measure C.1f

Bangs Avenue and American Avenue: Install a two-lane roundabout with a northbound right-turn by-pass lane or install traffic signals and left-turn pockets on all approaches.

Implementation of either measure would result in LOS A for the AM and PM peak hours, reducing the project's impact to a less-than-significant level.

The cost of installing a two-lane roundabout or traffic signals and left-turn pockets at all approaches is to be funded by the Kaiser Medical Center and Kiernan Business Park South projects. The project sponsor would be required to either pay their fair share contribution to the ultimate cost of these improvements through payment to the Kiernan Business Park CFD, or, if the intersection improvements are not in place prior to the construction of the proposed project, construct the improvements.

Mitigation Measure C.1g

Bangs Avenue and Prescott Road: Install a two-lane roundabout or install traffic signals on all approaches.

Implementation of this measure would result in LOS A in the PM peak hour, reducing the project's impact to a less-than-significant level.

The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain significant and unavoidable.

Mitigation Measure C.1h

Bangs Avenue and Carver Road: Install a two-lane roundabout or install traffic signals and left-turn pockets on all approaches.

Implementation of this measure would result in LOS A in the AM and PM peak hours, reducing the project's impact to a less-than-significant level.

The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is

not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain significant and unavoidable.

Mitigation Measure C.1i

Bangs Avenue and Tully Road: Install a two-lane roundabout or install traffic signals and left-turn pockets on all approaches.

Implementation of this measure would result in LOS A in the PM peak hour, reducing the project's impact to a less-than-significant level.

The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain significant and unavoidable.

Mitigation Measure C.1j

Pelandale Avenue and SR 99 Southbound Ramps: This intersection is under the jurisdiction of Caltrans. Caltrans and the City of Modesto are currently engaged in a joint effort to develop improvements at this interchange. Potential improvements include loop ramps and modifications to Sisk Road, such as additional through lanes and turn lanes. However, widening and interchange improvement projects have not yet been through the Caltrans approval process, nor been designed or funded. Furthermore, the City does not have the authority to design or construct improvements at this location. As a result, implementation of this improvement prior to completion of the proposed project cannot be assured. Therefore, this mitigation measure is infeasible, and the impact would remain significant and unavoidable. The project sponsor would be required to pay their fair share contribution towards the ultimate interchange improvement project through payment to the CFF.

Mitigation Measure C.1k

Pelandale Avenue and Sisk Road: Install a third westbound through lane, a second westbound left-turn lane, a second southbound through lane, and a second southbound left-turn lane.

Implementation of this improvement would result in LOS D in the PM peak hour, reducing the project's impact to a less-than-significant level.

The City of Modesto's current CIP identifies a project at this intersection that includes the improvements in this mitigation measure. The proposed project is scheduled to go out to bid at the end of 2008/beginning of 2009 and is anticipated to be constructed prior to completion of the proposed project. The project sponsor would be required to pay their fair share contribution towards these planned improvements through payment to the CFF.

Mitigation Measure C.1*l*

Standiford Avenue and SR 99 Southbound Ramps: Add a second southbound left-turn lane.

Implementation of this measure would result in LOS D in the PM peak hour, reducing the project's impact to a less-than-significant level.

The SR 99/Standiford Avenue intersection is under the jurisdiction of Caltrans. The City does not have the authority to design and construct a second southbound left-turn lane at this intersection. Therefore, the City cannot assure its implementation in the near future. The intersection, as a result, could operate poorly for a substantial period of time. The mitigation measure is being treated as infeasible and the impact is identified as significant and unavoidable. The project sponsor would be required to pay their fair share contribution towards the ultimate interchange improvement project through payment to the CFF.

Impact C.2. Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the existing plus project scenario. (Significant and Unavoidable)

Project traffic would result in an increase in the v/c ratio of 0.05 or more at each of the 14 roadway segments currently operating at unacceptable levels during the AM peak hour, the PM peak hour, or both. Nine additional roadway segments would experience a deterioration of service and would operate at LOS E or worse (LOS D or worse if a county road) during the AM peak hour, the PM peak hour, or both with project-generated traffic. The following roadway segments would operate at unacceptable levels of service with project-generated traffic during the AM peak hour, the PM peak hour, or both:

- Eastbound Kiernan Avenue, four segments between SR 99 Southbound Ramps and Dale Road (AM and PM peak hours)
- Eastbound Kiernan Avenue, two segments between American Avenue and McHenry Avenue (PM peak hour)
- Westbound Kiernan Avenue between SR 99 NB Ramps and Sisk Road (AM and PM peak hours)

- Westbound Kiernan Avenue between Sisk Road and Stoddard Road (PM peak hour)
- Westbound Kiernan Avenue between Stoddard Road and Dale Road (AM and PM peak hours)
- Eastbound Pelandale Avenue, four segments between Dale Road and Tully Road (PM peak hour)
- Westbound Pelandale Avenue, three segments between SR 99 Southbound Ramps and Northpointe Shopping Center (PM peak hour)
- Westbound Pelandale Avenue, four segments between Dale Road and Tully Road (AM and PM peak hours)
- Eastbound Bangs Avenue between American Avenue and Prescott Road (PM peak hour)
- Northbound Dale Road between Kiernan Avenue and Healthcare Way (PM peak hour)
- Southbound Dale Road between Kiernan Avenue and Healthcare Way (PM peak hour)

Mitigation Measure C.2a

Kiernan Avenue: Add an eastbound through lane between the SR 99 SB Ramps and McHenry Avenue. Add a westbound through lane between the SR 99 NB Ramps and Dale Road. Signalize Stoddard Road, Dale Road, and Carver Road intersections.

Implementation of this measure would reduce the project's impact to a less-than-significant level.

Kiernan Avenue is under the jurisdiction of Caltrans. All of these improvements except the traffic signalization project at Carver Road and the section of the eastbound through lane between American and McHenry Avenues would be provided as part of the first phase of the regionally-funded Caltrans SR 219 widening project to upgrade Kiernan Avenue to a four-lane Class B expressway. The signalization project at the Carver Road intersection and the installation of a second eastbound travel lane between American and McHenry Avenues have been identified as part of the second phase of the SR 219 widening project. Construction of the first phase of improvements is expected to begin in 2008. Caltrans has identified the second phase of the SR 219 widening project as a high priority project when STIP funding becomes available; however, there is no assurance that funding would be available prior to completion of the proposed project. Furthermore, the City does not have the authority to design and construct improvements to the Kiernan Avenue/Carver Road intersection. As a result, the City cannot assure implementation of this mitigation measure. The intersection could therefore operate poorly for a substantial period of time. Therefore, this mitigation measure is being treated as infeasible, and the impact would remain significant and unavoidable.

Mitigation Measure C.2b

Pelandale Avenue: Add a westbound through lane between the SR 99 Southbound Ramps and Northpointe Shopping Center.

The Pelandale Avenue interchange with SR 99 is under Caltrans' jurisdiction; the roadway segments between Sisk Road and the Northpointe Shopping Center are under the City's jurisdiction. The City has developed improvements to the roadway segments between Sisk Road and Northpointe Shopping Center as part of a City/Caltrans joint effort to improve the Pelandale Avenue interchanges. These improvements are included in a CIP project going out to bid end of 2008/beginning of 2009. However, the Pelandale Avenue/SR99 bridge deck improvements, which could include loop ramps and additional through lanes and turn lanes on Sisk Road, a third westbound through lane, a second westbound left-turn lane, a second southbound through lane, and a second southbound left-turn lane and are necessary to facilitate this mitigation, have not been designed or approved by Caltrans. After a decision between the City of Modesto and Caltrans on planned improvements for the Pelandale Avenue/SR 99 interchanges and roadway segments, the project sponsor would be required to pay their fair share of the costs towards planned improvement for the roadway segments/interchanges to a CFF.

The City does not the authority to design or construct improvements to the Pelandale Avenue/SR 99 interchange. As a result, implementation of these improvements cannot be assured, and the mitigation measure is being treated as infeasible. Therefore, impacts to the westbound roadway segment along Pelandale Avenue between the SR 99 SB Ramps and Northpointe Shopping Center would remain significant and unavoidable.

Mitigation Measure C.2c

Pelandale Avenue: Add an eastbound and westbound through lane between Dale Road and Tully Road.

Improvements to the roadway segments between Dale Road and Tully Road are part of the City's Pelandale Expressway project. These improvements are currently under construction and are expected to be in place prior to completion of the proposed project. The project sponsor would be required to pay their fair share of the costs towards planned improvements on Pelandale Avenue between Dale Road and Tully Road through the CFF. Therefore, the construction of eastbound and westbound through lanes would reduce the impact on this segment of Pelandale Avenue to a less-than-significant level.

Mitigation Measure C.2d

Bangs Avenue: Add an eastbound and westbound through lane between American Avenue and Prescott Road.

Bangs Avenue is envisioned as a four-lane major collector roadway between Dale Road and McHenry Avenue with multiple driveways and intersections. It is important to note that with turning movements to/from parcels, increased friction occurs on the roadway, reducing the practical capacity of the facility. Providing an additional through lane in each direction would allow for turning movements to/from parcels while maintaining acceptable service levels for through traffic. With implementation of this mitigation measure the impact would be reduced to a less-than-significant level and the roadway segment between American Avenue and Prescott Road would operate at an acceptable level.

The cost of the additional eastbound and westbound through travel lanes needed for this segment of Bangs Avenue to operate at an acceptable level of service is not funded. The cost of adding a lane in each direction could be funded by this project, other existing and proposed Kiernan Business Park Specific Plan projects, and other proposed development projects in the vicinity. The project sponsor would be required to pay their fair share contribution to the ultimate cost of these improvements through payment to the Kiernan Business Park West CFD. The fair share contribution from the project sponsor would partially fund the needed improvements; however, without fair share contributions from other development projects, the improvements cannot be constructed.

While construction of these improvements is anticipated to occur as the City builds out, there can be no assurance that sufficient funds would be available for the City of Modesto to construct these improvements prior to completion of the proposed project. This could result in unacceptable roadway operations for a substantial period of time. Therefore, the uncertainty of funding sources would make the mitigation measure infeasible, and this impact would remain significant and unavoidable.

Mitigation Measure C.2e

Dale Road: Add a second northbound and second southbound through lane between Kiernan Avenue and Healthcare Way. *These lanes were constructed and placed into service after completion of the transportation impact analysis; therefore this mitigation measure is not necessary.*

Impact C.3. Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge interchanges near the project site under the existing plus project scenario. (Significant and Unavoidable)

Project traffic would result in an increase in the volume of traffic by five percent at one of the five freeway merge/diverge locations currently operating at unacceptable levels during the AM or PM peak hour. Three additional freeway merge/diverge locations would experience a deterioration of service and would operate at LOS E or LOS F during the AM or PM peak hour with project-generated traffic. The following freeway merge/diverge locations would operate at unacceptable levels of service with project-generated traffic:

- Kiernan Avenue Southbound Off-ramp Diverge (PM peak hour)
- Pelandale Avenue Northbound Off-ramp Diverge (AM peak hour)
- Standiford Avenue Southbound Off-ramp Diverge (PM peak hour)
- Standiford Avenue Northbound Off-ramp Diverge (AM peak hour)

Mitigation Measure C.3

The Kiernan, Pelandale, and Standiford Avenue SR 99 off-ramp diverge locations are under the jurisdiction of Caltrans. Caltrans envisions SR 99 as an eight-lane freeway and plans to improve the SR 99/Kiernan Avenue, SR 99/Pelandale Avenue, and SR 99/Standiford Avenue freeway interchanges. The widening project and interchange improvement projects have not yet been through the Caltrans approval process, nor been designed or funded, and the City does not have the authority to design and construct improvements to SR 99 or freeway interchanges. Therefore, this impact remains significant and unavoidable.

NEAR-TERM PLUS PROJECT SCENARIO

The near-term plus project scenario represents traffic conditions over a 5- to 10-year time horizon with planned transportation system improvements, traffic volume increases due to approved and pending development projects, plus regional growth. Peak hour project-specific traffic volumes were added to the near-term baseline traffic volumes to determine the near-term plus project traffic volumes. Several roadway improvements in the study area were included in the analysis of near-term conditions. Please see pp. IV.C.28 – IV.C.29 for a complete list of roadway improvements assumed in the near-term scenario.

Intersection Levels of Service

Service levels were calculated for all 31 study intersections for near-term plus project conditions. In general, traffic generated by the proposed project would increase delays at both signalized and unsignalized intersections, resulting in an increase in the number of study intersections that would

operate at unacceptable levels of service under the near-term plus project scenario. Near-term baseline and near-term plus project peak hour LOS analysis results are presented in Table IV.C.17. Locations where peak hour levels of service exceed the City standard of LOS D (or the county standard of LOS C) are shown in bold and indicate a significant impact.

Under near-term baseline conditions, eight signalized intersections operate at unacceptable LOS during the AM peak hour, the PM peak hour, or both. Compared to near-term baseline conditions, seven of the eight signalized intersections that operate at LOS E or worse during the AM peak hour, the PM peak hour, or both would experience an increase in the average delay of more than five seconds with project-generated traffic. The remaining intersection would operate under similar conditions with project-generated traffic and would not experience an increase in delay. Two additional signalized intersections would experience a deterioration of service from LOS D to LOS E or LOS F during the AM or the PM peak hour with project-generated traffic. The proposed project could impact nine signalized intersections.

The proposed project would not cause other signalized intersections to degrade below LOS D or to degrade from LOS E to LOS F (or to degrade from LOS D to LOS E or F, or, for locations already at LOS E or F, would not increase the average delay by five seconds or more.

Under near-term baseline conditions, two unsignalized intersections operate at unacceptable LOS during the AM and PM peak hours. Compared to near-term baseline conditions, the two unsignalized intersections that currently operate at LOS F would experience an increase in the average delay of more than five seconds during the AM and the PM peak hours with project-generated traffic. One unsignalized intersection, a roundabout which operates at an acceptable service level under near-term baseline conditions, would operate at LOS F during the AM and PM peak hours with project-generated traffic. The proposed project could impact three unsignalized intersections.

The proposed project would not cause controlled movements at other unsignalized intersections to degrade from LOS E or better to LOS F; or, for locations already at LOS F, would not satisfy the peak hour volume traffic signal warrant, would not increase the minor movement delay by more than 30 seconds, and would not result in a traffic increase of 10 or more vehicles per lane on the controlled approach for locations where the intersection already meets the traffic signal warrant prior to the addition of project traffic and delay cannot be measured.

In summary, nine signalized intersections and three unsignalized intersections would experience increased delays with project-generated traffic. For a list of impacted intersections, please see Impact C.4 on pp. IV.C.65 – IV.C.66.

Table IV.C.17: Intersection LOS Conditions – Near-Term Baseline and Near-Term Plus Project

	Intersection	Traffic Control	Near-Term Baseline				Traffic Control	Near-Term Plus Project				Significant Impact Y/N?
			AM		PM			AM		PM		
			Delay[1,2]	LOS[1,2]	Delay	LOS		Delay	LOS	Delay	LOS	
1.	Kiernan Avenue/Salida Boulevard[3]	Signalized	16	B	17	B	Signalized	17	B	17	B	N
2.	Kiernan Avenue/SR 99 SB Ramps[3]	Signalized	**52**	**D**	**40**	**D**	Signalized	**59**	**E**	**42**	**D**	**Y[4&5]**
3.	Kiernan Avenue/SR 99 NB Ramps[3]	Signalized	**20**	**B**	**23**	**C**	Signalized	**20**	**B**	**28**	**C**	**Y[4&5]**
4.	Kiernan Avenue/Sisk Road[3]	Signalized	40	D	**70**	**E**	Signalized	**75**	**E**	**81**	**F**	**Y[4&5]**
5.	Kiernan Avenue/Stoddard Road[3]	Signalized	32	C	29	C	Signalized	32	C	31	C	N
6.	Kiernan Avenue/Dale Road	Signalized	41	D	48	D	Signalized	48	D	48	D	N
7.	Kiernan Avenue/American Avenue	Unsignalized	1 (13)	A (B)	0 (12)	A (B)	Unsignalized	1 (14)	A (B)	8 (45)	A (E)	N
8.	Kiernan Avenue/Carver Road	Signalized	14	B	19	B	Signalized	15	B	23	B	N
9.	Healthcare Way/Dale Road	Signalized	23	C	26	C	Signalized	33	C	38	D	N
10.	Healthcare Way/American Avenue	Unsignalized	–	–	–	–	Roundabout	4	A	5	A	N
11.	Kaiser Main Entrance/Dale Road	Signalized	18	B	28	C	Signalized	26	D	**88**	**F**	**Y**
12.	Bangs Avenue/Dale Road	Signalized	24	C	26	C	Signalized	38	D	30	C	N
13.	Bangs Avenue/American Avenue[6]	Unsignalized	3 (23)	A (C)	7 (36)	A (E)	Unsignalized	**>50 (>50)**	**F**	**>50 (>50)**	**F**	**Y**
14.	Bangs Avenue/Prescott Road	Signalized	14	B	27	C	Signalized	21	B	**121**	**F**	**Y[4]**
15.	Bangs Avenue/Carver Road	Unsignalized	**141**	**F**	**257**	**F**	Unsignalized	**266**	**F**	**406**	**F**	**Y[4]**
16.	Bangs Avenue/Tully Road	Unsignalized	**113**	**F**	**300**	**F**	Unsignalized	**219**	**F**	**404**	**F**	**Y[4]**
17.	Bangs Avenue/McHenry Avenue	Signalized	25	C	36	D	Signalized	31	C	54	D	N
18.	Pelandale Avenue/Salida Boulevard	Signalized	25	C	21	C	Signalized	26	C	21	C	N
19.	Pelandale Avenue/SR 99 SB Ramps	Signalized	29	C	**188**	**F**	Signalized	29	C	**225**	**F**	**Y[4]**
20.	Pelandale Avenue/SR 99 NB Ramps	Signalized	29	C	22	C	Signalized	40	D	34	C	N
21.	Pelandale Avenue/Sisk Road	Signalized	30	C	**98**	**F**	Signalized	30	C	99	F	N
22.	Pelandale Avenue/Northpointe Shopping Center	Signalized	8	A	36	D	Signalized	8	A	45	D	N
23.	Pelandale Avenue/Chapman Road	Signalized	6	A	9	A	Signalized	6	A	10	A	N
24.	Pelandale Avenue/Dale Road	Signalized	40	D	**74**	**E**	Signalized	**116**	**F**	**93**	**F**	**Y[4]**
25.	Pelandale Avenue/Prescott Road	Signalized	25	C	30	C	Signalized	32	C	52	D	N

(cont'd.)

Table IV.C.17: (continued)

Intersection		Traffic Control	Near-Term Baseline				Traffic Control	Near-Term Plus Project				Significant Impact Y/N?
			AM		PM			AM		PM		
			Delay[1,2]	LOS[1,2]	Delay	LOS		Delay	LOS	Delay	LOS	
26.	Pelandale Avenue/Carver Road	Signalized	24	C	31	C	Signalized	32	C	52	D	N
27.	Snyder Avenue/Dale Road	Signalized	26	C	31	C	Signalized	28	C	43	D	N
28.	Standiford Avenue/SR 99 SB Ramps	Signalized	53	D	**320**	**F**	Signalized	**60**	**E**	**341**	**F**	**Y[4]**
29.	Standiford Avenue/SR 99 NB Ramps	Signalized	29	C	**179**	**F**	Signalized	40	D	**201**	**F**	**Y[4]**
30.	Standiford Avenue/Sisk Road	Signalized	31	C	**212**	**F**	Signalized	36	D	**240**	**F**	**Y[4]**
31.	Standiford Avenue/Dale Road	Signalized	24	C	41	D	Signalized	26	C	48	D	N

Notes:

[1] Delay is in seconds per vehicle. For unsignalized intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement).
[2] Intersections operating at unacceptable levels of service (LOS E or F – City of Modesto; LOS D, E or F – Stanislaus County) are shown in **bold**.
[3] These locations are evaluated against Stanislaus County LOS standards where LOS D, E, or F are considered deficient levels of service.
[4] Project increases delay by more than 5.0 seconds at an intersection operating at LOS E or F or results in LOS E or F conditions.
[5] This intersection is under jurisdiction of the county where the LOS standard is C.
[6] Roundabout intersection is shown as average delay (worst movement v/c ratio).

Source: Fehr & Peers, 2008.

Freeway and Roadway Segment Levels of Service

Freeway and roadway segment volume to capacity ratios (v/c) were calculated based on the near-term baseline traffic volumes plus project-generated traffic and the carrying capacities of the segments analyzed. The near-term baseline and near-term baseline plus project freeway and roadway segment v/c ratios, peak hour levels of service, and v/c ratio change resulting from implementation of the proposed project are shown in Table IV.C.18.

Under near-term baseline conditions, a total of 19 roadway segments operate at unacceptable LOS during the AM peak hour, the PM peak hour, or both. Compared to near-term baseline conditions, 16 of the 19 roadway segments that currently operate at unacceptable LOS would experience an increase in the v/c ratio by 0.05 or more with project-generated traffic or would experience deterioration in service from LOS E to LOS F. The remaining three roadway segments that operate at unacceptable service levels under near-term baseline conditions would continue to do so with the addition of project-generated traffic; however, the project-generated traffic does not increase the v/c ratio along these roadway segments by 0.05 or more. The addition of project-generated traffic would result in the deterioration of service at 14 additional roadway segments that operate at acceptable levels under the near-term baseline scenario.

The proposed project would not cause other freeway or roadway segments to degrade below LOS D or degrade from LOS E to LOS F, or, for locations already at LOS E or LOS F, would not increase the v/c ratio by five percent or more.

In summary, 26 roadway segments and four freeway segments would experience significant deteriorations in their levels of service with the addition of project-generated traffic. For a list of impacted freeway and roadway segments, please see Impact C.5 on pp. IV.C.72 – IV.C.73.

Freeway Interchange Ramp Levels of Service

Near-term baseline freeway on-ramp and off-ramp peak hour levels of service were determined for three on-ramps and three off-ramps on SR 99 that would serve project-generated traffic entering and exiting the regional freeway network: Kiernan Avenue, Pelandale Avenue, and Standiford Avenue. Table IV.C.19 presents the ramp merging (on-ramp) and diverging (off-ramp) analysis results for the AM and PM peak hour conditions.

Under near-term baseline conditions, a total of 10 merge/diverge areas operate at an unacceptable LOS E or LOS F during the AM peak hour, the PM peak hour, or both. Compared to near-term baseline conditions, the 10 merge/diverge areas would continue to operate at an unacceptable LOS E or LOS F with project-generated traffic. As a result of project-generated traffic, three of the 10 merge/diverge areas would experience a deterioration in its level of service from LOS E to

Table IV.C.18: Freeway and Roadway Segment LOS Conditions – Near-Term Baseline and Near-Term Baseline Plus Project

Freeway or Roadway Segment	Dir	Lane	Type	Near-Term Baseline				Near-Term Baseline Plus Project						Significant Impact Y/N?
				AM		PM		AM		PM		v/c change		
				v/c	LOS[1]	v/c	LOS[1]	v/c	LOS	v/c	LOS[1]	AM	PM	
SR 99	NB	3	FWY[2]	0.88	D	0.88	D	0.89	D	0.90	D	0.01	0.02	**Y**
Hammett Road to Kiernan Avenue	SB	3		0.86	D	**1.00**	**E**	0.88	D	**1.01**	**F**	0.02	**0.01**	
SR 99	NB	3	FWY	0.90	D	0.85	D	0.90	D	0.85	D	0.00	0.00	N
Kiernan Avenue to Pelandale Avenue	SB	3		0.84	D	**0.98**	**E**	0.84	D	**0.98**	**E**	0.00	0.00	
SR 99	NB	3	FWY	**0.94**	**E**	0.84	D	**0.98**	**E**	0.86	D	0.04	0.02	**Y**
Pelandale Avenue to Standiford Avenue	SB	3		0.85	D	**0.98**	**E**	0.87	D	**1.02**	**F**	0.02	**0.04**	
SR 99	NB	3	FWY	**1.00**	**E**	**0.92**	**E**	**1.06**	**F**	**0.96**	**E**	**0.06**	0.04	**Y**
Standiford Avenue to Briggsmore Avenue	SB	3		0.90	D	**1.01**	**F**	**0.92**	**E**	**1.07**	**F**	**0.02**	**0.06**	
Kiernan Avenue	WB	2	SA[4]	0.48	A	0.57	A	0.49	A	0.59	A	0.01	0.02	N
Salida Boulevard to SR 99 SB Ramps[3]	EB	2		0.70	B	0.60	A	0.72	C	0.61	B	0.02	0.01	
Kiernan Avenue	WB	2	SA	0.70	B	0.76	C	0.70	B	0.77	C	0.00	0.01	**Y**
SR 99 SB Ramps to SR 99 NB Ramps[3]	EB	2		**1.01**	**F**	**0.86**	**D**	**1.08**	**F**	**0.92**	**D**	**0.07**	**0.06**	
Kiernan Avenue	WB	2	SA	**0.91**	**E**	**1.12**	**F**	**0.95**	**E**	**1.20**	**F**	0.04	**0.08**	**Y**
SR 99 NB Ramps to Sisk Road[3]	EB	2		**1.29**	**F**	**1.09**	**F**	**1.35**	**F**	**1.15**	**F**	**0.06**	**0.06**	
Kiernan Avenue	WB	2	CBE[5]	0.44	A	0.59	A	0.46	A	0.66	B	0.02	0.07	N
Sisk Road to Stoddard Road[3]	EB	2		0.69	B	0.54	A	0.75	C	0.58	A	0.06	0.04	
Kiernan Avenue	WB	2	CBE	0.51	A	0.49	A	0.54	A	0.56	A	0.03	0.07	N
Stoddard Road to Dale Road[3]	EB	2		0.48	A	0.54	A	0.54	A	0.58	A	0.06	0.04	
Kiernan Avenue	WB	2	CBE	0.44	A	0.36	A	0.50	A	0.40	A	0.06	0.04	N
Dale Road to American Avenue	EB	2		0.30	A	0.43	A	0.33	A	0.43	A	0.03	0.00	
Kiernan Avenue	WB	2	CBE	0.44	A	0.39	A	0.51	A	0.42	A	0.07	0.03	N
American Avenue to Carver Road	EB	2		0.28	A	0.42	A	0.33	A	0.58	A	0.05	0.16	
Kiernan Avenue	WB	2	CBE	0.25	A	0.37	A	0.31	A	0.40	A	0.06	0.03	N
Carver Road to McHenry Avenue	EB	2		0.16	A	0.40	A	0.19	A	0.51	A	0.03	0.11	
Pelandale Avenue	WB	2	SA	0.37	A	0.55	A	0.38	A	0.57	A	0.01	0.02	N
Salida Boulevard to SR 99 SB Ramps	EB	1		0.78	C	0.83	D	0.81	C	0.84	D	0.03	0.01	
Pelandale Avenue	WB	2	SA	0.60	A	**1.13**	**F**	0.66	B	**1.32**	**F**	0.06	**0.19**	**Y**
SR 99 SB Ramps to SR 99 NB Ramps	EB	2		0.56	A	**0.99**	**E**	0.58	A	**1.00**	**E**	0.02	0.01	

(cont'd.)

Table IV.C.18 (continued)

Freeway or Roadway Segment	Dir	Lane	Type	Near-Term Baseline				Near-Term Baseline Plus Project				v/c change		Significant Impact Y/N?
				AM		PM		AM		PM				
				v/c	LOS[1]	v/c	LOS[1]	v/c	LOS	v/c	LOS[1]	AM	PM	
Pelandale Avenue	WB	3	SA	0.66	B	**1.12**	**F**	0.70	B	**1.25**	**F**	0.04	**0.13**	**Y**
SR 99 NB Ramps to Sisk Road	EB	3		0.74	C	**1.00**	**E**	0.87	D	**1.06**	**F**	0.13	**0.06**	
Pelandale Avenue	WB	3	SA	0.69	B	0.81	D	0.73	C	**0.94**	**E**	0.04	**0.13**	**Y**
Sisk Road to Northpointe Shopping Center	EB	3		0.62	B	**1.01**	**F**	0.74	C	**1.08**	**F**	0.12	**0.07**	
Pelandale Avenue	WB	3	SA	0.71	C	0.78	C	0.75	C	0.90	D	0.04	0.12	**Y**
Northpointe Shopping Center to Chapman Road	EB	3		0.56	A	0.90	D	0.69	B	**0.96**	**E**	0.13	**0.06**	
Pelandale Avenue	WB	3	SA	0.72	C	0.83	D	0.76	C	**0.96**	**E**	0.04	**0.13**	**Y**
Chapman Road to Dale Road	EB	3		0.56	A	**0.92**	**E**	0.69	B	**0.99**	**E**	0.13	**0.07**	
Pelandale Avenue	WB	3	CBE	0.35	A	0.37	A	0.41	A	0.40	A	0.06	0.03	N
Dale Road to American Avenue	EB	3		0.22	A	0.53	A	0.24	A	0.60	A	0.02	0.07	
Pelandale Avenue	WB	3	CBE	0.41	A	0.35	A	0.56	A	0.42	A	0.15	0.07	N
American Avenue to Prescott Road	EB	3		0.20	A	0.50	A	0.22	A	0.57	A	0.02	0.07	
Pelandale Avenue	WB	3	CBE	0.35	A	0.32	A	0.46	A	0.37	A	0.11	0.05	N
Prescott Road to Carver Road	EB	3		0.20	A	0.46	A	0.22	A	0.53	A	0.02	0.07	
Pelandale Avenue	WB	3	CBE	0.30	A	0.28	A	0.42	A	0.33	A	0.12	0.05	N
Carver Road to Tully Road	EB	3		0.17	A	0.40	A	0.19	A	0.48	A	0.02	0.08	
Bangs Avenue	WB	1	RR[6]	0.66	B	0.64	B	**1.12**	**F**	0.86	D	**0.46**	0.22	**Y**
Dale Road to American Avenue	EB	1		0.55	A	0.70	C	0.75	C	**1.02**	**E**	0.20	**0.32**	
Bangs Avenue	WB	1	RR	0.70	B	0.53	A	**1.21**	**F**	0.77	C	**0.51**	0.24	**Y**
American Avenue to Prescott Road	EB	1		0.40	A	**0.98**	**E**	0.55	A	**1.50**	**F**	0.15	**0.52**	
Bangs Avenue	WB	1	RR	0.65	B	0.53	A	**0.96**	**E**	0.66	B	**0.31**	0.13	**Y**
Prescott Road to Carver Road	EB	1		0.54	A	0.88	D	0.59	A	**1.05**	**F**	0.05	**0.17**	
Bangs Avenue	WB	1	RR	0.46	A	0.51	A	0.70	B	0.60	A	0.24	0.09	**Y**
Carver Road to Tully Road	EB	1		0.50	A	0.82	D	0.54	A	**0.99**	**E**	0.04	**0.17**	
Bangs Avenue	WB	1	RR	0.55	A	0.55	A	0.67	B	0.58	A	0.12	0.03	N
Tully Road to McHenry Avenue	EB	1		0.45	A	0.67	B	0.48	A	0.78	C	0.03	0.11	
Dale Road	NB	2	SA	0.37	A	0.71	C	0.42	A	0.88	D	0.05	0.13	N
Kiernan Avenue to Healthcare Way	SB	2		0.65	B	0.59	A	0.84	D	0.72	B	0.19	0.17	

(cont'd.)

Table IV.C.18 (continued)

Freeway or Roadway Segment	Dir	Lane	Type	Near-Term Baseline				Near-Term Baseline Plus Project				v/c change		Significant Impact Y/N?
				AM		PM		AM		PM				
				v/c	LOS[1]	v/c	LOS[1]	v/c	LOS	v/c	LOS[1]	AM	PM	
Dale Road	NB	2	RR	0.68	B	0.72	C	0.90	D	0.87	D	0.22	0.15	**Y**
Healthcare Way to The Plaza Way	SB	2		0.60	A	0.88	D	0.75	C	**1.17**	**F**	0.15	**0.29**	
Dale Road	NB	2	RR	**1.10**	**F**	0.77	C	**1.57**	**F**	**1.01**	**F**	**0.47**	**0.24**	**Y**
The Plaza Way to Bangs Avenue	SB	3		0.36	A	0.76	C	0.47	A	**1.06**	**F**	0.11	**0.30**	
Dale Road	NB	2	SA	**1.11**	**F**	0.74	C	**1.70**	**F**	**1.03**	**F**	**0.59**	**0.29**	**Y**
Bangs Avenue to Pelandale Avenue	SB	3		0.37	A	0.88	D	0.50	A	**1.29**	**F**	0.13	**0.41**	
Dale Road	NB	2	SA	0.78	C	0.83	D	**1.04**	**F**	**0.96**	**E**	**0.26**	**0.13**	**Y**
Pelandale Avenue to Snyder Avenue	SB	3		0.35	A	0.72	C	0.40	A	0.90	D	0.05	0.18	
Dale Road	NB	2	SA	0.54	A	0.81	D	0.75	C	**0.91**	**E**	0.21	**0.10**	**Y**
Snyder Avenue to Veneman Avenue	SB	2		0.52	A	**0.93**	**E**	0.58	A	**1.13**	**F**	0.06	**0.20**	
Dale Road	NB	3	SA	0.44	A	0.60	A	0.58	A	0.67	B	0.14	0.07	N
Veneman Avenue to Standiford Avenue	SB	3		0.28	A	0.72	C	0.33	A	0.86	D	0.05	0.14	

Notes:
[1] Freeway and roadway segments operating at unacceptable levels (LOS E or F if within the City and its Sphere of Influence (SOI) or LOS D, E, or F if within the County and outside of the City's SOI) are indicated in **bold**.
[2] Freeway
[3] This road segment is within the county and is evaluated against Stanislaus County LOS standards where LOS D, E, or F are considered deficient levels of service.
[4] Signalized Arterial
[5] Class B Expressway
[6] Rural Road

Source: Fehr & Peers, 2008.

Table IV.C.19: SR 99 Ramp Merge/Diverge LOS Conditions – Near-Term Baseline and Near-Term Baseline Plus Project

Ramp Merge/Diverge	Near-Term Baseline				Near-Term Baseline Plus Project				Percent Project Volume Increase through Merge/Diverge Area		Significant Impact Y/N?
	AM		PM		AM		PM				
	Density[1]	LOS[2]	Density	LOS	Density	LOS	Density	LOS	AM	PM	
Kiernan Avenue Southbound Off-ramp Diverge	**36**	**E**	**39**	**E**	**36**	**E**	**40**	**E**	1.5%	1.3%	N
Kiernan Avenue Southbound On-ramp Merge	33	D	**43**	**E**	33	D	**43**	**E**	0%	0%	N
Kiernan Avenue Northbound Off-ramp Diverge	**44**	**E**	**47**	**E**	**44**	**E**	**47**	**E**	0%	0%	N
Kiernan Avenue Northbound On-ramp Merge	32	D	33	D	32	D	34	D	0.8%	2.0%	N
Pelandale Avenue Southbound Off-ramp Diverge	**44**	**E**	**50**	**E**	**44**	**E**	**51**	**E**	0%	0%	N
Pelandale Avenue Southbound On-ramp Merge	31	D	**37**	**E**	32	D	**39**	**E**	1.8%	4.6%	N
Pelandale Avenue Northbound Off-ramp Diverge	**38**	**E**	**36**	**E**	**40**	**E**	**37**	**E**	4.8%	2.8%	N
Pelandale Avenue Northbound On-ramp Merge	**36**	**E**	34	D	**36**	**E**	34	D	0%	0%	N
Standiford Avenue Southbound Off-ramp Diverge	**36**	**E**	**42**	**E**	**36**	**E**	***44***	***F***	1.8%	4.6%	***Y***
Standiford Avenue Southbound On-ramp Merge	34	D	**38**	**E**	34	D	***40***	***F***	2.4%	6.3%	***Y***
Standiford Avenue Northbound Off-ramp Diverge	**40**	**E**	**38**	**E**	***43***	***F***	**39**	**E**	6.5%	3.6%	***Y***
Standiford Avenue Northbound On-ramp Merge	34	D	31	D	***36***	***E***	32	D	4.8%	2.8%	***Y***

Notes:
[1] Density is presented in passenger cars per mile per lane (pc/mi/ln).
[2] Unacceptable service levels are shown in **bold**; project-related significant impacts on LOS are shown in ***bold italics***.

Source: Fehr & Peers, 2008.

LOS F in the AM or PM peak hours. One additional merge/diverge areas would experience a deterioration of LOS D or better to LOS E during the AM peak hour with project-generated traffic.

For a list of impacted merge/diverge areas, please see Impact C.6 on p. IV.C.76.

The project would not cause other merge/diverge areas at Kiernan Avenue, Pelandale Avenue, and Standiford Avenue to degrade below LOS D or to degrade from LOS E to LOS F, or, for locations already at LOS E or F, would not increase traffic volume by five percent or more.

Impact C.4. Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the near-term baseline plus project scenario. (Significant and Unavoidable)

In the near-term plus project scenario, project traffic would result in an increase in delay by five seconds or more at seven of the eight signalized intersections operating at unacceptable levels during the AM peak hour, the PM peak hour, or both. Two additional signalized intersections would operate at LOS E or LOS F during the AM or the PM peak hour with project-generated traffic. At two of the three unsignalized intersections that would operate at unacceptable levels, the addition of project traffic would result in an increase in delay of 30 seconds or more during the AM and PM peak hours. The unsignalized intersection at Bangs and American Avenues would degrade to LOS F during the AM and PM peak hours with project-generated traffic. In sum, the proposed project would cause significant impacts at 12 of the 31 study intersections. The following signalized and unsignalized intersections would operate at unacceptable levels of service with project-generated traffic:

Signalized

- Kiernan Avenue and SR 99 Southbound Ramps (AM peak hour)
- Kiernan Avenue and Sisk Road (AM and PM peak hours)
- Dale Road and Kaiser Main Entrance/The Plaza Way (PM peak hour)
- Bangs Avenue and Prescott Road (PM peak hour)
- Pelandale Avenue and SR 99 Southbound Ramps (PM peak hour)
- Pelandale Avenue and Dale Road (AM and PM peak hours)
- Standiford Avenue and SR 99 Southbound Ramps (AM and PM peak hours)
- Standiford Avenue and SR 99 Northbound Ramps (PM peak hour)
- Standiford Avenue and Sisk Road (PM peak hour)

Unsignalized

- Bangs Avenue and American Avenue (AM and PM peak hours)
- Bangs Avenue and Carver Road (AM and PM peak hours)
- Bangs Avenue and Tully Road (AM and PM peak hours)

Mitigation measures are available that would result in improved levels of service for the 13 impacted intersections. In some cases implementation of identified mitigation measures would improve service levels to LOS D or better, which would meet the City of Modesto criterion for acceptable operations. However, in some instances these mitigation measures are infeasible and the impact would remain significant and unavoidable. There are several reasons why the measures could be infeasible; they include: a) the location may be outside the jurisdiction of the City of Modesto; b) although an approved project is identified, improvements have not been constructed and the City of Modesto cannot provide assurances regarding the timing or funding of the improvements; c) although a location may potentially be included in the City's Capital Improvement Program, funding is not guaranteed and improvements cannot be assured, d) although there may be an existing Capital Facilities Fee program (CFF), funding may be fully committed and some intersections may operate at unacceptable service levels for a substantial period of time before mitigation measures could be fully funded and implemented, e) the proposed project's fair share contribution is relatively small in relation to the overall cost of the improvements, and f) the improvements cannot be constructed within the existing right-of-way. Therefore, while mitigation measures would improve LOS at all 12 intersections, all are identified as significant and unavoidable impacts because implementation of mitigation is not assured.

Mitigation Measure C.4a

Kiernan Avenue and SR 99 Southbound Ramps: Add a second westbound left-turn lane and an associated receiving lane.

Implementation of this measure would result in LOS C in the AM peak hour, reducing the project's impact to a less-than-significant level.

Both Kiernan Avenue and SR 99 are under the jurisdiction of Caltrans. The improvements needed to mitigate the project's impact on this intersection have not been through the Caltrans approval process, nor designed or funded. Potential Caltrans improvements that would add capacity to this interchange include reconstruction of the overpass to provide three through lanes in each direction, turn pockets, and expanded on-ramp and off-ramp capacity. The project sponsor would be required to contribute their fair share of the costs of these improvements.

While construction of these improvements may occur as the City, the community of Salida, and unincorporated Stanislaus County build out, the City does not have the authority to design and construct the identified improvements to the Kiernan Avenue/SR 99 SB ramp intersection. Therefore, there can be no assurance that Caltrans would construct improvements that would increase the capacity of the intersection prior to completion of the proposed project. As a result,

the intersection could operate poorly for a substantial period of time. The mitigation measure is being treated as infeasible and the impact is identified as significant and unavoidable.

Mitigation Measure C.4b

Kiernan Avenue and Sisk Road: Modify the eastbound right-turn lane to provide a shared eastbound through/right-turn lane (for a total of three through lanes) and associated receiving lane, and provide a third westbound through lane and modify the traffic signal to provide protected-permitted phasing for the northbound and southbound approaches.

Implementation of this measure would result in LOS C in the AM and PM peak hours, reducing the project's impact to a less-than-significant level.

Kiernan Avenue is under the jurisdiction of Caltrans. All of the intersection improvements except the addition of the third eastbound and westbound through lanes are included in the Phase I work program of the regionally-funded Caltrans SR 219 widening project. The third eastbound and westbound through lanes, although envisioned as part of the ultimate buildout of Kiernan Avenue as a six-lane Class B Expressway, has not yet been through the Caltrans approval process. The City does not have the authority to design and construct the identified improvements at this intersection and, therefore, cannot assure implementation. As a result, the intersection could operate poorly for a substantial period of time. The mitigation measure is being treated as infeasible and the impact is identified as significant and unavoidable.

Mitigation Measure C.4c

Dale Road and Kaiser Main Entrance/The Plaza Way: Add a third southbound through lane; add a third northbound through lane.

Implementation of this measure would result in LOS D in the PM peak hour, reducing the project's impact to a less-than-significant level.

The addition of a third northbound and a third southbound through lane is necessary for this intersection to operate at an acceptable level of service. The cost of adding a third lane in the southbound direction is expected to be funded by the Kaiser Modesto Medical Center and placed in service prior to completion of the proposed project. The project sponsor would be required to fund the cost of the third northbound through lane. Therefore, the impact would be less than significant.

Mitigation Measure C.4d

Bangs Avenue and American Avenue: Construct a two-lane roundabout with a northbound by-pass lane; or install a traffic signal and add an eastbound through lane, an eastbound left-turn pocket, a westbound through lane, a westbound left-turn pocket, a northbound left-turn lane, a northbound through lane, a northbound right-turn only lane, a southbound left-turn lane, and a southbound shared through/right-turn lane.

Implementation of either measure would result in LOS A for the AM and PM peak hours, reducing the project's impact to a less-than-significant level.

The construction of either improvement is necessary for this intersection to operate at an acceptable level of service. The cost of a two-lane roundabout with a northbound by-pass lane or installation of a traffic signal with the associated intersection improvements is expected to be funded by the Kaiser Modesto Medical Center and Kiernan Business Park South projects. The project sponsor would be required to pay their fair share contribution to the ultimate cost of these improvements through payment into the Kiernan Business Park West CFD, or, if the intersection improvements are not in place prior to the construction of the proposed project, construct the improvements. Therefore, this impact would be less than significant.

Mitigation Measure C.4e

Bangs Avenue and Prescott Road: Construct a two-lane roundabout; or maintain the traffic signal identified in the City's intersection improvement program and add a second westbound through lane and a second eastbound through lane.

Implementation of either measure would result in LOS A in the PM peak hour, reducing the project's impact to a less-than-significant level.

The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain significant and unavoidable.

Mitigation Measure C.4f

Bangs Avenue and Carver Road: Construct a two-lane roundabout; or install traffic signals and left-turn pockets at all approaches.

Implementation of either measure would result in LOS B in the AM and PM peak hour, reducing the project's impact to a less-than-significant level.

The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain significant and unavoidable.

Mitigation Measure C.4g

Bangs Avenue and Tully Road: Construct a two-lane roundabout; or install traffic signals and left-turn pockets at all approaches and an eastbound right-turn only lane.

Implementation of either measure would result in LOS A in the AM and PM peak hours, reducing the project's impact to a less-than-significant level.

The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain significant and unavoidable.

Mitigation Measure C.4h

Pelandale Avenue and SR 99 Southbound Ramps: This intersection is under the jurisdiction of Caltrans. Caltrans and the City of Modesto are currently engaged in a joint effort to develop improvements at this interchange. Potential improvements include loop ramps and modifications to Sisk Road, such as additional through lanes and turn lanes. Widening and interchange

improvement projects for this intersection have not yet been through the Caltrans approval process, nor have they been designed or funded. While construction of improvements at this intersection is anticipated to occur as the City builds out, there can be no assurance that the needed improvements would be in place prior to the completion of the proposed project.

The project sponsor would be required to pay their fair share contribution toward the ultimate interchange improvement project through payment to the applicable CFF. The improvements, however, cannot be constructed without additional funding sources beyond the City's CFF. The additional funds needed to fully implement this mitigation measure are likely to come from state and federal sources. Because the intersection is under Caltrans jurisdiction and funds needed to fully implement this mitigation measure are not expected to be available prior to completion of the proposed project, this mitigation measure is being treated as infeasible. The impact would, therefore, remain significant and unavoidable.

Mitigation Measure C.4i

Pelandale Avenue and Dale Road: Add a third northbound through lane and add eastbound and westbound free right-turn lanes.

Implementation of this measure would result in LOS D in the AM and PM peak hours, reducing the project's impact to a less-than-significant level.

Adding a third northbound through lane and east and westbound free right-turn lanes would require additional right-of-way. Implementation would require acquisition of private property and the demolition and displacement of current land uses. The identified improvements are funded through a City CFF. The project sponsor would be required to pay their fair share contribution to the ultimate cost of these improvements with the amount of the payment based on their percentage contribution to the overall impact. While construction of some improvements is anticipated to occur as the City builds out, not all are physically feasible without loss of existing, active structures and/or their parking facilities. Therefore, this mitigation measure is being treated as infeasible and the impact would remain significant and unavoidable.

Mitigation Measure C.4j

Standiford Avenue and SR 99 Southbound Ramps: Add a second southbound left-turn lane.

Implementation of this measure would reduce the project's impact to a less-than-significant level; however, the intersection would continue to operate at LOS F in the PM peak hour and additional improvements would be necessary to achieve an acceptable LOS D.

The Standiford Avenue/SR 99 SB Ramps intersection is under the jurisdiction of Caltrans. The City does not have the authority to design or construct improvements at the interchange and, therefore, cannot assure implementation of the identified improvement or any additional improvements in the near future. As a result, the interchange could operate poorly for a substantial period of time. The mitigation measure is being treated as infeasible and the impact is identified as significant and unavoidable.

The improvement received Caltrans and Federal Highway Administration (FHWA) approval; however, its projected addition to the City's Capital Improvement Program has been delayed. Although there are no assurances that this project will be funded in the near-term, the project sponsor would be required to contribute their fair share to the ultimate improvement project through payment to an applicable CFF program when formed.

Mitigation Measure C.4k

Standiford Avenue and SR 99 Northbound Ramps: Install a free northbound right-turn only lane.

Implementation of this measure would result in LOS B in the PM peak hour, reducing the project's impact to a less-than-significant level.

The Standiford Avenue/SR 99 NB Ramps intersection is under the jurisdiction of Caltrans. The City does not have the authority to design and construct improvements at the intersection and cannot ensure Caltrans implementation. As a result, the intersection could operate poorly for a substantial period of time. The mitigation measure is being treated as infeasible and the impact is identified as significant and unavoidable.

Mitigation Measure C.4*l*

Standiford Avenue and Sisk Road: Install a third westbound through lane.

Implementation of this measure would reduce the project's impact to a less-than-significant level by substantially reducing delay; however, the intersection would continue to operate at LOS F in the PM peak hour and additional improvements would be necessary to achieve an acceptable LOS D.

The City has established a CFF program to cover the costs of improvements to this intersection, to which the project sponsors would be required to contribute its fair share. While construction of these improvements is anticipated to occur as the City builds out, there can be no assurance that the City of Modesto would construct these improvements by the time the proposed project is expected to be completed. Although the proposed project would provide its fair share

contribution, the contribution would be relatively small in relation to the total cost and would not cover the improvement. The uncertainty of funding sources makes the mitigation measure infeasible. This could result in unacceptable intersection operations for a substantial period of time. Therefore, the mitigation measure is infeasible, and the impact would remain significant and unavoidable.

Impact C.5. Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the near-term baseline plus project scenario. (Significant and Unavoidable)

The addition of project-generated traffic to the roadway network would result in an increase in the v/c ratio of 0.05 or more at 16 of the 19 roadway segments currently operating at unacceptable levels during the AM peak hour, the PM peak hour, or both under near-term baseline conditions. Fourteen additional roadway segments would experience a deterioration of service and would operate at an unacceptable LOS during the AM peak hour, the PM peak hour, or both with project-generated traffic. The following roadway segments would operate at unacceptable levels of service during the AM peak hour, the PM peak hour, or both under the near-term baseline plus project scenario:

- Northbound SR 99 between Standiford Avenue and Briggsmore Avenue (AM peak hour)
- Southbound SR 99 between Hammet Road and Kiernan Avenue (PM peak hour)
- Southbound SR 99 between Pelandale Avenue and Standiford Avenue (PM peak hour)
- Southbound SR 99 between Standiford Avenue and Briggsmore Avenue (AM and PM peak hours)
- Eastbound Kiernan Avenue, two segments between SR 99 SB Ramps and Sisk Road (AM and PM peak hours)
- Westbound Kiernan Avenue between SR 99 NB Ramps and Sisk Road (PM peak hour)
- Eastbound Pelandale Avenue, four segments between SR 99 NB Ramps and Dale Road (PM peak hour)
- Westbound Pelandale Avenue, three segments between SR 99 SB Ramps and Northpointe Shopping Center (PM peak hour)
- Westbound Pelandale Avenue between Dale Road and Chapman Road (PM peak hour)
- Eastbound Bangs Avenue, four segments between Dale Road and Tully Road (PM peak hour)
- Westbound Bangs Avenue, three segments between Dale Road and Carver Road (AM peak hour)
- Northbound Dale Road, three segments between Snyder Avenue and The Plaza Way (AM and PM peak hours)

- Northbound Dale Road between Veneman Avenue and Snyder Avenue (PM peak hour)
- Southbound Dale Road, three segments between Healthcare Way and Pelandale Avenue (PM peak hour)
- Southbound Dale Road between Snyder Avenue and Veneman Avenue (PM peak hour)

Mitigation Measure C.5a

State Route 99: Add a northbound and a southbound through lane between Hammet Road and Kiernan Avenue and between Pelandale Avenue and Briggsmore Avenue.

Implementation of this measure would reduce the project's impact to a less-than-significant level.

State Route 99 is under the jurisdiction of Caltrans. Caltrans' long range plan is to widen SR 99 from a six-lane to an eight-lane freeway in conjunction with interchange improvements. This long-range plan has not been through the Caltrans approval process, nor has it been designed or funded. The City does not have the authority to design and construct improvements to SR 99. Therefore, implementation of the improvement cannot be ensured and the impact would remain significant and unavoidable.

Mitigation Measure C.5b

Kiernan Avenue: Add a third eastbound and a third westbound through lane between the SR 99 Southbound Ramp and Sisk Road.

Implementation of this measure would reduce the project's impact to a less-than-significant level.

Kiernan Avenue is under the jurisdiction of Caltrans. The addition of a third eastbound and third westbound through lane along this segment of Kiernan Avenue has not been designed or funded by Caltrans and is not currently included in the County's PFF program. Caltrans' long range plan for Kiernan Avenue is to develop the roadway as a six-lane Class B Expressway between SR 99 and McHenry Avenue. However, the City does not have the authority to design and construct improvements to Kiernan Avenue and cannot assure that Caltrans would implement the needed improvements along this roadway segment. As a result, the roadway segment could operate poorly for a substantial period of time. The mitigation measure is being treated as infeasible and the impact is identified as significant and unavoidable.

Mitigation Measure C.5c

Pelandale Avenue: Add eastbound and westbound through lanes between the SR 99 Southbound Ramps and Sisk Road and turn lanes on Sisk Road.

Implementation of this measure would reduce the project's impact to a less-than-significant level.

This segment of Pelandale Avenue is controlled by Caltrans. Interchange improvements are currently under development by the City of Modesto and Caltrans. Potential improvements could include loop ramps and additional through lanes and turn lanes on Sisk Road. While construction of improvements at this intersection is anticipated to occur as the City builds out, there can be no assurance that the needed improvements would be in place prior to the completion of the proposed project.

The project sponsor would be required to pay their fair share contribution towards the ultimate interchange improvement project through payment to the applicable CFF. The improvements, however, cannot be constructed without additional funding sources beyond the City's CFF. The additional funds needed to fully implement this mitigation measure are likely to come from state and federal sources. Because the intersection is under Caltrans jurisdiction, and funds needed to fully implement this mitigation measure are not expected to be available by the time the proposed project is completed, this mitigation measure is being treated as infeasible. The impact on the roadway segments along Pelandale Avenue between SR 99 SB Ramps and Sisk Road would remain significant and unavoidable.

Mitigation Measure C.5d

Bangs Avenue: Widen to two lanes in each direction between Dale Road and Tully Road.

Bangs Avenue is envisioned as a four-lane major collector roadway between Dale Road and McHenry Avenue with multiple driveways and intersections. It is important to note that with turning movements to/from parcels, increased friction occurs on the roadway, reducing the practical capacity of the facility. Providing an additional through lane in each direction would allow for turning movements to/from parcels while maintaining acceptable service levels for through traffic. With implementation of this mitigation measure the impact would be reduced to a less-than-significant level and the roadway segments between Dale Road and Tully Road would operate at acceptable levels.

The cost of the second eastbound and second westbound through travel lanes needed for the Bangs Avenue roadway segments between Dale Road and Tully Road to operate at an acceptable level of service is not funded. The cost of adding a lane in each direction could be funded by this project, other existing and proposed Kiernan Business Park Specific Plan projects, and other proposed development projects in the vicinity. The project sponsor would be required to pay their fair share contribution to the ultimate cost of these improvements through payment into the Kiernan Business Park West CFD. The fair share contribution from the project sponsor would partially fund the needed improvements; however, without fair share contributions from other

development projects, the improvements to the Bangs Avenue roadway segments cannot be constructed.

While construction of these improvements is anticipated to occur as the City builds out, there can be no assurance that sufficient funds would be available for the City of Modesto to construct these improvements prior to completion of the proposed project. This could result in unacceptable operations for a substantial period of time. Therefore, the uncertainty of funding sources would make the mitigation measure infeasible, and this impact would remain significant and unavoidable.

Mitigation Measure C.5e

Dale Road: Add a northbound and a southbound through lane between Healthcare Way and The Plaza Way; add a northbound through lane between Snyder Avenue and The Plaza Way; add a northbound and southbound through lane between Snyder Avenue and Veneman Avenue.

Dale Road is envisioned as a six-lane principal arterial between Kiernan and Standiford Avenues in the 2008 *Urban Area General Plan*.

The cost of the improvements needed for the Dale Road roadway segments between Kiernan and Standiford Avenues to operate at an acceptable level of service is not funded through a City CFF or any other local or regional transportation funding source. The cost of the improvements can be funded through the collection of fair share contributions from this project, other existing and proposed Kiernan Business Park Specific Plan projects, and other proposed development projects in the vicinity. The project sponsor would be required to pay their fair share contribution to the ultimate cost of these improvements based on their percent contribution to the overall impact; however, the fair share contribution is relatively small in relation to the overall cost of the improvements.

While construction of these improvements is anticipated to occur as the City builds out, there can be no assurance that sufficient funds would be available for the City of Modesto to construct these improvements prior to completion of the proposed project. Furthermore, the addition of a third northbound through lane would require additional right-of-way along Dale Road, between Pelandale and Bangs Avenue and full implementation would require acquisition of private property and the demolition and displacement of current land uses. This could result in unacceptable operations for a substantial period of time. Therefore, this mitigation measure is being treated as infeasible, and the impact would remain significant and unavoidable.

Impact C.6. Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge areas near the project site under the near-term baseline plus project scenario. (Significant and Unavoidable)

The addition of project-generated traffic to the roadway network would contribute to unacceptable service levels at the ten freeway merge/diverge areas that operate at LOS E or LOS F under near-term baseline conditions. Three of these freeway merge/diverge areas would experience an increase in volume of five percent or more as a result of project-generated traffic. One diverge area that operates at an acceptable service level under near-term baseline conditions would operate at an unacceptable LOS E during the AM peak hour with project-generated traffic. The proposed project could impact the following freeway merge/diverge areas during the AM or PM peak hour:

- Standiford Avenue Southbound Off-Ramp Diverge (PM peak hour)
- Standiford Avenue Southbound On-Ramp Diverge (PM peak hour)
- Standiford Avenue Northbound Off-Ramp Diverge (AM peak hour)
- Standiford Avenue Northbound On-Ramp Merge (AM peak hour)

Mitigation Measure C.6

The Standiford Avenue/SR 99 freeway merge/diverge areas are under the jurisdiction of Caltrans. Caltrans' long range plan is to widen SR 99 from a six-lane to an eight-lane freeway in conjunction with interchange improvements including the SR 99/Standiford Avenue interchange. If implemented these improvements would mitigate the project's impacts on the Standiford Avenue/SR 99 freeway ramp merge/diverge areas to a less-than-significant level. The SR 99 widening project and associated interchange improvements have not been through the Caltrans approval process, nor have they been designed or funded. The City does not have the authority to design and construct improvements to SR 99, and the City cannot assure Caltrans implementation. Therefore, the Standiford Avenue/SR 99 merge/diverge areas could operate poorly for a substantial period of time. The mitigation measure is being treated as infeasible and the impact is identified as significant and unavoidable.

CUMULATIVE BASELINE (2025) PLUS PROJECT SCENARIO

The cumulative baseline plus project scenario represents year 2025 conditions with buildout of the City of Modesto according to the City's 2008 *Urban Area General Plan* land use designations and planned transportation system including widening SR 99, widening Bangs Avenue to four lanes, widening Standiford Avenue to six lanes, and improving the interchanges at Standiford Avenue, Pelandale Avenue, and Kiernan Avenue. In order to generate daily cumulative baseline plus project roadway segment forecasts, the City's travel demand model was modified to replace the business park use with the proposed project's mix of land uses, trip generation, and trip

distribution on a roadway network that includes improvements proposed as part of the project. Project-related transportation system improvements are assumed to have been completed by the time the proposed project is expected to be occupied.

Freeway and Roadway Segment Levels of Service

Daily project traffic estimates were added to the Cumulative Baseline (2025) volumes to determine Cumulative Baseline (2025) Plus Project traffic volumes. The Cumulative Baseline and Cumulative Baseline (2025) Plus Project freeway and roadway segment v/c ratios and weekday daily operations are shown in Table IV.C.20.

Under cumulative baseline conditions, a total of eight roadway segments operate at LOS E or LOS F. Compared to cumulative baseline conditions, three of the eight roadway segments that currently operate at LOS E or LOS F would experience an increase in the v/c ratio of 0.05 or greater with project-generated traffic. The remaining five roadway segments that operate at unacceptable service levels under cumulative baseline conditions would continue to do so with the addition of project-generated traffic; however, the project-generated traffic does not increase the v/c ratio along these roadway segments by 0.05 or greater. Four additional roadway segments would experience a deterioration of service (from LOS D or better) with the addition of project-generated traffic and would operate at LOS E or LOS F.

The remaining roadway segments currently have capacity to accommodate additional vehicles (i.e., LOS D or better) and would have the capacity to accommodate project-generated traffic without experiencing reductions in level of service.

Impact C.7. Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the cumulative baseline plus project scenario. (Significant and Unavoidable)

The addition of project-generated traffic to the roadway network would result in an increase in the v/c ratio of 0.05 or greater at five of the 11 roadway segments currently operating at unacceptable levels in 2025 under cumulative baseline conditions. Five additional roadway segments would experience a deterioration of service and would operate at LOS E or LOS F with project-generated traffic. The following roadway segments would operate at unacceptable levels of service under the cumulative plus project scenario:

Table IV.C.20: Weekday Daily Roadway Segment LOS Conditions – Cumulative Baseline and Cumulative Baseline Plus Project

Roadway Segment	Roadway Type	# of Lanes	Cumulative Baseline		Cumulative Baseline Plus Project		v/c change	Significant Impact Y/N?
			v/c	LOS	v/c	LOS		
SR 99 - Hammett Road to Kiernan Avenue	FWY	8	0.74	C	0.75	C	0.01	N
SR 99 - Kiernan Avenue to Pelandale Avenue	FWY	8	0.71	C	0.72	C	0.01	N
SR 99 - Pelandale Avenue to Standiford Avenue	FWY	8	0.72	C	0.72	C	0.00	N
SR 99 - Standiford Avenue to Briggsmore Avenue	FWY	8	**0.91**	**E**	**0.91**	**E**	0.00	N
Kiernan Avenue - Salida Boulevard to SR 99 SB Ramps	Arterial	6	0.64	B	0.66	B	0.02	N
Kiernan Avenue - SR 99 SB Ramps to SR 99 NB Ramps	Arterial	6	**1.14**	**F**	**1.17**	**F**	0.03	N
Kiernan Avenue - SR 99 NB Ramps to Sisk Road	Arterial	6	**1.44**	**F**	**1.47**	**F**	0.03	N
Kiernan Avenue - Sisk Road to Stoddard Road	Arterial	6	**1.39**	**F**	**1.42**	**F**	0.03	N
Kiernan Avenue - Stoddard Road to Dale Road	CB EXPY	6	0.76	C	0.76	C	0.00	N
Kiernan Avenue - Dale Road to American Avenue	CB EXPY	6	0.77	C	0.72	C	(0.05)	N
Kiernan Avenue - American Avenue to Carver Road	CB EXPY	6	0.80	C	0.77	C	(0.03)	N
Kiernan Avenue - Carver Road to McHenry Avenue	CB EXPY	6	0.86	D	0.83	D	(0.03)	N
Pelandale Avenue - Salida Boulevard to SR 99 SB Ramps	Overpass	4	0.67	B	0.71	C	0.04	N
Pelandale Avenue - SR 99 SB Ramps to SR 99 NB Ramps	Overpass	5	0.60	A	0.63	B	0.03	N
Pelandale Avenue - SR 99 NB Ramps to Sisk Road	Overpass	5	0.79	C	0.83	D	0.04	N
Pelandale Avenue - Sisk Road to Northpointe Shopping Center	Arterial	6	**1.11**	**F**	***1.17***	***F***	***0.06***	***Y***
Pelandale Avenue - Northpointe Shopping Center to Chapman Rd.	Arterial	6	**0.99**	**E**	***1.07***	***F***	***0.08***	***Y***
Pelandale Avenue - Chapman Road to Dale Road	Arterial	6	0.86	D	***0.93***	***E***	***0.07***	***Y***
Pelandale Avenue - Dale Road to Prescott Road	CB EXPY	6	0.56	A	0.66	B	0.10	N
Pelandale Avenue - Prescott Road to Carver Road	CB EXPY	6	0.78	C	0.77	C	(0.01)	N
Pelandale Avenue - Carver Road to Tully Road	CB EXPY	6	0.71	C	0.72	C	0.01	N
Bangs Avenue - Dale Road to American Avenue	Collector	4	0.27	A	0.38	A	0.11	N
Bangs Avenue - American Avenue to Prescott Road	Collector	4	**0.36**	**A**	0.54	A	0.18	N
Bangs Avenue - Prescott Road to Carver Road	Collector	4	**0.46**	**A**	0.67	B	0.21	N

(cont'd.)

Table IV.C.20 (continued)

Roadway Segment	Roadway Type	# of Lanes	Cumulative Baseline		Cumulative Baseline Plus Project		v/c change	Significant Impact Y/N?
			v/c	LOS	v/c	LOS		
Bangs Avenue - Carver Road to Tully Road	Collector	4	0.51	A	0.65	B	0.14	N
Bangs Avenue - Tully Road to McHenry Avenue	Collector	4	**0.94**	**E**	**0.97**	**E**	0.03	N
Dale Road - Kiernan Avenue to Healthcare Way	Arterial	6	0.68	B	0.72	C	0.04	N
Dale Road - Healthcare Way to The Plaza Way	Arterial	6	0.69	B	0.65	B	(0.04)	N
Dale Road - The Plaza Way to Bangs Avenue	Arterial	6	0.76	C	0.81	D	0.05	N
Dale Road - Bangs Avenue to Pelandale Ave	Arterial	6	0.87	D	***0.94***	***E***	***0.07***	***Y***
Dale Road - Pelandale Avenue to Snyder Avenue	Arterial	6	0.87	D	***0.95***	***E***	***0.08***	***Y***
Dale Road - Snyder Avenue to Veneman Avenue	Arterial	6	0.87	D	***0.96***	***E***	***0.09***	***Y***
Dale Road - Veneman Avenue to Standiford Avenue	Arterial	6	**1.02**	**F**	**1.03**	**F**	0.01	N
Note: Freeway and roadway segments operating at unacceptable levels are indicated in **bold**; those indicated in bold italics are significant project impacts.								

Source: Fehr & Peers, 2008.

- Pelandale Avenue between Sisk Road and Northpointe Shopping Center*
- Pelandale Avenue between Northpointe Shopping Center and Chapman Road*
- Pelandale Avenue between Chapman Road and Dale Road
- Dale Road between Bangs Avenue to Pelandale Avenue
- Dale Road between Pelandale Avenue and Snyder Avenue*
- Dale Road between Snyder Avenue and Veneman Avenue
- Dale Road between Snyder Avenue and Veneman Avenue *(The 2008 Urban Area General Plan identifies the impact on the Dale Road segment between Snyder Avenue and Veneman Avenue. As part of the certification process for the Master Environmental Impact Report for the Urban Area General Plan the impact was overridden.)*

Mitigation Measure C.7

Pelandale Avenue and Dale Road: No physical improvements are recommended for these roadways beyond the planned maximum cross-section. Other measures, such as signal timing coordination and transportation demand management measures, should be implemented to maximize through traffic efficiency and minimize single occupant vehicle trips. The project sponsor shall prepare a transportation demand management program to the satisfaction of City staff. Elements of this plan could include:

Financial Programs: These are programs that would encourage employees to participate in the TDM Program by providing financial incentives.

- Transit Ticket Subsidy
- Lottery Prizes for Use of Commute Alternatives
- Shuttles or Vanpools
- Subsidized Bicycle Purchase Programs for Employees

Services: These are services that, if implemented, could facilitate employee participation in the TDM Program.

- Guaranteed Ride Home Program
- On-Site Bicycle Secure Storage Facilities
- On-Site Bicycle Shower and Locker Facilities
- Preferential Carpool Parking

* The *Final Master EIR* for the *2008 Urban Area General Plan* identified the Pelandale Avenue segments between Sisk Road and Chapman Road and the Dale Road segments between Pelandale Avenue and Nightingale Drive and Vintage Drive and Standiford Avenue as operating with a daily LOS of E or F. The City has accepted that impacts on segments of its roadway system are acceptable without implementation of mitigation measures. Please see Table 1-7 on p. V-1-32 and Figure V-1-4b in the Final MEIR.

Support Activities: These are activities that, if implemented, could inform and educate employees regarding the TDM Program.

- Biannual Transportation Fairs
- Distribution of TDM Program Information
- Carpool Ride Matching
- Vanpool Informational Meetings

The adjacent Kaiser Medical Center should participate in a Transportation Demand Management program to maximize the trip reduction potential within the Kiernan Business Park Specific Plan Area. Implementation of this measure would potentially reduce the severity of project impacts. Given the uncertainty of vehicle trip reductions associated with TDM programs, this impact would remain significant and unavoidable.

CONSTRUCTION IMPACTS

Impact C.8: Construction-related traffic activity could have a significant although temporary impact. (Less than Significant)

Project-related activities would generate heavy vehicle trips for hauling of equipment and construction materials for site preparation and construction. Construction of the project could require periodic halting of traffic, temporary lane closures, and detours on roadways in the project vicinity if construction occurs within or adjacent to a public roadway and a portion of the pavement is required for construction purposes. Construction could then result in a temporary reduction in the number of travel lanes or the available width of travel lanes, and subject vehicles using the affected roadways to increased congestion and delays. Construction activities necessitating road closures would require drivers to detour to other, potentially less convenient, routes to access their destinations. In addition, construction of the project would involve workers traveling to and from the project work area on a daily basis.

Without mitigation, construction traffic and associates could cause significant, although temporary, traffic congestion and delays.

Mitigation Measure C.8

The project sponsor shall develop a construction management plan for review and approval by the City Public Works Department and the Community Development Department. The plan shall include at least the following items:

- Development of a construction truck route that would appear on all construction plans to limit truck and auto traffic on nearby residential streets.
- A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, with detour signs if required, lane closure

procedures, sidewalk closure procedures, signs, cones for drivers, and designated construction access routes.

- Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures would occur.
- Location of construction staging areas for materials, equipment, and vehicles.
- Identification of haul routes for movement of construction vehicles that would minimize impacts on vehicular and pedestrian traffic, circulation and safety; and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the project applicant.
- Temporary construction fences to contain debris and material and to secure the site.
- Provisions for removal of trash generated by project construction activities.
- A process for responding to, and tracking, complaints pertaining to construction activities, including identification of an on-site complaint manager.

Implementation of this measure would reduce the project's temporary construction traffic impact to a less-than-significant level.

VEHICLE SITE ACCESS AND ON-SITE CIRCULATION

Kiernan Avenue, future American Avenue, Bangs Avenue, and Dale Road form the perimeter of the project site. Kiernan Avenue forms the northern boundary and is ultimately planned as a six-lane expressway along the project frontage. Therefore, no direct access from Kiernan Avenue to the project site would be provided.

American Avenue, the eastern boundary of the project site, is planned as a two-lane roadway with Class II bicycle lanes. American Avenue at both Kiernan Avenue and Pelandale Avenue would be restricted to right-in/right-out access only. Access to the site from American Avenue would be provided from three intersections between Kiernan Avenue and Bangs Avenue.

Bangs Avenue, the southern boundary of the project site, is planned as a four-lane major collector in the 2008 *Urban Area General Plan*. A Class I bicycle path would be constructed north of the MID Lateral No. 6 Canal parallel to Bangs Avenue in the study area. A new north-south roadway (Chopra Parkway) would intersect with Bangs Avenue to provide site access along the southern boundary.

Dale Road, the western boundary of the project site, is planned to ultimately be a six-lane roadway from Kiernan Avenue to Standiford Avenue in the 2008 *Urban Area General Plan*. Access to the site from Dale Road would be provided from an extension of Health Care Way (which would ultimately connect to Chapman Road as Kiernan Business Park is developed to the

west) and from a new roadway aligned with the main entrance to the Kaiser Medical Center, The Plaza Way.

Two east-west streets would connect Dale Road to American Avenue and one north-south street would connect Health Care Way to Bangs Avenue. Two additional streets would provide internal circulation within the project site as shown on the land use diagram (see Figure III.6 in Chapter III, Project Description), but these were not analyzed quantitatively as they would be minor roadways whose main function is to provide property access. One east-west street would connect Chopra Parkway and American Avenue. A north-south street would connect this minor east-west street to The Plaza Way.

Health Care Way, The Plaza Way, and Chopra Parkway are proposed to be minor collector roadways with two travel lanes, a two-way left-turn lane, bicycle lanes, and sidewalks within 78 feet of right-of-way. No on-street parking would be permitted on these roadways. Chopra Parkway, a north-south street, would align with Mana Parkway (the Kiernan Business Park South entrance) at Bangs Avenue and would intersect with Health Care Way and The Plaza Way on the site.

Vehicle queue spillback would occur at the American Avenue/Bangs Avenue intersection with the currently proposed single-lane roundabout. Provision of a two-lane roundabout on Bangs Avenue and a northbound right-turn by-pass lane, as identified in Mitigation Measure C.4d on p. IV.C.68, would result in acceptable service levels and reduce potential vehicle queue spillback to a less-than-significant level. Alternatively, the intersection could be signalized with two travel lanes in each direction on Bangs Avenue in addition to left-turn pockets. On the northbound approach, a left-turn lane, through lane, and right-turn only lane are recommended. On the southbound approach, a left-turn lane and a through-right shared lane are recommended in Mitigation Measure C.4d. A conceptual design of the roundabouts on Bangs Avenue at Chopra Parkway and American Avenue are shown in Appendix B, Figures 13A and 13B, pp. 80-81.

Internal Traffic Control and Intersection Operations

Roundabout traffic control is proposed for several of the internal and access intersections. As shown in Table IV.C.21, the internal intersections would operate acceptably with single lane roundabout control. All proposed roundabouts should be designed to City Standards as presented in Modesto Roundabout Policy, adopted by Resolution 2004-451, September 7, 2004. The recommended lane configurations at the project entrances and internal intersections are shown in Appendix B, Figure 14, p. 82.

Sufficient site plan details are not provided to evaluate parking lot layouts or circulation, or minor internal intersection operations; however, no significant impacts are expected. The driveways on

Table IV.C.21: Near-Term Plus Project with Recommendations – Internal and Entry Intersection Levels of Service

Intersection	Traffic Control[1]	Peak Hour	Delay[2,3] (in seconds)	LOS
Kiernan Avenue/Dale Road	Traffic Signal	AM	52	D
		PM	54	D
Kiernan Avenue/American Avenue	Side-Street Stop	AM	1 (14)	A (B)
		PM	8 (45)	A (E)
Healthcare Way/Dale Road	Traffic Signal	AM	28	C
		PM	35	C
Healthcare Way/Chopra Parkway	One-Lane Roundabout	AM	4	A
		PM	4	A
Healthcare Way/American Avenue	One-Lane Roundabout	AM	4	A
		PM	5	A
Dale Road/Kaiser Main Entrance/The Plaza Way	Traffic Signal	AM	28	C
		PM	42	D
The Plaza Way/Chopra Parkway	One-Lane Roundabout	AM	4	A
		PM	5	A
The Plaza Way/American Avenue	One-Lane Roundabout	AM	5	A
		PM	4	A
Bangs Avenue/Dale Road	Traffic Signal	AM	21	C
		PM	30	C
Bangs Avenue/Chopra Parkway	Two-Lane Roundabout	AM	7 (0.46)	A
		PM	9 (0.79)	A
Bangs Avenue/American Avenue	Two-Lane Roundabout	AM	7 (0.61)	A
		PM	7 (0.54)	A

Notes:
[1] Traffic signals, stop signs, or roundabout.
[2] Delay shown in seconds. Delay for signalized and stop-controlled intersections calculated using the 2000 HCM method. Delay for roundabout controlled intersections calculated using the FHWA method or aaSidra.
[3] For roundabout intersections, volume/capacity ratio for worst movement and average intersection delay are shown: average delay (worst movement v/c ratio).

Source: Fehr & Peers, 2008.

Health Care Way, Chopra Parkway, The Plaza Way, and American Avenue should conform to the City's driveway spacing standards. The site plan should be reviewed by City Staff as it is being developed to ensure safe and efficient and on-site vehicular circulation.

Emergency Vehicle Access

Factors such as number of access points, roadway widths, and proximity to fire stations determine whether a site has sufficient emergency access. The proposed project site has multiple points of entry from Dale Road, Bangs Avenue, and American Avenue. If one of these roadways is blocked or obstructed, an emergency vehicle could use an alternate route to access the site. The

project roadways have minimum travel ways of 24 feet, which is adequate for emergency vehicle access. A fire station is located at the Pelandale Avenue/Carver Avenue intersection, approximately one and one-half miles from the project site. The proximity of the fire station would allow for timely emergency response to the project site. Given these considerations, the project provides sufficient emergency access, and no significant impacts would occur.

D. AIR QUALITY

This section describes the existing air quality conditions in the Modesto area and evaluates the potential impacts on air quality that would result from construction and operation of the proposed Kiernan Business Park Specific Plan Amendment #4 project. This section discusses the project's potential to cause or contribute to violations of state and federal ambient air quality standards, to result in exposure of sensitive receptors to toxic air contaminants or nuisance odors, and to impact global climate change.

SETTING

CLIMATE AND METEOROLOGY

The climate of the San Joaquin Valley is generally controlled by a semi-permanent subtropical high-pressure system located in the northern Pacific Ocean. In the summer, this high-pressure system provides clear skies, high temperatures, and low humidity. Very little precipitation occurs during the summer months because storms are blocked by the high-pressure system. The high-pressure system weakens and moves south, allowing storms to move through the area beginning in the fall and continuing through the winter. Temperature, winds, and rainfall are more variable during the winter months. Winter weather patterns include periods of stormy weather with rain and gusty winds, clear weather that can occur after a storm, or persistent fog. The mean temperature for Modesto ranges from 46° in January to 77° in July.

The predominant annual wind direction in the project area is from the north through west-northwest. These winds mainly occur through the spring, summer, and fall. In the winter, the winds tend to be either from the northwest or from the southeast, depending on storm flow. Low wind speeds and stable thermal conditions during the winter or nighttime provide the opportunity for persistent fog to form. Higher winds during daylight hours and during the spring, summer, and fall allow pollutants to be transported throughout the valley.

REGULATORY FRAMEWORK

Regulated Pollutants

National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) define the upper limits for ambient airborne concentrations of pollutants. They are designed to protect all aspects of the public health and welfare, with a reasonable margin of safety. At the national level, the federal Clean Air Act (CAA) requires the U.S. Environmental Protection Agency (EPA) to establish NAAQS and designate geographic areas that are either attaining or violating the standards. In California, the task of managing air quality and developing regulations has been legislatively granted to the California Air Resources Board

(CARB) and local air quality management districts. The CARB establishes CAAQS and designates the attainment status of each area in the state with the standards. The project site is located in the San Joaquin Valley Air Basin (SJVAB). The SJVAB is managed by the San Joaquin Valley Air Pollution Control District (SJVAPCD) to ensure attainment of national and state standards.

The NAAQS and CAAQS are established for "criteria pollutants": ozone, respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. Ozone is not emitted directly from a source (e.g., an automobile tailpipe), but is formed in the atmosphere by chemical and photochemical reactions. Reactive organic gases (ROG), including volatile organic compounds (VOCs), and nitrogen oxides (NO_x) are monitored and regulated because they are precursors to ozone formation. Table IV.D.1 identifies the ambient national and state air quality standards.

Toxic air contaminants (TAC) are a category of air pollutants regulated separately from criteria pollutants. TACs are suspected or known to cause cancer, birth defects, neurological damage, or death. There are no established ambient air quality standards for TACs. Instead, they are managed on a case-by-case basis depending on the quantity and type of emissions and proximity to potential receptors. Their effects tend to be localized and directly attributable to certain sources.

Air Quality Planning and Attainment

CARB is responsible for oversight of air quality management in the state. CARB's responsibilities include establishing emissions standards and regulations for most mobile sources (e.g., autos, light-duty trucks) and overseeing the efforts of local air quality management districts. The SJVAPCD is responsible for demonstrating that attainment of the ambient air quality standards is, or will be, achieved through proper regional planning in the SJVAB. The SJVAPCD directly regulates stationary emission sources through its permit authority and indirectly manages emissions from mobile sources through coordination with regional municipalities and transportation planning agencies.

Because of ongoing violations of the NAAQS and CAAQS for ozone and PM_{10} in SJVAB, the region is designated as a nonattainment area for these criteria pollutants, and these pollutants are therefore the most relevant to air quality planning and regulation in the SJVAB. The SJVAPCD manages these pollutants through a long-term attainment planning process that forecasts emissions and future concentrations depending on changes in source activity, regulatory programs, and meteorological conditions. The air quality plans for demonstrating attainment (one each for ozone and PM_{10}) are evolving documents that are updated approximately triennially

Table IV.D.1: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard	National Standard	Violation Criteria	
				State	National
Ozone	1-hour	0.09 ppm	–	If exceeded	NA
	8-hour	0.07 ppm	0.08 ppm	If exceeded	If the 4th highest 8-hour concentration in a year, averaged over three years, is exceeded
Respirable particulate matter (PM_{10})	24-hour	50 µg/m^3	150 µg/m^3	If exceeded	If expected number of days with average 24-hr concentration is over one.
	Annual mean	20 µg/m^3	–	If exceeded	NA
Fine particulate matter ($PM_{2.5}$)	24-hour	—	35 µg/m^3 65 µg/m^3 (1997)	If exceeded	If 98% of average 24-hour daily concentration, averaged over three years, is exceeded
	Annual mean	12 µg/m^3	15 µg/m^3	If exceeded	If exceeded
Carbon monoxide (CO)	1-hour	20 ppm	35 ppm	If exceeded	Not to be exceeded more than one day a year
	8-hour	9.0 ppm	9 ppm	If exceeded	Not to be exceeded more than one day a year
Nitrogen dioxide (NO_2)	1-hour	0.18 ppm	–	If equaled or exceeded	NA
	Annual mean	0.03 ppm	0.053 ppm	If equaled or exceeded	Not to be exceeded more than one day a year
Sulfur dioxide (SO_2)	1-hour	0.25 ppm	–	If equaled or exceeded	NA
	24-hour	0.04 ppm	0.14 ppm	If equaled or exceeded	Not to be exceeded more than one day a year
	Annual mean	–	0.030 ppm	NA	Not to be exceeded more than one day a year

Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter; "–" = no standard; NA = not applicable.

Source: CARB Ambient Air Quality Standards Table, June 3, 2008.

to reflect the changing population, economic, land use, and transportation conditions in the San Joaquin Valley. The local transportation planning agencies (in this area, Stanislaus County Council of Governments) and CARB provide the information needed to predict future on-road mobile source emissions. Programs for motor vehicle inspection and maintenance (smog check), fuel reformulation, encouragement of transit use, and stringent control of stationary sources are all triggered by the nonattainment status of the area. If violations of the ambient air quality standards in the region persist beyond the attainment dates predicted by SJVAPCD plans, federal transportation funds can be withheld, adversely affecting future transportation projects in the region. The region needs to meet the federal eight-hour ozone standard before 2013 and the PM_{10} standards by 2010. Direct emissions of PM_{10} have remained relatively unchanged between 1975 and 2005 and are projected to remain unchanged through 2020.[1]

Ozone Planning

Effective June 15, 2005, the EPA revoked, in full, the federal one-hour ozone ambient air quality standard, including associated designations and classifications, in all areas except 14 early action compact areas that do not include the SJVAB. On April 15, 2004, the EPA designated 15 areas in California, including the SJVAB, as nonattainment areas for the federal eight-hour ozone standard. Each nonattainment area's classification (i.e., marginal, moderate, serious, or severe) and attainment deadline are based on the severity of its ozone problem. The SJVAB is currently classified as a serious nonattainment area, and its attainment deadline for the eight-hour NAAQS is June 15, 2013. In addition to nonattainment status for federal ozone standards, the SJVAB is also classified as serious nonattainment for state ozone standards.

On April 30, 2007, the SJVAPCD adopted the *2007 Ozone Plan*, which provides strategies for attainment of the eight-hour federal ozone standard. The *2007 Ozone Plan* seeks to reclassify the SJVAB from serious nonattainment to an extreme/severe nonattainment area. The rationale behind this proposal is that currently available pollution control technology and known future advancements would not reduce ozone precursors enough to allow the SJVAB to attain the federal ozone standards. The Clean Air Act allows an extreme/severe nonattainment area to have an approvable plan based on future technological advancements. The *2007 Ozone Plan* was submitted to the EPA through the CARB on June 14, 2007, and is currently under review. Once approved, the *2007 Ozone Plan* will become part of the *California State Implementation Plan* (SIP).

Particulate Matter Planning

The SJVAPCD adopted the latest PM_{10} Plan (*2006 PM_{10} Plan*) in February 2006. The *2006 PM_{10} Plan* identifies aggressive steps that the SJVAPCD must implement to attain the federal

[1] California Air Resources Board, *The California Almanac of Emissions and Air Quality - 2007 Edition*, (hereinafter "California Almanac of Emissions and Air Quality").

standards. Strategies to reduce PM_{10} emissions include stringent controls for agricultural dust, road dust from vehicles, and dust from construction activities. The EPA has determined that the SJVAB has attained the federal PM_{10} standards, but the determination does not constitute a redesignation to attainment per section 107(d)(3) of the federal Clean Air Act. The SJVAB will continue to be designated nonattainment until all of the Section 107(d)(3) requirements are met. CARB approved the SJVAPCD's *2007 PM_{10} Maintenance Plan and Request for Redesignation*, which was submitted to the EPA for approval. The EPA proposed approval of the *2007 PM_{10} Maintenance Plan and Request for Redesignation* on April 25, 2008 and accepted public comments on the plan through June 10, 2008. The EPA approved the request for redesignation on September 25, 2008.[2]

The SJVAPCD has established an Indirect Source Review (ISR) program that would require new development projects to mitigate their indirect emissions of PM_{10} and NO_x (meaning emissions from motor vehicle trips generated by the project) by contributing to some type of mitigation fund that could be used to identify and pay for emission reduction projects.[3] ISR applies to development projects that have not yet gained discretionary approval. The rules allow the project proponents to mitigate the indirect emissions by contributing to a mitigation fund that could be used to identify and pay for emission reduction projects. Transportation projects that meet certain conditions, reconstruction projects that result from a natural disaster, and development projects regulated as stationary sources are exempt. In addition, development projects that have a mitigated baseline below 2.0 tons per year for NO_x and PM_{10} are exempt from the mitigation requirement of the rule.

The EPA adopted the first national air quality standards for the fine fraction of particulates, $PM_{2.5}$, in July 1997. The EPA set the annual $PM_{2.5}$ standard at 15 micrograms per cubic meter ($\mu g/m^3$) and the 24-hour $PM_{2.5}$ standard at 65 $\mu g/m^3$. The EPA designated the SJVAB as nonattainment for $PM_{2.5}$; the SJVAB's current air quality is within the 1997 24-hour standard, but not the annual standard. On October 17, 2006, EPA revised the NAAQS for PM in the Federal Register. This rule revoked the annual PM_{10} standard and retained the existing 24-hour PM_{10} standard of 150 $\mu g/m^3$. The EPA also retained the existing annual $PM_{2.5}$ standard of 15 µg/m3, but lowered the 24-hour $PM_{2.5}$ standard to 35 $\mu g/m^3$. The SJVAPCD must show how the Basin will attain the 1997 $PM_{2.5}$ standards in the *2008 $PM_{2.5}$ Plan*, which was adopted April 30, 2008. The EPA will designate areas under the new standard by November 2009, effective April 2010, and SIPs for the 2006 standards will be due to EPA by April 2013. Areas must attain the 2006 standards by April 2015, though extension to April 2020 is possible.

[2] San Joaquin Valley Air Pollution Control website homepage, http://www.valleyair.org, accessed November 20, 2008.
[3] Indirect Source Review Rule 9510 and the Administrative Indirect Source Review Fee Rule 3180.

Carbon Monoxide Planning

On April 26, 1996, CARB approved the *Carbon Monoxide Redesignation Request and Maintenance Plan for Ten Federal Planning Areas* as part of the SIP for CO, which included the Modesto Urbanized Area. CO conditions had improved due to improvements in motor vehicles and the use of reformulated fuels. The EPA approved this revision on June 1, 1998, and redesignated the 10 areas to attainment. On October 22, 1998, CARB revised the SIP to incorporate the effects of the recent regulatory action to remove the wintertime oxygen requirement for gasoline in certain areas. On July 22, 2004, CARB approved an update to the SIP that shows how the 10 areas will maintain the standard through 2018, revises emission estimates, and establishes new on-road motor vehicle emission budgets for transportation conformity purposes.

The attainment status for each of the criteria pollutants, including CO, is summarized in Table IV.D.2.

Table IV.D.2: Ambient Air Quality Attainment Status for San Joaquin Valley

Pollutant	State-Level Attainment Status	Federal-Level Attainment Status
Ozone (1-hour)	Nonattainment (Severe)	No Federal Standard
Ozone (8-hour)	Nonattainment	Nonattainment (Serious) [1]
Inhalable particulates (PM_{10})	Nonattainment	Nonattainment (Serious)[2]
Fine particulates ($PM_{2.5}$)	Nonattainment	Nonattainment[3]
Carbon monoxide (CO)	Attainment/Unclassified	Attainment/Unclassified
Nitrogen dioxide (NO_2)	Attainment	Attainment/Unclassified
Sulfur dioxide (SO_2)	Attainment	Attainment/Unclassified

Notes:

[1] On April 30, 2007, the Governing Board of the SJVAPCD voted to request EPA to reclassify the San Joaquin Valley Air Basin (SJVAB) as extreme nonattainment for the federal 8-hour ozone standards. CARB, on June 14, 2007, approved this request. This request must be forwarded to EPA by CARB and would become effective upon EPA final rulemaking after a notice and comment process; it is not yet in effect.

[2] Although EPA has determined that the SJVAB has attained the federal PM_{10} standards, their determination does not constitute a redesignation to attainment per section 107(d)(3) of the Federal Clean Air Act. The Valley will continue to be designated nonattainment until all of the Section 107(d)(3) requirements are met. On April 25, 2008, the EPA proposed approval the *2007 PM_{10} Maintenance Plan and Request for Redesignation*, pending review of public comments.

[3] The Valley is designated nonattainment for the 1997 $PM_{2.5}$ federal standards. EPA designations for the 2006 $PM_{2.5}$ standards will be finalized in December 2009. The SJVAPCD has determined, as of the 2004-06 $PM_{2.5}$ data, that the Valley has attained the 1997 24-Hour $PM_{2.5}$ standard.

Source: San Joaquin Valley Air Pollution Control District website, http://www.valleyair.org, accessed August 21, 2007.

TACs

TACs are managed through a combination of source identification, risk characterization, control requirements, and avoidance of land use conflicts.

All stationary sources of TACs are subject to the SJVAPCD's permitting requirements, which include an evaluation of potential TAC emissions and risks to nearby receptors. Stationary sources are screened for their potential to cause health risks using a facility prioritization score. The SJVAPCD does not require detailed assessments of facilities with prioritization scores below 1.0, because their emissions would not be likely to result in potential health risks. For new sensitive land uses (including residential areas and schools), a city or county must identify whether the new land uses would be located near existing sources of TACs. Management of the public's exposure to odors is also generally accomplished by avoiding land use conflicts with appropriate distance controls.

There are 10 TACs that pose the greatest potential health risk, primarily based on statewide ambient air quality data: acetaldehyde, benzene, 1,3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter. CARB identified diesel engine particulate matter as a TAC in 1998. Although diesel particulate matter is not currently monitored, emissions and modeled ambient concentrations indicate that diesel particulate matter has a higher health risk than the other nine TAC compounds combined.[4] Mobile sources, such as trucks, buses, automobiles, trains, ships, and farm equipment, are the largest source of diesel emissions. CARB estimates that 70 percent of the known statewide cancer risk from outdoor air toxics is attributable to diesel particulate matter.[5] Approximately 24 percent is attributed to on-road diesel-fueled vehicles.[6] CARB recommends avoiding siting new sensitive land uses within 500 feet of freeways with 100,000 vehicles per day.[7] Particulates from diesel exhaust are managed through vehicle emission control programs implemented on a state and federal level with the cooperation of fuel suppliers and vehicle and engine manufacturers. CARB has implemented a *Diesel Risk Reduction Plan* to reduce diesel particulate matter emissions through cleaner fuels, such as ultra-low sulfur diesel, new diesel tailpipe regulations, and regulations governing operations such as idling restrictions.[8]

Greenhouse Gases

Climate change is a global problem, and greenhouse gases (GHGs) are global pollutants, unlike criteria air pollutants (such as ozone precursors) and TACs, which are pollutants of regional and local concern. Activities such as fossil fuel combustion, deforestation, and other changes in land use result in the accumulation of GHGs such as carbon dioxide (CO_2) in our atmosphere. An

[4] *California Almanac of Emissions and Air Quality*.
[5] *California Almanac of Emissions and Air Quality*.
[6] *California Almanac of Emissions and Air Quality*.
[7] California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, March 2005.
[8] CARB, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, October 2000.

increase in GHG emissions results in an increase in the Earth's average surface temperature, which is commonly referred to as global warming. Global warming is expected, in turn, to affect weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, in a manner commonly referred to as "climate change." The Intergovernmental Panel on Climate Change (IPCC) has been established by the World Meteorological Organization and United Nations Environment Programme to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC's best estimates are that the average global temperature rise between 2000 and 2100 could range from 0.6°C (with no increase in GHG emissions above year 2000 levels) to 4.0°C (with substantial increase in GHG emissions). Large increases in global temperatures will have massive deleterious impacts on the natural and human environments.

According to the EPA, a GHG is any gas that absorbs infrared radiation in the atmosphere. This absorption traps heat within the atmosphere, creating a "greenhouse" effect that is slowly raising global temperatures. GHGs include water vapor, CO_2, methane (CH_4), nitrous oxide (N_2O), halogenated chlorofluorocarbons (HCFCs), ozone, perfluorinated carbons (PFCs), and hydrofluorocarbons (HFCs). Naturally occurring GHGs include water vapor, CO_2, CH_4, N_2O, and ozone. Many human activities add to the levels of most of these naturally occurring gases. CO_2 is released to the atmosphere when solid waste, fossil fuels (oil, natural gas, and coal), and wood and wood products are burned. N_2O is emitted during agricultural and industrial activities, as well as during combustion of solid waste and fossil fuels. CO_2 and N_2O are the two GHGs released in greatest quantities from mobile sources burning gasoline and diesel fuel.

Worldwide, California is estimated to be the 12th to 16th largest emitter of CO_2 and is responsible for approximately two percent of the world's CO_2 emissions.[9] The transportation sector produced approximately 40.7 percent of California's GHG emissions in 2004. Electric power production accounted for approximately 22.2 percent of emissions (including estimated emissions from out-of-state coal-fired power plants); the industrial sector, 20.5 percent; agriculture and forestry, 8.3 percent; and other sectors, 8.3 percent. At a local level, vehicular traffic within the Modesto planning area emitted approximately 1,207,624.4 metric tons (1,331,176.9 U.S. tons) of CO_2 on an annual basis, based on an estimated 2005 vehicle miles traveled.[10] In 1990 the City of Modesto's estimated level of CO_2 emissions from mobile sources was approximately 724,495 metric tons (798,620 U.S. tons).[11]

[9] California Energy Commission, "Inventory of California Greenhouse Gases and Sinks: 1990 to 2004." Staff Final Report CEC-600-2006-013-SF. December 2006. Website: www.energy.ca.gov/2006publication/CEC-600-2006-013/CEC-600-2006-SF.pdf. Accessed July 10, 2008.
[10] City of Modesto, Final Master EIR for the *Modesto General Plan Update*, July 2008.
[11] City of Modesto, Final Master EIR for the *Modesto General Plan Update*, July 2008.

Reducing GHG emissions will rely on reducing the levels of GHG emissions produced by vehicles, reducing consumption of energy generated by GHG-emitting power plants, and changing industrial practices, among other actions. The major federal, state, and local (county and City) GHG policies in effect that apply to the proposed project are discussed below.

Federal Regulations

There are no federal regulations aimed at GHG, per se. In April 2007, the U.S. Supreme Court ruled 5-4 in the case of *Massachusetts v. EPA* that the federal EPA has the authority under the Clean Air Act to regulate GHG emissions from new motor vehicles. However, as of this writing, the EPA has not enacted any such regulations.

On July 11, 2008, the EPA issued an Advance Notice of Proposed Rulemaking soliciting public comment and made no finding on whether global warming poses a threat to people's health within the meaning of the CAA. The EPA found that attempting to regulate greenhouse gases under the CAA will harm the U.S. economy while failing to actually reduce global greenhouse gas emissions.[12]

State Regulations

California has been a national leader in enacting legislation and regulations intended to reduce GHG emissions. Since 2002, the state has been enacting legislation and regulations that are intended to reduce contributions to GHG, as discussed below.

Assembly Bill 1493. Assembly Bill (AB) 1493 (Chapter 200, Statutes of 2002) directed the CARB to adopt regulations that achieve feasible and cost-effective GHG emissions reductions from motor vehicles. The CARB did so in 2004 and applied to the federal EPA for a waiver under the federal CAA to authorize these regulations to be implemented. The waiver request was denied by the EPA in December 2007. In January 2007, the State Attorney General filed a lawsuit against the EPA, challenging its denial of the requested waiver. The outcome of the state's suit is pending. On February 29, 2008, the EPA Administrator signed a Federal Register Notice Denying a Waiver of Clean Air Act Preemption for California's 2009 and Subsequent Model Year Greenhouse Gas Emission Standards for New Motor Vehicles.

Assembly Bill 32. AB 32, the California Global Warming Solutions Act of 2006, recognizes that California is the source of substantial amounts of GHG emissions. The statute begins with several legislative findings and declarations of intent, including the following:

[12] Environmental Protection Agency, 40 CFR Chapter I, Regulating Greenhouse Gas Emissions under the Clean Air Act [EPA-HQ-OAR-2008-0318; FRL-8694-2], RIN 2060-AP12, July 11, 2008.

> Global warming poses a serious threat to the economic wellbeing, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snow pack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems (Health and Safety Code, section 38501).

AB 32 establishes a state goal of reducing GHG emissions to 1990 levels by the year 2020 with further reductions to follow. The law requires CARB to establish a program to track and report GHG emissions; approve a scoping plan for achieving the maximum technologically feasible and cost-effective reductions from sources of GHG emissions; adopt early reduction measures to begin moving forward; and adopt, implement, and enforce regulations – including market mechanisms such as "cap-and-trade"[13] programs – to ensure the required reductions occur. CARB recently adopted a statewide GHG emissions limit and an emissions inventory, along with requirements to measure, track, and report GHG emissions by the industries it determined to be significant sources of GHG emissions.

AB 32 assigns the following tasks to CARB:

- Adopt mandatory reporting rules for significant sources of greenhouse gases. Based on its 1990-2004 inventory work, CARB staff recommended an amount of 427 million metric tons (470 U.S tons) of carbon dioxide equivalent as the total statewide greenhouse gas 1990 emissions level and 2020 emissions limit. The Board approved the 2020 limit on December 6, 2007. This limit is an aggregated statewide limit, rather than sector- or facility-specific.
- Adopt a plan by January 1, 2009, indicating how emission reductions will be achieved from significant GHG sources via regulations, market mechanisms, and other actions.
- Adopt regulations by January 1, 2011, to achieve the maximum technologically feasible and cost-effective reductions in GHGs, including provisions for using both market mechanisms and alternative compliance mechanisms.
- Convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee to advise CARB.
- Ensure public notice and opportunity for comment for all CARB actions.
- Prior to imposing any mandates or authorizing market mechanisms, evaluate several factors including, but not limited to, impacts on California's economy, the environment, and public health; equity between regulated entities; electricity reliability; and conformance with other environmental laws. Also, ensure that the rules do not disproportionately impact low-income communities.

[13] "Cap-and-trade," also called emissions trading, is an approach used to control pollution by providing economic incentives for achieving reductions in the emissions of pollutants.

- Adopt a list of discrete, early action measures by July 1, 2007, which can be implemented before January 1, 2010, and adopt such measures. CARB has reached this milestone.

Executive Order S-3-05. This Executive Order, signed by Governor Schwarzenegger in June 2005, includes the following provisions:

- The following greenhouse gas emission reduction targets are hereby established for California: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels.
- The Secretary of the California Environmental Protection Agency shall coordinate oversight of the efforts made to meet the targets with the Secretary of the Business, Transportation and Housing Agency; Secretary of the Department of Food and Agriculture; Secretary of the Resources Agency; Chairperson of the CARB; Chairperson of the CEC; and the President of the Public Utilities Commission.
- The Secretary shall report to the Governor and the State Legislature by January 2006 and biennially thereafter on progress made toward meeting the greenhouse gas emission targets established herein; and biennially thereafter on the impacts to California of global warming, including impacts to water supply, public health, agriculture, the coastline, and forestry, and shall prepare and report on mitigation and adaptation plans to combat these impacts.

Executive Orders are directives to state agencies from the Governor of California. They do not govern local agency actions, nor do they affect the State Legislature. While S-3-05 is an indicator of state policy as interpreted by the Governor, it does not reflect the view of the Legislature. It is, however, one of the factors being considered by state agencies such as the CARB, the California Energy Commission (CEC), and the Building Standards Commission in formulating their GHG reduction strategies.

California Code of Regulations. Energy conservation standards for new residential and non-residential buildings were adopted by the California Energy Resources Conservation and Development Commission (CERCDC) in June 1977 and most recently revised in 2005. Title 24, Part 6 of the California Code of Regulations (CCR) (California's Energy Efficiency Standards for Residential and Nonresidential Buildings) was established in 24 CCR Part 6 in 1978, in response to a legislative mandate to reduce California's energy consumption. Title 24 requires that building shells and building components be designed to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. The 2006 Appliance Efficiency Regulations (Title 20, CCR Sections 1601 through 1608), dated December 2006, were adopted by the CEC on October 11, 2006, and approved by the California Office of Administrative Law on December 14, 2006. The regulations include standards for both federally regulated appliances and non-federally regulated appliances. While these regulations are now often seen as "business as usual," they do exceed the standards imposed by any other state and reduce GHG emissions by reducing energy

demand. In mid-February 2008, the California Building Standards Commission began the process of adopting the California Green Building Standards Code (proposed Part 11, Title 24) as part of the California Building Standards Code (Title 24, California Code of Regulations). This Green Building Code is intended to encourage reduction of GHG emissions in recognition of AB 32 and Executive Order S-3-05. As adopted in July 2008, Part 11 establishes voluntary standards including planning and design for sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and internal air contaminants. The effectiveness of this prospective code will depend upon its adoption and implementation by local agencies.

California Energy Commission. The CEC prepares California's GHG inventory, develops transportation fuel policy, and manages climate change technical research programs. It also coordinates a number of energy efficiency programs, including the emerging renewables program that offers rebates on small wind and fuel-cell electrical generation systems.

San Joaquin Valley Air Pollution Control District. The SJVAPCD has not adopted programs addressing global climate change. Eventually, as AB 32 is implemented and guidance is provided by CARB, the SJVAPCD is expected to adopt regulations to reduce GHG emissions.

City of Modesto. The City of Modesto's *Urban Area General Plan* provides policies that relate to reducing vehicle miles traveled, promoting energy conservation, and using non-emitting energy sources. The policies have an additional benefit of reducing the emissions of GHGs and are discussed below.

SJVAPCD and City Regulations and Policies

San Joaquin Valley Air Pollution Control District

The following rules and regulations, known as the Rules and Regulations of the SJVAPCD, may apply to the proposed project. It should be noted that at this time it is not known specifically what commercial enterprises might operate at the project site. Some commercial enterprises, such as dry cleaning facilities or bakeries, have air emissions regulated by the SJVAPCD and would be required to comply with other rules, not listed below.

Rule 2280 Portable Equipment Registration. The purpose of this rule is to provide an administrative mechanism and to establish standards for registration of certain portable emissions units for operation at participating districts throughout the State of California. The SJVAPCD may update, through rulemaking, the emissions standards for new emissions units as more effective control technology becomes available.

Rule 4101 Visible Emissions. This rule prohibits the emissions of visible air contaminants to the atmosphere. The rule prohibits the discharge into the atmosphere from any single source

of emission, any air contaminant, other than uncombined water vapor, for a period or periods aggregating more than three (3) minutes in any one hour which is as dark or darker in shade as that designated as No. 1 on the Ringelmann Chart.

Rule 4102 Nuisance. The purpose of this rule is to protect the health and safety of the public. The rule prohibits anyone from discharging air contaminants or other materials which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such person or the public or which cause or have a natural tendency to cause injury or damage to business or property. The provisions of this rule do not apply to odors emanating from agricultural operations in the growing of crops or raising of fowl or animals.

Rule 4103 Open Burning. This rule regulates through a permit process open burning, including agricultural burning, to minimize the smoke impact on the public. The SJVAPCD utilized a daily allocation system to limit the amount, timing, and locations of open burning. The SJVAPCD considers several factors including air quality, meteorological conditions expected during burning, locations of smoke-sensitive areas relative to the materials to be burned, and types and amounts of materials to be burned.

Rule 4306 Boilers, Steam Generators, and Process Heaters, Phase 3. This rule requires all boilers and steam generators with a heat input rating greater than 5 million British thermal units per hour (MMBtu/hr) to achieve certain exhaust limits for NO_x and CO. This rule was established in 2003 as part of the strategy for achieving ozone attainment.

Rule 4601 Architectural Coatings. The purpose of this rule is to limit VOC emissions from architectural coatings by regulating the storage, cleanup, and labeling requirements. Painting Practices: The rule requires that all containers containing architectural coatings (including any volatile material used for thinning or cleanup) be closed when not in use. The rule also set limits on the amount of VOCs in architectural coating and prohibits thinning such that the limits would be exceeded.

Rule 4641, Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. This rule limits VOC emissions by restricting the application and manufacturing of cutback asphalt[14], slow cure asphalt, or emulsified asphalt.

Rule 4702 Internal Combustion Engines, Phase 2. This rule requires stationary engines to meet certain exhaust limits for NO_x and CO, but these limits are not applicable to standby engines as long as they are used fewer than 200 hours per year (e.g., for testing during non-emergencies).

Rule 4901 Wood Burning Fireplaces and Wood Burning Heaters. This rule limits emissions of carbon monoxide and particulate matter from wood burning fireplaces and heaters by regulating the sale, supply, and installation of wood burning devices. Wood burning heaters must be EPA Phase II Certified and sellers must provide public information about proper operation and maintenance of the heater and the health effects of wood smoke. The rule also prohibits the installation of wood burning fireplaces in new residential developments with a density greater than two dwelling units per acre or more than one wood burning heater per

[14] Cutback asphalt is manufactured by blending asphalt cement with a petroleum solvent.

dwelling unit in any new residential development with a density equal to or greater than two dwelling units per acre.

Rule 4902 Natural Gas-fired, Fan-Type Residential Central Furnaces. This rule requires natural gas-fired, fan-type residential central furnaces sold or installed with the SJVAPCD be certified as meeting specified exhaust limits for NO_x.

Regulation VIII (Fugitive PM_{10} Prohibitions). These series of rules (8011, 8021, 8031, 8041, 8051, 8061, 8071, and 8081) are aimed at reducing fugitive PM_{10} emissions. Sources regulated under these rules include construction, excavation, earthmoving activities, carryout and trackout, open areas, paved and unpaved roads, unpaved vehicle/equipment traffic areas, and agricultural sources.

Rule 9510 Indirect Source Review (ISR). The purpose of this rule is to fulfill the SJVAPCD's emission reduction commitments in the PM_{10} and Ozone Attainment Plans by reducing emission from the construction and operational uses of projects through design features and on-site measures. The rule also provides a mechanism for reducing emissions through off-site measures. These reductions are achieved through implementation of the ISR Program. This rule applies to any applicant that seeks to gain a ***final discretionary approval*** for qualified projects.[15] Development projects that have a mitigated baseline below 2 tons per year of NO_x and 2 tons per year of PM_{10} are exempt.

In the ISR process, the applicant must submit an Air Impact Assessment (AIA) application to the SJVAPCD at the same time as applying for a final discretionary approval from the relevant public agency. The project applicant must commit to reducing NO_x and PM_{10} emissions from construction activities and operational use of the project. For construction equipment greater than 50 horsepower the NO_x emissions must be reduced by 20 percent and the PM_{10} emissions 45 percent below the statewide average. The SJVAPCD believes that construction emission reductions can be achieved by using add-on controls, cleaner fuels, or newer equipment. Operational emissions must be reduced by 33 percent for NO_x and 50 percent for PM_{10} below the project's operational baseline at the time of buildout over a period of 10 years. These emission reductions may be met through any combination of on-site emission reduction measures such as bike trails, or increases in energy efficiency, or through fees that fund emission reduction programs off-site. Implementation of the project in accordance with the SJVAPCD's rules and regulations will provide consistency with the SJVAPCD's planning documents for achieving ambient air quality standards.

City of Modesto

The City of Modesto recognizes that its actions can be coordinated to aid the SJVAPCD in the effort of attaining the ambient air quality standards. The Air Quality Policies of the *Urban Area General Plan* (October 2008) analyzed in the City of Modesto's *Final Master Environmental*

[15] "Qualified Projects" include 50 residential units; 2,000 square feet of commercial space; 25,000 square feet of light industrial space; 100,000 square feet of heavy industrial space; 20,000 square feet of medical office space; 39,000 square feet of general office space; 9,000 square feet of educational space; 10,000 square feet of government space; 20,000 square feet of recreational space; or 9,000 square feet of space not otherwise identified.

Impact Report (2008) apply within the plan area, which includes the project site. The relevant Air Quality Policies include the following:

Policy VII-H.2[a]: The City of Modesto shall implement measures to reduce motor vehicle use and related ozone precursor and PM_{10} emissions through changes to the transportation infrastructure (*Final Master Environmental Impact Report (2008),* Measure AQ-1). Potential measures may include the following [summarized as Mitigation Measure AQ-2 of the *Final Master Environmental Impact Report (2008)]*.

1. The following mitigation measures shall be implemented by the City of Modesto, and incorporated into development plans and public facility plans as appropriate:

a. The City of Modesto shall vigorously pursue and use state and federal funds earmarked for bicycle and transit improvements.

b. The City shall establish transit services on key arterials to locate stops within ¼ mile of residences/work places, and reevaluate quality and frequency of services, as appropriate as development progresses and demand increases.

c. The City of Modesto shall consider measures to increase the capacity of the existing road network prior to constructing more capacity (additional lanes, new freeways, etc.).

2. The following measures should be strongly encouraged, and incorporated into development plans and public facility plans, when it is shown to be appropriate and feasible:

a. The City of Modesto shall ensure that a comprehensive system of bikeways and pedestrian paths is planned and constructed in accordance with an adopted City/County Regional plan. The City of Modesto shall ensure that regional and commuter bikeways are extended to serve new development consistent with the City of Modesto Non-Motorized Transportation Plan and the Regional Non-Motorized Transportation Plan.

b. The City of Modesto shall plan for a multi-modal transportation system that meets the mobility needs of the community and improves air quality. The City of Modesto shall plan for multi-modal transfer sites that incorporate auto parking areas, bike parking, transit, pedestrian and bicycle paths, and park-and-ride points.

c. The City of Modesto shall ensure that upgrades to existing roads (widening, curb and gutter, etc.) include bicycle and pedestrian improvements in their plans and implementation as outlined in the City of Modesto Non-Motorized Transportation Plan and the Regional Non-Motorized Transportation Plan.

d. The City of Modesto should design all arterial and collector streets planned as transit routes to allow the efficient operation of public transit.

e. The City of Modesto should plan park-and-ride lots at suitable locations serving long distance and local commuters. The City of Modesto should work with Caltrans and transit providers to identify park-and-ride sites with convenient access to public transit.

f. The City of Modesto shall provide a funding mechanism for maintenance of the non-motorized transportation system as each project is developed.

Policy VII-H.2[b]: The City of Modesto and project proponents shall implement measures to reduce vehicle use and associated emissions related to existing and future land use development in the City of Modesto (*Final Master Environmental Impact Report (2008),*

Measure AQ-3). The following measures [summarized as Mitigation Measure AQ-4 of the *Final Master Environmental Impact Report (2008)*] are intended to reduce vehicle use:

1. The following mitigation measures shall be implemented by the City of Modesto, and incorporated into development plans and public facility plans as appropriate:

a. The City of Modesto shall work with employers and developers to provide employees and residents with attractive, less-polluting, and affordable transportation alternatives (such as accommodations for bicycle use as outlined in the City of Modesto Non-Motorized Transportation Plan, transit use subsidies for employees, ridesharing incentives, etc.).

b. The City of Modesto shall consider air quality and mobility when reviewing any proposed change to the land use pattern of this community.

c. The City of Modesto shall plan adequate neighborhood commercial shopping areas to serve new residential development.

d. Subdivision designs shall provide neighborhood parks, community parks, trails, Class I and II bike trails in proximity to activity centers such as schools, libraries, community centers, regional parks, and Class I trail routes as outlined in the City of Modesto Non-Motorized Transportation Plan.

e. The City of Modesto shall plan the area around new commuter and mainline rail stations to provide convenient and safe pedestrian and bicycle access, and connections to the transit system.

f. The City shall endeavor to fully develop all Class I, II and Ill non-motorized transportation trails, lanes and routes as outlined in the City of Modesto Non-Motorized Transportation Plan.

g. The City shall endeavor to build Class I trails on all MID [Modesto Irrigation District] canals and Hetch Hetchy right-of-way to the extent possible. These trails, coupled with the Virginia Corridor, shall be connected to regional trails as outlined in the City of Modesto Non-Motorized Transportation Plan.

The following measures should be strongly encouraged, and incorporated into development plans and public facility plans, when it is shown to be appropriate and feasible:

a. Projects within the City of Modesto should propose pedestrian or transit-oriented designs at suitable locations.

b. The City of Modesto should work to preserve and enhance existing neighborhoods and commercial districts having transit and pedestrian oriented designs.

c. The City of Modesto should plan areas within 1/4 mile of locations identified as transit hubs and commercial centers for higher density development.

d. Higher housing densities in areas served by the full range of urban services should be utilized within the City of Modesto.

e. Mixed-use developments should provide commercial services such as day care centers, restaurants, banks, and stores near employment centers.

f. The development of shopping areas should be located within walking distance of high-density residential neighborhoods.

g. The City of Modesto should protect pedestrian-oriented commercial areas from development that is incompatible in design, scale, or use.

h. Regional shopping malls/centers should be located at sites capable of support by a full range of transportation options.

i. The City of Modesto should require new major activity centers, office, and commercial development to provide secure bicycle storage and parking facilities.

j. The City should establish TCMs and mandatory trip reduction and monitoring/reporting programs for all development within the Business Park designation. Such programs shall ignore property boundaries so that paratransit and carpooling opportunities are cooperative and in-common.

k. The City of Modesto should work to establish public/private partnerships to develop satellite and neighborhood work centers for telecommuting.

Policy VII-H.2[c]: The City shall implement measures to reduce emissions associated with energy use by residences and businesses. Potential measures may include the following [summarized from Mitigation Measure AQ-5 of the *Final Master Environmental Impact Report (2008)]:*

1. The following mitigation measures shall be implemented by the City of Modesto, and incorporated into development plans and public facility plans as appropriate:

a. The City of Modesto shall work with local energy providers on voluntary incentive-based programs to encourage the use of energy efficient designs and equipment.

b. The City shall not allow new residential development to include conventional open-hearth fireplaces. With designs of new residential construction that include fireplaces, the City shall encourage installation of California Energy Commission (CEC) certified natural gas appliances over wood-burning appliances. The City shall limit the number of allowable EPA-approved/Oregon-certified wood-burning appliances to one per new residence.

2. The following measures should be strongly encouraged, and incorporated into development plans and public facility plans, when it is shown to be appropriate and feasible:

- The City should cooperate with the local building industry, utilities, and the SJVAPCD to develop and adopt new building efficiency practices (standards) for commercial, industrial, and residential buildings to reduce energy and water consumption below the amounts that would be used if the buildings only complied with the existing state standard.
- The City could implement a program to offer incentives for new developments that are more energy efficient than state energy standards at the time the building permit is issued. Incentives may include reduced permit fees or expedited permit processing. Through an annual awards program, the City could recognize outstanding projects.

Policy VII-H.2[d]: The City of Modesto recognizes the efforts of the San Joaquin Valley Air Pollution Control District (SJVAPCD) to identify the cumulative transportation and air quality impacts of all general plan amendments approved during the previous year. The City

of Modesto encourages employers to implement the following measures [summarized as Mitigation Measure AQ-9 of the *Final Master Environmental Impact Report (2008)]*:

(1) In-house matching services (for carpools and vanpools) at employers with over 100 weekday employees, or at large development sites occupied by several smaller employers, or coordination with Caltrans' "Commuter Computer" program;

(2) Employer-based dissemination of commute information;

(3) Employer subsidies for transit passes and incorporation of transit stop facilities into site design;

(4) A program to guarantee rideshare participants a ride home in case of emergency;

(5) Flex-time scheduling;

(6) Site plan design that encourages pedestrian movement between adjacent land uses;

(7) Incentives such as preferred parking for carpoolers;

(8) Encouraging submission of site plans featuring mixed land uses or "neo-traditional" design; and

(9) Encouraging employers to experiment with telecommuting options, where feasible.

Policy VII-H.2[e]: The City of Modesto shall work with neighboring jurisdictions and affected agencies to address cross-jurisdictional and regional transportation and air quality issues [also identified as Mitigation Measure AQ-10 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[f]: The City of Modesto shall coordinate with other jurisdictions and other regional agencies in the San Joaquin Valley to establish parallel air quality programs and implementation measures (trip reduction ordinances, indirect source programs, etc.). (General Plan) [also identified as Mitigation Measure AQ-11 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[g]: AQ-12: The City of Modesto shall implement measures to reduce emissions associated with future development through the CEQA review process (*Final Master Environmental Impact Report (2008),* Measure AQ-12) [summarized as Mitigation Measure AQ-13 of the *Final Master Environmental Impact Report (2008)*]:

1. The following mitigation measures shall be implemented by the City of Modesto:

   a. The City of Modesto shall consult with the SJVAPCD during CEQA review for all discretionary projects not previously reviewed by the District. The City of Modesto shall determine project air quality impacts using analysis methods and significance thresholds recommended by the SJVAPCD.

2. The following measures should be strongly encouraged, and incorporated into development plans and public facility plans, when it is shown to be appropriate and feasible:

   a. The City of Modesto should require the local CO "hot spot" modeling for individual projects that would substantially affect high-volume intersections such that Levels of Service would degrade to "F" or where Levels of Service without the project are already "F."

b. The City should ensure that air quality impacts identified during the CEQA review are consistently and fairly mitigated.

c. The City of Modesto should ensure that all air quality mitigation measures are feasible, implementable, and cost effective.

Policy VII-H.2[h]: To be consistent with the SJVAPCD's Air Quality Guidelines for General Plans, the City of Modesto should consult with the SJVAPCD during CEQA review for discretionary projects with the potential for causing adverse air quality impacts [also identified as Mitigation Measure AQ-7 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[i]: To be consistent with the SJVAPCD's Air Quality Guidelines for General Plans, the City of Modesto should consider supporting investment in geographic information system technology [also identified as Mitigation Measure AQ-8 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[m]: The City of Modesto should implement measures to reduce the temporary, yet potentially significant, local air quality impacts from construction activities (*Final Master Environmental Impact Report (2008), AQ-17)*. Potential measures to be implemented may include the following [summarized as Mitigation Measure AQ-18 of the *Final Master Environmental Impact Report (2008)]*:

1. The following mitigation measures shall be implemented by the City of Modesto, and incorporated into development plans and public facility plans as appropriate:

a. The City of Modesto shall work with the SJVAPCD to reduce particulate matter emissions from construction, grading, excavation, and demolition to the maximum extent feasible.

b. If required by Regulation VIII (Fugitive Dust Rules) of the San Joaquin Valley Unified Air Pollution Control District, the City of Modesto shall require all access roads, driveways, and parking areas serving new commercial and industrial development to be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.

2. The following measures should be strongly encouraged, and incorporated into development plans and public facility plans, when it is shown to be appropriate and feasible:

a. The City of Modesto should reduce PM10 emissions from City-maintained roads to the maximum extent feasible.

b. The City of Modesto should adopt a standard set of construction-related mitigation measures that can be adapted to all new, non-emergency construction projects in the City.

Policy VII-H.2[n]: The City shall require residential development projects and projects categorized as sensitive receptors (including hospitals) to be located an adequate distance from existing and potential sources of toxic and/or odorous emissions such as freeways, major arterials, industrial sites, refuse transfer or disposal sites, and hazardous material locations [also identified as Mitigation Measure AQ-19 of the Final Master Environmental Impact Report (2008)].

Policy VII-H.2[o]: To be consistent with the SJVAPCD's Air Quality Guidelines for General Plans, the City of Modesto should determine project air quality impacts using analysis

methods and significance thresholds recommended by the SJVAPCD [also identified as Mitigation Measure AQ-20 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[p]: To be consistent with the SJVAPCD's Air Quality Guidelines for General Plans, the City of Modesto should ensure that air quality impacts identified during CEQA review are consistently and fairly mitigated [also identified as Mitigation Measure AQ-21 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[q]: To be consistent with the SJVAPCD's Air Quality Guidelines for General Plans, the City of Modesto should ensure all air quality mitigation measures are feasible, implementable, and cost effective [also identified as Mitigation Measure AQ-22 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[r]: To be consistent with the SJVAPCD's Air Quality Guidelines for General Plans, the City of Modesto should identify the cumulative transportation and air quality impacts of all general plan amendments approved during the previous year [also identified as Mitigation Measure AQ-23 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[s]: To be consistent with the SJVAPCD's Air Quality Guidelines for General Plans, the City of Modesto should reduce air quality impacts of development projects that may be insignificant by themselves, but cumulatively are significant. These impacts will be addressed in the initial studies required for future development. Where necessary to reduce cumulative contributions, project-specific mitigation measures will be identified and required as part of project approval [also identified as Mitigation Measure AQ-24 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[t]: To be consistent with the SJVAPCD's Air Quality Guidelines for General Plans, the City of Modesto should encourage innovative mitigation measures to reduce air quality impacts by coordinating with the SJVAPCD, project applicants, and other interested parties [also identified as Mitigation Measure AQ-25 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[u]: Review of new development shall be coordinated with SJVAPCD staff to ensure all projects subject to the SJVAPCD Rule 9510 (Indirect Source Review) comply fully with the rule [also identified as Mitigation Measure AQ-26 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[v]: The City of Modesto should consider air quality when planning the land uses and transportation systems to accommodate the expected growth in this community [also identified as Mitigation Measure AQ-27 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[x]: The City of Modesto should consult with transit providers to determine project impacts on long range transit plans and ensure that impacts are mitigated [also identified as Mitigation Measure AQ-29 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[y]: The City of Modesto should work with the Housing Authority, transit providers, and developers to encourage the construction of low income housing developments that use transit-oriented and pedestrian-oriented design principle [also identified as Mitigation Measure AQ-30 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[hh]: The City of Modesto should work with the SJVAPCD to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible in accordance with the requirements of SJVAPCD Regulation VIII. Regulation VIII was adopted to reduce the amount of particulate matter suspended in the atmosphere as a result of emissions generated from anthropogenic (man-made) fugitive dust sources [also identified as Mitigation Measure AQ-39 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[ii]: The City of Modesto shall require all access roads, driveways, and parking areas serving new commercial and industrial development are to be constructed with materials that minimize particulate emissions in accordance with the requirements of SJVAPCD Regulation VIII and are appropriate to the scale and intensity of use [also identified as Mitigation Measure AQ-40 of the *Final Master Environmental Impact Report (2008)]*.

The following controls are required to be implemented at all construction sites:

Policy VII-H.2[kk]: All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover [also identified as Mitigation Measure AQ-42 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[ll]: All onsite unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant [also identified as Mitigation Measure AQ-43 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[mm]: All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking. (General Plan Policy VII-H.2[mm]) [also identified as Mitigation Measure AQ-44 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[nn]: With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition [also identified as Mitigation Measure AQ-45 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[oo]: When materials are transported off site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained [also identified as Mitigation Measure AQ-46 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[pp]: All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday [also identified as Mitigation Measure AQ-47 of the *Final Master Environmental Impact Report (2008)]*. 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 also expressly forbidden.

Policy VII-H.2[qq]: Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust

emissions utilizing sufficient water or chemical stabilizer/suppressant [also identified as Mitigation Measure AQ-48 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[rr]: Within urban areas, trackout shall be immediately removed when it extends 50 or more feet from the site and at the end of each workday [also identified as Mitigation Measure AQ-49 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[ss]: Any site with 150 or more vehicle trips per day shall prevent carryout and trackout [also identified as Mitigation Measure AQ-50 of the *Final Master Environmental Impact Report (2008)]*.

The following measures should be implemented at construction sites when required to mitigate significant PM10 impacts. These measures are to be implemented in addition to SJVAPCD Regulation VIII requirements.

Policy VII-H.2[tt]: AQ-51: Limit traffic speeds on unpaved roads to 15 mph [also identified as Mitigation Measure AQ-51 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[uu]: Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent (1%) [also identified as Mitigation Measure AQ-52 of the *Final Master Environmental Impact Report (2008)]*.

The following measures are strongly encouraged at construction sites that are large in area, located near sensitive receptors, or which for any other reason warrant additional emissions reductions:

Policy VII-H.2[vv]: Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site [also identified as Mitigation Measure AQ-53 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[ww]: AQ-54: Install wind breaks at windward side(s) of construction areas [also identified as Mitigation Measure AQ-54 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[xx]: Suspend excavation and grading activity when winds exceed 20 mph (regardless of windspeed, an owner/operator must comply with Regulation VIII's 20 percent (20%) opacity limitation) [also identified as Mitigation Measure AQ-55 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-H.2[yy]: Limit the area subject to excavation, grading, and other construction activity at any one time [also identified as Mitigation Measure AQ-56 of the *Final Master Environmental Impact Report (2008)]*.

In addition to the policies to reduce emissions of local and regional air pollutants, the City has formulated the following policies in the *Urban Area General Plan* (2008) to reduce greenhouse gas emissions that are relevant to the proposed project.

Policy VII-I.1[a]: The City of Modesto shall require shade trees, where feasible and appropriate, in landscape plans for all new development proposals. Mature trees have lower water needs. The City shall develop shade-tree specifications for different land uses (residential, commercial, parking lots, etc.) including appropriate types of trees (size, deciduous or evergreen, absence or lower branches, etc.), locations (e.g., distance from structures), density (i.e. within a subdivision or parking lot), and orientation (trees on the west side of a building generally provide the most benefit) for use in landscape plans [also

identified as Mitigation Measure CL-4 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-I.1[b]: The City shall require the planting of large-canopy species in new development areas in such a way that they grow to full size without damaging streets and sidewalks (including, but not limited to, deep watering until roots are well established, proper fertilizers, root barriers, and structured soils) [also identified as Mitigation Measure CL-5 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-I.1[g]: The City of Modesto shall encourage the use of solar energy systems for residential, agricultural, parks, public buildings, and business purposes as provided in Government Code Section 65892.13 [also identified as Mitigation Measure CL-9 of the *Final Master Environmental Impact Report (2008)]*.

Policy VII-I.1[n]: All commercial development projects should include bicycles racks and changing rooms to facilitate trips by bicycle and on foot by both employees and customers [also identified as Mitigation Measure CL-16 of the Final Master Environmental Impact Report (2008)].

EXISTING LOCAL AIR QUALITY CONDITIONS

In contrast to other air basins in California, the air quality in the SJVAB is not dominated by a single large urban source, but by a number of moderately sized urban areas spread along the valley's main axis. While only 10 percent of California's population lives in the San Joaquin Valley, pollution sources in the region account for about 14 percent of the total statewide criteria pollutant emissions. With the exception of PM_{10}, emission levels in the SJVAB have been decreasing since 1990. This is primarily due to improved controls on motor vehicle emissions, which are the primary source of CO and NO_x. A large source of ROG in the region comes from the oil and gas production in the lower San Joaquin Valley. Particulate matter emissions are primarily from road dust, agricultural operations, residential fuel combustion, and waste burning.[16]

The CARB and the SJVAPCD continually monitor the ambient concentrations of criteria pollutants including ozone, PM_{10}, $PM_{2.5}$, and carbon monoxide. The monitoring station nearest the project site is located approximately seven miles to the southeast on 14th Street in downtown Modesto. Table IV.D.3 summarizes the relevant data for the past three years.

Exceedances of the SO_2 and lead violations have not been observed; and lead from human-generated sources have been essentially eliminated with the use of unleaded fuels.

In general, the average concentrations and associated health risks of most TACs for the SJVAB are lower than the statewide averages. CARB monitors ambient TAC concentrations at six sites within the SJVAB (data for the Modesto 14th Street site is available only from 1990 through 1999 and additional data were collected from a monitoring site on I Street in Modesto between 1991

[16] *California Almanac of Emissions and Air Quality.*

Table IV.D.3: Ambient Air Quality Data Summary, Modesto Station

	Ozone						CO				$PM2_{.5}$			PM_{10}			
Year	Days Over State 1-hr Std.	Max. 1-hr (ppm)	3-yr Ave. 4th Highest 1-hr Ave. (ppm)	Days Over Natnl. 1997 8-hr Std.	Max. 8-hr Ave. (ppm)	3-yr Ave. 4th High 1997 8-hr Ave. (ppm)	Days Over Natnl. 8-hr Std.	Max. Natnl. 8-hr Ave. (ppm)	Days Over State 8-hr Std.	Max. State 8-hr Ave. (ppm)	Est. Days Over Natnl. 1997 24-hr Std.	Max. 24-hr Ave. ($\mu g/m^3$)	3-Yr Ave. 98^{th} percentile ($\mu g/m^3$)	Est. Days Over Natnl. 24-hr Std.	Max. Natnl. 24-hr Ave. ($\mu g/m^3$)	Est. Days Over State 24-hr Std.	Max. State 24-hr Ave. ($\mu g/m^3$)
2005	15	0.115	0.11	6	0.094	0.083	0	2.89	0	2.89	1	80	55.0	0	93	9	97
2006	14	0.120	0.11	8	0.097	0.086	0	3.73	0	3.73	1	71	52.0	0	96	8	102
2007	1	0.100	0.11	0	0.081	0.085	0	3.16	0	3.16	0	64	57.4	0	83	6	87

Notes:
hr = hour; yr = year, Ave. = Average; Std. = Standard; Max. = Maximum; Natnl. = National; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

Source: CARB, http://www.arb.ca.gov. Accessed June 4, 2008.

and 1997). According to the most recent SJVAPCD annual report on toxics, mobile sources are responsible for the 60 percent of toxic air pollutants. The SJVAPCD's implementation of the Air Toxics Hot Spots requirements has resulted in significant reductions in the public's exposure to toxic air contaminants. Of the 16 Valley facilities that have been deemed to pose significant health risks since the toxics program was implemented, 14 have subsequently reduced those risks to a level no longer considered significant.[17]

EXISTING LOCAL SOURCE INVENTORY

Throughout the SJVAB, agricultural operations and mobile sources account for the majority of ozone precursor and PM_{10} emissions. The majority of PM_{10} emissions in the San Joaquin Valley are attributed to farming operations and airborne dust from paved and unpaved roads.[18] Managing growth in emissions from agricultural operations and emissions from all types of motor vehicle activity is an important component of the regional air quality attainment strategy. Industry and other stationary sources make up the remainder of the human-generated emissions in the SJVAB.

Current land uses on the project site primarily include agricultural production, single-family residences, and some commercial space. Row crops and ruderal make up the majority of the agricultural use throughout the north and south portions, with some orchards planted in the central and northwest corner of the site. Major sources of air emissions in the vicinity are on- and off-road equipment and farming activities or burning that can create substantial dust or soot emissions. Agricultural land uses surrounding the project site can also occasionally cause emissions of TACs from pesticide application.[19] A search of the stationary source facility database[20] maintained by CARB indicated that there are no notable stationary sources of air emissions located within one mile of the project site.

Mobile sources in the project vicinity are the major source of air emissions. Traffic on State Route 99 (SR 99) and other on-road vehicles throughout the region's transportation network routinely emit ROG, NO_x, and CO. On- and off-road vehicles are also a major source of respirable particulate matter emissions (PM_{10} and $PM_{2.5}$) from entrained dust on the roadways. Exhaust from diesel train engines is another source of air emissions.

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[17] San Joaquin Valley Air Pollution Control District, *2006 Air Toxics Annual Report*. Available at http://www.valleyair.org.

[18] San Joaquin Valley Air Pollution Control District, *Guide for Assessing and Mitigating Air Quality Impacts, Technical Document*, Section 3, revised January 10, 2002.

[19] The California Department of Pesticide Regulation is updating its process to improve management of the chemicals that pose the greatest risks (risk assessment prioritization), January 2004. Available at http://www.cdpr.ca.gov/.

[20] California Air Resources Board, Community Health Air Pollution Information System (CHAPIS), accessed September 20, 2007: http://www.arb.ca.gov/gismo/.

SENSITIVE RECEPTORS

Land uses such as schools, children's day care centers, hospitals, and convalescent homes are considered more sensitive than the general public to poor air quality because the population groups at these uses have increased susceptibility to respiratory distress. Persons engaged in strenuous work or exercise also have increased sensitivity to poor air quality. Residential areas are also considered more sensitive to air quality conditions compared to commercial and industrial areas because children generally spend longer periods there.

Sensitive receptors in the project vicinity include an existing single-family residential neighborhood and rural residences. The nearest residential development is located southwest of the intersection of Bangs Avenue and Dale Road. There are also single-family residences located on farms within the project site.

The nearest existing school to the proposed project site, the Stanislaus Elementary School, is located approximately one-half mile east on Kiernan Avenue. A Modesto City Schools high school, Gregori High School, is set to open on Stoddard Road, about one mile north of Kiernan Avenue, in the fall of 2010. The nearest day-care center is Childtime Learning Center at 3912 Honey Creek Road, located approximately one mile to the south-southwest. The new hospital on the Kaiser Modesto medical campus is located directly west of the project site opposite Dale Road and opened in the fall of 2008.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

California State CEQA Guidelines specify that the significance criteria established by the local air district may be used to determine significance. The SJVAPCD's thresholds of significance are based on its *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI), dated 2002. These guidelines define separate thresholds for construction emissions, project operation and occupation, and cumulative impacts. Based on these guidelines, the project would cause a significant adverse air quality impact if it would:

- Fail to comply with SJVAPCD's PM_{10} mitigation measures during construction. The SJVAPCD has determined that compliance with Regulation VIII and implementation of other control measures presented in their guidance manual[21] will constitute sufficient mitigation to reduce PM_{10} impact to a level considered less than significant.
- Cause emissions of air pollutants that would cause or substantially contribute to localized or regional violations of the ambient air quality standards. Project emissions of more

[21] San Joaquin Valley Air Pollution Control District, *Guide for Assessing and Mitigating Air Quality Impacts*, 2002 (hereinafter "GAMAQI"), Tables 6-2 and 6.3.

than 10 tons per year of NO_x or ROG would substantially contribute to existing violations of ozone standards.[22]

- Cause localized CO concentrations to exceed the CAAQS of 9 parts per million (ppm) averaged over eight hours or 20 ppm averaged over one hour.[23]
- Cause odor problems that result in more than one confirmed complaint per year, averaged over a three-year period, or three unconfirmed complaints per year averaged over a three-year period.[24]
- Expose sensitive receptors or the general public to substantial levels of TACs, based on the potential to increase cancer risk for the person with maximum exposure potential by 10 in 1 million or a non-cancer Hazard Index greater than one.[25]

The guidelines indicate that if project development would individually cause a significant air quality impact from project operations, then the cumulative impacts of the project would also be considered significant.

However, since the SJVAB is in nonattainment for ozone and PM_{10}, the EIR for the City's *General Plan Update* in 2008[26] considered that any net increase in ozone precursors (ROG and NO_x) or PM_{10} would be identified as a significant impact. In this CEQA evaluation, the City's threshold of significance for ozone precursors and PM_{10} will be used.

Under the law, CARB, the State Energy Resources Conservation and Development Commission (Energy Commission), and the California Climate Action Registry all have responsibilities with respect to the control of emissions of greenhouse gases, as defined, and the Secretary for Environmental Protection is required to coordinate emission reductions of greenhouse gases and climate change activity in state government. As a result, the State Attorney General's Office and some environmental groups are now requesting that large regional projects analyze impacts on global climate change and/or GHG as part of the CEQA process. However, CARB, the California EPA, the EPA, or other appropriate governmental organizations have not yet developed guidelines on how to prepare an impact assessment for a project's contribution of GHG emissions to global climate change. The evaluation of the proposed project's potential for climate change impacts due to emissions of GHGs was performed in accordance with the Governor's Office of Planning and Research technical advisory on evaluation of climate change

[22] GAMAQI, Table 4-1.
[23] GAMAQI, p. 26.
[24] GAMAQI, p. 27.
[25] The Hazard Index is calculated by summing the hazard quotients for substances that affect the same target organ or organ system (e.g., respiratory system). The hazard quotient is the ratio of potential exposure to the substance and the level at which no adverse health effects are expected. A HI of less than 1 indicates no adverse health effects are expected as a result of exposure and a HI greater than 1 indicates adverse health effects are possible.
[26] City of Modesto, *Final Master Environmental Impact Report for the Urban Area General Plan Update, July 2008*.

in CEQA documents. The technical advisory provides guidance regarding the steps lead agencies should take to address climate change in their CEQA documents and was developed in cooperation with the Resources Agency, the California EPA, and CARB.[27]

Even a very large individual project is not likely to generate enough GHG emissions to individually influence global climate change. A project may participate in this potential impact by its incremental contribution combined with the cumulative increase of all other sources of GHGs, which cumulatively may result in global climate change. Therefore, climate change and GHG emissions are evaluated in this EIR only as a cumulative impact. The City of Modesto has approved the following thresholds of significance to analyze the effects of the project on the production of GHGs:

- Would the proposed project result in a noticeable change in global climate change?
- Would the proposed project make a considerable contribution to cumulative global climate change?
- Would implementation of the proposed project interfere with the implementation of AB 32's objectives (i.e., reducing GHG emissions to 1990 levels by 2020)?

METHODOLOGY AND ASSUMPTIONS

The URBEMIS2007 (Version 9.2.4) computer model published by CARB was used to estimate emissions of criteria pollutants and CO_2. For comparison purposes, the program provides the result assuming both no mitigation measures and the use of standard, feasible mitigation measures. This model includes the CARB-adopted emission factors for the statewide motor vehicle fleets, including estimation of emission rates in future years. Based on the proposed land use, the program estimates construction emissions, operational emissions (vehicle trips generated by the project), and area source emissions (natural gas usage, landscape maintenance, and consumer products). The analysis for this EIR used the land use assumptions shown in Table IV.D.4. While specific types of retail development, i.e., pharmacy or hardware store, have not been determined, these assumptions are consistent with the types and size of retail development envisioned for the proposed project.

The URBEMIS evaluation also included the use of SJVAPCD's recommended standard changes to URBEMIS default values. These changes include use of pass-by trips, modified silt loading factor, modified residential fleet mix, modified residential natural gas emission factors, a change in the percent of equipment for landscape-related emissions, and use of zero natural gas hearth emissions (the hearth emissions have been incorporated into the residential natural gas emission factors). The proposed project's emissions were evaluated with or without mitigation measures to demonstrate the result of the mitigation measure impact.

[27] Governor's Office of Planning and Research, *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA) Review*, June 19, 2008.

Table IV.D.4: Assumed Land Uses for the Kiernan Business Park-East

Land Use Type	Unit Type	No. Units
Apartments Mid-Rise	dwelling units	80
Condo/Townhouse General	dwelling units	262
Quality Restaurant	1000 sq. ft.	50
Hotel	Rooms	175
Supermarket	1000 sq. ft.	100
Hardware/Paint Store	1000 sq. ft.	100
Convenience Market (24 hour)	1000 sq. ft.	50
Office Park	1000 sq. ft.	1,498
Pharmacy/Drugstore	1000 sq. ft.	50
Bank	1000 sq. ft.	71

Source: Project Description information; Baseline Environmental.

The CO impact from increased vehicle use on the local streets was evaluated using the CALINE4 (CL4) dispersion model provided by Caltrans. The program was used to determine worst-case localized CO concentrations where the traffic study for this project indicated a significant deterioration of level of service (LOS). The program models the worst-case CO concentrations at nearby receptors by assuming stable atmospheric conditions, which would limit dispersion.[28]

The impacts of TACs and odors were evaluated by considering whether notable sources of TACs or objectionable odors would occur as a result of the proposed project or whether the proposed project emissions would be located near existing sources of TAC or objectionable odors.

Global climate change impacts were evaluated based on the result of the URBEMIS evaluation, which included estimates of the proposed project's CO_2 emissions and the state's estimated GHG inventory.

PROJECT IMPACTS AND MITIGATION

Impact D.1. Emissions of criteria pollutants during project construction would contribute to existing violations of the ambient air quality standards in the region. (Significant and Unavoidable)

Site preparation and building construction would include earthmoving activities (soil excavation and backfilling, and grading) and the movement of heavy mobile equipment on paved and unpaved roads. These activities would result in short-term dust emissions and cause a temporary increase in localized PM_{10} and $PM_{2.5}$ concentrations compared to existing conditions. Soils exposed during construction activities would be subject to wind erosion, which can also cause result in an increase in airborne particulate matter. Diesel equipment exhaust also contains

[28] University of California Davis, Transportation Project-Level Carbon Monoxide Protocol (CO Protocol), Appendix B, December 1997.

particulate matter, primarily the smaller $PM_{2.5}$. The PM_{10} and $PM_{2.5}$ emissions are considered by CARB to be the greatest pollutant of concern associated with construction activities.

The emissions from construction activities were estimated using the UR3EMIS software program, and the results are shown in Table IV.D.5. The program estimates the amount of grading, heavy equipment use, vehicle traffic, paving, and other sources of criteria pollutants based on the future land uses. An anticipated construction schedule was used for the modeling assuming full buildout by 2011. Since a specific development schedule for the proposed project has not been developed, the URBEMIS evaluation performed for this EIR assumed the construction would occur in two phases, with initial site grading occurring in the fall of 2008, the first phase of building occurring between the winter of 2008 and summer of 2009, and the second phase of building occurring between the fall of 2009 and the spring of 2010 for buildout by 2011. The estimated emission results from the program are provided on annual basis (tons per day). It should be noted that a different schedule for construction would result in a change in the mass of emissions per year. However, the total mass emissions for the project would be the same. The URBEMIS evaluation for construction activities used the following standard, feasible mitigation measures:

- Application of soil stabilizers to inactive areas;
- Replacement of ground cover in disturbed areas;
- Watering of exposed surfaces two times daily;
- Dust suppression during earthmoving equipment loading and unloading;
- Use of 2nd Tier diesel particulate filters (DPF);
- Use of diesel oxidation catalyst (15 percent reduction); and
- Use of low VOC coatings on residential, commercial and residential interiors and exteriors.

As shown on Table IV.D.5, the construction phase of the proposed project would result in both ozone precursors and PM_{10}. This URBEMIS modeling indicated that the mitigation measures would be very effective in reducing emission of PM_{10}, particularly during the site preparation or grading phase, but less so in reducing ROG and NOx. To minimize the air quality impact from construction, the project developers would be required to implement the SJVAPCD's recommended construction mitigation measures[29] and the policies of the *Modesto Urban Area General Plan Update*.[30] Implementation of the mitigation measure below would reduce the significance of this impact to the extent possible, but would still result in a net increase in emissions.

[29] GAMAQI.
[30] City of Modesto, *Modesto General Plan Update Draft Master EIR*, March 2008.

Table IV.D.5: Project Construction Emissions (tons per year)

	ROG	NOx	CO	SO_2	PM_{10} Dust	PM_{10} Exhaust	PM_{10} Total	$PM_{2.5}$ Dust	$PM_{2.5}$ Exhaust	$PM_{2.5}$ Total
Unmitigated – 2008	0.57	3.56	5.92	0.00	12.47	0.18	12.65	2.61	0.17	2.77
Mitigated – 2008	0.57	3.46	5.92	0.00	2.84	0.16	3.00	0.60	0.15	0.74
Percent Reduction	0.00	2.7%	0.00	0.00	77%	13%	76%	77%	13%	73%
Unmitigated – 2009	26.50	3.96	14.20	0.01	0.06	0.21	0.27	0.02	0.19	0.21
Mitigated – 2009	23.90	3.72	14.20	0.01	0.06	0.15	0.21	0.02	0.13	0.16
Percent Reduction	9.8%	6.2%	0.0	0.0	0.0	29%	22%	0.00	29%	26%
Unmitigated – 2010	26.24	2.59	8.85	0.01	0.04	0.14	0.18	0.02	0.12	0.14
Mitigated – 2010	23.67	2.44	8.85	0.01	0.04	0.10	0.14	0.02	0.09	0.10
Percent Reduction	9.8%	5.8%	0.0	0.0	0.0	29%	22%	0.0	29%	26%

Notes:
Assumes an initial site grading phase followed by two phases of construction with buildout by 2011.
This evaluation used San Joaquin Valley Air Pollution Control District *Recommended Standard Changes to URBEMIS Default Values*, dated August 2, 2007.
Source: BASELINE Environmental Consulting, URBEMIS2007 version 9.2.4 Analysis, July 2008.

Mitigation Measure D.1. Implementation of SJVAPCD recommendations to minimize emissions during construction phases.

The construction plans for all project phases shall incorporate the following recommendations from SJVAPCD:

- The project developers shall review Regulation VIII of the SJVAPCD regulations and submit a compliance plan to the City of Modesto prior to commencing any phase of construction. The compliance plan must demonstrate that the current requirements of Regulation VIII will be implemented.
- Prior to the issuance of construction contracts, the project developers shall perform a review of new technology, as it relates to heavy-duty equipment, to determine what, if any, advances in emissions reduction are available for use. (Information is available at CARB's website http://www.arb.ca.gov/msprog/aftermkt/aftermkt.htm.) Recently, CARB initiated a number of incentive programs to offer funds for retrofitting existing heavy-duty engines in public and private fleets to reduce PM and NO_x emissions. CARB has evaluated and certified retrofit systems to be used in PM or NO_x incentive programs. (Applicants who plan to participate in any of the CARB's retrofit programs may obtain additional information by viewing the CARB's Diesel Mobile Programs website at http://www.arb.ca.gov/diesel/mobile.htm.) The SJVAPCD should be consulted during this process.
- Dust suppression shall be implemented on all disturbed areas, including inactive outdoor storage piles, by application of water, chemical stabilizer/suppressant, or covering with a tarp, vegetative ground cover, or other suitable cover.
- Dust suppression shall be implemented following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles using water or chemical stabilizer/suppressant.
- Dust suppression shall be implemented on all on-site unpaved roads, and off-site unpaved access roads used during the construction phase, using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions by application of water during the activity or by presoaking.
- When materials are transported off site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches of freeboard space from the top of the container shall be maintained.
- The project developers shall limit traffic speed on unpaved roads to 15 miles per hour.
- The project developers shall install sandbags or other control measures to prevent silt runoff to public roadways from sites with a slope greater than one percent.
- The project developers shall install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site, to prevent track-out of soil to public roadways.
- The project developers shall install windbreaks at windward sides of construction areas, if necessary to prevent wind-blown dust.

- The project developers shall suspend excavation and grading activity when winds exceed 20 miles per hour.
- The project developers shall limit the area subject to excavation, grading, and other construction activity at any one time.
- The project developers shall ensure that the accumulation of mud or dirt (track-out) is expeditiously removed from adjacent public streets if it extends more than 50 feet from the construction site or at least once every 24 hours when construction activities are occurring (the use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions).
- The project developers shall use alternative-fuel construction equipment, where feasible.
- The project developers shall minimize idling time (e.g., to a 10-minute maximum).
- The project developers shall limit the hours of operation of heavy-duty equipment and/or the amount of equipment in use to the minimum practical.
- The project developers shall replace fossil-fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set), where feasible.
- The project developers shall take steps to curtail construction activity during periods of high ambient pollutant concentrations; this may include reducing construction activity during the peak hour of vehicular traffic on adjacent roadways or ceasing construction activity during days declared as Spare the Air days by the SJVAPCD.
- The project developers shall manage activity tasks to reduce cumulative short-term impacts.

Implementation of these mitigation measures would reduce impacts of construction-related PM_{10} and ozone precursors, but would still result in a net increase in emissions. Therefore, in the opinion of the City of Modesto, the impact would not be reduced to a less-than-significant level. This impact would therefore remain significant and unavoidable.

Impact D.2. Emissions of criteria pollutants during project operation would contribute to existing violations of the ambient air quality standards in the region. (Significant and Unavoidable)

Air quality impacts to the regional air basin are evaluated based on past air monitoring results and estimations of future increases in emissions due to expected population growth, vehicle miles traveled, and stationary source emissions. These past and future emission estimations, referred to as "emission inventories," are used to develop air quality plans and to predict air quality in the future. Because the SJVAB is designated a nonattainment area for violations of the ozone PM_{10} and $PM_{2.5}$ standards, any new emissions of these pollutants and their precursors could cause or contribute to continuing violations of state and national air quality standards. Although motor vehicle sources are the subject of numerous state and federal emission control requirements currently in place, the regional benefits provided by those programs are being offset by local

population growth and the resultant increase in the levels of vehicular activity. The emission increases caused by operation of the proposed project are quantified in Table IV.D.6.

The proposed project would result in increased emissions of ozone precursor pollutants (ROG and NO_x) and respirable particulate matter (PM_{10} and $PM_{2.5}$) because it would increase the number of vehicle trips (vehicle miles traveled). It would also result in minor amounts of emissions from what are referred to as "area sources": ROG or NO_x emissions from the use of natural gas in equipment such as water heaters, the use of petroleum-fueled landscape equipment, use of consumer products containing VOCs, and periodic building maintenance using architectural coatings (paint).

The URBEMIS modeling for the operation phase of the proposed project assumed the following mitigation measures:

- Trip reduction due to mixed use development;
- Trip reduction due to service by local public transportation;
- Use of arterial roadways for bike lanes;
- Building construction that would achieve energy efficiency of 20 percent beyond Title 24 requirements; and
- No wood-burning fireplaces or woodstoves in the residences.[31]

As shown on Table IV.D.6, the proposed project would result in emissions of ozone precursors (NO_x and ROG) and PM_{10}. The NOx and ROG emissions are above the SJVAPCD's 10-tons-per-year significance threshold. The project-related emissions would primarily come from motor vehicles, but emissions from heating and other energy use would also contribute to this significant impact. Emissions of CO would not substantially affect regional air quality, but they could adversely affect local conditions near heavy traffic areas (as discussed under Impact D.3, below). To mitigate the project's significant impacts related to ozone, the SJVAPCD recommends implementing a combination of strategies that minimizes a project's vehicle travel demand and the demand for heating, cooling, and other energy use.

Motor vehicle exhaust and the particulate matter made airborne by increased traffic (roadway dust) each contain PM_{10} and $PM_{2.5}$. Because particulate matter emissions would be proportional to motor vehicle activity, measures that would reduce emissions from motor vehicles can be used to reduce impacts related to particulate matter.

[31] Natural gas emissions from natural gas burning fireplaces are included in the District's recommended natural gas emission rates.

Table IV.D.6: Project Area and Operational Emissions (tons per year)

	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Area Source Emission Estimates						
Totals – unmitigated	5.94	3.04	3.82	0.00	0.02	0.01
Totals - mitigated	5.90	2.44	3.33	0.00	0.01	0.00
Percent Reduction	0.67%	20%	13%	0.0	50%	100%
Operational (Vehicle) Emission Estimates						
Totals – unmitigated	95.48	99.39	924.25	0.67	61.41	13.31
Totals - mitigated	92.39	96.05	893.17	0.65	59.34	12.87
Percent Reduction	3.2%	3.4%	3.4%	3.0%	3.4%	3.4%
Sum of Area Source and Operational Emission Estimates						
Totals – unmitigated	101.42	102.43	928.07	0.67	61.43	13.32
Totals - mitigated	98.29	98.49	896.50	0.65	59.35	12.87
Percent Reduction	3.1%	3.9%	3.4%	3.1%	3.4%	3.4%

Notes:
Includes correction for pass-by trips.
Includes the following double counting adjustment for internal trips at eight percent.
Analysis Year: 2011 Season: Annual
Emfac Version: Emfac2007 V2.3, 1 November 2006.

Source: BASELINE Environmental Consulting, URBEMIS2007 version 9.2.4 Analysis, July 2008.

Implementation of mitigation measures to reduce emissions from motor vehicle activity and other project-related sources would reduce the impacts to regional ozone and particulate matter concentrations. These measures are derived from recommendations provided by the SJVAPCD during the scoping process for this project and the policies adopted in the City of Modesto's *Urban Area General Plan* accompanying the *Final Master Environmental Impact Report (2008).* An Indirect Source Mitigation Fee may be required from the project developer as a potentially feasible mitigation (as identified in the *SJVAPCD PM_{10} Attainment Demonstration Plan*). The following measures may reduce project emissions shown in Table IV.D.6 above, but not by more than about 10 percent. Even with mitigation, this impact would remain significant and unavoidable.

Mitigation Measure D.2.a. Implementation of design features to reduce emissions from motor vehicle activity.

The site design shall fulfill the following requirements:

- The project developers shall incorporate improvements for transit service, including bus turnouts, transit loading areas, and shelters.
- The project developers shall incorporate sidewalks and bicycle paths throughout the site and connect those facilities to any nearby pedestrian and bicycle facilities, including those located at open space areas, parks, schools, or commercial areas.

- The project developers shall incorporate secure bicycle storage and changing rooms and parking facilities throughout the site.

Mitigation Measure D.2.b. Development and implementation of an approved trip reduction plan to reduce emissions from motor vehicle activity.

The project developers shall prepare a trip reduction plan for review and approval by the City of Modesto prior to occupation of each phase of the proposed project. To be compliant with the policies of the *Urban Area General Plan*, the trip reduction plan shall address how the following features will be implemented:

- Providing matching services (for participants in carpools and vanpools) by employers with over 100 weekday employees or coordination with Caltrans' "Commuter Computer" program;
- Employer-based dissemination of commute information;
- A program to guarantee rideshare participants a ride home in case of emergency;
- Flex-time scheduling;
- Site plan design which encourages pedestrian movement between adjacent land uses;
- Incentives such as preferred location of four percent of parking for carpoolers and hybrid or other clean-fuel vehicles;
- Encouraging submission of site plans featuring mixed land uses or "neo-traditional" design; and
- Encouraging employers to experiment with telecommuting options, where feasible.

Mitigation Measure D.2.c. Implementation of site design features to reduce emissions from energy consumption.

The site design shall fulfill the following requirements:

- The project developers shall incorporate energy-efficient building design features including automated control systems for heating and air conditioning and energy efficiency to achieve a 20 percent reduction beyond the requirements of the Building Code (Title 24, California Code of Regulations), increased wall and ceiling insulation beyond Building Code requirements, light-colored roof materials to reflect heat, and energy-efficient lighting and lighting controls.
- The project developers shall orient buildings to the north to maximize natural cooling and heating.
- The project developers shall incorporate approved deciduous trees to provide shade on the south- and west-facing sides of buildings.
- Natural gas burning units for space and water heating in the residential units shall use low-NOx space heaters and water heaters.

- All access roads, driveways, and parking areas serving the Business Park (BP) shall be constructed with materials that minimize particulate emissions in accordance with the requirements of SJVAPCD Regulation VIII and are appropriate to the scale and intensity of use.

Implementation of these mitigation measures would reduce impacts to regional ozone and particulate matter concentrations, but the impacts would remain significant and unavoidable.

Impact D.3. Motor vehicle emissions would locally contribute to elevated concentrations of carbon monoxide. (Less than Significant)

Project-related traffic would cause or contribute to existing traffic on local roadways, which could result in locally elevated concentrations of CO. The existing CO emissions (shown in Table IV.D.3) comply with the ambient air quality standards for CO, but near heavy traffic areas, the motor vehicle exhaust combines with the existing background conditions. During stagnant weather conditions, the exhaust contaminant could build up around locations with high levels of slow-moving traffic. Using CALINE4 and traffic volumes from the traffic study (see Appendix B), 10 intersections were evaluated for elevated CO concentrations where the traffic analysis indicated that the LOS at these locations would degrade significantly due to implementation of the project (Table IV.D.7).[32]

The background 1-hour CO concentration used in the model was 5.3 ppm. This was conservatively based on an 8-hour concentration of 3.16 ppm, the highest CO concentration measured in 2006 at the Modesto 14th Street station, and assuming persistence factor of 0.6.[33] Table IV.D.7 identifies the locations for the CO analysis and the expected CO concentrations with the various phases of the proposed project. As indicated in Table IV.D.7, the maximum 1-hour CO impact with project-generated traffic would be approximately 11.2 ppm, which would be below the CAAQS of 20 ppm, and the maximum 8-hour CO impact would be approximately 6.7, below the CAAQS of 9 ppm. Therefore, implementation of the proposed project would not contribute significantly to locally elevated concentrations of CO.

Mitigation Measure. No mitigation necessary.

[32] Fehr & Peers, Transportation Impact Analysis for Kiernan Business Park East, November 2008.
[33] University of California Davis, Transportation Project-Level Carbon Monoxide Protocol (CO Protocol), Appendix B, December 1997.

Table IV.D.7: Localized Carbon Monoxide Concentrations (parts per million)

Location	Existing 2008 1-Hour AM/PM	Existing 2008 8-Hour AM/PM	2008 with Project 1-Hour AM/PM	2008 with Project 8-Hour AM/PM	2011 with Project 1-Hour AM/PM	2011 with Project 8-Hour AM/PM
Kiernan Ave/Stoddard Rd	8.7/9.2	5.2/5.5	8.7/8.9	5.2/5.3	9.5/9.6	5.7/5.8
Kiernan Ave/Stoddard Rd	7.9/8.2	4.7/4.5	8.2/8.3	4.9/5.0	9.3/9.1	5.6/5.5
Kiernan Ave/Dale Rd	7.6/8.2	4.6/4.9	8.2/8.8	4.9/5.3	8.8/9.3	5.3/5.6
Kiernan Ave/American Ave	6.9/7.1	4.1/4.3	7.4/8.0	4.4/4.8	7.9/8.4	4.7/5.0
Kiernan Ave/Carver Rd	6.0/8.3	3.6/5.0	6.4/8.1	3.8/4.9	7.2/8.5	4.3/5.1
Bangs Ave/American Ave	6.1/6.5	3.7/3.9	7.7/8.4	4.6/5.0	7.9/8.4	4.7/5.0
Bangs Ave/Prescott Rd	6.6/6.8	4.0/4.1	7.6/8.4	4.6/5.3	7.8/8.6	4.7/5.2
Bangs Ave/Carver	6.8/6.9	4.1/4.1	7.4/7.6	4.4/4.6	7.6/7.8	4.6/6.9
Bangs Ave/Tully Rd	6.9/7.4	4.1/4.4	7.2/7.5	4.6/4.5	7.3/7.9	4.4/4.7
Pelandale Ave/Sisk Rd	8.9/10.6	5.3/6.4	9.4/11.2	5.6/6.7	9.2/10.9	5.5/6.5

Notes:
California Ambient Air Quality Standards for CO: 20 ppm (1-hour) and 9 ppm (8-hour).
-- = intersection does not exist.

Source: CALINE4 Analysis, BASELINE, 2008.

Impact D.4. Implementation of the proposed project would cause sensitive receptors to be exposed to TACs. (Less than Significant)

The proposed commercial and residential land uses within the project would not generate substantial TAC emissions that would adversely affect nearby sensitive receptors. No stationary source of TACs within a one-mile radius of the project center has been found to emit TACs at a level that represents an unacceptable increased health risk to the general public. TACs from sources at greater distances would be expected to disperse to below levels of concern prior to reaching the project site. Since implementation of the project would not cause or increase sensitive receptors exposure to TACs, this would be a less-than-significant impact.

Mitigation Measure. No mitigation necessary.

Impact D.5. Implementation of the proposed project would cause sensitive receptors to be exposed to objectionable odors. (Less than Significant)

The proposed commercial and residential land uses within the project would not generate objectionable odors during routine operation. Types of facilities identified by the SJVAPCD as likely sources of nuisance odors are listed below:

- Wastewater treatment facilities
- Sanitary landfills
- Composting facilities
- Petroleum refinery
- Asphalt batch plant

- Chemical manufacturing plant
- Fiberglass manufacturing plant
- Painting/coating operations
- Food processing facilities
- Feed lots/dairies
- Rendering plants

None of these types of facilities are located within a mile of the project site. This would be a less-than-significant impact.

Mitigation Measure. No mitigation necessary.

CUMULATIVE IMPACTS

Impact D.6. The project would cause a cumulatively considerable net increase of pollutants for which the San Joaquin Valley is designated as nonattainment. (Significant and Unavoidable)

Ongoing population and employment growth in the San Joaquin Valley, when combined with the proposed project, would cumulatively increase mobile source activity and associated regional emissions of ROG, NO_x, and PM_{10}. Emissions from the project would occur during construction phases but would be short term. Even with full mitigation (as described in Impact D.1), the net increase of construction-related emissions would be cumulatively considerable according to the City of Modesto's significance criteria for construction emissions resulting in a net increase of PM_{10} or ozone precursors. It should be noted that compliance with the SJVAPCD's suggested construction-related mitigation measures is considered sufficient mitigation for construction-related emissions for cumulative projects.

The operational phase of the proposed project would contribute to the regional violations of the ozone and PM_{10} standards (as described in Impact D.2). Because all sources in the region also contribute to these impacts, any individual project impact would also be cumulatively considerable, and the project's cumulative impacts to the region's ability to attain the ozone and PM_{10} standards would be significant.

Mitigation Measure D.6. See Mitigation Measures D.2a and D.2b. With implementation of these measures, significant cumulative impacts would be reduced but not to less-than-significant levels.

Impact D.7. The proposed project, including annexation of the proposed parcels to the City of Modesto and changes to adopted community plans, could conflict with or obstruct implementation of the ozone and PM_{10} attainment plans. (Significant and Unavoidable)

The proposed project includes annexing parcels to the City of Modesto and changing the land use designations for parcels within the Kiernan Business Park Specific Plan Amendment #4 project area to accommodate the changes in proposed land use. Reviewing the consistency of these changes with the regionwide ozone and PM_{10} *Attainment Demonstration Plans* provides an analysis of program-level impacts in a cumulative context.

The SJVAPCD plans for growth in the region, in part, based on assuming the land use designations in various General Plans and based on assumptions about the rate of population growth. The ozone and PM_{10} *Attainment Demonstration Plans* therefore evolved to reflect the changing projections for growth in the San Joaquin Valley. The proposed project would not directly induce population growth. Employment growth would be consistent with or slightly less than what was anticipated in the *Urban Area General Plan*. Emissions associated with the proposed project would be consistent with the SJVAPCD attainment plans, which are based on overall growth projections, such as those identified in the *General Plan*. The projected growth is also consistent with growth projections in the Stanislaus Council of Government's (StanCOG) *Draft 2004 Regional Transportation Plan* (*Transportation Plan*). The *Transportation Plan* states that the Kiernan Business Park is expected to support between 10,000 and 27,000 year-round jobs by 2030. The *Transportation Plan* contains provisions for improvements to the routes serving planned business park developments. Routes providing east-west and north-south connections to SR 99 and I-5 were given priority due to the focus on reducing travel times for longer distance goods movement trips. Kiernan Avenue (SR 219) would be widened from State Route 99 to McHenry (SR 108) to serve the Kiernan Business Park and to reduce traffic congestion along the existing corridor.

The project's significant air quality impacts would mainly be from mobile source activity (traffic), i.e., vehicle trips associated with residents and commercial enterprises. Although some of the project's individual impacts may be offset by reduced mobile source emissions elsewhere in the region, the impact of project emissions would remain cumulatively significant.

This impact is significant and unavoidable because project-related emissions would significantly contribute to ongoing and cumulative violations of ozone and PM_{10} standards (as described in Impact D.2). Emission increases caused by the project in combination with other development in the region would delay the region's progress in attaining the ozone and PM_{10} standards. Thus, despite achieving consistency with the attainment plans, project-related emissions combined with

emissions from other projects would likely obstruct implementation of the attainment plans, causing a significant and unavoidable cumulative impact.

Mitigation Measure D.7. See mitigation measures listed under Impact D.2.

With implementation of these measures, the significant cumulative impacts would be reduced, but not to less-than-significant levels.

Impact D.8. The proposed project, including annexation of the proposed parcels to the City of Modesto and changes to adopted community plans, could increase greenhouse gas emissions and potentially accelerate the effects of greenhouse gases on global climate change. (Less than Significant with Mitigation)

The potential adverse impacts of global warming include the exacerbation of air quality problems; a reduction in the quality and supply of water to the state from the Sierra snow pack; a rise in sea levels, resulting in the displacement of thousands of coastal businesses and residences; damage to marine ecosystems and the natural environment; and an increase in the incidences of infectious diseases, asthma, and other human health-related problems. Global warming may also have detrimental effects on some of California's largest industries, including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry.

Emissions of GHG from the proposed project may contribute to global warming when considered with other past, current, and future projects. The cumulative project emissions include direct emissions from petroleum-fueled engines and indirect emissions from power plants producing electrical power. Carbon dioxide emissions were estimated using the URBEMIS software program, as shown in Table IV.D.8. While the proposed project would emit other GHGs such as methane and nitrous oxide, even considering that other GHG have greater greenhouse effect, these emissions would be expected to be minor when compared to the project's CO_2 emissions. Note that CO_2 emissions from construction activities remained the same whether mitigation measures were implemented or not.

The maximum annual emissions of CO_2 during construction were 1,510 tons for 2009. This estimated mass would be approximately 0.003 percent of the total GHG emissions estimated for California in 2004.[34] During the operational phase of the proposed project, the CO_2 emissions would be approximately 0.1 percent of California's 2004 GHG emissions. The mitigation measures used in the URBEMIS program would result in a 4.2 percent reduction in CO_2 emissions.

[34] http://www.arb.ca.gov/cc/inventory/data/tables/rpt_Inventory_IPCC_Sum_2007-11-19.pdf

Table IV.D.8: Estimated Carbon Dioxide Emissions (tons per year)

Construction Emission Estimates	
2008 Total	671
2009 Total	1,510
2010 Total	1,017
Area Source Emission Estimates	
Total – unmitigated	3,651
Total –mitigated	2,921
Percent Reduction	20%
Operational (Vehicle) Emission Estimates	
Total – unmitigated	68,510
Total – mitigated	66,206
Percent Reduction	3.4%
Sum of Area Source and Operational Emission Estimates	
Total – unmitigated	72,161
Total – mitigated	69,127
Percent Reduction	4.2%

Note:
Emfac Version: Emfac2007 V2.3, 1 November 2006.
Source: BASELINE Environmental Consulting, URBEMIS2007 version 9.2.4 Analysis, July 2008.

CARB has developed, as required by AB 32, "discrete early action" strategies to reduce GHG emissions. These early action strategies consist of three measures related to low carbon fuels, restrictions on refrigerants, and landfill methane capture. An additional 23 actions have also been identified and CARB will further evaluate the appropriateness of those actions. Among these actions are heavy-duty vehicle emission reductions. When regulations are promulgated, this project would be subject to compliance, if any, with the requirements that would apply to construction or operational activities associated with the proposed project.

The development plans for the proposed project are consistent with the use of "Smart Growth," a planning tool endorsed by CARB. The goal of Smart Growth is to develop and implement a preferred land use vision that favors mix of uses at moderate or high densities while accommodating the region's growing workforce. Smart Growth is more transit and pedestrian oriented and encourages a greater mix of housing, commercial, and retail uses. The proposed project's mix of residential and commercial land uses adjacent to centers of employment such as Business Park and medical campus, increases the opportunities to use walking, biking, or public transit rather than automobiles compared to retaining the existing BP use. Since transportation is the largest source of most types of air pollution, implementation of Smart Growth policies results

in an overall decrease in local air quality impacts such as CO and particulates, regional air quality impacts including ozone and PM_{10}, and global impacts from GHGs.

The proposed project includes a number of mitigation measures (Mitigation Measures D.1 and D.2.a through c) that not only address criteria pollutants but also reduce GHGs. Implementation of these mitigation measures would reduce direct GHG emissions from reduced vehicles emissions and indirect GHG emission from power plants due to increased building energy efficiency. For instance, the URBEMIS model estimates that a 20 percent increase in energy efficiency (Mitigation Measure D.1c) beyond the requirements of the Title 24 results in a 20 percent reduction in CO_2 emissions. In addition, the following mitigation measure is proposed to further reduce the potential climate change impact. This project has incorporated measures that result in reduced GHG emissions. With implementation of these mitigation measures, the significant cumulative impact would be reduced to a less-than-significant level.

Mitigation Measure D.8.

- For lighting in public streets, parking areas, and recreation areas, use of energy-efficient light and mechanical, computerized, or photocell switches to reduce unnecessary energy use.
- Use of alternative, non-fossil-fuel-based energy systems.
- Orientation of lots to maximize natural energy conservation.
- Provision of bike racks and changing rooms for commercial development.
- Planting of large-canopy, deciduous shade trees that are designed to fit in planters that are large enough to contain them without disrupting public improvements at project buildout.

E. NOISE

This section addresses the environmental noise impacts associated with the Kiernan Business Park Specific Plan Amendment #4 project. The Setting discussion describes the background sound levels and presents a summary of the project's acoustical criteria. The impact analysis estimates noise generated by the traffic from development under the proposed Kiernan Business Park Specific Plan Amendment #4 project, and evaluates its effects on sensitive receptors. Mitigation measures are specified where necessary.

SETTING

NOISE FUNDAMENTALS

Three dimensions of environmental noise are important in determining subjective response:

- The intensity or level of the sound;
- The frequency spectrum of the sound; and
- The time-varying character of the sound.

Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in a logarithmic scale with the unit of decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing.

The logarithmic decibel scale allows an extremely wide range of acoustic energy to be characterized in a manageable numeric notation. For example, a doubling of noise energy is correlated to a 3 dB increase in noise levels.

The "frequency" of a sound refers to the number of complete pressure fluctuations per second in the sound. The unit of measurement is the cycle per second (cps) or hertz (Hz). Most of the sounds that we hear in the environment do not consist of a single frequency but of a broad band of frequencies, differing in level. The name of the frequency and level content of a sound is its "sound spectrum." A sound spectrum for engineering purposes is typically described in terms of octave bands, which separate the audible frequency range (for human beings, from about 20 to 20,000 Hz) into 10 segments.

There are many rating methods to compare sounds with different spectra. The simplest method correlates with human response nearly as well as the more complex methods. This method consists of evaluating all of the frequencies of a sound in accordance with a weighting that progressively de-emphasizes the importance of frequency components below 1000 Hz and above 5000 Hz. This frequency weighting reflects the fact that human hearing is less sensitive at low frequencies and at extreme high frequencies relative to the mid-range.

The weighting system described above is called "A"-weighting, and the level so measured is called the "A-weighted sound level" or "A-weighted noise level." The unit of A-weighted sound level is sometimes abbreviated "dBA." In practice, the sound level is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting characteristic. All U.S. and international standard sound level meters include such a filter. Typical sound levels found in the environment and in industry include a jet takeoff (at a distance of 200 feet), 120 dBA; a pile driver (at a distance of 50 feet), 100 dBA; an off-highway vehicle (at a distance of 50 feet), 80 dBA; speech (at a distance of 1 foot), 55 dBA; typical minimum nighttime levels in residential areas, 35 dBA; and a soft whisper (at a distance of 5 feet), 25 dBA.

Although a single sound level value may adequately describe environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise is a conglomeration of distant noise sources, which results in a relatively steady background noise having no identifiable source. These distant sources may include traffic, wind in trees, industrial activities, etc. and are relatively constant from moment to moment. As natural forces change or as human activity follows its daily cycle, the sound level may vary slowly from hour to hour. Superimposed on this slowly varying background is a succession of identifiable noisy events of brief duration. These may include nearby activities such as single vehicle pass-bys, aircraft flyovers, etc. which cause the environmental noise level to vary from instant to instant.

To describe the time-varying character of environmental noise, statistical noise descriptors were developed. "L_{10}" is the A-weighted sound level equaled or exceeded during 10 percent of a stated time period. The L_{10} is considered a good measure of the maximum sound levels caused by discrete noise events. "L_{50}" is the A-weighted sound level that is equaled or exceeded 50 percent of a stated time period; it represents the median sound level. The "L_{90}" is the A-weighted sound level equaled or exceeded during 90 percent of a stated time period and is used to describe the background noise.

As it is often cumbersome to quantify the noise environment with a set of statistical descriptors, a single number called the average sound level or "L_{eq}" is now widely used. The term "L_{eq}" originated from the concept of a so-called equivalent sound level which contains the same acoustical energy as a varying sound level during the same time period. In simple but accurate technical language, the L_{eq} is the average A-weighted sound level in a stated time period. The L_{eq} is particularly useful in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity. Widening roads and/or increasing traffic are examples of this kind of situation.

In determining the daily measure of environmental noise, it is important to account for the different response of people to daytime and nighttime noise. During the nighttime, exterior background noise levels are generally lower than in the daytime; however, most household noise

also decreases at night, thus exterior noise intrusions become noticeable. Further, most people trying to sleep at night are more sensitive to noise. To account for human sensitivity to nighttime noise levels, a special descriptor was developed. The descriptor is called the L_{dn} (Day/Night Average Sound Level), which represents the 24-hour average sound level with a penalty for noise occurring at night. The L_{dn} computation divides the 24-hour day into two periods: daytime (7:00 a.m. to 10:00 p.m.); and nighttime (10:00 p.m. to 7:00 a.m.). The nighttime sound levels are assigned a 10 dB penalty prior to averaging with daytime hourly sound levels. Similar to L_{dn} is a descriptor referred to as CNEL (Community Noise Equivalent Level). The CNEL is computed in much the same fashion as L_{dn} with the addition of a 5 dB penalty during evening hours (7:00 p.m. to 10:00 p.m.). Typically, this additional penalty results in an increase of less than 1 dB when compared to the L_{dn}. As discussed in further detail below, except in carefully controlled laboratory experiments, a change of only 1 dB in sound level cannot be perceived.

For highway noise environments, the average noise level during the peak hour traffic volume is approximately equal to the L_{dn}.

The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as startle and hearing loss.

The sound levels associated with environmental noise usually produce effects only in the first two categories. The U.S. Environmental Protection Agency (EPA) states that the average eight-hour daily noise dose ($L_{eq(8)}$) should be no greater than 76.4 dB.[1] This is typically a concern for occupational safety, as residents are not usually exposed to such a continuous level of noise. Rather, environmental noise tends to be intermittent, and building construction reduces noise levels significantly at interior noise environments.

There has never been a completely predictable measure for the subjective effects of noise nor of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over time. Thus, an important factor in assessing subjective reactions is to compare the new noise environment to the existing noise environment. In general, the more a new noise exceeds the existing noise levels, the less acceptable the new noise will be judged.

Noise levels diminish (or attenuate) as distance from the source increases based on an inverse square rule, depending on how the noise source is physically configured. Sound from a point

source, such as a single piece of construction equipment, attenuates at a rate of 6 dB per doubling of distance. Ideally, heavily traveled roads with few gaps in traffic behave as continuous line sources and attenuate roughly 3 dB per doubling of distance. However, in reality, traffic sources are not infinitely long and do contain gaps between vehicles. Studies show that in practice, an attenuation rate of 4.5 dB per doubling is typical.

With regard to increases in noise level, knowledge of the following relationships will be helpful in understanding the quantitative sections of this report: Except in carefully controlled laboratory experiments, a change of only 1 dB in sound level cannot be perceived. Outside of the laboratory, a 3 dB change is considered a just-noticeable difference. A change in level of at least 5 dB is required before any noticeable change in community response would be expected. A 10 dB change is subjectively heard as approximately a doubling in loudness, and would almost certainly cause an adverse community response.

EXISTING NOISE CONDITIONS

The existing noise environment at and adjacent to the project site is generally comprised of transportation on adjacent local roadways; agriculture, commercial, and residential land uses; operations related to the Kaiser Modesto hospital, which opened in the fall of 2008); and a few stationary (e.g., commercial rooftop mechanical equipment) sources.

Roadways on the site boundary generate noise from rural or suburban traffic accessing the urban portion of Modesto, approximately 5 miles south of the site, or State Highway 99 (SR 99) approximately 1.5 miles south and west of the site. Boundary roads (i.e., Kiernan Avenue, Dale Road, and Bangs Avenue) are not listed as truck routes in the City's *Urban Area General Plan* (2008)[2]. In addition, the proposed extension of American Avenue along the eastern border of the project does not currently exist.

Specific existing noise levels for roadway segments surrounding the project site are not included in the *Urban Area General Plan* (2008) or the Master Environmental Impact Report for the Urban Area General Plan Update[3] (MEIR). However, existing noise levels in the vicinity of the project are calculated and analyzed based on data contained within the traffic study prepared for

[1] Environmental Protection Agency, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974.
[2] City of Modesto, *Urban Area General Plan*, October 2008.
[3] City of Modesto, *Final Master Environmental Impact Report for the Urban Area General Plan Update* Plan, July 2008.

the project.[4] The results of baseline and plus project conditions are compared to assess the potential for significant impacts imposed by the project.

The Modesto City-County Airport (Harry Sham Field), the nearest public airport, is located over seven miles from the site. As stated in the *Kiernan Business Park Specific Plan Amendment #4 Initial Study (15 June 2007)* (see Appendix A, pp. 55-56), the project would not expose people residing or working on the project site to excessive noise from aircraft.

Ongoing agricultural operations on properties surrounding the project site occur periodically and seasonally, and they vary depending on how the land is used. For any of the agricultural properties, farming equipment, pumps, or trucks may occasionally cause elevated noise levels.

Noise Sensitive Areas

Some activities and land uses are more sensitive to noise than others. The *Urban Area General Plan* (2008) identifies the various types of land uses that are considered noise-sensitive. These include residences, hospitals, parks, churches, schools, and agricultural land uses. The project itself would also introduce the presence of noise sensitive receptors to the site. Existing noise sensitive areas in the vicinity of the proposed project include adjacent residential and agricultural land uses, and patients, visitors, and employees at the Kaiser Modesto Medical Center. Project proposed residential and associated outdoor-use areas would also be considered noise sensitive areas.

REGULATORY FRAMEWORK

Under the Noise Control Act of 1972, the U.S. EPA is responsible for developing regulations that adequately control environmental noise such that it does not endanger the population's health and welfare. The EPA established the Office of Noise Abatement and Control, but funding for the office was removed in 1981. Similarly, the California Department of Health Services (DHS) once operated an Office of Noise Control that has since been disbanded. As such, environmental noise protection is mainly a local government responsibility. The City of Modesto would be responsible for noise regulations and monitoring in the project area.

Governor's Office of Planning and Research

The State Governor's Office of Planning and Research (OPR) encourages each local jurisdiction to use its guidelines (based on guidelines developed by the DHS before its Office of Noise

[4] Fehr & Peers, Transportation Impact Analysis for Kiernan Business Park Specific Plan Amendment #4, November 2008.

Control was closed) for evaluating the compatibility of various land uses as a function of community noise exposure.[5] The guidelines indicate that no special noise insulation is necessary for residential land uses in areas where exterior ambient noise levels do not exceed an L_{dn} of approximately 60 dB. If a residential area experiences an L_{dn} between 60 dB and 70 dB, the noise would be conditionally acceptable, assuming that conventional construction of the homes provides some level of noise insulation. On the other hand, residential uses should generally be discouraged in areas where noise levels are above an L_{dn} of 70 dB. The City of Modesto has adopted similar, but slightly more stringent, land use compatibility guidelines in the *Urban Area General Plan*, as discussed below.

State of California, Noise Insulation Standards

The State of California Building Code (Title 24, Part 2, Section 1207.11 of the 2007 California Code of Regulations (CCR)) requires that the interior noise level due to exterior sources shall not exceed an L_{dn} of 45 dB within hotels, motels, dormitories, apartment houses and dwellings other than detached single-family residential dwellings. Units requiring windows to be closed to achieve the interior noise standard will also need an alternative method of providing fresh air in accordance with the State Building Code. This ventilation system must not compromise the noise reduction of the exterior façade. Sections 1207.7 and 1207.8 also state requirements for sound insulation between units.

City of Modesto, Policies

The City of Modesto strives to coordinate development projects in a way to reduce noise pollution. The Noise Mitigation Policies of the *Urban Area General Plan* (2008) and its MEIR apply within the Planned Urbanizing Area, which includes the project site. The compatibility of land uses with their noise surroundings is a primary focus of the plan.

Standards for community noise exposure for land use categories relevant to the project are shown in Table IV.E.1 (Table VII-2 of the *Urban Area General Plan*).

The MEIR includes a summary of the County of Stanislaus Noise Element Standards that indicates the maximum allowable noise exposure from stationary noise sources is given in terms of hourly L_{eq} and maximum level at any time. The specific noise levels are shown in Table IV.E.2. The county's noise standards affect lands within the City limits that adjoin the county, as in the case of the proposed project. Otherwise, within the City, City standards apply exclusively. The county does not have a noise ordinance.

[5] State of California, Governor's Office of Planning and Research, General Plan Guidelines, Appendix A: Noise Element Guidelines, November 1998.

Table IV.E.1: State Land Use Compatibility Standards for Community Noise Environment

	Community Noise Exposure – L_{dn} or CNEL (dB)			
Land Use Category	**Normally Acceptable**	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Single-Family Residential	Less than 60	55 to 70	70 to 75	Greater than 75
Multi-Family Residential	Less than 65	60 to 70	70 to 75	Greater than 75
Hospitals	Less than 70	60 to 70	70 to 80	Greater than 80
Office Buildings, Business Commercial and Professional	Less than 70	---	67 to 77	Greater than 75
Agriculture	Less than 75	---	70 to 80	Greater than 75

Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design.
Normally Unacceptable	New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.
Clearly Unacceptable	New construction or development generally should not be undertaken.

Source: City of Modesto, *Urban Area General Plan*, Table VII-2.

Table IV.E.2: County of Stanislaus Noise Element Standards

	Maximum Allowable Noise Exposure from Stationary Noise Sources*	
	Daytime (7:00 a.m. to 10:00 p.m.)	**Nighttime (10:00 p.m. to 7:00 a.m.)**
Hourly L_{eq}	55	45
Maximum Level	75	65

*As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.

Source: City of Modesto, *Final Master Environmental Impact Report for the Urban Area General Plan Update*, July 2008, Table 3-4.

The *Urban Area General Plan* (2008) applies the following noise mitigation policies in the "Baseline Developed Area" and "Redevelopment Area":

> Policy VII-G.3[a]: The City of Modesto shall require construction activities to comply with the City's noise ordinance (Title 4, Chapter 9), and noise-reducing construction practices to be implemented as conditions of approval for development projects where substantial construction-related noise impacts would be likely to occur (e.g., where construction would include extended periods of pile driving, where construction would occur over an unusually long period, or where noise-sensitive uses like homes and schools would be in the immediate

vicinity, etc.). The City should consider potential mitigation measures, including, but not limited to, the following:

(1) Construction equipment and vehicles should be equipped with properly operating mufflers according to the manufacturers' recommendations. Air compressors and pneumatic equipment should be equipped with mufflers, and impact tools should be equipped with shrouds or shields.

(2) Equipment that is quieter than standard equipment should be utilized.

(3) Haul routes that affect the fewest number of people should be selected.

Policy VII-G.3[b]: During City review of a proposed project consistent with the updated General Plan, the City of Modesto shall use the following guidelines to decide whether to require additional study and/or mitigation for outdoor activity areas typically defined as common outdoor recreational areas, as discussed below:

(1) Single-family Residential uses: the noise would exceed 65 dBA, L_{dn} at outdoor activity areas. Outdoor activity areas for single-family residential uses are defined as backyards.

(2) Other proposed uses: the noise/land compatibility guidelines (i.e., those noise levels that are "conditionally acceptable," "normally unacceptable," or "clearly unacceptable") shown on Table VII-2 [Urban Area General Plan (2008) p. VII-19 and Table IV.E.1, above]. For multi-family residential uses, the exterior noise level standard shall be applied at the common outdoor recreation area, such as pools, play areas, or tennis courts. Where such areas are not provided in multi-family residential uses, the standards shall be applied at individual patios and balconies of the development. Outdoor activity areas of transient lodging facilities include swimming pool and picnic areas.

Policy VII-G.3[c]: For new single-family residential development within the 65 dBA, L_{dn} contour, new multifamily residential development within the 65 dBA L_{dn} contour [Figure VII-2 Urban Area General Plan (2008)], and other land uses located within the "Normally Acceptable" contour distances indicated in Table VII-2 [Urban Area General Plan (2008) p. VII-19, and Table IV.E.1, above] and Figure VII-2 [Urban Area General Plan (2008)], the City of Modesto shall require developers to demonstrate that the proposed development will incorporate measures to reduce noise impacts to a less-than-significant level, as follows:

(1) Incorporate construction techniques to achieve an interior noise limit of 45 L_{dn} (these potential techniques are presented in CCR Title 24 standards).

(2) Where feasible and consistent with General Plan policy, incorporate setbacks and/or locate less-sensitive uses between a noise source and noise-sensitive uses.

(3) Provide (to the extent feasible and consistent with General Plan policy) berms, barriers, or other techniques to shield noise-sensitive uses. This policy is appropriate for more suburban, less densely populated areas of the City. More urban areas of the City would more likely require policies VII-G.3 [c.1] and [c.2], above.

Policy VII-G.3[d]: The City of Modesto shall use the most recent noise contour map to implement the requirements of Noise Insulation Standards contained in Title 24 of the California Code of Regulations. (Title 24 applies to multi-family housing, not single-family.)

Title 24 also specifies minimum values for the sound insulation afforded by interior partitions separating different dwelling units from each other and from interior common space.

Policy VII-G.3[e]: For proposed non-residential uses, where noise mitigation is deemed necessary for new developments to meet the exterior noise land use compatibility guidelines [Table VII-2 - Urban Area General Plan (2008) p. VII-19 and Table IV.E.1, above], the City of Modesto shall require developers to demonstrate that the proposed development will incorporate measures to reduce noise impacts to a less-than-significant level, as follows:

(1) Where feasible and consistent with General Plan policy, incorporate setbacks and/or locate less-sensitive uses between a noise source and noise-sensitive uses.

(2) Provide (to the extent feasible and consistent with General Plan policy) berms, barriers, or other techniques to shield noise-sensitive uses from noise sources.

(3) Incorporate construction techniques to achieve specified interior noise limits. One source that can be used for such specifications is the Noise Control Manual for Residential Buildings (Builder's Guide) by David A. Harris (1997).

Policy VII-G.3[f]: With road extension, widening, and upgrade projects, the City of Modesto shall implement, as feasible, techniques to minimize noise impacts on adjacent uses. Potentially available techniques may include:

(1) Widened right-of-way

(2) Depressed roadway alignments

(3) Earthen berms or earthen/wall combination

(4) Walls

(5) Acoustical retrofitting to affected parties

Policy VII-G.3[g]: In recognition of the conservative methodology used to develop the noise contours shown on Figure VII-2 [Urban Area General Plan (2008)], builders, developers (for private development projects), and the City (for Capital projects) shall be allowed to demonstrate that detailed noise studies and/or mitigation are not necessary because future noise levels would be substantially less than depicted on Figure VII-2 [Urban Area General Plan (2008)] due to, for example, natural shielding (e.g. from intervening topographical features or man-made structures) of a site or inapplicability of assumptions (shown on Table 3-3 of the Master Environmental Impact Report) used to develop the contours.

Policy VII-G.3[h]: The City of Modesto shall limit trucking to specific routes, times, and speeds that minimize adverse effects to sensitive land uses such as schools and residential areas.

Policy VII-G.3[i]: Airport and aircraft noise analysis will be conducted in accordance with the Modesto City–County Airport's Master Plan mitigation measure in the approved plan and Federal Aviation Regulation (FAR) Part 150. Mitigation will be required for new construction as necessary to meet the noise compatibility standards of the UAGP. As airport operations increase, mitigation will be provided to existing residential and other sensitive uses, either through operations or direct property improvements, in order to meet Title 14 Code of Federal Regulations Part 150 land use compatibility guidelines.

Policy VII-G.3[j]: Proponents of new heliports where projected noise impacts from helicopter operations would exceed 65 L_{dn} at the nearest residential uses should utilize the latest FAA helicopter modeling tools and noise assessment criteria.

In addition, the MEIR states the following noise policies:

The City uses the State's Land Use Compatibility Guidelines, summarized in Table 3-3, for establishing guidelines for noise within the City. For areas zoned for single-family residential uses, the City has established 65 dBA L_{dn} as the maximum acceptable noise level. For areas zoned for other uses, the standards from Table 3-3 shall apply.

N-1: The City has also established a noise ordinance to control noise within the City. The City's noise ordinance (Modesto Municipal Code Section 4-9.101) prohibits the "loud and raucous discharge into the open air of the steam of any steam equipment or exhaust from any stationary internal-combustion engine."

N-2: Additionally, the noise ordinance prohibits the loud and raucous operation or use of any of the following before 7:00 a.m. or after 9:00 p.m. daily (except Saturday and Sunday and state or federal holidays, when the prohibited time shall be before 9:00 a.m. and after 9:00 p.m.):

A hammer, or any other device or implement used to pound or strike an object.

1. An impact wrench, or other tool or equipment powered by compressed air.
2. A hand-powered saw.
3. Any tool or piece of equipment powered by an internal-combustion engine such as, but not limited to, chain saw, backpack blower, and lawn mower.
4. Any electrically powered (whether by alternating current electricity or by direct current electricity) tool or piece of equipment used for cutting, drilling, or shaping wood, plastic, metal, or other materials or objects, such as, but not limited to, a saw, drill, lathe, or router.
5. Any of the following: heavy equipment (such as but not limited to bulldozer, steam shovel, road grader, back hoe), ground drilling and boring equipment (such as but not limited to derrick or dredge), hydraulic crane and boom equipment, portable power generator or pump, pavement equipment (such as but not limited to pneumatic hammer, pavement breaker, tamper, compacting equipment), pile-driving equipment, vibrating roller, sand blaster, gunite machine, trencher, concrete truck, and hot kettle pump.
6. Any construction, demolition, excavation, erection, alteration, or repair activity. In the case of urgent necessity and in the interest of public health and safety, the Chief Building Official may issue a permit for exemption from these. Such period shall not exceed three (3) working days in length while the emergency continues but may be renewed for successive periods of three (3) days or less while the emergency continues. The Chief Building Official may limit such permit as to time of use and/or permitted action, depending upon the nature of the emergency and the type of action requested.

In addition, the MEIR includes the following language regarding significant effects of cumulative impacts:

1. Measures Which Mitigate Direct Impacts

   The UAGP requires all development projects located within the Baseline Developed Area and Redevelopment Area to incorporate explicit noise mitigation measures to mitigate noise levels. These policies would reduce significant impacts to a less-than-significant level in most instances. However, these policies would not reduce to less than significant all of the noise impacts that would occur due to growth and development in the City to 2025. The effect is significant and unavoidable.

2. Measures Which Mitigate Cumulative Impacts

   This impact is considered significant in that individual projects allowed under the UAGP will contribute to the cumulative noise impact within the city. Implementation of the UAGP policies will reduce construction-related, transportation-related, and industrial/commercial noise impacts in most instances to less-than-significant levels. However, these policies would not eliminate the contributions of the individual noise impacts that would contribute to the cumulative impact in 2025. The effect is significant and unavoidable.

City of Modesto, Municipal Code

Chapter 9 Article 1 of the Modesto Municipal Code generally prohibits any noise that can be deemed "loud and raucous." Determining what noises are "loud and raucous" depends on a number of factors such as whether the nature of the noise is usual or unusual, when the noise occurs, and whether it is recurrent, intermittent, or constant (Section 4-9.102). It specifically prohibits loud noise from the exhaust of stationary internal combustion engines (Section 4-9.103(a)).

Noises related to "sirens, horns, and bells on police, fire, and other emergency response vehicles" (Section 4-9.104(b)), locomotives, railroad equipment, and aircraft (Section 4-9.104(f)), and collection of solid waste (Section 4-9.104(g)) are specifically exempt and not constrained by the noise ordinance.

Kiernan Business Park Specific Plan, Relevant General Plan Goals and Policies

Page 118 of the *Kiernan Business Park Specific Plan – Section VIII Implementation* restates the following from the *Urban Area General Plan* as follows:

- The Focused EIR for each Comprehensive Planning District shall include a Noise Analysis prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics. Noise mitigation measures shall be "used as a guide for establishing a pattern of land uses… that minimized the exposure of [present

and future] community residents to excessive noise." (Section 65302(1) Government Code.) The noise contours developed by the Noise Analysis shall be used to determine the land use pattern appropriated within the Comprehensive Plan. (For example, noise from a freeway or expressway might indicate the need for sound barriers, or for non-residential uses adjacent to the noise source.)

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Development of the proposed project would have a significant impact if it were to:

- Result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, Master Environmental Impact Report associated with the *Urban Area General Plan* (2008) or applicable standards of other agencies.
- Result in exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.
- Create a permanent increase in ambient noise that causes the exterior noise level to exceed the City's standard of 65 dB L_{dn} for residential land use. For other land uses, both at the proposed project and those affected by the proposed project, the applicable criteria as recommended by the California Governor's Office of Planning and Research are the "Normally Acceptable" limits of: 70 dB L_{dn} for hospitals, office buildings, business commercial and professional; and 75 L_{dn} for agriculture.
- Create a permanent increase of more than 3 dB if ambient exterior noise levels in residential areas that already exceed the City of Modesto's 65 dB L_{dn} standard.
- Cause a permanent increase in the interior noise level of residential buildings that causes an exceedence of 45 dB L_{dn}.

METHODOLOGY AND ASSUMPTIONS

The major categories of noise sources that must be analyzed are transportation and traffic-related noise, construction noise from pile-driving activities, and noise from stationary or operational sources associated with commercial land uses including the adjacent Medical Center. The major categories of noise sensitive receptors that must be analyzed are existing and proposed single-family and multi-family residential, commercial, agricultural land uses, and the new Kaiser Modesto hospital.

The compatibility of existing and future noise sensitive receptors with project-related and cumulative development is addressed by modeling traffic noise and other project-related noise.

Traffic noise calculations[6] use traffic volume, vehicle speed, truck percentage, distance to receiver, and a presumed attenuation rate to estimate the L_{eq} at a specified setback distance. For the purpose of this analysis, it is assumed, as in the Final MEIR, that vehicle noise attenuates at a rate of 4.5 dB per doubling of distance, and that the L_{dn} is equal to the peak hour L_{eq}.

Significant noise increases are defined to be those that would cause one or more of the following:

- The exterior L_{dn} to exceed 65 dB at residential outdoor-use areas;
- More than a 3 dB increase above the existing noise level when the exterior L_{dn} is above 65 dB at residential areas;
- An exceedence of the L_{dn} 45 dB residential interior noise standard; or
- An exceedence of the "Normally Acceptable" limit for non-residential land-uses (e.g., commercial, hospital, etc.).

If significant noise increases would occur at residences already exposed to unacceptable noise levels, then the analysis identifies measures to reduce the project-related noise. If future-plus-project noise levels would be incompatible with surrounding land uses anticipated with the project, then the analysis identifies features that could be incorporated with proposed development to reduce the impact.

The proposed Specific Plan amendments include noise-related design guidelines for development. The guidelines include the following provisions that would help reduce noise levels:

- Screening and Landscaping of Outdoor Storage or Loading Areas – For all uses in the Plan area, outdoor storage of materials and equipment incidental to the primary activity is permitted provided the outside storage area is screened by a view-obscuring wall or fence. Such screening should include landscaping and/or architectural features such as walls compatible with the surrounding buildings and environment. The use of free-standing storage facilities, cargo containers, trailers etc., is prohibited unless completely screened from view.
- Walls and Fences – Walls and fences for the Kiernan Business Park should complement the building design and the prevailing materials and design elements in the project. Walls shall be concrete masonry unit, case concrete, metal or brick. Block walls shall be integrally colored, split faced, masonry units. No painted block walls shall be permitted. Climbing vines should be utilized on walls to soften the look of the wall and reduce graffiti.

The analysis of impacts assumes adoption and implementation of these guidelines as part of the proposed project.

[6] California Vehicle Noise Reference Energy Mean Emission Levels (Calveno REMELS), California Department of Transportation (TAN 95-03).

PROJECT IMPACTS AND MITIGATION

Impact E.1. Project-related traffic could cause a substantial increase in noise levels for existing sensitive receptors adjacent to the project area. (Less than Significant)

Background growth in traffic volumes would result in increased noise levels regardless of whether or not the project is approved and the project area is developed. Traffic generated by the proposed project would contribute to these increased noise levels, resulting in a gradual change from the existing, rural noise environment to one that would seem more urban. Existing residences in the project vicinity would experience gradually increased traffic noise with background growth, and additional increases in traffic noise as the development proceeds. Existing noise sensitive receivers are located throughout the project vicinity. These include the adjacent Kaiser Modesto hospital and Fleur de Ville residential development, various single- and multi-family developments throughout the area, and commercial and agricultural land uses.

This analysis of traffic-generated changes in noise levels summarizes the conditions anticipated for the existing scenario along with the related baseline conditions. Therefore, the noise analysis also reflects transportation system, roadway segment, and local intersection improvements proposed with the project. The analysis coincides with peak AM and PM hour turning movements for each of the four directions at each of the 31 intersections documented in the traffic analysis. Changes in noise levels that would be considered as a significant impact are presented in Table IV.E.3, below. The "plus project" difference in noise level for near-term conditions at the same roadways would not be considered significant impacts.

Existing noise sensitive land uses that would be exposed to the noise level increases shown in Table IV.E.3 are as follows:

- Kaiser Modesto hospital;
- Fleur de Ville Residential development;
- Existing commercial land uses along Dale Road, between Bangs Avenue and Palendale Avenue; and
- Existing residential land uses along Bangs Avenue, between American Avenue and Prescott Road.

The Kaiser Modesto hospital is located approximately 500 feet west of the Dale Road centerline. Existing traffic generated noise levels at this setback would be approximately 52 dBA. Since project-related traffic noise would not increase noise to greater than 70 dB L_{dn}, this would not be a significant impact. The Kaiser Modesto Medical Center buildings would be exposed to a near-term plus project noise levels below 70 dB L_{dn}, generated by vehicular traffic along Dale Road. This would not be considered a significant impact as identified in the *Urban Area General Plan.*

Table IV.E.3: Existing Baseline and Existing Plus Project Traffic Noise Levels[1]

	L_{dn} at 50 feet		
	Existing Baseline	**Existing + Project**	**Change with Project**
Dale Road – Northbound from Bangs Avenue toward Kaiser Entrance (Intersection #12)	66.5 dB	69.8 dB	3.3 dB
Dale Road – Southbound from Bangs Avenue toward Palendale Avenue (Intersection #12)	67.0 dB	70.5 dB	3.5 dB
Bangs Avenue – Eastbound from American Avenue toward Prescott Road (Intersection #13)	64.9 dB	68.4 dB	3.4 dB
	Near-Term Baseline	**Near-Term + Project**	**Change with Project**
Dale Road – Northbound from Bangs Avenue toward Kaiser Entrance (Intersection #12)	70.9 dB	72.4 dB	1.5 dB
Dale Road – Southbound from Bangs Avenue toward Palendale Avenue (Intersection #12)	71.4 dB	73.0 dB	1.6 dB
Bangs Avenue – Eastbound from American Avenue toward Prescott Road (Intersection #13)	68.9 dB	70.7 dB	1.8 dB

Note:
[1] Fifty feet represents the setback distance from centerline to receiver. Since this table indicates differences in noise level, the selection of setback distance is arbitrary with 50 feet being common.

The nearest residences along Dale Road at the Fleur de Ville neighborhood are shielded from vehicular traffic with a noise barrier approximately seven feet in height. This would reduce existing plus project exterior noise levels to less than 65 dB L_{dn} at backyard areas, meeting City noise standards. Therefore, this would not be a significant impact. It should be noted that regardless of the buildout of the proposed project, future baseline noise levels alone would cause an exceedence of the City's exterior noise goal at these areas.

Existing plus project traffic noise levels at commercial buildings along Dale Road, between Bangs Avenue and Palendale Avenue, would remain 70 dB L_{dn}, or less, meeting the City's "Normally Acceptable" interpretation. Therefore, mitigation would not be required.

Existing exterior noise levels along Bangs Avenue, between American Avenue and Prescott Road already exceed the City's 65 dB L_{dn} standard. The project would further increase existing noise levels along this roadway segment by 3.4 dB compared to existing baseline conditions. However,

it should be noted that similar to the Fleur de Ville neighborhood, the project at buildout would not increase noise levels by more than 3 dB for the near-term analysis condition, and therefore would not result in a significant traffic noise effect. Moreover, typical construction-grade dual-glazed window assemblies would reduce existing plus project interior noise levels at exposed second story locations along the southern portion of Bangs Avenue (i.e., setback approximately 50 feet from the roadway centerline and not shielded by the noise barrier) below the City's 45 dB L_{dn} requirement.

Backyards of the nearest residences along the northern portion of Bangs Avenue between American Avenue and Prescott Road are set back at least 100 feet from the roadway centerline. In addition, residential and agricultural buildings provide some noise shielding from Bangs Avenue at backyard locations. As a result, these backyards would be exposed to future plus project vehicular traffic noise levels less than 65 dB L_{dn}. This would be a less-than-significant impact.

Backyards of the nearest residences along the southern portion of Bangs Avenue between American Avenue and Prescott Road are set back at least 45 feet from the roadway centerline. In addition, a six-foot-tall concrete masonry wall provides some noise shielding from Bangs Avenue at backyard locations. As a result, these backyards would be exposed to future plus project vehicular traffic noise levels less than 63 dB L_{dn}. This would also be a less-than-significant impact.

Mitigation Measure. No mitigation necessary.

Impact E.2. Project-related traffic could cause a substantial increase in noise levels or an exceedence of "Normally Acceptable" noise levels for sensitive receptors within the project area. (Less than Significant with Mitigation)

For the near-term condition (i.e., analysis year 2011), the project would not increase noise levels by more than 3 dB L_{dn} at any of the study intersection's roadway segments. Additionally, the project would not result in any existing noise-sensitive land-uses being newly exposed to 65 dB L_{dn}, or greater.

However, land-uses within the project site constructed adjacent to roadways would be exposed to vehicular traffic noise. Traffic noise levels interior to the project were calculated for roadway segments affecting the project to determine whether noise levels would be compatible with the proposed land uses. Proposed residential land uses that would be within the 65 dB L_{dn} noise contour, and proposed commercial land uses that would be within the 70 dB L_{dn} noise contour would be exposed to a potentially significant impact as summarized in Table IV.E.4.

Table IV.E.4: Near-Term Plus Project Traffic Noise Contours Within Project Area

Intersection	Noise Contours (Distance from Roadway Centerline)		
	Distance to 70 dB L_{dn}	Distance to 65 dB L_{dn}	Distance to 60 dB L_{dn}
Kiernan Avenue – Eastbound from Dale Road toward American Avenue (Intersection #6)	133 feet	286 feet	616 feet
Dale Road – Northbound from Healthcare Way toward Kiernan Avenue (Intersection #9)	52 feet	112 feet	240 feet
Healthcare Way – Eastbound from Dale Road toward American Avenue (Intersection #9)	25 feet	53 feet	114 feet
Dale Road – Southbound from Healthcare Way toward The Plaza Way (Intersection #9)	60 feet	130 feet	279 feet
American Avenue – Northbound from Healthcare Way toward Kiernan Avenue (Intersection #10)	14 feet	30 feet	65 feet
Healthcare Way – Westbound from American Avenue toward Dale Road (Intersection #10)	17 feet	37 feet	79 feet
American Avenue – Southbound from Healthcare Way toward Bangs Avenue (Intersection #10)	12 feet	26 feet	56 feet
Dale Road – Southbound from The Plaza Way toward Bangs Avenue (Intersection #11)	72 feet	155 feet	333 feet
The Plaza Way – Eastbound from Dale Road toward American Avenue (Intersection #11)	25 feet	54 feet	117 feet
Bangs Avenue – Eastbound from Dale Road toward American Avenue (Intersection #12)	44 feet	94 feet	203 feet

Residences located within the 60 dB L_{dn} noise contour are required by state building code to incorporate a fresh-air ventilation system, since closed windows are relied upon to meet the interior noise standards. Depending on layout and window and exterior door sizes, residences exposed to noise levels above 70 dB L_{dn} generally need to incorporate sound-rated construction (i.e., increased Sound Transmission Class, or STC, rating) to meet applicable interior noise requirements, while residential outdoor-use areas exposed to noise levels above 65 dB L_{dn} would need noise barriers to meet City standards. Therefore, depending on site layout, some residences may be exposed to a potentially significant impact. It should be noted that the proposed residential buildings with future cumulative (i.e., analysis year 2025) noise level also would need to meet the applicable noise standards. A discussion of the related noise mitigation is addressed in the Cumulative Impacts section below.

Although the City and State do not specify interior noise requirements for commercial land uses, some proposed businesses within approximately 130 feet of the Kiernan Avenue centerline, 50 to 70 feet of the Dale Road centerline (depending on location along Dale Road, see Table IV.E.4), and 45 feet of the Bangs Avenue centerline would be exposed to noise levels above 70 dB L_{dn}, exceeding the City's "Normally Acceptable" guideline. Depending on the expectations for interior noise at these areas (e.g., "Class A" office spaces, teleconference rooms, executive offices, etc.), some buildings may need to incorporate sound rated windows and exterior doors. This will be based on merchantability decisions by the developer, but could still be considered a potentially significant impact. Selecting interior noise goals and the resulting noise mitigation should be assessed by an independent acoustical study on a case-by-case basis.

Mitigation Measure E.2a.

To reduce noise levels at significantly impacted proposed residential land uses would require the construction of noise barriers up to approximately six feet in height and properly locating outdoor-use areas to be partially shielded by project-proposed buildings. Specific noise barrier heights required to reduce noise levels to a less-than-significant noise level depend on the setback distance and exposure to the adjacent roadway and are to be determined by a qualified acoustical consultant. Noise barriers may need to be constructed at the following locations:

- Along Healthcare Way
- Along The Plaza Way
- Along Dale Road

Since noise barriers typically provide noise reduction for receivers at a first-story height, some façades at higher elevations would likely be exposed to noise levels that require sound-rated windows to meet Building Code requirements. With the additional sound insulation to be determined by a qualified acoustical consultant, interior noise levels would achieve the applicable standards of an L_{dn} less than 45 dB.

Mitigation Measure E.2b.

The City and state do not specify interior noise standards for commercial uses. Commercial land uses located more than approximately 130 feet from the Kiernan Avenue centerline, 50 to 70 feet of the Dale Road centerline (depending on location along Dale Road, see Table IV.E.4), and 45 feet from the Bangs Avenue centerline would be exposed to noise levels interpreted by the City as "Normally Acceptable", and would be considered less-than-significant impacts. A qualified acoustical consultant should prepare a supplemental noise analysis for any commercial building located at closer distances (i.e., exposed to greater than 70 dB L_{dn}) to these roadways. The noise analysis should include an interior noise goal specific to the building and mitigation necessary to meet the goal.

Impact E.3. New stationary sources of noise associated with the proposed project could generate noise levels incompatible with ordinances or goals for the surroundings. (Less than Significant with Mitigation)

Future stationary sources of noise would include mechanical equipment for commercial buildings and possibly multi-family building ventilation and cooling equipment. The new stationary sources would have the potential to cause noise that would violate the City's noise standards or be incompatible with the surrounding uses.

The use of emergency engine generators at some commercial land uses would generate mechanical noise that could exceed City standards. However, generators are typically only used for emergency purposes and occasional testing (about once per month). Because of the infrequency of this use, generators would not result in significant noise impacts, although testing would be noticeable to nearby residents.

Noise levels can vary greatly for components of stationary mechanical equipment. Examples include mechanical equipment for building heating, ventilation and cooling, and refrigeration equipment on commercial buildings. As specific building locations have not been established, and specific equipment has not been identified, noise impacts cannot be quantified. Noise from these sources could be incompatible with the residential uses planned to be developed adjacent to these commercial or business park uses.

Incorporating setback buffers and local noise screens (i.e., barriers) between mechanical equipment and noise sensitive land uses might reduce the associated noise to acceptable levels, depending on the distances between the mechanical equipment and the residences and the types and heights of screening included.

Because there is not sufficient information available about the location and orientation of proposed commercial buildings, their distances from noise sensitive areas, and the types of mechanical equipment proposed to be used on commercial and multi-family residential buildings, it is assumed that noise from mechanical equipment could result in a significant environmental impact, and a mitigation measure is identified.

Mitigation Measure E.3.

Each development project that involves commercial uses or multi-family residential buildings that would include outdoor mechanical equipment shall carry out the following:

- Retain a qualified acoustical engineer to prepare a noise study for submission to the City, ensuring that noise levels will not exceed City Standards, as described above. The following noise reduction measures should be considered by the acoustical engineer:
    - Use of acoustical silencers on inlet and discharge openings of mechanical equipment;

- Installation of parapets or enclosures with louvers or other barriers to shield noise;
- Orientation of equipment so that it faces away from sensitive receptors; and
- Orientation or setback of buildings to increase distance from sensitive receptors.

Implementation of this mitigation measure would reduce the impacts from stationary noise generated by the project site to a less-than-significant level.

Impact E.4. Pile-driving activities related to construction of taller buildings in the Mixed Use area could temporarily generate noise and/or ground-borne vibration levels incompatible with ordinances or goals for the surroundings. (Less than Significant with Mitigation)

The U.S. EPA has published typical noise levels for construction equipment and activities.[7] Based on the data, pile-driving activities can cause intermittent noise levels up to 96 dBA (sonic-type) or 101 dBA (impact-type) at a distance of 50 feet without mitigation. Therefore, although temporary, pile-driving activities over a long-term construction period could cause a significant impact without implementation of reasonable measures to manage construction activities. Due to the repetitive and significant increase in noise associated with pile-driving activities, limiting the hours of allowable operation to "typical" working hours could reduce the potential for complaints.

While no vibration standards apply to the project, guidelines have been prepared by the Federal Transit Administration to assess the annoyance of construction-related vibration in adjacent occupancies.[8] Impact and sonic pile-driving techniques typically generate ground-borne vibration levels of 104 dB and 93 dB (re: 1 micro-inch per second) at 25 feet, respectively. To reduce vibration levels to the threshold of human perception would require a setback distance of approximately 250 feet or 500 feet from the sonic or impact pile-driving location, respectively. Building damage occurs from significantly higher vibration levels, and should not be considered a potential impact for this project. Since existing noise and vibration sensitive receivers are located at distances greater than 500 feet from the boundary of the project site, this would not be a significant impact for most land uses. In addition, pile driving should be conducted prior to project proposed residences being occupied. However, some very highly vibration sensitive equipment such as magnetic resonance imaging (MRI) equipment, which may be located at the Kaiser Modesto Medical Center, may be significantly impacted. Therefore, proper vibration measurement screening should be conducted at the MRI locations, and "quiet" pile driving conducted during restricted hours may need to be implemented.

[7] U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment and Home Appliances, December 31, 1971.
[8] Federal Transit Administration, Transit Noise and Vibration Impact Assessment, May 2006.

Mitigation Measure E.4.

Construction-related pile driving activities shall be conducted in accordance with the following:

- Limit the operation or use of pile-driving equipment to the hours between 7:00 a.m. and 9:00 p.m. daily (except Saturday and Sunday and state or federal holidays, when the prohibited time shall be before 9:00 a.m. and after 9:00 p.m.).
- Perform vibration measurements at MRI locations during pile driving to assess the potential for interference with the equipment. This should be conducted as a "mock-up" test to assess the potential for vibration impacts. A compatible schedule may need to be developed for pile-driving activities that would allow for the non-impacted operation of the MRI equipment.

Implementation of this mitigation measure would reduce the impacts from construction noise at the project site to a less-than-significant level.

Impact E.5. Non-stationary sources of noise associated with the proposed project could generate noise levels incompatible with ordinance or goals for the surroundings. (Less than Significant with Mitigation)

Other sources of noise not attributable to roadway traffic or mechanical equipment include the following:

- Delivery vehicle and loading dock operations, trash collection, parking lot vehicle noise, general landscaping, and adjacent agricultural land use activities; and
- Helipad and other emergency operations associated with the Kaiser Modesto hospital including helicopter flyovers and emergency vehicle sirens.

While it is difficult to predict noise levels associated with the above sources of noise, general planning measures can be implemented to avoid noise intrusion on sensitive land uses.

Controlling the hours of delivery can play a significant role in reducing potential intrusion of commercial activities into the residential neighborhoods. Due to the potentially high levels of noise associated with loading dock operations in conjunction with diesel truck noise, noise barriers and setback buffers may need to be incorporated, and some activities may need to be conducted inside a warehouse with doors closed. In addition, truck engines may need to be shut off during loading and unloading. Once locations and orientations of loading docks have been specified, a qualified acoustical consultant should be retained to assess the resulting noise levels at residential receivers.

Parking areas for commercial uses should be positioned as far as is feasible from residential receivers, incorporate landscape buffers, and potentially include noise barriers. A qualified acoustical engineer should be retained to review site plans for commercial uses located near sensitive land uses.

Collection of solid waste is specifically exempted from the noise ordinance. With respect to general landscaping the City's noise ordinance states that any tool or piece of equipment powered by an internal-combustion engine such as, but not limited to, chain saw, backpack blower, and lawn mower is specifically regulated and prohibited before 7:00 a.m. or after 9:00 p.m. daily (except Saturday and Sunday and state or federal holidays, when the prohibited times are before 9:00 a.m. and after 9:00 p.m.). Therefore, there would be no significant impact if these activities are limited to the mentioned times above, and noise levels meet the County's noise element exterior noise level standards as stated in the City's MEIR.

Agricultural land uses at adjacent properties not within the project site may generate noise associated with farming activities. Such activities could include the use of farming-related mechanical equipment (e.g., tractors, pumps, trucks, etc.). Most farming activities occur during daytime hours and therefore are not expected to generate significant noise impacts on surrounding land uses at the project site. Noise levels and hours of operation are subject to the City's noise ordinance.

Although not attributable to a specific source of noise, the State of California Noise Insulation Standards contain criteria for sound insulation between multi-family dwelling units. Compliance with these requirements would reduce sound transmission impacts in multi-family buildings to less-than-significant levels.

The project Initial Study (see Appendix A, pp. 55-56) states that approximately 50 helicopter trips per year are expected at the Kaiser Modesto hospital. This number of operations would not generate noise levels that would exceed the City and state interior or exterior noise levels at noise-sensitive land-uses. However, noise generated by helicopter flyovers and emergency vehicle sirens can cause a short-term disturbance to near-by residents. Although the significance threshold would not consider this a potentially significant impact to prospective homeowners, and commercial developers and tenants, the developer should provide written notification of the potential for short-duration intrusion from medical helicopter flyovers and emergency vehicle sirens.

Mitigation Measure E.5.

A qualified acoustical engineer shall be retained to review the site plans and building designs for proposed commercial activities when located adjacent to sensitive residential land uses. The acoustical engineer shall consider the following measures, and shall identify a complete list of measures that will reduce noise levels at the nearest residential property line to an L_{dn} of 65 dB:

- Limiting loading and exterior warehouse activities to daytime hours from 7:00 a.m. to 9:00 p.m.
- Requiring loading and trash compacting and collection activities to be fully enclosed.

- Location and orientation of parking lot areas with respect to noise sensitive land uses.
- Establishing minimum setback distances between common open space for multi-family residential buildings and locations of loading docks, warehousing activity areas, and trash compaction and collection areas in commercial developments.

Implementation of this mitigation measure would reduce the impacts from non-stationary noise sources at the project site to a less-than-significant level.

CUMULATIVE IMPACTS

Impact E.6. Cumulative development could lead to noise conflicts between incompatible land uses. (Exterior Noise: Significant and Unavoidable, Interior Noise: Significant and Unavoidable)

The proposed project would be part of other development anticipated under the *Urban Area General Plan* (2008). Consistent with language stated in the *Urban Area General Plan*, an increase in traffic noise levels is expected to occur regardless of the proposed project, with some baseline conditions increasing by more than L_{dn} 3 dB, regardless of project noise. By year 2025, baseline vehicular noise would have increased to a level such that the proposed project alone does not generate a significant noise impact on existing land uses. The year 2025 baseline conditions may cause some existing residences to be exposed to interior noise levels that would exceed 45 dB L_{dn}. The proposed project would contribute to the overall noise levels, but not significantly.

Cumulative noise levels on project-proposed noise-sensitive land uses would also have increased. Since the state stipulates that "future noise levels shall be predicted for a period of at least 10 years from the time of building permit application,"[9] recommendations prepared to meet Mitigation Measure E.2 should also consider cumulative conditions. This is a potentially significant impact. Depending on site layout, some outdoor-use areas may be relocated to take advantage of acoustical shielding provided by project proposed buildings.

Mitigation Measure E.6.

Acoustical recommendations prepared to address Impact E.2 should also consider cumulative year 2025 conditions.

[9] 2007 California Building Code, Title 24, Part 2, Section 1207.11.2.

F. HAZARDS

This section of the EIR focuses on the effects related to hazardous materials that may be found on the project site, identifies potential impacts to the public and environment, and presents mitigation measures, as appropriate. It describes the regulatory framework and Modesto and Stanislaus County General Plan policies for hazardous materials discovery and waste disposal, including requirements for management of hazardous building materials. The Initial Study checklist found that the project would not create a significant hazard to the public through the routine transport and use of hazardous materials; would not release hazardous materials into the environment; would not emit hazardous emissions or waste within the vicinity of an existing or proposed school; would not be located within an airport use plan or within the vicinity of an airstrip; would not impair implementation of an adopted emergency response plan; and would not expose people or structures to risk involving fires. (See Appendix A, pp. 44-48.) Therefore, further discussion of these topics in this EIR is unnecessary.

SETTING

The project site is comprised of 16 parcels totaling 153 acres of property on the northern side of the City of Modesto, about five miles north of downtown Modesto. The majority of the parcels comprising the site are in agricultural production. There are 10 separate farmhouse sites, a commercial nursery and landscaping business, a welding company, and the Modesto Irrigation District Bangs Substation.

Formerly, farms often had their own tanks for fuel and chemicals. Dry wells were often used for liquid waste disposal. On-site trash disposal was also common. Based on these common farm practices, the agricultural land of the project site could contain a variety of contaminants, including pesticides, herbicides, petroleum hydrocarbons, semi-volatile organic compounds, volatile organic compounds, and heavy metals. Buildings constructed prior to approximately 1980 frequently contain asbestos-containing building materials (ABM) and lead-based paint. To assess the likelihood that hazardous materials are present, Phase I Environmental Site Assessments (ESAs) are used to identify visible evidence of use, storage, and/or disposal of hazardous materials; visible evidence of a release of hazardous materials; and regulatory records of contaminated sites, either on, or in proximity to, the subject property. Phase I ESAs have not been prepared for any of the parcels.

The State of California maintains a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.[1] This list was reviewed as part of the preparation of this EIR, and no part of the project site was found to be on any of the listed hazardous materials sites.

REGULATORY FRAMEWORK

The use, storage, and disposal of hazardous materials,[2] including management of contaminated soils and groundwater, are regulated by numerous local, state, and federal laws and regulations. The U.S. Environmental Protection Agency (U.S. EPA) administers hazardous materials and hazardous waste regulations. The U.S. Department of Labor, Occupational Health and Safety Administration (OSHA), regulates worker safety. State and regional agencies include the California Department of Toxic Substances Control (DTSC) (a department of the California EPA), the Central Valley Regional Water Quality Control Board (Water Board), and the San Joaquin Valley Air Pollution Control District (SJVAPCD). The Stanislaus County Department of Environmental Resources (SCDER) has jurisdiction on the local level. Transportation of hazardous waste is regulated by the U.S. Department of Transportation (DOT), U.S. EPA, the California Highway Patrol (CHP), and the California Department of Transportation (Caltrans).

Each agency's jurisdiction and involvement in the management of hazardous materials and wastes are described below.

U.S. Environmental Protection Agency

The U.S. EPA is responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. The federal regulations are primarily codified in Title 40 of the Code of Federal Regulations (40 CFR). The legislation is outlined in the Resource Conservation and Recovery Act of 1976 (RCRA), the Superfund Amendments and Reauthorization Acts of 1986 (SARA), and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The U.S. EPA provides oversight for site investigation and remediation projects, and has developed land disposal restrictions and treatment standards for the disposal of certain hazardous wastes.

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[1] Department of Toxic Substances Control, website http://www.calepa.ca.gov/sitecleanup/corteselist/SectionA.htm, accessed June 2008.

[2] The California Health and Safety Code defines a hazardous material as "...any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety, or to the environment. Hazardous materials include, but are not limited to, hazardous substances, hazardous waste, radioactive materials, and any material which a handler or the administering agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment." (California Health and Safety Code Section 25501)

U.S. Department of Labor, Occupational Safety and Health Administration

OSHA has regulations that address training workers involved in asbestos removal, transportation, and disposal; hazardous waste site investigation and cleanup; hazardous materials handling; and hazardous waste transport and disposal.

Department of Toxic Substances Control

DTSC is authorized by U.S. EPA to enforce and implement federal hazardous materials laws and regulations. California regulations pertaining to hazardous materials are equal to or more stringent than federal regulations. Most state hazardous materials regulations are contained in Title 22 of the California Code of Regulations (CCR). DTSC generally acts as the lead agency for soil and groundwater cleanup projects, and establishes cleanup levels for subsurface contamination that are equal to, or more restrictive than, federal levels. DTSC has developed land disposal restrictions and treatment standards for hazardous waste disposal in California.

Central Valley Regional Water Quality Control Board

The project site is located within the jurisdiction of the Central Valley Regional Water Quality Control Board (Water Board). The Water Board enforces the Porter-Cologne Water Quality Act of 1969 for protection of the waters of the state. The Water Board can act as lead agency to provide oversight for sites where the quality of groundwater or surface waters is threatened, and has the authority to require investigations and remedial actions.

San Joaquin Valley Air Pollution Control District

SJVAPCD is responsible for issuing permits for demolition/renovation activities that include asbestos.

Stanislaus County Department of Environmental Resources

The primary agency for local enforcement of state and federal laws controlling hazardous materials management is the Hazardous Materials Division of SCDER. The Hazardous Materials Division is a Certified Unified Program Agency (CUPA), the local agency responsible for coordinating hazardous waste generator programs, overseeing underground and aboveground storage tank management, and investigating leaking underground storage tank sites and other contaminated sites. SCDER also administers the Hazardous Materials Business Plan program.

Hazardous Waste Transportation

DOT has developed regulations pertaining to the transport of hazardous wastes by all modes of transportation. U.S. EPA has also promulgated regulations for the transport of hazardous wastes through the RCRA. The "cradle-to-grave" requirements of RCRA include tracking shipments with manifests to ensure that wastes are delivered to their intended destinations.

The CHP and Caltrans have the primary responsibility to enforce hazardous materials transportation requirements established by DOT, U.S. EPA and California EPA. Carriers must be licensed by the CHP. Vehicle and equipment inspection, shipment preparation, container identification, and shipping documentation are all part of CHP's responsibility. CHP conducts regular inspections of licensed transporters to ensure regulatory compliance.

LOCAL PLANS AND POLICIES

City of Modesto

The update to the City of Modesto *Urban Area General Plan* (2008) contains the following overview and policies regarding hazardous waste disposal:

Section M. Community Services – Hazardous Materials Management

Overview

The County has prepared a Hazardous Waste Management Plan which is the guideline for managing hazardous waste in Stanislaus County. The goals, objectives, conclusions, recommendations, and implementation measures of that plan are hereby incorporated as part of this document (referring to the Modesto General Plan), along with any modifications which may result from state review of the Hazardous Waste Management Plan.

Policy V-M.2[c]: In the event that site inspection of construction activities uncovers chemical contamination, underground storage tanks, abandoned drums, or other hazardous materials or wastes at a parcel, the inspection report preparer shall so notify the City. The City shall notify the County Health Services Department. Under the direction of these agencies, a site remediation plan shall be prepared by the project applicant.

The plan would (1) specify measures to be taken to protect workers and the public from exposure to the potential site hazards and (2) certify that the proposed remediation measures would clean up the wastes, dispose the wastes, and protect public health in accordance with federal, state and local requirements. Permitting or work in the areas of potential hazard shall not proceed until the site remediation plan is on file with the City.

If a parcel is found to be contaminated to a level that prohibits the proposed use, the potential for reduction of the hazard should be evaluated. Site remediation is theoretically capable of removing hazards to levels sufficiently low to allow any use at the site.[3]

[3] In practice, both the technical feasibility of the remediation and its cost (financial feasibility) should be evaluated to determine the overall feasibility of locating a specific use on a specific site. In some cases, it

In accordance with OSHA requirements, any activity performed at a contaminated site shall be preceded by preparation of a separate health and safety plan (prepared by the project applicant and filed with the City) for the protection of workers and the public. All reports, plans, and other documentation shall be added to the administrative record.

Policy V-M.2[e]: Prior to issuance of all building permits, the City shall identify the site in relation to all CERCLIS[4] sites and to known or suspected uncontrolled or abandoned hazardous waste sites. All projects within 2,000 feet of these facilities shall conduct hazardous materials studies as necessary to identify the type and extent of contamination, if any, and the extent of risk to human health and public safety. If necessary, a remedial action program would be developed and implemented as in the policy 2-c, as described above.

Stanislaus County General Plan (Safety Element)

The *Stanislaus County General Plan*, Safety Element (1994), contains the following policy and implementation measures that are relevant to hazardous materials identification and hazardous wastes:

Policy Thirteen

The Department of Environmental Resources shall continue to coordinate efforts to identify locations of hazardous materials and prepare and implement plans for management of spilled hazardous materials as required.

Implementation Measures

1. The County will continue to provide planning efforts to locate and minimize the effects of hazardous materials through the County's adopted emergency plan.
   Responsible Department: Environmental Resources
2. The County has prepared a Hazardous Waste Management Plan which is the guideline for managing hazardous wastes in this County. The goals, objectives, conclusions, recommendations and implementation measures of that plan are hereby incorporated as part of the Safety Element, along with any modifications which may result from state review of the Hazardous Waste Management Plan.
   Responsible Departments: Board of Supervisors, Environmental Resources
3. The Area Plan for Emergency Response to Hazardous Substances Release, required by the California Health and Safety Code, will be incorporated as part of the Safety Element when that plan is adopted.
   Responsible Departments: Environmental Resources, Fire Safety, Sheriff, Emergency Services.

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may require restriction to industrial use or to a use that involves complete paving and covering of the parcel.

[4] CERCLIS is the list of hazardous waste sites compiled pursuant to the Superfund Act (Comprehensive Environmental Response, Compensation and Liability Act).

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

According to the Initial Study (Appendix A, pp. 44-48), the project would cause a significant adverse impact to the environment if it would:

- 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 create a significant hazard to the public or the environment.

The City of Modesto has adopted the following significance standard for hazardous materials:

- Impacts will be significant if any proposed development involves an unauthorized release of the generation, use, storage, or transport of any hazardous waste or if the project is located within or adjacent to a site known to have been contaminated with toxic or hazardous substances that have not been remediated.

METHODOLOGY AND ASSUMPTIONS

The risk to human health and the environment is determined by the probability of exposure to potentially harmful material and the severity of harm such exposure would pose. This analysis therefore focuses on the potential for community or environmental exposure to occur and on the consequences of reasonably foreseeable exposures. Since the primary strategy to manage hazards is to prevent releases during both routine activities and upset conditions, much of the analysis involves evaluating the likelihood that a hazard may be present. Where environmental or community exposures may occur, the approach is to assess whether such exposures have the potential to create a significant hazard. A "significant hazard" is evaluated relative to ordinary hazards associated with day-to-day life in the Modesto region.

PROJECT IMPACTS AND MITIGATION

Impact F.1. Demolition of existing buildings could cause release of hazardous materials, causing potential hazards to the public and environment. (Less than Significant)

Based on the age of existing buildings on the project site, the buildings could contain lead and asbestos. Prior to 1978, lead compounds were commonly used in exterior and interior paints. Lead is a suspected human carcinogen (i.e., causes cancer), a known teratogen, and a reproductive toxin (i.e., causes birth defects and sterility). Prior to the 1980s, building materials often contained asbestos fibers, which were used to provide strength and fire resistance. They were frequently found in insulation, roofing, and siding, textured paint, patching compounds used on wall and ceiling joints, vinyl floor tiles and adhesives, and insulation on water and steam pipes, among other uses. Asbestos is a known human carcinogen. Lead particles, asbestos fibers,

and/or other hazardous materials could be released into the air during demolition and then may be inhaled by construction workers and the general public. In addition, other common items, such as electrical transformers, fluorescent lighting, electrical switches, heating/cooling equipment, and thermostats, can contain hazardous materials, which may pose a risk if not handled and disposed of properly.

Federal and state regulations govern the demolition of structures where lead or material containing lead is present. Regulations pertaining to demolition of structures with lead-based paint are promulgated by the U.S. EPA, DTSC, and the U.S. Department of Housing and Urban Development (HUD). For example, the U.S. EPA and DTSC require that lead-based paint equal to or greater than the HUD definition of lead-based paints (greater or equal to 1 milligrams per square centimeter (mg/cm^2) or 0.5 percent lead by weight) be removed prior to demolition if the paint is loose and peeling. If the paint is securely adhering to the substrate, the entire material may be disposed of as demolition debris, which is a non-hazardous waste. Loose and peeling paint must be disposed of as a California and/or federal hazardous waste if the concentration of lead exceeds applicable waste thresholds. Hazardous wastes must be appropriately managed, labeled, transported, and disposed of in accordance with local, state, and federal requirements by trained workers. State and federal construction worker health and safety regulations require air monitoring and other protective measures during demolition activities where lead-based paint is present.

Federal, state, and local requirements also govern the removal of asbestos or suspected asbestos-containing building materials (ACBM), including the demolition of structures where asbestos is present. These requirements are put into effect by the U.S. EPA, federal and state OSHA, DTSC, and SJVAPCD. All friable (crushable by hand) ACMs, or non-friable ACMs subject to damage, must be abated prior to demolition in accordance with applicable requirements. Friable ACM must be disposed of as an asbestos waste at an approved facility. Non-friable ACM may be disposed of as non-hazardous waste at landfills that will accept such wastes. Workers conducting asbestos abatement must be trained in accordance with state and federal OSHA requirements.

Fluorescent lighting tubes and ballasts, computer displays, and several other common items containing hazardous materials are regulated as “universal wastes” by the State of California. Universal waste regulations allow common, low-hazard wastes to be managed under less stringent requirements than other hazardous wastes. Management of other hazardous wastes is governed by DTSC hazardous waste rules.

Conformance with applicable regulations regarding testing of building materials for lead-based paint and asbestos-containing building materials, worker safety, and disposal of hazardous materials would reduce this impact to a less-than-significant level.

Mitigation Measure. No mitigation necessary.

Impact F.2. Excavation for installation of utilities and other construction on the project site could encounter contaminated soil and/or groundwater and expose workers and the public to hazardous substances. (Less than Significant with Mitigation)

Development carried out pursuant to the proposed project would involve extensive excavation and trenching to install utilities and roads, and for building foundations. The project site is not located on any site listed on the list of hazardous materials sites compiled by the State of California pursuant to Government Code Section 65962.5.[5] As discussed in the Initial Study (Appendix A, pp. 44-48), Phase I ESAs have not been prepared for any of the parcels comprising the site. If contaminated soil or groundwater is present, construction workers could be exposed to hazardous substances. In addition, construction could result in release of hazardous substances to the environment. For example, if an underground storage tank were damaged during excavation, hazardous substances could be released to the soil and groundwater. Further studies (i.e., Phase II) would be needed to determine the nature and extent of contamination. Thereafter, as required by federal, state, and local regulations, risk assessments and remedial plans would be developed and implemented prior to commencement of construction. The Hazardous Materials Division of SCDER would be involved in determining whether remediation is necessary and the method of remediation. Implementation of the appropriate remediation at each contaminated site would reduce this impact to a less-than-significant level.

Mitigation Measure F.2. Conduct Phase I Environmental Site Assessments, conduct site investigations, and implement remediation as necessary.

Prior to construction, Phase I ESAs shall be conducted on all parcels comprising the project site. Where the findings of the Phase I ESA indicate that soil or groundwater contamination could be present, a Phase II study shall be performed. Where the results of the Phase II ESA indicate that soil or groundwater contamination is present, any necessary remediation shall be conducted.

In addition, the policies of Section M.2.c of the City of Modesto *Urban Area General Plan* shall be implemented. Section M.2.c. states that in the event site inspection of construction activities uncovers chemical contamination, underground storage tanks, abandoned drums, or other hazardous materials or wastes at a parcel, the inspection report preparer shall so notify the City. The City shall notify the County Health Services Department. Under the direction of these agencies, a site remediation plan shall be prepared by the project applicant. The plan would (1) specify measures to be taken to protect workers and the public from exposure to the potential site

[5] Department of Toxic Substances Control, website http://www.calepa.ca.gov/sitecleanup/corteselist/SectionA.htm. Accessed June 2008.

hazards and (2) certify that the proposed remediation measures would clean up the wastes, dispose the wastes, and protect public health in accordance with federal, state, and local requirements. Permitting of work in the areas of potential hazard shall not proceed until the site remediation plan is on file with the City.

With the implementation of Mitigation Measure F.2, the impact of potential release of, and exposure to, hazardous materials would be less than significant.

Impact F.3. Transportation of contaminated soil and/or building materials removed from the project site could result in accidental release of hazardous materials. (Less than Significant)

DOT, Caltrans, CHP, and DTSC regulate the transport of hazardous waste. Any contaminated soil or other hazardous waste removed from the project site would be transported in accordance with the regulations of these agencies. Conformance with these regulations would reduce this impact to a less-than-significant level.

Mitigation Measure. No mitigation necessary.

CUMULATIVE IMPACTS

Implementation of the proposed project would not increase the exposure to, and transport of, hazardous materials. Therefore, no significant cumulative adverse impact would occur.

G. BIOLOGICAL RESOURCES

This section addresses the environmental setting and impacts related to biological resources, including threatened, endangered, and other special-status species and habitats. While agricultural and other human-related activities have long ago greatly modified the natural communities that historically occurred along the east side of the San Joaquin Valley, this region still supports remnants of these communities and the diverse assemblage of plants and wildlife that they once contained. The potential impacts to biological resources are discussed here because implementation of the Kiernan Business Park Specific Plan Amendment #4 would occur in the vicinity of sensitive biological resources. The Initial Study checklist found that the project would not affect riparian or sensitive natural communities, federally protected wetlands, or biological resources protected by local policies or ordinances; nor would it conflict with provisions of an adopted conservation plan. Therefore, further discussion of these topics in this EIR is unnecessary. (See Appendix A, pp. 29-35.) The Initial Study also found that the project would not have a significant impact on three special-status species: the Northern harrier, the loggerhead shrike, and the tri-colored blackbird. This section of the EIR focuses on potential impact on nesting raptors and on the sensitive species identified as potentially being affected by the proposed project: Swainson's Hawk (*Buteo swainsoni*) and Burrowing Owl (*Athene cunicularia hypugea*).

SETTING

REGULATORY FRAMEWORK

Special-Status Plant and Wildlife Species

Federal and state endangered species legislation gives special status to several plant and animal species known to occur in the vicinity of the project site. In addition, state resource agencies and professional organizations, whose lists are recognized by agencies that review environmental documents, have identified some species occurring in the vicinity of the project site as sensitive. These species are referred to collectively as "species of special status" and include plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA); animals listed as "fully protected" under the California Fish and Game Code; animals designated as "Species of Special Concern" by the California Department of Fish and Game (CDFG); and plants listed as rare or endangered by the California Native Plant Society (CNPS).[1]

[1] California Native Plant Society, *Inventory of Rare and Endangered Plants of California*, 2001.

ESA provisions protect federally listed threatened and endangered species and their habitats from unlawful take. Under the ESA, "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct." The U.S. Fish and Wildlife Service's (USFWS) regulations define harm as "an act which actually kills or injures wildlife." Such an act "may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."[2] Activities that may result in "take" of individuals are regulated by the USFWS. The USFWS produced an updated list of candidate species in May 2005.[3] Candidate species are not afforded any legal protection under ESA; however, candidate species typically receive special attention from federal and state agencies during the environmental review process.

Provisions of CESA protect state-listed threatened and endangered species. CDFG regulates activities that may result in "take" of individuals (i.e., "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of "take" under the California Fish and Game Code. Additionally, the California Fish and Game Code contains lists of vertebrate species designated as "fully protected."[4] Such species may not be taken or possessed.

In addition to federal- and state-listed species, the CDFG also has produced a list of Species of Special Concern to serve as a "watch list." Species on this list are of limited distribution or the extent of their habitats has been reduced substantially, such that threat to their populations may be imminent. Species of Special Concern may receive special attention during environmental review, but they do not have statutory protection. USFWS also uses the label "Species of Concern" as an informal term that refers to those species that might be in need of concentrated conservation actions. Species of Concern receive no legal protection as a result of their designation, and the use of the term does not necessarily mean that the species will eventually be proposed for listing as a threatened or endangered species. However, most, if not all, of these species are currently protected by state and federal laws.

Raptors (e.g., eagles, hawks, and owls) and their nests are protected under both federal and state regulations. The federal Migratory Bird Treaty Act[5] (MBTA) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Birds of

[2] Title 50, Code of Federal Regulations (CFR) §17.3 (cited as "50 CFR").
[3] 50 CFR 17, May 11, 2005.
[4] California Fish & Game Code §§3511 (birds), 4700 (mammals), 5050 (reptiles and amphibians), 5515 (fish).
[5] Title 16, United States Code Sec. 703, Supp. I, 1989.

prey are protected in California under the State Fish and Game Code.[6] Section 3503.5 states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this Code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the CDFG.

City of Modesto

Modesto's *Urban Area General Plan* (2008) provides four policies related to sensitive wildlife and plant habitat.[7] Elements of those policies that are relevant to development that would be expected pursuant to the proposed Specific Plan Amendment are presented below:

> Policy VII-E-3[a]: For all lands within the Planned Urbanizing Area, site-specific surveys shall be conducted by a qualified biologist to determine whether any sensitive natural communities or species are present within the proposed development area. These studies shall particularly focus on proposed development within any lands included within a potential biological resource study area, as delineated on Figure 7-1 in the Final Master Environmental Impact Report (Riparian Corridor Diagram). Prior to considering development applications, the City shall coordinate with the U.S. Fish and Wildlife Service (USFWS) regarding listed species and potential for impacts. The City shall employ the measures recommended by the USFWS to avoid an incidental take.
>
> Surveys should be conducted at the appropriate season to best determine the likelihood of occurrence and should employ accepted methodologies as determined by the California Department of Fish and Game (CDFG) and the USFWS. The significant results of such surveys should be recorded onto the City's existing biological resources map for future planning purposes.
>
> Policy VII-E-3[b]: All areas occupied or potentially occupied by special-status species shall be avoided and preserved, where feasible. Areas that can be avoided shall be protected by fencing, signage, or establishment of buffer zones appropriate to the species and/or habitat involved. Generally, a minimum 100-foot buffer of undeveloped land would be necessary. This buffer area should be improved through sustainable habitat restoration. The protected habitat shall be required to be managed so as to contribute to the long-term conservation of the species and ecosystems on which they depend.
>
> Where state and/or federally listed species are determined to be present, consultation shall be carried out with the CDFG and/or USFWS in accordance with the California and/or federal Endangered Species Acts to determine mitigation measures to avoid and minimize impacts to those species. If other special-status species are determined to be present and cannot be avoided, then species-specific mitigation measures shall be implemented to minimize impacts

[6] California Fish and Game Code §3503.5.
[7] City of Modesto, *Urban Area General Plan*, October 2008 (hereinafter "*Urban Area General Plan*"), p. VII-10.

on those species through informal consultation with CDFG and/or USFWS. The mitigation measures and other recommendations of these agencies shall be incorporated into the development plan. Where a Community Plan is prepared, these shall become policies of the plan.

Policy VII-E-3[c]: Additional measures to protect sensitive habitats may be implemented. Potential measures to be implemented may include measures listed in Table 7-1 in the Final Master Environmental Impact Report.

EXISTING CONDITIONS

The project site area is located in the northwest portion of Modesto, Stanislaus County, California. The project site, which encompasses a 153-acre portion of the Kiernan Business Park Specific Plan area, is situated on nearly level agricultural lands. The majority of land within the project site (approximately 59 percent) is cultivated and used for agricultural production including orchards, irrigated row crops (predominantly corn and potatoes), and irrigated pasture. The remaining land (41 percent) is developed, ruderal, or fallow.

A reconnaissance-level field survey of the project site was conducted on July 18, 2006.[8] A biotic study summarizing the results of this survey is included in Appendix C. The purpose of this survey was to document biotic resources on the site that may pose constraints to the proposed development. Specifically, the survey was conducted to 1) describe existing biotic habitats; 2) assess the site for its potential to support special-status species and their habitats; and 3) identify potential jurisdictional habitats, including Waters of the U.S., riparian habitat, and ordinance trees.

BIOTIC HABITATS AND ASSOCIATED VEGETATION AND WILDLIFE

Irrigated Row Crops

Irrigated row crops (including disked fields) comprise approximately 54 acres (34 percent) of the project site. Dominant crops include corn and potatoes. The largest areas of irrigated row crops occur in the southeast corner of the project site adjacent to Bangs Avenue, and in the central section between Bangs Avenue and Kiernan Avenue.

Because they are less frequently disturbed than other crops, irrigated row crops are used by some wildlife. Periodic disking of agricultural areas disrupts burrows and other places of refuge for

[8] Turnstone conducted a reconnaissance land use survey in July 2008 and noted some changes to the types of agricultural uses currently on site. The number of acres identified for irrigated row crops, orchard, ruderal, and developed uses have been updated in this Draft EIR. No changes to the Biotic Report (Appendix C), however, have been made. Turnstone also consulted the California Natural Diversity Database in July 2008. Nothing relevant to the proposed project has been added.

reptiles, rodents, and other small animals. Efficient burrowers such as California ground squirrels are capable of recolonizing this habitat after the disturbance has passed. Such colonization is usually limited to the periphery of the field. Bird species that occur in cultivated habitats are generally widespread species accustomed to repeated disturbance such as American kestrel (*Falco sparverius*), American crows, killdeer (*Charadrius vociferous*), mourning dove (*Zenaida macroura*), western meadowlark (*Sturnella neglecta*), Brewer's blackbird (*Euphagus cyanocephalus*), and house finch (*Carpodacus mexicanus*).

Ruderal

Ruderal habitat comprises approximately 36 acres (23 percent) of the project site. Ruderal communities are assemblages of plants that thrive in disturbed areas; weedy, non-native annual forbs and grasses are typically the first species to colonize these sites following disturbances associated with agricultural practices such as disking and operation of heavy farm equipment. Ruderal habitat is located in the southwest section of the site along Bangs Avenue and in the west central section east of Dale Road. Ruderal species observed on the project site included ripgut brome, soft chess, black mustard, wild radish, and cheeseweed. Additional ruderal plants included wild oat (*Avena fatua*), annual bluegrass (*Poa annua*), wild lettuce (*Lactuca serriola*), common sow thistle (*Sonchus oleraceus*), yellow star thistle (*Centaurea solstitialis*), curly dock (*Rumex crispus*), and bristly ox-tongue (*Picris echioides*).

Ruderal habitats within the project area are of limited value to wildlife due to the lack of vegetative cover. Common species such as mourning dove and killdeer occasionally forage in such areas.

Orchard

Deciduous almond and walnut orchards occupy approximately 32 acres, or approximately 20 percent, of the project site. These orchards are located in the northeast section of the project site adjacent to the intersection of American Avenue and Kiernan Avenue, in the west section of the project site adjacent to Dale Road, and in the southern sections of the project site adjacent to Bangs Avenue. The western portion of these orchards supports scattered patches of ruderal (herbaceous, non-native) plants, including rip-gut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum murinum* ssp. *gussoneanum*), black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), filaree (*Erodium* sp.), soft chess brome (*Bromus hordeaceus*), fiddleneck (*Amsinckia menziesii*), cheeseweed (*Malva parviflora*), and shepherd's purse (*Capsella bursa-pastoris*). These plant species grow below the tree canopy of the western orchard adjacent to Dale Road.

Orchards typically provide limited habitats for wildlife, as frequent disturbances associated with crop production (e.g., pruning, spraying, harvesting, and watering) limit the potential for most

wildlife species to persist in these habitats. Swainson's Hawks (*Buteo swainsoni*), in particular, are not likely to nest within these orchards because they are intolerant of frequent disturbance. Common reptiles such as the side-blotched lizard (*Uta stansburiana*) are known to persist under these conditions, and some common bird species are attracted to nut crops and can be abundant in orchards, such as the American Crow (*Corvus brachyrhynchos*) and Yellow-billed Magpie (*Pica nuttalli*). Burrowing animals, such as California ground squirrels (*Spermophilus beecheyi*) and gophers (*Thomomys sp.*), are typically discouraged in orchards because they can cause damage to irrigation systems.

Developed

The developed area comprises approximately 20 acres (12 percent) of the project area including houses and associated hardscape as well as barns, related structures, and equipment. The developed area also includes a commercial nursery located in the southwest section of the site at the intersection of Dale Road and Bangs Avenue, and a single light industrial business on Kiernan Avenue near American Avenue. In addition to a variety of native and non-native landscape trees, many of the ruderal plant species described below occur around these developments.

Homesteads and developed areas typically provide habitat for common species accustomed to human disturbance. Common backyard birds such as western scrub jays (*Aphelocoma californica*), American robins (*Turdus migratorius*), northern mockingbirds (*Mimus polyglottos*), house finches, and house sparrows (*Passer domesticus*) are likely to be present at these sites. Where there are brush or wood piles, species such as western fence lizards (*Sceloporus occidentalis*) and desert cottontail rabbits (*Sylvilagus audobonii*) may be present.

Fallow Field

Fallow (previously farmed but not currently planted) fields comprise approximately 10 acres (six percent) of the project site. The fallow field habitat consists of a single parcel of land located in the northwest section of the site adjacent to the intersection of Dale Road and Kiernan Avenue. Although this area appeared to have been previously used as an orchard, it was recently disked and devoid of vegetation at the time of the survey.

Fallow fields are more likely than actively farmed lands to support larger populations of small mammals, such as gophers, and may be more likely to provide nesting habitat for birds such as killdeer. Raptors such as red-tailed hawk (*Buteo junacensis*) also prey upon small mammals within fallow fields.

Irrigated Pasture

Irrigated pasture occupies approximately eight acres, or approximately five percent of the project site. This habitat includes a single parcel of land that is associated with an active equestrian ranch located in the northwest portion of the project site near the intersection of Dale Road and Kiernan Avenue. Irrigated pasture is dominated by annual and perennial non-native grasses and forbs commonly grown for forage, including Bermuda grass (*Cynodon dactylon*), Italian ryegrass (*Lolium multiflorum*), white sweetclover (*Melilotus alba*), white clover (*Trifolium repens*), and filaree.

Irrigated pasture attracts bird species typically found in pastures in the Modesto area including killdeer, western kingbird (*Tyrannus verticalis*), western meadowlark, brown-headed cowbird (*Molothrus ater*), Brewer's blackbird, and red-winged blackbird (*Agelaius phoeniceus*).

SPECIAL STATUS SPECIES

Swainson's Hawk *(Buteo swainsoni)*
Federal Status: None; State Status: Threatened

The Swainson's hawk (*Buteo swainsoni*) is a large soaring bird of open habitats. Swainson's hawks were once one of the most common birds of prey in the grasslands of California. Populations have declined at least 90 percent since 1990 and are still believed to be declining.[9] They once nested in the majority of the lowland areas in the state. Currently, the nesting range is primarily restricted to portions of the Sacramento and San Joaquin Valleys and northeast California.[10] It was listed as threatened by the State of California in 1983.

Swainson's hawks require large amounts of foraging habitat, preferably grassland or pasture habitats. Their preferred prey items are voles (*Microtus* sp), gophers, birds, and insects such as grasshoppers.[11] They have also adapted to some croplands, particularly alfalfa, but also forage in hay, grain, tomatoes, beets, and other row crops.[12] Crops such as cotton, corn, rice, orchards, and

[9] P.H. Bloom and D. Van De Water, *Swainson's Hawk,* in C.G. Thelander and M.Crabtree, eds, *Life on the Edge: A Guide to California's Endangered Natural Resources*: Wildlife, Biosystems Books, 1994.
[10] P.H. Bloom, *The Status of the Swainson's Hawk in California, 1979,* Federal Aid in Wildlife Restoration, Project W-54-R-12, Final Report 11-8-0, California Department of Fish and Game, Wildlife Management Division, Nongame Bird and Mammal Section, 1980 (hereinafter "*The Status of the Swainson's Hawk in California, 1979*").
[11] J.A. Estep, *Biology, movements and habitat relationships of the Swainson's Hawk in the Central Valley of California, 1986-1987,* California Department of Fish and Game, Wildlife Management Division, Nongame Bird and Mammal Section, 1989 (hereinafter "*Biology, movements and habitat relationships of the Swainson's Hawk").*
[12] *Biology, movements and habitat relationships of the Swainson's Hawk.*

vineyards are not suitable since they either lack suitable prey or the prey is unavailable due to the crop structure.

In the Central Valley, Swainson's hawks are generally tied to riparian habitat for nesting sites.[13] A few pairs nesting in Tulare and Kings Counties use eucalyptus trees and nest outside riparian areas.[14]

In the fall, Swainson's hawks form flocks called kettles, sometimes in large numbers, and migrate together to South America. Kettles can occasionally be seen in the valley foraging behind tractors or harvesters, hunting mice and insects that have been displaced by the activities.

Land conversion for agricultural purposes in the San Joaquin Valley and the predominance of crops that create unsuitable foraging habitat have led to a loss of suitable habitat patches large enough to sustain Swainson's hawks. The California Natural Diversity Database (CNDDB) contains numerous current and historic records of Swainson's Hawks within 10 miles of the project site.[15] Most of these are west of the project site in the vicinity of the San Joaquin River. Two records from 1992 and 1995 are within five miles of the project site. These two records are more than five years old, however, and thus would not be considered active nests.[16] There is one record that would be considered an active nest from 2002 near the intersection of Beckwith Road and Gates Road, approximately six miles southwest of the project site.

The CDFG[17] has indicated that, because there is an active nest within 10 miles of the project site, the post-harvest cornfields, ruderal habitats, fallow fields, and irrigated pasture on the project site could provide foraging habitat for Swainson's hawks, and that the lack of foraging habitat would contribute directly or cumulatively to impacts to the species. Based on the specific nature of the project site, the site is unlikely to represent primary foraging habitat for this species. Foraging habitat on the site is fragmented and interspersed with non-suitable foraging habitats such as orchards and developed areas. Thus, the site is marginal habitat that is unlikely to be used by a breeding pair. Though site may be used occasionally by transient individual Swainson's hawks, the potential is low based on the availability of suitable habitat on the site.

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[13] *The Status of the Swainson's Hawk in California, 1979.*
[14] CNDDB, California Natural Diversity Data Base, California Department of Fish and Game, Sacramento, CA, 2005.
[15] CNDDB, California Natural Diversity Data Base, California Department of Fish and Game, Sacramento, CA, 2005.
[16] California Department of Fish and Game, *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (Buteo swainsonii) in the Central Valley of California,* 1994 (hereinafter "*Staff Report Regarding Mitigation for Impacts to Swainson's Hawks*").
[17] *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks.*

Western Burrowing Owl *(Athene cunicularia)*
Federal Status: None; State Status: Species of Special Concern

The burrowing owl is a small, terrestrial owl of open country. Burrowing owls favor flat, open annual or perennial grassland or gentle slopes, and sparse shrubland ecosystems typically with sparse or non-existent tree or shrub canopies. In California, burrowing owls are found in close association with California ground squirrels, whose burrows are used by the owls for shelter and nesting.

Burrowing owls are known to be resident within the southern San Joaquin Valley. They are likely to inhabit pastures, fallow fields, and canal and railroad rights-of-way where ground squirrels have been allowed to invade. No burrowing owls or signs of their presence, such as feathers, droppings, pellets, or prey remains, were observed on the project site during the biotic survey. However, habitat characteristics within fallow fields and some ruderal patches on the project site may become favorable for burrowing owls prior to construction. Therefore, the species could occur on the project site.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

The proposed project will have a number of effects on the biological resources of the project site. The California Environmental Quality Act (CEQA) defines a "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in the environment."[18] Under CEQA Guidelines Section 15065, a project's effects on biotic resources are deemed significant where the project would:

- 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; and/or
- Reduce the number or restrict the range of a rare or endangered plant or animal.

During the process of developing their General Plan, the City of Modesto reviewed the thresholds of significance suggested by the state CEQA Guidelines and the "mandatory findings of significance" (Section 15065). The City also reviewed thresholds of significance in the federal and state Endangered Species Acts, which deem actions that would result in the "take" of a listed species or that would adversely impact protected species as significant. The City of Modesto adopted the finding that actions that would violate the federal and state laws (and related

[18] California Public Resources Code §21068.

regulations), including but not limited to the federal Endangered Species Act, California Endangered Species Act, and federal Clean Water Act, would be significant.

METHODOLOGY AND ASSUMPTIONS

The following assumptions were used to evaluate impacts on biological resources that would result from the implementation of the proposed project:

1. Direct impact to wildlife species are assumed to be correlated with the loss of plant communities that provide their primary habitat. These losses would result from site excavation, road building, grading, filling or other damage to habitats, and direct wildlife loss or disturbance by construction activities and human uses. The conversion of these communities to commercial and residential development and infrastructure, therefore, may result in the loss or reduction of use for some wildlife species. The existing wildlife species are usually eliminated or replaced with a group of species that tolerate environmental conditions in the completed development.
2. Indirect impacts to wildlife could also occur. If remaining fragments of undeveloped habitat are isolated from larger areas of contiguous habitat, particularly during development of individual parcels in the Specific Plan area, the remaining habitats are expected to have lower biological values than those prevailing before development. Indirect impacts to wildlife that are most often associated with increased human activity can occur off site.

PROJECT IMPACTS AND MITIGATION

Impact G.1. Implementation of the Specific Plan would result in loss of occupied burrowing owl habitat. (Less than Significant with Mitigation)

Neither burrowing owls nor signs of their presence, such as feathers, droppings, pellets, or prey remains, were observed in the project area during the biotic survey. The project site does not currently provide suitable burrowing owl habitat because there are no ground squirrel burrows or other suitable burrows on or adjacent to the project site.[19] There is evidence that ground squirrels are actively prevented from establishing burrow systems by ongoing farming activities on the site. Should ground squirrels and their burrows be present on the parcels that were not examined during the biotic survey, or should active farming on some portions of the project site cease before construction starts on a development site, ground squirrels could become established and provide habitat for burrowing owls on the project site.

If burrowing owls are present on a parcel, or adjacent to a parcel, at the time of construction, disturbance could destroy occupied burrows or cause owls to abandon burrows. Construction

[19] Burrowing owls rely heavily on California ground squirrel for burrows in this region. Therefore, burrowing owls would be likely to inhabit pastures, fallow fields, and canal and railway rights-of-way where ground squirrels have established burrows.

during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. The loss of occupied burrowing owl habitat (habitat known to have been occupied by owls during the nesting season within the past three years) or reduction in the number of this rare species within Stanislaus County, directly or indirectly through nest abandonment or reproductive suppression, is considered a significant impact. Furthermore, raptors, including owls and their nests, are protected under both federal and state laws and regulations, including the MBTA and California Fish and Game Code section 3503.5.

Mitigation Measure G.1a. Implement CDFG guidelines[20] to avoid and minimize impacts to burrowing owls.

In conformance with federal and state regulations regarding the protection of raptors, a habitat assessment in accordance with CDFG guidelines for burrowing owls shall be completed prior to the start of construction. Burrowing owl habitat on the project site and within a 500-foot buffer zone should be assessed (Assessment Area). If the habitat assessment concludes that the Assessment Area lacks suitable burrowing owl habitat, no additional action would be warranted. However, if suitable habitat is located on the Assessment Area, all ground squirrel colonies should be mapped at an appropriate scale, and the following mitigation measures should be implemented:

1. In conformance with federal and state regulations regarding the protection of raptors, a pre-construction survey for burrowing owls, in conformance with CDFG guidelines, should be completed no more than 30 days prior to the start of construction within suitable habitat at the project site and buffer zone. An initial site visit would be conducted to assess the habitat suitability for burrowing owls. If suitable habitat is present, the first of four owl surveys can be conducted during this initial site visit. Three additional surveys should also be completed per CDFG guidelines prior to construction.
2. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist verifies through non-invasive methods that the birds have not begun egg-laying and incubation, or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Eviction outside the nesting season may be permitted pending evaluation of eviction plans and receipt of formal written approval from the CDFG authorizing the eviction.
3. A 250-foot buffer, within which no new activity will be permissible, will be maintained between project activities and nesting burrowing owls during the nesting season. This protected area will remain in effect until August 31, or at the CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently.
4. If accidental take (disturbance, injury, or death of owls) occurs, the CDFG will be notified immediately.

[20] California Department of Fish and Game, *Staff Report on Burrowing Owl Mitigation*, 1995.

Mitigation Measure G.1b. Compensate for loss of burrowing owl habitat.

If pre-construction surveys determine that burrowing owls occupy the site and avoiding development of occupied areas is not feasible, then habitat compensation on off-site mitigation lands should be implemented. Habitat Management (HM) lands comprising existing burrowing owl foraging and breeding habitat should be acquired and preserved. An area of 6.5 acres (the amount of land found to be necessary to sustain a pair of owls or an individual owl) should be secured for each pair of owls, or individual in the case of an odd number of birds. As part of an agreement with the CDFG, the project applicant should secure the performance of its mitigation duties by providing the CDFG with security in the form of funds that would:

- Allow for the acquisition and/or preservation of 6.5 acres of HM lands;
- Provide initial protection and enhancement activities on the HM lands, potentially including, but not limited to, such measures as fencing, trash clean-up, artificial burrow creation, grazing or mowing, and any habitat restoration deemed necessary by CDFG;
- Establish an endowment for the long-term management of the HM lands; and
- Reimburse the CDFG for reasonable expenses incurred as a result of the approval and implementation of this agreement.

Implementation of Mitigation Measures G.1a and G.1b would reduce the potential impact on this species to a less-than-significant level.

Impact G.2. Implementation of the Specific Plan would result in disturbance of nesting raptors and migratory birds. (Less than Significant with Mitigation)

Migratory birds, including raptors, are known to or are expected to nest in the vicinity of the project area. Migratory birds and their nests are protected under both federal and state regulations. The provision of the Migratory Bird Treaty Act that prohibits killing migratory birds encompasses bird nests and eggs. Construction disturbance during the nesting season could result in the abandonment of fertile eggs and nestlings, or otherwise lead to nest abandonment. Disturbance that results in nest abandonment and/or loss of reproductive effort is considered "take" by the CDFG. Loss of fertile eggs or nesting birds, or any activities resulting in nest abandonment, could constitute a significant impact if the species is particularly rare in the region. Construction activities such as tree removal and site grading that disturb a rare nesting bird on the site or immediately adjacent to the construction zone could constitute a significant impact. The mitigation measures described below would reduce the potential for a significant impact to a less-than-significant level.

Mitigation Measure G.2a. Avoidance.

To the extent practicable, construction should be scheduled to avoid the nesting season, which extends from January through August.

Mitigation Measure G.2b. Pre-construction Surveys.

If it is not possible to schedule construction between August and January, pre-construction surveys for nesting birds shall be conducted by a qualified ornithologist or wildlife biologist to ensure that no nests of rare or protected species would be disturbed during project implementation. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of demolition/construction activities during the early part of the breeding season (January through April) and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August). During this survey, the qualified person shall inspect all potential nest substrates in and immediately adjacent to the construction areas for nests. If an active next is found close enough to the construction area to be disturbed by construction, the ornithologist, in consultation with CDFG, shall determine the extent of a construction-free buffer zone to be established around the nest.

Impact G.3. Implementation of the Specific Plan would result in cumulative loss of Swainson's hawk and burrowing owl habitat. (Less than Significant with Mitigation)

Loss of nesting and foraging habitat due to agricultural and urban expansion has greatly reduced the breeding range and abundance of Swainson's hawks and burrowing owls in California. Modesto, as the largest city in Stanislaus County, is expected, and planned, to accommodate a substantial share of the County's projected population growth.[21] Development in the Modesto area under the *Urban Area General Plan* would convert approximately 26,100 acres of agricultural land identified by the California Department of Conservation as either Prime Farmland, Unique Farmland, or farmland of state or local importance.[22] These agricultural areas include habitat suitable for Swainson's hawk and burrowing owl.

Continued degradation of native plant communities in the San Joaquin Valley from ongoing development will continue to contribute to the decline of listed and sensitive species or their habitats throughout the region. Loss of suitable habitat for burrowing owls and Swainson's hawks as a result of this project has the potential to combine with similar impacts of other projects and would be considered cumulatively significant.

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[21] *Urban Area General Plan (2008).*
[22] City of Modesto, *Final Master Environmental Impact Report for the Urban Area General Plan Update*, July 2008.

The mitigation measures described above for burrowing owls would reduce cumulative impacts to this species to a less-than-significant level. The mitigation measure described below would reduce cumulative impacts to Swainson's hawks to a less-than-significant level.

Based on the quality of the on-site habitat and the isolated nature of the project site in relation to other suitable habitat in the project vicinity, the cumulative loss of habitat for Swainson's hawks should be mitigated by providing 0.25 acre of off-site HM lands comprising irrigated row crops, ruderal areas, fallow fields, and irrigated pasture. All HM lands protected under this requirement may be protected through fee title acquisition or conservation easement (acceptable to CDFG) on agricultural lands or other suitable habitats that provide foraging habitat for Swainson's hawks. Management Authorization holders/project sponsors shall provide for the long-term management of HM lands by funding a management endowment (the interest on which shall be used for managing the HM lands) at a rate agreed upon by CDFG.

Mitigation Measure G.3. Same as Mitigation Measures G.1a and G.1b.

H. HYDROLOGY AND WATER QUALITY

This section describes the existing hydrological setting for the Modesto area, including runoff, drainage, and water quality. The analysis is based on information included in published and unpublished reports, and on a site reconnaissance. Based on information collected, this section identifies impacts that may result from project development and suggests mitigation measures to reduce potential impacts. The Initial Study completed for this project determined that potential impacts associated with placement of housing in a Federal Emergency Management Agency (FEMA) flood hazard zone would not occur because there are no mapped 100-year flood hazard zones at or in the vicinity of the Specific Plan area (see Appendix A, pp. 48-58). Similarly, the Initial Study found that potential impacts associated with tsunamis, seiches, and mudflows were not applicable to the proposed project. Therefore, these issues are not discussed further.

SETTING

The existing conditions in the vicinity of the Specific Plan area related to hydrology, storm drainage, and water quality are described below.

CLIMATE

The climate in Modesto is characterized as dry-summer subtropical (often referred to as Mediterranean), with cool, wet winters and warm, dry summers. The mean annual rainfall in the vicinity of the project site, for the period between 1931 and 2007, was approximately 12.4 inches, with most rainfall between October and May.[1] The lowest rainfall year on record is 1913, with only 4.3 inches of rainfall, while the highest recorded rainfall year is 1983, with 26.0 inches of rainfall.[2]

The western U.S., including the Modesto area, periodically experiences a weather phenomenon referred to as the "Pineapple Express." The Pineapple Express is a Pacific Ocean subtropical jet stream that brings warm moist air from Hawaii (where pineapples are grown) into the region. The combination of moisture-laden air, atmospheric dynamics, and orographic[3] enhancement that results as this air passes over the mountain ranges of the West Coast causes some of the most torrential rains to occur in the region. Many major West Coast flooding events, such as the 1997 floods in the Central Valley, came about because of this weather phenomenon.

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[1] Western Regional Climate Center, 2007. Website: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca5738.
[2] The City of Modesto, Engineering & Transportation Department, Capital Planning Division and the Modesto Irrigation District, *Urban Water Management Plan*, 2000.
[3] Of or pertaining to the physical geography of mountains and mountain ranges.

SURFACE WATER

Runoff and Drainage

The Specific Plan area is located within the San Joaquin Valley, a relatively flat, structural, and topographic trough. The primary source of surface water flows in the San Joaquin Valley is rainfall and snowmelt runoff from the Sierra Nevada range to the east. The secondary source of surface water flow is local rainfall and runoff from the Coast Ranges to the west. In general, runoff flows from the Sierra Nevada toward the west across alluvial fans and the valley floor in streams and rivers, including the Kings, Merced, Tuolumne, and Stanislaus Rivers. These westward-flowing rivers join with the San Joaquin River on the west side of the valley, where the combined flows travel northwest toward the Delta and San Francisco Bay.

The study area is located in rural northwestern Modesto approximately two miles south of the Stanislaus River and five miles northwest of Dry Creek (a major tributary to the Tuolumne River). The Modesto Irrigation District (MID)[4] operates several irrigation canal "laterals" that flow east to west in the vicinity of the study area. Lateral No. 6 is located along the southern project site boundary along Bangs Avenue. These laterals (open concrete-lined canals that were completed in the early 1900s) are essentially constructed drainages that divert water from the Tuolumne River (and a series of reservoirs). The primary function of these laterals is to distribute water to irrigated farmlands. To a limited extent, these laterals receive irrigation return flows and urban storm water runoff.[5] Lateral No. 6 near the project site is a concrete-lined trapezoidal channel, approximately 7 feet deep and 28 feet wide at the top, and elevated above the surrounding grade.

Increasingly, discharges into the laterals of urban storm water runoff associated with new development are being carefully scrutinized by the MID.[6] The MID is concerned about the quantity and quality of storm water in the laterals. Quantity is an issue because the laterals were designed to distribute irrigation water and therefore decrease in size downstream (because irrigation water is used along the flow path and the acreage served downstream diminishes). Storm water conveyances typically increase in size downstream as more water is collected. If too

[4] The Modesto Irrigation District (MID) was formed in 1887 by the Modesto voters and represented the second irrigation district formed in California. The Modesto and Turlock irrigation districts built La Grange Dam, a diversion dam, on the Tuolumne River in 1893. MID continues to divert water to the north of the river and the Turlock Irrigation District diverts water to the south. Don Pedro Reservoir is the MID's primary water storage facility, while Modesto Reservoir is a small holding reservoir. Modesto and Turlock irrigation districts constructed the original Don Pedro Reservoir in 1923. It was replaced by the completion of New Don Pedro Reservoir and Dam in 1971.

[5] Bill Ketscher, Irrigation Engineer, Modesto Irrigation District, personal communication with Bruce Abelli-Amen of BASELINE, October 7, 2005 (hereinafter "Ketscher, pers. com.").

[6] Ketscher, pers. com.

much storm water is discharged to the laterals, they could flood downstream or overtop the capacity of certain reaches throughout the system.

The MID is also concerned that urban pollutants in storm water runoff in the laterals could, either in the near or distant future, affect compliance with National Pollutant Discharge Elimination System (NPDES) requirements (described in more detail below) regarding discharge into the San Joaquin River.

Kiernan Business Park-East is located in Subbasin 55 of the current draft version of the *Storm Drainage Master Plan* (SDMP) for the City of Modesto.[7] In the SDMP, the Kiernan Business Park-East site (the project site) is shown as a self-contained subbasin (not providing or relying on regional detention/retention facilities).

The project site is relatively flat, with a very gentle gradient to the south. Precipitation either ponds at the surface, infiltrates, or flows by overland sheet flow (or in irrigation furrows) toward topographic lows (which are not visually detectable during dry weather). No visible drainage features were noted at the site during a September 2007 site reconnaissance. The entire project site appears to be internally drained, with adjacent road grades at higher elevations than the project site, effectively creating low levees around the site.

Approximately 98 percent of the site is covered by soils that are characterized by the National Resource Conservation Service as belonging to Hydrologic Soil Group B,[8] indicating moderately well-drained soils.[9]

Flooding

Due to its climate and geography, flooding is a frequent and natural event in the Central Valley. Major floods in the Central Valley within the past 25 years (1983, 1986, 1995, and 1997) have caused significant damage.[10] The project site is not located within a FEMA-designated 100-year flood hazard zone. However, flooding can also occur as a result of catastrophic dam failure and the release of waters contained in upstream reservoirs. The Specific Plan area could be impacted if an upstream dam in the vicinity were to fail catastrophically. Although a very low probability event, catastrophic structural dam failure can be caused by earthquake or overflow. According to

[7] City of Modesto, *Revised Storm Drainage Master Plan for the City of Modesto*, October 2006.
[8] Group B soils are characterized as having a moderate infiltration rate when thoroughly wet. They consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture.
[9] National Resource Conservation Service, 2005, Soil Survey of Eastern Stanislaus Area, California, web-based soil survey.
[10] State of California Reclamation Board and U.S. Army Corps of Engineers, Sacramento and San Joaquin River Basins, Comprehensive Study, Technical Studies Documentation, December 2002.

the City of Modesto's *Local Hazard Mitigation Plan*,[11] failure of the New Melones Dam, which has a capacity of 2,420,000 acre-feet, could affect the project site.[12] Regional mapping indicates that the inundation zones associated with other potential catastrophic dam failures, including the New Don Pedro Dam, would not affect the project site.[13]

GROUNDWATER

The project site is located within an area underlain by the Modesto Subbasin of the San Joaquin Valley Groundwater Basin (as designated by the California Department of Water Resources).[14] The sediments in the vicinity of Modesto are generally poorly sorted and derived from continental and marine sedimentary rocks (with some volcanic rocks) of the Coast Ranges.[15] Groundwater occurs in the geologic materials underlying the site in discrete water-bearing zones or "aquifers." Based on regional mapping, the depth to first groundwater is about 40 feet below the ground surface (bgs).[16] Groundwater flow in the vicinity of the project site is generally to the west and southwest toward the San Joaquin River.

REGULATORY FRAMEWORK

Federal Emergency Management Agency

In 1968, Congress created the National Flood Insurance Program (NFIP) in response to the rising cost of taxpayer-funded disaster relief for flood victims and the increasing amount of damage caused by floods. The NFIP makes federally-backed flood insurance available to communities that agree to adopt and enforce floodplain management ordinances to reduce future flood damage. The NFIP is managed by FEMA. FEMA is responsible for conducting floodplain studies and publishing Flood Insurance Rate Maps (FIRM) that delineate flood hazard areas. The City of Modesto is a participating community in the NFIP, and therefore all new development must comply with the minimum requirements of the NFIP.

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[11] City of Modesto, *Local Hazard Mitigation Plan, Including Modesto Police Services, Modesto Fire Services, and the Modesto Contract Portion of Industrial Fire Protection District*, September 2004.
[12] Information regarding ownership and capacity of each dam based on California Department of Water Resources, Dams within the Jurisdiction of the State of California, Bulletin 17-88, October 1988.
[13] State of California, Governor's Office of Emergency Services, Dam Inundation Maps/GIS Data, March 30, 2006.
[14] California Department of Water Resources, 2005, website: http://www.sjd.water.ca.gov/groundwater/basin_maps/maps/turl_d00/index.cfm
[15] Burow, K.R., Shelton, J.L., Dubrovsky, N.M., *Occurrence of Nitrate and Pesticides in Ground Water beneath Three Agricultural Land-Use Settings in the Eastern San Joaquin Valley, California*, 1993-1995, U.S. Geological Survey, Water Resources Investigation Report 97-4284, 1998.
[16] California Department of Water Resources, 2005, website: http://www.sjd.water.ca.gov/groundwater/basin_maps/maps/turl_d00/index.cfm

Regional Water Quality Control Board

Water quality in surface water and groundwater bodies is regulated by the State Water Resources Control Board and Regional Water Quality Control Boards. The project site is under the jurisdiction of the Central Valley Regional Water Quality Control Board (CVRWQCB), which is responsible for the implementation of applicable state and federal water quality protection guidelines. The Water Board implements the *Water Quality Control Plan* (Basin Plan),[17] a master policy document for managing water quality issues in the region. The Basin Plan establishes beneficial water uses for waterways and water bodies within the region.

The proposed project may affect the volume and quality of storm water discharges. The following discussion describes how discharges are regulated by the Water Board and current water quality issues of concern that could be affected by the proposed project.

Storm Water Discharges

Runoff water quality is regulated by the National Pollutant Discharge Elimination System (NPDES) program (established through the Federal Clean Water Act); the NPDES program objective is to control and reduce pollutant discharges to surface water bodies. Locally, the NPDES program is administered by the Water Board. The Water Board has conveyed responsibility for implementation of storm water regulations in the vicinity of the project components to the City of Modesto. The following NPDES permits are relevant to the City of Modesto and activities proposed by the project.

General Construction Permit

Projects disturbing more than one acre of land during construction are required to file a Notice of Intent (NOI) with the State Water Resources Control Board to be covered under the state NPDES General Construction Activity Storm Water Permit (General Construction Permit) for discharges of storm water associated with construction activity. The project proponent must propose control measures that are consistent with the General Construction Permit. A Storm Water Pollution Prevention Plan (SWPPP) must be developed and implemented for each site covered by the General Construction Permit. An SWPPP should include Best Management Practices (BMPs) designed to reduce potential impacts to surface water quality through the construction period. The area that would be disturbed by the proposed project exceeds one acre, and therefore the project would be required to comply with the General Construction Permit.

[17] California Regional Water Quality Control Board Central Valley Region, *The Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, The Sacramento River Basin and the San Joaquin River Basin* (hereinafter referred to as the "*Water Quality Control Plan* (Basin Plan")), 1998.

Municipal Permit

In compliance with the Federal Water Pollution Control Act (also known as the Clean Water Act [CWA]), the City of Modesto has obtained a municipal permit under the NPDES for the management of storm water discharges. The municipal permit, which was issued by the Water Board, requires that the City develop, administer, implement, and enforce a Comprehensive Storm Water Management Program (CSWMP).

Recent changes to the permit held by the City are detailed in Water Board Order No. R5-2003-0132, which amends Order No. R5-2002-0182. Compliance with the NPDES Permit is mandated by state and federal statutes and regulations. The City of Modesto must comply with the provisions of the permit by ensuring that new development and redevelopment mitigate water quality impacts to storm water runoff during both the construction period and the operation period of projects.

As part of the CSWMP, the City has implemented a New Development Management Program, which has the goal of minimizing runoff pollution typically associated with land development. In January 2001, the program published the *Guidance Manual for New Development Stormwater Quality Control Measures*. The manual presents extensive discussion and recommendations for BMPs to be incorporated into new development design and post-development monitoring for the protection of water quality.

City of Modesto

The City of Modesto *Urban Area General Plan* (2008) contains the following policies that are relevant to development that would be expected pursuant to the proposed Specific Plan Amendment.

City of Modesto General Plan Policies

Storm Water Drainage Policies – Baseline Developed Area[18]

Policy V.E.3[a]: One-third of the Baseline Developed Area is served by "rockwells." New rockwells shall be allowed only under very limited circumstances. New storm drainage in the Baseline Developed Area shall be by means of positive storm drainage systems unless otherwise approved by the City Engineer.

The new storm drainage facilities shall consider the drainage facility requirements presented in Table 9-1 of the Final Master Environmental Impact Report and the Storm Drainage

[18] The City of Modesto's *Urban Area General Plan* (2008) identifies the limits of the Baseline Developed Area and Planned Urbanizing Area. See Figure II-1, Growth Strategy Diagram.

Master Plan. This policy applies to both positive storm drainage systems and to new rockwells (which are generally discouraged) in the Baseline Developed Area.

Policy V-E.3[b]: MID shall be consulted during the preparation of drainage studies required by this General Plan.

Policy V-E.3[c]: The City shall prevent water pollution from urban storm runoff as established by the Central Valley Regional Water Quality Control Board Basin Plan for surface discharges and Environmental Protection Agency for underground injection.

Policy V-E.3[d]: Storm water drainage facilities shall be constructed, operated, maintained, and replaced in a manner that will provide the best possible service to the public, as required by federal and state laws and regulations. In developing implementation plans, consideration shall be given to rehabilitation of existing facilities, remediation of developed areas with inadequate levels of drainage service, and the timely expansion of the system for future development.

Policy V-E.3[e]: The City shall update and maintain its Storm Drainage Master Plan to cover the entire area within the City's Sphere of Influence. The City of Modesto shall adopt the Storm Drainage Master Plan, in consultation with Stanislaus County, MID, and TID, to address the projected cumulative flows that would be discharged to MID and TID facilities from the urbanized drainage areas. The master drainage program should include the procedures for planning, evaluation, and design of necessary stormwater drainage facilities to ensure that facilities are capable of accommodating the additional flows. The master drainage program should include capital improvement, operations, and maintenance-financing plans necessary to ensure that facilities are constructed in a timely fashion to reduce the impacts from potential flooding problems.

Policy V-E.3[f]: New development shall comply with City requirements for conveyance, retention and detention. New development shall include onsite storage of stormwater as necessary. Rockwells shall not be allowed for new development except at infill areas smaller than three acres where no other feasible alternative is available.

Policy V-E.3[g]: The City Engineer may require storm water drainage infrastructure master plans for the public infrastructure or when otherwise pertinent to provision of service at adopted service levels for the specific plan areas or other projects depending upon site issues and location.

Policy V-E.3[h]: Construction activities shall comply with the requirements of the City's Storm Water Management Plan under its municipal NPDES stormwater permit, and the State Water Resources Control Board's General Permit for Discharges of Storm Water Associated with Construction Activity.

Policy VE.3[j]: The City shall ensure that new development complies with the City of Modesto's *Stormwater Management Program: Guidance Manual for New Development Stormwater Quality Control Measures.*

Storm Water Drainage Policies – Planned Urbanizing Area

Policy V-E.4[a]: All of the Stormwater Drainage policies for the Baseline Developed Area apply within the Planned Urbanizing Area.

Policy V-E.4[b]: The City of Modesto shall require each new development area to be served with positive storm drainage systems. A positive storm drainage system may be comprised of catch basins, pipelines, channels, recharge/detention basins, and pumping facilities that discharge stormwater to surface waters. New detention basins must typically include new technologies in their design that allow for full, healthy, and sustainable landscaping. The City of Modesto *Design Standards for Dual Use Flood Control / Recreation Facilities* manual is the guiding document for the development of these facilities. The positive storm drainage facilities shall consider the requirements presented in Table 9-1 of the Final Master Environmental Impact Report and the SDMP.

Policy V-E.4[c]: The City of Modesto shall require positive storm drainage facilities in the Planned Urbanizing Area. Recharge shall be typically accomplished at recharge/detention basins, designed to be in compliance with applicable federal and state water quality regulations for both groundwater and surface water.

Policy V-E.4[d]: Where feasible, dual-use flood control/recreation facilities shall be developed (dual-use facilities) as part of the storm drainage system. Dual-use facilities maximize efficient use of land and funds by satisfying needs for water quality, flood control, recreation, and aesthetics within a single consolidated facility.

Policy V-E.4[e]: Dual-use facilities shall be designed and constructed in accordance with the standards in the City of Modesto *Design Standards for Dual Use Flood Control/Recreation Facilities* manual and the Open Space and Parks/Planned Urbanizing Area Policy e.

Policy V-E.4[f]: New developments shall be required to implement an appropriate selection of permanent pollution control measures in accordance with the City's implementation policies for the municipal NPDES stormwater permit. Permanent erosion control measures such as seeding and planting vegetation for new cut-and-fill slopes, directing runoff through vegetation, or otherwise reducing the off-site discharge of particulates and sediment are the most effective method of controlling off-site discharges of urban pollutants.

Flood Hazard Policies – Baseline Developed Area

When development is proposed on parcels located within any "Flood Potential Study Area" shown on Figure VI-2 [of the 2008 UAG], the following policies apply:

Policy VI-C.2[a]: New urban development shall be approved only when the developer shows it to be protected from "200 year" floods and otherwise complies with the City's Floodplain Management Ordinance (Title 9, Chapter 4 of the Modesto Municipal Code).

Policy VI-C.2[b]: Undeveloped floodway areas as well as the Tuolumne River Regional Park Master Plan, the Dry Creek Master Plan, the Tuolumne River Comprehensive Planning District (CPD), and the Dry Creek CPD shall be preserved for undeveloped and non-urban use, as provided in the City's Floodplain Management Ordinance.

Policy VI-C.2[c]: Appropriate emergency plans for the safe evacuation of people from areas subject to inundation from dam failure shall be reviewed and periodically updated. The City Fire Department, Police Department, and Public Works Department shall continue to work with other jurisdictions to develop evacuation routes to be used in case of dam failure. Evacuation routes will serve all of the jurisdictions in the County.

Policy VI-C.2[d]: Maintain the floodplain management ordinance to ensure that flood insurance can be made available to qualified property owners through state and federal programs.

Policy VI-C.2[e]: Support the Federal Emergency Management Agency (FEMA) Flood Insurance Program so that residents who qualify may purchase such protection. Property owners whose property is located within certain areas identified by FEMA as flood hazard areas may purchase insurance against flood damage.

Policy VI-C.2[f]: Discourage development in areas susceptible to floods, except as provided under the Flood Insurance Program and City Floodplain Management Ordinance.

Flood Hazard Policies – Planned Urbanizing Area

Policy VI-C.3[a]: All of the Flood Hazard Policies adopted for the Baseline Developed Area apply equally within the Planned Urbanizing Area.

Policy VI-C.3[b]: The Focused Environmental Impact Report for any Comprehensive Planning District located within or including any portion of a "Flood Potential Study Area" on Figure VI-2 shall include a Flood Hazard Analysis developed to mitigate all of the Flood Hazard impacts identified in the Master Environmental Impact Report.

Policy VI-C.3[c]: The results of the Flood Hazard Analysis shall be incorporated into the project design of any Specific Plan. The Specific Plan shall prohibit development within the flood channel, consistent with the City's Floodplain Management Ordinance. Where possible, the Specific Plan shall minimize development within the floodplain, consistent with the City's Floodplain Management Ordinance, by such means as providing setbacks from flood zones designating areas within the flood zones for low-intensity development only, or providing for setback levees. When levee improvements are necessary to achieve flood protection, the Specific Plan shall include adequate funding for those improvements. Funding mechanisms may include special assessments or special taxes for both capital and maintenance costs, and shall not rely solely on impact fees. The City may work with other agencies to provide these improvements.

Policy VI-C.3[d]: The Urban Area General Plan Update includes policies to restrict development in the floodplain. Existing policies of the Urban Area General Plan and the City's Floodplain Management Ordinance will also restrict the amount of post-development runoff to no more than pre-development conditions.

City of Modesto Municipal Code

The City of Modesto has adopted the California Stormwater Quality Association (CASQA) *Stormwater Best Management Practices Handbook for Construction* as the standard for all

municipal construction projects (Modesto Municipal Code 5-10.204(c)). Chapter 16 of the City of Modesto Standard Specifications, 2006 revision, outlines the basic storm water BMPs that are required for all construction sites. The City requires the preparation of a Water Pollution Control Plan (WPCP) for all municipal projects less than one acre in size. For projects greater than one acre, the developer shall obtain coverage from the Water Board for the project under the General Construction Permit, as described above.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

According to Significance Criteria adopted by the City of Modesto, development of the proposed project would have a significant impact if it were to result in the project would substantially increase the rate or amount of surface runoff in a manner that would result in flooding on site or off site, or create or contribute runoff water that would exceed the capacity of existing or planned storm drainage systems or provide substantial sources of polluted runoff.

METHODOLOGY AND ASSUMPTIONS

The analysis of the significance of potential impacts to hydrologic conditions is based on a review of conformance of the proposed project activities (during and following construction) with existing local, state, and federal laws and regulations regarding stormwater runoff and protection of water quality.

PROPOSED PROJECT

City of Modesto Kiernan Business Park Proposed Specific Plan Amendment #4

- Policy PF-10: The City shall require all storm drainage facilities for the Kiernan Business Park to be designed and constructed in accordance with the storm drain study prepared by Harris & Associates [Stantec (August 2008), see Appendix D] and Figure III-11, Proposed Storm Drainage Facilities, which is hereby adopted as part of this Specific Plan.
- Policy PF-11: The City shall require the initial recharge/detention basin and pumping facilities to be completed prior to construction of buildings or paved surfaces in the Specific Plan area.
- Policy PF-12: The City shall require all development to be connected to the recharge/detention basin with a gravity storm drain system designed in conformance with the Master Drainage Plan.
- Policy PF-13: The recharge/detention basin shall be designed to accomplish 80 percent recharge of average annual run into groundwater.

- Policy PF-14: Discharge into the Modesto Irrigation District (MID) Canal shall meet MID's requirements for timing, flow rate and quality.
- Policy PF-15: All storm drain lines shall be within public street right-of-ways or, if appropriate and approved by the City, in public easements within private driveways or roadways.
- Policy PF-16: All storm retention basins and pumping facilities shall have direct access from public right-of-ways.
- Policy PF-17: All storm retention basins shall be designed to meet all functional and aesthetic criteria in accordance with the City of Modesto Design Standards for Dual Use Flood Control / Recreation Facilities.

PROJECT IMPACTS AND MITIGATION

Impact H.1. Construction activities could result in degradation of water quality in nearby surface water bodies by causing accidental spills and/or by reducing the quality of storm water runoff. (Less than Significant with Mitigation)

Groundbreaking and construction activities would occur under the proposed project. In general, construction, grading, and excavation results in exposure of soil to runoff, potentially causing erosion and entrainment of sediment in the runoff. Soil stockpiles and excavated areas would be exposed to runoff and, if not managed properly, the runoff could cause erosion and increased sedimentation in drainage ditches, MID laterals, and/or receiving surface water bodies.

The potential for chemical releases is present at most construction sites. Once released, substances such as fuels, oils, paints, and solvents could be transported to surface waters and/or groundwater in storm water runoff, wash water, and dust control water, potentially reducing the quality of the receiving waters. This is a potentially significant impact requiring mitigation.

Mitigation Measure H.1

The project proponent shall prepare an SWPPP for each development project under the Specific Plan (or one master SWPPP for all development) designed to reduce potential impacts to surface water quality through the construction period of all of the project components (whether or not the particular portion of the project disturbs more than one acre). The SWPPP shall emphasize measures designed to minimize erosion and off-site sedimentation.

The City staff shall review and approve the project SWPPP before the developer obtains a Grading and Building Permit. The project SWPPP shall include and adequately address all elements in the State General Construction Permit (Waste Discharge Requirements for Discharges of Stormwater Runoff Associated with Construction Activity, State Water Resources Control Board Order Number 99-08-DWQ). It is not required that the SWPPP be submitted to

the Water Board, but it must be maintained on site and made available to Water Board staff upon request. The SWPPP shall include:

- Specific and detailed BMPs designed to mitigate construction-related pollutants. At a minimum, BMPs shall include practices to keep construction materials, equipment, and maintenance supplies (e.g., fuels, lubricants, paints, solvents, adhesives) from coming into contact with storm water. The SWPPP shall specify properly designed, centralized storage areas that keep these materials out of the rain.
- On-site personnel meetings. An important component of the storm water quality protection effort is knowledge of the site supervisors and workers. To educate on-site personnel and maintain awareness of the importance of storm water quality protection, site supervisors shall conduct regular tailgate meetings to discuss pollution prevention. The SWPPP shall specify the frequency of the meetings and required personnel attendance.
- A monitoring program to be implemented by the construction site supervisor. The monitoring program must include both dry and wet weather inspections. In addition, in accordance with State Water Resources Control Board Resolution No. 2001-046, monitoring would be required during the construction period for pollutants that may be present in the runoff that are "not visually detectable in runoff."
- BMPs designed to reduce erosion of exposed soil. They may include, but are not limited to, soil stabilization controls, watering for dust control, perimeter silt fences, placement of hay bales, and sediment basins. The potential for erosion is generally increased if grading is performed during the rainy season as disturbed soil can be exposed to rainfall and storm runoff. If grading must be conducted during the rainy season, the primary BMPs selected shall focus on erosion control; that is, keeping sediment on the site. End-of-pipe sediment control measures (e.g., basins and traps) shall be used only as secondary measures. Entry and egress from the excavation area shall be carefully controlled to minimize off-site tracking of sediment. Vehicle and equipment wash-down facilities shall be designed to be accessible and functional during both dry and wet conditions.

The City of Modesto Public Works Department shall ensure that the SWPPP is prepared prior to approval of the grading plan for each development project or each phase of a multi-phased development project. Implementation of this mitigation would reduce the significance of this impact to a less-than-significant level.

Impact H.2. Operation-phase use of the site could result in degradation of water quality in receiving waters by reducing the quality of storm water runoff. (Less than Significant)

Proposed land uses at the project site would result in discharge of urban pollutants to storm water runoff. These pollutants include fuels, lubricants, fine sediments from tire wear, and fallout from exhaust, which will contribute petroleum hydrocarbons, heavy metals, and sediment to the pollutant load in runoff being transported to receiving waters. Runoff from landscaped areas at

the site may contain residual pesticides and nutrients. Long-term degradation of water quality runoff from the site could impact water quality in the receiving waters.

Under existing programs, the City must ensure that development under the proposed project meets all the requirements of the current Municipal NPDES Permit (NPDES Permit No. R5-2003-0132 which amends by Order No. R5-2002-0182) for operation-phase water quality treatment. The drainage plan for each proposed development under the Specific Plan would be required to include features and operational BMPs to reduce potential impacts to surface water quality associated with operation of the project. The final design would be required to include measures designed to mitigate potential water quality degradation of runoff from all portions of the completed development. In general, "passive," low-maintenance BMPs (e.g., grassy swales, porous pavements) are preferred over active filtering or treatment systems. An operations and maintenance plan would be developed and implemented to inspect and maintain BMPs in perpetuity.

The proposed Kiernan Business Park Specific Plan Amendment #4 includes detailed policies and requirements for design, construction, and maintenance of drainage facilities within the project site. The proposed Specific Plan Amendment policies are listed above under the "Regulatory Framework" section. Additional requirements of the Specific Plan include an emphasis on infiltration-based BMPs and proper design and maintenance of these BMPs so that their effectiveness is maintained through time. The proposed Specific Plan Amendment requires that infiltration areas be protected from construction-related compaction and sediment discharges, and that runoff be pretreated to reduce sediment clogging of the completed BMPs.

Under existing programs, the City Public Works Department would review and approve each design-level drainage plan for developments proposed under the Specific Plan Amendments to ensure that the requirements of the current Municipal NPDES Permit and the requirements of the proposed Kiernan Business Park Specific Plan Amendment #4 are satisfied before the grading plan is approved. Implementation of existing City programs, including the detailed policies and requirements of the proposed Kiernan Business Park Specific Plan Amendment #4, would therefore ensure that potential impacts related to storm water quality would be less than significant.

Mitigation Measure. No mitigation necessary.

Impact H.3. Implementation of the project could alter drainage patterns at the site, potentially causing runoff to exceed the capacity of existing conveyances and result in localized flooding. (Less than Significant with Mitigation)

The proposed project would increase the amount of impervious cover and redirect surface runoff relative to existing drainage patterns. Under the existing conditions, less than two percent of the

surface area is covered with impervious surfaces (based on aerial photograph interpretation). Under the full buildout of the proposed project, the site would be covered with substantially more impervious surfaces, including roads, parking lots, driveways, building roofs, and hardscape (the precise percentage is not known because the individual development designs have not been completed). This substantial increase in impervious cover represents a potentially significant impact that, if unmitigated, could increase the volume and rate of runoff from the site.

The project proponent retained a hydraulic engineering firm to prepare a drainage plan for the Specific Plan area (see Appendix D). The *Kiernan Business Park East and South Final Storm Drainage Technical Report* specifies preliminary drainage design features for the Specific Plan area (and another area, the South area, not evaluated in this EIR).[19] The preliminary drainage plan includes a combination of on-site detention (infiltration) basins, linear detention (infiltration) basins adjacent to public streets, and a terminal detention basin.[20] The on-site detention basins will incorporate elements that facilitate infiltration as the primary method for draining them and will be sized for the 100-year, 24-hour runoff volume.[21] If the capacity of the terminal basin is exceeded, discharge to MID Lateral No. 6 would be initiated. Discharges from the terminal basin would be pumped into the MID Lateral No. 6 with a single pump station (at a rate up to 5.0 cubic feet per second). The MID has not yet agreed to accept these discharges, but the City believes that MID is likely to accept them. The proposed project drainage system would not function as designed unless this discharge to the MID Lateral No. 6 is approved.

Mitigation Measure H.3a

As a condition of approval of the final grading and drainage plans for the first project proposed in the Specific Plan area, the developer must acquire written approval from the MID to discharge runoff to the MID Lateral No. 6 (up to 5.0 cubic feet per second), and provide this documentation to the City of Modesto Public Works Department. If approval from MID cannot be obtained, then an alternative plan for disposal of stormwater would need to be developed and accepted in accordance with the City of Modesto standards for stormwater runoff.

Mitigation Measure H.3b

As a condition of approval of the final grading and drainage plans for all projects proposed within the Specific Plan area, detailed hydraulic analysis must demonstrate that implementation of the proposed drainage plans will:

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[19] Stantec Consulting Inc., *Kiernan Business Park East and South Final Storm Drainage Technical Report*, prepared for Harris & Associates, August 2008.
[20] The "terminal basin," the final basin in the system, contains all the water that does not infiltrate or evaporate.
[21] *Kiernan Business Park East and South Final Storm Drainage Technical Report*, p. 1.2.

- Include adequately sized detention facilities to accommodate anticipated runoff associated with the 100-year storm event. A licensed professional engineer shall prepare the final drainage plan for the project and plans must be submitted to the City of Modesto Public Works Department for review and approval.
- Include drainage components that are designed in compliance with City of Modesto standards. The grading and drainage plans shall be reviewed for compliance with these requirements by the Public Works Department.
- Establish a funding mechanism for maintenance and annual inspections of the detention basin, drainage ditches, and drainage inlets. Any accumulation of sediment or other debris shall be promptly removed. An annual report documenting the inspection and any remedial action conducted shall be submitted to the City of Modesto Public Works Department for review.

Implementation of this mitigation measure would reduce potential impacts associated with increased peak runoff volumes to a less-than-significant level.

Impact H.4. Implementation of the proposed project could place new development within an area potentially subject to dam failure inundation and/or inundation associated with spring/early summer snowmelt runoff. (Less than Significant)

The Specific Plan area could be impacted if the New Melones Dam were to fail catastrophically. The New Melones Dam is located on the Stanislaus River and operated by the U.S. Bureau of Reclamation. The New Melones Dam is under the jurisdiction of the federal government (the U.S. Bureau of Reclamation). Existing dams under state and federal jurisdiction are periodically inspected to ensure that they are adequately maintained and to direct the owner to correct any identified deficiencies. Regular inspections and required maintenance of the dams substantially reduce the potential for catastrophic failure. Therefore, this impact would be less than significant.

The Initial Study for this project identified the potential for global warming to increase the rate of melting of the Sierra snowpack in the spring and early summer, potentially leading to overburdening of the reservoirs located east and southeast of the Specific Plan area. The Initial Study indicated that under this scenario, higher in-stream flows could occur, potentially resulting in downstream flooding. However, even if the reservoir operators were forced to release water at a greater rate than under existing conditions, these flows would follow the path of the rivers and their associated floodplains (e.g., the Stanislaus and the Tuolumne Rivers). The Specific Plan area is approximately two miles south of the Stanislaus River and five miles northwest of the Tuolumne River (and more than 10 feet higher in elevation along a north-south line). Therefore, this impact would be less than significant.

Mitigation Measure. No mitigation necessary.

Impact H.5. Implementation of the project could result in depletion of groundwater resources. (Less than Significant)

Under existing conditions, the project site has little impervious cover (less than two percent). The proposed project would substantially increase the amount of impervious cover, which, if unmitigated, could reduce the amount of groundwater recharge at the site. However, the project proposes to construct BMPs that emphasize infiltration of the runoff. Runoff would be directed into the detention basins and, under hydrostatic pressure, infiltrate into the basin bottoms and sidewalls (at an increased rate due to the hydrostatic pressure). In addition, collection of the runoff into basins would reduce the surface area of water ponded at the surface and therefore reduce overall evaporative losses, relative to the existing condition. Construction and operation of the detention basin system is expected to offset the potential losses to groundwater recharge associated with the increased impervious coverage.

The project could deplete local groundwater resources if it proposed to increase local groundwater extraction. The project does not propose to increase groundwater extraction relative to existing conditions. Therefore, no depletion of local resources associated with groundwater pumping is expected, and this impact would be less than significant.

Mitigation Measure. No mitigation necessary.

Impact H.6. Existing water supply wells within the Specific Plan area, if not properly managed or decommissioned, could be damaged during construction, potentially resulting in impacts to groundwater quality. (Less than Significant with Mitigation)

Based on observations made during a field reconnaissance conducted by BASELINE Environmental, there are likely numerous water supply wells located within the Specific Plan area that serve the existing residences and agricultural operations. If any of the wells were not fitted with effective sanitary seals upon construction, or if any seals have been damaged since installation or were to be damaged during grading and construction for the any of the projects under the Specific Plan, surface water (potentially containing pollutants) could seep into the wells and the underlying aquifer, causing water quality degradation.

Mitigation Measure H.6

Before a grading plan for development of a particular parcel of the Specific Plan area is approved, a well survey shall be conducted by a State-registered geologist or engineer to determine the location and characteristics of each well for that particular parcel. The survey results shall be submitted to the City for review.

The water supply wells shall either be:

1. Properly abandoned in compliance with the California Department of Water Resources, California Well Standards and Stanislaus County Code, Chapter 9.36 prior to final approval of the grading plan, or
2. Inspected by a qualified professional to determine whether each well is properly sealed at the surface to prevent infiltration of water-borne contaminants into the well casing or surrounding gravel pack. The California Well Standards require an annular surface seal of at least 20 feet. If any of the wells are found not to comply with this requirement, the applicant shall retain a qualified well driller to install the required seal. Documentation of the inspections and seal installations, if any, shall be provided to the City prior to final approval of the grading plan.

Implementation of this mitigation would reduce this impact to a less-than-significant level.

I. COMMUNITY SERVICES

The 153-acre project site is currently under the jurisdiction of both the City of Modesto (the approximately 87-acre southwest portion) and Stanislaus County (the approximately 67-acre northeast portion). Police services are provided by the Modesto Police Department (MPD) and the Stanislaus County Sheriff's Department (SCSD); fire services are provided by the Modesto Fire Department (MFD) and the Salida Fire Protection District (SFPD); and school services are provided by the Stanislaus Union School District (SUSD) and the Modesto High School District (MHSD). The project includes annexation of the 67-acre northeast portion of project site into the City of Modesto. Therefore, the Community Services section describes existing police, fire, and school services in Stanislaus County and the City of Modesto. It also describes the changes that would affect these services upon annexation of the proposed project area and evaluates the project's impacts on these services. The Initial Study found that the proposed project could result in substantial adverse physical impacts on police, fire, and school services (see Appendix A, Initial Study, pp. 58-60).

This section is based on available site information, a review of the 2003 *Modesto Urban Area General Plan*, the 2003 *Final Master Environmental Impact Report for the Urban Area General Plan and Related Amendments to the Urban Area General Plan*, and information gathered from survey responses provided by the SCSD, the SFPD, the California Highway Patrol (CHP), the MPD, the MFD, the SUSD, and the MHSD. This section is organized by service, with Setting and Impacts discussions for each service.

POLICE

SETTING

City of Modesto

In 2007, approximately 210,000 Modesto residents received Modesto Police Department (MPD) law enforcement services,[1] up from 187,000 in 1999-2000.[2] The MPD is funded by the City General Fund through a yearly budget process. The MPD has a total of 363 officers: 261 sworn officers assigned to various units and divisions[3] and an additional 102 non-sworn officers,[4] 37 of whom are authorized Community Service officers.[5]

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[1] Bronda Smith, Modesto Police Department, survey responses, June 13, 2008.
[2] City of Modesto, *Final Master Environmental Impact Report for the Urban Area General Plan and Related Amendments to the Urban Area General Plan*, October 2003 (hereinafter "*Final Master Environmental Impact Report*"), p. V-13-1.
[3] The MPD has authorization for 287 sworn officer positions.

The MPD consists of three divisions: Operations, Investigations, and Support. Some of the services provided by the MPD are 24-hour Patrol Services, Investigative Services, Information Services, Traffic Enforcement, Property Crimes, Crime Prevention and Public Relations, Records, and Youth Services. The Operations Division provides most of the daily law enforcement, with personnel divided into four shifts per 24-hour period. Patrol detail, organized by patrol areas or "beats," is structured to fluctuate with changes in demand. In addition, the MPD responds to requests from other agencies outside City limits when necessary, including the SCSD and the CHP.

The MPD operates from two main facilities: the Gerald L. McKinsey Modesto Police Complex, at 600 10th Street (the base for all core police services – patrol and field services, investigative service, and support services) and the Police Operations Building, at 601 11th Street. The MPD currently serves the 36.2-square-mile area of the incorporated City of Modesto. In addition, there are four command areas operating from local facilities strategically located throughout the City.

The 86-acre portion of the project site adjacent to Dale Road is within MPD Patrol Area 65 and reporting district M010. Patrol Area 65 is bounded by Beckwith Road, State Route 99, and Dale Road on the west, by the Modesto city limits on the north (Kiernan Avenue and Bangs Avenue), by W. Briggsmore Avenue on the south, and by Prescott Road, Pelandale Avenue, and Carver Road on the east. The 67-acre portion of the project site is served by the SCSD.

The MPD responds to emergency calls related to crimes in progress, threats to public safety, traffic accidents, and other urgent requests. The response rate is determined by the number of full-time police personnel per 1,000 citizens and varies by type of incoming call.[6] As of July 1, 2007, the officer to population ratio is 1.37 officers per 1,000 residents.[7] The MPD's goal is 1.85 officers per 1,000 residents by fiscal year 2016/2017.[8] In 2007, approximately 121,600 calls received by the MPD were assigned case numbers[9]; however, the actual number of calls is significantly higher because not all calls are given a case number.[10] Calls reporting crimes in progress (Priority 1P) receive the highest priority and the quickest response. Most other calls report crimes that have just occurred and/or situations where a police unit is needed as soon as possible. At the current service ratio, the department is able to answer Priority 1P calls within

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[4] The MPD has authorization for 114.75 non-sworn officer positions.
[5] Community Service officers perform a variety of non-Peace Officer field and office law enforcement tasks including parking enforcement and traffic control, evidence and fingerprint collection, and general staff support to Police Department staff.
[6] Priority 1 calls include robbery, homicide, and kidnap; Priority 2 calls include prowlers, domestic disturbances, and alarms; and Priority 3 calls include public nuisance, grand theft, and trespassing.
[7] Bronda Smith, Modesto Police Department, City of Modesto survey response, June 13, 2008.
[8] Ibid.
[9] Ibid.
[10] Ibid.

5.18 minutes, Priority 1 calls within 13.54 minutes, Priority 2 calls within 21.69 minutes, and Priority 3 calls within 30.14 minutes.

Stanislaus County

The SCSD provides law enforcement services to approximately 100,000 people over an approximately 1,520-square-mile area.[11] The SCSD has local agreements with all the municipal and state police agencies within the county for mutual aid. The Sheriff's Operations Center is located at 250 E. Hackett Road in the City of Modesto. The SCSD serves the 67-acre portion of the project site outside of the existing Modesto city limit from the Salida Substation in downtown Salida. The 67-acre portion of the project site is located within patrol area S531. The patrol area is bounded on the north by Kiernan Avenue, on the east by Carver Road, on the south by Bangs Avenue, and on the west by the Modesto city limits.

The Sheriff's Department is authorized for 678 sworn and non-sworn officers. Currently, 293 sworn and 385 non-sworn officers are on staff. The officer to population ratio is 1.5 patrol deputies per 1,000 residents, which allows for an average response time of approximately 7.26 minutes for Priority 1 calls (defined as calls concerning crimes in progress), 7.95 minutes for Priority 2 calls, and 10.32 minutes for Priority 3 calls.[12,13]

California Highway Patrol

The CHP's Central Division provides law enforcement and traffic control services in the San Joaquin Valley. The CHP provides traffic control on segments of interstate and state routes that run the length of the Central Division, i.e., the 244-mile stretch of State Route 99 and the 275-mile stretch of Interstate 5. The Central Division has 15 area offices, 6 resident posts, 2 commercial inspection facilities, 698 uniformed officers, and 242 non-uniformed personnel. The Merced Dispatch Center provides communication services to the area offices in Modesto, Merced, Madera, Los Banos, Mariposa, Oakhurst, and Sonora.[14]

The CHP assists local law enforcement agencies upon request. The CHP's Modesto Area Office is located at 4030 Kiernan Avenue and its service area includes Stanislaus County and Modesto. The Modesto Area Office patrols 1,521 square miles, including county roadways and state highways in Stanislaus County. The area office employs 60 uniformed officers, 6 sergeants, 1

[11] The service area includes all of unincorporated Stanislaus County, including unincorporated islands within the City of Modesto, and the cities of Patterson, Riverbank, Hughson, and Waterford.
[12] Lt. Charles Grom, Stanislaus County Sheriff, City of Modesto survey response, June 13, 2008.
[13] Priority 1 calls include robbery, homicide, and kidnap; Priority 2 calls include prowlers, domestic disturbances, and alarms; and Priority 3 calls include public nuisance, grand theft, and trespassing.
[14] Lt. Barry Koenig, California Highway Patrol, City of Modesto survey response, June 13, 2008.

lieutenant, 1 captain, and 9 non-uniformed personnel. In the project vicinity, the CHP provides traffic control on State Route 99, State Route 219 (Kiernan Avenue), State Route 108 (McHenry Avenue), and all public roadways in the unincorporated portions of the vicinity of the project.[15]

In 2006, the CHP responded to 2,841 traffic collisions on county roadways and state highways in Stanislaus County. In the vicinity of the project, approximately 67 collisions occurred on State Route 219 (Kiernan Avenue), of which 16 resulted in injuries and 51 resulted in property damage only; there were no fatalities. Approximately 473 collisions occurred on State Route 99, of which 95 resulted in injuries (including 2 fatalities), 378 in property damage only. In 2007, the CHP made 25 arrests on State Route 219 (Kiernan Avenue) and 232 arrests on State Route 99 within the project vicinity. Over 499 arrests were made in the surrounding county area.[16]

REGULATORY FRAMEWORK

The Regulatory Framework discusses applicable policies of both the Stanislaus Local Agency Formation Commission (LAFCO) and the City of Modesto *Urban Area General Plan.* LAFCO policies are relevant because they govern the City of Modesto's annexation of unincorporated County lands; the City of Modesto *Urban Area General Plan* policies are relevant because they govern existing City land. Upon fulfillment of LAFCO annexation requirements, Stanislaus County *General Plan* goals and policies would no longer apply and City of Modesto *Urban Area General Plan* policies would be applicable.

Stanislaus County Local Agency Formation Commission

LAFCO oversees the annexation of unincorporated lands to the City under the provisions of the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Government Code Section 56000 *et seq.*). LAFCO is responsible for coordinating logical and timely changes in local governmental boundaries; conducting special studies that review ways to reorganize, simplify, and streamline governmental structure; and preparing a Sphere of Influence for each city and special district within each county. The Commission's efforts are directed to seeing that services are provided efficiently and economically while agricultural and open-space lands are protected.

Under Government Code Section 56668, LAFCO is required to consider the need for police services before approving any annexation to the City. Prior to annexation, the applicant is required to submit a plan for service demonstrating that the area will have adequate police service. This plan must provide evidence that, at the minimum, the current range and level of services provided to the proposed annexation area will be maintained.

[15] Ibid.
[16] Ibid.

City of Modesto

The following Modesto *Urban Area General Plan* policies that support the City's goals for police services are relevant to the Kiernan Business Park Specific Plan Amendment #4:

Community Development Policy III-D.1[e]: Each Specific Plan shall be accompanied by a long-range financing strategy that provides reasonable estimates of the costs of on- and off-site infrastructure to support the proposed development pattern. The strategy should generally address public facility funding, including schools, for any development project that serves to implement the subject Specific Plan. If new public facilities are required that will also serve the broader community, the Specific Plan should include options for broad-based funding mechanisms.

Community Services Policy V-J.2[a]: The City of Modesto should maintain an adequate personnel level to organize patrol areas and provide investigative responses to achieve a comfortable and safe community climate conducive to a high quality of life and to maintain an active and growing commercial and business environment. To the maximum economic extent feasible, police operations should include proactive law enforcement and administrative efforts, all to be expanded as the City's population grows.

Community Services Policy V-J.2[b]: The City of Modesto Police Department should strive to reduce the level of crime below levels of other progressive departments with comparable populations and demographics.

Community Services Policy V-J.2[c]: The City of Modesto should strive to provide sworn officers in sufficient numbers to support basic police services consistent with other progressive departments with comparable population and demographic statistics. The City of Modesto's recommended long-term police staffing plan contains a ratio of 1.85 sworn officers per one thousand residents. This ratio shall be achieved through on-going evaluation of projects that generate demand for police services and facilities and by incremental increases to staffing each year. This evaluation shall include the long-term forecasting for the need and placement of police facilities.

Community Services Policy V-J.2[d]: The City of Modesto should strive to provide civilian staff in sufficient numbers to support sworn staff and to support continuing civilianization of services such as Crime Prevention, Investigative Support, Crime Scene Investigation, Accident Reports, and other documentation of incidents and other forms of clerical support.

POLICE SERVICE IMPACTS AND MITIGATION

Significance Criteria

The City of Modesto recognizes impacts as significant if the project is located in an area that cannot be adequately serviced by existing or budgeted police personnel and facilities.

Impact I.1. Development of the project site would result in an increased demand for Modesto Police Department officer hours due to the potential for increased on-site criminal activity and increased number of traffic incidents near the site. (Less than Significant)

Upon annexation, the MPD would include the 67-acre portion of the project site now served by the SCSD as part of Patrol Area 65 (the portion of the project site within the City is already in this patrol area). The MPD would respond to all reported incidents at the project site from the main police complex at 600 10th Street.

The development of the project site is expected to increase Modesto's population by approximately 1,000 people. In order to maintain the current response times, the MPD would require approximately 1.37 additional officers based on its current service ratio of officers to population. Implementation of the proposed project would also result in the expenditure of more officer-hours responding to an increased number of calls and traffic incidents.

The increase in officer hours would not result in the need for the expansion of the main police complex or other police facilities, or in the construction of any new police-related infrastructure. Compliance with City of Modesto *Urban Area General Plan* policies, specifically Policy III-D.1[e], which calls for the development of a long-range financing strategy for each Comprehensive Plan Area, would allow the City to allocate the necessary funds to extend police services, with additional police personnel and equipment, into the Kiernan/Carver Comprehensive Planning District,[17] which includes the project site. Therefore, the impact on police services as a result of the proposed project would be less than significant.

Mitigation Measure. No mitigation necessary.

FIRE

SETTING

City of Modesto

Fire protection within City limits is provided by the Modesto Fire Department (MFD). The MFD is also Modesto's first responder to many emergency situations. Fire stations are strategically located to provide rapid response, and fire engines are equipped with life-saving equipment. The MFD service area encompasses approximately 36.2 square miles and approximately 74,700 residential units. Fire services in unincorporated areas included in the City of Modesto *Urban*

[17] The City's Planned Urbanizing Area is comprised of separate Comprehensive Planning Districts. Each Comprehensive Planning District is implemented by a Comprehensive Plan.

Area General Plan boundary are provided by the Burbank/Paradise, Salida, Industrial, Woodland, and Stanislaus Consolidated Fire Protection Districts.

The MFD employs a total of 167 people in its Fire Suppression division. Firefighters operate through three shifts and are on duty 24 hours per day, 7 days a week.[18] The MFD has 11 fully staffed stations, each equipped with at least one "Type 1" engine and three firefighters. Station No. 8 has a Crash and Fire Rescue unit and a "purple K" (dry chemical) unit, as well as specially designed Aircraft Rescue/Fire Fighting apparatus. Stations No. 4 and No. 9 have Advanced Life Services units. At least 57 firefighters, including two battalion chief, are on duty during each 24-hour shift. Each fire engine is accompanied by a captain, an engineer, and a firefighter. Each ladder truck is accompanied by a captain, an engineer, and two firefighters. Two additional stations are proposed to be constructed: Fire Station No. 12, in the northeast portion of the City of Modesto between Roselle Avenue and Litt Road on land planned to be part of the future Mary E. Grogan Park; and Fire Station No. 13, in the north-central portion of the City.

The MFD strives to maintain a service standard of a "first in" response time within six minutes of dispatch in all areas of the City, with an "effective response force"[19] on scene at all structure fires within 10 minutes. The service standard for a second alarm assignment is to reach the scene within 15 minutes of dispatch more than 95 percent of the time.[20]

To fulfill firefighting water supply needs, pipeline sizes, pump capacities, and water storage capacity should be adequate to meet the demand for peak-load water supply. The minimum fire flow for multi-family, commercial, and industrial land uses is 1,500 gallons per minute from each of two adjacent fire hydrants flowing simultaneously with 20-pounds-per-square-inch residual pressure.[21] The three factors that influence fire flow rates are building square footage, type of construction, and automatic fire sprinklers.

Fire protection classifications are designated by the State Insurance Services Office (ISO). The ISO considers three primary factors in their rating system: fire department location, personnel, and equipment (50 percent); water supply and fire flow capacity (40 percent); and communications capabilities (10 percent). Ratings are based on a scale of 1 to 10, with 1 being the best possible protection. The MFD maintains an ISO rating of 2.

The project site is located in the primary service area of Fire Station No. 11, located at 4225 Carver Road (about two miles east of the intersection of Dale Road and Kiernan Avenue), and

[18] Michael Payton, Fire Marshal, Modesto Fire Department, City of Modesto Survey Responses, June 13, 2008.
[19] An effective response force consists of three engines, one truck, and a battalion chief.
[20] City of Modesto, *Urban Area General Plan*, Policy K.2.j, p. V-29.
[21] City of Modesto, *2006 Standard Specifications*, Engineering and Transportation Department, p. 6-6.

within the secondary service area of Fire Station No. 6 at 2700 Standiford Avenue (about two miles to the south).[22] Station No. 11 has seven personnel and is equipped with one Type 1 engine and one ladder truck. Station No. 6 has three personnel and is equipped with one Type I engine. Fire Station No. 5, located at 200 W. Briggsmore Avenue (about six miles from the intersection of Dale Road and Kiernan Avenue), serves the northwestern portions of Modesto and would also respond to calls from the project site. This station has approximately 12 personnel and is equipped with one Type 1 engine, one rescue vehicle, one battalion truck, and one ladder truck.

Salida Fire Protection District, Stanislaus County

The SFPD currently provides emergency fire services to the portion of the project site outside of Modesto city limits and to the surrounding area outside Modesto city limits. Its service area covers approximately 43 square miles and includes residential neighborhoods, commercial buildings, rural areas, approximately 3 miles of Highway 99, and approximately 15 miles of the Stanislaus River. The SFPD serves a population of approximately 24,000 people. In 2007, the SFPD's average response time for calls from within the urban areas of Salida was less than five minutes.

The SFPD has three active fire stations: Fire Station No. 1, at 4820 Salida Boulevard in the community of Salida, which serves as the administrative station; Fire Station 2, at 1330 Ladd Road between Tully and Carver Roads in the Del Rio area; and Fire Station 3, at 5551 Ciccarelli Road. Development of a fourth fire station is in the planning stages and is proposed to coincide with the River Ranch and Gateway developments.[23] The project site is located within the service area of Fire Station No. 1, located 1¾ miles east of the project site. Backup is provided by Fire Station No. 2, located about 3½ miles north and east of the project site. In 2007, the SFPD responded to approximately 11 calls within the project vicinity: 1 structure fire, 5 emergency medical responses, 2 alarms, 2 cancelled calls, and 1 vehicle accident.[24]

The SFPD has a total of 35 personnel: 2 chiefs, 6 captains, 14 engineers, 11 firefighters, and 2 non-safety-related positions. It provides Fire Safety and Basic Life Support as first responders over its full service area. Advanced Life Support is provided by the local ambulance company, American Medical Response. The SFPD maintains six engines (five Type I and one Type III), two rescue vehicles, and one water tender vehicle.[25] In 2007 the SFPD responded to 1,063

[22] Michael Payton, Fire Marshal, Modesto Fire Department, City of Modesto Survey Responses, June 13, 2008.
[23] Dale Skiles, Fire Chief, Salida Fire Protection District, City of Modesto Survey Responses, June 13, 2008.
[24] Ibid.
[25] The difference between fire engines is based on a variety of criteria, including number of feet of ladder, number of feet of hose, hose diameter, maneuverability, and pumping capacity. These differences result in

incidents. Roughly 24 percent of all incidents were fire-related; 9 percent were vehicle accidents; 56 percent were emergency medical service-related and the remaining 11 percent consisted of miscellaneous, public assistance, and hazardous material responses, among other items.[26]

The SFPD has entered into master and day-to-day mutual aid agreements with all regional fire agencies. In addition, the SFPD has automatic aid agreements with adjoining fire agencies including the Escalon Consolidated Fire Protection District, the Ripon Consolidated Fire District, and the Woodland Avenue Fire District. The SFPD also has an automatic mutual aid agreement with the Modesto Fire Department.[27]

Fire protection classifications are designated by the State ISO. Due to the geography and demographics of the District, the SFPD has been assigned two different ISO ratings. In areas with a water system its ISO rating is 4, while in the more rural parts of its service area without a water system its ISO rating is 9.

REGULATORY FRAMEWORK

The Regulatory Framework addresses applicable policies of both LAFCO and the City of Modesto *Urban Area General Plan*. LAFCO policies are relevant because they govern the City of Modesto's annexation of unincorporated County lands; the City's *Urban Area General Plan* policies are relevant because they govern existing City land. Upon fulfillment of LAFCO annexation requirements, Stanislaus County *General Plan* goals and policies would no longer apply and the City's *Urban Area General Plan* policies would be applicable.

Stanislaus County Local Agency Formation Commission

LAFCO oversees the annexation of unincorporated lands to the City under the provisions of the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Government Code Section 56000 *et seq.*). LAFCO is responsible for coordinating logical and timely changes in local governmental boundaries; conducting special studies that review ways to reorganize, simplify, and streamline governmental structure; and preparing a Sphere of Influence for each city and special district within each county. The Commission's efforts are directed toward seeing that services are provided efficiently and economically while agricultural and open-space lands are protected.

Type I engines being the primary engine for structure fires, with each grade down to Type IV engines being more appropriate for fighting wildfires.

[26] Salida Fire Protection District, Incident Response Summary – 2007. On file with the City of Modesto.

[27] Dale Skiles, Fire Chief, Salida Fire Protection District, City of Modesto Survey Responses, June 13, 2008.

Under Government Code Section 56668, LAFCO is required to consider the need for fire services before approving any annexation to the City. Prior to annexation, the applicant is required to submit a plan for service demonstrating that the area will have adequate fire service. The plan must provide evidence that, at the minimum, the current range and level of services provided to the proposed annexation area will be maintained.

City of Modesto

The following Modesto *Urban Area General Plan* policies that support the City's goals for fire services are relevant to the Kiernan Business Park Specific Plan Amendment #4:

Community Development Policy III-D.1[e]: Each Specific Plan shall be accompanied by a long-range financing strategy that provides reasonable estimates of the costs of on- and off-site infrastructure to support the proposed development pattern. The strategy should generally address public facility funding, including schools, for any development project that serves to implement the subject Specific Plan. If new public facilities are required that will also serve the broader community, the Specific Plan should include options for broad-based funding mechanisms.

Community Services Policy V-K.2[a]: The City of Modesto shall maintain adequate fire flows in relation to structure size, design, and requirements for construction and/or built-in fire protection systems in accordance with the California Fire Code and adopted local ordinances. Maintenance of adequate flows includes factors such as adequate storage, system gridding, hydrant spacing, and spacing and sizing of water mains.

Community Services Policy V-K.2[b]: The City of Modesto shall ensure adequate ingress and egress to all structures for fire fighting and rescue purposes independently of privately owned and maintained driveways.

Community Services Policy V-K.2[c]: The City of Modesto shall provide protection of life and property through the use of engineered fire protection systems and fire-resistive roof systems.

Community Services Policy V-K.2[d]: The City of Modesto shall practice timely adoption of the current edition of the California Fire Code including local ordinances designed to address local conditions. These codes and ordinances may be amended to suit local conditions.

Community Services Policy V-K.2[e]: The City of Modesto shall strive to ensure that fire stations, apparatus, equipment and personnel are in place concurrent with construction in the Planned Urbanizing Area.

Community Services Policy V-K.2[f]: Future fire stations and facilities should be closely coordinated with existing and planned public parks, libraries and other activity centers in order to encourage maximum efficiency of public facilities.

Community Services Policy V-K.2[g]: The City of Modesto shall promote fire-safe behaviors within the community through public fire education activities and programs.

Community Services Policy V-K.2[h]: The City shall maintain its readiness to mitigate man-made or natural disasters through maintenance and implementation of the Multi-Hazard Functional Plan, the Multi-Hazard Mitigation Plan, and the Emergency Operations Plan.

Community Services Policy V-K.2[i]: The City of Modesto Fire Department shall maintain equipment, staffing, and facilities to provide Emergency First Response Level Emergency Medical Services, Urban Search and Rescue, and Hazardous Materials emergency response capabilities.

Community Services Policy V-K.2[j]: The City of Modesto shall provide an adequate Fire and Life Safety Delivery system through the achievement of the following standards:

(1) The City of Modesto shall maintain an emergency response system capable of achieving the following standards in 90% of all cases.

   (a) The first emergency response unit arrives within six minutes of dispatch.

   (b) A full alarm assignment consisting of three engines, one truck, one chief officer, and 14 personnel arrives within 10 minutes of dispatch.

   (c) A second alarm assignment consisting of two additional fire units with a minimum of six personnel arrives within 15 minutes of dispatch.

(2) The City of Modesto shall maintain a fire and life safety delivery system adequate to achieve an Insurance Service Office (ISO) rating of Class 2, with the optimum goal to achieve Class 1 rating.

(3) The City shall maintain a fire and life safety delivery system adequate to achieve International Accreditation through the Center for Public Safety Excellence.

Community Services Policy V-K.2[k]: The City of Modesto shall protect life and property by requiring engineered fire protection systems and fire resistive roof systems as part of all new construction; in situations where access is limited, fire sprinklers shall be required for new construction.

Community Services Policy V-K.2[l]: The City of Modesto shall maintain adequate Fire Prevention staffing in order to provide an effective prevention program aimed at fire loss reduction through inspection, investigation, and public education.

Community Services Policy V-K.2[m]: The City of Modesto may negotiate with affected fire protection districts when an annexation to the City is contemplated and before it has been effected to determine whether the boundary change may result in the erosion of fire protection or other emergency services. Any resulting agreements must be approved by City Council and the governing board of the fire protection district prior to City Council approval of the annexation. Options range from the consolidation of the fire protection district into Modesto City Fire to revenue sharing.

Public Safety Policy VI-D.1[a]: Peak Load Water Supply. The City shall ensure that adequate water fire-flows are maintained throughout the City and shall regularly monitor fire-flows to ensure adequacy. New development shall comply with the minimum fire-flow rates, as presented in Appendix B of the California Fire Code.

Public Safety Policy VI-D.1[b]: Minimum Road Widths and Clearances Around Structures. Fire apparatus access roads to and around structures shall comply with the minimum requirements in Chapter 5 of the California Fire Code.

Public Safety Policy VI-D.1[c]: Miscellaneous. The following policies will help to minimize the hazardous conditions that might cause loss of life.

1. Enforce State-mandated Health and Safety Codes, including but not limited to the current adopted addition of the California Fire Code, California Building Code, California Mechanical Code, California Electrical Code, California Plumbing Code, Title 19, Title 24, and the City of Modesto Municipal Code.
2. Design and maintain roads so as to ensure adequate access in hazardous conditions.
3. Require all new development to have adequate water to meet the established fire flow standards.
4. Encourage funding sources that help to maintain adequate on-going fire services for both existing and new development.

Public Safety Policy VI-E.1[d]: All building permits shall be reviewed to ensure compliance with the current adopted edition of the California Fire Code, California Building Code, California Mechanical Code, California Electrical Code, California Plumbing Code, Title 19, Title 24, and the City of Modesto Municipal Code.

FIRE SERVICE IMPACTS AND MITIGATION

Significance Criteria

The City of Modesto recognizes impacts as significant if the project would result in an increased demand for fire services in an area that cannot be adequately serviced by existing and anticipated future fire personnel and facilities.

Impact I.2. Development of the project site would result in an increase in the volume of emergency calls. (Less than Significant)

Current land uses on the project site include agriculture and related ancillary uses, detached single-family residences, commercial use, and a Modesto Irrigation District electrical substation. The proposed project would change the character of the land uses from predominantly agricultural use with some residential uses to predominantly residential and commercial uses. This land use change would alter the type and amount of fire service provided.

Upon annexation of the 67-acre portion of the project site, MFD emergency response call volumes for fire emergency services would increase. Currently, the 86-acre portion of the project site with the City of Modesto is in the primary service area of Fire Station No. 11, approximately two miles east, and the secondary service area of Fire Station No. 6, approximately two miles to the south. Fire Station No. 5, approximately six miles to the south and east, would also respond to assist with structure fires on the project site. Currently, Fire Station No. 11 personnel and

apparatus would respond to all emergency calls from within the project site and be on the scene within five minutes of dispatch.[28]

The inclusion of new territory into the MFD's service area and increased residential, mixed use, and business park development on the project site would lead to an incrementally higher volume of emergency response calls. As a result, more personnel time would be needed. The existing personnel and apparatus at MFD's Fire Station No. 11 would be adequate to meet the increased demand, and expanded or new fire-protection-related infrastructure would not be necessary. Therefore, the proposed project would result in a less-than significant impact on fire services.

Mitigation Measure. No mitigation necessary.

Impact I.3. Development of the mixed use and high-density residential components of the proposed project with building heights over 30 feet could result in insufficient water pressure for firefighting. (Less than Significant)

The mixed use component of the proposed project would include structures over 30 feet in height. The residential component of the project also includes multi-family housing in structures over 30 feet in height. For multi-family, commercial, and industrial areas all water mains are required to be sized to provide fire flow as specified in the Modesto Fire Code, Table A-III-A-1, but must provide no less than 1,500 gallons per minute from each of two adjacent fire hydrants flowing simultaneously with 20-pounds-per-square-inch residual pressure.[29] For single-family residential areas, all water mains are required to be sized to provide 1,000-gallon-per-minute fire flow from each of two adjacent fire hydrants flowing simultaneously with 20-pounds-per-square-inch residual pressure.[30] The water flow can generally be obtained using the following design standards: one-half-mile looped grid - 12-inch mains or larger; one-quarter-mile looped grid - 8-inch mains; and distribution system, looped - 8-inch mains.[31]

Providing fire pumps and automatic fire sprinklers in multi-story commercial and residential buildings, constructing looped 10- and 12-inch water supply pipelines, and meeting the required water flow and water pressure thresholds are elements of the proposed project. These elements would be in place before multi-story buildings over 30 feet in height are completed, ensuring that the water pressure for firefighting would be adequate for all structures on site. Therefore, the proposed project would result in a less-than-significant impact.

Mitigation Measure. No mitigation necessary.

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[28] Michael Payton, Fire Marshal, Modesto Fire Department, City of Modesto Survey Responses, June 13, 2008.
[29] City of Modesto, 2006 Standard Specifications, Public Works Department, p. Design 6-6.
[30] Ibid.
[31] Ibid.

SCHOOLS

SETTING

The City of Modesto is served by a total of eight elementary school districts and one high school district. Modesto City Schools (MCS) is comprised of two separate districts: the Modesto City School District (MCSD) and the Modesto High School District (MHSD). These districts have different boundaries but a common Board of Education and a common administration. The MCSD serves K-8 students and covers the southern three-fourths of the incorporated area of the City of Modesto, while the MHSD boundaries extend well beyond the elementary/middle school boundaries, covering a total of approximately 170 square miles. MCS consists of 23 elementary schools, 4 junior high/middle schools, and 6 high schools. The MHSD's seventh high school, Gregori High School, is planned to open in fall 2010.

Approximately 64 percent of all children enrolled within the Modesto planning area attend a Modesto City School.[32] The other seven elementary school districts that provide service within the Modesto planning area are Shiloh, Paradise, Hart-Ransom, Salida, Stanislaus, Sylvan, and Empire. Students from the eight K-8 school districts go on to attend schools in the MHSD.

Between fall 2005 and fall 2007, high school enrollment remained steady, although there has been a modest decline in the last two years.[33] With an annual budget of over $205 million, MCS serves more than 33,000 students and has over 3,200 employees.[34]

The project site lies within the Stanislaus Union School District (SUSD) (K-8) and the MHSD (9-12). The SUSD is located in the northwestern portion of Modesto and is bounded by Highway 99 on the west, the Stanislaus River on the north, McHenry Avenue on the east, and Briggsmore Avenue on the south. Currently, approximately 3,200 K-8 students attend six K-6 elementary schools: Mary Lou Dietrich, Agnes Baptist, Chrysler, Eisenhut, Muncy, and Stanislaus Elementary. Students from these elementary schools go to Prescott Senior Elementary for 7th and 8th grade and eventually to an MHSD high school. The closest SUSD elementary school to the project site is Stanislaus Elementary (K-6). The closest MHSD high school is Davis High School 1½ miles from the project site. Gregori High School will be on an approximately 80-acre campus at 5518 Stoddard Road, approximately one mile north of the project site.

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[32] *Final Master Environmental Impact Report*, Figure III-3 - City of Modesto Planning Area.
[33] Modesto City Schools, *School Facilities Fee Plan*, p. 3, April 2008.
[34] Modesto City Schools website, http://www.monet.k12.ca.us/mcsnew/DistrictInf/Welcome.htm. Accessed on June 17, 2008.

REGULATORY FRAMEWORK

State Policies[35]

School construction and modernization funding is provided by a mix of state and local general obligation bonds, developer fees, and geographically specific special local bonds known as Mello-Roos bonds. The School Facility Program provides state funding assistance for two major types of school facility construction projects: new construction and modernization. The state, through the School Facility Program, provides money for school districts to buy land and to construct and renovate K-12 school buildings.[36,37] Funds for the new construction and modernization of schools are governed by the Leroy F. Greene School Facilities Act of 1998 Senate Bill 50 (SB 50).[38] The passage of Proposition 1A in November 1998 provided the initial funding source for SB 50.[39] SB 50 limits cities' consideration of school facilities issues in the land use approval process, prohibits cities from denying a residential project on the basis of inadequate school capacity, and limits the fees that can be imposed on new development. Under SB 50, payment of development impact fees, in addition to specified other funding options, is determined to be full mitigation of environmental impacts on schools.

City of Modesto

The following policies from the Modesto *Urban Area General Plan* that address the provision of adequate school facilities are relevant to the Kiernan Business Park Specific Plan Amendment #4:

> Community Development Policy III-C.1[f]: Work with school districts to avoid overcrowding in existing and/or planned school facilities within the provisions of SB 50 and Government Code Section 65995 et seq.
>
> Community Development Policy III-C.2[b]: Neighborhoods should contain sufficient elementary schools necessary to serve the residential development within the neighborhood.

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[35] The existing regulatory setting for the state of California is provided in the *Final Master Environmental Impact Report*, pp. V-12-3 - V-12-8 and is incorporated by reference as summarized in this section.

[36] Districts receive funding for construction and renovation based on the number of pupils who meet the eligibility criteria of the program. The cost of school construction projects is shared between the state and local school districts.

[37] Funds for the School Facility Program may be from any funding source made available to the State Allocation Board. This includes proceeds from the sale of State General Obligation Bonds and the State General Fund. In addition, districts are required to provide a portion of the cost of a project from funds available to the school district. This may include, among other sources, local general obligation bonds, developer fees, and the general fund.

[38] As stated in the *Final Master Environmental Impact Report* on pp. V-12-7 to V-12-8, SB 50 was intended to provide 50 percent of the cost of new school construction and 60 percent of the cost of modernization.

[39] Proposition 47 and 55, the Kindergarten-University Public Education Facilities Bond Act of 2002 and 2004, respectively, funded SB 50.

Schools should be located on Collector streets within the neighborhood, preferably at or near the intersection of two Collector streets.

Community Development Policy III-D.1[e]: Each Specific Plan shall be accompanied by a long-range financing strategy that provides reasonable estimates of the costs of on- and off-site infrastructure to support the proposed development pattern. The strategy should generally address public facility funding, including schools, for any development project that serves to implement the subject Specific Plan. If new public facilities are required that will also serve the broader community, the Specific Plan should include options for broad-based funding mechanisms.

Community Facilities Policy V-H.2[a]: For families in the child-rearing years, the proximity of a public elementary school within easy walking distance is a strong criterion in their evaluation of housing choices. Elementary school closure, a school district prerogative, has significant impacts on the surrounding neighborhood. School districts are encouraged to involve the city in deliberations regarding school closure early in the process. Consistent with state statutes, school districts are encouraged to include extensive community participation in the process to close any existing schools.

Community Facilities Policy V-H.2[b]: Existing schools and proposed school facilities on property owned by any School District on January 1, 1995, are shown on Figure V-7 of the 2008 *Urban Area General Plan.* School districts are encouraged to share their facility plans for new schools with the City.

Community Facilities Policy V-H.2[d]: There are specific state law prohibitions against certain uses within close proximity to schools, such as hazardous material uses and alcohol sales. Developers should contact the appropriate school district to determine if there are any known constraints to future development.

Community Facilities Policy V-H.2[e]: The City shall continue to require that the developer pay, prior to issuance of any building permits, the maximum residential, commercial, and industrial development school fees in effect at the time building takes place. This requirement is in accordance with the provisions of Government Code Section 65995, et seq.

Community Facilities Policy V-H.3[a]: Public School Districts should be directly involved in the lead time for planning of infrastructure. A lead time of 3-5 years is desirable.

Community Facilities Policy V-H.3[b]: Neotraditional Planning Principles, prescribed for residential development in the Planned Urbanizing Area, call for public schools as prominent, physical keystones to the connector street network. Schools, placed conveniently to the residents to be served, will maximize opportunities for students to walk and bike to school. Opportunities should be explored for joint school/park development when planning new neighborhoods or villages. The option for joint acquisition and development of school and park sites should be continued. School districts are encouraged to consider these design principles in their facility planning efforts.

Community Facilities Policy V-H.3[c]: Land for new school facilities should generally meet the following minimum space requirements: (1) Elementary schools - 10 acres (gross); (2) Middle schools or junior high schools - 20 acres (gross); and High schools - 50 acres (gross).

Community Facilities Policy V-H.3[e]: Developers of residential projects that are subject to the following policies (3.e through 3.k, below) should contact each affected school district prior to submitting an application to the City of Modesto. This early consultation with the

school district on such matters as housing mix, timing of development, phasing, etc., will assist both parties in reaching an agreement on the best method of mitigating school impacts, should the project later be found to have the potential for significant effects on school facilities.

Community Facilities Policy V-H.3[f]: Once an application for a residential project, which is not exempt from CEQA, has been determined to be complete, it will be referred to the appropriate school district(s) for "review and comment" in conjunction with the preparation of the required Focused Environmental Impact Report.

Community Facilities Policy V-H.3[g]: Each school district will provide the City of Modesto with the information needed to evaluate the impact of the proposed residential project on their facilities, including background data necessary to document the impact that a residential project may have on a district's facilities. Such information will be provided to the City of Modesto in a timely manner consistent with the City's responsibilities under CEQA.

Community Facilities Policy V-H.3[h]: If it is determined that a proposed residential project may have a significant effect on a school district's facilities, the Focused EIR shall analyze this impact. It shall be the responsibility of the project applicant and school district to resolve the appropriate method of mitigation, consistent with state law. Mitigation may take several forms, including but not limited to one or more of the following: fees, land dedication, special taxes, etc.

Community Facilities Policy V-H.3[i]: The impact on public school facilities shall be considered fully mitigated by the City of Modesto when the developer has complied with Government Code Section 65996.

Community Facilities Policy V-H.3[j]: Policies 3e through 3k shall apply when:

(1) A residential project seeks the approval of a General Plan Amendment, rezoning, prezoning, annexation, Comprehensive Plan, or other legislative act;

(2) The project is located on property classified as Planned Urbanizing Area on the Growth Strategy Diagram;

(3) A school district has imposed school mitigation fees; and

(4) A school district has a valid application for the funding of public school capital facilities pending before the State, unless it is not eligible for such State funding, in which case the school district shall, within thirty (30) days after it has determined in good faith that it is so eligible, initiate a process leading to the filing of a valid application for such funding.

Community Facilities Policy V-H.3[k]: The above policies (3e through 3k) shall not apply to residential projects approved in conjunction with General Plan Amendment, rezoning, prezoning, annexation, or other legislative act that have completed the CEQA process (certification of an environmental impact report, adoption of a negative declaration or adoption of an exemption determination) as of March 5, 1991.

SCHOOL SERVICE IMPACTS AND MITIGATION

Significance Criteria

A new project would have a significant impact on schools if the new student population exceeds the school system capacity, or if the project conflicts with established educational uses of the area, except to the limits established under SB 50/Proposition 1A. A project may also have a significant effect on the environment if it would result in substantial adverse physical impacts associated with the provision of new or physically altered school facilities, or in the need for new or physically altered school facilities which in themselves could result in significant environmental impacts.

Impact I.4. Buildout of the Kiernan Business Park Specific Plan would result in an increase in the number of elementary (K-6), middle (7-8), and high (9-12) school students and could require the construction of new or physically altered school facilities. (Less than Significant)

The Kiernan Business Park Specific Plan area is located within the service areas of Stanislaus Elementary School (K-6), Prescott Senior Elementary School (7-8), and Gregori High School (9-12). Currently, Stanislaus Elementary School has approximately 210 (K-6) students and Prescott Senior Elementary School (7-8) has about 740 students. Other elementary schools in the project vicinity include the Mary Lou Dietrich Elementary School and the Agnes M. Baptist Elementary School. Gregori High School will open in fall 2010 for 9th and 10th grades.

The SUSD and MCS use the same student generation factors. The student generation factors[40] are shown below.

	Student Generation Factors		
	K-6 (SUSD)	**7-8 (SUSD)**	**9-12 (MHSD)**
Single Family Dwellings	0.271	0.083	0.176
Multi-Family Dwellings	0.199	0.021	0.096

To determine the estimated number of students at buildout of the Kiernan Business Park Specific Plan, these rates were applied to the types of residential development proposed by the project. The results of the analysis are shown in Table IV.I.1.

[40] Student generation factors were provided by Dana McGarry, Modesto City Schools, Director, Planning and Research Department, June 2008.

Table IV.I.1: Estimated Number of Students Generated at Buildout of the Kiernan Business Park Specific Plan Amendment #4

Land Use Designation[1]	No. of Proposed Units	No. of K-6 Students	No. of 7-8 Students	No. of 9-12 Students
Mixed Use	80	16	2	8
Medium High Density Residential	262	52	5	25
Total	**342**	**68**	**7**	**33**

Note: The student generation factor for multi-family dwellings was applied to both the Medium High Density Residential land use and the Mixed Use land use.

Residential development within the proposed Kiernan Business Park Specific Plan area would generate about 68 elementary school (K-6) students, about 7 middle school (7-8) students, and about 33 high school (9-12) students at full buildout. It is expected that these students could be accommodated within existing school facilities.

MCS has planned for population growth in the northeast and northwest portions of the City of Modesto. The City's Planned Urbanizing Areas are expected to absorb future growth and the MHSD's Gregori High School is expected to accommodate growth in the northwestern portion of the City.

Buildout of the Kiernan Business Park Specific Plan area would increase the demand for school facilities. However, the project's contribution to the demand for additional or expanded school facilities is not itself considered a significant environmental impact. The SUSD and the MHSD would make use of Senate Bill 50, which allows school districts to charge developer fees on new residential development and use them to construct adequate school facilities that would serve the new development. SB 50 allows school districts to charge fees and prohibits cities and counties from seeking additional mitigation. The school districts can collect Level 1 fees at the rate of $2.97 per square foot for 2008. The Level 1 fee is updated every two years. The SUSD and the MHSD have a fee allocation agreement in place that splits the Level 1 fees between the two districts: $1.78 (60 percent) for the SUSD and $1.19 (40 percent) for the MHSD.

The developers of the Kiernan Business Park Specific Plan are statutorily required to pay the Level 1 fee to the SUSD and the MHSD. Developers can also meet this requirement in other ways including, but not limited to, negotiated agreements, developer built facilities, and participation in the City's Schools Infrastructure Financing Agency Community Facilities District 1997-1. The school districts would levy developer fees based on the state formula of $2.97 per square foot for new residential development and $0.47 per square foot of new

commercial/industrial development.[41] The payment of developer fees constitutes full mitigation for project-related impacts to school facilities. Therefore, project-related impacts related to the increased demand on existing school facilities would be less than significant.

Mitigation Measure. No mitigation necessary.

[41] Development impact fees are set by the State Legislature and are reviewed every 2 years by the State Allocation Board.

J. UTILITIES AND SERVICES SYSTEMS

This section analyzes the impact of the project on the City's wastewater system. It describes the projected quantity of wastewater to be generated by the Kiernan Business Park Specific Plan Amendment #4 (project) and the existing wastewater system's ability to handle wastewater flows from the project.

The Initial Study (Appendix A of this EIR) found that the project would not have a significant effect on solid waste disposal and concluded that solid waste from the proposed project need not be discussed in the EIR. Stormwater facilities are discussed in Section IV.H, Hydrology and Water Quality, of this EIR. Water supply and distribution are discussed in Section IV.K, Water Supply.

SETTING

OVERVIEW OF WASTEWATER COLLECTION SYSTEM[1]

Sewer service within the City limits is provided by Modesto Municipal Sewer District No. 1. Modesto's wastewater collection system conveys wastewater from residential, commercial, and industrial customers in its service area. Modesto's existing collection system includes nearly 600 miles of sanitary sewer lines, ranging from 6 to 60 inches in diameter, and about 39 lift stations (also called pump stations). There are about 80 miles of major sewers, called trunk sewers. The collection system is divided into 10 sewer areas; the western portion of the project site, i.e., the portion that is currently within the City limits, is located within Area 1.[2] There are two major sewer lines that serve Area 1: the West Trunk and the North Trunk. The West Trunk is the trunk sewer that would serve the project site.

Most of the wastewater system flows by gravity. Because most of Modesto is relatively flat, lift stations are required in various locations around the City to lift the wastewater to a level from which it can then flow by gravity toward Modesto's primary wastewater treatment plant.

The project site is not currently served by sewers.[3] Wastewater from the project site would flow first into an existing 30-inch line in Bangs Avenue (the Bangs Trunk), then to the West Trunk,

[1] This overview is based on information in the City of Modesto, *Final Master Environmental Impact Report for the Proposed City of Modesto Wastewater Master Plan Update*, 2007 (hereinafter cited as "Wastewater Master EIR"), pp. III.6-III.11.
[2] Carollo Engineers, *City of Modesto, Technical Memorandum, Kiernan Business Park Wastewater Capacity Study*, 2007 (hereinafter cited as "Wastewater Capacity Study"), Figure 4 (see Appendix E).
[3] Wastewater Capacity Study, Figure 4.

then south, through the Woodland Lift Station located on the West Trunk approximately 3½ miles south of the project site, and finally to the City's Sutter Avenue Treatment Plant.

OVERVIEW OF WASTEWATER TREATMENT AND DISPOSAL[4]

Locations

The City of Modesto operates two wastewater treatment plants: (1) the Sutter Avenue Treatment Plant, a primary treatment facility located in the southwest corner of the City, approximately 7 miles south of the project site, and (2) the Jennings Road Treatment Plant, a secondary treatment facility located west of Highway 99 on Jennings Road near the confluence of the Tuolomne and San Joaquin Rivers, about 12 miles south of the project site.

A 60-inch-diameter Primary Effluent Outfall pipeline carries primary effluent from the Sutter Avenue Treatment Plant approximately 6½ miles southwest to the Jennings Road Treatment Plant. A parallel 60-inch pipe, referred to as the Cannery Segregation Outfall, carries cannery process water to the Jennings Plant between July and September and is also used to convey primary effluent to the Jennings Plant during non-canning season.

Treatment

Modesto's wastewater treatment system has a total capacity of 62.5 million gallons per day (mgd) at the Sutter Avenue Treatment Plant and 70 mgd at the Jennings Road Treatment Plant including capacity for 33 mgd of cannery wastewater. During the dry season, the sewer system receives an average of approximately 27.8 mgd of wastewater. During the canning season, the cannery segregation line averages about 15 mgd, with highest seasonal average daily flows of 35 mgd. The highest hourly peak wet weather flow[5] is approximately 50 mgd, with average wet weather flows of about 30 mgd.

Wastewater flowing in the collection system is either pumped or flows by gravity to the Sutter Avenue Treatment Plant. There, incoming sewage receives preliminary and primary treatment. Preliminary and primary treatments consist of coarse screening, grit removal, and primary clarification. These treatments remove large objects, grit, suspended solids, and floating material. Solids removed from the wastewater are broken down (digested) by microorganisms. The digestion process generates waste methane gas that is burned in a flare. Digested solids are

[4] This overview is based on information in the Wastewater Master EIR, pp. III.6-III.15, and Wastewater Capacity Study, p. 3-5.
[5] Peak wet weather flow is the highest flow experienced in the collection system caused by storm runoff entering the collection system via direct storm drain connections or manhole covers (inflow), or via cracks in pipes that allow groundwater to seep in (infiltration).

spread out in beds to dry, then trucked to the Jennings Road Treatment Plant for application on the City's 2,526-acre ranch as a soil amendment. The liquid portion of the wastewater (primary effluent) is pumped through the Primary Effluent Outfall to the Jennings Road Treatment Plant for secondary treatment.

Secondary (biological) treatment exposes the effluent to microorganisms that break down the matter in the wastewater. After secondary treatment, the effluent is either disinfected with chlorine to kill disease-causing organisms and discharged to the San Joaquin River or disposed of by land application at the Jennings Road Treatment Plant. Land application means that the City uses the treated effluent to irrigate pastures at the Jennings Road facility. The amount of effluent that can be applied to land is limited by agronomic[6] considerations and rainfall.

The canning season occurs in the summer, and wastewater produced at Modesto canneries is discharged into 12 miles of trunk sewers which flow directly to the Jennings Road Treatment Plant. Cannery waste consists of wash water containing organic material that does not require treatment. This segregated portion of the wastewater flow is discharged directly onto the ranch at the Jennings Road Treatment Plant.

The wastewater treatment facilities process over 10 billion gallons of wastewater annually (9 billion gallons of domestic waste and 1 billion gallons of cannery wastes). The City's National Pollutant Discharge Elimination System (NPDES) permit allows discharge to the San Joaquin River only during October through May, when there is sufficient river flow for a 20:1 dilution of the treated effluent. In practice, discharge generally occurs from December through April as long as river flows are high enough to provide the required dilution. Although up to 70 mgd could theoretically be discharged to the river, river flow volumes usually result in discharges of about 10 to 20 mgd, with some periods of higher average daily discharge. Remaining treated effluent is pumped to storage ponds on the Jennings Road Treatment Plant site and held there until it is discharged (depending on river flows) or used for irrigation of the City’s ranch. During storage, some evaporation occurs.

Of the 10 billion gallons treated annually, approximately 3.1 billion gallons of treated effluent, along with 1 billion gallons of cannery waste, are discharged to land. Land discharge is regulated under a separate NPDES permit. Land discharge is greatest during summer and fall, and other periods of extreme low river flows that prevent adequate dilution.

The volume of discharge may also be affected by effluent quality. Algae grows in the storage ponds in October and November, generating high suspended solids concentrations that typically

[6] Agronomic in the context of Modesto’s wastewater treatment facilities is defined as the agricultural capacity of the land disposal area.

exceed discharge limitations. Consequently, discharge during October and November is currently not possible. The City is in the process of installing new dissolved air flotation (DAF) units to remove algae, which will allow the City to extend the discharge season into October and November. The DAF units be operational in summer 2008.

In 2006, the City completed the *Wastewater Master Plan Update*.[7] In order to prepare the *Wastewater Master Plan Update*, the City conducted assessments of the reliability, capacity, and condition of existing elements of the City's wastewater collection, treatment, and disposal system. The assessments addressed the sewer facilities that would be needed to collect, treat, and dispose of wastewater that would be generated by implementation of planned and approved projects within the City of Modesto, including projects within Area 1, within the next 20 years. The findings of the assessments regarding facilities serving Area 1 are discussed later in this section under Project Impacts.

REGULATORY FRAMEWORK

Federal and State Wastewater Treatment Requirements

Under the authority of the federal Clean Water Act and California's Porter-Cologne Water Quality Control Act, the Central Valley Regional Water Quality Control Board (Water Board) is responsible for protecting surface water quality in the Modesto area. The Water Board regulates public and private activities to minimize impacts to surface water quality. The Water Board also issues clean water certifications or waivers under Section 401 of the U.S. Clean Water Act. The Water Board implements the federal and state laws through the administration of the NPDES and by issuance of wastewater discharge requirements. The Water Board has prepared a Basin Plan that sets out water quality objectives and programs; establishes discharge requirements for point sources,[8] such as Modesto's wastewater treatment facilities; and administers the NPDES program for both point and non-point[9] sources. The Water Board is responsible for ensuring that the operations of the Modesto wastewater treatment facilities meet the requirements of those permits.

Stanislaus County Local Agency Formation Commission

The County Local Agency Formation Commission (LAFCO) oversees the annexation of unincorporated lands to the City under the provisions of the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Government Code Section 56000 *et seq.)*. LAFCO is responsible for coordinating logical and timely changes in local government boundaries;

[7] The Wastewater Master Plan Update has two parts: Carollo Engineers, *Wastewater Collection System Master Plan*, March 2007; and Carollo Engineers, *Wastewater Master Plan Phase 2 Update Master Plan Report*, March 2007 (hereinafter collectively cited as Wastewater Master Plan Update).
[8] Point sources are wastewater sources that have a single point of discharge, such as a pipeline.
[9] Non-point sources are wastewater sources that discharge over a broad area, such as runoff from a field.

conducting special studies that review ways to reorganize, simplify, and streamline governmental structure; and preparing a Sphere of Influence for each city and special district within each county. The commission's efforts are directed to seeing that services are provided efficiently and economically while agricultural and open-space lands are protected.

Under Government Code Section 56668, LAFCO is required to consider the need for sanitary sewer services before approving any annexation to the City. A portion of the project site is proposed to be annexed to the Municipal Sewer District No. 1 to provide sanitary sewer service. Prior to annexation, the applicant is required to demonstrate that the area will have adequate sanitary sewer service through the submission of a plan for service. The plan for service must provide evidence that, at a minimum, the range and level of services currently provided to the proposed annexation area will be maintained.

City of Modesto

The project site is within the Planned Urbanizing Area as defined by the City of Modesto's *Urban Area General Plan*.[10] The *Urban Area General Plan* (2008) provides goals related to provision of wastewater services. Policies furthering these goals that are relevant to the project site include the following:

Urban Growth Strategy Policy II.C.1[a]: In general, maintenance of a five-year supply of available developable land served with urban infrastructure is desirable.

Urban Growth Strategy Policy II.C.1[b]: Urban development should be kept as contiguous as possible in order to avoid premature urbanization of valuable farm land, foster resident convenience, and provide for economy in City services.

Urban Growth Strategy Policy II.C.1[d]: Urban growth should be directed, as long as economically feasible, to areas currently served with City services.

Community Development Policy III.D.1[l]: Each Specific Plan or Planning District shall address the need to provide sanitary sewer service, using the Sanitary Sewer Diagram presented in Chapter V.

Community Facilities Policy V.D.3[a]: To protect public health and the environment, the City's wastewater treatment facilities will conform to standards for wastewater and biosolids treatment and disposal, as established by the Central Valley Region Water Quality Control Board, in compliance with the Federal Clean Water Act, the State Porter-Cologne Act, and the implementing regulations, current and future.

Community Facilities Policy V.D.3[d]: Wastewater facilities will be constructed, operated, maintained and replaced in a manner that will provide the best possible service to the public as required by federal and state laws and regulations. In developing implementation plans, consideration shall be given to rehabilitation of essential existing facilities, expansion to meet current excess demand, and the timely expansion for future demand.

[10] City of Modesto, *Urban Area General Plan*, October 2008.

Community Facilities Policy V.D.3[g]: The City's wastewater system capacity will be allocated to existing and future residential, commercial and industrial customers. Discharges from environmental cleanup sites may be issued conditional discharge permits subject to the availability of excess treatment capacity. In accordance with federal and state regulations, all discharge to the wastewater system may not, or may not threaten to, upset, interfere, or pass through the wastewater system.

Community Facilities Policy V.D.3[k]: Subject to the approval of the Stanislaus County LAFCO, the City of Modesto will be the sole provider of wastewater services to the area within the City's Sphere of Influence and sewer service area.

Community Facilities Policy V.D.3[m]: The City will encourage the regional beneficial reuse of reclaimed water. The City is committed to development of a full reclamation program in the long term. The City will comply with Title 22 standards for use of reclaimed water and criteria contained in the California Department of Public Health (CDPH) "Purple Book."

Community Facilities Policy V.D.3[q]: The City shall utilize source control and demand management among its tools for accomplishing the most cost-effective wastewater management, protective of public health and the environment.

Community Facilities Policy V.D.4[a]: All of the Wastewater Policies for the Baseline Developed Area apply within the Planned Urbanizing Area.

Community Facilities Policy V.D.4[b]: The City of Modesto will require each new development project to be served with public sanitary sewers. Utilities located in private streets shall be part of the public sewerage system and shall be connected to a sewer lateral.

Community Facilities Policy V.D.4[c]: The City of Modesto will coordinate land development proposals with the expansion of wastewater facilities.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

The project would result in a significant impact if it were to:

- Exceed the wastewater treatment requirements of the Central Valley Regional Water Quality Control Board (RWQCB), including the NPDES;
- Require or result in the construction of new facilities or the expansion of existing facilities that would cause significant effects beyond those analyzed in the Wastewater Master Plan Master EIR; or
- Exceed the capacity of the City's wastewater treatment facilities.

METHODOLOGY AND ASSUMPTIONS

Proposed development on the project site would increase the amount of wastewater generated in the service area of the City's wastewater treatment system (assuming annexation of the remainder

of the project site by the City). In addition, new development would require expansion of the City's wastewater collection, treatment, and disposal infrastructure.

This section analyzes the potential effects of the project on the capacity of Modesto's wastewater collection and treatment facilities, and analyzes whether the project would cause the City's wastewater system to fail to meet the wastewater discharge requirements of the Central Valley Water Board. The potential environmental effects related to physical expansion of the City's wastewater facilities to meet near-term demand on the system from reasonably foreseeable growth are also addressed.

This analysis contains information based on the *Final Master Environmental Impact Report for the Proposed City of Modesto Wastewater Master Plan Update* and the *Kiernan Business Park Wastewater Capacity Study*.[11, 12]

Modesto has grown rapidly and faces a number of challenges regarding its current wastewater collection and treatment facilities:[13]

- Portions of the collection system do not have sufficient capacity to convey peak wet weather flows. Pipes that lack sufficient capacity sometimes cause wastewater surcharges or overflows. Surcharge is defined as the condition that occurs when wastewater rises in the manholes (i.e., above the level of the pipe), but does not overflow the manholes.
- Some pump stations have insufficient capacity to convey peak wet weather flows.
- A number of direct connections between the storm drain system and the wastewater collection system exacerbate the capacity constraints, by adding storm water to the flow of wastewater.
- Some of the older, reinforced concrete pipes in the collection system have corroded and are at risk of crown failure (which means that the top part of the pipe fails).
- The Sutter Avenue Treatment Plant has sufficient dry-weather treatment capacity, but insufficient capacity to convey and treat projected wet-weather flows during the City's wastewater planning period of 2006 to 2030.
- The City has limited options for the discharge of the plant's secondary treated effluent.

In 2007, the City approved its *Wastewater Master Plan Update*, which addressed necessary improvements to existing collection and treatment facilities and construction of new facilities required to provide adequate wastewater management for the City's planned growth through the year 2030. The *Wastewater Master Plan Update* identified improvements to the Sutter Avenue

[11] In the Wastewater Capacity Study, the project site is identified as Kiernan Business Park – East.
[12] Application of the 2007 Wastewater Capacity Study to the proposed project confirmed by letter from Carollo Engineers, June 30, 2008.
[13] Wastewater Master EIR, p. III.15.

Treatment Plant, the Primary Effluent Outfall, and the Jennings Road Treatment Plant. It also identifies improvements to the collection system, including disconnecting the storm drain cross-connections, upgrading lift stations including the Woodland Lift Station, and increasing the capacity of certain trunks and sub-trunks including the West Trunk. All of these improvements will be constructed over the next 20 years.

At full buildout, the project site would generate wastewater from business park, mixed use, and medium high density residential land uses. The Kiernan Business Park Specific Plan Amendment #4 includes a sanitary sewer plan for conveying wastewater from the project area. The plan proposes that the project site use the existing 30-inch-diameter trunk sewer that flows east in Bangs Avenue from Dale Road to American Avenue, as well as a 30-inch trunk sewer in Dale Road that the City proposes to construct as part of the *Waste Water Master Plan Update*. The project site's wastewater collection system would consist of 8- to 12-inch-diameter sewers in The Plaza Way, Chopra Parkway, and other roads on the project site that would flow to the 30-inch sewer in Bangs Avenue, then to the West Trunk.

To determine what new wastewater management facilities would be required, the City prepared the *Kiernan Business Park Wastewater Capacity Study*. The study examined average dry weather flow and peak wet weather flow that would be generated by the proposed development. As part of the 2006 *Wastewater Master Plan Update* project, the City conducted wastewater flow monitoring to determine the existing dry and wet weather flow throughout the system. Design flow estimates for the entire Kiernan Business Park were computed using average flow coefficients provided in the 2007 *Wastewater Master Plan Update.* The acreages for each type of land use were multiplied by the appropriate flow coefficient to estimate the average dry weather flow. The average dry weather flow for the 153-acre project site is 0.16 mgd (160,000 gallons per day) and the peak wet weather flow is 0.39 mgd (390,000 gallons per day). The following impact discussions are based on these flow volumes, as well as the planned improvements and new construction described in the *Wastewater Master Plan Update.*

PROJECT IMPACTS

Impact J.1. Development of the proposed Kiernan Business Park Specific Plan Amendment #4 area would result in an increased demand for wastewater collection, treatment, and disposal. (Less than Significant)

Currently, the western portion of the project site is served by Modesto Municipal Sewer District No. 1. Following annexation of the eastern portion of the project site, the entire site would be served by this sewer district. Current uses on the site are agricultural, residential, and commercial; the current site occupants do not have sewer connections.

The proposed project would increase the amount of wastewater generated in the service area of Modesto's wastewater management facilities. The estimated average dry weather flow from the project site is 160,000 gallons per day (0.16 mgd), and the estimated peak wet weather flow is 390,000 gallons per day (0.39 mgd).[14] The proposed project's wastewater generation of 160,000 gallons per day average dry weather flow would represent about 0.38 percent of the projected buildout flow of 41.6 mgd for the entire service area and about 1 percent of the projected increase in flows from 2005 to buildout.[15] Currently, the Sutter Avenue plant receives peak wet weather flow of 71.7 mgd.[16] At buildout of the Sphere of Influence, peak wet weather flow would be 95.5 mgd, an increase of 23.8 mgd.[17] The project site would contribute 0.39 mgd. This represents approximately 1.6 percent of the anticipated increased flow to the Sutter Avenue Treatment Plant.

The Sutter Avenue Treatment Plant has sufficient average dry weather flow treatment capacity for buildout of the Sphere of Influence area; however, the plant has insufficient capacity to convey and treat projected peak wet weather flow. Implementation of the proposed Specific Plan would magnify this existing deficiency. The City's *Wastewater Master Plan Update* calls for increasing the capacity of the collection system as well as the City's treatment and disposal facilities to accommodate growth anticipated through the year 2030. In order to correct existing discharge and treatment deficiencies, and to build sufficient capacity to accommodate increased growth in the City, the City proposes several projects for the collection system and the wastewater treatment facilities. These projects are described in the 2007 *Wastewater Master Plan Update*.

The City plans to implement improvements to the collection system in Area 1 to increase hydraulic capacity, rehabilitate deteriorated pipes, and provide reliability at critical crossings. The proposed collection system improvements in Area 1 downstream of the Kiernan Business Park Specific Plan Amendment #4 area include the following:[18]

- Construct a parallel 51-inch-diameter trunk crossing at Highway 99 (reliability project);
- Rehabilitate the existing 51-inch-diameter trunk at Highway 99 (rehabilitation project);
- Upgrade the existing Woodland Lift Station (capacity project); and
- Construct a parallel 48-inch-diameter trunk in the lower reaches of the West Trunk (capacity project).

[14] Wastewater Capacity Study, p. 10.
[15] Wastewater Capacity Study, p. 14.
[16] Wastewater Capacity Study, p. 14.
[17] Wastewater Capacity Study, p. 14.
[18] Wastewater Capacity Study, pp. 12-13.

No additional capacity improvements as a result of increased flows from the Kiernan Business Park Amendment #4 area are anticipated in Area 1.[19]

As previously described, the Woodland Lift Station is planned to be upgraded. The current peak wet weather flow at the lift station is 18.9 mgd, assuming that existing storm drain connections are removed as planned.[20] The proposed upgrade, planned for the year 2022-2024, will increase the firm capacity[21] of the lift station from 20.9 mgd to 25.9 mgd and the total capacity from 27.4 mgd to 32.4 mgd. Projected wastewater flows from project site would increase the existing peak wet weather flow at the lift station by 0.39 mgd, to a total flow of 19.3 mgd.[22] The estimated peak wet weather flow is less than the lift station's existing firm capacity of 20.9 mgd; therefore, no upgrades to the lift station are required as a result of the implementation of the Kiernan Business Park Specific Plan Amendment #4.

With the upgrades and improvements to Modesto's wastewater collection, treatment, and disposal system that will be provided by implementation of the City's *Wastewater Master Plan Update*, the City's wastewater management system will be able to accommodate the additional flow generated by the proposed project. The impacts associated with provision of these facilities have been addressed by the *Final Master Environmental Impact Report for the Proposed City of Modesto Wastewater Master Plan Update*. Because the project would not require or result in the construction of new wastewater treatment facilities or expansion of existing facilities beyond those facilities already anticipated by the City's *Wastewater Master Plan Update*, or cause the City's wastewater treatment system to exceed wastewater discharge requirements of the Central Valley Water Board, the impact of the Kiernan Business Park Specific Plan Amendment #4 on wastewater management would be less than significant.

Mitigation Measure. No mitigation necessary.

CUMULATIVE IMPACTS

Impact J.2. Development of the proposed Kiernan Business Park Specific Plan Amendment #4 area would contribute to future cumulative increases in demand on the wastewater collection, treatment, and disposal system. (Less than Significant)

With the upgrades and improvements to Modesto's wastewater collection, treatment, and disposal system that will be provided by implementation of the City's *Wastewater Master Plan Update*,

[19] Wastewater Capacity Study, p. 13.
[20] Wastewater Capacity Study, p. 13.
[21] The upgraded lift station will contain five pumps. The firm capacity of the lift station is the capacity with the largest pump out of service.
[22] Wastewater Capacity Study, p. 13.

the City's wastewater management system will be able to accommodate the additional flow generated by the proposed project. The system will also be able to accommodate additional flows generated by other buildout projects throughout the City. The impacts associated with provision of these facilities have been addressed by the *Final Master Environmental Impact Report for the Proposed City of Modesto Wastewater Master Plan Update*. Therefore, the project's contribution to cumulative increases in demand on the wastewater collection, treatment, and disposal system would be less than significant.

Mitigation Measure. No mitigation necessary.

K. WATER SUPPLY

This section discusses existing and future water supplies for the project site in relation to overall water supplies for the City of Modesto and the area served by the City water agency, and assesses water demand resulting from the proposed development project. The section summarizes the information provided in the Water Supply Assessment (WSA) prepared by the City of Modesto for the Kiernan Business Park East and Kiernan Business Park South, adopted by the City Council on May 1, 2007.[1] The project as currently proposed, Kiernan Business Park Specific Plan Amendment #4, represents a portion of the area considered in the WSA; therefore, the WSA fully addresses the project site. Information on water supply and demand from the *Joint Urban Water Management Plan 2005 Update*[2] (UWMP) prepared and adopted by the City of Modesto and the Modesto Irrigation District (MID) in May 2007 was also used in preparing this section. The WSA for the project is reproduced in Appendix Fa to this EIR.

SETTING

WATER RESOURCES IN THE MODESTO AREA

The City of Modesto Municipal Water System service area consists of one large contiguous area and several outlying areas. The contiguous water service area includes all locations within the City limits, the City's Sphere of Influence, and areas within the Cities of Salida, Empire, and Ceres. The outlying water service areas include Grayson, Del Rio and Hickman, Waterford, and some small areas within the City of Turlock.

The City of Modesto would be the project's water service provider since the Kiernan Business Park Specific Plan Amendment #4 area is within the City's contiguous water service area. The northeastern portion of the project site is outside the current City limits; the City would annex that portion of the project site as part of the required project approvals.

Surface water is provided by the MID through a joint Treatment and Delivery Agreement (TDA) signed in 1992.

The MID serves about 160 square miles within Stanislaus County, about 60 percent of which is under irrigation. The MID water service area is generally located between the Stanislaus and Tuolumne Rivers, primarily east of the San Joaquin River. MID provides both surface water and groundwater for agricultural use throughout its service area. The City of Modesto is MID's only

[1] City of Modesto, *Water Supply Assessment, Kiernan Business Park East, Kiernan Business Park South, Final Report*, April 2007 (hereinafter cited as "WSA").
[2] City of Modesto/Modesto Irrigation District, *Joint Urban Water Management Plan 2005 Update*, May 2007 (hereinafter cited as "UWMP").

domestic water customer. The MID delivers approximately 32,507 acre-feet[3] per year (af/yr) of treated surface water to the City of Modesto.[4]

Groundwater Resources

The City of Modesto is currently dependent on groundwater for approximately 60 percent, on average, of its total supply, or 45,252 af/yr in 2006.[5] The City's water service area overlies a portion of three subbasins of the San Joaquin Valley Groundwater Basin: the Modesto Subbasin, the Turlock Subbasin, and the Delta-Mendota Subbasin. Table IV.K.1 shows the City's recent groundwater production from the three subbasins. The City's contiguous service area draws water from two of the three groundwater subbasins: the Modesto Subbasin, serving the area north of the Tuolumne River, and the Turlock Groundwater Subbasin, serving the area south of the Tuolumne River. The City of Modesto has both overlying and appropriative rights to water in both groundwater subbasins.[6] The Modesto Subbasin and the Turlock Subbasin are "unadjudicated" groundwater basins, meaning that there is no appointed "water master" to resolve groundwater pumping issues and there are no established limits on the amounts of groundwater that can be extracted by individuals or agencies.

Table IV.K.1: Recent Groundwater Production by City of Modesto

	Groundwater Production (af/yr)					
Subbasin	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Modesto Subbasin	40,863	43,541	42,254	41,964	41,443	40,778
Turlock Subbasin	4,839	5,445	4,979	4,480	4,903	4,298
Delta-Mendota Subbasin	297	324	287	261	237	176
Total Groundwater Production	45,999	49,310	47,250	46,705	46,583	45,252
Average Groundwater Production			46,895			

Source: WSA, Table 17, p. 47.

[3] An acre-foot is the amount of water necessary to cover an acre of land (about 43,560 sq. ft.) with 1 foot of water, or about 325,872 gallons.
[4] UWMP, p. ES-2.
[5] UWMP, p. ES-5.
[6] Overlying water rights are rights to use groundwater on the property that overlies the water ("on-tract" use). Appropriative water rights are uses of groundwater away from the property from which it was pumped. Where an aquifer is overdrafted, courts can allocate water among overlying users and will allocate to overlying users before appropriative users; in these circumstances remaining water would be allocated among appropriative users on a seniority basis. Additional principles apply when an appropriative user has been withdrawing non-surplus water for more than five years.

Various water service agencies have formed associations to coordinate planning and management of the three groundwater subbasins. A number of groundwater management plans have been prepared and adopted by these associations. Table IV.K.2 shows the agencies most recently active and the status of their planning activities.

Table IV.K.2: Recent Groundwater Management Plans in the Modesto Area

Groundwater Subbasin	Agency	Title	Adoption Date
Modesto Subbasin	Stanislaus and Tuolumne Rivers' Groundwater Subbasin Association (STRGBA)	Integrated Regional Groundwater Management Plan for the Modesto Basin	June 2005
Turlock Subbasin	Turlock Groundwater Basin Association (TGBA)	Turlock Groundwater Basin Groundwater Management Plan	April 2008
Delta-Mendota Subbasin	San Luis and Delta-Mendota Water Authority North	Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County	December 1997

Source: WSA, Table 14, p. 39; Table 15, p. 43; and Table 16, p. 46; and *http://www.modestogov.com/PWD/pdf/Turlock%20Groundwater%20Basin%20Groundwater%20Management%20Plan.pdf*, and City of Modesto Council Agenda Report for meeting of April 1, 2008.

In order to effectively manage the groundwater basins and optimize conjuctive use[7] of the City's surface water and groundwater supplies, the City of Modesto is planning a 10-year program of groundwater monitoring. At completion, a groundwater management plan will be developed for management of the Modesto and Turlock Subbasins.[8]

Sustainable yield is defined as the average annual amount of groundwater than can be extracted from a groundwater basin, while maintaining a non-overdraft condition. The sustainable yields of the Modesto and Turlock Subbasins are currently unknown, and the City is participating in a study with the U.S. Geological Survey to model the subbasins and quantify the sustainable yield for both subbasins. In 1995, the groundwater management plan prepared by STRGBA estimated that the total municipal sustainable yield for the Modesto Subbasin was 50,000 af/yr.[9]

[7] Conjuctive use is the combined use of surface water and groundwater supplies.
[8] UWMP, p. ES-8.
[9] WSA, p. 36.

Approximately 91 percent of this value was allocated to the City (45,625 af/yr). According to the *1997 Groundwater Management Plan* for the Turlock Subbasin, the City's municipal sustainable yield from the Turlock Subbasin was estimated to be 4,587 af/yr.[10] These quantities have been used to provide an estimate of the City's total municipal sustainable yield. For the UWMP, however, the City has estimated an "operational yield."[11] Using historic groundwater level and pumping data from the past 25 years, the City has estimated a combined operational yield from the Modesto, Turlock, and Delta-Mendota Subbasins of 53,500 af/yr.[12] The City's current groundwater production capacity is limited, however, by the pumping capacity of its existing wells.[13] In 2006, the City pumped 40,778 acre-feet of groundwater from the Modesto Subbasin and 4,298 acre-feet from the Turlock Subbasin.[14]

Groundwater levels were declining in the Modesto Subbasin before 1995, because annual use exceeded annual recharge. The water levels declined nearly 15 feet between 1970 and 2000 according to the California Department of Water Resources.[15] At the lowest point during this 30-year period, water levels were nearly 20 feet below the 1970 level. In 1995, surface water supply became available as the result of the completion of the Modesto Regional Water Treatment Plant (MRWTP), and the City of Modesto reduced its groundwater pumping rate to about half the 1994 rate of 68,478 af/yr.[16] Groundwater levels rose about five feet between 1996 and 2000, indicating that recharge to the basin now exceeded pumping and other outflows from the basin during this time period. The 1996 to 2000 period consisted of three wet years in a row followed by two above-normal rainfall years.

The City considers its groundwater extraction operations to be consistent with a non-overdraft condition, as groundwater levels rose during the 1996-2000 period after use of treated surface water was initiated. The City believes that if long-term groundwater extraction is limited to the operational yield of 53,500 af/yr, then stable groundwater levels will result.[17] If groundwater extraction is less than 53,500 af/yr, groundwater levels should rise, increasing the quantity of groundwater stored in the basin. The City's current groundwater extraction rate of 45,252 af/yr is less than the operational yield.

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[10] WSA, p. 41.
[11] Operational yield is defined as the amount of localized groundwater extraction that does not exceed the long-term annual average recharge rate of the localized aquifer from which the groundwater is extracted and does not create conditions that exceed the established minimum groundwater elevation, as required for long-term sustainable use of the basin. Based on UWMP, p. ES-6.
[12] UWMP, p. ES-6
[13] UWMP, p. ES-7.
[14] WSA, Table 17, p. 47.
[15] WSA, p. 35.
[16] WSA, Fig. 10, p. 37.
[17] WSA, p. 51.

The City monitors water quality at each wellhead for dissolved solids, hardness, major ions, organic compounds, and nitrates; when water fails to meet state and federal standards, a well is taken out of service. Wellhead treatment using granular activated carbon is used at some wells to remove organic compounds from the water before it enters the distribution system.[18] Chlorination takes place within the distribution system.

As of March 2007, there were 78 active wells in the Modesto Subbasin and 18 active wells in the Turlock Subbasin. Eighteen of the City's wells are currently out of service, primarily because of the presence of contaminants or minerals at levels that exceed drinking water standards.[19] These out-of-service wells are located throughout the system, with the majority located in the Modesto Subbasin, in the west and north-central parts of the City's service area. The out-of-service wells have reduced the City's available pumping capacity.[20]

Surface Water Resources

Surface water resources in the Modesto area are the Stanislaus River, located north of the City at the Stanislaus County boundary; the Tuolumne River that flows through the southern part of the City; the Modesto Reservoir, located about 15 miles east of Modesto; and the Don Pedro Reservoir located in the Sierra Nevada foothills near La Grange. Both reservoirs receive water from the Tuolumne River and are part of the MID surface water facilities. MID irrigation canals are found throughout the City and eastern and central Stanislaus County; the canals distribute a combination of surface water from the Tuolumne River and groundwater. There is no surface water on the project site.

The source of surface water for Modesto is MID's allocated water from the Tuolumne River. In 1992, the City and MID, along with the then-existing Del Este Water Company, joined to provide domestic water service using MID's surface water supply, and to construct and operate the MRWTP.[21] The MRWTP, located about 17 miles east of Modesto, near the Modesto Reservoir, was completed in January 1995. It currently has a capacity to routinely treat 30 million gallons per day (mgd), or approximately 32,507 acre-feet of water per year, and has the additional capability to treat over 36 mgd for a short period of time with advance notice. The MRWTP provides treatment designed to meet state and federal drinking water standards. The treatment

[18] City of Modesto and Modesto Irrigation District, *Modesto 2000 Urban Water Management Plan, 2000*, cited in Final Environmental Impact Report, Kaiser Modesto Medical Center / Cornerstone Business Park Project, State Clearinghouse No. 2003072085, certified August 10, 2004.
[19] WSA, p. Fig. 9, p. 33.
[20] West Yost Associates, Technical Memorandum: Evaluation of the Kiernan Business Park East Project's Hydraulic Impacts on the City's Existing Water System, June 4, 2007 (hereinafter cited as "Hydraulic Tech Memo"), p. 3. (See Appendix Fb.)
[21] The City of Modesto acquired the Del Este Water Company in July 1995.

process includes ozonation, coagulation/flocculation, sedimentation, filtration, and carbonate stabilization for corrosion control. Water is delivered to the Terminal Reservoir and Pump Station via a pipeline. This treated surface water enters the City's water distribution system at this pump station.

Existing Water Distribution System

In order to evaluate the potential hydraulic impacts of the proposed Specific Plan Amendment on the City's existing water system, the City commissioned a hydraulic study.[22] The study examined the capacity of the existing water distribution system under average day, maximum day, peak hour, and maximum day with concurrent fire flow demand conditions.[23] The study found that the existing system is capable of maintaining the City's minimum water service pressure level under all the stated conditions except peak hour demand.[24] The City's existing water distribution system is not currently capable of meeting the City's minimum pressure requirements for the peak hour demand condition in three portions of the distribution system. The pressure deficiency is currently being addressed by a combination of planned localized and system-wide improvements. The system-wide improvements are portions of the MID Downstream Tier I Improvements currently being planned by the City and funded by the City's Connection Fee Program. The localized improvements will be funded by the City's Ongoing Strengthening and Repairing Water Pipelines Program.

BASELINE WATER SUPPLY AND DEMAND

The combined groundwater and surface water supply currently available to serve the Modesto Water System is about 86,007 af/yr.[25] This total is comprised of 53,500 af/yr of groundwater plus the MID surface water supply for domestic use of 32,507 af/yr. The surface and groundwater supplies are disinfected prior to blending in the water distribution system.

Water users in the Modesto Water System contiguous (i.e., not including the outlying areas) service area consumed approximately 75,382 acre-feet (af) of water for residential and non-residential uses in 2005.[26, 27] Groundwater plus surface water supplies were available to provide 86,007 af/yr, thus supplying more than the amount estimated to have been used in 2005.

[22] Hydraulic Tech Memo.
[23] Hydraulic Tech Memo, p. 7.
[24] Hydraulic Tech Memo, pp. 7-8.
[25] WSA, Table 19, p. 55.
[26] WSA, p. 21.
[27] If water use in the outlying areas is included, total water use in 2005 was 78,802 af. This value is used in the remainder of this analysis when describing existing water use.

The Modesto Reservoir provides storage for about 83 percent of the 30 mgd treated in the MRWTP annually. The Don Pedro Reservoir provides approximately 300 percent of the annual demand for irrigation from both MID and the Turlock Irrigation District, thus providing protection for the domestic supply of surface water provided by MID.

A key reason that water supply has continued to meet water demand in recent years is the ongoing water conservation program implemented in the Modesto water service area over 10 years ago. Modesto adopted a Water Conservation Program in 1990 that includes an education program for water users, watering restrictions, and prohibition of water waste. The *Joint Urban Water Management Plan 2005 Update* describes 14 Demand Management Measures:

- DMM 1 – Water Survey Programs for Single- and Multi-Family Residential Customers
- DMM 2 – Residential Plumbing Retrofit
- DMM 3 – System Water Audits, Leak Detection and Repair
- DMM 4 – Metering with Commodity Rates for all New Connections and Retrofit of Existing Connections
- DMM 5 – Large Landscape Conservation Programs and Incentives
- DMM 6 – High Efficiency Washing Machine Rebate Programs
- DMM 7 – Public Information Programs
- DMM 8 – School Education Programs
- DMM 9 – Conservation Programs for Commercial, Industrial, and Institutional Accounts
- DMM 10 – Wholesale Agency Programs
- DMM 11 – Conservation Pricing
- DMM 12 – Water Conservation Coordinator
- DMM 13 – Water Waste Prohibition
- DMM 14 – Residential Ultra Low Flush Toilet Replacement Program

The City is currently implementing or plans to implement all 14 Demand Management Measures; however, because not all of the measures have been implemented, the water savings that may ultimately be attributed to these practices have not been quantified. An aggressive water conservation program was instituted in May 2003. Implementation resulted in peak summer water demand in 2003 remaining at 2002 levels, indicating that the conservation program achieved measurable savings.

REGULATORY FRAMEWORK

The following state and local laws, programs, and policies affect water supply in the Modesto area.

Urban Water Management Plan

The Modesto City Council adopted an updated Urban Water Management Plan (UWMP) in April 2007 pursuant to the California Urban Water Management Planning Act.[28] The UWMP, prepared jointly by the City of Modesto and the MID, provides a planning tool for both agencies to develop and deliver domestic water supplies to the Modesto water supply service area. The UWMP evaluates past, present, and projected future demand and supply in five-year increments through 2030. The projected future demand is based on the Stanislaus Council of Governments population growth projections for the City of Modesto and surrounding areas served by the Modesto water system. Growth in the Kiernan Business Park Specific Plan Amendment #4 area is included in the water demand estimate. The UWMP recommends that Phase Two of the MRWTP be constructed, to provide an additional approximately 33,600 af/yr of water in normal water years. Phase Two of the MRWTP is planned to increase the treated surface water supply to about 67,204 af/yr by 2009.

The City of Modesto has participated in the regional groundwater basin associations that developed groundwater management plans for the Stanislaus and Tuolumne Rivers Groundwater Basin and the Turlock Groundwater Basin. The City adopted the *Integrated Regional Groundwater Management Plan,* which addresses the Modesto subbasin, in 2005. A draft of the *Turlock Groundwater Basin Groundwater Management Plan Update* was issued in August 2006. The City is implementing elements from the plans, including monitoring groundwater levels and the conjunctive use of surface water.

Water Supply Assessment

The City of Modesto prepared a Water Supply Assessment for the Kiernan Business Park East and Kiernan Business Park South (WSA) pursuant to Sections 10910 to 10915 of the California Water Code, often referred to as "SB 610" based on substantial modifications to these sections of the Water Code in 2001. The Modesto City Council adopted the WSA on May 1, 2007. A copy of the WSA is provided in Appendix Fa to this EIR.

[28] California Water Code Sections 10610-10657.

California State Drinking Water Quality Regulations

The California Department of Health Services has established standards for drinking water supplied by public water systems. The state standards must meet or exceed federal drinking water standards established by the U.S. Environmental Protection Agency. Concentrations of specified constituents, such as minerals, total dissolved solids, and bacteriological contaminants, are limited to specified maximum contaminant levels (MCLs). Public water suppliers must obtain a permit from the Department of Health Services to provide domestic water supplies (water provided for drinking and other non-agricultural or industrial uses). The City has the required permits and meets required MCLs.

City of Modesto

The City of Modesto's *Urban Area General Plan* includes the following polices related to water supplies:

Community Facilities Policy V-C.3[a]: During review of all proposed development, the City shall require, as a condition of approval, that all developments reduce their potable water demand. The City should refer to Table 5-1 in the Joint Urban Water Management Plan for potential techniques to reduce potable water demand, as well as those identified in the City's current UWMP.

Community Facilities Policy V-C.3[j]: The City of Modesto will encourage the optimum beneficial use of water resources within the City. The City shall strive to maintain an adequate supply of high quality water for urban uses. At a minimum, potable water supplies (including well water) delivered to water customers shall conform to the primary maximum contaminant levels as defined in the California Code of Regulations, Title 22, Section 64431-64444.

Community Facilities Policy V-C.3[k]: The City of Modesto will strive to stabilize groundwater levels and eliminate groundwater overdraft, as part of a conjunctive groundwater-surface water management program. The City shall view regional water resources, such as groundwater, surface water and recycled wastewater, as an integrated hydrologic system when developing water management programs.

Community Facilities Policy V-C.3[l]: The City of Modesto will be the sole provider of municipal and industrial water services to the area within the City's Sphere of Influence, with the exception of private wells. The City will cooperate with the overlying agricultural water providers, MID and TID, and with adjacent municipal and industrial providers for the mutually beneficial management of the limited water resources. The City will also take into consideration its public trust duty with regard to environmental uses of water resources.

Community Facilities Policy V-C.3[n]: Water facilities will be constructed, operated, maintained, and replaced in a manner that will provide the best possible service to the public. The City shall ensure that infrastructure is installed before or concurrently with development. The City will take a comprehensive approach to financing, using a blend of special taxes, benefit assessments, and other methods to ensure that infrastructure installation occurs in a timely manner.

Community Facilities Policy V-C.3[o]: The City will continue to establish guidelines, policies and programs to implement water conservation to the maximum extent feasible. Funding for large conservation rebate or exchange programs should be in place. The City shall strive to maximize the utilization of water resources when developing and implementing its Economic Development Strategy.

Community Facilities Policy V-C.3[q]: The City of Modesto shall implement Local Basin Management Objectives (BMOs) discussed in the Integrated Regional Groundwater Management Plan that relate to the specific approaches to water management goals including groundwater supply, groundwater quality, and protection against inelastic land surface subsidence.

Community Facilities Policy V-C.3[r]: The City of Modesto shall support the Regional BMOs discussed in the Integrated Regional Groundwater Management Plan.

Community Facilities Policy V-C.3[s]: The City of Modesto should develop and implement a water recycling program to reduce the demands for new water supplies in the City and basin.

Community Facilities Policy V-C.4[b]: The City of Modesto shall coordinate land development projects with the expansion of water treatment and supply facilities.

In addition, the City has adopted the *Integrated Regional Groundwater Management Plan* for the Modesto Basin and participated in the preparation of the draft *Turlock Groundwater Basin Groundwater Management Plan Update* in cooperation with other stakeholder agencies.

IMPACTS AND MITIGATION

SIGNIFICANCE CRITERIA

Supplying the project site with water would have a significant environmental impact if the project would result in water demand that exceeds the capacity for recharge or that will contribute to overdraft of the groundwater basins.

METHODOLOGY AND ASSUMPTIONS

Future Water Demand

The UWMP determined that water use in the contiguous water service area in 2000 was about 79,088 af/yr.[29] The UWMP assumed increases in water demand every five years through 2030, when demand was estimated to be about 133,313 af/yr. These estimates include the projected

[29] UWMP, Table ES-3, p. ES-10.

water demand from implementation of the Kiernan Business Park Specific Plan Amendment #4. The WSA uses the UWMP demand estimate for 2030.[30]

Applying a unit water demand factor (previously developed for the City as part of the City of Modesto Water System Hydraulic Model Update and other studies) to the proposed 153.6-acre [31] Kiernan Business Park Specific Plan Amendment #4 development results in a future baseline demand for water on the project site of about 363 af/yr.[32]

Future Water Supply

The Kiernan Business Park Specific Plan Amendment #4 area is near existing water infrastructure including wells, transmission system piping, and the distribution system. This proximity to City water services is consistent with the City's General Plan policy that "Urban growth should be directed, as long as economically feasible, to areas currently served with City services."

The existing water supply includes both groundwater and surface water sources. The City's actual water demand within the contiguous water service area in 2005 was 75,382 af.[33] This demand was met by the existing water supply of about 86,007 af/yr. At present, the City projects that water demand and supply in 2030 in normal years will be approximately 133,313 af/yr[34] and that the City has sufficient supply of groundwater and surface water to supply estimated growth over a 25-year time frame.[35]

The City of Modesto and MID have a TDA and are working together on a Phase Two expansion of the MRWTP. Under the TDA, MID will deliver a total of 67,204 af/yr to Modesto upon completion and operation of the Phase Two treatment plant facilities expansion, now under construction. This expansion will supply an additional approximately 33,600 af/yr from surface water supplies, and will assist the City of Modesto to meet its future water demand. The expansion is expected to be completed by about 2009.[36]

The City requires installation of water meters with all new development and is currently retrofitting existing water service customers with meters (approximately 5,000 dwelling units per year). The City has initiated billing residential customers based on metered usage, in a phased approach. The City anticipates that conversion to metered-use billing will result in water use

[30] WSA, Table 10, p. 25.
[31] The WSA uses 153.9 acres as the size of the project area; the difference in acreage does not significantly affect the accuracy of the results.
[32] WSA, p. 9.
[33] WSA, p. 21.
[34] WSA, Table 10, p. 25, Table 20, p. 56, Table 22, p. 57.
[35] WSA, Table 20, p. 56.
[36] WSA, p. 52.

reductions of approximately 10 percent. The City also expects that metering will permit detection and elimination of significant water leaks.

The City is implementing a water supply management strategy that maximizes the use of available surface water supplies and uses groundwater supplies for peaking needs and emergency supplies.

The City is currently evaluating the following potential future water supplies.[37]

- A Phase Three expansion is based on the future conversion of agricultural land to urban uses, which would allow for a corresponding redistribution of MID's existing surface water rights. The City has engaged in preliminary discussion with MID regarding development of Phase Three. This supply has not yet been confirmed or negotiated, however, and it was not included as a potential source of supply in the WSA.
- The development of a new Water Treatment Plant (WTP) with the Turlock Irrigation District (TID) would provide the City with an estimated additional 12,882 af/yr of surface water. Water provided by this WTP would serve South Modesto (south of the Tuolumne River). TID WTP deliveries could be available as early as 2011. This supply has not yet been confirmed or negotiated, however, and it was not included as a potential source of supply in the WSA.
- The City has completed a feasibility study regarding the development of a recycled water system to offset potable demand. Tier I of this project has the potential to provide an additional 6,720 to 11,200 af/yr of water by applying recycled water for irrigation at existing golf courses, parks, schools, and industrial uses, and in future Comprehensive Planning Districts. Much of this additional supply, however, will not affect potable water supply because most of the golf course and parks' irrigation is currently supplied by non-potable sources. The City anticipates that the Tier I system, if found to be economically feasible, could be developed and operational within 5 to 10 years. Since the feasibility of recycled water has not yet been determined, future availability of recycled water was not included in the WSA.
- The City does not anticipate the need for the entire 66,107 af/yr of surface water supply that will become available from the MRWTP in 2009 until 2018. The City is evaluating the feasibility of purchasing and distributing the 66,107 af/yr of MID surface water when it becomes available in 2009, and reducing its groundwater extraction by that amount in an aquifer storage and recovery (ASR) program. The amount of groundwater "stored" would be greatest in 2009 and would decrease each year until 2018, at which time the City anticipates the need for the full output of the MRWTP and the sustainable yield of the groundwater reservoir. Reduced pumping of groundwater between 2009 and 2018 could result in an increase in the groundwater level through in-lieu storage. After 2018, the City could begin to "recover" the stored groundwater. The feasibility of an ASR program in South Modesto, using TID surface water, could also be studied because the City does not anticipate the need for the 12,880 af/yr from the TID WTP in the early

[37] WSA, pp. 52-54.

years. Because the feasibility of an ASR program has not yet been determined, this source of supply was not included in the WSA.

Demand Compared to Supply

Table IV.K.3 shows the projected surplus (deficit) for years 2010, 2015, (by which time buildout of the project site would have occurred), 2020, 2025, and 2030. The WSA analysis is to the year 2030. During these years, the City water supply would be adequate to meet demand in both normal and dry years.

Table IV.K.3: Summary of City of Modesto Projected Water Supply and Demand (acre-feet per year)

Year/Condition		Supply[1, 2, 3, 4]	Demand[5]	Surplus (Deficit)
2005	Actual	86,007	78,802	7,205
2010	Normal	86,308[6]	86,308	0
	Drought Year 1	86,308	86,308	0
	Drought Year 5	86,308	86,308	0
2015	Normal	96,008	96,008	0
	Drought Year 1	96,008	96,008	0
	Drought Year 5	96,008	96,008	0
2020	Normal	106,963	106,963	0
	Drought Year 1	106,963	106,963	0
	Drought Year 5	106,963	106,963	0
2025	Normal	119,337	119,337	0
	Drought Year 1	119,337	119,337	0
	Drought Year 5	119,337	119,337	0
2030	Normal	133,313	133,313	0
	Drought Year 1	133,313	133,313	0
	Drought Year 5	133,313	133,313	0

Notes:
[1] Source, WSA, Table 19, p. 55.
[2] Source: WSA, Table 20, p. 56; Table 23, p. 60; and Table 24, p. 61.
[3] Water supply is increased by surface water treatment projects given in note 6.
[4] Water supply remains at 100 percent of normal year in Drought Year 1.
[5] Source: WSA, Tables 10, p. 25 and Table 12, p. 28.
[6] Assumes that 33,602 af/yr becomes available in 2009 from Phase Two expansion of the MRWTP.

The City's surface water deliveries from the MRWTP would be reduced by 22.43 percent in a single dry year. This would continue to be the case after the increase in delivery from the MRWTP that is anticipated in 2009. There would be no further reduction in deliveries from the MRWTP in multiple dry years, i.e., deliveries would continue to be reduced by 22.43 percent. Although water demands in single dry and multiple dry years may be reduced due to additional mandatory conservation measures, as a conservative assumption for purposes of the WSA, projected future demands were not assumed to be reduced for single dry or multiple dry year conditions.

Whenever delivery of surface water would be reduced, groundwater pumping would be increased to meet demand. The estimated operational yield of the City's groundwater supply is 53,500 af/yr. In multiple dry years, groundwater pumping would exceed the operational yield beginning in 2020. In 2025, groundwater pumping would exceed the operational yield by 13,034 af/yr, and in 2030, groundwater pumping would exceed the operational yield by 27,010 af/yr.[38] The quantity of groundwater pumped beyond the operational yield would be previously banked groundwater pumped out of storage.

PROJECT IMPACTS AND MITIGATION

Impact K.1. Implementation of the Kiernan Business Park Specific Plan Amendment #4 could increase the demand for potable water. (Less than Significant)

The total average annual water demand at buildout of the proposed Kiernan Business Park Amendment #4 project would be about 363 af/yr.[39] The UWMP has included this amount in its estimates of water demand to the year 2030.

Based on this analysis, the WSA determined that, while implementation of the Kiernan Business Park Specific Plan Amendment #4 project would increase the demand for potable water, there would be sufficient supply to serve the project site, and the impact of the increased water demand for implementation of the Kiernan Business Park Specific Plan would be less than significant.

Mitigation Measure. No mitigation necessary.

Impact K.2. Demand from the project would cause water pressure problems within the City's water distribution system. (Less than Significant with Mitigation)

As described earlier, the hydraulic capacity study, conducted to evaluate the potential impact of the proposed project on the City's existing water distribution system, stated that while the system currently has sufficient capacity to meet the City's required minimum water distribution system pressure requirements for average day, maximum day, and maximum day plus concurrent fire flow demand, there are existing water system pressure deficiencies during peak hour demand in three locations.[40] The study found that additional water demand from implementation of Kiernan Business Park Specific Plan Amendment #4 area would further impact the existing system's ability to maintain the City's minimum system pressure requirements.[41]

[38] WSA, Table 24 and Figure 16, p. 61.
[39] Memorandum from J. Bissell, Harris & Associates to J. Bridegroom, City of Modesto, Re: Confirmation of Land use and related Water Supply Assessment – Kiernan Business Park East, September 3, 2008.
[40] Hydraulic Tech Memo, p. 8.
[41] Hydraulic Tech Memo, p. 8.

Mitigation Measure K.2

In order to maintain adequate water pressure in the City's delivery system, it would be necessary to design and construct project specific, local, and system-wide water facility improvements.[42] There are three categories of improvements:

- Project-specific improvements funded by the project sponsor,
- Localized system improvements that would be funded by the City's Ongoing Strengthening and Repairing Water Pipelines Program,
- System-wide Improvements funded by the City's Connection Fee Program.

The localized system improvements and system-wide improvements are currently planned to be installed by the City.[43] In addition to the project infrastructure currently proposed by the project sponsor (i.e., 10-inch to 12-inch water distribution pipelines would be installed following the alignments of Healthcare Way, The Plaza Way, Chopra Parkway, and other planned roads within the project site), a 12-inch-diameter pipeline should be constructed in Kiernan Avenue along the entire northern boundary of the project site. This pipeline is recommended in order to enhance system reliability to the project by providing a system loop and an alternative route for delivery of water supplies. Installation of the recommended pipeline would not create any new impacts within the Kiernan Business Park Specific Plan Amendment #4 project site.

With the implementation of Mitigation Measure K.2, this impact would be less than significant.

CUMULATIVE IMPACTS

Impact K.3. Development of the proposed project could contribute to cumulative demand for potable water in the City of Modesto water service area. (Less than Significant)

The WSA for Kiernan Business Park Specific Plan Amendment #4 includes projections of available water supplies under single and multiple year drought conditions, and provides projections of growth in demand for water through 2030. The WSA analysis accounts for additional growth in demand, but does not account for additional surface water supply that may become available as other water projects, i.e. Phase 3 expansion of the MRWTP, construction of a water treatment plant by Turlock Irrigation District, and implementation of recycled water projects, become available. The analysis is, therefore, conservative.

The UWMP anticipates that the City will have adequate water supply until 2030 from existing surface and groundwater sources, assuming implementation of water conservation measures

[42] Hydraulic Tech Memo, p. 10.
[43] Hydraulic Tech Memo, p. 10.

including the planned increased use of metering. At present, the City has identified a sufficient water supply to serve future growth within its service area through 2030. Therefore, the contribution of the proposed project to demand for potable water in the City of Modesto water service area would be less than significant.

Mitigation Measure. No mitigation necessary.

Impact K.4. Development of the proposed project would contribute to the potential for cumulative demand to result in overdraft of groundwater supplies. (Less than Significant)

Future water demand from development projected to occur in the City of Modesto water service area would require the use of both surface water and groundwater resources. The availability of the City's surface water supply in normal years is currently fixed at 67,204 af/yr by the capacity of the MRWTP Phases 1 and 2. The City's operational yield from groundwater resources is limited to 53,500 af/yr. In one or more dry years, however, the City would receive less water from the MRWTP.[44] In these instances, the City's groundwater use is expected to increase to approximately 80,510 af/yr.

As shown in Table IV.K.4, in multiple dry years, the City's groundwater use would exceed the operational yield by 2025. The City has several measures under study, planned, or currently in place to mitigate the potential problems that could arise from multiple dry years. The City's Demand Management Program, discussed earlier, should reduce demand during both normal and dry years. Additional surface water supply could become available by a Phase Three expansion of the MRWTP and/or by development of a water treatment plant with the Turlock Irrigation District. Finally, the City will supplement reduced surface water supplies with banked groundwater supplies, as necessary, to meet demand.

Water demand from the proposed project would contribute to groundwater use exceeding Modesto's operational yield quantity of 53,500 af/yr by 2025. The amount consumed by the project, approximately 363 af/yr, would not be a significant portion of the total groundwater use in normal or dry years by 2025. Therefore, the project would not contribute substantially to potential cumulative impacts on groundwater levels.

Mitigation Measures. No mitigation necessary.

[44] WSA, Table 21, p. 55.

Table IV.K.4: Projected Sources of Water Supply 2005 Through 2030 (acre-feet per year)

Year/Condition		Supply[1, 2, 3]	Demand			Surplus (Deficit)
			Surface Water[4]	Groundwater[5]	Total[6]	
2005	Actual	86,007	32,509	46,293	78,802	5,012
2010	Normal	86,308[7]	67,204	19,104	86,308	0
	Drought Year 1	86,308[8]	52,803	33,505	86,308	0
	Drought Year 5	86,308	52,803	33,505	86,308	0
2015	Normal	96,008	67,204	28,804	96,008	0
	Drought Year 1	96,008	52,803	43,205	96,008	0
	Drought Year 5	96,008	52,803	43,205	96,008	0
2020	Normal	106,963	67,204	39,759	106,963	0
	Drought Year 1	106,963	52,803	54,160	106,963	0
	Drought Year 5	106,963	52,803	54,160	106,963	0
2025	Normal	119,337	67,204	52,133	119,337	0
	Drought Year 1	119,337	52,803	66,534	119,337	*
	Drought Year 5	119,337	52,803	66,534	119,337	*
2030	Normal	133,313	67,204	66,109	133,313	*
	Drought Year 1	133,313	52,803	80,510	133,313	*
	Drought Year 5	133,313	52,803	80,510	133,313	*

Notes:

[1] Source, WSA, Table 19, p. 55.

[2] Source: WSA, Table 20, p. 56; Table 23, p. 60; and Table 24, p. 61.

[3] Water supply is increased by surface water treatment projects given in note 75.

[4] Source: WSA, Table 23, p. 60, Table 24, p. 61.

[5] Source: WSA, Table 18, p. 51; Figure 15, p. 59; Figure 16, p. 62.

[6] Source: WSA, Table 12, p. 28.

[7] Assumes that 33,602 af/yr becomes available in 2009 from Phase Two expansion of the MRWTP.

[8] Water supply remains at 100 percent of normal year in Drought Year 1.

* Groundwater extraction exceeds operational yield. It is assumed that groundwater extraction that exceeds the operational yield is previously banked groundwater pumped out of storage.

V. OTHER CEQA CONSIDERATIONS

A. GROWTH INDUCEMENT

Growth inducement under the California Environmental Quality Act (CEQA) considers the ways in which proposed and foreseeable project activities could encourage and facilitate population and economic growth, either directly or indirectly, in the surrounding environment. Direct increases in population and employment, such as those that would result from the proposed project, may induce indirect economic and population growth and result in the demand for a range of goods and services to meet the additional production and consumption needs. This section summarizes the project's direct growth in population and employment, and describes the likelihood of associated induced growth and its potential impact.

The proposed Kiernan Business Park Specific Plan Amendment #4 project would provide a framework under which the 153-acre project site would be developed. The project would redesignate an approximately 39-acre portion of the existing Business Park (BP) land use to approximately 23 acres of Mixed Use (MU) and approximately 16 acres of Medium High Density Residential (MHDR) land uses. The remaining 114 acres would continue under the BP land use designation. Development of the MU subarea would include 80 dwelling units, 371,000 gross square feet (gsf) of retail area, 79,000 gsf of office area, and a 170,000-gsf, 170-room hotel. The MHDR subarea would allow for 262 residential units. The project would include up to 1,498,224 gsf of business park development.

POPULATION

Development of the Kiernan Business Park Specific Plan Amendment #4 project would contribute approximately 992 additional persons to the City of Modesto's population at full buildout that might occur as early as 2011.[1] Modesto has a current population of 209,936.[2] Modesto's population is projected to be approximately 235,319 by the year 2011, and approximately 400,000 by the year 2025.[3, 4] The proposed project would represent approximately 0.42 percent of the City's estimated population in 2011, and approximately 0.25 percent of the

[1] City of Modesto, *Housing Element 2003-2008*, p. 2-25. The average household size is estimated at 2.9 persons per unit.
[2] State of California, Department of Finance, E-1 City / County Population Estimates with Annual Percent Change, Stanislaus County January 1, 2008 i. Accessed September 4, 2008. http://www.dof.ca.gov/research/demographic/reports/estimates/e-1_2006-07/documents/E-1table.xls
[3] City of Modesto, *Final Master Environmental Impact Report for the Urban Area General Plan and Related Amendments to the Urban Area General Plan* (hereinafter "*Final Master Environmental Impact Report*"), Appendix F, Table F-1, Estimated Development Capacity: Population, Employment and Housing Units – 2002 General Plan by Growth Strategy Area. March 2003.
[4] City of Modesto, Housing Element 2003-2008, Table 2-11, p. 2-17.

City's estimated population in 2025. Based on these percentages, implementation of the Kiernan Business Park Specific Plan would minimally contribute to an increase in Modesto's population over an approximately 20-year planning horizon. The project would not cause the City as a whole to exceed the population threshold set out in the *Urban Area General Plan*.

Other residential developments are anticipated in the vicinity of the Kiernan Business Park Specific Plan, contributing to additional population for the City of Modesto. Modesto estimates there are 1,900 units under construction, approved, or planned in northeast Modesto, adding about 5,500 new residents to the City of Modesto.[5] Additional residential development is anticipated between 2008 and 2010 in northeast Modesto, including three Specific Plan areas: the Pelandale-McHenry Specific Plan area, the Village One Specific Plan area and environs, and the Tivoli Specific Plan area.[6] Including the Kiernan Business Park Specific Plan Amendment #4 project, anticipated growth in the northeast area of Modesto could potentially total about 15,342 new residents by 2011 if all of these developments, including the proposed project, were to be completed and occupied within the next few years as planned. In the longer term (after 2011) the remaining portions of the Tivoli Specific Plan, Roselle/Claribel Comprehensive Planning District, as well as the Hetch Hetchy Comprehensive Planning District, could potentially be developed, adding an additional 10,800 units (31,320 persons) to the northeast area of Modesto.[7] The City of Modesto also expects development of other Specific Plan areas in the longer-term: the Johansen-Empire and North Specific Plan areas. It is estimated that development of these Specific Plan areas could result in future population of an additional 8,990 persons.

EMPLOYMENT

According to the California Employment Development Department, Modesto currently has an unemployment rate of about 9.2 percent, which is lower than the current unemployment rate (about 10.8 percent) for Stanislaus County as a whole.[8] Employment opportunities attributable to the development of the commercial/office and the public/quasi-public components of the proposed project are expected to be filled largely by residents of the region, including residents of Modesto and residents of the Kiernan Business Park Specific Plan Amendment #4 project site. Construction of the 153-acre project site would not require unusual construction methods. Construction labor requirements for the project, therefore, would be expected to be filled by the regional labor market available for construction projects in Modesto and nearby surrounding areas.

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[5] City of Modesto, *Tivoli Specific Plan Final EIR*, February 2008 (hereinafter "*Tivoli Specific Plan Final EIR*"), Appendix C, pp. 14-16 and Map 5.

[6] *Tivoli Specific Plan Final EIR.*

[7] *Tivoli Specific Plan Final EIR.*

[8] California Employment Development Department, Labor Market Information Division, Labor Force Data for Sub-County Areas, May 2008. Accessed online on July 14, 2008 at www.calmis.ca.gov/file/lfmonth/stanisub.xls

The Modesto *Urban Area General Plan* has designated a substantial amount of land for job-generating land uses, and much of this land is located within the City's Planned Urbanizing Areas or in unincorporated areas of Stanislaus County surrounding the City but within its planning area and Sphere of Influence. Substantial capacity for providing job-generating uses and development remains in the Modesto area and its surroundings. City employment projections estimate that about 304,000 persons are expected to be employed within the General Plan boundary by 2025.[9] About 147,900 of those persons would be employed in the City's Planned Urbanizing Areas. Based on the Stanislaus County Council of Governments annual employment increase of 5.33 percent,[10] which is intended to mirror population growth through 2025, it is expected that in 2011 there would be approximately 141,050 persons employed in Modesto and about 180,380 persons employed by 2025.

At full buildout, the proposed commercial and retail components of the proposed project would generate approximately 2,968 Modesto-based jobs.[11] The proposed project would represent about 2 percent of the City's estimated total employment in 2025 for its Planned Urbanizing Areas, and about 1.6 percent of the City's estimated total employment in 2025. This anticipated growth in employment would contribute to local (City of Modesto) and regional (Stanislaus County) employment growth over the next 20 years, which would in turn indirectly affect housing demand over that same period. However, project-related employment growth would not induce population growth that is not accounted for in the Modesto *Urban Area General Plan.*

Given current unemployment rates in Modesto and generally higher unemployment rates in nearby communities and the County as a whole, it is possible that 2,968 new jobs generated by the proposed project could induce workers to relocate to Modesto, thereby resulting in secondary impacts on City facilities and services because of an influx of new residents. Although residential development in Modesto has not historically kept pace with the expansion of employment opportunities, the number of new project-generated jobs would not exceed the planned housing supply.

Development of the Kiernan Business Park Specific Plan pursuant to Amendment #4 could encourage the conversion of additional Prime Farmland in the vicinity of the project. The increased desirability of the project vicinity for urban development and the resulting increase in

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[9] *Final Master Environmental Impact Report*, Appendix F, Table F-1, Estimated Development Capacity: Population, Employment and Housing Units – 2002 General Plan by Growth Strategy Area. The General Plan boundary includes planned urbanizing areas within Stanislaus County that are anticipated, but yet to be annexed into the City of Modesto.

[10] City of Modesto, *City of Modesto 2003-2008 Housing Element*, pp. 2-17 - 2-18, April 27, 2004.

[11] Estimated employment at the Business Park development site is based on a ratio of approximately 670 sq. ft. per employee. This ratio is derived from the Business Professional Land Use section of the General Plan EIR, which estimates 26 employees per acre and a Floor Area Ratio (FAR) of 0.40 on the BP and MU (not including the hotel component) uses. Estimated employment at the hotel is 0.75 employees per room (60 total employees).

land values would increase inducements for agricultural property owners to sell. Development of the project would also increase roadway capacity and improve other infrastructure, and justify the area as a rational location to receive additional development.

The quantity of Prime Farmland that would be lost as a result of the project's growth-inducing impacts cannot be projected, or distinguished from the loss that would result under the current Business Park designation of the area within the existing Kiernan Business Park Specific Plan area. The *Final Master Environmental Impact Report for the Urban Area General Plan and Related Amendments to the Urban Area General Plan* anticipated that from 1995-2025, approximately 22,600 acres of Prime Farmland in the Planned Urbanizing Area would be converted to urban uses, resulting in a significant and unavoidable impact.[12] Conversion of the project site and other nearby agricultural parcels in the Kiernan Business Park Specific Plan area would be expected to occur at some point in the reasonably foreseeable future based on anticipated population growth in Modesto and Stanislaus County. This conversion would result in continued demand for new housing and demand for job growth in the City and the region.

To the extent that future conversion and development of additional Prime Farmland on adjacent parcels can reasonably be anticipated, an agricultural easement on these sites could mitigate future losses of Prime Farmland. However, implementation of such a measure is contingent on the ability of the project sponsor to secure such easements from nearby landowners who may be unwilling to encumber their property. Further, such a measure would not be consistent with Modesto's *Urban Area General Plan*, which calls for these areas to be developed, and would not provide effective mitigation for the growth-inducing impacts of the project, even if it would prevent the conversion of adjacent parcels encumbered by agricultural easements. Future development attracted to the area would merely avoid these parcels and locate at greater distances from the project site. Such an outcome would run counter to Local Agency Formation Commission, County, and City policies that provide for the orderly expansion of cities and encourage compact urban development patterns. In time, the value of such protected parcels for agricultural production would be impaired, as these parcels would cease to occupy the edge of urban development but would be absorbed within, as isolated fragments of farmland.

Prior to any actual development in the Kiernan Business Park Specific Plan area pursuant to the proposed Amendment #4 project area, the City Council will consider creation of a farmland mitigation program to determine whether such a program could feasibly provide partial mitigation for the loss of Prime Farmland (see Mitigation Measure B.1 in Section IV.B, Agricultural Resources). The potential growth-inducing impact may therefore be partially mitigated by the creation of a farmland mitigation program. Compliance with a future farmland mitigation program would be a condition precedent to the issuance of building permits for the proposed

[12] *Final Master Environmental Impact Report*, p. V-4-10.

project. A future farmland mitigation program has the potential to support farmland preservation projects in Stanislaus County. Such a mitigation measure would not reduce impacts on agricultural resources or growth-inducing impacts to less-than-significant levels. The project is expected to be completely built out by about 2011 to 2016; given this timeframe for the development under the Kiernan Business Park Specific Plan Amendment #4, any growth-inducing impacts on agricultural parcels adjacent to the project site would occur gradually.

INFRASTRUCTURE

Supplying water to serve the project area would not induce growth. The proposed land uses for the project area were accounted for in the *Joint Urban Water Management Plan 2005 Update* (UWMP); thus, the development of this project to its contemplated capacity would result in water demand as described in the UWMP. The Water Supply Assessment used the population projections used in the UWMP and found that the City has adequate water supply to serve the proposed project site. No new sources of water would be developed to serve the project area.

Wastewater collection capacity and infrastructure for the project site would increase wastewater collection capacity, but would not induce growth. Implementation of the proposed Specific Plan Amendment #4 would translate into approximately 992 residents (342 residential units multiplied by 2.9 persons per household). The 992 potential residents would represent 0.25 percent of the City's estimated population (400,000) in 2025. Housing construction in the area that would be served by wastewater treatment facilities beyond the Kiernan Business Park Specific Plan area would contribute to an increase in Modesto's population over a 20-year planning horizon, but would not cause the City to exceed its projections. Planned wastewater facilities would be sufficient to serve the project site, and the City would allocate its expanded wastewater treatment and disposal capability as the need arises (and would have to stop development, if the demand were to exceed capacity).

Roadway improvements included in the proposed project would not open new areas to development other than those of the project site. Surrounding areas are already accessible by motor vehicle on existing roadways.

Although new infrastructure, service improvements, and amenities offered by the proposed project could make residential development north of the City more attractive and economical, demand for such development would have to be absorbed in addition to the existing anticipated developments currently under construction or planned. The growth management policies of the City's *Urban Area General Plan* would prevent additional development outside of the City's planning area. Additional housing demand, beyond that generated by the project, would then be directed to other underdeveloped areas of the City's planning area that are already designated for residential development. Based on the above discussion, the new infrastructure improvements

analyzed in the EIR for the project are in the Kiernan Business Park Specific Plan Amendment #4 and would not cause growth-inducing impacts, either alone or in combination.

B. CUMULATIVE IMPACTS

Section 15130 of the CEQA Guidelines requires that an EIR contain a discussion of cumulative impacts. In this EIR, cumulative impacts are discussed in applicable sections of Chapter IV.

C. SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE PROPOSED PROJECT IS IMPLEMENTED

In accordance with CEQA and the State CEQA Guidelines, the purpose of this section is to identify significant impacts that could not be eliminated or reduced to less-than-significant levels by implementing mitigation measures included in the proposed project or identified in the EIR.

The project, with mitigation, would have the following unavoidable significant impacts:

- Implementation of the proposed project would directly result in the permanent loss of Prime Farmland. (See Impact B.1)
- Implementation of the proposed project would incrementally contribute to the cumulative loss of Prime Farmland in Stanislaus County and in the Modesto area. (See Impact B.3)
- Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the existing plus project scenario. (See Impact C.1)
- Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the existing plus project scenario. (See Impact C.2)
- Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge interchanges near the project site under the existing plus project scenario. (See Impact C.3)
- Construction and occupancy of the project site would result in significant impacts at study intersections adjacent to and near the project site under the near-term baseline plus project scenario. (See Impact C.4)
- Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the near-term baseline plus project scenario. (See Impact C.5)
- Construction and occupancy of the project site would result in significant impacts on freeway ramp merge/diverge areas near the project site under the near-term baseline plus project scenario. (See Impact C.6)
- Construction and occupancy of the project site would result in significant impacts on freeway and roadway segments adjacent to and near the project site under the cumulative baseline plus project scenario. (See Impact C.7)

- Emissions of criteria pollutants during project construction would contribute to existing violations of the ambient air quality standards in the region. (See Impact D.1)
- Emissions of criteria pollutants during project operation would contribute to existing violations of the ambient air quality standards in the region. (See Impact D.2)
- The project would cause a cumulatively considerable net increase of pollutants for which the San Joaquin Valley is designated as nonattainment. (See Impact D.6)
- The proposed project, including annexation of the proposed parcels to the City of Modesto and changes to adopted community plans, could conflict with or obstruct implementation of the ozone and PM_{10} attainment plans. (See Impact D.7)
- Cumulative development could lead to noise conflicts between incompatible land uses. (See Impact E.6)

D. SIGNIFICANT IRREVERSIBLE ENVIRONMENTAL CHANGES WHICH WOULD BE CAUSED BY THE PROPOSED PROJECT SHOULD IT BE IMPLEMENTED

Significant irreversible environmental changes would occur with development of the proposed Kiernan Business Park Specific Plan Amendment #4 project. The loss of agricultural resources on any parcel in the Plan Area would not be expected to be reversed once any of the project parcels develop, and would commit future generations to the residential, commercial, and light industrial uses proposed. Development would involve irreversible use of resources to construct buildings and infrastructure, including lumber, concrete, sand, gravel, masonry, metals, and water. However, development would not be expected to involve an unusual commitment of these resources, nor would it be expected to consume any of these resources in a wasteful manner.

Development of buildings and infrastructure, and occupancy of these buildings would use energy resources in the form of fossil fuels, including fuel oil, natural gas, and gasoline or diesel fuel for construction equipment and automobiles and trucks that would use the project site. Because individual buildings would be required to comply with California Code of Regulations Title 24 energy regulations, energy would not be used in a wasteful, inefficient, or unnecessary manner. Energy consumption for treatment of groundwater in the future would increase demand for power generation in the region by 2020, but not in excess of expected future capacity.

VI. ALTERNATIVES

This chapter identifies alternatives to the proposed Kiernan Business Park Specific Plan Amendment #4 project and discusses the environmental effects associated with them. The California Environmental Quality Act (CEQA) Guidelines require that an EIR describe a reasonable range of alternatives to the proposed project that could feasibly attain most of the basic project objectives. The alternatives considered should focus on elimination or reduction of significant adverse impacts caused by the proposed project. The feasibility of an alternative may be determined based on a variety of factors including, but not limited to, site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (if the site is already owned by the proponent) (CEQA Guidelines Section 15126.6 (c)(f)(1)). The CEQA Guidelines further state that an EIR need not consider every conceivable alternative to the project. Rather, it must consider a reasonable range of potentially feasible alternatives that will foster informed decision-making and public participation. An EIR is not required to consider alternatives that are infeasible.

The analysis of alternatives is of benefit to decision-makers because it provides more complete information about the impacts of land use decisions, and consequently a better understanding of the interrelationships among all of the environmental topics under evaluation. The City of Modesto must consider approval of an alternative if that alternative would substantially lessen or avoid significant environmental impacts identified for a proposed project and that alternative is determined to be feasible. The determination of feasibility will be made by the City of Modesto decision-makers.

The following alternatives to the Kiernan Business Park Specific Plan Amendment #4 project are discussed and evaluated in this chapter: A. No Project alternative; B. Existing Business Park Specific Plan alternative; and C. Reduced Intensity alternative.

An off-site alternative was not considered for several reasons. One of the objectives of the Kiernan Business Park Specific Plan Amendment #4 project is to plan for development and future use of this particular property, and to further implement *General Plan* policies which already call for development of this property. In addition, an "off-site" alternative would not accomplish the project objectives. Another purpose of the project is to provide a mixed use area adjacent to the Kaiser Modesto Medical Campus to serve the hospital and its visitors, including providing nearby housing choices for hospital employees. There are no alternative sites within proximity to the Kaiser site with a combination of suitable size and traffic access on arterial streets where such

uses could be placed. Relocating the project to other sites within the City of Modesto would similarly involve loss of prime agricultural land and biological habitats in other areas, and therefore would not substantially lessen or avoid significant environmental impacts.

A. NO PROJECT ALTERNATIVE

CEQA requires an EIR to evaluate a No Project alternative. The purpose of the No Project alternative is to allow decision-makers to compare the effects of the proposed project with the effects of taking no action.

DESCRIPTION

For this No Project alternative, the site would remain in agricultural, residential, and commercial uses. The proposed amendment to the Kiernan Business Park Specific Plan would not be considered. Physical conditions on the project site would remain as they currently are. The 86 acres within City of Modesto limits would continue in existing agricultural, residential, and commercial uses. The 67 acres in the County's land use designation and zoning would not be incorporated into the City of Modesto's boundaries and would remain in current agricultural and residential land use. Physical conditions would remain as they currently are. There would be no loss of agricultural lands or changes to the visual character of the site. No project-generated traffic would be added to City or County roadways and no new air emissions would be generated. Biological habitat would not be altered, and there would be no changes to hydrology and water quality. There would also be no increased demand in public services or utilities for the area, or population and/or employment increases.

ENVIRONMENTAL ANALYSIS

This alternative reflects existing physical conditions in the Kiernan Business Park Specific Plan Amendment #4 area. If existing physical conditions on the project site were to continue for the foreseeable future, conditions described in detail in the Environmental Setting for each environmental topic in Chapter IV would remain until the City of Modesto and County adopts *General Plan* amendments establishing new land use designations or the entire property is fully annexed into the Modesto city limits. Impacts identified for the Kiernan Business Park Specific Plan Amendment #4 area would not occur under the No Project alternative.

B. EXISTING KIERNAN BUSINESS PARK SPECIFIC PLAN ALTERNATIVE

DESCRIPTION

Under the Existing Kiernan Business Park Specific Plan, the 153-acre project site would be developed pursuant to the existing Kiernan Business Park Specific Plan Business Park (BP) land use designation.

Consistent with the Kiernan Business Park Specific Plan, the 67-acre portion within County jurisdiction would be annexed into the City of Modesto limits. The project site would be developed in accordance with the BP land use designation, consistent with the Kiernan Business Park Specific Plan Land Use Diagram, which allows business park, office, and regional commercial development. Development would include a mixture of these types of uses. This alternative would allocate up to about 2,664,900 square feet (40 percent allowable Floor Area Ratio [FAR]) of business park development.

Under the Existing Specific Plan alternative, nearby roadways would be developed pursuant to the existing Circulation Diagram set forth in the existing Kiernan Business Park Specific Plan. These are described in Chapter III, Project Description, under the existing conditions (pp. III.8-III.10). Healthcare Way east of Dale Road would continue as a two-lane industrial connector roadway. Under the Existing Kiernan Business Park Alternative, there would be no modifications proposed to the two-lane minor collector cross section. Proposed Class II bike lanes would be constructed along American Avenue and Healthcare Way, as set forth in the existing Kiernan Business Park Specific Plan Bike Path diagram. New connections to water, storm water, and sanitary sewer collection and distribution systems would occur on an as-needed basis and would be extended from existing City pipelines along Dale Road and Bangs Avenue, consistent with the existing Kiernan Business Park Specific Plan Illustrative Public Facilities Plan Diagram.

IMPACTS

Impacts resulting from development under the existing Kiernan Business Park Specific Plan alternative would be slightly greater than, but similar to, those identified for the proposed project. The impacts are described below.

Land Use

Development of the project site in conformity with the existing Kiernan Business Park Specific Plan would result in slightly more allowable building area than with the proposed project. Under this alternative, 2,664,900 gross square feet (gsf) of total development (all BP-designated uses)

would be permitted, about 82,675 gsf more than with the proposed project. (The project currently proposes 1,498,224 gsf of BP uses, 684,000 gsf of Mixed Use (MU) and 400,000 of Medium High Density Residential [MHDR].) Development impacts on the project site, however, would be largely similar in character to those resulting from the proposed project and described in Section IV.A, Land Use and Planning, of this EIR. No land use compatibility issues would result. As with the proposed project, land use impacts under this alternative would be considered less than significant for the purposes of CEQA. No amendments to land use designation in the Kiernan Business Park Specific Plan would be needed for this alternative.

Agricultural Resources

Impacts under this alternative on agricultural resources would be identical to those of the proposed project as described in Section IV.B, Agricultural Resources, of this EIR. Like the proposed project, development under this alternative would result in the permanent loss of roughly 153 acres of Prime Farmland. Mitigation Measure B.1 would apply to this alternative; however, as with the proposed project, this alternative would create significant unavoidable impacts.

Transportation and Circulation

Assumptions

Under the Existing Specific Plan alternative, the general office, and retail elements of the proposed project plus the 175-room hotel and the medium density residential land uses (80 apartments and 262 town homes, respectively) would not be developed. In their place an additional 1.17 million square feet of business park uses would be developed, totaling approximately 2,664,900 square feet (based on a floor area ratio of 0.40) of business park uses.

The impacts of traffic from the Existing Specific Plan alternative on the surrounding roadway system were assessed by establishing project trip generation, trip distribution, and trip assignments, in order to assign the project-generated traffic to roadway segments and intersections.

The baseline transportation system improvements assumed to be constructed by the City in the near-term and cumulative baseline scenarios are the same as those identified for the analysis of the proposed project.

Traffic Impacts

Implementation of the Existing Specific Plan alternative would generate about 2,380 fewer daily trips, but the BP land use would generate about 795 more AM peak hour vehicle trips (867 more

inbound trips and 72 fewer outbound trips), and more outbound PM peak hour vehicle trips (342 fewer inbound trips and 265 more outbound trips, resulting in about 77 fewer total PM peak hour trips).

The increase in inbound AM peak hour vehicle trips and outbound PM peak hour trips would result in more vehicles at intersections and on freeway and roadway segments, resulting in additional significant impacts at four intersections (see Tables VI.1 and VI.2). An additional significant impact at the Pelandale Avenue and SR 99 Northbound Ramps intersection would occur under the existing baseline plus Existing Specific Plan alternative. Additional significant impacts at the following three intersections would occur under the near-term baseline plus Existing Specific Plan alternative:

- Kiernan Avenue and Dale Road
- Kiernan Avenue and American Avenue
- Bangs Avenue and McHenry Avenue

Implementation of the Existing Specific Plan alternative would not result in additional impacts on roadway and freeway segments under the existing baseline plus Existing Specific Plan alternative or the cumulative baseline plus Existing Specific Plan alternative. However, under the near-term baseline plus Existing Specific Plan alternative, the following additional roadway segments would be impacted:

- Northbound SR 99 from Standiford Avenue to Pelandale Avenue
- Westbound Pelandale Avenue from Chapman Road to Northpointe Shopping Center
- Northbound Dale Road from The Plaza Way to Healthcare Way
- Southbound Dale Road from Kiernan Avenue to Healthcare Way
- Southbound Dale Road from Pelandale Avenue to Snyder Avenue

Mitigation

The mitigation measures for the proposed project were reviewed to verify if the measures would also mitigate the impacts for the existing baseline plus Existing Specific Plan alternative and near-term baseline plus Existing Specific Plan alternative. Existing and near-term plus proposed project mitigation measure would be applicable to the impacts identified for the Existing Specific Plan alternative under both the existing and near-term scenarios.

Table VI.1: Intersection LOS Conditions – Existing Baseline, Existing Plus Project, and Existing With Project Alternatives

	Intersection	Control	Peak Hour	Existing		Existing Plus Project		Existing Plus Specific Plan Alternative		Existing Plus Reduced Intensity Alternative	
				Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
1.	Kiernan Avenue/Salida Boulevard[3]	Traffic Signal	AM	26	C	26	C	26	C	26	C
			PM	17	B	17	B	17	B	17	B
2.	Kiernan Avenue/SR 99 SB Ramps[3]	Traffic Signal	AM	**48**	**D**	***63***	***E***	***83***	***F***	***56***	***E***
			PM	**45**	**D**	**51**	**D**	**48**	**D**	**49**	**D**
3.	Kiernan Avenue/SR 99 NB Ramps[3]	Traffic Signal	AM	15	B	15	B	15	B	14	B
			PM	19	B	20	B	20	B	20	B
4.	Kiernan Avenue/Sisk Road[3]	Traffic Signal	AM	24	C	26	C	32	C	25	C
			PM	**41**	**D**	**53**	**D**	**57**	**E**	**47**	**D**
5.	Kiernan Avenue/Stoddard Road[3]	Side-Street Stop Control	AM	7 **(69)**	A **(F)**	11 ***(140)***	B ***(F)***	16 ***(>150)***	B ***(F)***	10 ***(110)***	A ***(F)***
			PM	**128 (> 50)**	**F (F)**	***> 150 (> 50)***	***F (F)***	***>150 (>50)***	***F (F)***	***>150 (>50)***	***F (F)***
6.	Kiernan Avenue/Dale Road	All-Way Stop-Control	AM	**55**	**F**	***95***	***F***	***111***	***F***	***80***	***F***
			PM	**83**	**F**	***158***	***F***	***172***	***F***	***122***	***F***
7.	Kiernan Avenue/American Avenue	Side-Street Stop Control	AM	1 (18)	A (C)	2 (30)	A (D)	2 ***(36)***	A ***(E)***	1 (25)	A (C)
			PM	1 (18)	A (C)	8 ***(>50)***	A ***(F)***	***96 (>50)***	***F (F)***	3 ***(37)***	A ***(E)***
8.	Kiernan Avenue/Carver Road	Traffic Signal	AM	8	A	11	B	14	B	10	A
			PM	**60**	**F**	***223***	***F***	***279***	***F***	***151***	***F***
9.	Dale Road/Healthcare Way	Traffic Signal	AM	4	A	29	C	55	D	20	B
			PM	7	A	24	C	29	C	21	C
10.	Healthcare Way/American Avenue	Roundabout	AM	--	--	4	A	5	A	3	A
			PM	--	--	5	A	7	A	4	A
11.	Dale Road/Kaiser Main Entrance	Traffic Signal	AM	5	A	19	B	14	B	15	B
			PM	8	A	31	C	14	B	22	C
12.	Bangs Avenue/Dale Road	Traffic Signal	AM	8	A	9	A	10	A	8	A
			PM	10	A	11	B	12	B	11	B
13.	Bangs Avenue/American Avenue	Side-Street Stop Control	AM	0 (9)	A (A)	***>150 (> 50)***	***F (F)***	***>150 (>50)***	***F (F)***	6 (25)	A (C)
			PM	1 (11)	A (B)	***>150 (> 50)***	***F (F)***	***>150 (>50)***	***F (F)***	16 **(>50)**	A **(F)**
14.	Bangs Avenue/Prescott Road	All-Way Stop-Control	AM	10	A	21	C	33	D	13	B
			PM	12	B	***152***	***F***	***145***	***F***	**55**	***F***
15.	Bangs Avenue/Carver Road	All-Way Stop-Control	AM	13	B	***37***	***E***	***56***	***F***	20	C
			PM	16	C	***74***	***F***	***88***	***F***	***38***	***E***

(continued)

Table VI.1 (Continued)

Intersection		Control	Peak Hour	Existing		Existing Plus Project		Existing Plus Specific Plan Alternative		Existing Plus Reduced Intensity Alternative	
				Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
16.	Bangs Avenue/Tully Road	All-Way Stop-Control	AM	15	B	35	D	***52***	***F***	22	C
			PM	**69**	**F**	***164***	***F***	***177***	***F***	***121***	***F***
17.	Bangs Avenue/McHenry Avenue	Traffic Signal	AM	21	C	23	C	25	C	22	C
			PM	19	B	22	C	25	C	21	C
18.	Pelandale Avenue/Salida Boulevard	Traffic Signal	AM	24	C	24	C	25	C	24	C
			PM	18	B	18	B	18	B	18	B
19.	Pelandale Avenue/SR 99 SB Ramps	Traffic Signal	AM	29	C	30	C	30	C	30	C
			PM	**90**	**F**	***102***	***F***	***107***	***F***	***96***	***F***
20.	Pelandale Avenue/SR 99 NB Ramps	Traffic Signal	AM	19	B	31	C	***64***	***E***	24	C
			PM	15	B	22	C	21	C	17	B
21.	Pelandale Avenue/Sisk Road	Traffic Signal	AM	26	C	27	C	27	C	27	C
			PM	**72**	**E**	***84***	***F***	***81***	***F***	**80**	***E***
22.	Pelandale Avenue/Northpointe Shopping Center	Traffic Signal	AM	10	A	10	A	10	A	10	A
			PM	30	C	30	C	30	C	30	C
23.	Pelandale Avenue/Chapman Road	Traffic Signal	AM	5	A	5	A	5	A	5	A
			PM	8	A	8	A	8	A	8	A
24.	Pelandale Avenue/Dale Road	Traffic Signal	AM	22	C	30	C	36	D	25	C
			PM	31	C	38	D	38	D	35	C
25.	Pelandale Avenue/Prescott Road	Traffic Signal	AM	17	B	27	C	29	C	21	C
			PM	21	C	37	D	34	C	28	C
26.	Pelandale Avenue/Carver Road	Traffic Signal	AM	16	B	20	B	21	C	18	B
			PM	16	B	19	B	21	C	18	B
27.	Dale Road/Snyder Avenue	Traffic Signal	AM	18	B	18	B	19	B	18	B
			PM	22	C	26	C	25	C	24	C
28.	Standiford Avenue/SR 99 SB Ramps	Traffic Signal	AM	40	D	42	D	43	D	41	D
			PM	**187**	**F**	***198***	***F***	***197***	***F***	***195***	***F***

(continued)

Table VI.1 (Continued)

Intersection		Control	Peak Hour	Existing		Existing Plus Project		Existing Plus Specific Plan Alternative		Existing Plus Reduced Intensity Alternative	
				Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
29.	Standiford Avenue/ SR 99 NB Ramps	Traffic Signal	AM	19	B	29	C	41	D	22	C
			PM	34	C	42	D	40	D	40	D
30.	Standiford Avenue/Sisk Road	Traffic Signal	AM	26	C	26	C	26	C	26	C
			PM	46	D	51	D	51	D	47	D
31.	Standiford Avenue/Dale Road	Traffic Signal	AM	21	C	29	C	40	D	24	C
			PM	28	C	36	D	34	C	32	C

Notes:
[1] For unsignalized intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement).
[2] Deficient operations (LOS E or F – City of Modesto/LOS D, E or F – Stanislaus County) are shown in **bold**. ***Bold italics*** indicate a potential significant impact.
[3] These locations are evaluated against Stanislaus County LOS standards.

Source: Fehr & Peers, 2008.

Table VI.2: Intersection LOS Conditions – Near-Term Baseline, Near-Term Plus Project, and Near-Term With Project Alternatives

	Intersection	Control	Peak Hour	Near-Term		Near-Term Plus Project		Near-Term Plus Specific Plan Alternative		Near-Term Plus Reduced Intensity Alternative	
				Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
1.	Kiernan Avenue/Salida Boulevard[3]	Traffic Signal	AM	16	B	17	B	17	B	17	B
			PM	17	B	17	B	17	B	17	B
2.	Kiernan Avenue/SR 99 SB Ramps[3]	Traffic Signal	AM	**52**	**D**	***59***	***E***	***73***	***E***	***56***	***E***
			PM	**40**	**D**	***42***	***D***	***41***	***D***	***41***	***D***
3.	Kiernan Avenue/SR 99 NB Ramps[3]	Traffic Signal	AM	20	B	20	B	31	C	20	B
			PM	23	C	28	C	29	C	24	C
4.	Kiernan Avenue/Sisk Road[3]	Traffic Signal	AM	**40**	**D**	***75***	***E***	***67***	***E***	***46***	***D***
			PM	**70**	**E**	***80***	***F***	***83***	***F***	***72***	***E***
5.	Kiernan Avenue/Stoddard Road[3]	Side-Street Stop Control	AM	32	C	32	C	32	C	33	C
			PM	29	C	31	C	32	C	30	C
6.	Kiernan Avenue/Dale Road	All-Way Stop-Control	AM	41	D	48	D	***64***	***E***	44	D
			PM	48	D	48	D	48	D	48	D
7.	Kiernan Avenue/American Avenue	Side-Street Stop Control	AM	1 (13)	A (B)	1 (14)	A (B)	1 (15)	A (B)	1 (14)	A (B)
			PM	0 (12)	A (B)	8 (45)	A (E)	23 ***(108)***	C ***(F)***	3 (22)	A (C)
8.	Kiernan Avenue/Carver Road	Traffic Signal	AM	14	B	15	B	15	B	15	B
			PM	19	B	23	C	24	C	22	B
9.	Dale Road/Healthcare Way	Traffic Signal	AM	23	C	33	C	43	D	28	C
			PM	26	C	38	D	55	D	34	D
10.	Healthcare Way/American Avenue	Roundabout	AM	--	--	4	A	5	A	4	A
			PM	--	--	5	A	8	A	4	A
11.	Dale Road/Kaiser Main Entrance	Traffic Signal	AM	18	B	26	C	23	C	21	C
			PM	28	C	***88***	***F***	***134***	***F***	***82***	***F***
12.	Bangs Avenue/Dale Road	Traffic Signal	AM	24	C	38	D	54	D	25	C
			PM	26	C	30	C	29	C	26	C

(continued)

Table VI.2 (continued)

Intersection		Control	Peak Hour	Near-Term		Near-Term Plus Project		Near-Term Plus Specific Plan Alternative		Near-Term Plus Reduced Intensity Alternative	
				Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
13.	Bangs Avenue/American Avenue	Side-Street Stop Control	AM	3 (23)	A (C)	***>50 (>50)***	***F***	***>50 (>50)***	***F***	***>50 (>50)***	***F***
			PM	7 (**36**)	A (**E**)	***>50 (>50)***	***F***	***>50 (>50)***	***F***		***F***
14.	Bangs Avenue/Prescott Road	All-Way Stop-Control	AM	14	B	21	C	23	C	17	B
			PM	27	C	***121***	***F***	***117***	***F***	***64***	***E***
15.	Bangs Avenue/Carver Road	All-Way Stop-Control	AM	**141**	**F**	***266***	***F***	***305***	***F***	***207***	***F***
			PM	**257**	**F**	***406***	***F***	***418***	***F***	***337***	***F***
16.	Bangs Avenue/Tully Road	All-Way Stop-Control	AM	**113**	**F**	***219***	***F***	***239***	***F***	***173***	***F***
			PM	**300**	**F**	***404***	***F***	***425***	***F***	***361***	***F***
17.	Bangs Avenue/McHenry Avenue	Traffic Signal	AM	25	C	31	C	34	C	29	C
			PM	36	D	54	D	***64***	***E***	45	D
18.	Pelandale Avenue/Salida Boulevard	Traffic Signal	AM	25	C	26	C	26	C	25	C
			PM	21	C	21	C	21	C	21	C
19.	Pelandale Avenue/SR 99 SB Ramps	Traffic Signal	AM	29	C	29	C	25	C	28	C
			PM	**188**	**F**	***225***	***F***	***235***	***F***	***210***	***F***
20.	Pelandale Avenue/SR 99 NB Ramps	Traffic Signal	AM	29	C	40	D	50	D	35	C
			PM	22	C	34	C	29	C	28	C
21.	Pelandale Avenue/Sisk Road	Traffic Signal	AM	30	C	30	C	29	C	29	C
			PM	**98**	**F**	**99**	**F**	**98**	**F**	**98**	**F**
22.	Pelandale Avenue/Northpointe Shopping Center	Traffic Signal	AM	8	A	8	A	8	A	8	A
			PM	36	D	45	D	50	D	39	D
23.	Pelandale Avenue/Chapman Road	Traffic Signal	AM	6	A	6	A	6	A	6	A
			PM	9	A	10	A	11	B	10	A
24.	Pelandale Avenue/Dale Road	Traffic Signal	AM	40	D	***116***	***F***	***156***	***F***	***73***	***E***
			PM	**74**	**E**	***93***	***F***	***89***	***F***	***82***	***F***

(continued)

Table VI.2 (continued)

Intersection		Control	Peak Hour	Near-Term Baseline		Near-Term Plus Project		Near-Term Plus Specific Plan Alternative		Near-Term Plus Reduced Intensity Alternative	
				Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]	Delay[1]	LOS[2]
25.	Pelandale Avenue/Prescott Road	Traffic Signal	AM	25	C	32	C	36	D	29	C
			PM	30	C	52	D	49	D	40	D
26.	Pelandale Avenue/Carver Road	Traffic Signal	AM	24	C	31	C	38	D	27	C
			PM	31	C	38	D	38	D	35	C
27.	Dale Road/Snyder Avenue	Traffic Signal	AM	26	C	28	C	30	C	27	C
			PM	31	C	43	D	41	D	36	D
28.	Standiford Avenue/SR 99 SB Ramps	Traffic Signal	AM	53	D	***60***	***E***	***61***	***E***	***57***	***E***
			PM	**320**	**F**	***341***	***F***	***342***	***F***	***333***	***F***
29.	Standiford Avenue/ SR 99 NB Ramps	Traffic Signal	AM	29	C	40	D	45	D	36	D
			PM	**179**	**F**	***201***	***F***	***197***	***F***	***192***	***F***
30.	Standiford Avenue/Sisk Road	Traffic Signal	AM	31	C	36	D	39	D	33	C
			PM	**212**	**F**	***240***	***F***	***242***	***F***	***229***	***F***
31.	Standiford Avenue/Dale Road	Traffic Signal	AM	24	C	26	C	31	C	25	C
			PM	41	D	48	D	48	D	45	D

Notes:
[1] For unsignalized intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement).
[2] Deficient operations (LOS E or F – City of Modesto/LOS D, E or F – Stanislaus County) are shown in **bold**. ***Bold italics*** indicate a potential significant impact.
[3] These locations are evaluated against Stanislaus County LOS standards.

Source: Fehr & Peers, 2008.

The following ***additional*** mitigation measures for the impacted intersections would be necessary to reduce the impacts of the Existing Specific Plan alternative to a less-than-significant level:

- ***Kiernan Avenue/Dale Road*** – Implementation would result in a near-term scenario impact at this location in addition to the existing scenario impact identified with the proposed project. In the near-term scenario, modification of the traffic signal to provide an eastbound right-turn overlap phase would mitigate the impact.
- ***Kiernan Avenue/American Avenue*** – Implementation would result in a near-term scenario impact at this location in addition to the existing scenario impact identified with the proposed project. The deficient operations would be experienced by vehicles exiting the project site in the PM peak hour. As this intersection would be restricted to right-in/right-out operation only and all delay would be experienced by the side-street movement, no improvements are recommended. The impact would potentially remain ***significant and unavoidable.***
- ***Bangs Avenue/McHenry Avenue*** – Implementation would result in a near-term scenario impact at this location. In the near-term scenario, construction of a second eastbound right-turn lane (resulting in a left-turn lane, shared through-right lane, and a right-turn only lane in the eastbound direction) would be necessary to reduce this impact to a less-than-significant level.
- ***Pelandale Avenue/SR 99 Northbound Ramps*** – Implementation would result in an existing scenario impact at this location. Improvements at this interchange are currently being studied by the City of Modesto and Caltrans. Potential improvements include loop ramps and modifications to Sisk Road, such as additional through lanes and turn lanes. However, as implementation of this improvement cannot be assured, this impact would remain ***significant and unavoidable***. The project applicant should pay their fair share contribution towards the ultimate interchange improvement project.

In addition, near-term Mitigation Measure C.4a for the proposed project would have to be implemented to mitigate the existing baseline plus Existing Specific Plan alternative impact at the Kiernan Avenue/SR 99 Southbound Ramps. Furthermore, the construction of a westbound right-turn bypass lane in addition to a northbound right-turn bypass lane would be needed to provide acceptable operations at the Bangs Avenue/American Avenue two-lane roundabout intersection. The additional by-pass lane is required to accommodate the additional inbound traffic during the AM peak hour with the Existing Specific Plan alternative. The proposed project would result in a moderate volume-to-capacity ratio of 0.61 at the westbound approach, while the Existing Specific Plan alternative would increase the total intersection volume by 14 percent, including a 31 percent increase in the northbound-left movement and a 77 percent increase in the westbound-right movement. The northbound left-turn movement, northbound through movement, and all of the westbound movements currently conflict. This mitigation would move the heavy westbound right-turn movement from this conflict area, providing acceptable operations.

The additional mitigation measures discussed above and those identified for the proposed project would be necessary to mitigate the impacts of the Existing Specific Plan alternative.

Air Quality

Under the Existing Specific Plan alternative, the number of daily vehicle trips would be approximately eight percent lower than the proposed project; therefore, air quality impacts would be reduced proportionally as well. As with the proposed project, the Existing Specific Plan alternative would still create significant and unavoidable construction-related and operation-related impacts, and Mitigation Measures E.1, E.2a, and E.2b would apply. With implementation of the above-described measures, impacts to air quality would be less than significant under the Existing Specific Plan alternative.

Noise

Under the Existing Specific Plan alternative, noise-related impacts would generate slightly less impact compared to the proposed project. Unlike the proposed project, this alternative would not generate a potentially significant impact for existing conditions at Intersection #12 – Bangs Avenue and Dale Road (northbound toward Kaiser Entrance). The reduction in the number of locations experiencing potentially significant noise impacts accounts for existing plus project conditions only. Near-term conditions with the proposed project would result in less than a 1 dB difference in the vehicular noise environment between this alternative and the proposed project at this location and a significant impact would result with the alternative. The Kaiser Modesto hospital would not be exposed to significant noise levels with this alternative, as with the proposed project. All other impacts and mitigation measures identified for the proposed project would be applicable under this alternative.

Hazards

As with the proposed project, development under the Existing Specific Plan alternative would require demolition and excavations that could result in exposing workers and the public to hazardous substances. Federal, state, and local regulations would require risk assessments and remedial plans should it be found that release of hazardous substances to the environment is likely. Similar to the proposed project, implementation of Phase I Environmental Site Assessments throughout the project site would be necessary to reduce impacts to less-than-significant levels.

Biology

Impacts on biological resources with the Existing Specific Plan alternative would be similar in character to those described for the proposed project. Habitat for burrowing owls would be lost under the Existing Specific Plan alternative. Implementation of Mitigation Measures G.1a and G.1b could avoid and minimize impacts to burrowing owls. Nesting raptors could be disturbed by construction. Implementation of Mitigation Measures G.2a and G.2b could avoid and

minimize impacts to nesting raptors. With implementation of the above-described measures, impacts to biological resources would be less than significant.

Hydrology and Water Quality

Future development anticipated under this alternative would create hydrology and water quality impacts similar to those discussed for the proposed project. Mitigation measures identified in Section IV.H for the proposed project would also apply to this alternative. Therefore, like the proposed project, this alternative would have less-than-significant impacts to hydrology and water quality.

Community Services

Development under this alternative would be less varied than the proposed project in terms of the type of land uses. Under this alternative, the amendments to the Kiernan Business Park Specific Plan to allow for a portion of the Business Park land use to be redesignated for mixed use and medium high density residential (MHDR) land uses would not be sought. This would result in slightly more building lot coverage; however, building heights would be lower under this alternative than with the proposed project (a maximum of three stories rather than seven with the proposed project). Like the project, demand for police and fire services would not result in the need for expansion of police or fire facilities, including the need to construct new infrastructure. Therefore, police and fire services impacts under this alternative would be considered less than significant.

Under the Existing Specific Plan alternative, there would be no residential units constructed, as they would be with the proposed project. Therefore, there would be no demand on school services.

Utilities and Services Systems: Wastewater

Impacts related to wastewater collection and treatment under the Existing Specific Plan alternative would be similar to the proposed project. It is assumed that a similar *on-site* collection system would be included in the final project design, and that all on-site collection system improvements would be installed by the project developer prior to or concurrent with development of the project. The project would not require construction of new wastewater collection or treatment facilities or cause waste discharge standards to be violated. Thus, the impact would be less than significant.

Water Supply

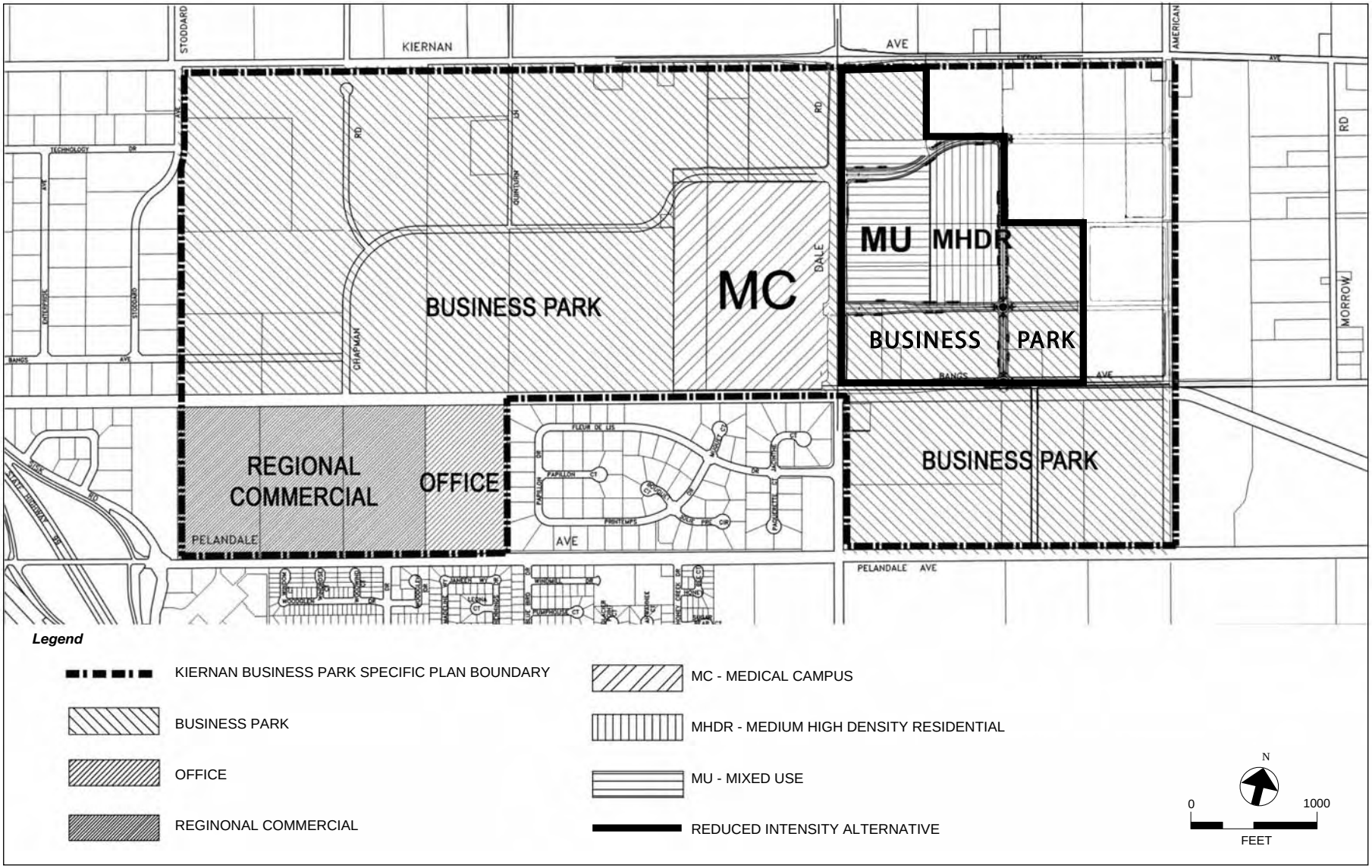
Development of the project site under the Existing Kiernan Business Park Specific Plan alternative would result in a reduced demand for domestic water. The estimated water demand under the Business Park Specific Plan alternative is about 55 acre-feet per year less than for the proposed project. The Water Supply Assessment found that the City's future water supply will be sufficient to meet the larger demand imposed by the proposed project. Thus, the Water Supply Assessment accounts for development on the project site and implementation of this alternative would result in less-than-significant impacts to water supply.

C. REDUCED INTENSITY ALTERNATIVE – MODIFIED KIERNAN BUSINESS PARK AMENDMENT #4

DESCRIPTION

Under the Reduced Intensity alternative, the western portion of the project site would be developed with BP, MU, and MHDR land uses. (See Figure VI.1: Reduced Intensity Alternative.) Under this alternative, about 55 acres would be designated Business Professional, allowing up to 878,932 square feet of business park development. About 22 acres would be designated for MU development, and would allow up to 420,354 square feet of development area, including area for combined residential and/or office above retail uses, detached residences, hotels, restaurants, pharmacies, professional offices, art galleries, and athletic clubs. The Reduced Intensity alternative would also include a 17-acre area designated for MHDR. Allowed uses in the MHDR area would include townhouses, condominiums, and garden apartments. The MHDR area would be developed to a maximum of 354 dwelling units with an average dwelling unit size of 1,500 gross square feet. As with the proposed project, the Reduced Intensity alternative would require an amendment to the Kiernan Business Park Specific Plan to redesignate the 39-acre BP land use area to MU and MHDR.

As is proposed under the planned project, amendments to the Kiernan Business Park Specific Plan Circulation Diagram would be required under the Reduced Intensity alternative. Dale Road would be reclassified from a four-lane minor arterial to a six-lane principal arterial between Kiernan Avenue and Pelandale Avenue. Bangs Road would be reclassified from a two-lane industrial connector to a four-lane major collector between Dale Road and American Avenue. Healthcare Way would be reclassified from a two-lane industrial connector to a two-lane minor collector east of Dale Road. And, the two-lane minor collector cross section would be redesigned to alter the widths of the public right-of-way, the traveled way, the pedestrian zone, the transition zone and the vehicular zone from a 64-foot-wide public right-of-way, a 40-foot-wide traveled way, 4-foot-wide sidewalks, 8-foot-wide landscape strips, 6-foot-wide bike paths, and



SOURCE: Dahlin Group, Turnstone Consulting

FIGURE VI.1: REDUCED INTENSITY ALTERNATIVE

14-foot-wide travel lanes to a 60-foot-wide public right-of-way, a 36-foot-wide traveled way, 5½-foot-wide sidewalks, 7-foot-wide landscape strips, 6-foot-wide bike paths, and 11½-foot-wide travel lanes. In addition, Class II bike paths would be proposed for the interior roadways of the project site.

As with the proposed project, development of the Reduced Intensity alternative would require the installation of new utilities and the extension of existing services. Electric service lines would be extended onto the project site from existing lines along Dale Road, Bangs Avenue, and Kiernan Avenue. New connections to water and sanitary sewer pipelines would be extended from existing City lines along Dale Road and Bangs Avenue. New storm drainage facilities would be installed throughout the (smaller) project area and discharge to proposed detention (infiltration) basins.

IMPACTS

Impacts resulting from development under the Reduced Intensity alternative would be similar to, but generally less than, those identified for the proposed project. The impacts are described below.

Land Use

Under the Reduced Intensity alternative, 40 percent less land area would be developed than is proposed with the proposed project. Compared to the proposed project, the Reduced Intensity alternative would have roughly 40 percent less BP space, 40 percent less MU space, but 92 more residential units in the MHDR land use area. Impacts arising from development of the project site would be somewhat less than, though similar in character to those resulting from the proposed project and described in Section IV.A, Land Use and Planning. As with the proposed project, land use impacts under this alternative would be considered less than significant for the purposes of CEQA.

Agricultural Resources

Impacts under this alternative on agricultural resources would be less than with the proposed project, since only 94 acres of Prime Farmland would be developed. However, like the proposed project, development under this alternative would result in the permanent loss of Prime Farmland, a significant, irreversible, and unavoidable impact. Under the Reduced Intensity alternative, the eastern half of the proposed project site would not be developed; therefore, the acres of permanent loss would be roughly 40 percent less than with the proposed project, minimizing the amount of converted Prime Farmland.

Transportation and Circulation

Assumptions

Under the Reduced Intensity alternative, the portion of the project site within City of Modesto limits would be developed with 878,932 square feet of business park development, about 420,350 square feet of mixed-use development, and up to 434 dwelling units and a 170-room hotel.

The impacts of traffic from the Reduced Intensity alternative on the surrounding roadway system were assessed by establishing project trip generation, trip distribution, and trip assignments, in order to assign the project-generated traffic to roadway segments and intersections.

The baseline transportation system improvements assumed to be constructed by the City in the near-term and cumulative baseline scenarios are the same as those identified for the analysis of the proposed project in the near-term scenario and in 2025. In addition, revisions to the Circulation Plan Diagram would be similar to the proposed project to reflect the proposed changes to the Specific Plan.

Traffic Impacts

Implementation of the Reduced Intensity alternative would generate about 11,320 fewer daily trips, about 1,033fewer AM peak hour vehicle trips (864 fewer inbound trips and 169 fewer outbound trips), and about 1,190 fewer PM peak hour vehicle trips (367 fewer inbound trips and 823 fewer outbound trips). See Table VI.1, on pp. VI.6-VI.8, and Table VI.2, on pp. VI.9-VI.11.

Traffic impacts would be similar to the proposed project under this alternative. Implementation of the Reduced Intensity alternative is expected to result in significant impacts at one less intersection under the existing baseline plus Reduced Intensity alternative scenario – the Kiernan Avenue and American Avenue intersection. Under the cumulative baseline plus Reduced Intensity alternative, significant impacts would occur at one less roadway segment – Kiernan Avenue between SR 99 Southbound ramps and SR 99 Northbound ramps.

No new intersections or roadway segments would experience significant reduction in LOS with the Reduced Intensity alternative. Mitigation measures identified for the existing baseline plus project and near term plus project in Section IV.C, Transportation and Circulation, are applicable to the Reduced Intensity alternative.

Air Quality

Under the Reduced Intensity alternative, daily vehicle trips would be less than with the proposed project, and air quality impacts would be decreased as well. However, as with the proposed project, the Reduced Intensity alternative would still create significant and unavoidable

construction-related and operation-related impacts. Mitigation Measures D.1, D.2a, D.2b, and D2c would still apply. With implementation of the above-described measures, impacts to air quality would be less than significant.

Noise

Under the Reduced Intensity alternative, there would be fewer noise-related impacts compared to the proposed project. Unlike the proposed project, this alternative would not generate potentially significant impacts for the following intersections: Intersection #12 – Bangs Avenue and Dale Road (Northbound toward Kaiser Entrance); Intersection #12 – Bangs Avenue and Dale Road (Southbound toward Palendale Avenue); and Intersection #13 – Bangs Avenue and American Avenue (Eastbound toward Prescott Road). Similar to the "Existing Kiernan Business Park Specific Plan," this reduction in the number of potentially significant impacts accounts for existing conditions only. For the near-term analysis scenario, vehicular noise levels would be within 1 dB of those with the proposed project, and mitigation measures identified for the proposed project would apply.

Hazards

As with the proposed project, development under the Reduced Intensity Alternative would require demolition and excavations that could result in exposing workers and the public to hazardous substances. Federal, state, and local regulations would require risk assessments and remedial plans should it be found that release of hazardous substances to the environment is likely. Similar to the proposed project, implementation of Phase I Environmental Site Assessments on the individual parcels would be necessary to reduce impacts to less-than-significant levels.

Biology

The Reduced Intensity alternative would result in fewer biological impacts on burrowing owls and nesting raptors than with the proposed project. Under this alternative, construction activities could still result in a loss of habitat for the burrowing owl and disturbance of nesting raptors, though on a smaller scale since this alternative would convert less area identified as foraging lands than the proposed project would. Nonetheless, implementation of Mitigation Measures G.1a, G.1b, G.2a, and G.2b would still be required to reduce impacts to less-than-significant levels.

Hydrology and Water Quality

Future development anticipated under this alternative would create hydrology and water quality impacts similar to but less than those discussed for the proposed project. This Reduced Intensity

alternative is assumed to include development of storm drainage systems similar to those described for the proposed project. Mitigation measures identified for the proposed project would apply to this alternative. Therefore, like the proposed project, the Reduced Intensity alternative would have less-than-significant impacts on hydrology and water quality with implementation of the groundwater quality mitigation measures, as identified in Section IV.H., Hydrology and Water Quality.

Community Services

Under this alternative, the BP, MU, and MHDR land uses would be developed, although with the BP and MU at a lesser intensity than with the proposed project. Demand for police and fire services would increase from the existing baseline demand under the Reduced Intensity Alternative, but to a lesser degree than that projected under the proposed project. This alternative proposes about 92 more residential dwelling units within the MHDR land use area. This increase would slightly increase the estimated number of students projected at buildout within the project site; however, as with the proposed project, it is expected that these students could be accommodated within existing school facilities. Like the project, this demand would not result in the need for the expansion of police, fire, or school facilities, including the need to construct new infrastructure. Therefore, community services impacts under this alternative would be considered less than significant.

Water Supply

Development of the project site under the Reduced Intensity alternative would result in a similar demand for domestic water with the proposed project. Under the Reduced Intensity alternative, there would be an increase in the number of dwelling units, but development in both the BP and MU land use areas would decrease by about 40 percent. The water demand from this alternative would be less than that estimated for the proposed project. As the Water Supply Assessment for the proposed project concluded that supply would be sufficient, the Reduced Intensity alternative would not result in significant water supply impacts. Therefore, the impact of the Reduced Intensity alternative on water supply would be less than significant.

Utilities and Services Systems: Wastewater

Impacts related to wastewater collection under the Reduced Intensity Alternative would be similar to the proposed project. It is assumed that the *on-site* collection system proposed would be included in the final project design, and that all on-site collection system improvements would be installed by the project developer prior to or concurrent with development of the project. The project would not require construction of new wastewater collection or treatment facilities or cause waste discharge standards to be violated. Thus, the impact would be less than significant.

E. ENVIRONMENTALLY SUPERIOR ALTERNATIVE

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. CEQA Guidelines require that an environmentally superior alternative be designed and states that "if the environmentally superior alternative is the no project alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives."

Based on the review of the development alternatives evaluated in this chapter, the Reduced Intensity alternative would be considered environmentally superior to the proposed project due to the decrease in impacts to agricultural resources, traffic, air quality, biological resources, and community services.

VII. AUTHORS AND PERSONS CONSULTED

EIR AUTHORS

City of Modesto
1010 Tenth Street
Modesto, CA 95353
Community and Economic Development

Director:	H. Brent Sinclair, AICP
Planning Manager:	Patrick Kelly, AICP
Senior Planner:	Josh Bridegroom

EIR CONSULTANTS

Turnstone Consulting
330 Townsend Street, Suite 216
San Francisco, CA 94107

Project Director:	Nancy Cunningham Clark
Project Manager:	Barbara W. Sahm
Deputy Project Manager:	Julie Tilley Barlow, AICP
	S. Elizabeth Haines
	Michael Kometani
	Peter Mye
	Barbara Westree

Baseline Environmental Consulting
101 H Street, Suite C
Petaluma, CA 94952-5100 (Hydrology, Air Quality)

Senior Hydrogeologist:	Bruce Abelli-Amen
Civil Engineer	James McCarty, P.E.

Charles M. Salter Associates, Inc.
130 Sutter Street
San Francisco, CA 94104 (Noise)

Senior Consultant:	Timothy G. Brown

H.T. Harvey & Associates
423 W. Fallbrook, Suite 202
Fresno, CA 93711 (Biology)

Principal:	Scott B. Terrill, Ph.D.
Division Head/Project Manager:	Brian B. Boroski, Ph.D.
Botanist:	Brian J. Cleary, M.S.
Wildlife Ecologist:	Jeff Seay

Fehr & Peers Associates, Inc.
100 Pringle Avenue, Suite 600
Walnut Creek, CA 94596 (Transportation)
Principal: Jane Bierstedt, P.E.
Transportation Planner: Kathrin Tellez

RT Design
13020 Quaker Hill Cross Road
Nevada City, CA 95959 (Graphics) Ron Teitel

Eagle Eye Editing
1932 Chestnut Street
Oakland, CA 94607 (Word Processing) Brian Vahey

PROJECT SPONSOR

Aruna Chopra and Associates (Master Planner/Developer of Mixed Use and Residential Areas)
Chopra Development Enterprises
313 Banner Court
Modesto, CA 95356

PROJECT SPONSOR'S CONSULTANTS

Carollo Engineers (Wastewater)
7580 North Ingram Avenue, Suite 112
Fresno, CA 93711

Dahlin Group (Specific Plan Consultant)
5865 Owens Drive
Pleasanton, CA 94588

Harris & Associates
2850 North Tracy Boulevard, Suite 200
Tracy, CA 95376

Stantec Consulting, Inc. (Storm Drainage)
2590 Venture Oaks Way
Sacramento, CA 95833

West Yost Associates (Water Supply)
7041 Koll Center Parkway
Pleasanton, CA 94566

PERSONS CONSULTED

Jeff Barnes, Traffic Engineer, Modesto Public Works Department

Fred Cavanah, Transit Manager, Modesto Public Works Department

David Cervantes, Senior Deputy Attorney, City of Modesto, City Attorney's Office

Doug Critchfield, Parks Planning and Development Manager, Modesto Parks Recreation and Neighborhood Department

Eva Dankha-Kelly, Modesto Community and Economic Development Department

Paul Easter, Deputy Fire Marshall, Modesto Fire Department

Dan England, Senior Civil Engineer, Modesto Community and Economic Development Department

Laurie French, Administrative Analyst I, Modesto Public Works Department

Amy Gedney, IFP Administrator, Modesto Community and Economic Development Department

Dhyan Gilton, Environmental Compliance Inspector II, Modesto

Charles Grom, Lieutenant, Stanislaus County Sheriff's Department

Violet Jakab, Senior Civil Engineer, Modesto Community and Economic Development Department

Bill Ketscher, Irrigation Engineer, Modesto Irrigation District

Barry Koenig, Lieutenant, California Highway Patrol, Central Division

Dana McGarry, Modesto City Schools Planning and Research Department

James Miguel, Chief, Modesto Fire Department

Mike Payton, Fire Marshall, Modesto Fire Department

Nicholas Pinhey, Director, Modesto Public Works Department

Bill Sandhu, Senior Civil Engineer, Modesto Community and Economic Development Department

Dale Skiles, Chief, Salida Fire Protection District

Bronda Smith, CSO II, Captain, Modesto Police Department

Richard Ulm, Deputy Director, Modesto Public Works Department

Helen Wang, Transportation Planner, Modesto Public Works Department

William Wong, Senior Civil Engineer, Modesto Public Works Department

APPENDIX A: NOTICE OF PREPARATION AND INITIAL STUDY

CITY OF MODESTO
INITIAL STUDY
ENVIRONMENTAL CHECKLIST

Project Title:	Kiernan Business Park Specific Plan Amendment #4
Lead Agency Name and Address:	City of Modesto Community and Economic Development Department 1010 Tenth Street, Suite 3300 Modesto, CA 95354
Contact Person and Phone Number:	Josh Bridegroom Senior Planner (209) 571-5267
Project Sponsor's Name and Address:	Chopra Development Enterprises 1741 Coffee Road, Suite 1B Modesto, CA 95354
Brief Description of the Proposed Action: (*Full Project Description Below*)	The proposed project is an amendment to the Kiernan Business Park Specific Plan to redesignate approximately 39 acres of Business Park land uses to 22 acres of Mixed Use and 17 acres of Medium High Density Residential land uses. The proposed project also requires an amendment to the Specific Plan Land Use Plan Diagram, Circulation Plan Diagram, Illustrative Public Facilities Plan Diagram, and Bike Paths figure. In addition, a new street cross-section for two-lane minor collectors is introduced. The text of the Specific Plan would be amended to accommodate the new land use designations. The Specific Plan amendment requires that the *Urban Area General Plan* be amended. The proposed project would also include annexation of a portion of the project site into Modesto city limits and an agreement with the Modesto Irrigation District for stormwater discharge.
Public Agencies Whose Approval is Required:	City of Modesto

PROJECT DESCRIPTION

INTRODUCTION

The proposed project is an amendment to the *Kiernan Business Park Specific Plan* (Specific Plan).[1] (Notes are at the end of the Initial Study.) The Specific Plan sets out the framework for development of the 614-acre Kiernan Business Park Specific Plan Area (the Specific Plan area). The Specific Plan was assessed in accordance with the California Environmental Quality Act (CEQA).[2]

Kiernan Business Park-East is a 153-acre portion of the Specific Plan area (the project site). It is bounded on the west by Dale Road, on the north by Kiernan Avenue, on the east by a line extending south from American Avenue and parallel to Dale Road, and on the south by Bangs Avenue and Modesto Irrigation District (MID) Lateral No. 6. The proposed amendments to the Specific Plan would include the following:

- Redesignation of a 39-acre portion of the 153-acre project site currently designated Business Park (BP) under the existing Specific Plan, to Mixed Use (MU) and Medium High Density Residential (MHDR).
- Reclassification of Dale Road from a four-lane major collector to a six-lane principal arterial between Kiernan Avenue and Pelandale Avenue,
- Reclassification of Bangs Road from a two-lane industrial connector to a four-lane major collector between Dale Road and American Avenue, and
- Reclassification of Healthcare Way from a two-lane industrial connector to a two-lane minor connector east of Dale Road.

The remaining 114 acres of the project site would remain in the BP land use designation. The proposed amendments would also include new development standards and design guidelines for the MU and MHDR areas to provide a framework and direction for development within these areas. The development standards and design guidelines for the BP land use would remain the same. The Land Use Plan Diagram, the Circulation Plan Diagram, the Bike Paths figure, and the Illustrative Public Facilities Plan Diagram in the Specific Plan would also be revised to reflect the proposed changes to the Specific Plan. A new street cross section for two-lane minor collectors would be included as part of the amendments to the Specific Plan. The Specific Plan otherwise remains unchanged in substance with respect to the rest of the Plan Area.[3]

The proposed project does not include any specific development proposal implementing the proposed changes to the Specific Plan. As such, this environmental review is programmatic in scope. Subsequent activities implementing the proposed amendments to the Specific Plan will be reviewed in light of this program-level EIR to determine what type of additional project-level environmental review is required for a specific development project.

PROJECT OBJECTIVES

The following objectives have been identified as part of the Kiernan Business Park-East project[4]:

- Create a Mixed Use area adjacent to the Kaiser Foundation Medical Campus which will serve the hospital and its visitors, the immediate business park area, and residential areas. Provide a vibrant village atmosphere which provides a safe, pedestrian-friendly environment.
- Balance support commercial, retail, residential, and employment opportunities near the hospital to create an extended-hour community that serves the hospital, its visitors, the residential areas, and the business park employees and its visitors. Attract small businesses that provide needed services.
- Provide multi-family residential uses, both apartments and condominiums, to provide housing choices for doctors and nurses, hospital employees and support staff, visitors, single parents, business owners and employees, and independent seniors.
- Design a healthy, smart growth development that increases physical activity via walking and bicycling, reduces dependence on automobiles, and increases transit use.
- Provide incentives to reduce traffic through the use of shared parking and reduced automobile parking standards. Balance the supply and management of parking to address the needs of the businesses, residents, and employees.
- Incorporate an efficient infrastructure system designed to accommodate the future phases of development.
- Provide for employment-intensive uses in an attractive "campus-like" setting that is consistent with the needs of the target industries identified in the *Kiernan Business Park Industrial Development Strategy*.

PROJECT LOCATION AND EXISTING CONDITIONS

REGIONAL LOCATION

Stanislaus County is located within the central San Joaquin Valley and is bounded by San Joaquin County to the north; Calaveras, Tuolumne, and Mariposa Counties to the east; Merced County to the south; and Santa Clara and Alameda Counties to the west. Modesto is located approximately 45 miles east of Livermore and 30 miles southeast of Stockton. Nearby Central Valley communities include Patterson to the west; Salida, Ripon, and Manteca to the northwest; Riverbank to the northeast; and Ceres, Turlock, and Merced to the south.

The Kiernan Business Park Specific Plan area is located about five miles north of Modesto's downtown core. Highway 99 is located about two miles to the west. Kiernan Avenue (State Route 219) and Pelandale Avenue, both of which are planned future expressways, are located to the north and south of the Specific Plan area, respectively. The eastern and western boundaries of the Specific Plan area are a line even with American Avenue and parallel to Dale Road and Stoddard Avenue, respectively.

PROJECT VICINITY

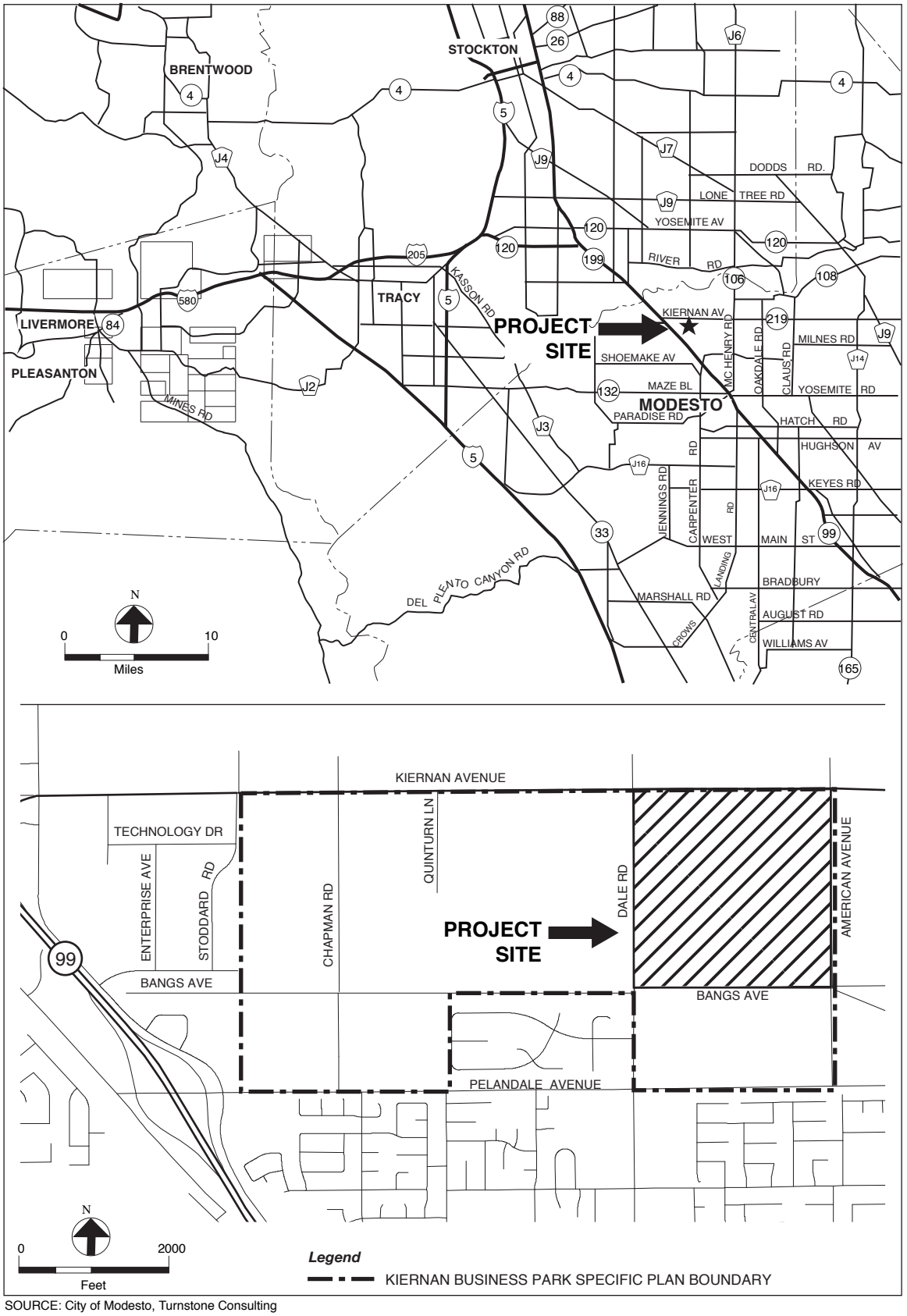
The 153-acre Kiernan Business Park-East project site is bounded on the west by Dale Road, on the north by Kiernan Avenue, on the east by a line extending south from American Avenue and parallel to Dale Road, and on the south by Bangs Avenue and Modesto Irrigation District (MID) Lateral No. 6 (see Figure 1: Project Location).

In the vicinity of the project site is a mix of medical, agricultural, commercial, and residential land uses. Directly west across Dale Road is the Kaiser Modesto Medical Center and the Cornerstone Business Park. Unincorporated Stanislaus County lands to the north across Kiernan Avenue are primarily in agricultural use, and there is a produce market and gift shop at the northeast corner of Kiernan Avenue and Dale Road. To the east, between the proposed north-south extension of American Avenue and existing Morrow Road, are agricultural parcels with some individual home sites. Immediately south of the project site across Bangs Avenue and MID Lateral No. 6 are an event center/catering business and two churches. Low-density residential neighborhoods and commercial uses are located further south of the project site across Pelandale Avenue. The Fleur de Ville residential neighborhood is located south and west of the project site, south of MID Lateral No. 6.

PROJECT SITE

The project site consists of 16 parcels (see Table 1: Parcels on the Project Site). Of these, nine parcels, generally comprising the southwest portion of the project site, are within the existing City limits (about 87 acres). The remaining seven parcels, generally comprising the northeast portion of the project site, are outside of the existing city limits (about 67 acres). These parcels are in unincorporated Stanislaus County within the City's Sphere of Influence.

Currently, the majority of parcels that make up the project site are in agricultural production. Some of these parcels also include single-family homes and/or structures related to agricultural production. There are 13 separate farmhouse sites, 4 with access to Dale Road, 6 with access to Kiernan Avenue, and 3 with access to Bangs Avenue. A commercial nursery and landscaping service is located on a 4.2-acre parcel at the northeast corner of Dale Road and Bangs Avenue; a welding company is located at the northeastern corner of a 9.8-acre parcel fronting Kiernan Avenue near its intersection with American Avenue; and the MID's Bangs Substation is located on the southeast corner of the 19.6-acre parcel fronting Bangs Avenue near its intersection with American Avenue. When surveyed in July 2006, orchards were the dominant agricultural use (approximately 65 acres) with some parcels used for irrigated row crops (approximately 36 acres). Other uses include approximately 8 acres of irrigated pasture, approximately 18 acres of disturbed land that is not in agricultural production, and 10 acres of fallow land.



SOURCE: City of Modesto, Turnstone Consulting

TURNSTONE CONSULTING

T05.172

KIERNAN BUSINESS PARK SPECIFIC PLAN AMENDMENT

FIGURE 1: PROJECT LOCATION

Table 1: Parcels on the Project Site

	Location	Approximate Acres
Parcels Within Existing City Limits		
Parcel 0780-15-001	Kiernan Avenue	9.8
Parcel 0780-15-003	4754 Dale Road	19.6
Parcel 0780-15-007	4620 Dale Road	9.8
Parcel 0780-15-020	4506 Dale Road	4.2
Parcel 0780-15-023	2719 Bangs Avenue	2.3
Parcel 0780-15-024	Bangs Avenue	17.2
Parcel 0780-15-025	Dale Road	9.9
Parcel 0780-15-026	2931 Bangs Avenue	1.0
Parcel 0780-15-028	2731 Bangs Avenue	12.8
Subtotal		*86.6*
Parcels Outside Existing City Limits		
Parcel 0780-15-002	2866 Kiernan Avenue	8.7
Parcel 0780-15-005	2572 Kiernan Avenue	9.8
Parcel 0780-15-010	2573 Bangs Avenue	19.6
Parcel 0780-15-012	2706 Kiernan Avenue	19.3
Parcel 0780-15-013	2742 Kiernan Avenue	0.5
Parcel 0780-15-015	2506 Kiernan Avenue	0.4
Parcel 0780-15-017	2472 Kiernan Avenue	8.7[1]
Subtotal		*67*
Total		***153.6***

Note:
[1] The portion of this parcel located west of the proposed American Avenue right-of-way is included in the proposed project. Number of acres are for the portion of parcel within the project site.

Source: Thompson-Hysell Engineers & Velthoen Associates (Exhibit No. A, 2006); City of Modesto GIS, 2006; Stanislaus County Assessor's Office.

EXISTING KIERNAN BUSINESS PARK SPECIFIC PLAN

EXISTING LAND USE PLAN

The City of Modesto's 17,600-acre Planned Urbanizing Area is divided into Comprehensive Planning Districts that are expected to absorb much of the City's future population and employment growth.[5] Comprehensive Planning Districts are developed through implementation of Comprehensive Plans and Specific Plans. The Kiernan Business Park Specific Plan area is situated within the western portion of the 1,385-acre Kiernan/Carver Comprehensive Planning District and consists of approximately 614 acres adjacent to the City's northern boundary, east of Highway 99 and south of Kiernan Avenue. The 153-acre project site is located on the eastern portion of the Specific Plan area, east of Dale Road. The approximately 87-acre portion within City limits is pre-zoned as SP-O (Specific Plan-Overlay) and the approximately 66-acre portion outside of City limits is pre-zoned as SP-H (Specific Plan-Holding), consistent with the existing Specific Plan.

Under the Specific Plan, area planning promotes the development of new business park, office, and regional commercial land uses, as well as compatible institutional land uses such as medical campus and office uses in the vicinity of Kiernan Avenue. The existing Land Use Diagram

identifies three development areas: Area A (Business Park); Area B (Office); and Area C (Regional Commercial). Area A includes a Medical Campus area. As shown in Figure 2: Existing Kiernan Business Park Specific Plan – Land Use Diagram, most of the Specific Plan area (540 acres of the 614-acre Specific Plan area), including the entire project site, is designated as "Business Park." See Table 2: Existing Land Use Summary.

Table 2: Existing Land Use Summary

Development Area	Land Use Designation	Acres[1]	Maximum Development Allowed (sf)
Area A (Business Park)	Business Park	491	8,555,184
	Medical Campus	49	1,425,000
Subtotal		***540***	***9,980,184***
Area B (Office)	Office	19	282,100
Area C (Regional Commercial)	Regional Commercial	55	965,300
Total		***614***	***11,227,584***

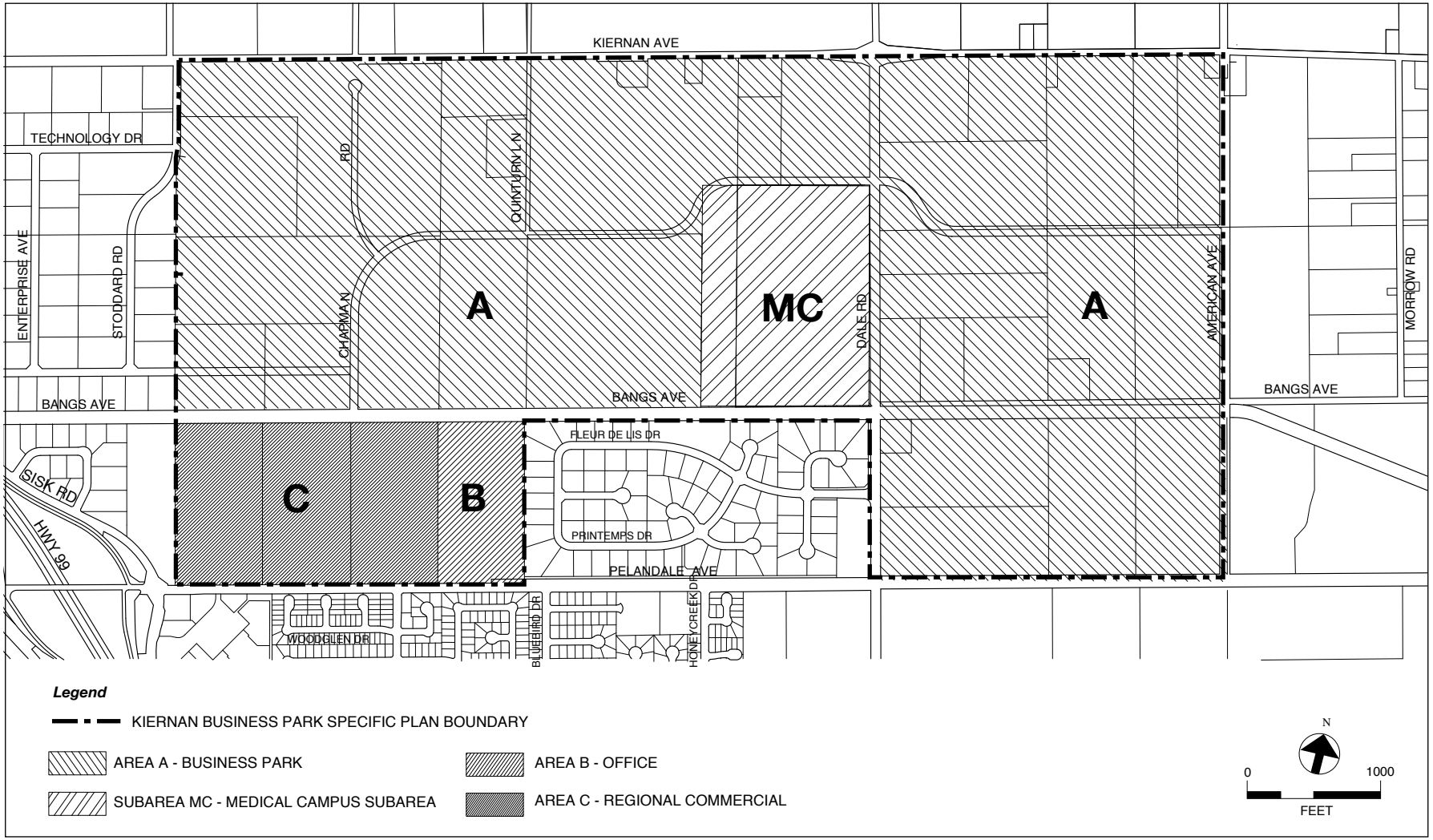
Notes:
[1] Acres are approximate.

Source: City of Modesto, *Kiernan Business Park Specific Plan*, as amended in 2004.

EXISTING CIRCULATION PLAN

The Specific Plan includes provisions to enhance the existing traffic and circulation system with improvements to existing roadways and construction of new arterial and collector streets. Kiernan Avenue (State Route 219) to the north is an existing east-west, two-lane rural arterial proposed to become a six-lane Class B expressway. Pelandale Avenue to the south is an existing east-west, six-lane principal arterial between Sisk Road and Dale Road. East of Dale Road, Pelandale Avenue is a two-lane roadway that is proposed to become a six-lane Class B expressway. Dale Road is a rural, north-south, two-lane roadway north of Kiernan Avenue. Under the existing Specific Plan it is classified as a four-lane minor arterial. Currently, between Kiernan Avenue and Pelandale Avenue, Dale Road varies from four lanes to six lanes and provides local access. Along the eastern boundary of the Specific Plan area, the Specific Plan calls for a southerly extension of American Avenue. The internal circulation program under the existing Specific Plan is comprised of the following roadways:

- Quinturn Lane is an existing north-south access road. It is proposed to be a four-lane minor arterial that would extend south from a proposed signalized intersection at Kiernan Avenue to a proposed roundabout with Technology Drive.
- Technology Drive is a proposed internal east-west, four-lane major collector that parallels Kiernan Avenue. From a roundabout with Quinturn Lane, Technology Drive is proposed to extend east for about ¼ mile to the western boundary of the Kaiser Medical Center. At this boundary Technology Drive is shown to shift to the north a short distance and continue east to a signalized intersection at Dale Road. This stretch of Technology Drive is identified as Healthcare Way and defines the northern boundary of the Kaiser Medical Center property. The Healthcare Way portion of the roadway was recently constructed as part of the Kaiser Medical Center.



SOURCE: City of Modesto, Turnstone Consulting

FIGURE 2: EXISTING KIERNAN BUSINESS PARK SPECIFIC PLAN-LAND USE DIAGRAM

- Healthcare Way is shown to shift south a short distance east of the Dale Road/Healthcare Way signalized intersection, is classified as a two-lane industrial connector, and is shown to extend east to a signalized intersection at American Avenue, a proposed north-south, two-lane minor connector.
- Technology Drive is proposed to extend west for about ¼ mile from a proposed roundabout with Quinturn Lane. This stretch of Technology Drive is classified as a four-lane minor arterial. Technology Drive is shown to turn into Chapman Road at the midpoint of a southerly curve.
- American Avenue is proposed to be extended from Kiernan Avenue south to Pelandale Avenue. This north-south extension is proposed as a two-lane minor connector.
- Chapman Road is an existing north-south access road that is proposed to become a four-lane minor arterial from the point where it changes over from Technology Drive (the midpoint of the southerly curve) to its intersection with Pelandale Avenue. A portion of Chapman Road extends north from the midpoint of the southerly curve and is proposed to become a two-lane minor connector that ends as a cul-de-sac. The existing intersection of Chapman Road and Kiernan Avenue is proposed to be removed.
- Bangs Avenue is an existing east-west roadway that is proposed to be extended east from the western boundary of the Specific Plan area as a two-lane minor connector. This extension of Bangs Avenue would terminate at Chapman Road. Bangs Avenue is also an existing east-west roadway on the eastern portion of the Specific Plan area. This segment of Bangs Avenue is classified as a two-lane industrial connector from its western terminus at Dale Road east to American Avenue.

Access to the Specific Plan area is through a mix of primary and secondary gateways. Primary gateways on the north are planned at the existing intersections of Kiernan Avenue/Quinturn Lane and Dale Road/Kiernan Avenue and on the south at the proposed intersection of Chapman Road/Pelandale Avenue. A secondary gateway is identified at the signalized intersection of Dale Road/Pelandale Avenue. Two access points to the Kaiser Medical Center – Healthcare Way and Kaiser Way – are located along Dale Road between Kiernan Avenue and Bangs Avenue.

EXISTING BICYCLE CIRCULATION PLAN

Two east-west Class II[6] bicycle lanes (a striped lane in the roadway) are shown in the existing Specific Plan: one follows the Technology Drive/Healthcare Way alignment and the other follows the Bangs Avenue right-of-way from the western boundary of the Specific Plan area to Chapman Road. Under the existing Specific Plan, north-south Class II bicycle lanes are proposed along Dale Road between Pelandale and Kiernan Avenues and along Quinturn Lane between a proposed roundabout with Technology Drive and Kiernan Avenue. In addition, east-west Class I[7] bicycle paths (separated from the roadway) are proposed along Bangs Avenue and parallel to MID Lateral No. 6 on the southern portion of the Specific Plan area and along Kiernan Avenue. Both of these Class I bicycle paths would extend from the eastern boundary of the Specific Plan area to its western boundary.

EXISTING PUBLIC FACILITIES PLAN

The Specific Plan includes provisions to enhance the existing water supply, stormwater, and sanitary sewer distribution and collection systems, with improvements planned along existing and proposed roadways and other rights-of-way. Future development of the existing Specific Plan land uses – Business Park, Medical Campus, Office, and Regional Commercial – would require the installation of new utilities and incremental expansion of the service areas. New connections to water, stormwater, and sanitary sewer collection and distribution systems would occur on a project-by-project basis and would be extended from existing City pipelines along Dale Road and Bangs Avenue.

PROPOSED PROJECT

SPECIFIC PLAN AMENDMENT

The proposed Kiernan Business Park-East project is an amendment to the *Kiernan Business Park Specific Plan* to re-designate an approximately 39-acre portion of the existing Business Park (BP) land use to approximately 22 acres of Mixed Use (MU) and approximately 17 acres of Medium High Density Residential (MHDR) land uses. (See Table 3: Proposed Specific Plan Land Use Changes.) An amendment to the Specific Plan Land Use Plan Diagram would be necessary to accommodate the proposed mix of land uses, and therefore is also proposed with the project. Specific Plan text amendments include development standards and design guidelines for the following areas: a Mixed Use (MU) area for retail, commercial, and residential uses; and a

Table 3: Proposed Specific Plan Land Use Changes

Development Area	Land Use Designation	Acres Existing	Acres Proposed	Change	Maximum Development Allowed (sf)
Area A (Business Park)	Business Park	491	452	-39	7,875,648
	Medical Campus	49	49	0	1,425,000
	Mixed Use	0	22	+22	479,160
	Medium High Density Residential	0	17	+17	–
Subtotal		***540***	***540***	***0***	***9,779,808***
Area B (Office)	Office	19	19	0	282,100
Area C (Regional Commercial)	Regional Commercial	55	55	0	965,300
Total		***614***	***614***		***11,027,208***

Notes:
[1] Acres are approximations.

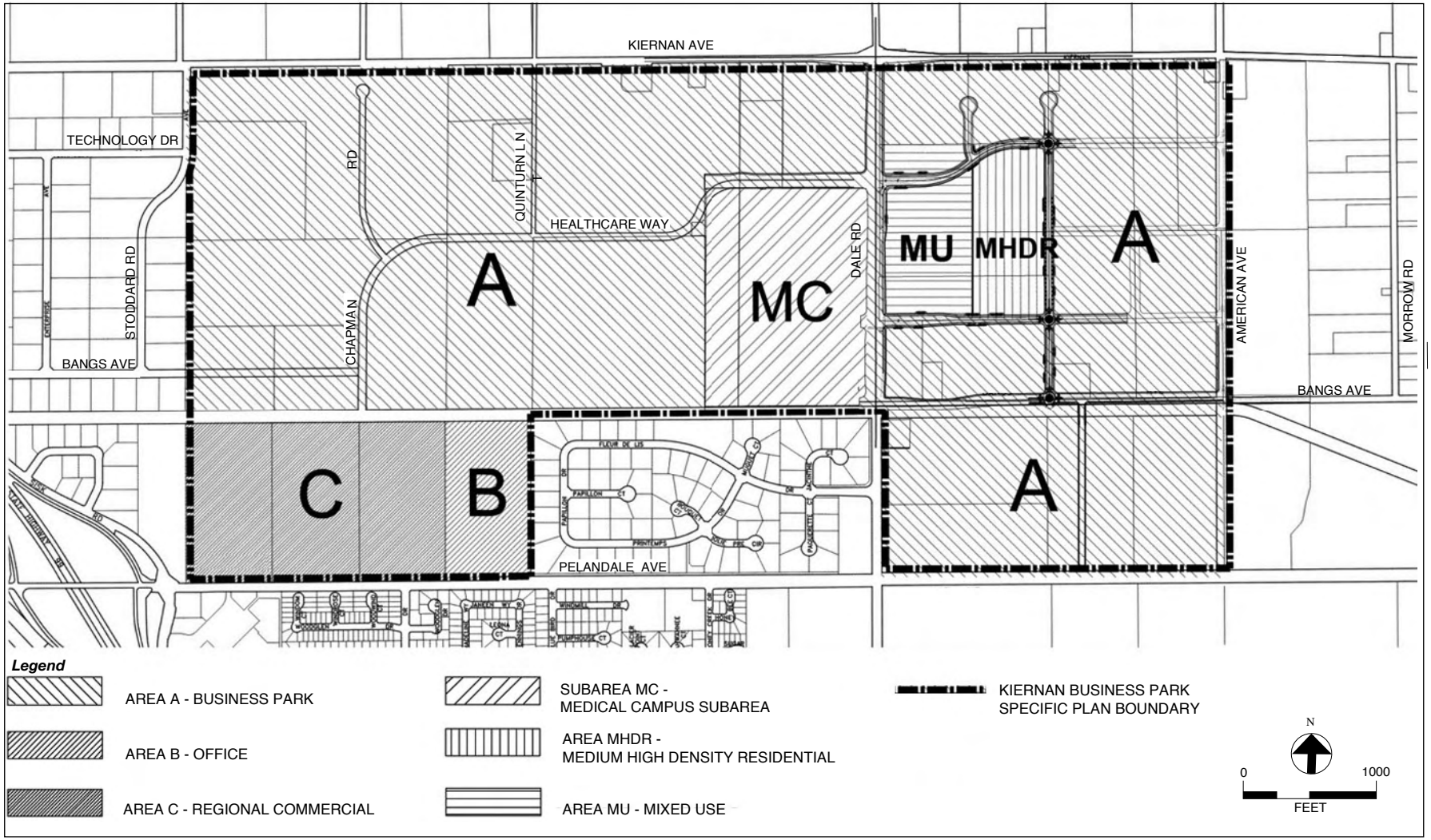
Source: City of Modesto, *Kiernan Business Park Specific Plan,* as amended in 2004; *Administrative Draft Kiernan Business Park Specific Plan,* November 29, 2006.

Medium High Density Residential (MHDR) area characterized by attached multi-family units at a density of 18 to 24 units per acre. In addition, the Specific Plan's Circulation Plan Diagram, Bike Paths figure, and Illustrative Public Facilities Plan Diagram would be amended to reflect proposed changes to the Specific Plan. The reclassification of portions of Dale Road (from a four-lane major arterial to a six-lane principal arterial), Bangs Road (from a two-lane industrial connector to a four-lane major collector), and Healthcare Way (from a two-lane industrial connector to a two-lane minor collector) as well as a new street cross section for two-lane minor collectors would also be included as part of the amendments to the Specific Plan. The proposed changes to the Specific Plan would require an amendment to the Kiernan/Carver CPD of the *Urban Area General Plan.*

The proposed amendments to the Specific Plan provide a framework under which the 153-acre project site would be developed. Future steps would include the review, process, and approval of Area Plans, Final Development Plans, and Tentative Maps. An Area Plan defines the key features and characteristics of a proposed development project and how the development would integrate with neighboring properties. An Area Plan boundary is based primarily on property lines and must be consistent with the perimeter arterial and collector streets, and the provision of public infrastructure as described in detail in the Specific Plan's Facilities Master Plan and Infrastructure Financing Plan. Final Development Plans are site-specific development proposals and must be consistent with the proposed Area Plan and Tentative Subdivision Map or Tentative Parcel Map, as well as the Specific Plan and the *Urban Area General Plan.* An Area Plan, Final Development Plan, and Tentative Map may be submitted together by a project applicant and reviewed concurrently by the City.

PROPOSED LAND USE PLAN

The proposed project would re-designate an approximately 22-acre area immediately east of Dale Road from Business Park (BP) to Mixed Use (MU). The proposed project would use the MU designation to promote the development of a retail/commercial center with residential/office and hotel uses immediately east of Dale Road. This retail/commercial center is proposed to serve doctors and nurses, hospital employees, hospital support staff, and visitors from the Kaiser Medical Center located on the west side of Dale Road. The retail and commercial elements of the center would also serve the local businesses and residential populations. The proposed project would also re-designate an approximately 17-acre area immediately east of the proposed MU area from BP to Medium High Density Residential (MHDR). Approximately 114 acres would remain in the Business Park land use identified in the existing Specific Plan. The two new land use designations proposed for the project site (MU and MHDR), and the continued BP land use designation are described below. (See Figure 3: Proposed Kiernan Business Park Specific Plan – Land Use Plan Diagram.)



SOURCE: City of Modesto, Turnstone Consulting

FIGURE 3: PROPOSED KIERNAN BUSINESS PARK SPECIFIC PLAN-LAND USE DIAGRAM

Mixed Use

A mixed-use land use generally refers to land uses consisting of one or more lots developed as a cohesive project and designed with a blend of various compatible uses such as retail, commercial office, and residential. Allowed land uses in the MU area include, but are not limited to, residential and/or office above retail; separate residential; hotels; restaurants; pharmacies; professional office; art galleries; athletic clubs; and any other uses required to be allowed by state law.

The proposed project would amend the Specific Plan to include specific development standards for the Mixed Use portion of the project site. Development standards would govern building density, building orientation and setbacks, building height, residential configurations, and signage.

Specific design guidelines for the Mixed Use area are also proposed as part of the project to encourage high-quality design and materials, and create streetscapes that are both cohesive and varied. Specific design guidelines would provide design direction for buildings and development sites, including guidelines related to building articulation, rooflines, entries, rear and side elevations, screening of service areas and equipment, building materials, landscaping, and lighting.

Medium High Density Residential (MHDR)

The MHDR area is an approximately 17-acre area east of the Mixed Use area and west of the proposed alignment of "new" Chopra Parkway. Allowed uses in the MHDR area include townhouses, condominiums, garden apartments, conventional apartments, and all other uses permitted by City ordinances, resolutions and other documents at a density of 18 and 24 dwelling units per acre.

The MHDR area would provide housing in close proximity to Business Park land uses, the Kaiser Medical Center, and the Mixed Use area and would be developed to a maximum of 354 dwelling units with an average dwelling unit size of 1,500 gross square feet.

The proposed project would amend the Specific Plan to include specific development standards for the MHDR area. Development standards would govern dwelling unit density, lot size, building orientation and setbacks, building height, building size and mix, and provision of private and public open space.

Specific design guidelines for the MHDR area are also proposed as part of the project to encourage high-quality design and materials and create streetscapes that are both cohesive and varied. Specific design guidelines would provide design direction for buildings and sites in the MHDR area, including guidelines related to building articulation, porches and entries, rooflines,

entries, garage doors, rear and side elevations, screening of mechanical equipment, building materials, building colors, fencing, parking, signage, landscaping and lighting.

Business Park

Business Park land uses would continue as the prevailing land use in the Specific Plan area and on the project site. The Business Park land use designation is intended to accommodate the development of modern, employment-intensive office and non-nuisance light industrial space. The principal development and employment generating uses allowed within this designation are characterized by research, product development, professional office, limited manufacturing and distribution, and commercial business services intended to support the immediate area. Development within this district should support the creation of a campus-like environment for office, light production, or warehouse uses in high-quality single- or multiple-occupant buildings. Approximately 114 acres of the 153-acre project site would remain under the business park land use designation. Business park land uses would surround the retail/commercial center and the residential area on the north, east and south.

The specific development standards and design guidelines for the Business Park designation, established under the existing Specific Plan (as amended in 2004), continue to apply to the portion of the project site that would remain designated as Business Park under the proposed project.

Maximum Buildout Land Use Scenario

The maximum amount of development that is likely to be accommodated under the proposed land use plan would include 1,498,224 gross square feet of business park land uses, 420,354 gross square feet of mixed-use development (that could include a 120,000-square-foot, 200-room hotel; an 80,000-square-foot, 150-room extended stay hotel; 80 apartment units (totaling 64,000 square feet); 20,000 square feet of office space; and 136,354 square feet of retail), and a maximum of 434 dwelling units (that could include up to 80 apartment units in the MU area, listed above) (see Table 4: Maximum Buildout Land Use Scenario Summary).

Table 4: Maximum Buildout Land Use Scenario Summary

Land Use	Gross Acres	Net Acres	DU/Acre[1]	Gross Square Feet[2]	Dwelling Units
Business Park	114.79	95.47		1,498,224	
Mixed Use	22.26	19.3		420,354	
Residential				*64,000*	80
Hotel				*200,000*	
Retail				*136,354*	
Office				*20,000*	
Medium High Density Residential	16.85	14.75	18-24	399,000-531,000	266-354
Substation		2.80			
Rights-of-Way	(21.58)				
TOTAL	***153.90***	***132.32***		***2,317,578 - 2,449,578***	**346-434**

Notes:
[1] Dwelling units per acre.
[2] Calculated with net acres.

Source: A.C. Martin Partners, Inc., 2006.

PROPOSED CIRCULATION PLAN

The proposed project would include revisions to the Circulation Plan Diagram and to the Bike Paths figure to reflect the proposed changes in the Specific Plan. In addition, a street cross section for Healthcare Way, the new The Plaza Way, and the new Chopra Parkway is proposed as an amendment to the typical design standards for Class I Bike Paths for these streets in the project site.

Truck and Automobile Circulation

Existing perimeter roadways that would be changed as part of the proposed project include the reclassification of Dale Road from a four-lane minor arterial to a six-lane principal arterial between Kiernan Avenue and Pelandale Avenue and the reclassification of Bangs Road from a two-lane minor collector to a four-lane major collector between Dale Road and American Avenue. Internal roads proposed to serve the retail/commercial center, the residential neighborhood, and the business park land uses include a planned extension of Healthcare Way and the development of The Plaza Way and Chopra Parkway. Two points of vehicular access for the retail/commercial center would be developed between Kiernan Avenue and Bangs Avenue along Dale Road: one at the signalized intersection of Dale Road and Healthcare Way and the other at a proposed signalized intersection of Dale Road and The Plaza Way. An additional access point would be developed at the intersection of Bangs Avenue and Chopra Parkway.

Healthcare Way is proposed to extend east from the signalized intersection at Dale Road/Healthcare Way for a short distance before shifting north prior to a roundabout with the proposed Chopra Parkway. Healthcare Way would be re-classified from a two-lane industrial connector to a two-lane minor connector. A north-south, two-lane minor connector would extend

north for a short distance from Healthcare Way between Dale Road and Chopra Parkway and terminate at a cul-de-sac. The Plaza Way is a proposed east-west, two-lane minor collector extending east from Dale Road to a roundabout with Chopra Parkway. The Plaza Way would be aligned opposite Kaiser Way, the southern entry from Dale Road to the Kaiser Medical Center. Chopra Parkway is proposed as a north-south, two-lane minor collector extending north from Bangs Avenue, through a roundabout with The Plaza Way, to a roundabout with Healthcare Way and terminating at a cul-de-sac north of the roundabout with Healthcare Way.

In addition, Healthcare Way and The Plaza Way would extend east from the roundabouts at Chopra Parkway to American Avenue, terminating at roundabouts. An east-west, two-lane minor collector would be developed connecting American Avenue and Chopra Parkway starting at the midpoint between the roundabouts of Healthcare Way and The Plaza Way with American Avenue. A north-south, two-lane minor collector would connect The Plaza Way and this proposed east-west, two-lane minor collector to be located between Chopra Parkway and American Avenue.

Public Transportation

There are no proposed changes to the location of bus stops or turnouts resulting from the amendments to the existing Specific Plan. In addition, all streets within the Specific Plan area and project site would continue to or would be constructed to accommodate bus routes.

Pedestrian and Bicycle Circulation

The east-west, Class II bicycle lane that is shown to follow the Technology Drive/Healthcare Way alignment under the existing Specific Plan would be amended to reflect the change in alignment of Healthcare Way east of Dale Road and the change in street design for two-lane minor connectors on the project site – Healthcare Way, The Plaza Way, and Chopra Parkway. This east-west bicycle lane would be reclassified as a Class I bike path. A new east-west Class I bicycle path is proposed for The Plaza Way, and a new north-south Class I bicycle path is proposed for Chopra Parkway.

The east-west Class I bicycle path on The Plaza Way is proposed to extend east from the proposed intersection of Dale Road/The Plaza Way to the American Avenue/The Plaza Way roundabout. The east-west Class I bicycle path on Healthcare Way is proposed to extend east from the proposed intersection of Dale Road/ Healthcare Way to the American Avenue/Healthcare Way roundabout to follow the new alignment of Healthcare Way. The new north-south Class I bicycle path on Chopra Parkway is proposed to extend north from the proposed intersection of Bangs Avenue/Chopra Parkway through roundabouts with The Plaza Way and Healthcare Way to the northern terminus of Chopra Parkway. A new pedestrian circulation program is not proposed as part of the project; however, the introduction of the shared

bicycle/pedestrian Class I facilities on Healthcare Way, The Plaza Way, and Chopra Parkway would establish a "shared path" on one side of the street.

PROPOSED PUBLIC FACILITIES PLAN

Development of the Business Park, Mixed Use, and Medium High Density Residential land uses on the project site would require the installation of new utilities and the extension of services. New connections to water, storm, and sanitary sewer pipelines would be extended from existing City lines along Dale Road and Bangs Avenue. The proposed 8- to 12-inch water supply, storm drain, and sanitary sewer lines planned within the former alignment of Healthcare Way would be relocated to follow the new road alignment proposed as part of the project. Water supply, storm drain, and sanitary sewer lines would follow the alignments of The Plaza Way, Chopra Parkway, and other roads on the project site. In addition, electric service lines would be extended from existing lines along Dale Road, Bangs Avenue, and Kiernan Avenue.

Storm Drainage

On-site, low-impact infiltration drainage facilities are proposed as part of the Specific Plan amendment. Typical infiltration drainage facilities would include, but not be limited to, the following:

- roof drains on buildings that would direct water to a settlement basin prior to discharge to an infiltration bed or directly to green swales;
- slotted curbs and green swales parallel to each side of public roadways;
- green swales parallel to each side of private roads;
- rainfall gardens, green medians or green swales adjacent to or within parking areas; and
- small depressions or swales within open spaces.

LANDSCAPING AND EXTERIOR LIGHTING

Development of the Business Park, Mixed Use, and Medium High Density Residential land uses on the project site would introduce landscaping, screening, and exterior lighting at different locations. These areas would include, but would not be limited to, vehicular and pedestrian building entrances, outdoor storage and loading areas, utility areas, refuse areas, the perimeter of properties, along sidewalks and trails, in parking lots, and along new and improved roads. The development standards for landscaping, screening, and exterior lighting established under the existing Specific Plan would be applicable throughout the 614-acre Specific Plan area including the project site, and would be applied when specific development proposals are brought forward. These standards would ensure that landscaping and lighting improvements along roadways would be consistent with City standards. In addition, exterior lighting would be shielded to avoid substantial light and glare while providing minimum safe lighting levels.

FACILITIES MASTER PLAN AND INFRASTRUCTURE FINANCING PLAN

The proposed project also includes adoption of a Facilities Master Plan (FMP) and Infrastructure Financing Plan (IFP). The FMP will provide a detailed analysis and description of the public facilities required to serve the Specific Plan. The FMP identifies the size and capacity of public facilities and the layout of these facilities in relation to the properties. The public facilities within the scope of the FMP are the street system, sewer, water, storm drainage, and public utilities. The IFP will provide the cost basis and funding mechanisms necessary to construct the public facilities. The primary funding mechanism for the construction and maintenance of certain public infrastructure as well as certain public services and amenities is a special taxing district commonly known as a Community Facilities District (CFD). The IFP coordinates the developer's improvement responsibility, fees from the CFD, and other existing City fees.

PROJECT APPROVALS

City of Modesto

- Environmental Impact Report/CEQA review and adoption of a Mitigation Monitoring and Reporting Plan. The City of Modesto must certify an EIR prior to its approval of any of the project applications listed below. This EIR is being prepared to fulfill this requirement.
- Adoption of Kiernan Business Park Specific Plan amendments. Proposed amendments would amend the Land Use Plan Diagram to show the change in land use designation from Business Park to Mixed Use and Medium High Density Residential; would amend the Circulation Plan Diagram to reflect changes to the planned roads and to show new roads; would amend the Bike Paths figure to reflect changes to the planned bicycle facilities and to show new bicycle facilities; would amend the Illustrative Public Facilities Diagram to reflect changes to the planned water, storm, and sanitary sewer pipeline alignments and to show new water, storm, and sanitary sewer pipelines; would introduce a Street Cross Section diagram for Healthcare Way, The Plaza Way, and Chopra Parkway; would amend the text of the Land Use chapter of the Specific Plan to include project-specific Development Standards and Design Guidelines; and would amend the text of the Circulation and Access and Public Facilities chapters of the Specific Plan to reflect the proposed changes.
- Adoption of an amendment to the General Plan. The proposed amendment would redesignate a portion of the Kiernan Carver Comprehensive Planning District of the General Plan from Business Park to Mixed Use.
- Approval of a Development Agreement, if applicable.
- Approval of a Tentative Subdivision Map, if applicable.
- Adoption of a resolution initiating annexation of a 67-acre portion of the project site.
- Rezone.
- Adoption of a Facilities Master Plan and an Infrastructure Financing Plan.
- Formation of a Community Facilities District (CFD).

Stanislaus Local Agency Formation Commission

- Approval by LAFCO. LAFCO will review reorganization of the amended Kiernan Business Park Specific Plan, including the annexation of the 67-acre portion of the 153-acre project site to the City of Modesto and the Modesto Municipal Sanitary Sewer District No. 1 and simultaneously detach this portion of the project site from the Salida Fire Protection District.

Modesto Irrigation District

- Approval by MID. MID must review the proposed stormwater drainage system which proposes discharge to MID Lateral No. 6. Upon acceptance of the proposed stormwater drainage system, MID would enter into a Drainage Agreement with the City.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors, indicated below by a solid box (■), 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	

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 or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Josh Bridegroom — Signature

June 15, 2007 — Date

Josh Bridegroom — Printed Name

For

EVALUATION OF ENVIRONMENTAL IMPACTS

I. AESTHETICS	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
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

a-b) There are no identified scenic vistas or scenic resources on or within the vicinity of the project site. The project site is not adjacent to or within view of a state scenic highway. Implementation of the proposed amendments to the Kiernan Business Park Specific Plan would not impact scenic views from public open spaces or other sites accessible to the general public, nor substantially damage scenic resources. Therefore, this topic will not be discussed further in the EIR.

c) Existing Visual Setting

The historic downtown core of Modesto is a 1-mile square. Its streets are laid out in a diagonal grid aligned with the Southern Pacific Railroad tracks. Its street grid, historic structures, and civic and cultural institutions give the downtown area a distinctive visual character. Over time, newer development has advanced incrementally from the central core in all directions. The site planning of newer residential areas at the perimeter of the City has a different visual character than older development patterns in and near downtown Modesto.

The Specific Plan area lies about 5 miles northwest of Modesto's downtown core at the edge of urban development where agriculture and developed urban uses meet. The visual character of the Specific Plan area and adjoining lands to the north and east is defined by

the flatness and openness of the terrain and by its agricultural use. A strong rectilinear "patchwork" pattern is formed by alternating roads, fields, orchards and row crops. This pattern, familiar throughout the Central Valley, affords expansive views across open land. The combined flatness and openness of the land and the rectilinear orientation of its features result in a clear sense of linear perspective with lines converging at a point on the horizon. Randomly scattered farmhouse compounds, surrounded by clusters of mature trees, provide a counterpoint to this regular horizontal pattern. Orchards also provide visual variety, providing a sense of spatial enclosure when viewed from nearby and a linear element when viewed from a distance.

Except for an event center/catering business and two churches along Dale Road, the area immediately south of the 153-acre project site (located in the eastern portion of the Specific Plan area) across Bangs Avenue and MID Lateral No. 6 remains open and in agricultural use. Low-density residential neighborhoods are located further south of the project site across Pelandale Avenue. To the south and west of the project site, across Dale Road, is the Fleur de Ville residential subdivision. This gated residential subdivision is surrounded by a 6-foot-high masonry wall. Although this development is relatively recent (about 15 years old), its cover of vegetation is already well established, with numerous trees rising from behind the wall. Lot sizes are large compared to most residentially zoned areas in Modesto, supporting large houses. These houses are one to two stories and are built in a variety of historically derived styles. Varied massing and detail and complex roof forms (dormers, gables, hipped roofs, chimneys) provide visual interest and a sense of human scale.

Immediately west of the project site is the recently constructed Kaiser Medical Center. The medical center consists of a cluster of buildings from one to five stories at the center of its site within a landscaped, campus-like setting. Buildings are flat-roofed, horizontal volumes that are functional and modern in design. The building design is characterized by variations in façade plane, colors, materials, textures, and fenestration. Exterior finish materials include glass, metal, concrete and textured masonry units in a palette of complementary warm earth-tones. A bermed planted perimeter buffer and planted surface parking areas surround the project buildings along the southern, eastern and northern ends of the site. Additional buildings, including structured parking, are planned for portions of these surface parking areas. Over time, vegetation in the remaining parking areas will mature to screen and soften views of the medical center buildings at the center of the site.

<u>Proposed Design Standards for Mixed Use and Medium High Density Residential</u>

The proposed amendments to the Kiernan Business Park Specific Plan would establish

specific Design Guidelines for the proposed new Mixed-Use area and the Medium High Density Residential area. The intent of the design standards is to create an attractive and vibrant village atmosphere in a pedestrian-friendly environment.

Mixed Use

The proposed development standards for the MU area provide for a maximum non-residential floor area ratio (FAR) of 50 percent. Under existing development standards building height is not limited within the portion of the Kiernan Business Park Specific Plan that is the subject of the current study. The proposed MU development standards would establish a height limit within the proposed MU area of no more than 7 stories. The proposed MU development standards also include specific requirements for the size, location, quantity, and type of signage.

The MU area design guidelines are intended to encourage streetscapes that are varied yet cohesive. The design guidelines include specific requirements for building exterior treatments for major entries (tenants above 25,000 square feet) and minor entries (tenants less than 25,000 square feet). The MU area design guidelines specify that building character should be contemporary and that historical building vocabulary should be tastefully done in a contemporary way; that rear and side elevations visible to the public should also be compatible with the front elevation in appearance and quality; that loading docks be screened from view; that materials be high quality; and that street elevations be articulated with reveals, recesses, trim, and other architectural features to provide visual interest. Reflective glass is prohibited. The MU area design guidelines also encourage the use of color to achieve variety.

Medium High Density Residential

The proposed development standards for the MHDR area provide for a maximum residential density of 18 to 24 dwelling units per acre, and a maximum site coverage of 75 percent. MHDR buildings have minimum setback requirements of 10 feet from the street property line, 15 feet from the rear property line, and 5 feet from the side property line. Porches have a minimum setback of 6 feet from the street. In order to encourage variety and scale, building elements such as chimneys, bay windows, roof overhangs, and other projections may extend into the front and side setbacks.

Under existing development standards building height is not limited within the portion of the Kiernan Business Park Specific Plan that is the subject of the current study. The proposed MHDR development standards would establish a height limit within the proposed MHDR area of no more than three stories.

The MHDR area design guidelines are intended to encourage streetscapes that are both varied yet cohesive. The design guidelines include specific requirements for building exterior features (like porches, roofs, projections and bays, garage doors, mechanical equipment), building materials, colors, fencing, parking and storage, and signage.

The landscaping requirements for the MU and MHDR areas are intended to create a cohesive visual identity; define entries and circulation (both vehicular and pedestrian); buffer less intensive adjacent uses; contribute to a sense of human scale for buildings and expanses of paving; screen and soften hard urban surfaces; add visual interest with color, pattern, texture and form; and improve pedestrian comfort.

Conclusion

Implementation of the proposed amendments to the Kiernan Business Park Specific Plan would transform the open and agricultural visual character of the project site to that of new urban development. While substantial, the change would not result in significant adverse impacts on the visual character of the site or nearby areas. Views of new development east of Dale Road on the project site from nearby streets and buildings would be of urban development similar to that found to the south and west, as the City has expanded. The proposed Specific Plan amendments are intended to encourage high-quality design, and streetscapes that are cohesive yet varied, and attractive and comfortable for pedestrians. The 7-story height limit in the MU area would allow buildings of similar height to the Kaiser Medical Center to the west across Dale Road and would provide a transition to the 3-story height limit proposed in the MHDR area. The development standards and design guidelines for the new land use designations would help to ensure that the extension of urban development into the Specific Plan area would not degrade visual character. Therefore, the impact of the proposed revisions to the development standards and design guidelines of the Kiernan Business Park Specific Plan are considered less than significant. This topic will not be discussed in the EIR for the project.

This review of impacts on visual quality is programmatic since no specific development proposal is currently under review along with the amendments to the Kiernan Business Park Specific Plan. At such future time when a specific development project is proposed for the Mixed Use or Medium High Density Residential areas, a project design will be reviewed at the project level under CEQA. Its particular impacts on the visual quality of the site and its surroundings would be assessed at that time.

d) Implementation of the proposed amended Specific Plan would create new sources of nighttime light visible from nearby surrounding residential areas. Building grounds, interior roadways, and surface parking lots of commercial areas would be illuminated, in

conformity with minimum City requirements for lighting of parking areas, in the interest of public safety. The introduction of residential units under the proposed amendments to the Specific Plan would also place new sensitive residential receptors within the project site.

Compliance with the existing lighting guidelines in the Kiernan Business Park Specific Plan would ensure that lighting would not adversely affect nighttime views of the area. The lighting guidelines require that lights be directed and shielded to control glare and light trespass.

Some indirect light (light reflected off of surfaces, and off of particles and moisture in the air) would still be visible to nearby residents as a "glow" when viewing the commercial areas at night. Such light, however, would become increasingly screened over the years, as the cover of vegetation, which would be required as part of project approval, matures. Residents of existing and new residential areas would perceive such indirect project light in the context of existing nighttime residential street lighting and exterior residential lighting. Nighttime light levels would not exceed typical levels accepted by residents of the area. Therefore exterior nighttime lighting within commercial areas would not create a significant source of light and glare on nearby properties.

New buildings constructed under the proposed Specific Plan are potential sources of daytime light and glare if they are clad in reflective glass. The Kiernan Business Park Specific Plan Design Guidelines prohibit the use of reflective glass on all new buildings. Therefore, the potential impact of daytime glare reflected from buildings would be less than significant, and the topic of light and glare will not be discussed in the EIR.

II. AGRICULTURE RESOURCES	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
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 (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
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?	■	□	□	□

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
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

a) Lands in the 614-acre Kiernan Business Park Specific Plan area have been in agricultural production since the early 1900s and are currently characterized by rich soils and flat topography.[8] The predominant soil types on the 153-acre portion of the Specific Plan area (project site) are Hanford Sandy Loam (HdA) and Dinuba Fine Sandy Loam (DmA).[9] The United States Department of Agriculture (USDA) Storie index assesses the general suitability of soils for agriculture based on four factors that represent the inherent characteristics and qualities of the soils.[10] Both Hanford Sandy Loam and Dinuba Fine Sandy Loam are rated "1" on the Storie index, indicating that they are the finest soils for agriculture.[11] The California Department of Conservation Farmland Mapping and Monitoring Program classifies both soils as meeting the USDA standard for "Prime Farmland."[12] Although there are no specific development projects proposed for the project site, the Specific Plan land use classifications (existing Business Park and proposed Mixed Use and Medium High Density Residential) provide a development framework under which the approximately 153-acre project site would be converted from Prime Farmland to non-agricultural use. The proposed Mixed Use and Medium High Density Residential land uses may accelerate the planned transformation of agricultural lands to urban use. Therefore, this is a potentially significant impact that will be discussed in the EIR.

b) The proposed project site is comprised of 16 parcels; 9 parcels located within City limits and 7 parcels located outside of City limits in unincorporated Stanislaus County. All the parcels are within the City of Modesto's Sphere of Influence. The parcels within City limits are zoned as Specific Plan-Overlay (SP-O). The parcels in Stanislaus County are zoned A-2-10-UT (Urban Transition) under the County's zoning ordinance.[13] The purpose of the Urban Transition designation is to ensure that land remains in agricultural use until its proposed change to urban development is found to be consistent with a city's (or unincorporated community's) general plan designation and approved. The Urban Transition designation is appropriate for undeveloped land located within a city or town's sphere of influence.[14] The parcels on County land would retain their existing zoning until

they are annexed by the City of Modesto, at which point County zoning would cease to apply. The project site has been specifically prezoned for conversion from agricultural land to developed use. Development of agricultural land is consistent with the City of Modesto's long-range growth plan. The topic of zoning will not be discussed further in the EIR.

A 19.3-acre parcel (APN 078-015-012) on the northwest portion of the project site is subject to a California Land Conservation Act, also known as the Williamson Act, contract.[15] This parcel came under Williamson Act protection in 1975. In 2004, the property owner filed for Non-Renewal. Williamson Act protection on this parcel would cease on January 1, 2014.[16] The EIR will discuss the topic of agricultural land conservation.

c) Lands immediately north of the Specific Plan area across Kiernan Avenue and east of Dale Road are in unincorporated Stanislaus County outside of the City of Modesto's Sphere of Influence but within its General Plan Boundary. These lands are planned for in the City's General Plan and are located within the Kiernan/Carver North Comprehensive Planning District. Land parcels north of Kiernan Avenue are currently in agricultural operation with some individual home sites and commercial operations. These parcels are zoned A-2-40 (General Agriculture) under the Stanislaus County zoning ordinance. The future designated land use is Village Residential. The area east of the Specific Plan area (east of American Avenue) lies within the Kiernan/Carver Comprehensive Planning District. Land parcels east of American Avenue are currently in agricultural operation with some individual home sites. The Stanislaus County land use designation is A-2-10-UT (Urban Transition). The City of Modesto designates this area as Village Residential. Prime Farmland soils consistent with those that make up the proposed project site occur in the lands north of Kiernan Avenue and east of American Avenue.[17]

Development of the 614-acre Specific Plan area may spur growth within the boundaries of the Kiernan/Carver CPD and the Kiernan/ Carver North CPD and may have a "colonizing" or "anchor" effect, spurring further development of agricultural lands in the area. While surrounding development would be consistent with the goals and policies of the applicable CPD, future Specific Plans, and the City of Modesto's growth plan, it could have a potentially significant impact in terms of converting Prime Farmland in the project area to non-agricultural use. Therefore, the topic of Prime Farmland conversion in the vicinity of the project site will be discussed in the EIR.

III. AIR QUALITY	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	■	□	□	□
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	■	□	□	□
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project 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

a-d) The Specific Plan area is located in the San Joaquin Valley Air Basin and is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (APCD). The APCD regulates air quality through its permit authority and through its planning and review activities that cover most types of stationary emission sources. The APCD is responsible for implementing emission controls and other requirements. The primary pollutants for which the air basin is a non-attainment area are ozone and suspended particulate matter less than 10 microns in diameter. Other air pollutants that are monitored because they are precursors to ozone formation include reactive organic gases and oxides of nitrogen.

Carbon dioxide, methane, nitrous oxide, and three groups of fluorinated gases (sulfur hexafluoride, hyrdrofluorocarbons, and perfluorocarbons)[18] are major greenhouse gases that contribute to climate change. These emissions are not currently monitored by the APCD; however, industrial activities, private and public transportation, and agricultural practices are the primary sources of greenhouse gas emissions and likely the main cause of climate change.

Future development projects within Kiernan Business Park-East would generate short-term construction-related air pollutant emissions, and its operation would result in criteria air pollutant emissions from development-related motor vehicle trips and land-use-based sources such as natural gas. The future development of Kiernan Business Park-East would also be expected to incrementally increase the amount of greenhouse gases emitted into the atmosphere and contribute in a cumulative manner to global climate change.

The EIR will discuss the project's potential effects on air quality, global climate change, and the potential for exposure of sensitive receptors to pollutants.

e) The proposed project includes land use designation changes that would allow for residential, retail, and commercial developments in an area that formerly allowed only business park land uses. Future development of the MHDR area would introduce new residential units to the project site and, as a result, new sensitive receptors. Allowed uses under the proposed Mixed Use land use designation may operate under conditions that create odors in the site vicinity, e.g., gas stations and drive-through fast food restaurants. These uses may generate objectionable odors but not to a degree that would cause a significant adverse impact. Therefore, this topic will not be discussed further in the EIR.

IV. BIOLOGICAL RESOURCES	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Would the project:				
a) 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?	■	□	□	□
b) 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 U.S. Fish and Wildlife Service?	□	□	■	□
c) 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?	□	□	□	■

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
d) 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?	■	□	□	□
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	□	□	□	■
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	□	□	□	■

Discussion

A biological study has been prepared by H.T. Harvey & Associates of Fresno, CA, to assess the biotic constraints associated with the proposed amendments to the Kiernan Business Park Specific Plan.[19] The results of the study are summarized below. The 153-acre project site, located on the eastern portion of the Specific Plan area, consists of relatively flat agricultural lands and has six identified habitats: irrigated row crops (including disked fields between plantings), irrigated pasture, orchards, fallow field, ruderal, and developed area. The site is bordered to the south by the MID Lateral No. 6 canal, a concrete-lined channel with little to no habitat value.

a, b) Plants

Reconnaissance-level surveys were conducted by H.T. Harvey & Associates on July 18, 2006, to describe existing biotic habitats, assess the site for its potential to support special-status species and their habitats, and identify potential jurisdictional habitats, including those regulated by the US Army Corps of Engineers and the California Department of Fish and Game (CDFG). The reconnaissance-level survey was supported by background documents research and included on-site observation and analysis. A query of the California Natural Diversity Database[20] (CNDDB) and the California Native Plant Society Inventory[21] was performed to identify special-status plant species potentially occurring in the project vicinity. Eight special-status plant species, including one federally-endangered species, Greene's tuctoria, were initially identified in these queries; however, further investigation using CNDDB 2006

determined that none of the eight species occurs within a 5-mile radius of the project site. Greene's tuctoria has been dismissed as potentially occurring on site due to the absence of vernal pools on the project site. Similarly, the remaining plant species are not expected to occur on site because they have microhabitat requirements that are absent from the project site. Therefore, no state- and/or federally-listed threatened plant species occur on or near the site and no further surveys for special-status plant species are warranted. No significant impacts would occur to special-status plant species, and this topic will not be discussed further in the EIR.

Animals

H.T. Harvey & Associates also conducted reconnaissance-level surveys on July 18, 2006, for habitats capable of supporting special-status animal species. A query of the CNDDB was performed to identify special status species potentially occurring in the project vicinity. Special status species are those identified by the U.S. Fish and Wildlife Service as either endangered or threatened under the federal Endangered Species Act, identified by the CDFG as endangered or threatened under the California Endangered Species Act, or identified by CDFG as Species of Special Concern. A total of 22 wildlife species of special status were identified as those that might exist at the project site. It was determined that 17 of the 22 special status species are not likely to occur on the project site.

- Five special-status vernal pool crustaceans were identified. However, vernal-pool habitat is absent from the site.
- The Valley elderberry longhorn beetle and the Moestan blister beetle are federally protected species. No suitable habitat for either one occurs at the project site.
- The California tiger salamander requires both breeding habitat such as stock ponds, vernal pools, or other temporary pools, as well as estivation habitat, which consists of small mammal burrows. The site does not include either type of habitat.
- The project site is outside of the known range of the giant garter snake, and does not provide the required aquatic habitat.
- Both the riparian brush rabbit and the riparian woodrat are restricted to riparian habitats not found on the project site or in the immediate vicinity.
- The San Joaquin kit fox occurs in grasslands or grassy open stages with scattered shrubby vegetation. Appropriate habitat for kit foxes is absent from the project site and its surroundings. No kit fox habitat is located within 5 miles of the project site.
- Five special-status birds were identified: the golden eagle, Western yellow-billed cuckoo, prairie falcon, Aleutian cackling goose, and Suisun song sparrow. None of the habitat types required for these species are found on the project site.

Two special-status species, Northern harrier and loggerhead shrike, were found on the site. In addition, there is a low potential for three other special-status species: Swainson's hawk, burrowing owl, and tricolored blackbird.

Northern Harrier

The Northern harrier is a California Species of Special Concern. Northern harriers are commonly found in open grasslands, agricultural areas, and marshes. Northern harriers nest on the ground in areas where long grasses or marsh plants provide cover and protection. Harriers hunt for a variety of prey, including rodents, birds, frogs, reptiles and insects, by flying close to the ground and slowly traversing the area, using both sight and sound to detect prey items. Harriers were observed foraging in the project vicinity during the field survey on July 18, 2006. While nesting habitat is not present on the project site, some marginal foraging habitat exists on the project site. Foraging habitat is regionally abundant. Loss of the foraging habitat available on this site would not substantially reduce the foraging habitat regionally available to this species, restrict the harrier's range, or cause the regional population to drop below a self-sustaining level. Therefore, this impact would be less than significant and this topic will not be discussed further in the EIR.

Loggerhead Shrike

The loggerhead shrike is a California Species of Special Concern. This bird inhabits much of the lower 48 states of the United States. They prefer open habitats interspersed with shrubs, trees, poles, fences or other perches from which they can hunt. Even though their population appears to be decreasing in western North America, they are still a fairly common species in California. Though they are likely to be more common in less-disturbed habitats, loggerhead shrikes are still found throughout the Central Valley. A loggerhead shrike was observed on the project site during the survey. Suitable nesting and foraging habitat exists on the project site at the edge of orchards and in some vegetation associated with the residences. Loss of the foraging and nesting habitat available on this site would not substantially reduce the foraging habitat regionally available to this species, restrict the species' range, or cause the regional population to drop below a self-sustaining level. Therefore, this impact would be less than significant and this topic will not be discussed further in the EIR.

Swainson's Hawk

The Swainson's hawk is a state-listed threatened species that could occur in the greater project area. Swainson's hawks require large amounts of foraging habitat, preferably grassland or pasture habitats. They have also adapted to some croplands, particularly alfalfa, but crops such as cotton, corn, orchards, and vineyards are not suitable, since

they either do not support prey species or the prey is inaccessible due to crop structure. Swainson's hawk nest sites in the Central Valley are generally associated with riparian habitat. There is a 1992 record of a nest approximately 3.5 miles from the project site on the Stanislaus River. Another nest was observed in 1999 less than 10 miles from the project site on the Tuolumne River.

No Swainson's hawk nests were observed on site, nor are Swainson's hawks likely to nest on site in the future. The trees within the orchards and around the existing homes are short in stature and/or experience high levels of disturbance. The CDFG report regarding mitigation for Swainson's hawks[22] suggests that the CDFG may assume that the fallow fields, recently tilled fields, and cornfields could be considered foraging habitat and loss of this habitat could contribute to impacts on the species. The nature of the project site suggests that any potential development would not jeopardize the existence of the species by removing valuable foraging habitat based on the following: the 65 acres of almond orchards do not provide foraging habitat; the areas around existing homes experience disturbances; the condition of the 44 acres of croplands represents marginal foraging habitat that is not likely to be used; the adjacent parcels comprise largely unsuitable foraging habitat in the form of orchards, business parks, and residential subdivisions; and the majority of the landscape surrounding the parcel consists of unsuitable foraging habitat comprised of urban development and orchards. Thus, loss of any foraging habitat on the project site that may be used by Swainson's hawks would be less than significant and this topic will not be discussed further in the EIR.

Burrowing Owl

The burrowing owl is a California Species of Special Concern. It is a small owl that lives in open country. Burrowing owls prefer annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. In California, burrowing owls are found in close association with California ground squirrels. Owls use the abandoned burrows of ground squirrels for shelter and nesting. Burrowing owls are known to be resident within the northern San Joaquin Valley. They are likely to inhabit pastures, fallow fields, and canal and railway rights-of-way where ground squirrels have been allowed to invade. No burrowing owls or signs of their presence were observed on the project site during the reconnaissance-level survey. However, habitat characteristics within fallow fields and some ruderal habitats within the project site may become suitable for burrowing owls prior to construction. Therefore, this species could occur on the project site, and development activities that could disrupt one or more burrowing owl nests would be a potentially significant impact. Potential impacts on this species will be discussed in the EIR.

Tricolored Blackbird

The Tricolored blackbird is a California Species of Special Concern. These blackbirds are found almost exclusively in the Central Valley and central and southern coastal areas of California. Nesting colonies are typically located near standing or flowing freshwater in tall, dense stands of cattails or tules, but also in blackberry, wild rose bushes, and tall herbs. Nesting habitat for the tricolored blackbird is absent from the project site. Tricolored blackbirds have been observed in the project vicinity and could occasionally forage on the project site in the orchard and disked field habitats. Loss of the foraging habitat available on this site would not substantially reduce the foraging habitat regionally available to this species, restrict the species' range, or cause the regional population to drop below a self-sustaining level. Therefore, this impact would be less than significant and this topic will not be discussed further in the EIR.

In sum, the site was found to be a suitable nesting habitat or foraging ground for five special-status animal species. Foraging and nesting habitats of the Northern harrier, loggerhead shrike, and tricolored blackbird are regionally abundant. Loss of the foraging and nesting habitats for these species available on the project site would not substantially reduce the habitat regionally available to these species, restrict the species' range, or cause the regional populations to drop below a self-sustaining level. Therefore, both direct and cumulative impacts on the Northern harrier, loggerhead shrike, Swainson's hawk, and tricolored blackbird would be less than significant, while impacts on the burrowing owl could potentially be significant. Potential impacts on the burrowing owl will be discussed further in the EIR. Direct impact on the Swainson's hawk would be less than significant; however, cumulative impacts on this species could be significant and will be discussed further in the EIR.

Riparian Habitat

The H.T. Harvey & Associates Biotic Study describes the biological habitats on the project site. As described in the study on p. 3 (list of habitats on the site), Figure 2 (Habitat Map), pp. 5-8 (discussion of habitats), and pp. 18-19 (discussion of wetlands, streams, and riparian habitat), there is no riparian habitat on the project site. The project site is about 1.9 miles from the Stanislaus River, 8.8 miles from the San Joaquin River and 6.2 miles from the Tuolumne River.[23] The project site is not within one of the areas surrounding a riparian corridor that the City of Modesto has defined as a potential biological resource area.[24] Therefore, the topic of riparian habitats or other sensitive communities will not be discussed further in the EIR.

c) No natural or artificial water bodies or watercourses were observed on site, or are depicted on the Salida USGS 7.5´ quadrangle or National Wetland Inventory maps.[25]

No obvious sustainable hydrology is apparent on the site. Thus, there are no federally protected wetlands on the site and this topic will not be discussed further in the EIR.

d) Migratory birds, including raptors, are known or are expected to nest in the vicinity of the project site. Raptors (e.g., eagles, hawks, and owls) and their nests are protected under both federal and state regulations. The Migratory Bird Treaty Act prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered a "take" by the California Department of Fish and Game. Loss of fertile eggs or nesting birds, or any activities resulting in nest abandonment, could constitute a significant impact if the species is particularly rare in the region. Construction activities such as tree removal and site grading that disturb a rare nesting bird on-site or immediately adjacent to a construction zone could potentially constitute a significant impact. This topic will be discussed in the EIR.

e) For proposed development in the Planned Urbanizing Area, the City of Modesto requires a site-specific survey by a qualified biologist to determine whether any sensitive natural communities, habitat or species are present within the proposed development area.[26] The *Biotic Study* prepared by H.T. Harvey satisfies this requirement. In the absence of a finding of a sensitive species or habitat, the City of Modesto requires no further action and this topic will not be discussed further in the EIR.

f) The proposed project does not conflict with any known conservation or habit preservation plans. The project site is comprised of 16 parcels, one of which is a Williamson Act property. Therefore, the topic of conflicts with conservation or habitat preservation plans will not be discussed further in the EIR.

V. CULTURAL RESOURCES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	□	■	□	□
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	□	■	□	□
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

The Central California Information Center (CCIC) conducted a record search for the project site.[27] The search included a review of maps for the specific project site and its immediate vicinity, and a review of the National Register of Historic Places, the California Register of Historical Resources, the *California Inventory of Historic Resources* (1976), the *California Historical Landmarks* (1990), the *California Points of Historical Interest* listing (May 1992 and updates), the Historic Property Data File (Office of Historic Preservation current computer list, December 2004), the Caltrans State and Local Bridge Survey (1989 and updates), the *Survey of Surveys* (1989), GLO Plats, and other pertinent historic data available at the CCIC for each specific county. The results of the search are included in the discussion below.

a) Historic architectural resources[28] in the City of Modesto generally include structures dating from the late 1800s with the establishment of the City. There are a number of historic cultural resources in the Modesto area listed on the National Register of Historic Places, California Register of Historical Resources, California Historical Landmarks, the California Points of Historical Interest, and the City of Modesto Landmark Preservation list.

The project area contains about 13 scattered farm complexes of varying age and size along existing streets. Buildings in the project area have been built and added throughout the Twentieth Century, beginning around 1910. These farm complexes consist of farmhouses and associated outbuildings (e.g., garages, sheds, barns).

None of the buildings on the project site are currently listed on the National Register of Historic Places, the California Register of Historical Resources, or the other surveys and registers searched by the CCIC. The project site contains no buildings included in local registers of historic resources. Previous studies of historic architectural resources in the area have not identified any properties eligible for the California Register of Historical Resources. According to the CCIC records search, a residence within the project site along Bangs Avenue (presumably 2573 Bangs Avenue) was studied and found to "not meet the threshold of 'significant historic resource' per CEQA."[29] The CCIC also reported that two properties along Kiernan Avenue (2706 and 2866 Kiernan Avenue) were evaluated in conjunction with a Caltrans project. These were each assigned a status code of "6Y" which indicates that each property has been found ineligible for listing on the National Register, but has not been evaluated under the California Register.

Under *CEQA Guidelines*, even if a resource is not included on any local, state or federal register, or identified in a qualifying historical resources survey, a lead agency may still determine that any resource is an historical resource for the purposes of CEQA (*CEQA Guidelines*, Section 15064.5(a)(4)). Such a determination must be supported by substantial evidence in light of the whole record (*CEQA Guidelines*, Section 15064.5(a)(3)). A lead agency shall consider a resource to be historically significant if it finds that the resource meets the criteria for listing in the California Register. A resource is eligible for listing in the California Register if it:

- (A. Events) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- (B. Persons) Is associated with lives of persons important in our past; or
- (C. Architecture) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- (D. Information Potential) Has yielded, or may be likely to yield, information important in prehistory or history.[30]

The project area has not been comprehensively surveyed for the presence of historic resources. The Specific Plan area, including the project site, was mapped and subdivided along a conventional 1-mile grid, a common practice throughout the Central Valley and the American West. Individual properties were developed according to the needs, preferences and constraints of individual property owners over time, on lots of varying sizes and configurations. At least five existing buildings on the project site are associated with early Twentieth Century settlement of the area. Typical of rural agricultural development throughout the County, these farm buildings are functional and utilitarian in character and siting, although greater decorative emphasis is often

paid to residences, which may include decorative features popular in the early Twentieth Century and landscaping.

Modesto's *Urban Area General Plan* Policy VII.F.2(i) requires that buildings within the Specific Plan area that are older than 50 years be studied to determine whether they meet the criteria for historic significance under CEQA. If found to be historically significant, General Plan Policy VII.F.2(h) further requires that mitigation measures be implemented to preserve the resources. As future development projects are proposed under the proposed Specific Plan, implementation of these General Plan policies for identification and preservation of historic architectural resources as mitigation would ensure that potential impacts of development under the Kiernan Business Park Specific Plan would be less than significant.

> **Historic Architectural Mitigation:** When no previous survey has been conducted, buildings and structures older than 50 years must be evaluated by a professional historian or architectural historian prior to project approval to determine whether the resource is a historically significant resource, for purposes of CEQA. When CEQA does apply, the character defining elements of resources that will be affected should be identified by an architectural historian, City staff member, or other professional qualified under Secretary of the Interior Standards to review such projects. It is these elements that are a crucial part of the ability of the resource to convey its historic significance. Projects that would alter character-defining elements would cause a compromise in historic integrity and would constitute a significant impact. Projects that follow Secretary of the Interior Standards, in consultation with the State Historic Preservation Office (SHPO), can be considered mitigated to a level of less than significant.
>
> When structures or areas of historical significance over 45 years old are proposed for demolition, alteration, or where construction is proposed within 100 feet of that structure, the applicant shall submit data to the City regarding the structure's history or locations prepared by a qualified architectural historian. The City shall evaluate the historical significance of the proposal and require measures be implemented to preserve all structure and places it deems historically significant.

Therefore, the topic of historic architectural resources will not be discussed further in the EIR.

It should be noted, however, that farmhouses and barns are familiar features contributing to the visual character of the rural landscape. Future demolition of existing buildings and the construction of a site-specific development would transform the rural visual character of the project area. This issue is addressed under Section I, Aesthetics, of this Initial Study.

b) The project site is not within any archaeological resource study area under the *Urban Area General Plan*. The records search conducted by the CCIC uncovered no known archaeological resources within the project site and its vicinity. However, the presence of archaeological resources cannot be conclusively ruled out.

A Native American tribe may be the only source of information about the existence and location of a Native American cultural place. Senate Bill 18, effective as of January 1, 2005, requires that a local government notify and consult with the appropriate California Native American tribes (identified on a list maintained by the Native American Heritage Commission) before adopting or amending a general plan or specific plan.

CEQA Guidelines, Sections 15064.5(e) and (f), provides procedures to be followed upon the accidental discovery of human remains or archeological resources during the course of construction. The procedures call for ceasing excavation in the area of the find, contacting the County coroner in the event that human remains are uncovered, consulting with the Native American Heritage Commission if human remains are determined to be Native American, and having the find evaluated by a qualified archaeologist.

The *Urban Area General Plan* was amended in March 2003 to include, among other things, new procedures and requirements for development to ensure the project impacts related to archaeological resources are less than significant under CEQA. The *Urban Area General Plan*, Section VII.F.2, includes requirements to be followed in the event of accidental discovery of archaeological resources during construction. These apply to all construction in the City, whether within the archaeological resource study area or not. Implementation of General Plan Policies VII.F.2(f and g) as archeological mitigation during construction of the proposed project would ensure that potential impacts of encountering archaeological resources during construction would be less than significant.

> **Archaeological Mitigation:** If archaeological resources are discovered at any time during construction, all activity shall cease, until the site is surveyed by a qualified archaeologist. The survey shall include mitigation measures, which shall be implemented before construction resumes.
>
> Whenever possible, the City should seek to avoid disturbing or damaging archaeological resource. Preservation is the preferred manner of mitigating impacts to archaeological sites. Preservation may be accomplished by: 1. planning construction to avoid archaeological sites; 2. incorporating site within parks, greenspace or other open space; 3. covering the sites with a layer of chemically stable soil; 4. deeding the site into a permanent conservation easement.

When in-place mitigation is not feasible, data recovery through excavation may be necessary. A data recovery plan, which makes provisions for adequately recovering the scientifically consequential information about the site, shall be prepared and adopted prior to any excavation being undertaken. Such studies must be deposited with the CCIC in Turlock, California. Special rules apply to any archaeological sites known to contain human remains (Health Safety Code sec. 7050.5; Guidelines sec. 15126.4[b]).

Therefore, the topic of archaeological resources will not be addressed further in the EIR.

c) There are no unique geological features within the project site. No unique paleontological resources are known to exist within the larger Specific Plan area. This area has been tilled and otherwise disturbed for nearly 100 years. Implementation of the proposed project would not likely unearth and/or directly or indirectly destroy a unique paleontological resource or site or a unique geologic feature. However the presence of unique paleontological resources on the project site cannot be conclusively ruled out. Implementation of the following mitigation measure (based on analogous archaeology measures called for by the General Plan) would ensure that potential impacts of encountering paleontological resources during construction would be less than significant.

Paleontological Mitigation: If paleontological resources are discovered at any time during construction, all activity shall cease until the site is surveyed by a qualified paleontologist. The survey shall include mitigation measures, which shall be implemented before construction resumes.

Whenever possible, the City should seek to avoid disturbing or damaging unique paleontological resources. Preservation is the preferred manner of mitigating impacts to paleontological sites. Preservation may be accomplished by: 1. planning construction to avoid paleontological sites; 2. incorporating site within parks, greenspace or other open space; 3. covering the sites with a layer of chemically stable soil; 4. deeding the site into a permanent conservation easement.

When in-place mitigation is not feasible, data recovery through excavation may be necessary. A data recovery plan, which makes provisions for adequately recovering the scientifically consequential information about the site, shall be prepared and adopted prior to any excavation being undertaken. Such studies must be deposited with the CCIC in Turlock California.

Therefore, the topic of paleontological resources and unique geologic features will not be discussed further in the EIR.

d) In the event that any human remains are accidentally discovered in the course of construction, the project sponsor will comply with the procedures set forth in *CEQA Guidelines* Section 15064.5(e). Compliance with these provisions would ensure that impacts related to this topic would be less than significant. Therefore, this topic will not be discussed further in the EIR.

VI. GEOLOGY AND SOILS	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Would the project:				
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 a geologic unit 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 (1994), creating substantial risks to life or property?	□	□	□	■
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	□	□	□	■

Discussion

Consolidated Engineering Laboratories of Pleasanton, California, has completed a *Geologic Hazards and Site Specific Design Ground Motions Study*[31] to satisfy the geologic, seismic, and geotechnical engineering design criteria for the Kaiser Medical Center located west of Dale Road across from the project site. The report is on file with the City of Modesto Community and Economic Development Department. The report contains site-specific geohazard and geotechnical information and makes recommendations for structures, foundations and site preparation.

At this time, a geological hazards report has not yet been completed for the project site as the proposed project is limited to amendments to the *Kiernan Business Park Specific Plan* and the *Urban Area General Plan*. For the purposes of this Initial Study, the findings and recommendations of the *Geologic Hazards and Site Specific Design Ground Motions Study* are applied to the project site, based upon a reasonable presumption of geological continuity between the adjacent sites (especially concerning geologic hazards).

a) i) The site is not within a designated Earthquake Fault Zone as defined by the Alquist-Priolo Earthquake Fault Zone Act of 1972, which regulates development near active faults for the purpose of preventing surface fault rupture hazards to structures for human occupancy.[32] No faults have been mapped as passing through or adjacent to the project site. The nearest earthquake fault zone is over 25 miles to the west in the Diablo Range.[33] The potential for fault ground rupture and fault creep hazards is judged to be very low.[34] Therefore, the topic of fault rupture will not be addressed further in the EIR.

a) ii) The 1998 California Building Code states that there are no areas in California where seismic hazards can be considered non-existent.[35] The site, therefore, would likely experience *moderate* ground shaking from earthquakes originating on faults mostly to the west.[36] No structures are proposed as part of this project. All future proposals would have to ensure that structures would be designed to accommodate moderate earthquake shaking pursuant to then-current provisions of the California Building Code.[37] Therefore, the topic of seismic ground shaking will not be addressed further in the EIR.

a) iii) Liquefaction results from loss of soil strength during a seismic event. Soil most susceptible to liquefaction is clean, loose, saturated, uniformly-graded, and fine-grained sand. Borings of subsurface soils collected from the Kaiser Medical Center site generally consisted of sandy silts, silty sands and poorly graded sands that vary laterally and vertically, reflecting the depositional environment of an alluvial fan.[38] These borings indicated groundwater levels ranging from 23 to 29.5 feet below the ground surface.[39] Based on the soil and groundwater conditions in the proximity of the

project site, risk of liquefaction at the site is very low.[40] Therefore, the topic of seismic-related ground failure will not be addressed further in the EIR.

a) iv) Landslides can occur under a variety of conditions, but they commonly involve sloping ground. The site and vicinity are nearly flat. Therefore, the site is not susceptible to landslides.[41] The topic of landslides will not be addressed further in the EIR.

b) According to the Soil Conservation Service, the on-site soils are considered to be only slightly prone to erosion hazard in their natural state.[42] However, the surface soils at the site have been repeatedly tilled for agricultural uses, which would make them more susceptible to erosion than undisturbed soil, if not protected.[43] The proposed project is a land use amendment to the Specific Plan. Future development proposals would be guided by the Specific Plan development standards and design guidelines and could include construction of multi-story commercial and residential buildings, surface and structured parking, and circulation areas. Section 16 of the City of Modesto's 2000 Standard Specifications for Construction, *Erosion and Sediment Control Standards and Specifications*, provides technical requirements for developing and implementing erosion control measures.[44] These measures would be required of any future development proposals and would reduce the potential soil erosion at the site to a less-than-significant level. The proposed land use amendment to the Specific Plan does not include any construction. Therefore, the topic of soil erosion will not be addressed further in the EIR.

c) As discussed under items a.iii and a.iv above, the project site is not susceptible to liquefaction or landslides. Lateral spreading is a failure within weaker soil material that causes the soil mass to move toward a free face or down a slope. Since the project site is nearly flat, the site is not susceptible to lateral spreading. Subsidence was not documented on the Kaiser Medical Center site. The documented subsidence nearest to the site occurred approximately 20 miles to the northwest near Stockton.[45] Groundwater levels in the site vicinity historically do not appear to have fluctuated more than approximately 10 feet since the turn of the century.[46] Given the absence of any underlying peat beds, the nature of the sediments explored during the nearby subsurface drilling program, and distance from documented land subsidence areas, the potential for collapse or for significant subsidence to occur at the site as a result of fluid withdrawal, is considered to be low.[47] The topic of subsidence will not be addressed further in the EIR.

d) Results of laboratory testing performed on representative samples of near-surface soils from the Kaiser Medical Center site indicate a Plasticity index of 5 to 6, indicating a low shrink/swell or expansion potential.[48] Hence, mitigation for expansive soils would

not be necessary for this site.[49] The topic of expansive soils will not be addressed further in the EIR.

e) Sanitary sewer service to the project site would be provided by the existing City of Modesto wastewater treatment system.[50] Septic tanks or alternative wastewater disposal systems would not be introduced on the project site and any existing septic tanks or alternative wastewater disposal systems would be removed from the project site as development is proposed and implemented. Therefore, the topic of soil capability to support septic tanks will not be discussed in the EIR.

VII. HAZARDS	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Would the project:				
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 CP 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?	□	□	□	■

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
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, b) Implementation of development under the Specific Plan would involve the routine transport, use, and disposal of hazardous materials both during construction and during use and occupancy.

During construction, hazardous materials (e.g., fuels, lubricants, paints, adhesives) would be transported to and used on-site. Commonly used construction vehicles could accidentally release hazardous materials such as oils, grease, or fuels. Typically, these materials would be stored on site by construction contractors during construction. Accidental release of hazardous materials could impact soil and/or groundwater, or could result in adverse health effects to construction workers, the public, and the environment.

During operation, the uses proposed under the Specific Plan would involve routine household and commercial use of small quantities of hazardous materials such as paints, cleaners, solvents, and disinfectants. All of these products are labeled to inform users of risks, and to instruct them in proper disposal methods. Most of these materials are consumed or neutralized through use, resulting in little hazardous waste. Businesses are required by law to ensure employee safety by identifying hazardous materials, providing safety information, and adequately training workers in hazardous material handling. For these reasons, hazardous material use by the project would not pose a substantial public health or safety hazard.

The Final MEIR (March 2003) for the *Urban Area General Plan* states on p. V-10-8 that the City must implement Best Management Practices (BMPs) for construction activities, stormwater drainage systems, and municipal operations that effectively reduce pollutant transport in stormwater such as erosion control measures, preventative

maintenance procedures, public education, and other, more complex, water quality treatment systems. These requirements are conditions of the City's National Pollutant Discharge Elimination System (NPDES) stormwater permit issued by the Central Valley Regional Water Quality Control Board (CVRWQCB). The NPDES stormwater permit allows the City to discharge wastewater and municipal stormwater.

As part of its compliance with the permit requirements, the City has developed the *Guidance Manual for New Development Stormwater Quality Control Measures*. The *Guidance Manual* identifies a full range of measures to protect water-quality during the construction of new development as well as post-construction. Water-quality protective measures are intended to prevent the entry of pollutants into the system (Source Control Measures) and to manage pollutants that have entered the system (Treatment Control Measures).

> **Stormwater Mitigation**: A developer must prepare a Stormwater Pollution Prevention Plan (SWPPP) for the construction phase of the project. The SWPPP must include emergency procedures to be implemented for incidental releases of hazardous materials as well as BMPs to minimize the potential for releases to occur. SWPPP BMPs should include, but are not limited to, good housekeeping practices (e.g., spill prevention, proper storage methods, and proper cleanup procedures) and measures to prevent disturbed soil from being carried off the site in runoff (e.g., vegetative swales). Subsequently, the developer must prepare a Storm Water Management Plan (SWMP) to prevent pollutants in runoff from developed areas from reaching the storm water collection system. SWMP BMPs should include, but are not limited to, bioswales, extended detention/retention basins, sand filters, and infiltration trenches/basins.

All use, storage, transport, and disposal of hazardous materials during construction would be performed in accordance with existing local, state, and federal hazardous materials regulations. Compliance with the above mitigation measure and existing federal, state, county, and city policies and regulations would reduce potential hazards-related impacts to less-than-significant levels. Therefore, the topic of hazards due to the transport, storage and use of hazardous materials during construction as well as occupancy will not be addressed in the EIR.

c) The project site is not within a quarter mile of an existing or proposed school. The nearest existing school to the proposed project site, the Stanislaus Elementary School, is approximately one-half mile east on Kiernan Avenue. A Modesto City Schools high school, the Joseph A. Gregori High School, is set to break ground in 2007 on Stoddard Road about one-half mile north of Kiernan Avenue. This high school would be outside a one-quarter-mile radius of the project site. Due to the distance of schools and known

school sites from the project site, the topic of hazards and schools will not be addressed in the EIR.

d) The majority of the parcels comprising the project site have been used as farms. There is also a commercial nursery and a welding facility. Farms and nurseries typically use a variety of hazardous materials such as pesticides, herbicides, and fuels. Potential contamination of soil and groundwater by hazardous waste is frequently identified by performing a Phase I Environmental Site Assessment Report (ESA) for the project site. An ESA reviews the existing and prior uses of the site and adjacent properties and identifies evidence that hazardous materials were used, stored, or disposed of on the site. An ESA includes evidence such as underground storage tanks (UST) for fuel or chemicals, above-ground tanks or other storage facilities, evidence of releases such as stained soils, and waste disposal facilities such as pits, ponds, and sumps. An ESA also includes a review of regulatory records of known hazardous materials sites within the vicinity of the project site compiled pursuant to Government Code Section 65962.5. No ESAs have yet been prepared for the parcels comprising the proposed project site. Therefore, the information needed to determine whether the site is a known hazardous material site under Government Code Section 65962.5 has not yet been provided, and this topic will be discussed in the EIR.

e) The project site is located over 7.5 miles from the Modesto City – County Airport (Harry Sham Field), the nearest public airport. The topic of hazards and public airports will not be addressed in the EIR.

f) The project site is located over 5 miles from the Yandell Ranch Airport, the nearest private airport. The topic of hazards and private airports will not be addressed in the EIR.

g) The residential, commercial, and business park land uses proposed under the Specific Plan would not impair implementation of or physically interfere with the City's adopted emergency response plan or emergency evacuation plan. However, the construction of public facilities that are necessary to support future development on the project site would introduce work areas along existing roadways at the perimeter of the project site and would result in increased levels of truck traffic during construction. These changes to baseline conditions have the potential to temporarily increase response times for fire, police and ambulance response vehicles that use affected roadways and, as a consequence, impair the implementation of or physically interfere with the City's adopted emergency response plan and/or emergency evacuation plan.

The City requires traffic control plans in its Standard Specifications - 2006 for construction zones. Traffic control plans are intended to minimize potential disruptions

to emergency response routes and provide for emergency vehicle access in and adjacent to the construction zone. The traffic control plans include an emergency access plan consistent with City policies for public safety and ensure coordination with emergency service providers before construction, limitations on the number and extent of road closures, and effective traffic direction. Therefore, this topic will not be discussed further in the EIR.

h) The area surrounding the project site is largely agricultural or developed. There is no significant wildland in the vicinity of the project site.[51] Thus, the topic of wildland fires will not be discussed in the EIR.

VIII. HYDROLOGY AND WATER QUALITY	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Would the project:				
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 or provide substantial additional sources of polluted runoff?	■	□	□	□

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
f) Otherwise substantially degrade water quality?	■	□	□	□
g) 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?	□	□	■	□
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	□	□	■	□
i) 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?	■	□	□	□
j) Inundation by seiche, tsunami, or mudflow?	□	□	□	■

Discussion

a, c-f) Development of Kiernan Business Park-East would alter on-site drainage patterns and increase the rate of surface runoff due to development of new structures, roadways, and parking lots. Increased volume and rate of runoff could result in changes in drainage patterns, increases in downstream flooding, and increases in urban runoff pollutant loading, including during construction periods. The City's Draft Master Drainage Plan identifies an on-site drainage retention/detention basin to serve the project area east of Dale Road and south of Bangs Avenue. Stormwater on the project site and the land to the south within the Specific Plan area is proposed to be captured on-site and pumped to MID Lateral No. 6. The EIR will evaluate potentially significant impacts associated with alteration of drainage patterns and increased run-off on the site.

b) On-site groundwater recharge sources consist of irrigation and rainwater reaching the subsurface through deep percolation. Implementation of the development framework under the Specific Plan would involve an increase in the extent of impervious surfaces on the site and may affect groundwater recharge potential. The Kiernan Business Park Specific Plan[52] requires that drainage for the area east of Dale Road and north of Bangs Avenue be accommodated on site via low-impact infiltration drainage facilities, including green swales, settlement basins, and infiltration beds. The EIR will evaluate potentially significant impacts of the project on groundwater recharge.

g-h) Flood hazard areas in the Modesto area are defined in the Public Safety Issues chapter of the *Urban Area General Plan* and are limited to properties along Dry Creek, and the Stanislaus and Tuolumne Rivers.[53] Located about 2 miles to the north, the Stanislaus River is the closest flood hazard area to the project site.[54] The flood hazard areas of Dry Creek and Tuolumne River are located more than 5 miles southeast of the project site.[55] The project site is not located within any 100-year floor hazard area and future development would not be within any flood hazard area. Therefore, the proposed project would not impede or redirect floodflows and this issue will not be discussed in the EIR.

i) The project site is located about 30 miles west and downstream of the Don Pedro Dam and about 35 miles southwest and downstream from the New Melones Dam. Levees bounding the Stanislaus River are more than 2 miles to the north. The project site is separated from these levees by adjacent existing development and undeveloped land along the river. Despite being downstream, the project site would not be expected to be inundated with flood waters, in the unforeseeable event of a dam or levee failure, as floods would have been dispersed throughout the central San Joaquin Valley.[56] However, regional and local climate change is expected to occur over time as greenhouse gases are added to the atmosphere. Climate change may affect the timing of the runoff of snowmelt from the Sierra Nevada and the amount of regional and local precipitation. If climate change were to increase rainfall and lead to earlier runoff of snowmelt, the reservoirs located west and southwest of the project site may be burdened beyond their design capacity, leading to significantly higher in-stream flows and potential flooding. Therefore, climate change and its contribution to potential flood hazards will be discussed in the EIR.

j) The project site is not located within the proximity of any natural or manmade large bodies of water where inundation by seiche, tsunami, or mudflow would be likely. Therefore, this topic will not be discussed further in the EIR.

IX. LAND USE AND PLANNING	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Would the project:				
a) Physically divide an established community?	□	□	□	■

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
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 community conservation plan?	□	□	□	■

Discussion

The 153-acre project site is located in both the City of Modesto and Stanislaus County, adjacent to the northern city limit of the City of Modesto. It is situated in the eastern portion of the Kiernan Business Park Specific Plan area, a 614-acre area in the western portion of the 1,385-acre Kiernan/Carver Comprehensive Planning District (CPD). The majority of land in this CPD is outside of the Modesto city boundary and it has been designated as an area that will absorb future urban development.

The project site's General Plan and Specific Plan land use designation is Business Park (BP). The *Urban Area General Plan* defines the purpose and intent of the BP designation as "to provide for areas of light industrial and employment-intensive uses, and to produce an environment conducive to industries and employers seeking an aesthetically attractive 'campus-like' setting."[57] The intent of the existing Specific Plan is to provide for the development of new business park and light industrial uses in the vicinity of Kiernan Avenue because of its location adjacent to Highway 99 and north Modesto, a prime business park location. The proposed project is an amendment to the Specific Plan entailing the redesignation of 39 acres of Business Park land uses to 22 acres of Mixed Use and 17 acres of Medium High Density Residential land uses.

a) The project site and lands to the north and east are predominantly agricultural and rural in character. The majority of parcels that make up the project site are in agricultural production except for a commercial nursery and landscaping service located on a parcel at the northeast corner of Dale Road and Bangs Avenue and a welding company located at the northeastern corner on a parcel fronting Kiernan Avenue near its intersection with American Avenue. The vicinity of the project site is characterized by a mix of medical, agricultural, commercial, and residential land uses. Directly west

across Dale Road is the Kaiser Medical Center and the Cornerstone Business Park. Unincorporated Stanislaus County lands to the north across Kiernan Road are primarily in agricultural use with a produce market and gift shop at the northeast corner of Kiernan Avenue and Dale Road. To the east, between the proposed north-south extension of American Avenue and the existing Morrow Road, are agricultural parcels with some individual home sites. Immediately south of the project site across Bangs Avenue and MID Lateral No. 6 is an event center/catering business and two churches. Low-density residential neighborhoods and commercial uses are located further south of the project site across Pelandale Avenue. The Fleur de Ville residential neighborhood is located south and west of the project site, south of MID Lateral No. 6. The proposed amendment to the Specific Plan would not result in a present or future physical division of the Fleur de Ville neighborhood or any other established community. Therefore, this topic will not be addressed further in the EIR.

b) The proposed project is not consistent with the existing Kiernan Business Park Specific Plan or the *Urban Area General Plan*. The proposed project would require land use and circulation amendments to the Specific Plan, specifically for the re-classification of a 39-acre BP land use to MU and MHDR land uses and for the relocation of Healthcare Way. The proposed project would also require amendments to the Specific Plan development standards and design guidelines to accommodate future development in the MU and MHDR areas. As proposed, the project would not comply with existing plans, and therefore, this topic will be discussed further in the EIR.

c) There are no known habitat conservation plans or natural community conservation plans associated with the project area. Therefore, the project would have no impact, and this topic of will not be addressed further in the EIR.

X. MINERAL RESOURCES	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Would the project:				
a) Result in the loss of availability of a known mineral resource 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 *Mineral Land Classification of Stanislaus County, California* report does not show the project site as being within a Mineral Resources Zone–2a (MRZ–2a) or Mineral Resources Zone–2b.[58] The proposed amendments to the *Kiernan Business Park Specific Plan* would not result in the loss of availability of a known mineral resource or mineral resource recovery site that would be of future value to the region or the State. Therefore, there would be no impact and this topic will not be discussed further in the EIR.

XI. NOISE	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Would the project result in:				
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, c) Mechanical equipment on new buildings that could be constructed with the amended Specific Plan, traffic generated by the new uses, and services such as trash collection would result in increased noise on or near the project.

Patients, visitors, and employees at the Kaiser Medical Center are sensitive receptors

that would experience an increase in noise levels. In addition, the proposed land use designation changes would introduce new sensitive receptors to the project site in the form of residents. These residents would be exposed to noise from ambulance trips that would be generated by the Kaiser Medical Center to the west when its emergency room is fully operational and from agricultural equipment on nearby parcels in agricultural use.

The impact of ambulance sirens on nearby sensitive receptors was addressed in the Environmental Impact Report prepared for the Kaiser Medical Center.[59] Implementation of Mitigation Measures F.3a and F.3.b, as identified in the adopted Kaiser Medical Center/Cornerstone Business Park Mitigation Monitoring and Reporting Program, would minimize adverse noise from ambulance traffic. These measures include a requirement that ambulance operators travel with sirens off when accessing the medical center from the south on Dale Road or Chapman Road between Pelandale Avenue and the emergency room; that ambulance operators use designated travel routes; and that ambulance operators maintain travel logs that include a history of siren use. In addition, the effectiveness of these measures would be evaluated and an evaluation report would be submitted to the City of Modesto within 6 months of the opening of the emergency room. A publicly noticed meeting would then be convened so that additional feasible noise reduction measures, if necessary, can be identified based on documentation submitted by project developers and from public comments generated at the meeting. And finally, the Community and Economic Development Director would approve necessary changes or establish new ambulance noise restrictions based on the findings. Therefore, ambulance noise is not expected to result in significant impacts on new residents east of Dale Road, and the topic of ambulance noise will not be discussed in the EIR.

The potentially significant impacts related to noise will be analyzed in the EIR because of the potential increase in existing noise levels on the project site resulting from future construction and operation of the proposed project.

b) The land use amendments to the Specific Plan do not propose heavy industries. The amendments to the development standards for the Mixed Use area, however, do allow for the construction of buildings up to seven stories. The construction necessary to place the building foundations may require pile driving that could cause groundborne noise or vibrations. Pile driving would be a temporary construction-related activity. Although this activity would be regulated under the Noise Ordinance, discussed below under d), potential noise impacts related to this activity will be discussed further in the EIR.

d) In general, temporary or periodic increases in ambient noise levels can occur from construction-related activities. The City of Modesto regulates noise, including noise generated by construction-related equipment, under Section 4-9.103 of the Modesto Municipal Code. The Noise Ordinance prohibits noise before 7:00 a.m. or after 9:00 p.m. daily (except Saturday and Sunday and state or federal holidays, when construction noise is prohibited before 9:00 a.m. and after 9:00 p.m.).[60] The proposed amendments to the Specific Plan do not include any construction-related activities. However, the development framework that would be established under the amended Specific Plan creates the condition for future development. Future site-specific development would have the potential to result in a temporary or periodic increase in the ambient noise levels in the project vicinity. Under General Plan Policy VII.G.3a, on p. V-3-11, the City requires noise-reducing construction practices to be implemented as conditions of approval for a development project where substantial construction-related noise impacts would be likely to occur. These practices are summarized here in a mitigation measure included in the project.

> Noise Mitigation: The project sponsor would be required to ensure that construction vehicles, construction equipment, air compressors, and pneumatic equipment employ the best available and most applicable noise control techniques (e.g. mufflers, intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds). The project sponsor would be required to meet City regulations regarding the timing of construction activities, ensuring that construction-related activities would not occur during the early morning or late evening hours when disturbance to nearby residents would be greatest.

As a result of the application of the standard construction practices and adherence to the noise ordinance limitations, the potential that construction-related noise from future projects would result in a substantial temporary significant impact would be minimized. Therefore, the topic of construction noise will not be discussed further in the EIR for informational purposes.

e-f) The project site is not located within an area identified in the *Stanislaus County Airport Land Use Plan* or within two miles of a public airport or public use airport.[61] In addition, the project site is not within the vicinity of a private airstrip. Therefore, implementation of the development framework established under this amendment to the Specific Plan would not introduce new residents or workers to an area that experiences excessive noise from aircraft. However, the Kaiser Medical Center across Dale Road to the west is being developed to include a helipad. When the helipad is fully operational, a maximum of 50 trips a year (2-4 per month) is anticipated, with most trips expected to occur during peak automobile commute periods when roads may be congested, possibly delaying an ambulance. The helicopter trips are not expected to substantially alter the day-night average ambient noise levels along Kiernan Avenue

(71 L_{dn}) or Dale Road (65 L_{dn}) and would not be expected to exceed noise compatibility levels established by the Federal Aviation Administration.[62] Although the number of residents and employees that could be exposed to excessive noise generated by helicopter trips may increase upon implementation of the proposed Specific Plan amendments, the infrequency of helicopter trips, its limited hours of operation (generally during the evening peak commute period), and its minimal effects on the ambient noise levels would generate short-term noise peaks that would not substantially impact the nearest sensitive receptors. Therefore, this topic will not be discussed in the EIR.

XII. POPULATION AND HOUSING	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Would the project:				
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

According to 2000 U.S. Census information, the population of Stanislaus County was about 447,000, and that of City of Modesto, about 189,000.[63] As of January 1, 2006, the California Department of Finance estimated Stanislaus County's population to be about 514,370 and the City of Modesto to be about 208,100.[64] According to Stanislaus Council of Governments (StanCOG) projections, the population in the City of Modesto is expected to grow to about 439,750 by 2025. Population projections are roughly consistent with the estimated development capacity projections, as stated in the City's 2003 *Final MEIR* traffic model transportation analyses zone (TAZ) file data, which states that Modesto is expected to grow to about 400,000 persons by 2025.[65]

As stated in the *Final MEIR* traffic model TAZ file data, about 304,000 persons would be expected to be employed within the General Plan boundary by 2025.[66] Of those employees, about 148,000 would be employed in the City's Planned Urbanizing Area, which includes

anticipated employment in the Specific Plan area.[67] The proposed Specific Plan amendment includes the redesignation of 39 acres of Business Park land uses to 22 acres of Mixed Use and 17 acres of Medium High Density Residential land uses. Buildout of Kiernan Business Park-East under the proposed land use plan would continue to contribute to the City's total employment growth, albeit at a marginally lower rate.

According to 2000 U.S. Census information, there were about 67,179 existing housing units in the City of Modesto. The estimates in the *Final MEIR* traffic model TAZ file indicate that by 2025, there will be approximately 138,000 housing units within the city limits. New housing construction would be anticipated in the Planned Urbanizing Area, as well as infill development within the Baseline Developed Area and Redeveloped Area.[68] Buildout of Kiernan Business Park-East under the proposed land use plan would directly contribute to the City's total population growth, compared to the existing Specific Plan that provides for businesses but not housing.

a) Rezoning of nonresidential properties to High Density Residential (R-3) is identified in the City's *Housing Element* as a strategy to further the development of multi-family housing and more comprehensively meet the City's range of housing needs.[69] The proposed project would allow for the development of up to 434 dwelling units in the proposed Mixed Use and Medium High Density Residential land use, approximately 420,354 square feet of retail/commercial development under the Mixed Use land use designation, and up to 1,498,225 square feet of business park land uses under the Business Park land use designation. Development of the Mixed Use and Medium High Density Residential land uses would directly induce local (City of Modesto) population growth by approximately 1,260 new residents, using an average of 2.9 persons per household.[70] Development of the proposed land uses and the existing Business Park land use would increase local and regional employment and extend roads and other infrastructure, indirectly inducing population growth and, as a result, increasing the demand for housing. The rezoning of the Business Park land use to mixed use/residential uses would lead to an increase in the City housing supply and may potentially meet some portion of the housing demand that would be indirectly generated by the future development of the adjacent Business Park land uses. Therefore, this topic would have a less-than-significant impact on the demand for housing and will not be discussed further in the EIR.

b-c) Implementation of the proposed amendments to the Specific Plan land use designations in the form of site-specific development proposals would directly result in the demolition of the 13 existing home sites on the 153-acre portion of the Specific Plan area currently under study. Using an average of 2.9 persons per household, the proposed project would potentially displace approximately 38 persons. The displaced

persons would represent about 0.02 percent of the total population for the City of Modesto in 2006. These persons would likely find new housing elsewhere in Modesto, or in nearby Stanislaus County areas. The EIR will not discuss the removal of existing housing units and the displacement of persons.

XIII. PUBLIC SERVICES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) 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:				
Fire protection?	■	□	□	□
Police protection?	■	□	□	□
Schools?	■	□	□	□
Parks?	□	□	■	□
Other public facilities?	□	□	■	□

Discussion

The proposed redesignation of approximately 39 acres of Business Park (BP) land uses to 22 acres of Mixed Use (MU) and 17 acres of Medium High Density Residential (MHDR) land uses would allow for the development of up to 434 dwelling units. Multi-story commercial and office buildings could be developed in the areas designated for MU and BP land uses. Multi-story residential buildings could be developed in the MHDR area. The residential (MHDR) land use has the potential to create an increased demand for schools and park services, and both residential and commercial/office components would create increased demand for fire and police services.

Fire Protection

The Modesto Fire Department serves northwest Modesto including the portions of the Specific Plan area within City limits from Fire Station No. 11, located at 4225 Carver Road, approximately 2 miles from the corner of Dale Road and Kiernan Avenue. The portions of the Specific Plan area that have not been annexed into the City are served by the Salida Fire

Protection District. Fire Station No. 11 includes one engine company and one truck company and would respond to calls from the Specific Plan area within 3 to 6 minutes.[71] The proposed amendments to the Specific Plan provide a development framework under which the existing and proposed land uses on the project site would be built out. As site-specific developments are proposed and constructed; the Modesto Fire Department would experience increased demand. The increased demand may require additional facilities to address any future demand generated by the multi-story commercial and residential buildings allowed under the existing and amended land use designations on the project site. Therefore, the effects of the project on fire protection will be discussed in the EIR.

Police Protection

The portion of the project site within City limits (approximately 87 acres) is currently served by the Modesto Police Department (MPD) and is part of MPD Beat 65. The portions of the Specific Plan area currently outside of City limits are served by the Stanislaus County Sheriff. The proposed amendments to the Specific Plan provide a development framework under which the existing and proposed land uses on the project site would be built out. As site specific developments are proposed and constructed, the MPD would be expected to spend more officer hours responding to a potential increase in the volume of calls generated on the project site. The increase in officer hours may result in the need for the expansion of police facilities or construction of any new police-related infrastructure. Therefore, the effects of the project on police protection will be discussed in the EIR.

Schools

The proposed land use changes, from Business Park to Mixed Use and Medium High Density Residential, would introduce residential uses to the project site and, as a result, would generate new demand for schools. The project site is located within the Stanislaus Union and Modesto City School Districts. The closest elementary schools are Stanislaus Elementary School at 1931 Kiernan Avenue, approximately 0.5 miles east of the Specific Plan area, and Mildred Perkins Elementary School, about 0.5 miles southwest of the Specific Plan area. A new Modesto City Schools District high school, Joseph A. Gregori High School, is projected to break ground in 2007 on Stoddard Road north of the Specific Plan area.

Senate Bill 50 (SB-50) allows school districts to directly charge developer fees on new residential and commercial/industrial developments to construct adequate school facilities to serve these new developments. Generally, school districts require school fees to be paid prior to the issuance of building permits. The fees are established by the State Allocation Board and are adjusted every two years. The next adjustment will occur in January 2008.

Level II fees are alternative fees allowed by statute and only apply to the fees collected for residential development. A school district's Board of Education can adopt Level II fees as part of a School Facility Needs Analysis (SFNA) and collect those fees in lieu of the Level I residential fee. As site-specific developments are proposed, constructed, and occupied under the new development framework established by the amended Specific Plan, project sponsors would be required to pay these school fees. Project-related impacts on school facilities will be discussed in the EIR.

Parks

The proposed amendments to the Specific Plan provide a development framework under which residential units would be constructed on the project site. Nearby parks and recreational facilities would experience an increased in demand generated by the new residents of the area. Amendments to the development standards would include an open space provision requiring that 400 square feet of open space be provided for each residential unit developed in the MHDR area. This would result in the creation of approximately 141,600 square feet of open space. Parks and recreational facilities are required to be provided according to City standards for residential neighborhoods in the Planned Urbanizing Area. As described below under Checklist Item XIV, Recreation, the proposed amendments to the Specific Plan would not have a significant impact on parks and recreation facilities.

Other Public Facilities

Other public services, such as telephone, electricity, and natural gas, would be provided for in the project design as site-specific developments are proposed. Impacts on water, wastewater, and storm drainage are discussed under Checklist Item XVI, Utilities and Service Systems. In general, the costs of new and expanded public infrastructure are provided through the City's Capital Facilities Fee program, through the formation of a special taxing district known as a Community Facilities District, or are borne directly by the developer. A detailed Facilities Master Plan and Infrastructure Financing Plan will be developed as part of the project, to address funding for public services. Therefore, this topic will not be discussed in the EIR.

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 which might have an adverse physical effect on the environment?	□	□	■	□

Discussion

The City's policies for developing park systems within the Planned Urbanizing Area are implemented through the requirements of each Comprehensive Planning District (CPD) outlined in the *Urban Area General Plan*.[72] The *Urban Area General Plan* requires that each CPD have at least one neighborhood park within each residential neighborhood. The neighborhood park should be centrally located and have access to one collector street (with the remaining access on residential streets) and a service radius one-half to three-quarters of a mile.[73] The minimum size for a neighborhood park is required to be at least seven acres or equal to one acre of park land per 1,000 residents within the neighborhood, whichever is greater. Additionally, the *Urban Area General Plan* requires two acres of community park land per 1,000 persons (40-acre minimum), located within a radius of approximately one to one-and-one-half miles of a residential neighborhood. As with neighborhood parks, each community park should have one major street frontage, with the remaining sides fronting on residential streets. The Specific Plan implements a portion of the Kiernan/Carver Comprehensive Planning District, and the proposed amendments introduce a residential land use component.

a-b) The Kiernan Business Park Specific Plan area is located within the Morrow Park Planning Area (No. 56).[74] The proposed land use amendments to the Specific Plan would change a portion of the Business Park land use to Mixed Use and Medium High Density Residential. These proposed land use changes would result in the addition of up to 434 dwelling units to the Specific Plan area; 354 in the MHDR area and 80 in the MU area. Proposed design standards for the MHDR area include the provision of 400 square feet of open space for each dwelling unit. The MU area does not have an analogous amendment regarding the provision of open space.

The 6-acre McKinney Colony Park is the closest neighborhood park, approximately 0.5 miles from the southeast corner of the Specific Plan area. The closest community park,

the Davis Community Park, is approximately 2.5 miles from the southeast corner of the Specific Plan area. In addition, the City of Modesto plans to construct Class I bicycle paths along Pelandale and Kiernan Expressways and along the southern portion of the project site, north of MID Lateral No. 6. This path would be used for recreational cycling. Residents of the area, as well as those employed in the area, would use these bicycle paths.

Using an average of 2.9 persons per household,[75] approximately 1,260 new residents would be added to the area. Development of new residences on the project site would create new users of the existing parks and planned recreational facilities in the vicinity of the project site. Under the City's neighborhood and community park standards, the proposed land use designation change would result in a demand for approximately 1.3 acres of neighborhood park land and about 2.7 acres of community park land and would lead to increased use of other nearby recreational facilities.

The amendments to the Specific Plan development standards would result in the provision of approximately 141,600 square feet of open space (about 3.25 acres) on or near the residential neighborhood envisioned for the project site. The provision of 3.25 acres of open space under the proposed Specific Plan does not meet the City standard for neighborhood parks which requires a minimum of seven acres for neighborhood parks. However, the proposed residential land uses are within the service radius of the McKinney Colony Park, approximately .75 miles southeast. Therefore, the neighborhood parks standard for Planned Urbanizing Areas under the *Urban Area General Plan* is met. The proposed project is not within the service radius (1.5 miles) of an existing community park and would not meet the City standard for community parks which requires that a community park be a minimum of 40 acres in size.

Future site-specific development projects in the Specific Plan area would be required to meet City standards for the provision of parks and recreational facilities or pay a Parks Capital Facilities Fees to fund the acquisition of appropriate parkland acreage. The exact location and acreage of parks and recreational facilities would be determined through the development of a Facilities Master Plan or would be determined as part of the development of the larger Kiernan Carver CPD, which has a large amount of land designated for Village Residential land uses and/or other North Modesto CPDs. Therefore, the project would not result in substantial physical deterioration of parks and recreational facilities and this topic will not be discussed in the EIR.

XV. TRANSPORTATION/TRAFFIC	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
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 due 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, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	□	□	□	■

Discussion

a, b) The proposed project would redesignate an approximately 39-acre portion of Business Park land use to a 22 acres of Mixed Use and 17 acres of Medium High Density Residential land uses. The proposed land use designation changes would allow for the construction of up to 454 dwelling units, 420,354 square feet of retail/commercial development, and business parks. The project would also amend the internal circulation program, adding new roadways to the 153-acre portion of the Specific Plan area being studied. Development of this scale on the project site would generate additional traffic on the local transportation system, including increased volume-to-capacity ratios on nearby roads (affecting levels of service), and/or increased congestion at intersections. The EIR will discuss potentially significant impacts related to transportation and circulation, including intersection and roadway operations.

c) The proposed amendments to the Specific Plan do not include new land use designations with an air traffic component. However, the proposed MU and MHDR land use designations would introduce residential uses in the Specific Plan area. In addition, the proposed development standards for the MU area would allow buildings up to a height of seven stories. The introduction of new residential land uses and multi-story buildings may change the future air traffic patterns at the Kaiser Medical Center. Anticipated approach and departure flight paths would occur within an arc that extends from the northwest to the east of the Kaiser Medical Center helistop located in the north-central portion of the Kaiser property just south of Healthcare Way. Helicopter flight paths would be located within this arc. Therefore, helicopters may fly over the areas proposed for Mixed Use and Medium High Density Residential. Kaiser Medical Center staff would encourage pilots to avoid residential areas to the best of their ability but would rely on the determination of pilots to ultimately choose the safest approach or departure route based on factors such as wind direction and wind speed. The western edge of the Mixed Use area, where buildings up to a height of seven stories are allowed under the proposed development standards, is 800 feet or more from the Kaiser helistop. At this distance, seven-story buildings would not penetrate the airspace clearance area for the helicopter landing pad. Therefore, there would be no air-traffic-related safety risks, and this topic will not be discussed further in the EIR.

d) The proposed project would include changes to the internal circulation program throughout the eastern portion of the Kiernan Business Park Specific Plan area. New proposed vehicular ingress and egress is planned along Bangs Avenue, Dale Road, Kiernan Avenue, and American Avenue. City and Caltrans traffic safety standards would be followed during the design and construction of these roads and points of ingress and egress to eliminate any potential hazards and maximize safety. The project's proposed circulation system and its connection to existing and proposed roadways in the vicinity of the project site are anticipated to be of concern for this project. Potential issues may include offset intersections as well as farm equipment from nearby agricultural land uses that may use area roadways. Therefore, this topic will be addressed in detail in the EIR.

e) The proposed internal street system for the eastern portion of the Kiernan Business Park Specific Plan area includes streets that would provide access to new development sites. The internal roads in the Specific Plan area would be required to meet City standards for street system and access from surrounding arterials. The City's Public Works Department and Fire Marshal would review street system design and site plan layout for adequacy of access for emergency vehicles. Therefore, the topic of emergency access will not be discussed further in the EIR.

f) Implementation of the proposed amendments to the Specific Plan provides a development framework under which surface and/or structured parking for the Business Park, Mixed Use, and MHDR land uses could be constructed. City parking standards would determine the final design layout and number of parking spaces required for site-specific developments within the Kiernan Business Park Specific Plan area as they are introduced. Therefore, the topic of inadequate parking capacity will not be discussed further in the EIR.

g) The proposed project would require amendments to the *Kiernan Business Park Specific Plan's* Circulation Plan diagram for the relocation of Technology Drive (Healthcare Way) and the layout of new streets. The EIR discusses the planned roadways' relocation and potentially significant impacts the proposed amendments may generate. The proposed project would also include non-motorized facilities, such as Class I bike paths and Class II bike lanes and pedestrian paths, that would be constructed along Kiernan Avenue, American Avenue, MID Lateral No. 6, and Dale Road, as well as throughout the proposed internal roadways on the project site, in accordance with the *Modesto Non-Motorized Transportation Master Plan*. The proposed project includes an amendment to the Bike Paths figure in the existing Specific Plan. As site specific developments are proposed, subsequent environmental analyses would be conducted to identify potentially significant impacts.

XVI. UTILITIES AND SERVICE SYSTEMS	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Would the project:				
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?	■	□	□	□

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	■	□	□	□
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	■	□	□	□
f) Be 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) Wastewater disposal is regulated under the federal Clean Water Act and the state Porter-Cologne Water Quality Control Act.[76] The Central Valley RWQCB implements these acts by administering the National Pollution Discharge Elimination System (NPDES), issuing waste discharge permits and establishing best management practices.[77] The proposed amendments to the Specific Plan would result in a development framework that would, upon buildout of the new and existing land uses, result in increased wastewater flows that would be collected and treated at the City's wastewater treatment plants. Disposal of treated wastewater flows would be required to comply with NPDES regulatory requirements. Therefore, the project would comply with wastewater treatment requirements, and this topic will not be discussed further in the EIR.

b) The project area would be served by an approximately 30-inch wastewater collection line in the Bangs Avenue right-of-way between Carver Road and Dale Road. Wastewater from the project area would flow south to the Primary Plant at Sutter Avenue via a 39-inch wastewater collection line that runs parallel to American Avenue south of Bangs Avenue. The proposed project may not require the construction of new wastewater collection facilities; however, a sewer capacity study will be prepared to determine if the existing facilities have capacity to accommodate buildout of the project area. The project could also require the expansion of City wastewater discharge

facilities; therefore, the EIR will discuss this potential impact. A Water Supply Assessment and water capacity study will be prepared to determine whether sufficient water and infrastructure exist to supply the project in combination with other forecast growth in the City and the MID supply area. This topic will be discussed in the EIR.

c) The proposed amendments to the Specific Plan and buildout of the project site would alter on-site drainage patterns and could increase the rate of surface runoff due to the development of new structures, roadways, parking lots, and walkways. The low-impact drainage facilities proposed for the area east of Dale Road would accommodate all surface flows on-site and would include, but are not limited to, green swales, settlement basins, and infiltration beds. Collected stormwater would be pumped to MID Lateral No. 6 and may require revisions to existing agreements between MID and the City. Construction of new storm drainage facilities may have a potentially significant environmental impact; therefore, the EIR will discuss this topic.

d) As the Specific Plan area is developed, the City of Modesto's water service area would be extended to serve the newly urbanized areas. Domestic water would be supplied to these areas on a project-by-project basis via a proposed "Grid System" connected to the City of Modesto's existing water service. The system would be sized with generally 12-inch lines on half-mile increments and 8-inch lines on quarter-mile increments with 6-inch local distribution lines.[78] Future demands on the City's water supply generated by the buildout of existing and proposed Specific Plan land uses may require additional wells and water storage tanks along with the proposed Phase II expansion of the Modesto Regional Water Treatment Plant. As stated above, a Water Supply Assessment and water capacity study will be prepared for the proposed project. Therefore, the topic of water supply will be discussed in the EIR.

e) The existing City of Modesto wastewater collection and treatment system may not have the capacity to provide service to the property in the Specific Plan area as development occurs.[79] Development based on the existing and proposed Specific Plan land use designations would generate wastewater in excess of the current flows; the proposed expansion of the wastewater collection facilities, discussed in b) above, may not be able to accommodate the increased demand. Additional flows attributable to future development would be required to comply with NPDES regulatory requirements prior to disposal; however, the additional flows may exceed the current treatment and disposal capacities. This topic will be discussed in the EIR.

f, g) The California Integrated Waste Management Act, AB 939, requires that municipalities divert at least 50 percent of solid waste from landfills by the year 2000. The City has developed programs to meet the requirements of AB 939 and has a diversion rate of

approximately 55 percent as of 2004, including the 10 percent diversion credit for using the Waste-to-Energy Facility.[80] The proposed amendments to the Specific Plan would allow development under new land use designations that could change the character of the solid waste, i.e., greater percentage of household waste (plastics and aluminum) as opposed to commercial and office waste (cardboard and paper). However, it is not likely to significantly change the volume of waste that would be generated by the land uses upon buildout. The City uses the Modesto and Stanislaus County Waste-to-Energy Facility, which has ample capacity to handle new waste from the project site.[81] Therefore, the topics of landfill space and compliance with federal, state, and local laws governing waste disposal will not be discussed further in the EIR.

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 under Checklist Item IV, Biological Resources, implementation of the project may have the potential to degrade the quality of the environment and reduce protected and/or sensitive species habitat. These potentially significant impacts will be discussed in the EIR.

Buildout of the project area under the proposed Specific Plan would not significantly

affect important examples of the major periods of California history, based on standard mitigation measures identified in the Final Master EIR for the Modesto *Urban Area General Plan* (March 2003) that would be implemented as development projects are proposed. Therefore, this issue will not be discussed in the EIR.

b) The City of Modesto certified a *Final Master EIR* for the Modesto *Urban Area General Plan* in February 2003. The Master EIR included an assessment of the cumulative and growth-inducing impacts of the buildout of the General Plan. No cumulative impacts were identified for police and fire services. Therefore, the assessment of cumulative impacts on police and fire services in the Master EIR is adequate for this subsequent project. No further analysis is required in the EIR.

Implementation of the proposed project would contribute to significant traffic, noise, water, sewer, and air quality impacts that could be cumulatively considerable. These issues will be discussed further in the EIR.

c) The proposed project would not have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly.

Endnotes

[1] City of Modesto, *Kiernan Business Park Specific Plan*, adopted on April 1, 1997 and amended on August 10, 2004.
[2] City of Modesto, *Kiernan Business Park and Carver-Bangs Specific Plans Focused Environmental Impact Report* (SCH # 94082005), February 20, 1997 and the *Kaiser Modesto Medical Center / Cornerstone Business Park Project Final Environmental Impact Report* (SCH # 2003072085), August 10, 2004.
[3] The proposed revisions to the Specific Plan include reformatting and restructuring in conformance with the *City of Modesto Specific Plan Procedures and Preparation Guide*, dated October 2004. This is not a substantive revision to the Specific Plan requiring additional environmental review.
[4] City of Modesto, *Administrative Draft Kiernan Business Park Specific Plan*, November 29, 2006 (hereinafter *Draft Specific Plan*), pp. 7-8.
[5] City of Modesto, *Urban Area General Plan*, Figure II-1 Growth Strategy Diagram, p. II-8, March 2003.
[6] Often referred to as a "bike lane," a Class II bikeway provides a striped and stenciled lane for one-way bicycle travel on either side of a street or highway.
[7] Typically called a "bike path" or "shared use path," a Class I bikeway provides bicycle travel on a paved right-of-way completely separated from any street or highway. The recommended width of a shared use path is dependent upon anticipated usage.
[8] *Draft Specific Plan*, p. 24.
[9] United States Department of Agriculture, Soil Conservation Service, *Soil Survey of the Eastern Stanislaus Area, California*, September 1964 (hereinafter "*Soil Survey of the Eastern Stanislaus Area*"), Map Sheet Number 5.
[10] *Soil Survey of the Eastern Stanislaus Area*, p. 84.
[11] *Soil Survey of the Eastern Stanislaus Area*, p. 80.

[12] California Department of Conservation, Farmland Mapping and Monitoring Program, *Soil Candidate Listing for Prime Farmland and Farmland of Statewide Importance, Stanislaus County*, February 2006, pp. 2-3.
[13] These parcels are zoned as Planned Specific Plan-Overlay (P-SP-O) on the Modesto zoning map.
[14] Stanislaus County, *Stanislaus County General Plan*, 1994, p. I-25.
[15] The Williamson Act is an agricultural land protection program established in the mid-1960s.
[16] Telephone conversation with the Stanislaus County staff at the Land Use and Zoning Counter, March 12, 2007.
[17] *Soil Survey of the Eastern Stanislaus Area*, Map Sheet Numbers 4 and 11.
[18] U.S. Environmental Protection Agency, www.epa.gov/climatechange/emissions/index.html#ggo, website accessed on June 4, 2007.
[19] H.T. Harvey and Associates, *Kiernan Business Park East Specific Plan Biotic Study*, February 28, 2007 (hereinafter "*Biotic Study*"). This report is on file with the City of Modesto Community and Economic Development Department, 1010 Tenth Street, Modesto, CA.
[20] California Department of Fish and Game, California Natural Diversity Database, Rarefind, 2006.
[21] California Native Plant Society, Inventory of Rare and Endangered Vascular Plants of California, (6th edition), 2001.
[22] California Department of Fish and Game, *Staff Report on Mitigation for Impacts to Swainson's Hawks (Buteo swainsonii) in the Central Valley of California*, 1994.
[23] United States Geological Survey, 7.5´ Quad Maps: Ripon (1994), Riverbank (1987), and Salida (1987).
[24] City of Modesto Community and Economic Development Department, *Final Master Environmental Impact Report for the Urban Area General Plan*, certified February 2003 (hereinafter "*Final Master EIR*"), p. V-7-19.
[25] *Biotic Study*, pp. 18-19.
[26] *Final Master EIR*, V-7-19.
[27] Central California Information Center (CCIC), California Historical Resources Information System. CCIC File # 6636N, March 2007. This report is on file with the City of Modesto Community and Economic Development Department, 1010 Tenth Street, Modesto, CA.
[28] Archaeological resources, which may also be considered "historical resources" under CEQA, are discussed separately below under subsection "b."
[29] CCIC File # 6636N, citing a study by Sean Jensen, File # P-50-001918.
[30] Criterion D is generally understood to refer to archaeological resources, which may also be considered historical resources under CEQA. These are discussed and analyzed separately from historic architectural resources.
[31] Consolidated Engineering Laboratories, *Geologic Hazards and Site Specific Design Ground Motions Study*, 2003 (hereinafter "*Geologic Study*"). This report is on file with the City of Modesto Community and Economic Development Department, 1010 Tenth Street, Modesto, CA.
[32] *Geologic Study*, p. 17.
[33] Official Map of Earthquake Fault Zones, California Geological Survey, June 2003. http://www.consrv.ca.gov/CGS/rghm/ap/Map_index/index.htm
[34] *Geologic Study*, p. 15.
[35] *Geologic Study*, p. 15.
[36] *Geologic Study*, p. 15.
[37] *Geologic Study*, p. 23.
[38] *Geologic Study*, p. 15.
[39] *Geologic Study*, p. 13.
[40] *Geologic Study*, p. 15.
[41] *Geologic Study*, p. 19.
[42] *Geologic Study*, p. 20.
[43] *Geologic Study*, p. 20.
[44] City of Modesto. http://www.ci.modesto.ca.us/etd/specs/Storm%20Water%20Quality%20NPDES/Erosion&Sediment_Control.pdf.

[45] *Geologic Study*, p. 18.
[46] *Geologic Study*, p. 18.
[47] *Geologic Study*, p. 18.
[48] *Geologic Study*, p. 19.
[49] *Geologic Study*, p. 19.
[50] *Draft Specific Plan*, p. 49.
[51] 7.5' Salida Quad.
[52] *Draft Specific Plan*, p. 49.
[53] City of Modesto, *Urban Area General Plan*, March 2003, p. VI-2.
[54] *Final MEIR*, Figure V-10-1a.
[55] *Final MEIR*, Figures V-10-1b through 1d.
[56] City of Modesto, *Final Environmental Impact Report Kaiser Modesto Medical Center / Cornerstone Business Park Project* (SCH #2003072085), August 10, 2004, Appendix B, p. 28.
[57] City of Modesto, *Urban Area General Plan*, 2003, pp. III-4 to III-5.
[58] *California Division of Mines and Geology, Mineral Land Classification of Stanislaus County, California*, DMG Special Report 173, 1993, pp. 33-34 and Plate 8B. This report is on file with the City of Modesto Community and Economic Development Department, 1010 Tenth Street, Modesto, CA.
[59] City of Modesto, *Final Environmental Impact Report Kaiser Modesto Medical Center / Cornerstone Business Park Project*, (SCH #2003072085) August 10, 2004, pp. IV.F.11 - IV.F.12
[60] City of Modesto Municipal Code Chapter 9: Noise Regulations.
[61] Stanislaus County, *Airport Land Use Plan*, adopted August 3, 1978.
[62] City of Modesto, *Final Environmental Impact Report Kaiser Modesto Medical Center / Cornerstone Business Park Project* (SCH #2003072085), August 10, 2004, pp. IV.F.2 - IV.F.3, IV.F.13.
[63] Population, employment and housing data have been rounded off.
[64] State of California, Department of Finance, *E-1 City / County Population Estimates, with Annual Percent Change, January 1, 2005 and 2006*, Sacramento, California, May 2005.
[65] *Final MEIR*, Appendix F, Table F-1, Estimated Development Capacity: Population, Employment and Housing Units – 2002 General Plan by Growth Strategy Area, March 2003.
[66] Ibid.
[67] Ibid.
[68] Ibid.
[69] City of Modesto, *Housing Element 2003-2008*, p. 4-10
[70] Ibid, p. 2-25.
[71] City of Modesto GIS, Fire Station Run Time Analysis – Stations 1, 5, and 11, April 10, 2006.
[72] City of Modesto, *Urban Area General Plan*, 2003, p. V-21.
[73] City of Modesto, *Urban Area General Plan*, 2003, p. V-22.
[74] City of Modesto, *Urban Area General Plan*, 2003, Figure V-5 - Park Planning Areas, p. V-42.
[75] City of Modesto, *City of Modesto Housing Element (2003-2008)*, April 2004, pp.2-24 – 2-25.
[76] *Final Master EIR*, p. V-6-2.
[77] Ibid.
[78] *Draft Specific Plan*, p. 50.
[79] *Draft Specific Plan*, p. 49.
[80] Telephone conversation with Karen Rodriguez, City of Modesto Integrated Waste Specialist, May 9, 2007.
[81] Ibid

APPENDIX B: KIERNAN TRANSPORTATION IMPACT STUDY FOR THE KIERNAN BUSINESS PARK SPECIFIC PLAN AMENDMENT #4

Transportation Impact Analysis

Kiernan Business Park Specific Plan Amendment #4 Project



FEHR & PEERS
TRANSPORTATION CONSULTANTS

100 Pringle Ave, Suite 600
Walnut Creek, CA

Prepared for:
Turnstone Consulting
City of Modesto

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1. INTRODUCTION

This report presents the findings, conclusions, and recommendations of the Transportation Impact Analysis (TIA) to be incorporated into the Draft Environmental Impact Report (DEIR) for the Kiernan Business Park Specific Plan Amendment #4 Project (Project) in Modesto, California. This chapter discusses the TIA purpose, analysis scenarios, analysis locations and methods, criteria used to identify significant impacts, and report organization.

STUDY PURPOSE

The study purpose is to evaluate the transportation impacts of the Project. The Project site is located on 153 acres within the 614-acre Kiernan Business Park Specific Plan Area (KPBSPA). The KPBSPA is generally bordered on the north by Kiernan Avenue, on the south by Pelandale Avenue, on the east by American Avenue, and on the west generally by Stoddard Avenue. The Project site is bounded by Dale Road on the west, Kiernan Avenue on the north, American Avenue on the east, and Bangs Avenue on the south as illustrated on Figure 1, Site Vicinity Map. Approximately 67.5 acres of the Project site are currently located outside of the City, but would be annexed to the City as part of the project.

As currently proposed, the Project would contain 1,498,224 square feet of business park uses, 262 townhomes in the Medium-High Density Residential Area, and a mixed-use development as shown on Figure 2, the Conceptual Project Site Plan. The mixed-use development would include 79,000 square feet of office uses, 371,000 square feet of retail uses, 175 hotel rooms and 80 apartment units.

ANALYSIS SCENARIOS

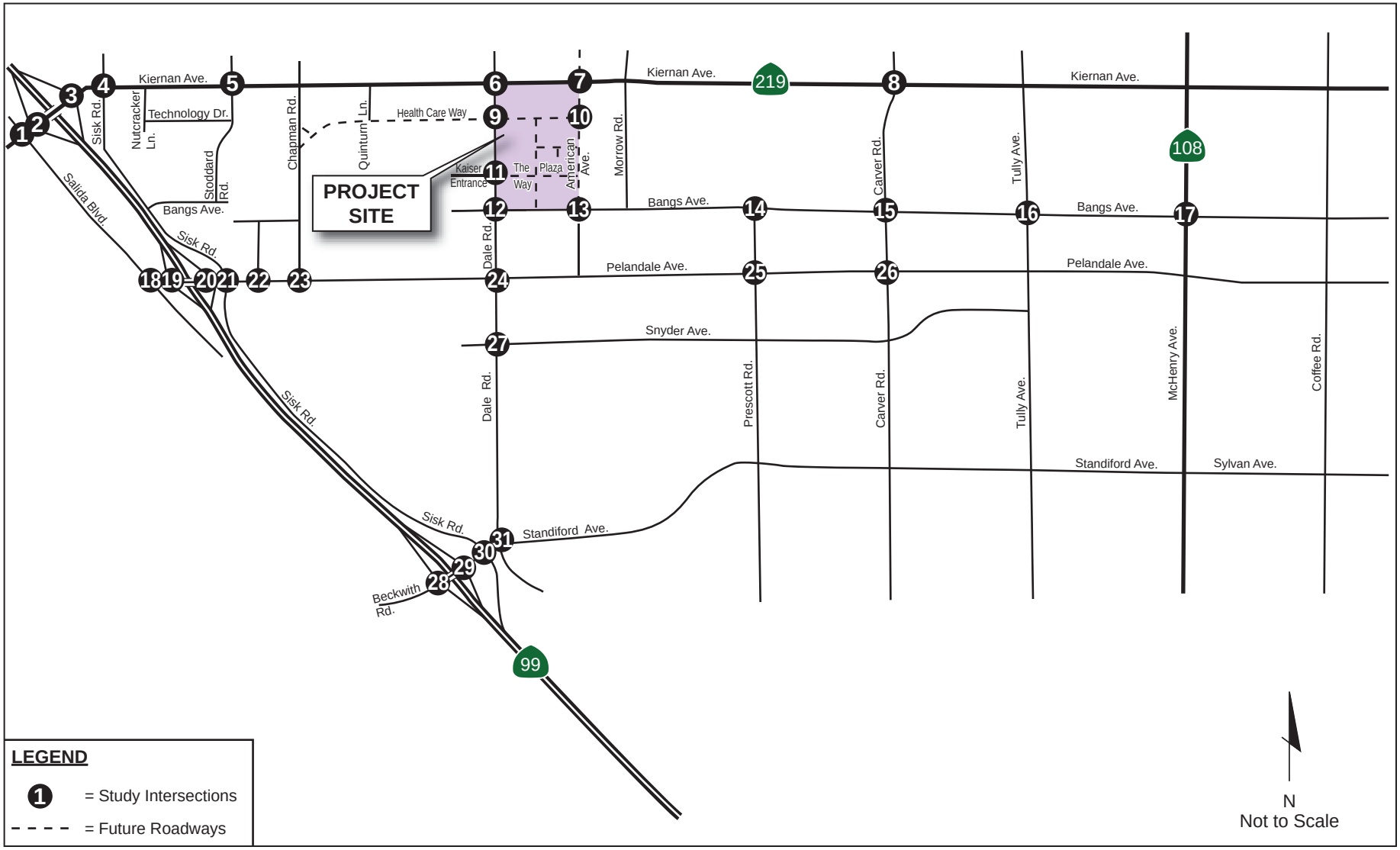
Project impacts to the roadway system were identified by evaluating the operations of selected intersections and roadway segments for six scenarios. There are changes occurring in the vicinity of the Project site that would affect Near-Term and Cumulative traffic conditions. Near-Term changes include traffic to be added by approved and pending development projects (not yet constructed), roadway improvements to be constructed by those developments, and new roadway improvements to be constructed by the City or Caltrans. There are also many roadway and land use changes contained in the Cumulative analysis. The City's Travel Demand Model, the recently updated *Transportation Planning Partnership Group (TPPG) Countywide Travel Demand Model (TPPG Model)*, was used to develop traffic forecasts for this condition.

The six analysis scenarios are:

Scenario 1: Existing Conditions. Existing traffic volumes obtained from recent traffic counts and the existing roadway system configuration.

Scenario 2: Existing With Project Conditions. Existing volumes plus traffic estimated from the proposed Project. The roadway system is the same as Scenario 1.

Scenario 3: Near-Term Without Project Conditions. Existing volumes obtained from counts plus traffic estimates for approved and pending developments (not yet constructed) in the City and in the County, traffic increases due to regional growth, and transportation system improvements anticipated to be completed in the Near-Term, including improvements that are conditioned on approved development projects.



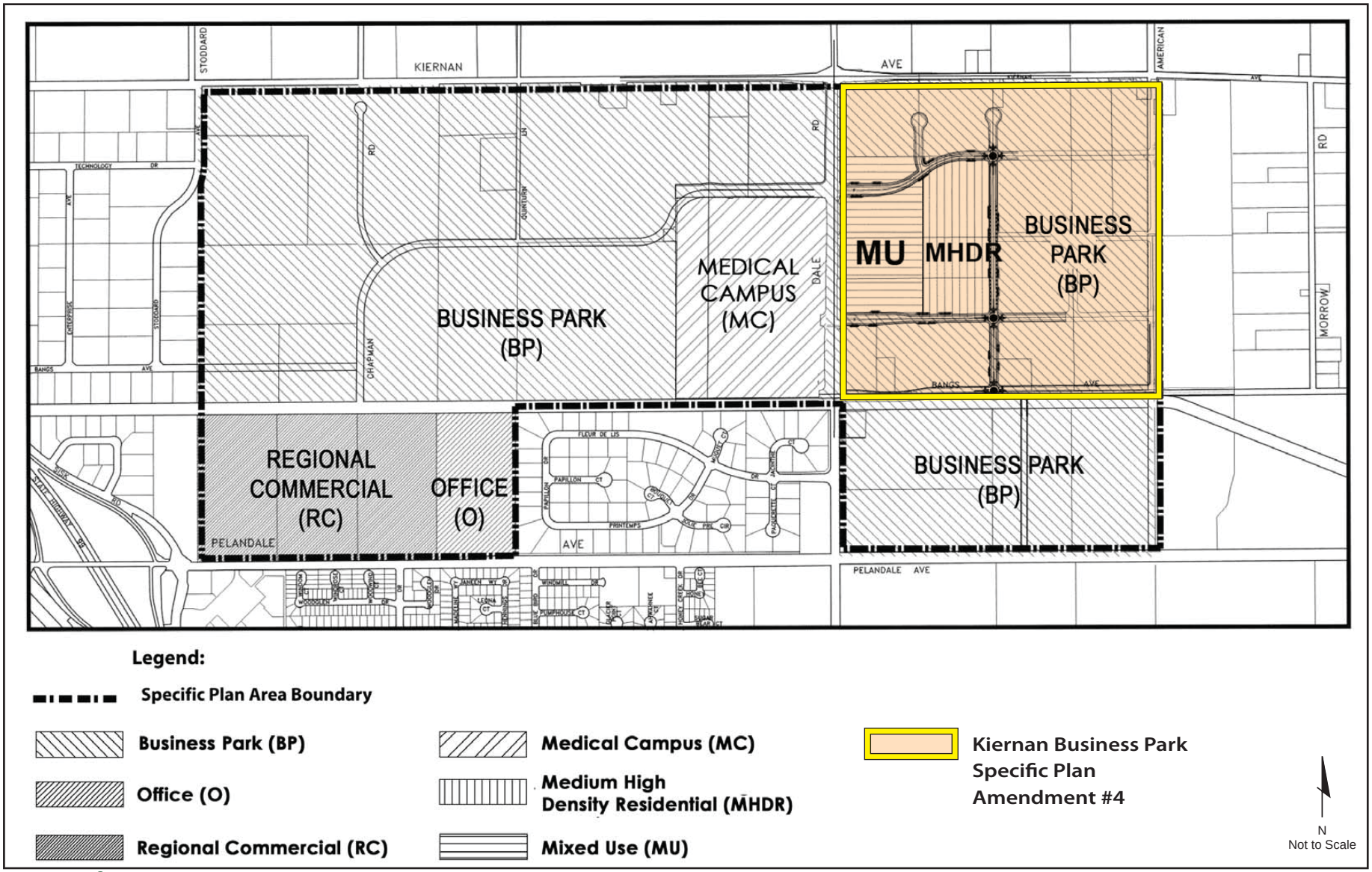
Kiernan Business Park East

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PROJECT SITE VICINITY MAP AND STUDY INTERSECTION LOCATIONS

May 2008
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Figure 1



Kiernan Business Park

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CONCEPTUAL LAND USE PLAN

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Figure 2

Scenario 4: Near-Term With Project Conditions. Traffic volumes from Scenario 3 plus traffic estimated from the proposed Project. The roadway system is the same as Scenario 3.

Scenario 5: Far-Term (Cumulative) Without Project Conditions (2025). Projected 2025 traffic volumes and the roadway system from the MEIR for the *Modesto General Plan Master EIR Update.*

Scenario 6: Far-Term (Cumulative) With Project Conditions (2025). Traffic volumes from Scenario 5 plus the traffic estimated for buildout of the project site. The roadway system is the same as Scenario 5.

STUDY INTERSECTIONS AND ROADWAY SEGMENTS

Intersection operations were evaluated during the weekday morning (AM) and evening (PM) peak periods for the Existing and Near-Term conditions. Thirty-one intersections in the vicinity of the Project site were analyzed, as shown on Figure 1 and listed below:

1. Kiernan Avenue/Salida Boulevard
2. Kiernan Avenue/SR 99 Southbound Ramps
3. Kiernan Avenue/SR 99 Northbound Ramps
4. Kiernan Avenue/Sisk Road
5. Kiernan Avenue/Stoddard Road
6. Kiernan Avenue/Dale Road
7. Kiernan Avenue/American Avenue
8. Kiernan Avenue/Carver Road
9. Healthcare Way/Dale Road
10. Healthcare Way/American Avenue
11. Kaiser Main Entrance/Dale Road
12. Bangs Avenue/Dale Road
13. Bangs Avenue/American Avenue
14. Bangs Avenue/Prescott Road
15. Bangs Avenue/Carver Road
16. Bangs Avenue/Tully Road
17. Bangs Avenue/McHenry Avenue
18. Pelandale Avenue/Salida Boulevard
19. Pelandale Avenue/SR 99 Southbound Ramps
20. Pelandale Avenue/SR 99 Northbound Ramps
21. Pelandale Avenue/Sisk Road
22. Pelandale Avenue/Northpointe Shopping Center
23. Pelandale Avenue/Chapman Road
24. Pelandale Avenue/Dale Road
25. Pelandale Avenue/Prescott Road
26. Pelandale Avenue/Carver Road
27. Snyder Avenue/Dale Road
28. Standiford Avenue/SR 99 Southbound Ramps
29. Standiford Avenue/SR 99 Northbound Ramps
30. Standiford Avenue/Sisk Road
31. Standiford Avenue/Dale Road

Roadway segment analyses were performed for the following roadway segments:

1. SR 99, Hammett Road to Briggsmore Avenue
2. Kiernan Avenue, Salida Boulevard to McHenry Avenue
3. Pelandale Avenue, Salida Boulevard to Tully Road
4. Bangs Avenue, Dale Road to McHenry Avenue
5. Dale Road, Kiernan Avenue to Standiford Avenue

The roadway segment analysis is conducted on a peak-hour basis for the Existing and Near-Term conditions, and on a daily basis for the Cumulative condition consistent with the General Plan MEIR. A ramp merge-diverge analysis was also conducted for the Kiernan Avenue, Pelandale Avenue, and Standiford Avenue interchanges with State Route 99 for the Existing and Near-Term conditions.

ANALYSIS METHODS

The operations of roadway facilities are described with the term "level of service" (LOS). LOS is a qualitative description of traffic flow based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined ranging from LOS A (i.e., best operating conditions) to LOS F (worst operating conditions). LOS E corresponds to operations "at capacity." When volumes exceed capacity, stop-and-go conditions result and operations are designated as LOS F.

Different criteria and methods were used to assess operating conditions for the various types of facilities analyzed in this study, including signalized and unsignalized intersections, roadway and freeway segments, and freeway ramp merge/diverge areas. The LOS criteria and methods for each of these facilities are described in the following sections.

Signalized Intersections

Traffic conditions at signalized intersections were evaluated using the method from Chapter 16 of the Transportation Research Board's 2000 *Highway Capacity Manual*. This operations analysis method uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the average control delay experienced by motorists traveling through an intersection. Control delay incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. Table 1 summarizes the relationship between average control delay per vehicle and LOS for signalized intersections. In Modesto, acceptable operations at signalized intersections are defined as LOS D[1] or better. LOS C is the standard for intersections located in Stanislaus County, outside the City of Modesto sphere of influence. Synchro version 6.0 was used to calculate signalized intersection LOS.

Unsignalized Intersections

Traffic conditions at unsignalized intersections were evaluated using the method from Chapter 17 of the 2000 *Highway Capacity Manual*. With this method, operations are defined by the average control delay per vehicle (measured in seconds) for each movement that must yield the right-of-way. This incorporates delay associated with deceleration, acceleration, stopping and moving up in the queue. For all-way stop-controlled intersections, the average control delay is calculated for the intersection as a whole. At two-way or side street-controlled intersections, the control delay (and LOS) is calculated for each controlled movement, the left-turn movement from the major street, and the entire intersection. For controlled approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The delays for the entire intersection and for the movement or approach with the highest delay are reported. Table 2 summarizes the relationship between delay and LOS for unsignalized intersections.

[1] Source: City of Modesto *General Plan.*

TABLE 1
SIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10.0 to 20.0
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20.0 to 35.0
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and/or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35.0 to 55.0
E	Operations with long delays indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	> 55.0 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80.0

Source: *Highway Capacity Manual (*Transportation Research Board, 2000).

TABLE 2
UNSIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delays	≤ 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic delays with intersection capacity exceeded	>50.0

Source: *Highway Capacity Manual* (Transportation Research Board, 2000).

Roundabouts

Operational analyses were conducted to evaluate the planned roundabouts on Bangs Avenue using the aaSIDRA roundabout level of service software. This program provides an effective tool for analyzing roundabouts with moderate to low levels of congestion (i.e., V/C ratios less than 0.85). This software is very consistent with HCM methods as it uses gap acceptance parameters. Please note that the environmental factor was modified for use in this assessment to reflect American driver behavior, as recommended by the software developer. The level of service criteria for roundabout intersections is the same as for unsignalized intersections, as presented in Table 2.

Roadway and Freeway Segments

Operations of the roadway and freeway segments were evaluated by comparing roadway segment volumes to capacities to develop volume-to-capacity (V/C) ratios. Peak-hour V/C ratios are used for the existing and Near-Term analysis and daily V/Cs are used for the Cumulative analysis. The capacity of each segment was based on the type of facility (freeway, expressway, arterial, or collector), number of lanes, type of traffic control at the downstream intersection, and maximum per-lane capacities from the Modesto *General Plan*. The *General Plan* defines the classes of arterials and collectors as major or minor according to number of travel lanes, design speed, and right-of-way width. Roadway segment capacities remain constant within classes for each roadway facility and do not take into consideration the added capacity of turning lanes at intersections. The hourly and daily per-lane capacities for each roadway type are presented in Table 3. LOS criteria are shown in Table 4.

TABLE 3
PER-LANE ROADWAY SEGMENT CAPACITIES

Type of Roadway Segment	Hourly Capacity (vplph[1])	Daily Capacity (vplpd[2])
Freeway Mainline	2,000	25,000
Expressway (Class A)	1,500	18,750
Expressway (Class B)	1,250	15,625
Expressway (Class C)	1,000	12,500
Arterial (Signalized)	750	9,375
Arterial (Unsignalized)	1,000	12,500
Collector (Signalized)	500	6,250
Collector (Unsignalized)	750	9,375
Rural Road	900	11,250

1. Vehicles per lane per hour.
2. Vehicles per lane per day. Peak hour capacity assumed to be 8 percent of daily capacity.

Source: City of Modesto *General Plan*.

Freeway Interchange Merge/Diverge

The location where a freeway mainline and on-ramp or off-ramp intersect is called a ramp junction. A ramp junction is an area where vehicles compete for space as they either merge onto the freeway from an on-ramp or diverge from the freeway to an off-ramp. In merge areas, upstream traffic competes with vehicles entering the freeway from the on-ramp, and in diverge areas exiting vehicles compete with vehicles continuing on the freeway in the outside lane, as exiting vehicles decelerating on the mainline can impede through traffic. For the merge and diverge areas, LOS was calculated using the method from Chapter 25 of the 2000 *Highway Capacity Manual*. This method considers peak hour traffic volumes, free-flow speeds, percentage of heavy vehicles, and the number of travel lanes as well as the interaction between the merge and diverge areas and the freeway mainline. These factors are used to correlate the LOS ratings to computed vehicle densities (passenger cars per mile per lane). Table 5 summarizes the relationship between vehicle density and LOS for freeway ramp junctions.

TABLE 4
ROADWAY SEGMENT LOS CRITERIA

Level of Service	Volume/Capacity Ratio[1]
A	≤ 0.60
B	> 0.60 to 0.70
C	> 0.70 to 0.80
D	> 0.80 to 0.90
E	> 0.90 to 1.00
F	> 1.00

1. Capacities are identified for each facility based on the classification.
Source: City of Modesto *General Plan.*

TABLE 5
FREEWAY RAMP MERGE/DIVERGE LOS CRITERIA

Level of Service	Density[1]
A	≤ 10
B	10.1 to 20.0
C	20.1 to 28.0
D	28.1 to 35.0
E	> 35.1
F	Demand Exceeds Capacity

Note: 1. Density is presented in passenger cars per mile per lane (pc/mi/ln).
Source: *Highway Capacity Manual*, Transportation Research Board, 2000

SIGNIFICANT IMPACT CRITERIA

Existing Project impacts were evaluated by comparing the results of Scenario 2 to 1, Near-Term Project impacts were evaluated by comparing the results of Scenario 4 to Scenario 3, and Cumulative Project impacts were evaluated by comparing the results of Scenario 6 to Scenario 5. Standards of significance were selected based on criteria used by the City of Modesto and accepted professional practice for transportation planning and engineering.

Roadway System

Traffic impacts would be considered significant if the Project would result in any of the following:

- Deterioration of a signalized intersection from LOS D (or better) to LOS E or LOS F, ***or*** a deterioration from LOS E to LOS F, ***or*** an increase in the service volume of any approach by 5 percent or more for a signalized intersection operating at LOS E or LOS F under Baseline (No Project) conditions, ***or*** an increase in average delay of 5 or more seconds for a signalized intersection operating at LOS E or LOS F under Baseline (No Project) conditions.
- Deterioration of a controlled movement at an unsignalized intersection from LOS E or better to LOS F, or at intersections where a controlled movement already operates at LOS F, one of the following:

    1. Project traffic results in satisfaction at the peak hour volume traffic signal warrant;
    2. Project traffic increases minor movement delay by more than 30 seconds; or
    3. Where the peak hour volume signal warrant is met without the Project traffic and delay cannot be measured, Project increases traffic by 10 or more vehicles per lane on the controlled approach.

- Deterioration of a roadway segment from LOS D or better to LOS E or LOS F, ***or*** a deterioration from LOS E to LOS F, ***or*** an increase in the V/C ratio of 0.05 or more for a segment operating at LOS E or LOS F under Baseline conditions.
- Deterioration of the V/C ratio of a roundabout approach from 0.85 or better to greater than 0.85 ***or*** an increase in the V/C ratio of 0.05 or more for a roundabout approach operating with a V/C ratio greater than 0.85 under Baseline conditions.

The level of service standard for intersections and roadways within Stanislaus County is LOS C. For those locations within the sphere of influence of a City that has adopted a lower level of service standard, the City standard shall apply (Policy 2, Implementation Measure 1, p. 2-28). The following are the study roadway locations located in the County beyond the existing City of Modesto's Sphere of Influence:

Study Intersections:

1. Kiernan Avenue/Salida Boulevard
2. Kiernan Avenue/SR 99 Southbound Ramps
3. Kiernan Avenue/SR 99 Northbound Ramps
4. Kiernan Avenue/Sisk Road

5. Kiernan Avenue/Stoddard Road

Study Roadway Segments:

1. Kiernan Avenue between Salida Boulevard and west of Dale Road

Impacts at these locations are evaluated against County LOS standards.

Caltrans Facilities

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities (*Guide for the Preparation of Traffic Studies*, Caltrans, December 2002), however, Caltrans recognizes that achieving LOS C/LOS D may not always be feasible. Consistent with the City of Modesto level of service policy for roadways, a standard of LOS D or better on a peak hour basis was used as the planning objective for the evaluation of potential freeway impacts for this development. The following criteria were used to evaluate potential freeway impacts:

- If a Caltrans facility (freeway mainline, ramp merge/diverge) is projected to operate acceptably (i.e., LOS D or better) without project and the project is expected to cause the facility to operate at an unacceptable service level (i.e., LOS E or F), the impact is considered significant.

- If a Caltrans facility is projected to operate unacceptably (i.e., LOS E or F) without the project and the project is expected to increase the mainline V/C ratio by 0.05 or more or increase ramp merge/diverge area traffic volumes by 5 percent or more, the impact is considered significant.

Transit System

Transit considerations were evaluated against the following criteria:

- The Project or any Project-related mitigation measure disrupts existing transit services or facilities. This includes disruptions caused by proposed Project driveways on transit streets, impacts to transit stops/shelters, and impacts to transit operations from traffic improvements proposed or resulting from the Project.
- The Project interferes with planned transit services or facilities.
- The Project creates demand for public transit services above that which is provided or planned.
- The Project conflicts or creates inconsistencies with adopted transit system plans, guidelines, policies or standards.

Bicycle System

Bicycle considerations were evaluated against the following criteria:

- The Project disrupts existing bicycle facilities.
- The Project interferes with planned bicycle facilities. This includes failure to dedicate right-of-way for planned on- and off-street bicycle facilities included in an adopted Bicycle Master Plan.
- The Project conflicts or creates inconsistencies with adopted bicycle system plans, guidelines, policies or standards.

Pedestrian System

Pedestrian considerations were evaluated against the following criteria:

- The Project disrupts existing pedestrian facilities. This can include adding new vehicular, pedestrian or bicycle traffic to an area experiencing pedestrian safety concerns such as an adjacent crosswalk or school.
- The Project interferes with planned pedestrian facilities.
- The Project conflicts or creates inconsistencies with adopted pedestrian system plans, guidelines, policies or standards.

Site Access, Internal Circulation, and Parking

Site access, internal circulation, and parking considerations were evaluated against the following criteria:

- Designs for on-site circulation, access and parking areas that fail to meet industry standard design guidelines.
- An insufficient quantity of on-site parking for vehicles for typical parking demand.
- Increases in off-site parking demand above that which is provided in the immediate Project area.
- Lack of, inaccessible, and/or unsafe pedestrian connections between buildings and adjacent streets and transit facilities.
- Lack of or an insufficient ingress left-turn lane length at a driveway, causing the ingress left-turn vehicle queue to spill out onto the streets adjacent through travel lane.
- Lack of or an insufficient ingress right-turn lane length at a driveway, causing the ingress vehicle queue to spill out onto the streets adjacent through travel lane.

REPORT ORGANIZATION

This report is divided into nine chapters as described below:

- ***Chapter 1 – Introduction*** discusses the study purpose, analysis scenarios, analysis locations and methods, significance criteria, and report organization.
- ***Chapter 2 – Existing Conditions*** describes existing transportation facilities, operations and services in the Project vicinity, including the surrounding roadway network; transit, pedestrian, and bicycle facilities; weekday morning (AM) and evening (PM) peak hour vehicle traffic volumes; and existing peak hour intersection, roadway segment and ramp merge/diverge levels of service.
- ***Chapter 3 – Project Traffic*** presents Project information, including descriptions of the Project components and Project trip generation, distribution, and assignment.
- ***Chapter 4 – Traffic Forecasts*** describes the method used to determine baseline traffic volumes for the Near-Term and Cumulative scenarios.
- ***Chapter 5 – Project Conditions*** addresses conditions with the addition of Project traffic.

- ***Chapter 6 – Vehicular Site Access, Circulation, and Parking*** describes Project access and circulation considerations for vehicles, and discusses parking requirements for the proposed Project.
- ***Chapter 7 – Alternative Mode Site Access and Circulation*** describes Project access and circulation considerations for pedestrians, bicyclists and transit.
- ***Chapter 8 – Project Impacts and Mitigation*** identifies the significant Project impacts and mitigation measures.
- ***Chapter 9 – Project Alternatives*** evaluates alternatives to the proposed Project.

2. EXISTING CONDITIONS

This chapter describes the existing transportation conditions in the Project study area, including the roadway network and transit, pedestrian, and bicycle facilities in the vicinity of the Project site.

STUDY AREA ROADWAYS

Regional access to the project site is provided by State Route 99 (SR 99), while local access is provided via Kiernan Avenue (SR 219), Pelandale Avenue, Dale Road, and Bangs Avenue. Many of these local roadways are not yet built-out to their ultimate widths and are being widened incrementally as adjacent properties develop and in response to increasing traffic volumes. These roadways, and others in the vicinity of the project site, are described below.

SR 99 is a six-lane, north-south freeway located to the west of the project site. This freeway extends throughout the length of the San Joaquin Valley and is a major goods movement corridor. Interchanges at Kiernan Avenue, Pelandale Avenue, and Standiford Avenue provide access to the site. The speed limit on SR 99 is 65 miles per hour (mph).

Kiernan Avenue (SR 219) is an east-west state highway that extends from west of SR 99 to McHenry Avenue, where it becomes Claribel Avenue. Near the site, Kiernan Avenue is currently a two-lane rural road. Caltrans will begin upgrading the road to a four-lane expressway in summer 2008. However, with numerous existing side streets and driveways, Kiernan Avenue to the west of Stoddard Road will be unable to function as an expressway.

Pelandale Avenue is an east-west arterial/expressway that extends from SR 99 to McHenry Avenue, where it becomes Claratina Avenue. It varies in width from two to six lanes, and is being widened as adjacent development occurs. The speed limit on Pelandale Avenue is 50 mph east of Dale Road, and 45 mph west of Dale Road.

Dale Road is a north-south minor arterial providing direct access to the project site. It extends from Ladd Road to Standiford Avenue. Dale Road provides one to three travel lanes per direction, and is being widened as adjacent development occurs. The speed limit is 40 mph north of Veneman Avenue, and 35 mph south of Veneman Avenue.

Bangs Avenue is a two-lane collector that extends from Dale Road to east of McHenry Avenue. The speed limit on Bangs Avenue is 45 mph. The City of Modesto *General Plan* designates it as a four-lane major collector from Dale Road to McHenry Avenue.

Standiford Avenue is a four-lane, east-west principal arterial that extends from west of SR 99 to east of McHenry Avenue, where it becomes Sylvan Avenue. The posted speed limit on Standiford Avenue is 40 mph east of Prescott Road, and 45 mph west of Prescott Road.

Salida Boulevard is a four-lane, north-south minor arterial that extends from Kiernan Avenue to south of Pelandale Avenue and serves as a frontage road on the west side of SR 99. The speed limit on Salida Boulevard is 40 mph.

Prescott Road is a four-lane, north-south minor arterial that extends from Bangs Avenue to the south of Standiford Avenue with a speed limit of 40 mph.

Carver Road is a north-south minor collector that extends from north of Bangs Avenue to south of Standiford Avenue. The speed limit on Carver Road is 35 mph south of Pelandale Avenue, and 40 mph north of Pelandale Avenue.

Tully Road is a north-south minor arterial that extends from north of Kiernan Avenue to south of Standiford Avenue. This roadway varies in width from two to four lanes, with a speed limit of 45 mph in the vicinity of the project site.

American Avenue is a north-south minor collector that currently extends from Pelandale Avenue to Bangs Avenue. Only northbound traffic is currently permitted on this roadway.

EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

Weekday morning (7:00 to 9:00 AM) and evening (4:00 to 6:00 PM) peak period intersection turning movement counts were conducted at the study intersections on clear days with area schools in normal session. The existing traffic counts are provided in Appendix A. For each intersection, the single hour with the highest traffic volumes during the two count periods was identified. The AM peak hour generally occurs between 7:30 and 8:30 AM and PM peak hour generally occurs between 5:00 and 6:00 PM. The peak hour volumes are presented on Figure 3. The peak hour data is used as the basis for intersection and roadway segment operations analysis. Existing intersection lane configurations and traffic control devices are shown on Figure 4.

Peak period traffic counts were conducted for the mainline (SR 99) at the Pelandale Avenue overcrossing on Thursday, November 2, 2006. No accidents or major construction was observed that would affect the traffic counts. The traffic counts are presented in Appendix A. Traffic volumes at other mainline locations were estimated by adding on-ramp volumes and subtracting off-ramp volumes.

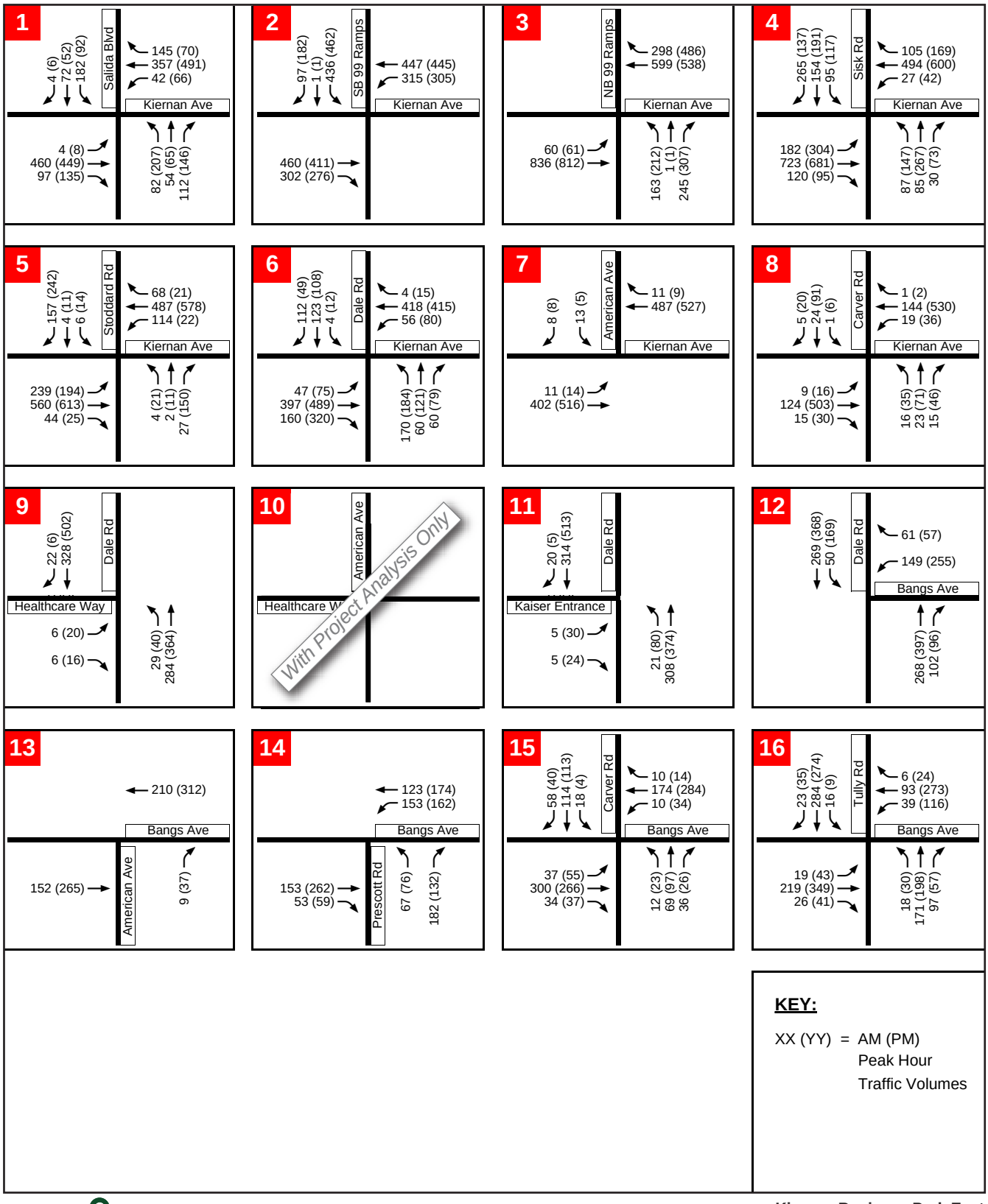
Truck traffic on SR 99 was estimated from the 2005 Annual Average Daily Truck Traffic (AADTT) on the California State Highway System prepared by Caltrans. These counts indicate that heavy vehicles make up about 14 percent of the traffic on SR 99 on a daily basis.

TRANSIT SERVICE

Bus service in Modesto is provided by Modesto Area Express (MAX) and Stanislaus Regional Transit (StaRT).

Modesto Area Express (MAX)

Currently, MAX does not provide service to the Project site, although two routes serve the Pelandale Avenue/Dale Road intersection: Routes 28 and 31. These routes connect to Downtown Modesto and the Vintage Faire Mall, where transfer facilities are provided. MAX also provides direct service to the Dublin/Pleasanton Bay Area Rapid Transit (BART) and Lathrop/Manteca Altamont Commuter Express (ACE) stations. Bike racks are available on all MAX routes except on the BART express route.



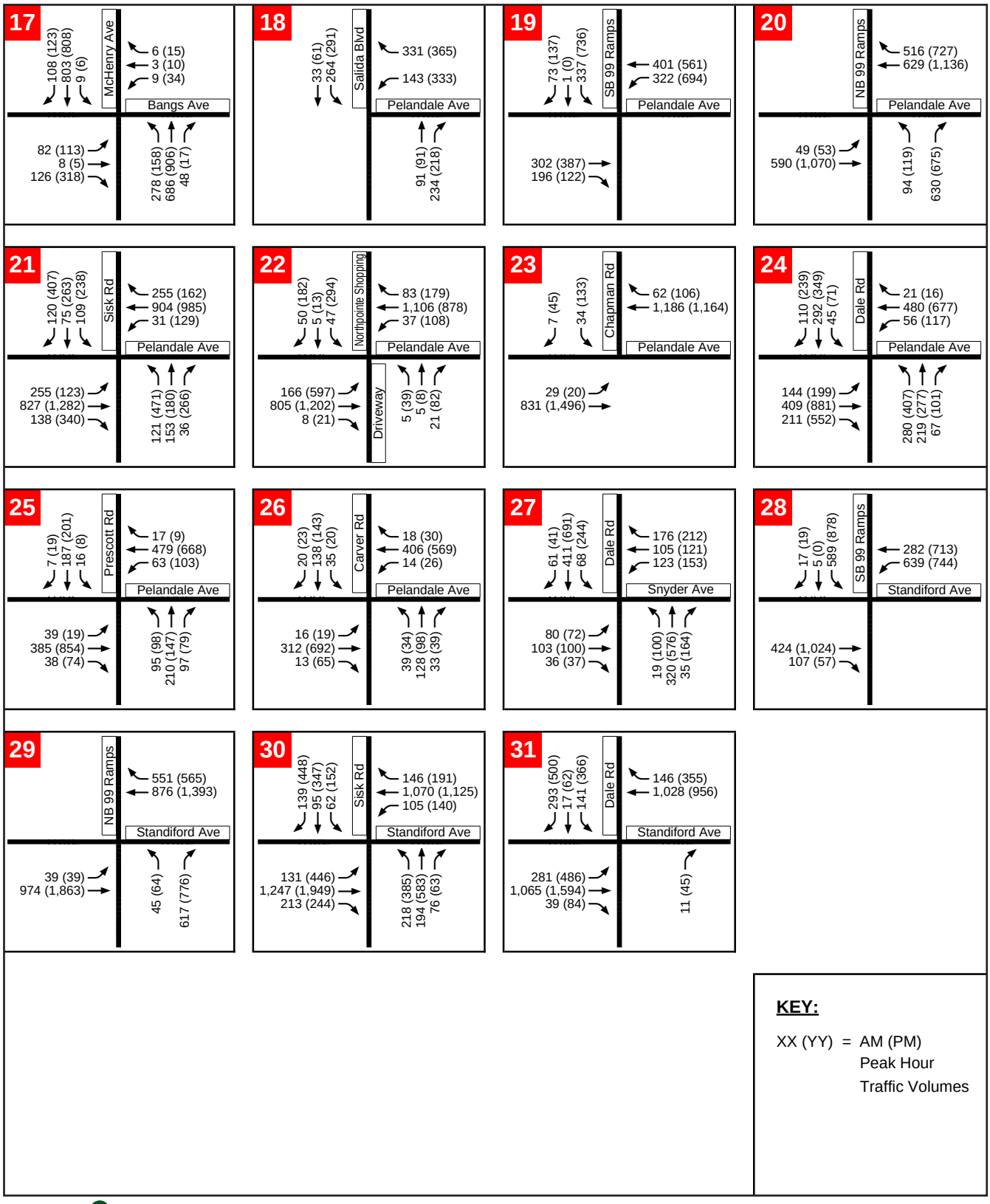
Kiernan Business Park East

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EXISTING CONDITIONS
PEAK HOUR INTERSECTION VOLUMES

May 2008
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Figure 3A



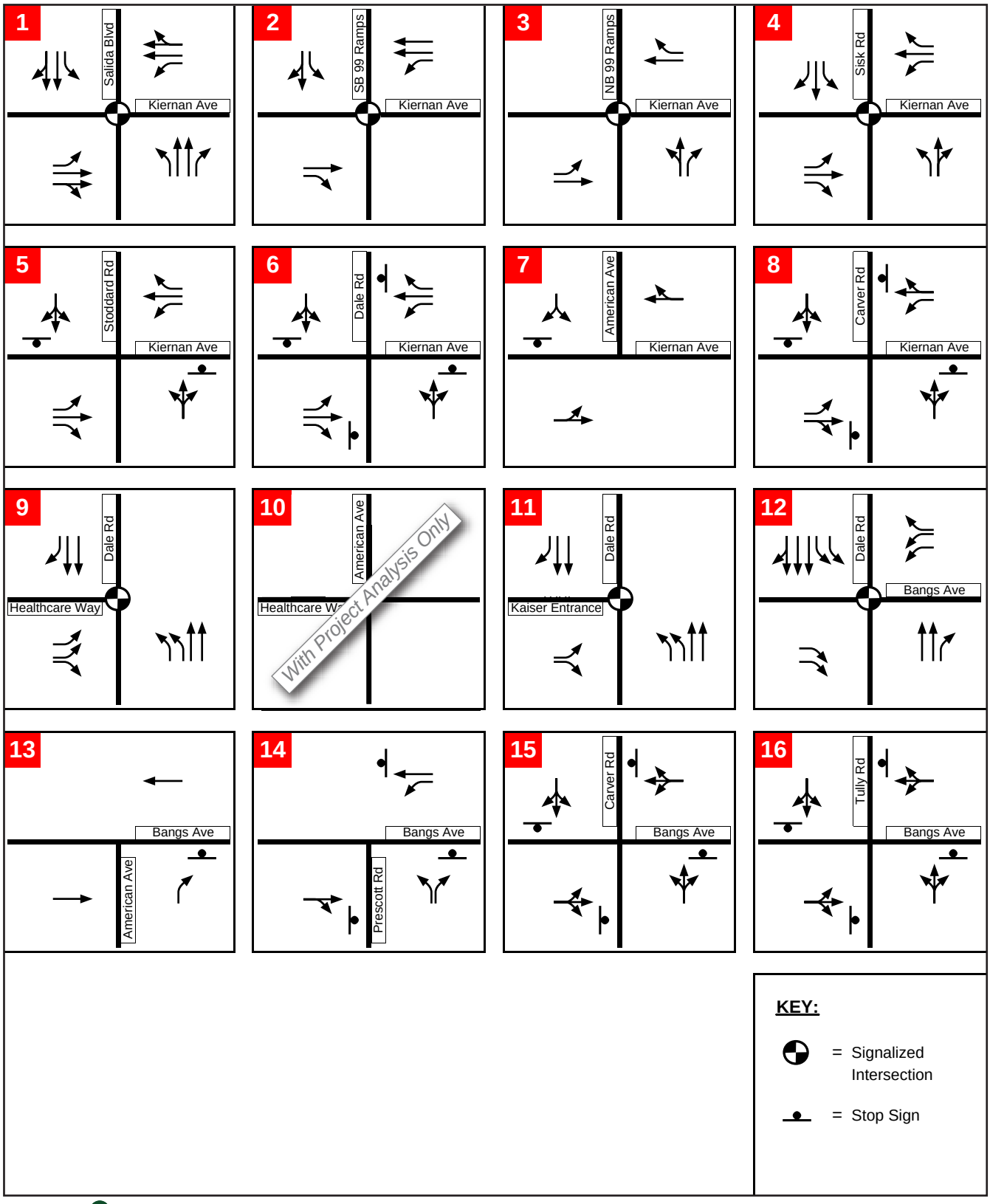
Kiernan Business Park East

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EXISTING CONDITIONS
PEAK HOUR INTERSECTION VOLUMES

May 2008
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Figure 3B



Kiernan Business Park East

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EXISTING CONDITIONS
LANE CONFIGURATIONS AND TRAFFIC CONTROL

May 2008
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Figure 4A



Kiernan Business Park East

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EXISTING CONDITIONS
LANE CONFIGURATIONS AND TRAFFIC CONTROL

May 2008
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Figure 4B

Route 28 is a two-loop route that connects the study area with Salida with timed stops near the project site at Kiernan Avenue/Dale Road. The Kiernan loop traverses Kiernan Avenue, Dale Road and Sisk Road in a clockwise pattern. The Salida-Pelandale loop traverses Pelandale Road, Dale Road, and Sisk Road in a clockwise pattern. Service is provided Monday through Saturday with 60-minute headways on each loop from 7:00 AM to 7:00 PM.

Route 31 connects the Vintage Faire Mall and Downtown via Pelandale Avenue, Tully Road, and 9th Street Monday through Saturday and via Standiford Avenue, Tully Road, and 9th Street on Sundays. Within the study area a timed stop is located at the Dale Road/Pelandale Avenue intersection. Monday through Saturday service is provided from 6:00 AM through 8:00 PM with 30-minute headways. Saturday service is provided from 8:00 AM through 7:20 PM with 60-minute headways. Sunday service is provided from 9:45 AM to 5:40 PM with 60-minute headways.

Modesto ACE Shuttle transfers passengers from Modesto (at Vintage Faire Mall Park-and-Ride lot) to the Lathrop/Manteca ACE train station. ACE provides passenger rail service between San Joaquin Valley and Santa Clara Valley. The shuttle offers three morning trips to the ACE station, and three evening return trips. The shuttle times are coordinated with the three AM and three PM ACE scheduled trains. This is a weekday-only service.

Modesto BART Express connects Modesto to the Dublin/Pleasanton BART station with two pick-up/drop-off locations: at the Modesto Downtown Transportation Center and at the Orchard Supply Hardware on Sisk Road, just south of West Rumble Road. BART provides commuter rail service to San Francisco (including the San Francisco International Airport), Millbrae, Fremont, Richmond, and Pittsburg/Bay Point. There are two morning trips in each direction (to and from the BART station), and two evening trips in each direction.

Stanislaus Regional Transit (StaRT)

StaRT provides regional transit service throughout Stanislaus County.

Route 60 connects Modesto to Oakdale, and Riverbank. Weekday and Saturday service is provided to Downtown Modesto, with Saturday service to the Vintage Faire Mall. Service to the Project area is only provided on Saturdays.

StaRT also operates runabouts, a transit service that combines fixed-route service (with fixed stops) and dial-a-ride service (with curb-to-curb service). Passengers can use this service between the fixed stops without making prior arrangements. Advance reservations must be made for curbside service. The Turlock/Modesto, Waterford/Modesto, and Eastside runabouts operate on Pelandale Avenue near the site.

Dial-A-Ride (DAR)

The city of Modesto also provides dial-a-ride service to the general public with fares comparable to a standard bus ride. Only the disabled and seniors are served from 4:45 AM to 6:00 PM Monday through Friday and 8:00 AM to 7:00 PM on Saturdays; the general public (including the disabled and seniors) is served 6:00 PM through 11:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Sundays.

PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian facilities include sidewalks, crosswalks, and pedestrian signals. Sidewalks are being constructed on the west side of Dale Road, as part of the improvements being installed with construction of the Kaiser

Medical Center. Sidewalks are generally provided in developed areas in Modesto and are being added in undeveloped areas as the adjacent parcels develop. Crosswalks and pedestrian signals are provided at the signalized study intersections in the area.

Bicycle facilities include the following:

- Bike paths (Class I) – Paved trails that are separated from roadways.
- Bike lanes (Class II) – Lanes on roadways designated for use by bicycles through striping, pavement legends, and signs.
- Bike routes (Class III) – Designated roadways for bicycle use by signs only; may or may not include additional pavement width for cyclists.

Class II bike lanes are provided on Standiford Avenue from Dale Road to McHenry Avenue. East of McHenry Avenue, Standiford Avenue continues as Sylvan Avenue. Bicycle lanes are provided on Sylvan Avenue from McHenry Avenue to Palmwood Avenue, west of Oakdale Road. Bicycle lanes are also provided on Prescott Road south of Standiford Avenue, and on Tully Road south of Pelandale Avenue.

EXISTING INTERSECTION LEVELS OF SERVICE

Existing operations were evaluated for the weekday AM and PM peak hours at the existing study intersections. The existing traffic volumes were used with the existing lane configurations and signal phasings/timings as inputs into the LOS calculations. Table 6 summarizes the results. Detailed intersection LOS calculation worksheets are presented in Appendix B.

Two delay values are reported for each unsignalized intersection: (1) the highest controlled movement delay, and (2) the intersection average delay. LOS D is the limit of acceptable operations in the City of Modesto. LOS C is the limit of acceptable operations in Stanislaus County.

Field observations and the level of service results indicate that most intersections operate acceptably during the weekday AM and PM peak hours, with a few exceptions. During the AM peak hour, three intersections operate unacceptably: the Kiernan Avenue/SR 99 Southbound Ramp intersection, located in the County, operates at LOS D, the Kiernan Avenue/Dale Road intersection operates at LOS F, and while the overall Kiernan Avenue/Stoddard Road intersection operates at an LOS A in the AM peak hour, the side-street stop movement experiences LOS F conditions.

During the PM peak hour the following intersections operate at an overall LOS E or F (or D, E, or F for locations in the County):

- Kiernan Avenue/SR 99 Southbound Ramps (LOS D)
- Kiernan Avenue/Sisk Road (LOS D)
- Kiernan Avenue/Stoddard Road (LOS F)
- Kiernan Avenue/Dale Road (LOS F)
- Kiernan Avenue/Carver Road (LOS F)
- Bangs Avenue/Tully Road (LOS F)
- Pelandale Avenue/SR 99 Southbound Ramp (LOS F)
- Pelandale Avenue/Sisk Road (LOS E)
- Standiford Avenue/SR 99 Southbound Ramps (LOS F)

TABLE 6
EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control[1]	Peak Hour	Delay[3] (seconds)	LOS[3]
1. Kiernan Avenue/Salida Boulevard	Traffic Signal	AM PM	26 17	C B
2. Kiernan Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	**48** **45**	**D** **D**
3. Kiernan Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	15 19	B B
4. Kiernan Avenue/Sisk Road	Traffic Signal	AM PM	24 **41**	C **D**
5. Kiernan Avenue/Stoddard Road	Side-Street Stop	AM PM	7 **(69)** **128 (> 50)**	A **(F)** **F (F)**
6. Kiernan Avenue/Dale Road	All-way Stop	AM PM	**55** **83**	**F** **F**
7. Kiernan Avenue/American Avenue	Side-Street Stop	AM PM	1 (18) 1 (18)	A (C) A (C)
8. Kiernan Avenue/Carver Road	All-way Stop	AM PM	8 **60**	A **F**
9. Dale Road/Healthcare Way	Traffic Signal	AM PM	4 7	A A
10. Healthcare Way/American Avenue	Roundabout	AM PM	-- --	-- --
11. Dale Road/Kaiser Main Entrance	Traffic Signal	AM PM	5 8	A A
12. Bangs Avenue/Dale Road	Signal	AM PM	8 10	A A
13. Bangs Avenue/American Avenue	Side-Street Stop	AM PM	0 (9) 1 (11)	A (A) A (B)
14. Bangs Avenue/Prescott Road	All-way Stop	AM PM	10 12	A B
15. Bangs Avenue/Carver Road	All-way Stop	AM PM	13 16	B C
16. Bangs Avenue/Tully Road	All-way Stop	AM PM	15 **69**	B **F**
17. Bangs Avenue/McHenry Avenue	Traffic Signal	AM PM	21 19	C B
18. Pelandale Avenue/Salida Boulevard	Traffic Signal	AM PM	24 18	C B
19. Pelandale Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	29 **90**	C **F**
20. Pelandale Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	19 15	B B
21. Pelandale Avenue/Sisk Road	Traffic Signal	AM PM	26 **72**	C **E**
22. Pelandale Avenue/Northpointe Shopping Center	Traffic Signal	AM PM	10 30	A C
23. Pelandale Avenue/Chapman Road	Traffic Signal	AM PM	5 8	A A
24. Pelandale Avenue/Dale Road	Traffic Signal	AM PM	22 31	C C

TABLE 6
EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control[1]	Peak Hour	Delay[3] (seconds)	LOS[3]
25. Pelandale Avenue/Prescott Road	Traffic Signal	AM PM	17 21	B C
26. Pelandale Avenue/Carver Road	Traffic Signal	AM PM	16 16	B B
27. Dale Road/Snyder Avenue	Traffic Signal	AM PM	18 22	B C
28. Standiford Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	40 **187**	D **F**
29. Standiford Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	19 34	B C
30. Standiford Avenue/Sisk Road	Traffic Signal	AM PM	26 46	C D
31. Dale Road/Standiford Avenue	Traffic Signal	AM PM	21 28	C C

1. Traffic signals or stop signs.
2. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement)
3. Intersections operating at unacceptable levels (LOS E or LOS F) are shown in **bold**.

Source: Fehr & Peers, 2008.

Traffic Signal Warrants

To assess the need for signalization of stop-controlled intersections, the *Manual of Uniform Traffic Control* Federal Highway Administration 2000 presents eight signal warrants. The Peak Hour Volume Warrant (Warrant 3) is used in this study as a supplemental analysis tool to assess operations at unsignalized intersections.[2] The results of the traffic signal warrant analysis indicate that the peak hour volume traffic signal warrant is currently satisfied at the following unsignalized intersections:

- Kiernan Avenue/Stoddard Road
- Kiernan Avenue/Dale Road

Detailed signal warrant calculations are provided in Appendix C.

EXISTING FREEWAY AND ROADWAY SEGMENT LEVELS OF SERVICE

Freeway and roadway segment V/C ratios were calculated based on existing traffic volumes and segment capacities presented in Table 3. These capacities are conservative as they are based on the number of lanes

[2] Unsignalized intersection warrant analysis is intended to examine the general correlation between existing conditions and the need to install new traffic signals. Existing peak-hour volumes are compared against a subset of the standard traffic signal warrants recommended in the *Manual of Uniform Traffic Control* (MUTCD), Federal Highway Administration 2000 and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

on the mainline segments and do not necessarily consider added turn lanes (and their added capacity) at the intersections. The existing V/C ratios and corresponding LOSs are shown in Table 7. Detailed calculation worksheets are provided in Appendix D.

Most of the roadway segments have a capacity to accommodate additional vehicles. Many of the segments with oversaturated conditions (i.e., LOS E or LOS F) occur near SR 99. These roadways include:

Weekday AM Peak Hour

- Eastbound Kiernan Avenue between SR 99 Southbound Ramps and Stoddard Road
- Westbound Kiernan Avenue between Sisk Road and SR 99 Northbound Ramps

Weekday PM Peak Hour

- Eastbound Kiernan Avenue between SR 99 Southbound Ramps and Dale Road
- Westbound Kiernan Avenue between Stoddard Road and SR 99 Northbound Ramps
- Westbound Pelandale Avenue between Sisk Road and SR 99 Northbound Ramps
- Eastbound Pelandale Avenue between Dale Road and Tully Road
- Westbound Pelandale Avenue between Carver Road and Dale Avenue

EXISTING FREEWAY RAMP LEVELS OF SERVICE

Existing freeway ramp volumes, freeway mainline volumes, free-flow speeds, and merging/diverging lengths, were used as inputs to calculate existing service levels for the freeway ramps at the merge/diverge areas with SR 99. The ramp merging and diverging analysis results are presented in Table 8. The following merge/diverge areas operate at an unacceptable LOS E or F:

- Kiernan Avenue Northbound Off-ramp Diverge (AM and PM peak hours)
- Pelandale Avenue Southbound Off-ramp Diverge (AM and PM peak hours)
- Standiford Avenue Southbound Off-ramp Diverge (PM peak hour)

The remaining merge/diverge areas at the Kiernan Avenue, Pelandale Avenue, and Standiford Avenue interchanges currently operate at acceptable service levels (LOS C or LOS D) during the weekday AM and PM peak hours. The existing freeway ramp LOS calculations are provided in Appendix E.

TABLE 7
EXISTING ROADWAY SEGMENT LEVEL OF SERVICE

Roadway Segment	Facility Type	# Lanes	Per Lane Capacity[1]	Direction	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Volume	V/C	LOS	Volume	V/C	LOS
SR 99 Hammett Road to Kiernan Avenue	FWY	3	2,000	SB	4,293	0.72	C	5,038	0.84	D
		3	2,000	NB	4,521	0.75	C	4,381	0.73	C
SR 99 Kiernan Avenue to Pelandale Avenue	FWY	3	2,000	SB	4,377	0.73	C	4,975	0.83	D
		3	2,000	NB	4,571	0.76	C	4,353	0.73	C
SR 99 Pelandale Avenue to Standiford Avenue	FWY	3	2,000	SB	4,485	0.75	C	4,918	0.82	D
		3	2,000	NB	4,730	0.79	C	4,367	0.73	C
SR 99 Standiford Avenue to Briggsmore Avenue	FWY	3	2,000	SB	4,625	0.77	C	4,822	0.80	C
		3	2,000	NB	4,802	0.80	C	4,603	0.77	C
Kiernan Avenue Salida Boulevard to SR 99 SB Ramps	SA	2	750	EB	762	0.51	A	687	0.46	A
		2	750	WB	544	0.36	A	627	0.42	A
Kiernan Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	1	750	EB	**896**	**1.19**	**F**	**873**	**1.16**	**F**
		2	750	WB	762	0.51	A	750	0.50	A
Kiernan Avenue SR 99 NB Ramps to Sisk Road	SA	1	750	EB	**1,081**	**1.44**	**F**	**1,119**	**1.49**	**F**
		1	750	WB	**897**	**1.20**	**F**	**1,024**	**1.37**	**F**
Kiernan Avenue Sisk Road to Stoddard Road	RR	1	900	EB	**848**	**0.94**	**E**	**871**	**0.97**	**E**
		1	900	WB	648	0.72	C	**841**	**0.93**	**E**
Kiernan Avenue Stoddard Road to Dale Road	RR	1	900	EB	604	0.67	B	**884**	**0.98**	**E**
		1	900	WB	700	0.78	C	648	0.72	C
Kiernan Avenue Dale Road to American Avenue	RR	1	900	EB	461	0.51	A	580	0.64	B
		1	900	WB	495	0.55	A	535	0.59	A
Kiernan Avenue American Avenue to Carver Road	RR	1	900	EB	415	0.46	A	549	0.61	B
		1	900	WB	498	0.55	A	585	0.65	B
Kiernan Avenue Carver Road to McHenry Avenue	RR	1	900	EB	140	0.16	A	555	0.62	B
		1	900	WB	164	0.18	A	568	0.63	B

TABLE 7
EXISTING ROADWAY SEGMENT LEVEL OF SERVICE

Roadway Segment	Facility Type	# Lanes	Per Lane Capacity[1]	Direction	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Volume	V/C	LOS	Volume	V/C	LOS
Pelandale Avenue Salida Boulevard to SR 99 SB Ramps	SA	1	750	EB	498	0.66	B	509	0.68	B
		2	750	WB	474	0.32	A	698	0.47	A
Pelandale Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	2	750	EB	639	0.43	A	1,123	0.75	C
		2	750	WB	723	0.48	A	1,255	0.84	D
Pelandale Avenue SR 99 NB Ramps to Sisk Road	SA	3	750	EB	1,220	0.54	A	1,745	0.78	C
		2	750	WB	1,145	0.76	C	**1,863**	**1.24**	**F**
Pelandale Avenue Sisk Road to Northpointe Shopping Center	SA	3	750	EB	979	0.44	A	1,820	0.81	D
		2	750	WB	1,190	0.79	C	1,276	0.85	D
Pelandale Avenue Northpointe Shopping to Chapman Road	SA	3	750	EB	873	0.39	A	1,578	0.70	B
		3	750	WB	1,226	0.54	A	1,209	0.54	A
Pelandale Avenue Chapman Road to Dale Road	SA	3	750	EB	865	0.38	A	1,632	0.73	C
		3	750	WB	1,248	0.55	A	1,323	0.59	A
Pelandale Avenue Dale Road to American Avenue	SA	1	750	EB	521	0.69	B	**1,053**	**1.40**	**F**
		1	750	WB	557	0.74	C	**810**	**1.08**	**F**
Pelandale Avenue American Avenue to Prescott Road	SA	1	750	EB	462	0.62	B	**947**	**1.26**	**F**
		1	750	WB	581	0.77	C	**785**	**1.05**	**F**
Pelandale Avenue Prescott Road to Carver Road	SA	1	750	EB	498	0.66	B	**941**	**1.25**	**F**
		1	750	WB	559	0.75	C	**780**	**1.04**	**F**
Pelandale Avenue Carver Road to Tully Road	SA	1	750	EB	380	0.51	A	**751**	**1.00**	**E**
		1	750	WB	438	0.58	A	625	0.83	D
Bangs Avenue Dale Road to American Avenue	RR	1	900	EB	152	0.17	A	265	0.29	A
		1	900	WB	210	0.23	A	312	0.35	A
Bangs Avenue American Avenue to Prescott Road	RR	1	900	EB	206	0.23	A	321	0.36	A
		1	900	WB	210	0.23	A	312	0.35	A
Bangs Avenue Prescott Road to Carver Road	RR	1	900	EB	371	0.41	A	394	0.44	A
		1	900	WB	276	0.31	A	347	0.39	A

TABLE 7
EXISTING ROADWAY SEGMENT LEVEL OF SERVICE

Roadway Segment	Facility Type	# Lanes	Per Lane Capacity[1]	Direction	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Volume	V/C	LOS	Volume	V/C	LOS
Bangs Avenue Carver Road to Tully Road	RR	1	900	EB	354	0.39	A	433	0.48	A
		1	900	WB	194	0.22	A	338	0.38	A
Bangs Avenue Tully Road to McHenry Avenue	RR	1	900	EB	332	0.37	A	436	0.48	A
		1	900	WB	389	0.43	A	413	0.46	A
Dale Road Kiernan Avenue to Healthcare Way	SA	1	750	SB	350	0.47	A	508	0.68	B
		1	750	NB	290	0.39	A	384	0.51	A
Dale Road Healthcare Way to The Plaza Way	SA	2	750	SB	334	0.22	A	518	0.35	A
		2	750	NB	313	0.21	A	404	0.27	A
Dale Road The Plaza Way to Bangs Avenue	SA	3	750	SB	319	0.14	A	537	0.24	A
		2	750	NB	329	0.22	A	454	0.30	A
Dale Road Bangs Avenue to Pelandale Avenue	SA	3	750	SB	447	0.20	A	659	0.29	A
		2	750	NB	384	0.26	A	493	0.33	A
Dale Road Pelandale Avenue to Snyder Avenue	SA	3	750	SB	559	0.25	A	1,018	0.45	A
		2	750	NB	576	0.38	A	860	0.57	A
Dale Road Snyder Avenue to Veneman Avenue	SA	2	750	SB	570	0.38	A	881	0.59	A
		2	750	NB	374	0.25	A	840	0.56	A
Dale Road Veneman Avenue to Standiford Avenue	SA	2	750	SB	451	0.30	A	928	0.62	B
		2	750	NB	427	0.28	A	841	0.56	A

Facility Types:
FWY = Freeway
SA = Signalized Arterial
RR = Rural Road
COL = Collector
EXP = Expressway

1. Capacity expressed in vehicles per lane per hour for mainline segments (not necessarily capacity at intersections).

Note: Roadway segments operating at unacceptable LOS E or LOS F levels are shown in **bold**.

Source: Fehr & Peers, 2008.

TABLE 8
EXISTING SR 99 RAMP MERGE/DIVERGE LEVELS OF SERVICE

Ramp Merge/Diverge	Peak Hour	Density (pc/mi/ln)[1]	LOS
Kiernan Avenue Southbound Off-ramp Diverge	AM PM	31 35	D D
Kiernan Avenue Southbound On-ramp Merge	AM PM	28 34	D D
Kiernan Avenue Northbound Off-ramp Diverge	AM PM	**36** **38**	**E** **E**
Kiernan Avenue Northbound On-ramp Merge	AM PM	27 27	C C
Pelandale Avenue Southbound Off-ramp Diverge	AM PM	**38** **41**	**E** **F**
Pelandale Avenue Southbound On-ramp Merge	AM PM	27 31	C D
Pelandale Avenue Northbound Off-ramp Diverge	AM PM	33 32	D D
Pelandale Avenue Northbound On-ramp Merge	AM PM	29 28	D D
Standiford Avenue Southbound Off-ramp Diverge	AM PM	32 **36**	D **E**
Standiford Avenue Southbound On-ramp Merge	AM PM	29 30	D D
Standiford Avenue Northbound Off-ramp Diverge	AM PM	34 33	D D
Standiford Avenue Northbound On-ramp Merge	AM PM	29 27	D C

Note: 1. Density is presented in passenger cars per mile per lane (pc/mi/ln).

Source: Fehr & Peers, 2008.

3. PROJECT TRAFFIC

This chapter describes the procedure used to develop Project traffic estimates, including Project trip generation, distribution, and assignment characteristics. The results are used to evaluate potential impacts the Project would have on the surrounding roadway network.

PROJECT DESCRIPTION

The Kiernan Business Park Specific Plan Area (KBPSPA), totaling 614 acres, is located in the city of Modesto bordered on the north by Kiernan Avenue, on the south by Pelandale Avenue, on the east by American Avenue, and on the west generally by Stoddard Avenue. Kiernan Business Park Specific Plan Amendment #4 Project (Project) is located on 153 acres within the KBPSPA, and is bounded by Dale Road on the west, Kiernan Avenue on the north, American Avenue on the east, and Bangs Avenue on the south. As currently proposed, the Project would contain 1,498,224 square feet of business park uses, 262 townhomes in the Medium-High Density Residential Area, and a mixed-use development. The mixed-use development would include 79,000 square feet of office uses, 371,000 square feet of retail uses, 175 hotel rooms and 80 apartment units.

PROJECT TRIP GENERATION

Project trip generation refers to the process for estimating the amount of vehicular traffic a project would add to the surrounding roadway system. First, estimates of the total amount of traffic projected to enter and exit each use are calculated for an average weekday. Separate estimates are created for the peak one-hour periods during the morning and evening commute periods when traffic volumes on the surrounding streets are highest. For projects that contain a mixture of uses, such as residential, retail, office, business park, and hotel, it is reasonable to expect that some trips would occur between uses and, therefore, remain internal to the site. Additionally, for retail uses, such as those contained within the proposed project, their traffic comprises: (1) new traffic generated by the project, (2) traffic that would otherwise already be on the adjacent roadways but the driver decides to stop at the site (e.g., to purchase an item on their way home from work), and (3) traffic on other nearby roadways, but the driver decides to take a short detour to stop at the site. The trips in Item 2 are referred to as "pass-by" trips and the trips in Item 3 are referred to as "diverted-link" trips.

Trip generation estimates for the project were developed by using trip generation rates contained in the Institute of Transportation Engineers (ITE), *Trip Generation,* (7^{th} Edition), as presented in Table 9. Information contained in the ITE *Trip Generation Handbook*, June 2004, was used to estimate internal, pass-by, and diverted-link trips. Using the procedures outlined in Chapter 7 of the *Trip Generation Handbook*, it is estimated that approximately 9 percent of overall project traffic would remain internal to the site on a daily basis. During the AM peak hour, 2 percent of the overall total would remain internal to the site, and approximately 8 percent of the overall total would remain internal to the site during the PM peak hour. Detailed internalization worksheets showing the trip interaction between the individual land uses is provided in Appendix E. For shopping centers, the average pass-by rate is 34 percent, and the average diverted-link trip rate is 16 percent. In other words, at a typical shopping center, approximately 50 percent of the traffic entering and exiting the site is already on the surrounding roadway system. Based on rates presented in *Trip Generation Handbook*, and in consultation with City staff, Fehr & Peers applied a 15 percent pass-by trip reduction to weekday daily traffic volumes and a 20 percent reduction to PM peak hour traffic volumes.

TABLE 9
PROJECT TRIP GENERATION

Land Use	Size	Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Business Park[1]	1,498,224 square feet	16,850	1,705	325	2,030	419	1,402	1,821
Mixed-Use								
General Office[2]	79,000 square feet	870	108	14	122	20	97	117
Regional Commercial[3]	360,000 square feet	15,610	226	145	371	700	758	1,458
Apartments[4]	80 dwelling units	540	8	33	41	24	26	50
Townhomes[5]	262 dwelling units	1,540	20	95	115	91	45	136
Restaurant[6]	11,000 square feet	1,400	66	61	127	73	47	120
Suites Hotel[7]	175 rooms	1,090	56	28	84	40	56	96
Sub-Total		*37,900*	*2,189*	*701*	*2,890*	*1,367*	*2,431*	*3,798*
Internal Capture %[8]		9.3%			2.4%			8.4%
Internal Trips		*(3,530)*	*(34)*	*(34)*	*(68)*	*(160)*	*(160)*	*(320)*
Driveway Volumes		*34,370*	*2,155*	*667*	*2,822*	*1,207*	*2,271*	*3,478*
Retail Pass-By Trips[9] (15%/0%/20%)		*(2,100)*				*(132)*	*(132)*	*(264)*
Restaurant Pass-By Trips[10] (40%/40%/40%)		*(500)*	*(24)*	*(24)*	*(48)*	*(22)*	*(22)*	*(44)*
Net New Proposed Project Trips		***31,770***	***2,131***	***643***	***2,774***	***1,053***	***2,117***	***3,170***

Note: All trip generation rates are from the ITE *Trip Generation* (7th Edition), where T = trip ends, X = 1,000 of square feet, DU = dwelling units, and R = rooms

1. Trip generation based on the average rate and fitted curve equation for Business Park (Land Use 770):
   Daily Rate: T = 10.75 * (X) + 747.41
   AM Rate: Ln (T) = 0.98 * Ln (X) + 0.45 (inbound = 84%, outbound = 16%)
   PM Rate: Ln (T) = 0.92 * Ln (X) + 0.78 (inbound = 23%, outbound = 77%)
2. Trip generation based on the average rate for Office (Land Use 710):
   Daily Rate: T = 11.01 * X
   AM Rate: T = 1.55 * X (inbound = 88%, outbound = 12%)
   PM Rate: T = 1.49 * X (inbound = 17%, outbound = 83%)
3. Trip generation based on the average rate and fitted curve equation for Shopping Center (Land Use 820):.
   Daily Rate: Ln (T) = 0.65 * Ln (X) + 5.83
   AM Rate: T = 1.03 * X (inbound = 61%, outbound = 39%)
   PM Rate: Ln (T) = 0.66 * Ln (X) + 3.40 (inbound = 48%, outbound = 52%)
4. Trip generation based on the average rate for Apartment (Land Use 220):
   Daily Rate: T = 6.72 * DU
   AM Rate: T = 0.51 * DU (inbound = 20%, outbound = 80%)
   PM Rate: T = 0.62 * DU (inbound = 48%, outbound = 52%)
5. Trip generation based on the average rate for Townhome (Land Use 230):
   Daily Rate: T = 5.86 * DU
   AM Rate: T = 0.44 * DU (inbound = 17%, outbound = 83%)
   PM Rate: T = 0.52 * DU (inbound = 67%, outbound = 33%)
6. Trip generation based on the average rate for High-Turnover (Sit-Down) Restaurant (Land Use 932):
   Daily Rate: T = 127.15 * (X)
   AM Rate: T = 11.52 * (X) (inbound = 52%, outbound = 48%)
   PM Rate: T = 10.92 * (X) (inbound = 61%, outbound = 39%)
7. Trip generation based on the average rate for All Suites Hotel (Land Use 311):
   Daily Rate: T = 6.24 * R
   AM Rate: T = 0.48 * R (inbound = 67%, outbound = 33%)
   PM Rate: T = 0.55 * R (inbound = 42%, outbound = 58%)

8. Internal Capture percentages based on the ITE Trip Generation Handbook (2nd Edition). Percent shown represents the overall internalization reduction applied for the peak hour. The attached worksheets show the individual reductions applied for each use, inbound and outbound.
9. Retail Pass-by reduction based on the ITE Trip Generation Handbook (2nd Edition) pass-by reduction for Shopping Center (Land Use 820); 15% daily, 0% AM peak hour, and 20% PM peak hour and applied to external trip generation only.
10. Restaurant Pass-by reduction based on the ITE Trip Generation Handbook (2nd Edition) pass-by reduction for High Turnover (Sit-Down) Restaurant (Land Use 923); 40% reduction applied to Daily, AM and PM peak hours and applied to external trip generation only.

Source: ITE and Fehr & Peers, 2008.

For high-turnover (sit-down) restaurants, the average pass-by rate in ITE's *Trip Generation Handbook* is 43 percent. Fehr & Peers applied a 40 percent reduction to the daily, AM and PM peak hour traffic volumes. No reductions for diverted-linked trips are included in the analysis as they would be new trips to the study area immediately surrounding the project site.

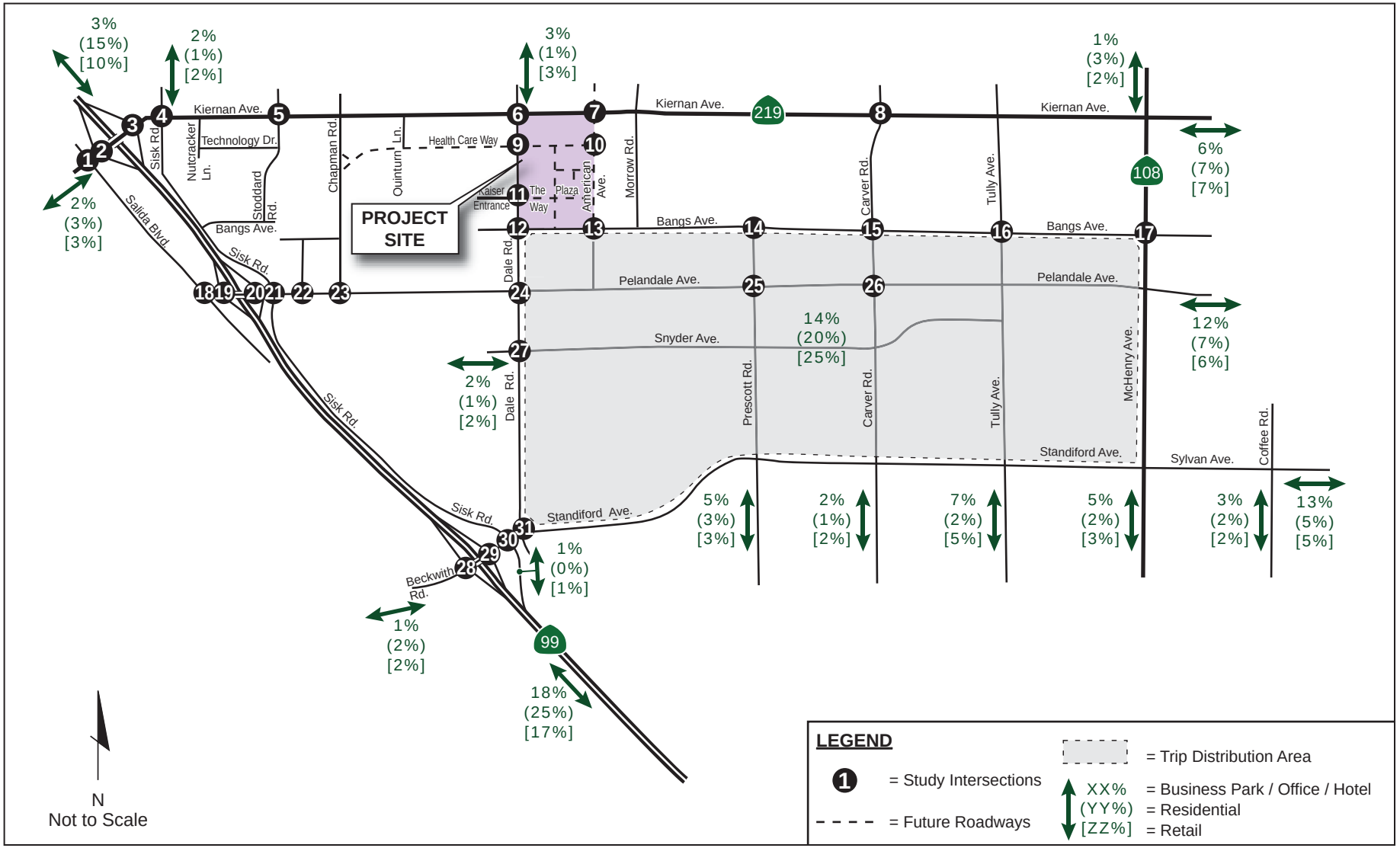
As shown in Table 9, the Project is estimated to generate approximately 37,900 weekday daily trips, including 2,890 AM peak hour trips and 3,798 PM peak hour trips. Approximately 9.3 percent of trips, or 3,530 trips, are expected to remain internal to the development on a daily basis, with 2.4 percent (68 trips) remaining internal during the AM peak hour and 8.4 percent (320 trips) remaining internal during the PM peak hour. After accounting for the retail and restaurant pass-by trips, the KPBE is expected to generate 31,770 net-new daily vehicle trips, 2,774 net-new AM peak hour trips, and 3,170 net-new PM peak hour trips.

TRIP DISTRIBUTION

Trip distribution for the Project was determined through a review of existing vehicle turning movement volumes near the project site and the City of Modesto Travel Demand Model. The projected trip distribution is presented in Table 10 for each of the proposed project uses, and is shown on Figure 5. Project trips were assigned through the study intersections based on these percentages, as shown on Figure 6. These percentages take into consideration existing travel patterns and the locations of complementary land uses.

TABLE 10
MAJOR DIRECTIONS OF APPROACH AND DEPARTURE

Roadway		Business Park/Office/ Hotel	Residential	Retail
North	SR 99	3%	15%	10%
	Sisk Road	2%	1%	2%
	Dale Road	3%	1%	3%
	McHenry Avenue	1%	3%	2%
East	Pelandale Avenue/Claratina Avenue	12%	7%	6%
	Standiford Avenue/Sylvan Avenue	13%	5%	5%
	Kiernan Avenue	6%	7%	7%
	Residential/Commercial areas between Dale Road, Bangs Avenue, McHenry Avenue and Standiford Avenue	14%	20%	25%
South	SR 99	18%	25%	17%
	Sisk Road	1%	0%	1%
	Prescott Road	5%	3%	3%
	Carver Road	2%	1%	2%
	Tully Road	7%	2%	5%
	Coffee Road	3%	2%	2%
	McHenry Avenue	5%	2%	3%
West	Kiernan (Broadway) Avenue	2%	3%	3%
	Beckwith Road	1%	2%	2%
	Snyder Avenue	2%	1%	2%
TOTAL		***100%***	***100%***	***100%***



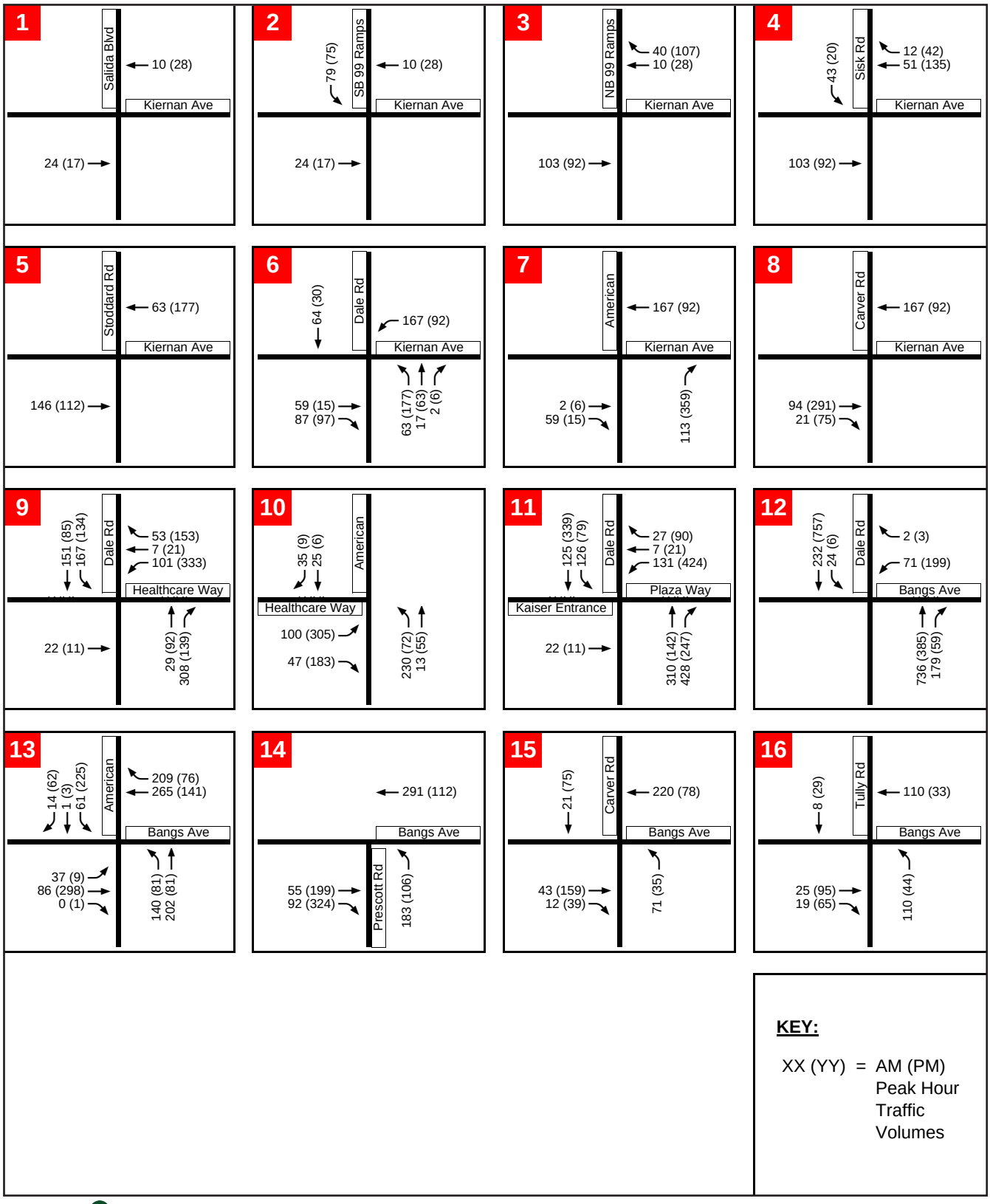
Kiernan Business Park East

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TRANSPORTATION CONSULTANTS

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PROJECT TRIP DISTRIBUTION

Figure 5



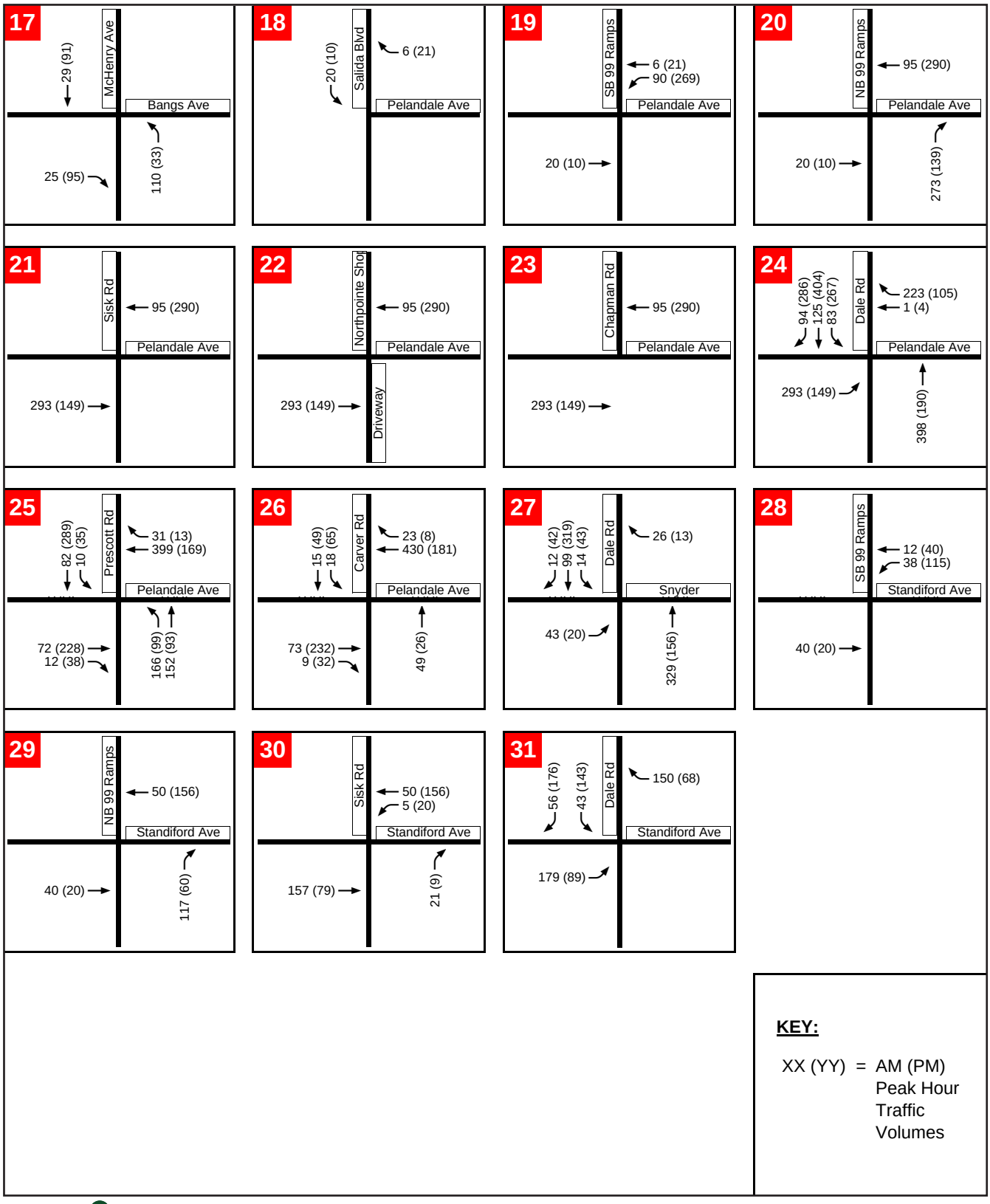
Kiernan Business Park East

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PEAK HOUR PROJECT TRIP ASSIGNMENT

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Figure 6A



Kiernan Business Park East

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PEAK HOUR PROJECT TRIP ASSIGNMENT

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Figure 6B

4. FUTURE WITHOUT PROJECT CONDITIONS

This chapter describes the methods used to develop the Near-Term and Cumulative (2025) traffic volumes, and future intersection and roadway segment operating conditions, without the Project.

NEAR-TERM WITHOUT PROJECT CONDITIONS

Near-Term Without Project conditions include transportation system improvements that are planned and funded, or conditioned on approved development, and traffic volume increases due to approved and pending developments plus regional growth. The near-term conditions reflect a 5 to 10 year horizon, depending on the timing of approved and pending developments.

Near-Term Transportation System Improvements

Several roadway improvements in the study area were included in the analysis of Near-Term conditions, as these improvements are conditioned on approved projects in the area, or are funded projects that have the reasonable expectation of being constructed within the next five to ten years:

- Construction of the Kiernan Avenue Expressway
- Construction of the Pelandale Avenue Expressway
- Improvements at the Pelandale Avenue intersections with Sisk Road and SR 99 Northbound Ramp
- Construction of a third northbound and a third southbound through lane on Dale Road from Veneman Avenue to Standiford Avenue
- Widening Standiford Avenue at Dale Road to provide three westbound through lanes and a free westbound right-turn lane
- Installation of a traffic signal at the Bangs Avenue/Prescott Road intersection
- Installation of a roundabout at the Bangs Avenue/American Avenue intersection

Caltrans will be widening and upgrading Kiernan Avenue (SR 219) to a four-lane expressway from SR 99 to McHenry Avenue (SR 108). Construction is anticipated to start in July 2008[3] on the segment from SR 99 to Morrow Road. As part of the widening project, traffic signals will be installed at Stoddard Road, Dale Road, Carver Road, and Tully Road. In addition, improvements at the Kiernan Avenue/SR 99 southbound and northbound ramp intersections would be constructed. The City of Modesto is upgrading Pelandale Avenue between Dale Road and McHenry Avenue to a six-lane expressway in conjunction with intersection improvements on Pelandale Avenue at Prescott Road, Carver Road, Tully Road, and McHenry Avenue. Additional improvements are planned for the Kiernan Avenue/Dale Road and Pelandale Avenue/Dale Road intersections. The Near-Term Without Project intersection lane configurations are presented on Figure 7.

[3] Based on information contained in the *Caltrans Central Region Project Status Report,* March 16, 2008, page 81 and discussions with Caltrans Staff.

Near-Term Traffic Estimates

Traffic volumes for the Near-Term Without Project conditions were estimated by adding existing volumes, traffic generated by approved and pending (but not yet constructed) development projects in the study area, plus traffic increases to account for regional growth. The City of Modesto provided a list of approved and pending projects (the list and corresponding trip generation estimates are presented in Appendix G). The amount of traffic added to each of the intersections due to the approved/pending projects and growth is presented in Appendix H. The existing traffic volumes were increased by 10 percent to account for regional growth in the near-term period. The resulting peak-hour traffic volumes at the study intersections are shown on Figure 8.

Near-Term Intersection Operations

Service levels were calculated for the study intersections for Near-Term Without Project conditions based on the lane configurations presented on Figure 7 and the traffic volumes presented on Figure 8. Table 11 presents the LOS results; the corresponding LOS calculation sheets are included in Appendix B. Traffic added by approved and pending projects (plus increases due to regional growth) would increase traffic congestion at the study intersections resulting in more locations with deficient operations.

Weekday AM Peak Hour

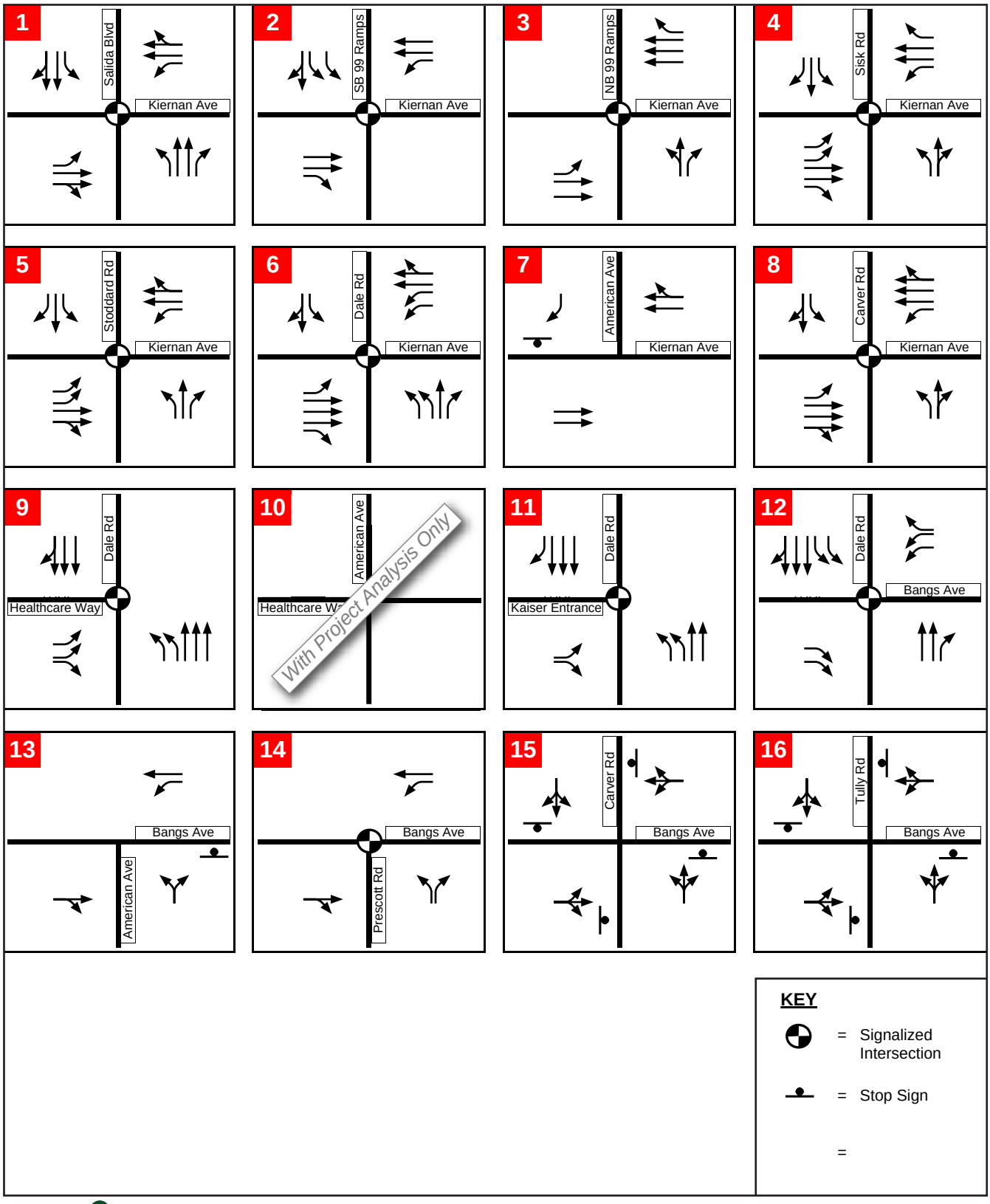
During the weekday AM peak hour in the Near-Term condition, the following intersections are projected to operate at overall deficient service levels:

- Kiernan Avenue/SR 99 Southbound Ramps (LOS D)
- Kiernan Avenue/Sisk Road (LOS D)
- Bangs Avenue/Carver Road (LOS F)
- Bangs Avenue/Tully Road (LOS F)

Weekday PM Peak Hour

During the weekday PM peak hour in the Near-Term condition, the following intersections are projected to operate at deficient service levels:

- Kiernan Avenue/SR 99 Southbound Ramps (LOS D)
- Kiernan Avenue/Sisk Road (LOS E)
- Bangs Avenue/Carver Road (LOS F)
- Bangs Avenue/Tully Road (LOS F)
- Pelandale Avenue/SR 99 Southbound Ramps (LOS F)
- Pelandale Avenue/Sisk Road (LOS F)
- Pelandale Avenue/Dale Road (LOS E)
- SR 99 Southbound Ramps/Standiford Avenue (LOS F)
- SR 99 Northbound Ramps/Standiford Avenue (LOS F)
- Standiford Avenue/Sisk Road (LOS F)



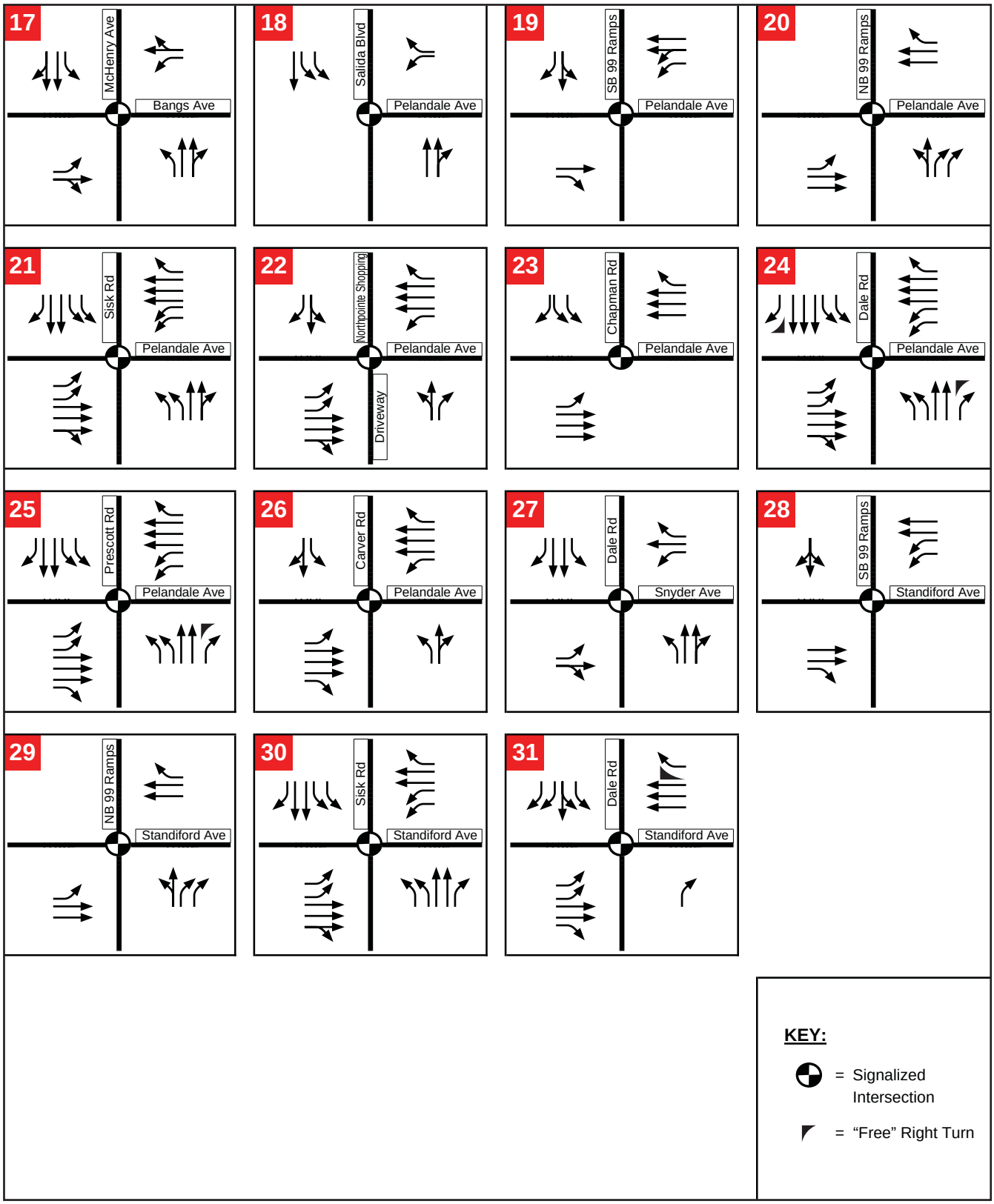
Kiernan Business Park East

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NEAR-TERM CONDITIONS
LANE CONFIGURATIONS AND TRAFFIC CONTROL

November 2008
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Figure 7A



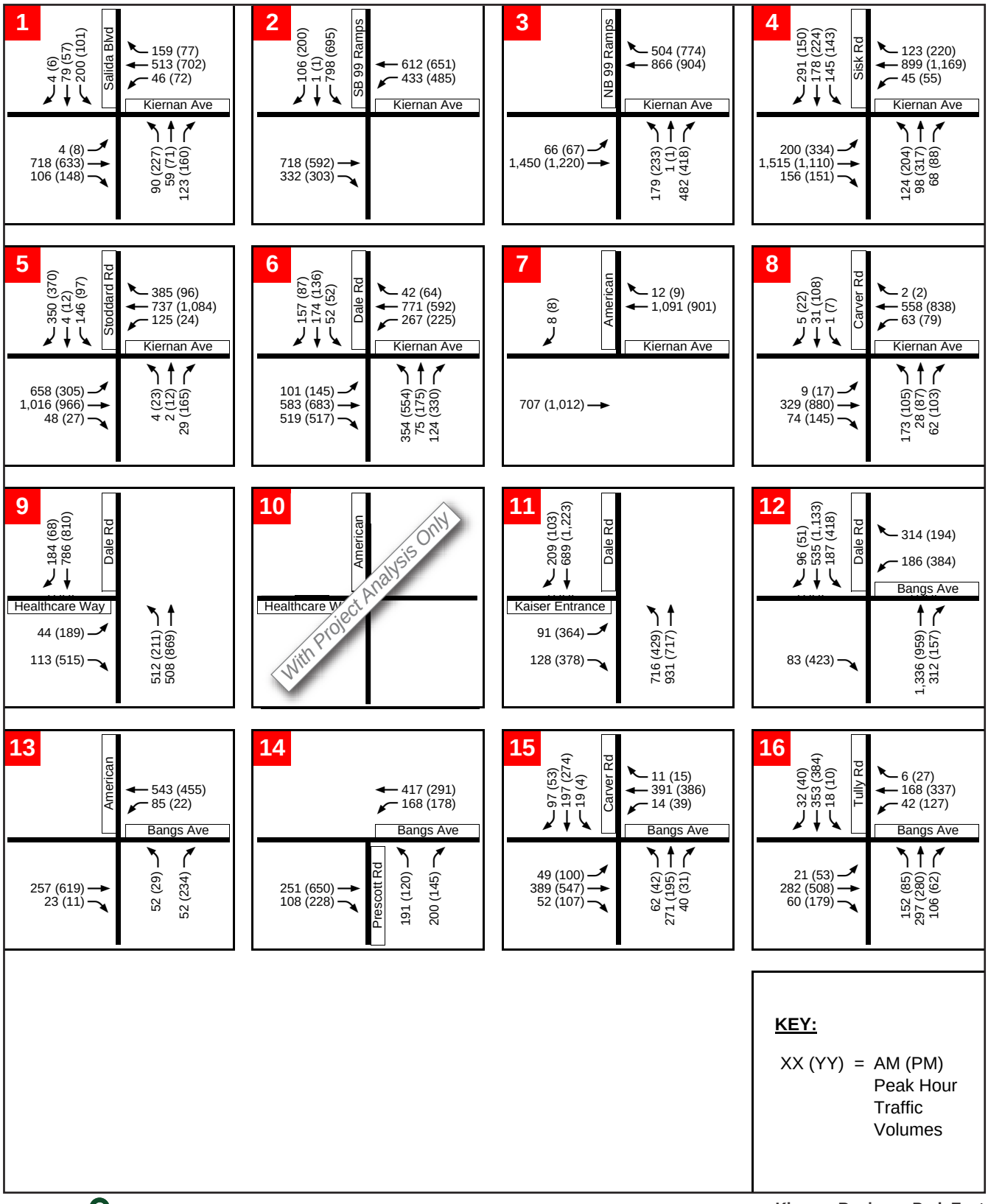
Kiernan Business Park East

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NEAR-TERM CONDITIONS
LANE CONFIGURATIONS AND TRAFFIC CONTROL

November 2008
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Figure 7B



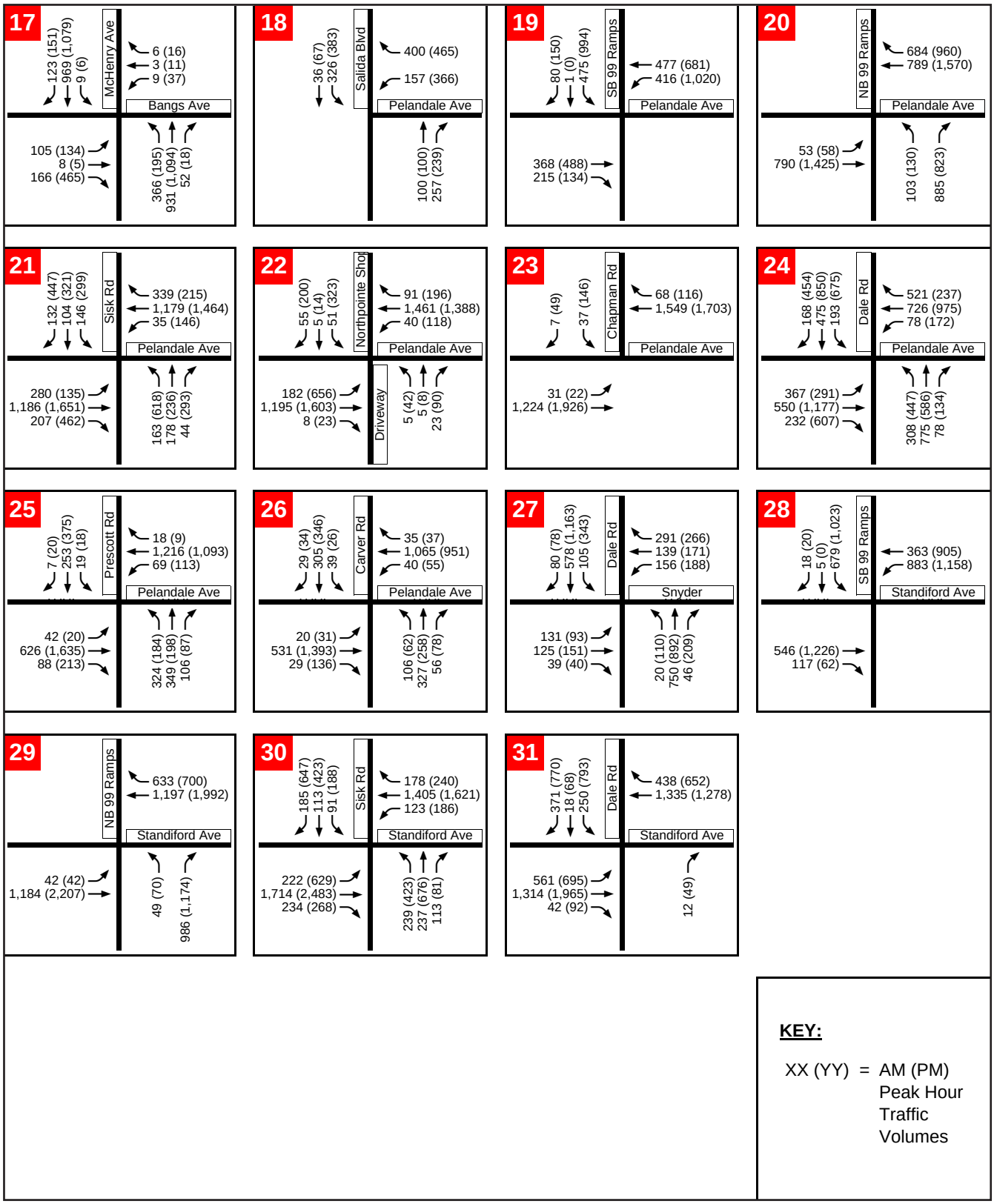
Kiernan Business Park East

FEHR & PEERS
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NEAR-TERM WITHOUT PROJECT CONDITIONS PEAK HOUR INTERSECTION VOLUMES

May 2008
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Figure 8A



Kiernan Business Park East

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NEAR-TERM WITHOUT PROJECT CONDITIONS PEAK HOUR INTERSECTION VOLUMES

May 2008
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Figure 8B

TABLE 11
NEAR-TERM WITHOUT PROJECT
INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Delay (in seconds)	LOS
1. Kiernan Avenue/Salida Boulevard	Traffic Signal	AM PM	16 17	B B
2. Kiernan Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	**52** **40**	**D** **D**
3. Kiernan Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	20 23	B C
4. Kiernan Avenue/Sisk Road	Traffic Signal	AM PM	**40** **70**	**D** **E**
5. Kiernan Avenue/Stoddard Road	Traffic Signal	AM PM	32 29	C C
6. Kiernan Avenue/Dale Road	Traffic Signal	AM PM	41 48	D D
7. Kiernan Avenue/American Avenue	Side-Street Stop[2]	AM PM	1 (13) 0 (12)	A (B) A (B)
8. Kiernan Avenue/Carver Road	Traffic Signal	AM PM	14 19	B B
9. Dale Road/Healthcare Way	Traffic Signal	AM PM	23 26	C C
10. Healthcare Way/American Avenue	Roundabout	AM PM	-- --	-- --
11. Dale Road/Kaiser Main Entrance	Traffic Signal	AM PM	18 28	B C
12. Bangs Avenue/Dale Road	Traffic Signal	AM PM	24 26	C C
13. Bangs Avenue/American Avenue	Side-Street Stop[2]	AM PM	3 (23) 7 **(36)**	A (C) A **(E)**
14. Bangs Avenue/Prescott Road	Traffic Signal	AM PM	14 27	B C
15. Bangs Avenue/Carver Road	All-way Stop	AM PM	**141** **257**	**F** **F**
16. Bangs Avenue/Tully Road	All-way Stop	AM PM	**113** **300**	**F** **F**
17. Bangs Avenue/McHenry Avenue	Traffic Signal	AM PM	25 36	C D
18. Pelandale Avenue/Salida Boulevard	Traffic Signal	AM PM	25 21	C C
19. Pelandale Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	29 **188**	C **F**
20. Pelandale Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	29 22	C C
21. Pelandale Avenue/Sisk Road	Traffic Signal	AM PM	30 **98**	C **F**
22. Pelandale Avenue/Northpointe Shopping Center	Traffic Signal	AM PM	8 36	A D
23. Pelandale Avenue/Chapman Road	Traffic Signal	AM PM	6 9	A A
24. Pelandale Avenue/Dale Road	Traffic Signal	AM PM	40 **74**	D **E**

TABLE 11
NEAR-TERM WITHOUT PROJECT
INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Delay (in seconds)	LOS
25. Pelandale Avenue/Prescott Road	Traffic Signal	AM PM	25 30	C C
26. Pelandale Avenue/Carver Road	Traffic Signal	AM PM	24 31	C C
27. Dale Road/Snyder Avenue	Traffic Signal	AM PM	26 31	C C
28. Standiford Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	53 **320**	D **F**
29. Standiford Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	29 **179**	C **F**
30. Standiford Avenue/Sisk Road	Traffic Signal	AM PM	31 **212**	C **F**
31. Standiford Avenue/Dale Road	Traffic Signal	AM PM	24 41	C D

1. Traffic signals or stop signs.
2. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement)
3. Intersections operating at unacceptable levels (LOS E or LOS F) are shown in **bold**.
4. For roundabout intersections, volume/capacity ratio for worst movement and average intersection delay are shown: average delay (worst movement v/c ratio).

Source: Fehr & Peers, 2008.

Traffic Signal Warrants

The peak hour volume signal warrant was assessed for the Near-Term condition. The results indicate that the warrant would be satisfied at the following unsignalized intersections:

- Bangs Avenue/Carver Road
- Bangs Avenue/Tully Road

Detailed signal warrant calculations are provided in Appendix C.

Near-Term Roadway Segment Operations

Roadway segment V/C ratios were calculated based on Near-Term Without Project traffic volumes shown on Figure 8 and segment capacities incorporating the planned improvements presented in Table 3. The Near-Term Without Project V/C ratios and corresponding LOSs are shown in Table 12.

Weekday AM Peak Hour

The following roadway segments are projected to operate at LOS E or F:

- Northbound SR 99 between Briggsmore Avenue and Pelandale Avenue
- Eastbound Kiernan Avenue between SR 99 Southbound Ramps and Sisk Road
- Westbound Kiernan Avenue between Sisk Road and SR 99 Northbound Ramps
- Northbound Dale Road from Pelandale Avenue to The Plaza Way

Weekday PM Peak Hour

The following roadway segments are projected to operate at LOS E or F:

- Southbound SR 99 from Hammett Road to Briggsmore Road
- Northbound SR 99 from Briggsmore Road to Standiford Avenue
- Eastbound Kiernan Avenue from SR 99 Southbound Ramps to Sisk Road
- Westbound Kiernan Avenue from Sisk Road to SR 99 Northbound Ramps
- Eastbound Pelandale Avenue from SR 99 SB Ramps to Northpointe Shopping Center, and Chapman Road to Dale Road
- Westbound Pelandale from Sisk Road to SR 99 Southbound Ramps
- Eastbound Bangs Avenue from American Avenue to Prescott Road
- Southbound Dale Road from Snyder Avenue to Veneman Avenue

Detailed roadway segment LOS calculations are provided in Appendix D.

TABLE 12
NEAR-TERM WITHOUT PROJECT
PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segment	Facility Type	# Lanes	Per Lane Capacity[1]	Direction	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Volume	V/C	LOS	Volume	V/C	LOS
SR 99 Hammett Road to Kiernan Avenue	FWY	3	2,000	SB	5,178	0.86	D	**5,970**	**1.00**	**E**
		3	2,000	NB	5,294	0.88	D	5,298	0.88	D
SR 99 Kiernan Avenue to Pelandale Avenue	FWY	3	2,000	SB	5,038	0.84	D	**5,864**	**0.98**	**E**
		3	2,000	NB	5,385	0.90	D	5,108	0.85	D
SR 99 Pelandale Avenue to Standiford Avenue	FWY	3	2,000	SB	5,114	0.85	D	**5,874**	**0.98**	**E**
		3	2,000	NB	**5,635**	**0.94**	**E**	5,043	0.84	D
SR 99 Standiford Avenue to Briggsmore Avenue	FWY	3	2,000	SB	5,416	0.90	D	**6,051**	**1.01**	**F**
		3	2,000	NB	**5,996**	**1.00**	**E**	**5,545**	**0.92**	**E**
Kiernan Avenue Salida Boulevard to SR 99 SB Ramps	SA	2	750	EB	1,050	0.70	B	895	0.60	A
		2	750	WB	718	0.48	A	851	0.57	A
Kiernan Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	2	750	EB	**1,516**	**1.01**	**F**	**1,287**	**0.86**	**D**
		2	750	WB	1,045	0.70	B	1,137	0.76	C
Kiernan Avenue SR 99 NB Ramps to Sisk Road	SA	2	750	EB	**1,932**	**1.29**	**F**	**1,638**	**1.09**	**F**
		2	750	WB	**1,370**	**0.91**	**E**	**1,678**	**1.12**	**F**
Kiernan Avenue Sisk Road to Stoddard Road	CBE	2	1,250	EB	1,728	0.69	B	1,341	0.54	A
		2	1,250	WB	1,091	0.44	A	1,477	0.59	A
Kiernan Avenue Stoddard Road to Dale Road	CBE	2	1,250	EB	1,203	0.48	A	1,345	0.54	A
		2	1,250	WB	1,282	0.51	A	1,233	0.49	A
Kiernan Avenue Dale Road to American Avenue	CBE	2	1,250	EB	759	0.30	A	1,065	0.43	A
		2	1,250	WB	1,099	0.44	A	909	0.36	A
Kiernan Avenue American Avenue to Carver Road	CBE	2	1,250	EB	707	0.28	A	1,042	0.42	A
		2	1,250	WB	1,103	0.44	A	965	0.39	A
Kiernan Avenue Carver Road to McHenry Avenue	CBE	2	1,250	EB	392	0.16	A	990	0.40	A
		2	1,250	WB	623	0.25	A	919	0.37	A
Pelandale Avenue Salida Boulevard to SR 99 SB Ramps	SA	1	750	EB	583	0.78	C	622	0.83	D
		2	750	WB	557	0.37	A	831	0.55	A

TABLE 12
NEAR-TERM WITHOUT PROJECT
PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segment	Facility Type	# Lanes	Per Lane Capacity[1]	Direction	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Volume	V/C	LOS	Volume	V/C	LOS
Pelandale Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	2	750	EB	843	0.56	A	**1,483**	**0.99**	**E**
		2	750	WB	893	0.60	A	**1,701**	**1.13**	**F**
Pelandale Avenue SR 99 NB Ramps to Sisk Road	SA	3	750	EB	1,675	0.74	C	**2,248**	**1.00**	**E**
		3	750	WB	1,474	0.66	B	**2,530**	**1.12**	**F**
Pelandale Avenue Sisk Road to Northpointe Shopping Center	SA	3	750	EB	1,385	0.62	B	**2,282**	**1.01**	**F**
		3	750	WB	1,553	0.69	B	1,825	0.81	D
Pelandale Avenue Northpointe Shopping to Chapman Road	SA	3	750	EB	1,269	0.56	A	2,016	0.90	D
		3	750	WB	1,592	0.71	C	1,752	0.78	C
Pelandale Avenue Chapman Road to Dale Road	SA	3	750	EB	1,261	0.56	A	**2,075**	**0.92**	**E**
		3	750	WB	1,617	0.72	C	1,876	0.83	D
Pelandale Avenue Dale Road to American Avenue	CBE	3	1,250	EB	821	0.22	A	1,986	0.53	A
		3	1,250	WB	1,325	0.35	A	1,384	0.37	A
Pelandale Avenue American Avenue to Prescott Road	CBE	3	1,250	EB	756	0.20	A	1,868	0.50	A
		3	1,250	WB	1,547	0.41	A	1,297	0.35	A
Pelandale Avenue Prescott Road to Carver Road	CBE	3	1,250	EB	751	0.20	A	1,740	0.46	A
		3	1,250	WB	1,303	0.35	A	1,215	0.32	A
Pelandale Avenue Carver Road to Tully Road	CBE	3	1,250	EB	626	0.17	A	1,497	0.40	A
		3	1,250	WB	1,140	0.30	A	1,043	0.28	A
Bangs Avenue Dale Road to American Avenue	RR	1	900	EB	499	0.55	A	630	0.70	B
		1	900	WB	595	0.66	B	578	0.64	B
Bangs Avenue American Avenue to Prescott Road	RR	1	900	EB	359	0.40	A	**878**	**0.98**	**E**
		1	900	WB	628	0.70	B	477	0.53	A
Bangs Avenue Prescott Road to Carver Road	RR	1	900	EB	490	0.54	A	795	0.88	D
		1	900	WB	585	0.65	B	481	0.53	A

TABLE 12
NEAR-TERM WITHOUT PROJECT
PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segment	Facility Type	# Lanes	Per Lane Capacity[1]	Direction	Weekday AM Peak Hour			Weekday PM Peak Hour		
					Volume	V/C	LOS	Volume	V/C	LOS
Bangs Avenue Carver Road to Tully Road	RR	1	900	EB	448	0.50	A	740	0.82	D
		1	900	WB	416	0.46	A	462	0.51	A
Bangs Avenue Tully Road to McHenry Avenue	RR	1	900	EB	406	0.45	A	604	0.67	B
		1	900	WB	492	0.55	A	491	0.55	A
Dale Road Kiernan Avenue to Healthcare Way	SA	2	750	SB	970	0.65	B	878	0.59	A
		2	750	NB	553	0.37	A	1,059	0.71	C
Dale Road Healthcare Way to The Plaza Way	SA	2	750	SB	899	0.60	A	1,326	0.88	D
		2	750	NB	1,022	0.68	B	1,081	0.72	C
Dale Road The Plaza Way to Bangs Avenue	SA	3	750	SB	818	0.36	A	1,702	0.76	C
		2	750	NB	**1,650**	**1.10**	**F**	1,153	0.77	C
Dale Road Bangs Avenue to Pelandale Avenue	SA	3	750	SB	836	0.37	A	1,979	0.88	D
		2	750	NB	**1,663**	**1.11**	**F**	1,116	0.74	C
Dale Road Pelandale Avenue to Snyder Avenue	SA	3	750	SB	785	0.35	A	1,629	0.72	C
		2	750	NB	1,172	0.78	C	1,251	0.83	D
Dale Road Snyder Avenue to Veneman Avenue	SA	2	750	SB	773	0.52	A	**1,391**	**0.93**	**E**
		2	750	NB	816	0.54	A	1,211	0.81	D
Dale Road Veneman Avenue to Standiford Avenue	SA	3	750	SB	639	0.28	A	1,631	0.72	C
		3	750	NB	999	0.44	A	1,347	0.60	A

Facility Types:
FWY = Freeway
SA = Signalized Arterial
RR = Rural Road
COL = Collector
CBE = Class B Expressway

1. Capacity expressed in vehicles per lane per hour for mainline segments (not necessarily capacity at intersections).

Note: Roadway segments operating at unacceptable LOS E or LOS F levels are shown in **bold**.

Source: Fehr & Peers, 2008.

Near-Term Freeway Ramp Levels of Service

Near-Term freeway ramp volumes, freeway mainline volumes, free-flow speeds, merging/diverging lengths, and proximity to upstream/downstream merge/diverge were used as inputs to calculate Near-Term service levels for the study freeway ramps at the merge/diverge points with State Route 99. The Near-Term ramp merging and diverging analysis results are presented in Table 13, which shows that most merge/diverge areas would degrade to LOS E or F during the AM and PM peak hours. The freeway ramp LOS calculations are provided in Appendix E.

TABLE 13
NEAR-TERM SR 99 RAMP MERGE/DIVERGE LEVELS OF SERVICE

Ramp Merge/Diverge	Peak Hour	Density (pc/mi/ln)[1]	LOS
Kiernan Avenue Southbound Off-ramp Diverge	AM PM	**36** **39**	**E** **E**
Kiernan Avenue Southbound On-ramp Merge	AM PM	33 **43**	D **F**
Kiernan Avenue Northbound Off-ramp Diverge	AM PM	**44** **47**	**F** **F**
Kiernan Avenue Northbound On-ramp Merge	AM PM	32 33	D D
Pelandale Avenue Southbound Off-ramp Diverge	AM PM	**44** **50**	**F** **F**
Pelandale Avenue Southbound On-ramp Merge	AM PM	31 **37**	D **E**
Pelandale Avenue Northbound Off-ramp Diverge	AM PM	**38** **36**	**E** **E**
Pelandale Avenue Northbound On-ramp Merge	AM PM	**36** 34	**E** D
Standiford Avenue Southbound Off-ramp Diverge	AM PM	**36** **42**	**E** **F**
Standiford Avenue Southbound On-ramp Merge	AM PM	34 **38**	D **F**
Standiford Avenue Northbound Off-ramp Diverge	AM PM	**40** **38**	**E** **E**
Standiford Avenue Northbound On-ramp Merge	AM PM	34 31	D D

Note: 1. Density is presented in passenger cars per mile per lane (pc/mi/ln).

Bold indicates deficient conditions.

Source: Fehr & Peers, 2008.

CUMULATIVE (2025) WITHOUT PROJECT CONDITIONS

The analysis of Cumulative conditions includes buildout of the City of Modesto according to the City's General Plan land use designations and planned transportation system. A computerized traffic model, Transportation Planning Partnership Group (TPPG) Countywide Travel Demand Model (TPPG Model), was used to develop future traffic forecasts for buildout of the Urban Area General Plan -- the year 2025

Cumulative (2025) Transportation System Improvements

Modifications to the transportation system in the study area include roadway improvements planned for construction by the City of Modesto and Caltrans, including widening of State Route 99 to eight lanes[4], widening of Bangs Avenue between Dale Road and McHenry Avenue to four lanes, widening of Standiford Avenue to six lanes, and improving the SR 99/Kiernan Avenue, SR 99/Pelandale, and SR 99/Standiford Avenue interchanges.

Cumulative (2025) Traffic Estimates

The City's travel demand model, modified to include the proposed Project land uses and roadway network, was used to develop daily cumulative roadway segment forecasts. Project land uses were removed from the model and the model was re-run to develop cumulative without project forecasts.

Cumulative (2025) Roadway Segment Operations

Cumulative roadway segment operations without the Project were evaluated by comparing the projected daily traffic volumes to the projected daily roadway capacities. Weekday daily conditions were evaluated to be consistent with the MEIR analysis and to reflect the type of traffic projections produced by the model (daily roadway segment volumes). The daily capacity is dependent on the type of facility and the number of lanes. The daily per-lane capacities were presented in Table 3 with the LOS criteria shown in Table 4. The per-lane capacities do not take into consideration the added capacity of turn lanes at the intersection. The results for the Cumulative Without Project Conditions are summarized in Table 14. The calculation worksheets are presented in Appendix D.

<u>Weekday Daily Operations</u>

The following roadway segments are projected to operate at LOS E or F:

- State Route 99 between Standiford Avenue and Briggsmore Avenue
- Kiernan Avenue between SR 99 Southbound Ramps and Stoddard Road
- Pelandale Avenue between Sisk Road and Chapman Road
- Bangs Road between Tully Road and McHenry Avenue
- Dale Road between Veneman Avenue and Standiford Avenue

[4] California Department of Transportation - District 10, *Transportation Concept Report State Route 99*, November 2002, page 75.

TABLE 14
CUMULATIVE (2025) WITHOUT PROJECT
ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segments	Roadway Type	Total No. Lanes	Weekday Daily		
			Volume	V/C	LOS
SR 99 Hammett Road to Kiernan Avenue	FWY	8	148,527	0.74	C
SR 99 Kiernan Avenue to Pelandale Avenue	FWY	8	142,995	0.71	C
SR 99 Pelandale Avenue to Standiford Avenue	FWY	8	144,410	0.72	C
SR 99 Standiford Ave to Briggsmore Avenue	FWY	8	**181,664**	**0.91**	**E**
Kiernan Avenue Salida Boulevard to SR 99 SB Ramps	Arterial	6	36,235	0.64	B
Kiernan Avenue SR 99 SB Ramps to SR 99 NB Ramps	Arterial	6	**63,846**	**1.14**	**F**
Kiernan Avenue SR 99 NB Ramps to Sisk Road	Arterial	6	**81,251**	**1.44**	**F**
Kiernan Avenue Sisk Road to Stoddard Road	Arterial	6	**77,943**	**1.39**	**F**
Kiernan Avenue Stoddard Road to Dale Road	CB EXPY	6	71,092	0.76	C
Kiernan Avenue Dale Road to American Avenue	CB EXPY	6	72,006	0.77	C
Kiernan Avenue American Avenue to Carver Road	CB EXPY	6	74,586	0.80	C
Kiernan Avenue Carver Road to McHenry Avenue	CB EXPY	6	80,287	0.86	D
Pelandale Avenue Salida Boulevard to SR 99 SB Ramps	Overpass	4	41,619	0.67	B
Pelandale Avenue SR 99 SB Ramps to SR 99 NB Ramps	Overpass	5	46,836	0.60	A
Pelandale Avenue SR 99 NB Ramps to Sisk Road	Overpass	5	61,408	0.79	C
Pelandale Avenue Sisk Road to Northpointe Shopping	Arterial	6	**62,693**	**1.11**	**F**
Pelandale Avenue Northpointe Shopping to Chapman Road	Arterial	6	**55,938**	**0.99**	**E**
Pelandale Avenue Chapman Road to Dale Road	Arterial	6	48,264	0.86	D
Pelandale Avenue Dale Road to Prescott Road	CB EXPY	6	52,867	0.56	A
Pelandale Avenue Prescott Road to Carver Road	CB EXPY	6	72,718	0.78	C
Pelandale Avenue Carver Road to Tully Road	CB EXPY	6	66,288	0.71	C
Bangs Avenue Dale Road to American Avenue	Collector	4	10,265	0.27	A

TABLE 14
CUMULATIVE (2025) WITHOUT PROJECT
ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segments	Roadway Type	Total No. Lanes	Weekday Daily		
			Volume	V/C	LOS
Bangs Avenue American Avenue to Prescott Road	Collector	4	13,625	0.36	A
Bangs Avenue Prescott Road to Carver Road	Collector	4	17,156	0.46	A
Bangs Avenue Carver Road to Tully Road	Collector	4	18,989	0.51	A
Bangs Avenue Tully Road to McHenry Avenue	Collector	4	**23,504**	**0.94**	**E**
Dale Road Kiernan Avenue to Healthcare Way	Arterial	6	38,339	0.68	B
Dale Road Healthcare Way to Plaza Way	Arterial	6	38,944	0.69	B
Dale Road Plaza Way to Bangs Avenue	Arterial	6	42,589	0.76	C
Dale Road Bangs Avenue to Pelandale Avenue	Arterial	6	49,213	0.87	D
Dale Road Pelandale Avenue to Snyder Avenue	Arterial	6	48,749	0.87	D
Dale Road Snyder Avenue to Veneman Avenue	Arterial	6	48,966	0.87	D
Dale Road Veneman Avenue to Standiford Avenue	Arterial	6	**57,227**	**1.02**	**F**

Note: Roadway segments operating at unacceptable levels (LOS E or LOS F) are shown in **bold**.
Source: Fehr & Peers, 2008.

5. PROJECT CONDITIONS

This chapter identifies potential off-site traffic impacts under Existing, Near-Term, and Cumulative with Project conditions.

EXISTING WITH PROJECT CONDITIONS

The peak hour Project traffic volumes (Figure 6) were added to the existing traffic volumes (Figure 4) to determine the Existing With Project traffic volumes, as shown on Figure 9. Roadway improvements that would be constructed as part of the Project are shown on Figure 10. The Existing With Project intersection analysis results are shown in Table 15, the Existing With Project roadway segment analysis is shown in Table 16, and the Existing With Project freeway merge/diverge analysis is shown in Table 17.

Intersections

The addition of Project traffic would increase average delay by more than 5 seconds at signalized intersections that operate at a deficient service levels prior to the addition of Project traffic, worsen LOS E to LOS F conditions, or result in deficient operations at the following locations:

- Kiernan Avenue/SR 99 Southbound Ramps (AM and PM peak hours)
- Kiernan Avenue/Sisk Road (PM peak hour)
- Pelandale Avenue/SR 99 Southbound Ramps (PM peak hour)
- Pelandale Avenue/Sisk Road (PM peak hour)
- Standiford Avenue/SR 99 Southbound Ramps (PM peak hour)

These delay increases are considered significant. All other signalized intersections would either continue to operate at acceptable service levels with the addition of Project traffic, or the Project would increase average delay by less than 5 seconds at those projected to operate at an unacceptable level prior to the addition of project traffic.

At unsignalized intersections, a significant project impact would occur if the addition of Project traffic deteriorates a controlled movement from LOS E (or better) to LOS F, or at intersections where a controlled movement already operates at LOS F, one of the following occurs: (1) Project traffic results in satisfaction at the peak hour volume traffic signal warrant, (2) Project traffic increases minor movement delay by more than 30 seconds, or (3) where the peak hour volume signal warrant is met without the Project traffic and delay cannot be estimated, Project increases traffic by 10 or more vehicles per lane on the controlled approach.

Based on the above criteria, the Project could potentially impact the following unsignalized intersections in the Existing condition:

- Kiernan Avenue/Stoddard Road (AM and PM peak hours)
- Kiernan Avenue/Dale Road (AM and PM peak hours)
- Kiernan Avenue/American Avenue (PM peak hour)
- Kiernan Avenue/Carver Road (PM peak hour)
- Bangs Avenue/American Avenue (AM and PM peak hours)
- Bangs Avenue/Prescott Road (PM peak hour)

- Bangs Avenue/Carver Road (AM and PM peak hours)
- Bangs Avenue/Tully Road (PM peak hour)

Roadway Segments

The addition of Project traffic would result in deficient service levels, worsen LOS E to LOS F conditions, or increase the volume-to-capacity ratio by more than 0.05 on the following roadway segments:

- Eastbound Kiernan Avenue from SR 99 Southbound Ramps to Dale Road (AM and PM peak hours)
- Eastbound Kiernan Avenue from American Avenue to McHenry Avenue (PM peak hour)
- Westbound Kiernan Avenue from Dale Road to Stoddard Road and Sisk Road to SR 99 Northbound Ramps (AM peak hour)
- Westbound Kiernan Avenue from Dale Road to SR 99 Northbound Ramps (PM peak hour)
- Eastbound Pelandale Avenue from Dale Road to Tully Road (PM peak hour)
- Westbound Pelandale Avenue from Tully Road to Dale Road (AM and PM peak hours)
- Westbound Pelandale Avenue from Northpointe Shopping Center to SR 99 Southbound Ramps (PM peak hour)
- Eastbound Bangs Avenue from American Avenue to Prescott Road (PM peak hour)
- Northbound and Southbound Dale Road between Kiernan Avenue and Healthcare Way (PM peak hour)

Freeway Ramp Merge/Diverge Areas

The addition of project traffic would worsen operations at three ramp merge/diverge areas from acceptable operations to unacceptable operations:

- Kiernan Avenue southbound off-ramp diverge (PM peak hour)
- Pelandale Avenue northbound off-ramp diverge (AM peak hour)
- Standiford Avenue northbound off-ramp diverge (AM peak hour)

Project traffic would also increase volumes through the Standiford Avenue southbound off-ramp diverge area by 6 percent during the AM peak hour. This is considered significant as the ramp diverge area currently operates at LOS E. All other ramp merge/diverge areas would continue to operate at acceptable service levels or the project would increase traffic by less than 5 percent.

NEAR-TERM PLUS PROJECT CONDITIONS

The peak hour Project traffic volumes (Figure 6) were added to the Near-Term Without Project (Figure 8) volumes to determine Near-Term traffic volumes with the Project, as shown on Figure 11. Roadway improvements that would be constructed as part of the Project are shown on Figure 12. The Near-Term With Project intersection analysis results are shown in Table 18, the Near-Term With Project roadway segment analysis is shown in Table 19, and the Near-Term With Project freeway ramp merge/diverge analysis is shown in Table 20.

Intersections

The addition of Project traffic would increase average delay by more than 5 seconds at signalized intersections that operate at a deficient service levels prior to the addition of Project traffic, worsen LOS E to LOS F conditions, or result in deficient operations at the following locations:

- Kiernan Avenue/SR 99 Southbound Ramps (AM and PM peak hours)
- Kiernan Avenue/Sisk Road (AM and PM peak hours)
- Dale Road/Kaiser Main Entrance/The Plaza Way (PM peak hour)
- Bangs Avenue/Prescott Road (PM peak hour)
- Pelandale Avenue/SR 99 Southbound Ramps (PM peak hour)
- Pelandale Avenue/Dale Road (AM and PM peak hours)
- Standiford Avenue/SR 99 Southbound Ramps (AM and PM peak hours)
- Standiford Avenue/SR 99 Northbound Ramps (PM peak hour)
- Standiford Avenue/Sisk Road (PM peak hour)

These delay increases are considered significant. All other signalized intersections would either continue to operate at acceptable service levels with the addition of Project traffic, or the Project would increase average delay by less than 5 seconds at signalized intersections projected to operate at unacceptable levels prior to the addition of Project traffic.

Based on the unsignalized intersection impact criteria, the Project could potentially impact the following unsignalized intersections in the Near-Term condition:

- Bangs Avenue/American Avenue (AM and PM peak hours)
- Bangs Avenue/Carver Road (AM and PM peak hours)
- Bangs Avenue/Tully Road (AM and PM peak hours)

Roadway Segments

The addition of Project traffic would result in deficient service levels, worsen LOS E to LOS F conditions, or increase the volume-to-capacity ratio by more than 0.05 on the following roadway segments:

- Southbound SR 99 from Hammett Road to Kiernan Avenue (PM peak hour)
- Southbound SR 99 from Pelandale Avenue to Standiford Avenue (PM peak hour)
- Southbound SR 99 from Standiford Avenue to Briggsmore Avenue (AM and PM peak hours)
- Northbound SR 99 from Briggsmore Avenue to Standiford Avenue (AM peak hour)
- Eastbound Kiernan Avenue from SR 99 Southbound Ramps to Sisk Road (AM and PM peak hours)
- Westbound Kiernan Avenue from Sisk Road to SR 99 Northbound Ramps (PM peak hour)
- Eastbound Pelandale Avenue from SR 99 Northbound Ramps to Dale Road (PM peak hour)
- Westbound Pelandale Avenue from Dale Road to Chapman Road, and Northpointe Shopping Center to SR 99 Southbound Ramps (PM peak hour)
- Eastbound Bangs Avenue from Dale Road to Tully Road (PM peak hour)
- Westbound Bangs Avenue from Carver Road to Dale Road (AM peak hour)
- Southbound Dale Road from Healthcare Way to Pelandale Avenue, and Snyder Avenue to Veneman Avenue (PM peak hour)

- Northbound Dale Road from Veneman Avenue to Snyder Avenue (PM peak hour)
- Northbound Dale Road from Snyder Avenue to The Plaza Way (AM and PM peak hour)

Freeway Ramp Merge/Diverge Areas

The addition of Project traffic would not degrade the operation of the Kiernan Avenue or Pelandale Avenue interchange ramp merge/diverge areas in the near-term condition. The addition of project traffic would increase traffic through the Standiford Avenue Southbound On-ramp merge (PM peak hour) and the Standiford Avenue Northbound Off-ramp diverge (AM peak hour) areas, which are projected to operate at deficient service levels prior to the addition of project traffic. The addition of project traffic would result in unacceptable LOS E conditions at the Standiford Avenue Northbound On-ramp merge area, and would worsen LOS E conditions to LOS F at the Standiford Avenue Southbound Off-ramp Diverge. These are considered significant impacts.

CUMULATIVE (2025) PLUS PROJECT CONDITIONS

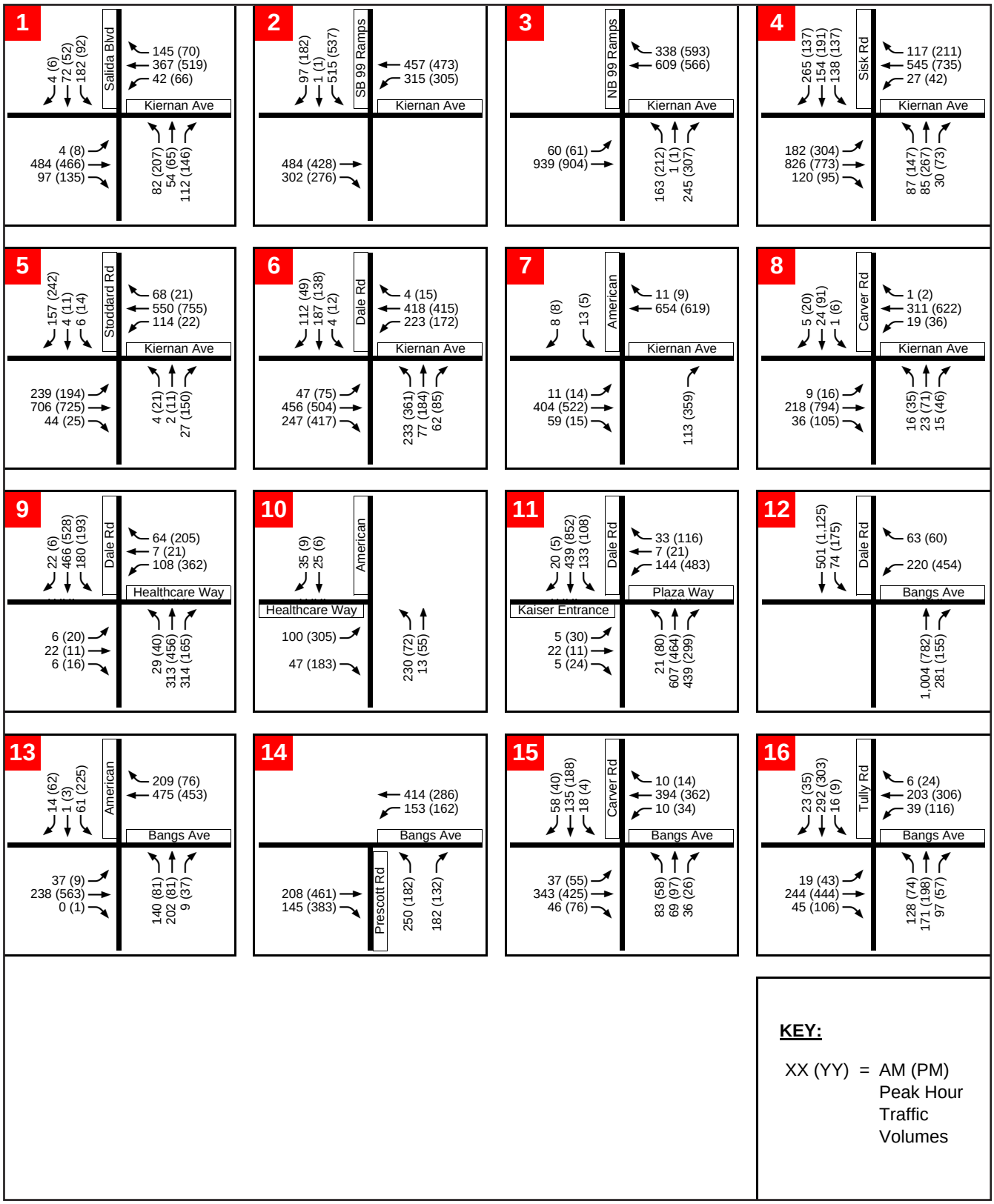
The City's travel demand model was used to develop both Cumulative (2025) Without Project volumes and Cumulative (2025) With Project volumes because the addition of the project is expected to change travel patterns, resulting in some study roadway segments improving with the project. Travel patterns are expected to change because the project is primarily a mixed-use employment and retail center, resulting in an improvement in the jobs/housing balance for the City. The Cumulative (2025) With Project roadway segment analysis is shown in Table 21.

Roadway Segments

The addition of Project traffic would result in deficient service levels or increase the volume-to-capacity ratio by more than 0.05 on segments projected to operate deficiently prior to the addition of project traffic on the following roadway segments:

- Pelandale Avenue between Sisk Road and Dale Road
- Dale Road between Bangs Avenue and Veneman Avenue

Mitigation measures to address significant off-site Project impacts are discussed in Chapter 8.



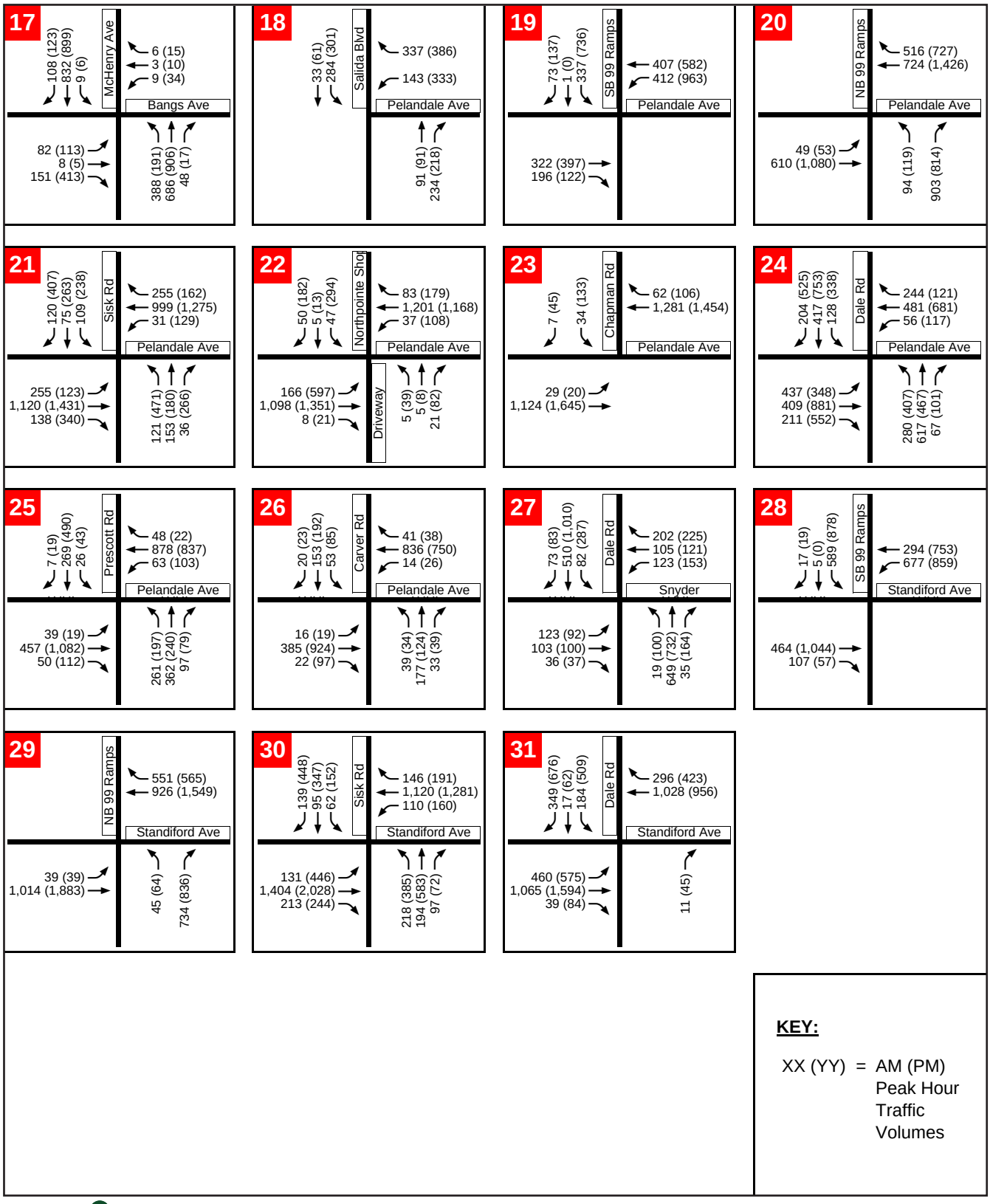
Kiernan Business Park East

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EXISTING WITH PROJECT CONDITIONS PEAK HOUR INTERSECTION VOLUMES

May 2008
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Figure 9A



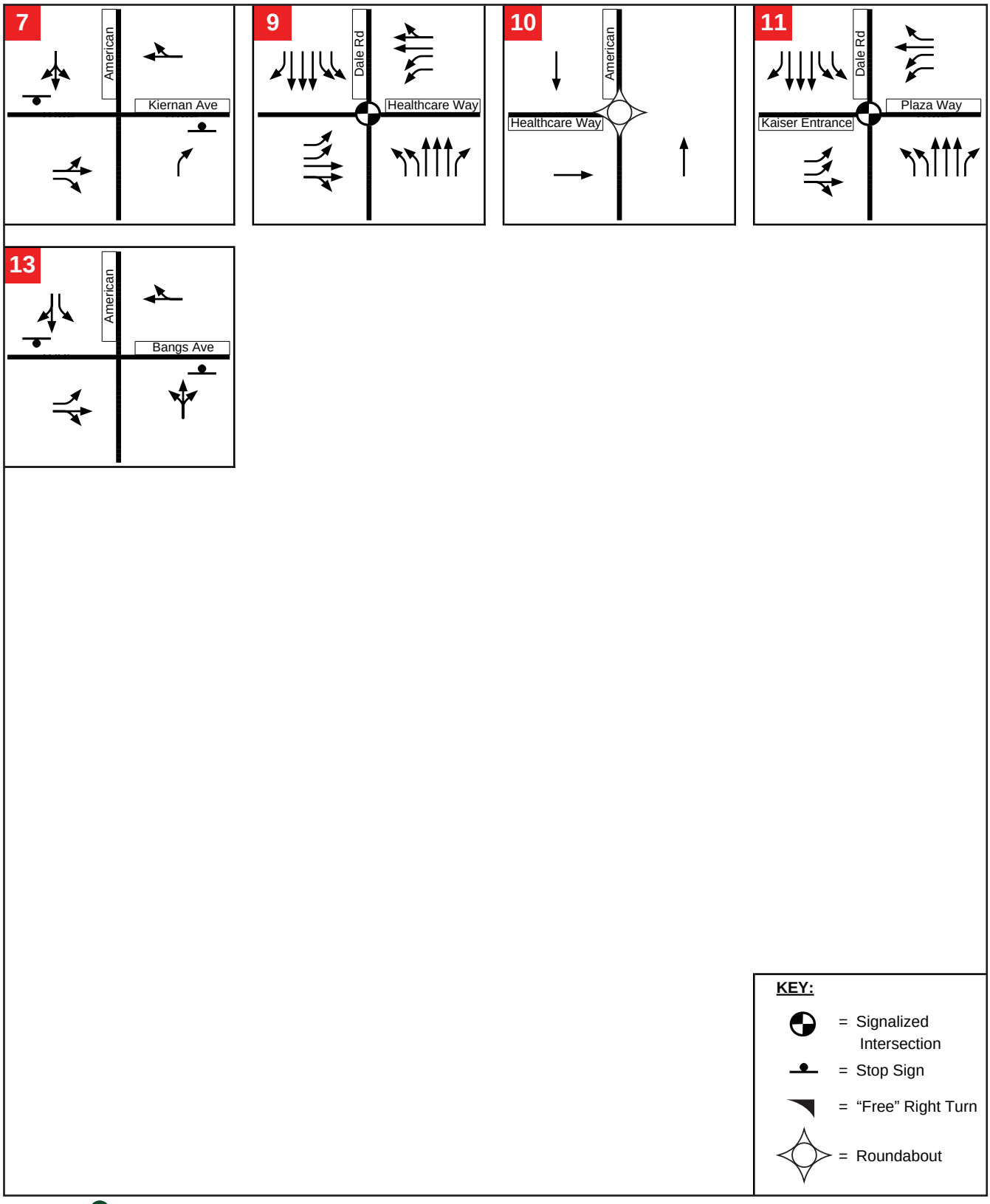
Kiernan Business Park East

FEHR & PEERS
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EXISTING WITH PROJECT CONDITIONS PEAK HOUR INTERSECTION VOLUMES

May 2008
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Figure 9B



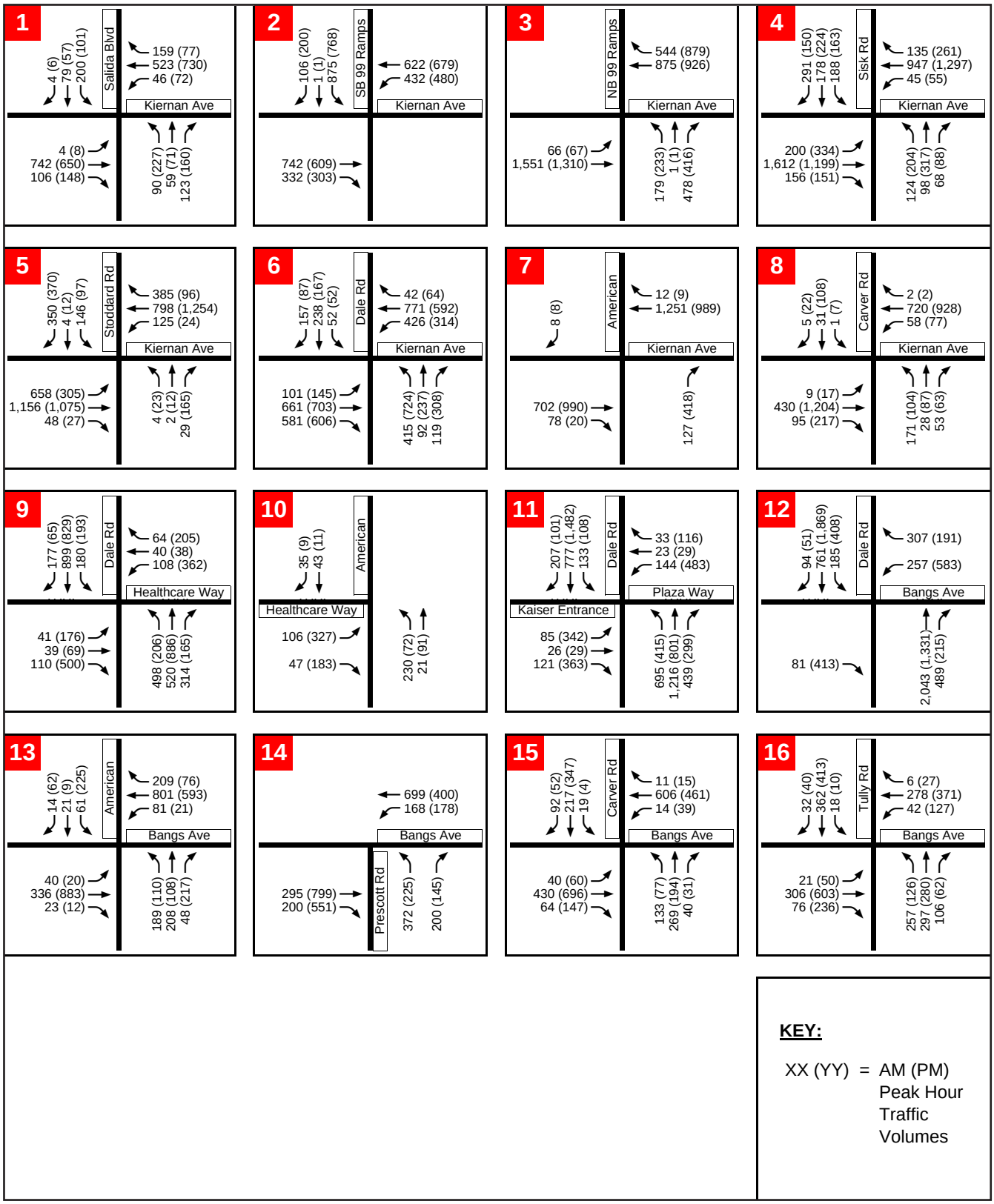
Kiernan Business Park East

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PROJECT IMPROVEMENTS TO EXISTING LANE CONFIGURATIONS AND TRAFFIC CONTROLS

November 2008
Graphics\Nov08\WC06-2317_10

Figure 10



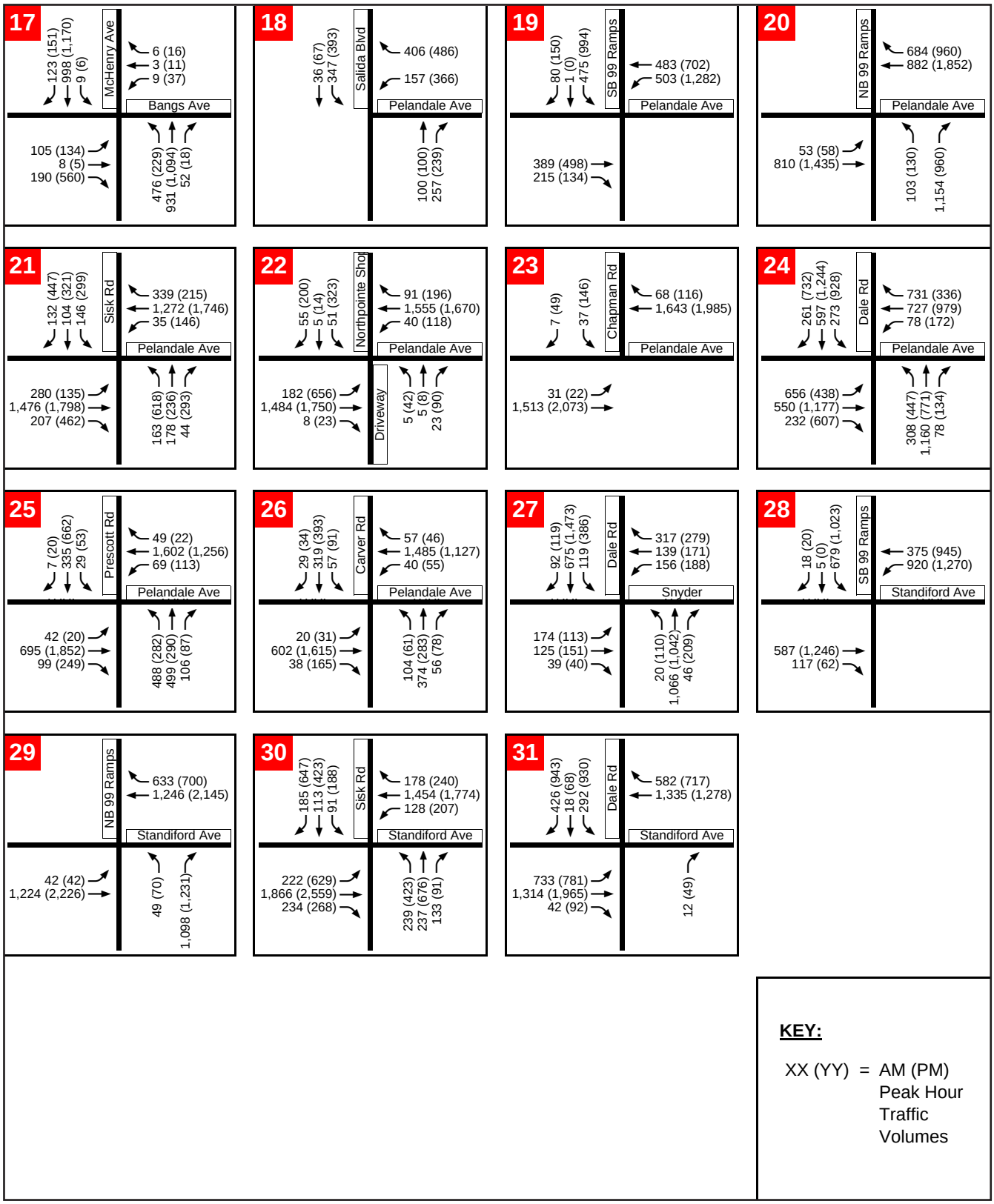
Kiernan Business Park East

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NEAR-TERM WITH PROJECT CONDITIONS PEAK HOUR INTERSECTION VOLUMES

May 2008
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Figure 11A



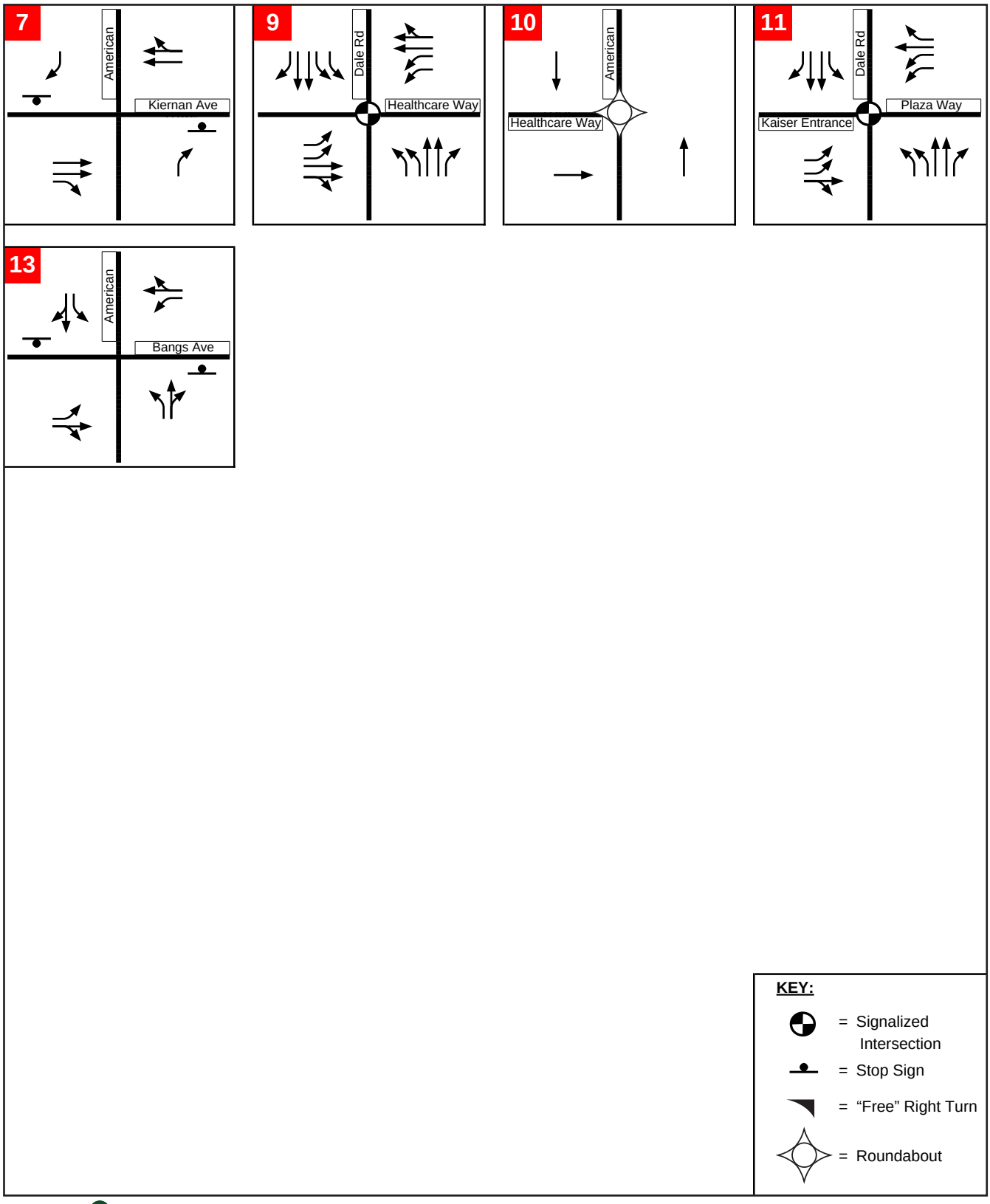
Kiernan Business Park East

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NEAR-TERM WITH PROJECT CONDITIONS PEAK HOUR INTERSECTION VOLUMES

May 2008
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Figure 11B



Kiernan Business Park East

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PROJECT IMPROVEMENTS TO NEAR-TERM LANE CONFIGURATIONS AND TRAFFIC CONTROLS

November 2008
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Figure 12

TABLE 15
EXISTING WITH PROJECT
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Existing		Existing With Project		Impact Summary	
			Delay[2] (seconds)	LOS[2]	Delay[2] (seconds)	LOS[2]	Increase (in delay)	Significant
1. Kiernan Avenue/Salida Boulevard	Traffic Signal	AM PM	26 17	C B	26 17	C B	0 0	No No
2. Kiernan Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	**48** **45**	**D** **D**	***63*** ***51***	***E*** ***D***	15 6	Yes[3&7] Yes[3&7]
3. Kiernan Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	15 19	B B	15 20	B B	0 1	No No
4. Kiernan Avenue/Sisk Road	Traffic Signal	AM PM	24 **41**	C **D**	26 ***53***	C ***D***	2 12	No Yes[7]
5. Kiernan Avenue/Stoddard Road	Side-Street Stop[1]	AM PM	7 **(69)** **128 (> 50)**	A **(F)** **F (F)**	11 ***(140)*** ***> 150 (> 50)***	B ***(F)*** ***F (F)***	4 (> 30) > 30 (> 30)	Yes[5&7] Yes[5&7]
6. Kiernan Avenue/Dale Road	All-way Stop	AM PM	**55** **83**	**F** **F**	***95*** ***158***	***F*** ***F***	>30 >30	Yes[3] Yes[3]
7. Kiernan Avenue/American Avenue	Side-Street Stop[1]	AM PM	1 (18) 1 (18)	A (C) A (C)	2 (30) 8 ***(>50)***	A (D) A ***(F)***	1 (12) 7 (> 30)	No Yes[4]
8. Kiernan Avenue/Carver Road	All-way Stop	AM PM	8 **60**	A **F**	11 ***223***	B ***F***	3 > 30	No Yes[3]
9. Dale Road/Healthcare Way	Traffic Signal	AM PM	4 7	A A	29 24	C C	25 17	No No
10. Healthcare Way/American Avenue	Roundabout	AM PM	-- --	-- --	4 5	A A	4 5	No No
11. Dale Road/Kaiser Main Entrance/Plaza Way	Traffic Signal	AM PM	5 8	A A	19 31	B C	14 23	No No
12. Bangs Avenue/Dale Road	Traffic Signal	AM PM	8 10	A A	9 11	A B	1 1	No No
13. Bangs Avenue/American Avenue	Side-Street Stop[1]	AM PM	0 (9) 1 (11)	A (A) A (B)	**>150** ***(> 50)*** ***>150 (> 50)***	***F (F)*** ***F (F)***	>30 (> 30) > 30 (> 30)	Yes[4] Yes[4]
14. Bangs Avenue/Prescott Road	All-way Stop	AM PM	10 12	A B	21 ***152***	C ***F***	11 >30	No Yes[3]
15. Bangs Avenue/Carver Road	All-way Stop	AM PM	13 16	B C	***37*** ***74***	***E*** ***F***	24 > 30	Yes[3] Yes[3]

TABLE 15
EXISTING WITH PROJECT
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Existing		Existing With Project		Impact Summary	
			Delay[2] (seconds)	LOS[2]	Delay[2] (seconds)	LOS[2]	Increase (in delay)	Significant
16. Bangs Avenue/Tully Road	All-way Stop	AM PM	15 **69**	B **F**	35 ***164***	D ***F***	20 > 30	No Yes[3]
17. Bangs Avenue/McHenry Avenue	Traffic Signal	AM PM	21 19	C B	23 22	C C	2 3	No No
18. Pelandale Avenue/Salida Boulevard	Traffic Signal	AM PM	24 18	C B	24 18	C B	0 0	No No
19. Pelandale Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	29 **90**	C **F**	30 ***102***	C ***F***	1 12	No Yes[3]
20. Pelandale Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	19 15	B B	31 22	C C	12 7	No No
21. Pelandale Avenue/Sisk Road	Traffic Signal	AM PM	26 **72**	C **E**	27 ***84***	C ***F***	1 12	No Yes[3]
22. Pelandale Avenue/Northpointe Shopping Center	Traffic Signal	AM PM	10 30	A C	10 30	A C	0 0	No No
23. Pelandale Avenue/Chapman Road	Traffic Signal	AM PM	5 8	A A	5 8	A A	0 0	No No
24. Pelandale Avenue/Dale Road	Traffic Signal	AM PM	22 31	C C	30 38	C D	8 7	No No
25. Pelandale Avenue/Prescott Road	Traffic Signal	AM PM	17 21	B C	27 37	C D	10 16	No No
26. Pelandale Avenue/Carver Road	Traffic Signal	AM PM	16 16	B B	20 19	B B	4 3	No No
27. Dale Road/Snyder Avenue	Traffic Signal	AM PM	18 22	B C	18 26	B C	0 4	No No
28. Standiford Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	40 **187**	D **F**	42 ***198***	D **F**	2 11	No Yes[3]
29. Standiford Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	19 34	B C	29 42	C D	10 8	No No
30. Standiford Avenue/Sisk Road	Traffic Signal	AM PM	26 46	C D	26 51	C D	0 5	No No

TABLE 15
EXISTING WITH PROJECT
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Existing		Existing With Project		Impact Summary	
			Delay[2] (seconds)	LOS[2]	Delay[2] (seconds)	LOS[2]	Increase (in delay)	Significant
31. Dale Road/Standiford Avenue	Traffic Signal	AM	21	C	29	C	8	No
		PM	28	C	36	D	8	No

1. For side-street stop-controlled intersections, delays for intersection average (worst movement) are shown.
2. Intersections operating at unacceptable (LOS E/LOS F) levels are shown in **bold.**
3. Project increases delay by more than 5.0 seconds at an intersection operating at LOS E or F or results in LOS E or F conditions.
4. Project results in LOS F conditions for worst movement.
5. Project increases side-street delay by more than 30 seconds, or delay increase is immeasurable and project adds more than 10 vehicles to stop-controlled approach.
6. This intersection is a side-street stop in existing conditions, but a signal is would be operational for the "with project" alternative.
7. This intersection is located in the County where the LOS standard is C.

Source: Fehr & Peers, 2008.

TABLE 16
EXISTING WITH PROJECT
PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segment	Facility Type	# Lanes[1]	Direction	Weekday AM Peak Hour					Weekday PM Peak Hour				
				Existing		With Project		V/C Change	Existing		With Project		V/C Change
				V/C	LOS	V/C	LOS		V/C	LOS	V/C	LOS	
SR 99 Hammett Road to Kiernan Avenue	FWY	3	SB	0.72	C	0.73	C	0.01	0.84	D	0.85	D	0.01
		3	NB	0.75	C	0.76	C	0.01	0.73	C	0.75	C	0.02
SR 99 Kiernan Avenue to Pelandale Avenue	FWY	3	SB	0.73	C	0.73	C	0.00	0.83	D	0.83	D	0.00
		3	NB	0.76	C	0.76	C	0.00	0.73	C	0.73	C	0.00
SR 99 Pelandale Avenue to Standiford Avenue	FWY	3	SB	0.75	C	0.76	C	0.01	0.82	D	0.86	D	0.04
		3	NB	0.79	C	0.83	D	0.04	0.73	C	0.75	C	0.02
SR 99 Standiford Avenue to Briggsmore Avenue	FWY	3	SB	0.77	C	0.79	C	0.02	0.80	C	0.87	D	0.07
		3	NB	0.80	C	0.87	D	0.07	0.77	C	0.80	C	0.03
Kiernan Avenue Salida Boulevard to SR 99 SB Ramps	SA	2	EB	0.51	A	0.52	A	0.01	0.46	A	0.47	A	0.01
		2	WB	0.36	A	0.37	A	0.01	0.42	A	0.44	A	0.02
Kiernan Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	1	EB	**1.19**	**F**	***1.33***	***F***	***0.14***	**1.16**	**F**	***1.29***	***F***	***0.13***
		2	WB	0.51	A	0.51	A	0.00	0.50	A	0.52	A	0.02
Kiernan Avenue SR 99 NB Ramps to Sisk Road	SA	1	EB	**1.44**	**F**	***1.58***	***F***	***0.14***	**1.49**	**F**	***1.61***	***F***	***0.12***
		1	WB	**1.20**	**F**	***1.26***	***F***	***0.06***	**1.37**	**F**	***1.55***	***F***	***0.18***
Kiernan Avenue Sisk Road to Stoddard Road	RR	1	EB	**0.94**	**E**	***1.10***	***F***	***0.16***	**0.97**	**E**	***1.09***	***F***	***0.12***
		1	WB	0.72	C	0.79	C	0.07	**0.93**	**E**	***1.13***	***F***	***0.20***
Kiernan Avenue Stoddard Road to Dale Road	RR	1	EB	0.67	B	***0.83***	***D***	***0.16***	**0.98**	**E**	***1.11***	***F***	***0.13***
		1	WB	0.78	C	***0.85***	***D***	***0.07***	0.72	C	***0.92***	***E***	***0.20***
Kiernan Avenue Dale Road to American Avenue	RR	1	EB	0.51	A	0.58	A	0.07	0.64	B	0.67	B	0.03
		1	WB	0.55	A	0.74	C	0.19	0.59	A	0.70	B	0.11
Kiernan Avenue American Avenue to Carver Road	RR	1	EB	0.46	A	0.59	A	0.13	0.61	B	***1.02***	***F***	***0.41***
		1	WB	0.55	A	0.74	C	0.19	0.65	B	0.75	C	0.10
Kiernan Avenue Carver Road to McHenry Avenue	RR	1	EB	0.16	A	0.26	A	0.10	0.62	B	***0.94***	***E***	***0.32***
		1	WB	0.18	A	0.37	A	0.19	0.63	B	0.73	C	0.10

TABLE 16
EXISTING WITH PROJECT
PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segment	Facility Type	# Lanes[1]	Direction	Weekday AM Peak Hour					Weekday PM Peak Hour				
				Existing		With Project		V/C Change	Existing		With Project		V/C Change
				V/C	LOS	V/C	LOS		V/C	LOS	V/C	LOS	
Pelandale Avenue Salida Boulevard to SR 99 SB Ramps	SA	1	EB	0.66	B	0.69	B	0.03	0.68	B	0.69	B	0.01
		2	WB	0.32	A	0.32	A	0.00	0.47	A	0.48	A	0.01
Pelandale Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	2	EB	0.43	A	0.44	A	0.01	0.75	C	0.76	C	0.01
		2	WB	0.48	A	0.55	A	0.07	0.84	D	***1.03***	***F***	***0.19***
Pelandale Avenue SR 99 NB Ramps to Sisk Road	SA	3	EB	0.54	A	0.67	B	0.13	0.78	C	0.84	D	0.06
		2	WB	0.76	C	0.83	D	0.07	**1.24**	**F**	***1.44***	***F***	***0.20***
Pelandale Avenue Sisk Road to Northpointe Shopping Center	SA	3	EB	0.44	A	0.57	A	0.13	0.81	D	0.88	D	0.07
		2	WB	0.79	C	0.86	D	0.07	0.85	D	***1.04***	***F***	***0.19***
Pelandale Avenue Northpointe Shopping to Chapman Road	SA	3	EB	0.39	A	0.52	A	0.13	0.70	B	0.77	C	0.07
		3	WB	0.54	A	0.59	A	0.05	0.54	A	0.67	B	0.13
Pelandale Avenue Chapman Road to Dale Road	SA	3	EB	0.38	A	0.51	A	0.13	0.73	C	0.79	C	0.06
		3	WB	0.55	A	0.60	A	0.05	0.59	A	0.72	C	0.13
Pelandale Avenue Dale Road to American Avenue	SA	1	EB	0.69	B	0.81	D	0.12	**1.40**	**F**	***1.76***	***F***	***0.36***
		1	WB	0.74	C	***1.04***	***F***	***0.30***	**1.08**	**F**	***1.23***	***F***	***0.15***
Pelandale Avenue American Avenue to Prescott Road	SA	1	EB	0.62	B	0.73	C	0.11	**1.26**	**F**	***1.62***	***F***	***0.36***
		1	WB	0.77	C	***1.53***	***F***	***0.76***	**1.05**	**F**	***1.40***	***F***	***0.35***
Pelandale Avenue Prescott Road to Carver Road	SA	1	EB	0.66	B	0.77	C	0.11	**1.25**	**F**	***1.61***	***F***	***0.36***
		1	WB	0.75	C	***1.32***	***F***	***0.57***	**1.04**	**F**	***1.28***	***F***	***0.24***
Pelandale Avenue Carver Road to Tully Road	SA	1	EB	0.51	A	0.63	B	0.12	**1.00**	**E**	***1.40***	***F***	***0.40***
		1	WB	0.58	A	***1.19***	***F***	***0.61***	0.83	D	***1.09***	***F***	***0.26***
Bangs Avenue Dale Road to American Avenue	RR	1	EB	0.17	A	0.39	A	0.22	0.29	A	0.64	B	0.35
		1	WB	0.23	A	0.70	B	0.47	0.35	A	0.66	B	0.31
Bangs Avenue American Avenue to Prescott Road	RR	1	EB	0.23	A	0.39	A	0.16	0.36	A	***0.94***	***E***	***0.58***
		1	WB	0.23	A	0.76	C	0.53	0.35	A	0.59	A	0.24

TABLE 16
EXISTING WITH PROJECT
PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segment	Facility Type	# Lanes[1]	Direction	Weekday AM Peak Hour					Weekday PM Peak Hour				
				Existing		With Project		V/C Change	Existing		With Project		V/C Change
				V/C	LOS	V/C	LOS		V/C	LOS	V/C	LOS	
Bangs Avenue Prescott Road to Carver Road	RR	1	EB	0.41	A	0.47	A	0.06	0.44	A	0.66	B	0.22
		1	WB	0.31	A	0.63	B	0.32	0.39	A	0.51	A	0.12
Bangs Avenue Carver Road to Tully Road	RR	1	EB	0.39	A	0.44	A	0.05	0.48	A	0.66	B	0.18
		1	WB	0.22	A	0.46	A	0.24	0.38	A	0.46	A	0.08
Bangs Avenue Tully Road to McHenry Avenue	RR	1	EB	0.37	A	0.40	A	0.03	0.48	A	0.59	A	0.11
		1	WB	0.43	A	0.55	A	0.12	0.46	A	0.50	A	0.04
Dale Road Kiernan Avenue to Healthcare Way	RR	1	SB	0.47	A	0.89	D	0.42	0.68	B	***0.97***	***E***	***0.29***
		1	NB	0.39	A	0.51	A	0.12	0.51	A	***0.91***	***E***	***0.40***
Dale Road Healthcare Way to The Plaza Way	RR	3	SB	0.22	A	0.39	A	0.17	0.35	A	0.64	B	0.29
		2	NB	0.21	A	0.44	A	0.23	0.27	A	0.44	A	0.17
Dale Road The Plaza Way to Bangs Avenue	RR	3	SB	0.14	A	0.26	A	0.12	0.24	A	0.60	A	0.36
		2	NB	0.22	A	0.71	C	0.49	0.30	A	0.56	A	0.26
Dale Road Bangs Avenue to Pelandale Avenue	SA	3	SB	0.20	A	0.33	A	0.13	0.29	A	0.72	C	0.43
		3	NB	0.26	A	0.87	D	0.61	0.33	A	0.62	B	0.29
Dale Road Pelandale Avenue to Snyder Avenue	SA	3	SB	0.25	A	0.30	A	0.05	0.45	A	0.63	B	0.18
		3	NB	0.38	A	0.65	B	0.27	0.57	A	0.70	B	0.13
Dale Road Snyder Avenue to Veneman Avenue	SA	2	SB	0.38	A	0.45	A	0.07	0.59	A	0.80	C	0.21
		2	NB	0.25	A	0.47	A	0.22	0.56	A	0.66	B	0.10
Dale Road Veneman Avenue to Standiford Avenue	SA	2	SB	0.30	A	0.37	A	0.07	0.62	B	0.83	D	0.21
		2	NB	0.28	A	0.50	A	0.22	0.56	A	0.67	B	0.11

Facility Types:
FWY = Freeway, COL = Collector SA = Signalized Arterial, CBE = Class B Expressway, RR = Rural Road

Notes: Roadway segments operating at unacceptable LOS E or LOS F levels are shown in **bold**. Significant project impacts are shown in ***bold italics***.
Source: Fehr & Peers, 2008.

TABLE 17
EXISTING WITH PROJECT
SR 99 RAMP MERGE/DIVERGE LEVELS OF SERVICE

Ramp Merge/Diverge	Peak Hour	Existing		Existing With Project		Percent Project Volume Increase through Merge/ Diverge Area	Signif-icant?
		Density (pc/mi/ln)[1]	LOS	Density (pc/mi/ln)[1]	LOS		
Kiernan Avenue Southbound Off-ramp Diverge	AM	31	D	32	D	1.8%	No
	PM	35	D	***36***	***E***	1.5%	***Yes***
Kiernan Avenue Southbound On-ramp Merge	AM	29	D	29	D	0.0%	No
	PM	34	D	34	D	0.0%	No
Kiernan Avenue Northbound Off-ramp Diverge	AM	**36**	**E**	**36**	**E**	0.0%	No
	PM	**38**	**E**	**38**	**E**	0.0%	No
Kiernan Avenue Northbound On-ramp Merge	AM	27	C	28	C	0.9%	No
	PM	27	C	28	C	2.4%	No
Pelandale Avenue Southbound Off-ramp Diverge	AM	**38**	**E**	**38**	**E**	0.0%	No
	PM	**41**	**F**	**41**	**F**	0.0%	No
Pelandale Avenue Southbound On-ramp Merge	AM	27	C	29	D	2.0%	No
	PM	31	D	33	D	5.5%	No
Pelandale Avenue Northbound Off-ramp Diverge	AM	33	D	***36***	***E***	5.8%	***Yes***
	PM	32	D	33	D	3.2%	No
Pelandale Avenue Northbound On-ramp Merge	AM	29	D	29	D	0.0%	No
	PM	29	D	29	D	0.0%	No
Standiford Avenue Southbound Off-ramp Diverge	AM	32	D	33	D	2.0%	No
	PM	**36**	**E**	***38***	***E***	5.5%	***Yes***
Standiford Avenue Southbound On-ramp Merge	AM	29	D	29	D	2.8%	No
	PM	30	D	32	D	8.0%	No
Standiford Avenue Northbound Off-ramp Diverge	AM	34	D	***36***	***E***	8.1%	***Yes***
	PM	33	D	34	D	4.3%	No
Standiford Avenue Northbound On-ramp Merge	AM	29	D	31	D	5.8%	No
	PM	27	C	28	C	3.2%	No

Note: 1. Density is presented in passenger cars per mile per lane (pc/mi/ln).
Bold Italics indicates significant impact.

TABLE 18
NEAR-TERM WITH PROJECT
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Near-Term Without Project		Near-Term With Project		Impact Summary	
			Delay[2,6] (in seconds)	LOS[2,6]	Delay[2,6] (in seconds)	LOS[2,6]	Increase (in delay)	Significant
1. Kiernan Avenue/Salida Boulevard	Traffic Signal	AM PM	16 17	B B	17 17	B B	1 0	No No
2. Kiernan Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	**52** **40**	**D** **D**	***59*** ***42***	***E*** **D**	7 2	Yes[3&7] No
3. Kiernan Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	20 23	B C	20 28	B C	0 5	No No
4. Kiernan Avenue/Sisk Road	Traffic Signal	AM PM	**40** **70**	**D** **E**	***75*** ***81***	***E*** ***F***	35 10	Yes[3&7] Yes[3&7]
5. Kiernan Avenue/Stoddard Road	Traffic Signal	AM PM	32 29	C C	32 31	C C	0 2	No No
6. Kiernan Avenue/Dale Road	Traffic Signal	AM PM	41 48	D D	48 48	D D	7 0	No No
7. Kiernan Avenue/American Avenue	Side-Street Stop[1]	AM PM	1 (13) 0 (12)	A (B) A (B)	1 (14) 8 (45)	A (B) A (E)	0 (1) 8 (> 30)	No No
8. Kiernan Avenue/Carver Road	Traffic Signal	AM PM	14 19	B B	15 23	B C	1 4	No No
9. Dale Road/Healthcare Way	Traffic Signal	AM PM	23 26	C C	33 38	C D	10 12	No No
10. Healthcare Way/American Avenue	Roundabout	AM PM	-- --	-- --	4 5	A A	4 5	No No
11. Dale Road/Kaiser Main Entrance	Traffic Signal	AM PM	18 28	B C	26 ***88***	C ***F***	8 >30	No Yes
12. Bangs Avenue/Dale Road	Traffic Signal	AM PM	24 26	C C	38 30	D C	14 4	No No
13. Bangs Avenue/American Avenue[6]	Side-Street Stop[1]	AM PM	3 (23) 7 **(36)**	A (C) A **(E)**	***>50 (>50)*** ***>50 (>50)***	***F*** ***F***	> 30 (> 30) > 30 (> 30)	Yes[3] Yes[3]
14. Bangs Avenue/Prescott Road	Traffic Signal	AM PM	14 27	B C	21 ***121***	C ***F***	7 >30	Yes[3] Yes[3]
15. Bangs Avenue/Carver Road	All-way Stop	AM PM	**141** **257**	**F** **F**	***266*** ***406***	***F*** ***F***	> 30 > 30	Yes[3] Yes[3]

TABLE 18
NEAR-TERM WITH PROJECT
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Near-Term Without Project		Near-Term With Project		Impact Summary	
			Delay[2,6] (in seconds)	LOS[2,6]	Delay[2,6] (in seconds)	LOS[2,6]	Increase (in delay)	Significant
16. Bangs Avenue/Tully Road	All-way Stop	AM PM	**113** **300**	**F** **F**	***219*** ***404***	***F*** ***F***	> 30 > 30	Yes[3] Yes[3]
17. Bangs Avenue/McHenry Avenue	Traffic Signal	AM PM	25 36	C D	31 54	C D	6 18	No No
18. Pelandale Avenue/Salida Boulevard	Traffic Signal	AM PM	25 21	C C	26 21	C C	1 0	No No
19. Pelandale Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	29 **188**	C **F**	29 ***225***	C ***F***	0 >30	No Yes[3]
20. Pelandale Avenue/SR 99 Northbound Ramps	Traffic Signal	AM PM	29 22	C C	40 34	D C	11 12	No No
21. Pelandale Avenue/Sisk Road	Traffic Signal	AM PM	30 **98**	C **F**	30 **99**	C **F**	0 1	No No
22. Pelandale Avenue/Northpointe Shopping Center	Traffic Signal	AM PM	8 36	A D	8 45	A D	0 9	No No
23. Pelandale Avenue/Chapman Road	Traffic Signal	AM PM	6 9	A A	6 10	A A	0 1	No No
24. Pelandale Avenue/Dale Road	Traffic Signal	AM PM	40 **74**	D **E**	***116*** ***93***	***F*** ***F***	>30 19	Yes[3] Yes[3]
25. Pelandale Avenue/Prescott Road	Traffic Signal	AM PM	25 30	C C	32 52	C D	7 22	No No
26. Pelandale Avenue/Carver Road	Traffic Signal	AM PM	24 31	C C	31 38	C D	7 7	No No
27. Dale Road/Snyder Avenue	Traffic Signal	AM PM	26 31	C C	28 43	C D	2 12	No No
28. Standiford Avenue/SR 99 Southbound Ramps	Traffic Signal	AM PM	53 **320**	D **F**	***60*** ***341***	***E*** ***F***	7 21	Yes[3] Yes[3]
29. Standiford Avenue/ SR 99 Northbound Ramps	Traffic Signal	AM PM	29 **179**	C **F**	40 ***201***	D ***F***	11 22	No Yes[3]
30. Standiford Avenue/Sisk Road	Traffic Signal	AM PM	31 **212**	C **F**	36 ***240***	D ***F***	5 28	No Yes[3]

TABLE 18
NEAR-TERM WITH PROJECT
PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Near-Term Without Project		Near-Term With Project		Impact Summary	
			Delay[2,6] (in seconds)	LOS[2,6]	Delay[2,6] (in seconds)	LOS[2,6]	Increase (in delay)	Significant
31. Standiford Avenue/Dale Road	Traffic Signal	AM	24	C	26	C	2	No
		PM	41	D	48	D	7	No

1. For side-street stop-controlled intersections, delays for intersection average (worst movement) are shown.
2. Intersections operating at unacceptable (LOS E/LOS F) levels are shown in **bold.**
3. Project increases delay by more than 5.0 seconds at an intersection operating at LOS E or F.
4. Project results in LOS F conditions for worst movement.
5. Project increases side-street delay by more than 30 seconds, or delay increase is immeasurable and project adds more than 10 vehicles to stop-controlled approach.
6. For roundabout intersections, volume/capacity ratio for worst movement and average intersection delay are shown: average delay (worst movement v/c ratio).
7. This intersection is located in the County where the LOS standard is C.

Source: Fehr & Peers, 2008.

TABLE 19
NEAR-TERM WITH PROJECT
PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segment	Facility Type	# Lanes[1]	Direction	Weekday AM Peak Hour					Weekday PM Peak Hour				
				Near-Term		With Project		V/C Change	Near-Term		With Project		V/C Change
				V/C	LOS	V/C	LOS		V/C	LOS	V/C	LOS	
SR 99 Hammett Road to Kiernan Avenue	FWY	3	SB	0.86	D	0.88	D	0.02	**1.00**	**E**	***1.01***	***F***	***0.01***
		3	NB	0.88	D	0.89	D	0.01	0.88	D	0.90	D	0.02
SR 99 Kiernan Avenue to Pelandale Avenue	FWY	3	SB	0.84	D	0.84	D	0.00	**0.98**	**E**	**0.98**	**E**	0.00
		3	NB	0.90	D	0.90	D	0.00	0.85	D	0.85	D	0.00
SR 99 Pelandale Avenue to Standiford Avenue	FWY	3	SB	0.85	D	0.87	D	0.02	**0.98**	**E**	***1.02***	***F***	***0.04***
		3	NB	**0.94**	**E**	**0.98**	**E**	0.04	0.84	D	0.86	D	0.02
SR 99 Standiford Avenue to Briggsmore Avenue	FWY	3	SB	0.90	D	***0.92***	***E***	***0.02***	**1.01**	**F**	***1.07***	***F***	***0.06***
		3	NB	**1.00**	**E**	***1.06***	***F***	***0.06***	**0.92**	**E**	**0.96**	**E**	0.04
Kiernan Avenue Salida Boulevard to SR 99 SB Ramps	SA	2	EB	0.70	B	0.72	C	0.02	0.60	A	0.61	B	0.01
		2	WB	0.48	A	0.49	A	0.01	0.57	A	0.59	A	0.02
Kiernan Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	2	EB	**1.01**	**F**	***1.08***	***F***	***0.07***	**0.86**	**D**	***0.92***	***E***	***0.06***
		2	WB	0.70	B	0.70	B	0.00	0.76	C	0.77	C	0.01
Kiernan Avenue SR 99 NB Ramps to Sisk Road	SA	2	EB	**1.29**	**F**	***1.35***	***F***	***0.06***	**1.09**	**F**	***1.15***	***F***	***0.06***
		2	WB	**0.91**	**E**	**0.95**	**E**	0.04	**1.12**	**F**	***1.20***	***F***	***0.08***
Kiernan Avenue Sisk Road to Stoddard Road	CBE	2	EB	0.69	B	0.75	C	0.06	0.54	A	0.58	A	0.04
		2	WB	0.44	A	0.46	A	0.02	0.59	A	0.66	B	0.07
Kiernan Avenue Stoddard Road to Dale Road	CBE	2	EB	0.48	A	0.54	A	0.06	0.54	A	0.58	A	0.04
		2	WB	0.51	A	0.54	A	0.03	0.49	A	0.56	A	0.07
Kiernan Avenue Dale Road to American Avenue	CBE	2	EB	0.30	A	0.33	A	0.03	0.43	A	0.43	A	0.00
		2	WB	0.44	A	0.50	A	0.06	0.36	A	0.40	A	0.04
Kiernan Avenue American Avenue to Carver Road	CBE	2	EB	0.28	A	0.33	A	0.05	0.42	A	0.58	A	0.16
		2	WB	0.44	A	0.51	A	0.07	0.39	A	0.42	A	0.03
Kiernan Avenue Carver Road to McHenry Avenue	CBE	2	EB	0.16	A	0.19	A	0.03	0.40	A	0.51	A	0.11
		2	WB	0.25	A	0.31	A	0.06	0.37	A	0.40	A	0.03

TABLE 19
NEAR-TERM WITH PROJECT
PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segment	Facility Type	# Lanes[1]	Direction	Weekday AM Peak Hour					Weekday PM Peak Hour				
				Near-Term		With Project		V/C Change	Near-Term		With Project		V/C Change
				V/C	LOS	V/C	LOS		V/C	LOS	V/C	LOS	
Pelandale Avenue Salida Boulevard to SR 99 SB Ramps	SA	1	EB	0.78	C	0.81	D	0.03	0.83	D	0.84	D	0.01
		2	WB	0.37	A	0.38	A	0.01	0.55	A	0.57	A	0.02
Pelandale Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	2	EB	0.56	A	0.58	A	0.02	**0.99**	**E**	**1.00**	**E**	0.01
		2	WB	0.60	A	0.66	B	0.06	**1.13**	**F**	***1.32***	***F***	***0.19***
Pelandale Avenue SR 99 NB Ramps to Sisk Road	SA	3	EB	0.74	C	0.87	D	0.13	**1.00**	**E**	***1.06***	***F***	***0.06***
		3	WB	0.66	B	0.70	B	0.04	**1.12**	**F**	***1.25***	***F***	***0.13***
Pelandale Avenue Sisk Road to Northpointe Shopping Center	SA	3	EB	0.62	B	0.74	C	0.12	**1.01**	**F**	***1.08***	***F***	***0.07***
		3	WB	0.69	B	0.73	C	0.04	0.81	D	***0.94***	***E***	***0.13***
Pelandale Avenue Northpointe Shopping to Chapman Road	SA	3	EB	0.56	A	0.69	B	0.13	0.90	D	***0.96***	***E***	***0.06***
		3	WB	0.71	C	0.75	C	0.04	0.78	C	0.90	D	0.12
Pelandale Avenue Chapman Road to Dale Road	SA	3	EB	0.56	A	0.69	B	0.13	**0.92**	**E**	***0.99***	***E***	***0.07***
		3	WB	0.72	C	0.76	C	0.04	0.83	D	***0.96***	***E***	***0.13***
Pelandale Avenue Dale Road to American Avenue	CBE	3	EB	0.22	A	0.24	A	0.02	0.53	A	0.60	A	0.07
		3	WB	0.35	A	0.41	A	0.06	0.37	A	0.40	A	0.03
Pelandale Avenue American Avenue to Prescott Road	CBE	3	EB	0.20	A	0.22	A	0.02	0.50	A	0.57	A	0.07
		3	WB	0.41	A	0.56	A	0.15	0.35	A	0.42	A	0.07
Pelandale Avenue Prescott Road to Carver Road	CBE	3	EB	0.20	A	0.22	A	0.02	0.46	A	0.53	A	0.07
		3	WB	0.35	A	0.46	A	0.11	0.32	A	0.37	A	0.05
Pelandale Avenue Carver Road to Tully Road	CBE	3	EB	0.17	A	0.19	A	0.02	0.40	A	0.48	A	0.08
		3	WB	0.30	A	0.42	A	0.12	0.28	A	0.33	A	0.05
Bangs Avenue Dale Road to American Avenue	RR	1	EB	0.55	A	0.75	C	0.20	0.70	B	***1.02***	***F***	***0.32***
		1	WB	0.66	B	***1.12***	***F***	***0.46***	0.64	B	0.86	D	0.22
Bangs Avenue American Avenue to Prescott Road	RR	1	EB	0.40	A	0.55	A	0.15	**0.98**	**E**	***1.50***	***F***	***0.52***
		1	WB	0.70	B	***1.21***	***F***	***0.51***	0.53	A	0.77	C	0.24

TABLE 19
NEAR-TERM WITH PROJECT
PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segment	Facility Type	# Lanes[1]	Direction	Weekday AM Peak Hour					Weekday PM Peak Hour				
				Near-Term		With Project		V/C Change	Near-Term		With Project		V/C Change
				V/C	LOS	V/C	LOS		V/C	LOS	V/C	LOS	
Bangs Avenue Prescott Road to Carver Road	RR	1	EB	0.54	A	0.59	A	0.05	0.88	D	***1.05***	***F***	***0.17***
		1	WB	0.65	B	***0.96***	***E***	***0.31***	0.53	A	0.66	B	0.13
Bangs Avenue Carver Road to Tully Road	RR	1	EB	0.50	A	0.54	A	0.04	0.82	D	***0.99***	***E***	***0.17***
		1	WB	0.46	A	0.70	B	0.24	0.51	A	0.60	A	0.09
Bangs Avenue Tully Road to McHenry Avenue	RR	1	EB	0.45	A	0.48	A	0.03	0.67	B	0.78	C	0.11
		1	WB	0.55	A	0.67	B	0.12	0.55	A	0.58	A	0.03
Dale Road Kiernan Avenue to Healthcare Way	SA	2	SB	0.65	B	0.84	D	0.19	0.59	A	0.72	C	0.13
		2	NB	0.37	A	0.42	A	0.05	0.71	C	0.88	D	0.17
Dale Road Healthcare Way to The Plaza Way	SA	2	SB	0.60	A	0.75	C	0.15	0.88	D	***1.17***	***F***	***0.29***
		2	NB	0.68	B	0.90	D	0.22	0.72	C	0.87	D	0.15
Dale Road The Plaza Way to Bangs Avenue	SA	3	SB	0.36	A	0.47	A	0.11	0.76	C	***1.06***	***F***	***0.30***
		2	NB	**1.10**	**F**	***1.57***	***F***	***0.47***	0.77	C	***1.01***	***F***	***0.24***
Dale Road Bangs Avenue to Pelandale Avenue	SA	3	SB	0.37	A	0.50	A	0.13	0.88	D	***1.29***	***F***	***0.41***
		2	NB	**1.11**	**F**	***1.70***	***F***	***0.59***	0.74	C	***1.03***	***F***	***0.29***
Dale Road Pelandale Avenue to Snyder Avenue	SA	3	SB	0.35	A	0.40	A	0.05	0.72	C	0.90	D	0.18
		2	NB	0.78	C	***1.04***	***F***	***0.26***	0.83	D	***0.96***	***E***	***0.13***
Dale Road Snyder Avenue to Veneman Avenue	SA	2	SB	0.52	A	0.58	A	0.06	**0.93**	**E**	***1.13***	***F***	***0.20***
		2	NB	0.54	A	0.75	C	0.21	0.81	D	***0.91***	***E***	***0.10***
Dale Road Veneman Avenue to Standiford Avenue	SA	3	SB	0.28	A	0.33	A	0.05	0.72	C	0.86	D	0.14
		3	NB	0.44	A	0.58	A	0.14	0.60	A	0.67	B	0.07

Facility Types:
FWY = Freeway, COL = Collector, SA = Signalized Arterial, CBE = Class B Expressway, RR = Rural Road

Notes: Roadway segments operating at unacceptable LOS E or LOS F levels are shown in **bold**. Significant project impacts are shown in ***bold italics***.

Source: Fehr & Peers, 2008.

TABLE 20
NEAR-TERM WITH PROJECT
SR 99 RAMP MERGE/DIVERGE LEVELS OF SERVICE

Ramp Merge/Diverge	Peak Hour	Near-Term Without Project		Near-Term With Project		Percent Project Volume Increase through Merge/ Diverge Area	Significant?
		Density (pc/mi/ln)[1]	LOS	Density (pc/mi/ln)[1]	LOS		
Kiernan Avenue Southbound Off-ramp Diverge	AM	**36**	**E**	**36**	**E**	1.5%	No
	PM	**39**	**E**	**40**	**E**	1.3%	No
Kiernan Avenue Southbound On-ramp Merge	AM	33	D	33	D	0.0%	No
	PM	**43**	**E**	**43**	**E**	0.0%	No
Kiernan Avenue Northbound Off-ramp Diverge	AM	**44**	**E**	**44**	**E**	0.0%	No
	PM	**47**	**E**	**47**	**E**	0.0%	No
Kiernan Avenue Northbound On-ramp Merge	AM	32	D	32	D	0.8%	No
	PM	33	D	34	D	2.0%	No
Pelandale Avenue Southbound Off-ramp Diverge	AM	**44**	**E**	**44**	**E**	0.0%	No
	PM	**51**	**E**	**51**	**E**	0.0%	No
Pelandale Avenue Southbound On-ramp Merge	AM	31	D	32	D	1.8%	No
	PM	**37**	**E**	**39**	**E**	4.6%	No
Pelandale Avenue Northbound Off-ramp Diverge	AM	**38**	**E**	**40**	**E**	4.8%	No
	PM	**36**	**E**	**37**	**E**	2.8%	No
Pelandale Avenue Northbound On-ramp Merge	AM	**36**	**E**	**36**	**E**	0.0%	No
	PM	34	D	34	D	0.0%	No
Standiford Avenue Southbound Off-ramp Diverge	AM	**36**	**E**	**36**	**E**	1.8%	No
	PM	**42**	**E**	***44***	***F***	4.6%	***Yes***
Standiford Avenue Southbound On-ramp Merge	AM	34	D	34	D	2.4%	No
	PM	**38**	**E**	***40***	***F***	6.3%	***Yes***
Standiford Avenue Northbound Off-ramp Diverge	AM	**40**	**E**	***43***	***F***	6.5%	***Yes***
	PM	**38**	**E**	**39**	**E**	3.6%	No
Standiford Avenue Northbound On-ramp Merge	AM	34	D	***36***	***E***	4.8%	***Yes***
	PM	31	D	32	D	2.8%	No

Note: 1. Density is presented in passenger cars per mile per lane (pc/mi/ln).

Source: Fehr & Peers, 2008.

TABLE 21
CUMULATIVE (2025) WITH PROJECT
WEEKDAY DAILY ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segments	Roadway Type	No. Lanes	Baseline		With Project			
			V/C	LOS	V/C	LOS	Change	Signif-icant?
SR 99 Hammett Road to Kiernan Avenue	FWY	8	0.74	C	0.75	C	0.01	No
SR 99 Kiernan Avenue to Pelandale Avenue	FWY	8	0.71	C	0.72	C	0.01	No
SR 99 Pelandale Avenue to Standiford Avenue	FWY	8	0.72	C	0.72	C	0.00	No
SR 99 Standiford Ave to Briggsmore Ave	FWY	8	**0.91**	**E**	**0.91**	**E**	0.00	No
Kiernan Avenue Salida Boulevard to SR 99 SB Ramps	Arterial	6	0.64	B	0.66	B	0.02	No
Kiernan Avenue SR 99 SB Ramps to SR 99 NB Ramps	Arterial	6	**1.14**	**F**	**1.17**	**F**	0.03	No
Kiernan Avenue SR 99 NB Ramps to Sisk Road	Arterial	6	**1.44**	**F**	**1.47**	**F**	0.03	No
Kiernan Avenue Sisk Road to Stoddard Road	Arterial	6	**1.39**	**F**	**1.42**	**F**	0.03	No
Kiernan Avenue Stoddard Road to Dale Road	CB EXPY	6	0.76	C	0.76	C	0.00	No
Kiernan Avenue Dale Road to American Avenue	CB EXPY	6	0.77	C	0.72	C	-0.05	No
Kiernan Avenue American Avenue to Carver Road	CB EXPY	6	0.80	C	0.77	C	-0.03	No
Kiernan Avenue Carver Road to McHenry Avenue	CB EXPY	6	0.86	D	0.83	D	-0.03	No
Pelandale Avenue Salida Boulevard to SR 99 SB Ramps	Overpass	4	0.67	B	0.71	C	0.04	No
Pelandale Avenue SR 99 SB Ramps to SR 99 NB Ramps	Overpass	5	0.60	A	0.63	B	0.03	No
Pelandale Avenue SR 99 NB Ramps to Sisk Road	Overpass	5	0.79	C	0.83	D	0.04	No
Pelandale Avenue Sisk Road to Northpointe Shopping	Arterial	6	**1.11**	**F**	***1.17***	***F***	***0.06***	***Yes***
Pelandale Avenue Northpointe Shopping to Chapman Road	Arterial	6	**0.99**	**E**	***1.07***	***F***	***0.08***	***Yes***
Pelandale Avenue Chapman Road to Dale Road	Arterial	6	0.86	D	***0.93***	***E***	***0.07***	***Yes***
Pelandale Avenue Dale Road to Prescott Road	CB EXPY	6	0.56	A	0.66	B	0.10	No
Pelandale Avenue Prescott Road to Carver Road	CB EXPY	6	0.78	C	0.77	C	-0.01	No

TABLE 21
CUMULATIVE (2025) WITH PROJECT
WEEKDAY DAILY ROADWAY SEGMENT LEVELS OF SERVICE

Roadway Segments	Roadway Type	No. Lanes	Baseline		With Project			
			V/C	LOS	V/C	LOS	Change	Signif-icant?
Pelandale Avenue Carver Road to Tully Road	CB EXPY	6	0.71	C	0.72	C	0.01	No
Bangs Avenue Dale Road to American Avenue	Collector	4	0.27	A	0.38	A	0.11	No
Bangs Avenue American Avenue to Prescott Road	Collector	4	0.36	A	0.54	A	0.18	No
Bangs Avenue Prescott Road to Carver Road	Collector	4	0.46	A	0.67	B	0.21	No
Bangs Avenue Carver Road to Tully Road	Collector	4	0.51	A	0.65	B	0.14	No
Bangs Avenue Tully Road to McHenry Avenue	Collector	4	**0.94**	**E**	**0.97**	**E**	0.03	No
Dale Road Kiernan Avenue to Healthcare Way	Arterial	6	0.68	B	0.72	C	0.04	No
Dale Road Healthcare Way to Plaza Way	Arterial	6	0.69	B	0.65	B	-0.04	No
Dale Road Plaza Way to Bangs Avenue	Arterial	6	0.76	C	0.81	D	0.05	No
Dale Road Bangs Avenue to Pelandale Avenue	Arterial	6	0.87	D	***0.94***	***E***	***0.07***	***Yes***
Dale Road Pelandale Avenue to Snyder Avenue	Arterial	6	0.87	D	***0.95***	***E***	***0.08***	***Yes***
Dale Road Snyder Avenue to Veneman Avenue	Arterial	6	0.87	D	***0.96***	***E***	***0.09***	***Yes***
Dale Road Veneman Avenue to Standiford Avenue	Arterial	6	**1.02**	**F**	**1.03**	**F**	0.01	No

Note: Roadway segments operating at unacceptable levels (LOS E or LOS F) are shown in **bold**.

Source: Fehr & Peers, 2008.

6. VEHICULAR SITE ACCESS, CIRCULATION AND PARKING

This chapter discusses site access and circulation for vehicles, pedestrians, bicycles, transit, and emergency vehicles, and discusses parking requirements for the Project. Site access, internal circulation, and parking considerations for all travel modes (vehicles, pedestrians, bicycles, and transit) were evaluated against the criteria presented in Chapter 1 and recommendations to improve site access, circulation and parking were developed.

VEHICLE SITE ACCESS AND ON-SITE CIRCULATION

Kiernan Avenue, American Avenue, Bangs Avenue, and Dale Road bound the Project site. Kiernan Avenue forms the northern boundary and is ultimately planned as a six-lane expressway along the project frontage. Therefore, no direct access from Kiernan Avenue to the Project site would be provided.

American Avenue, the eastern boundary of the Project site, is planned as a two-lane roadway with Class II bicycle lanes. American Avenue at both Kiernan Avenue and Pelandale Avenue would be restricted to right-in/right-out access only. Access to the site from American Avenue would be provided from three intersections.

Bangs Avenue, the southern boundary of the Project site, is planned as a four-lane major collector in the General Plan. A Class I bicycle facility (bike path) would be constructed north of the MID Lateral No. 6 Canal parallel to Bangs Avenue in the study area. A new north-south roadway (Chopra Parkway) would intersect with Bangs Avenue to provide site access.

Dale Road, the western boundary of the Project site, is planned to ultimately be a six-lane roadway from Kiernan Avenue to Standiford Avenue. Access to the site from Dale Road would be provided from an extension of Health Care Way (which would ultimately connect to Chapman Road as Kiernan Business Park is developed to the west) and from a new roadway aligned with the main entrance to the Kaiser Medical Center.

Two east-west streets would connect Dale Road to American Avenue and one north-south street would connect Health Care Way to Bangs Avenue. Two additional streets would provide internal circulation within the Project site as depicted on the land use diagram (see Figure 14), but these were not fully studied as they are minor roadways whose main function is to provide property access. One east-west street would connect Chopra Parkway and American Avenue. A north-south street would connect the minor east-west street described above to The Plaza Way.

Health Care Way, The Plaza Way, and Chopra Parkway are proposed to be minor collector roadways with two travel lanes, a two-way left-turn lane, bicycle lanes, and sidewalks within 78 feet of right-of-way. No on-street parking would be permitted on these roadways. Health Care Way would align with the roadway recently constructed as part of the Kaiser Medical Center. The Plaza Way would align with the main entrance of Kaiser Medical Center. Chopra Parkway, a north-south street, would align with Mana Parkway (the Kiernan Business Park South entrance) at Bangs Avenue and would intersect with Health Care Way and The Plaza Way on the site.

Vehicle queue spillback would occur at the American Avenue/Bangs Avenue intersection with the currently proposed single-lane roundabout. Provision of a two-lane roundabout on Bangs Avenue and a northbound

right-turn by-pass lane would result in acceptable service levels and reduce potential vehicle queue spillback to a less-than-significant level. Alternatively, the intersection could be signalized with two travel lanes in each direction on Bangs Avenue in addition to left-turn pockets. On the northbound approach, a left-turn lane, through lane, and right-turn only lane are recommended. On the southbound approach, a left-turn lane and a through-right shared lane are recommended. A conceptual design of the roundabouts on Bangs Avenue at Chopra Parkway and American Avenue are shown on Figures 13A and 13B

Internal Traffic Control and Intersection Operations

Roundabout traffic control is proposed for several of the internal and access intersections. As shown in Table 22, the internal intersections would operate acceptably with single lane roundabout control. All proposed roundabouts should be designed to City Standards as presented in *Modesto Roundabout Policy,* adopted by Resolution 2004-451, September 7, 2004. The recommended lane configurations at the Project entrances and internal intersections are presented on Figure 14.

TABLE 22
NEAR-TERM WITH PROJECT WITH RECOMMENDATIONS
INTERNAL AND ENTRY INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control[1]	Peak Hour	Delay[2,3] (in seconds)	LOS
Kiernan Avenue/Dale Road	Traffic Signal	AM PM	52 54	D D
Kiernan Avenue/American Avenue	Side-Street Stop	AM PM	1 (14) 8 (45)	A (B) A (E)
Healthcare Way/Dale Road	Traffic Signal	AM PM	28 35	C C
Healthcare Way/Chopra Parkway	One-Lane Roundabout	AM PM	4 4	A A
Healthcare Way/American Avenue	One-Lane Roundabout	AM PM	4 5	A A
Dale Road/Kaiser Main Entrance/The Plaza Way	Traffic Signal	AM PM	28 42	C D
The Plaza Way/Chopra Parkway	One-Lane Roundabout	AM PM	4 5	A A
The Plaza Way/American Avenue	One-Lane Roundabout	AM PM	5 4	A A
Bangs Avenue/Dale Road	Traffic Signal	AM PM	21 30	C C
Bangs Avenue/Chopra Parkway	Two-Lane Roundabout	AM PM	7 (0.46) 9 (0.79)	A A
Bangs Avenue/American Avenue	Two-Lane Roundabout	AM PM	7 (0.61) 7 (0.54)	A A

1. Traffic signals, stop signs or roundabout.
2. Delay for signalized and stop-controlled intersections calculated using the 2000 HCM method. Delay for roundabout controlled intersections calculated using the FHWA method or aaSidra.
3. For roundabout intersections, volume/capacity ratio for worst movement and average intersection delay are shown: average delay (worst movement v/c ratio).

Source: Fehr & Peers, 2008.

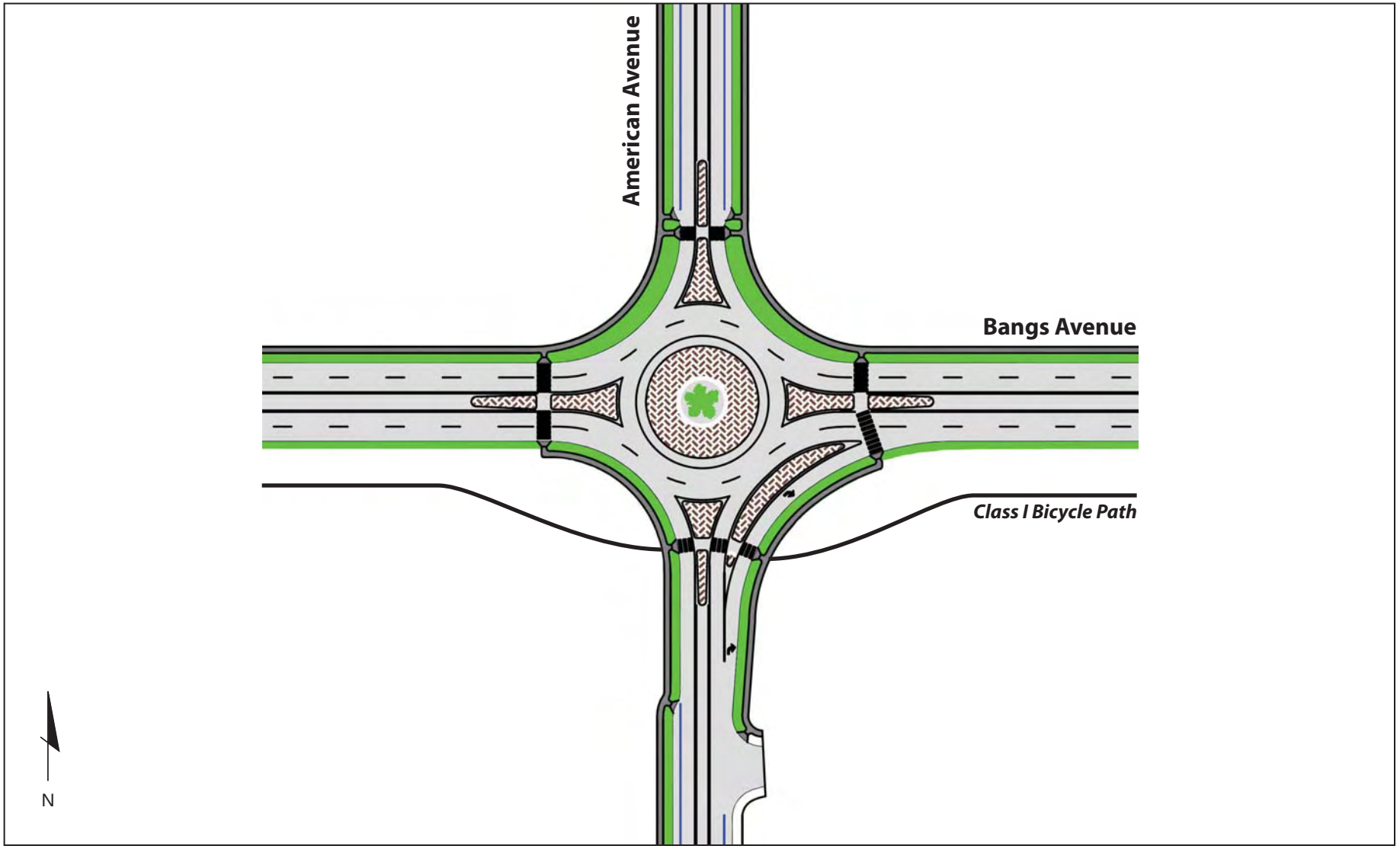
Sufficient site plan details are not provided to evaluate parking lot layouts or circulation, or minor internal intersection operations. The driveways on Health Care Way, Chopra Parkway, The Plaza Way, and American Avenue should conform to the City's driveway spacing standards. The site plan should be reviewed by City Staff as it is being developed to ensure safe and efficient and on-site vehicular circulation.

EMERGENCY VEHICLE ACCESS

Factors such as number of access points, roadway widths, and proximity to fire stations determine whether a site has sufficient emergency access. The proposed project site has multiple points of entry from Dale Road, Bangs Avenue, and American Avenue. If one of these roadways is blocked or obstructed, an emergency vehicle could use an alternate route to access the site. The project roadways have minimum travel ways of 24 feet, which is adequate for emergency vehicle access. A fire station is located at the Pelandale Avenue/Carver Avenue intersection, approximately one and one-half miles from the project site. The proximity of the fire station would allow for timely emergency response to the project site. Given these considerations, the project provides sufficient emergency access.

PARKING

Sufficient detail is not provided on the Project site plans or Project description to evaluate the proposed parking supply. However, it is anticipated that off-street parking would be provided according to City code requirements, considering the potential for shared parking amongst uses within the mixed-use area. Bicycle parking should also be provided, including long-term enclosed bicycle parking for employees and residents, and short-term bicycle parking for patrons.



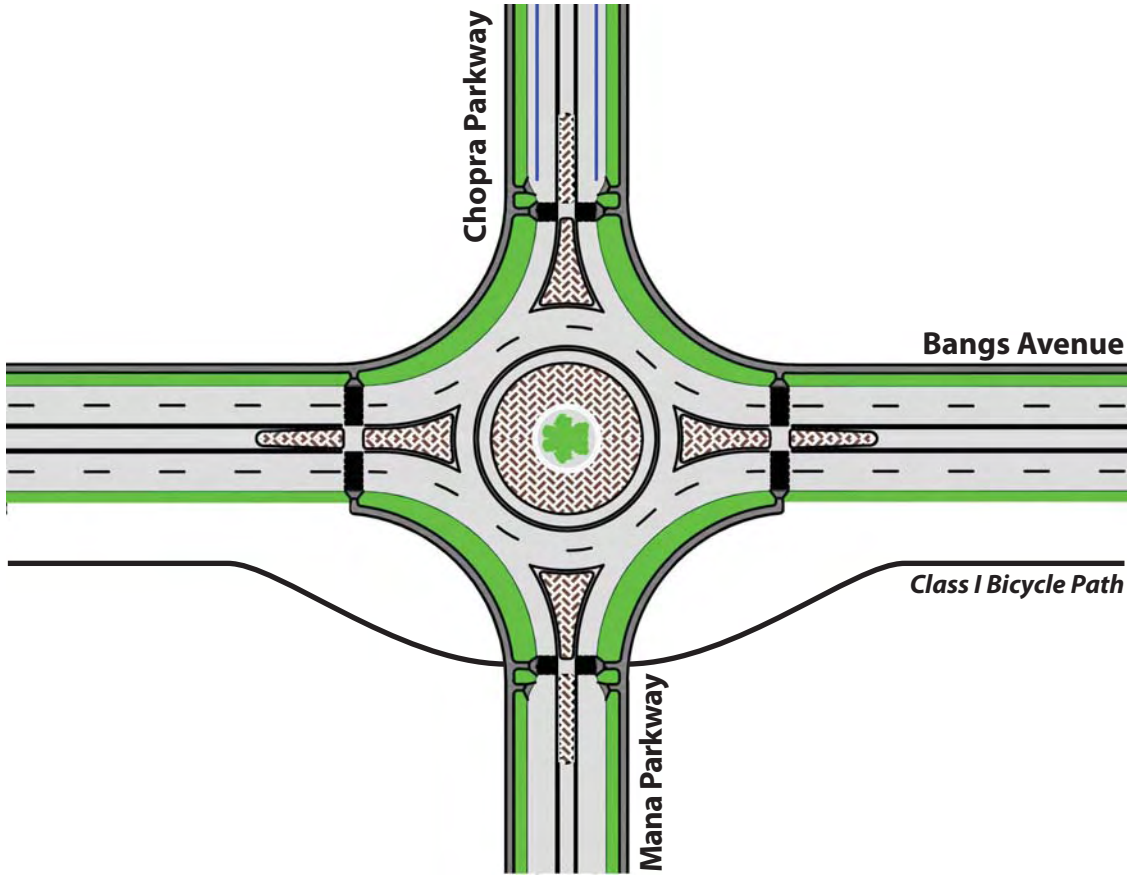
Kiernan Business Park East

CONCEPTUAL INTERSECTION DESIGN
AMERICAN AVENUE / BANGS AVENUE

Figure 13A

FEHR & PEERS
TRANSPORTATION CONSULTANTS

May 2008
Graphics\May08\WC06-2317_13A



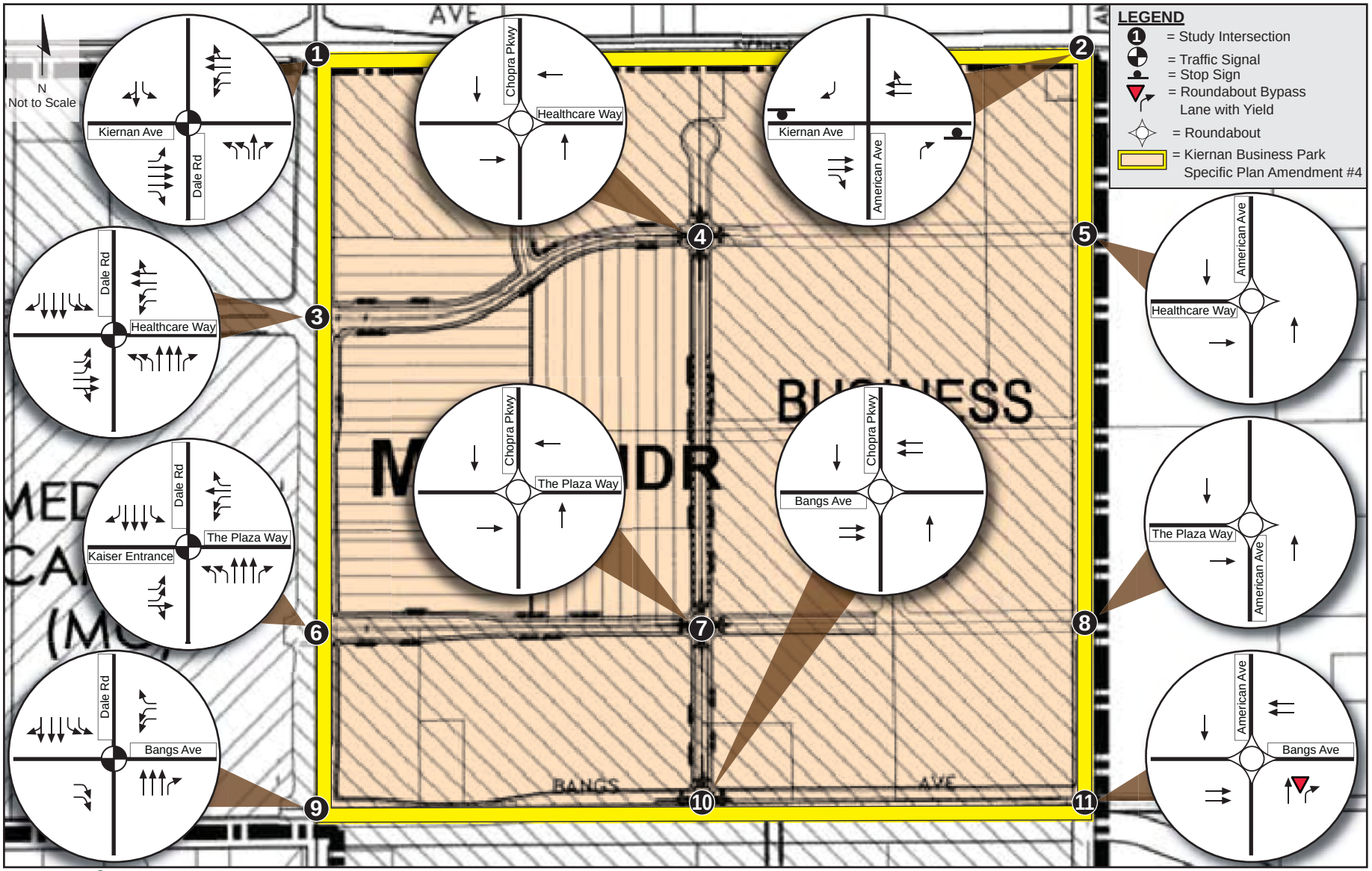
Kiernan Business Park East

FEHR & PEERS
TRANSPORTATION CONSULTANTS

CONCEPTUAL INTERSECTION DESIGN
CHOPRA PARKWAY / BANGS AVENUE

May 2008
Graphics\May08\WC06-2317_13B

Figure 13B



Kiernan Business Park

FEHR & PEERS
TRANSPORTATION CONSULTANTS

RECOMMENDED NEAR-TERM INTERSECTION LANE CONFIGURATIONS

June 2008
Graphics\May 2008\WC06-2317_14

Figure 14

7. ALTERNATIVE MODE SITE ACCESS, CIRCULATION AND RECOMMENDATIONS

Pedestrian, bicycle, and transit amenities are generally not provided within the immediate vicinity of the project site, except where sidewalks have been constructed on the west side of Dale Road as part of the Kaiser frontage improvements. It is anticipated that with development of the proposed project, sidewalks would be provided on Dale Road, Bangs Avenue, American Avenue and all roadways internal to the project site. Class II bicycle facilities would be provided on Kiernan Avenue. Class II bicycle facilities would also be provided on Health Care Way, connecting to planned facilities on Chapman Avenue, as well as on The Plaza Way, Chopra Parkway, and American Avenue. Class I bicycle facilities would also be constructed on Pelandale Avenue when it is upgraded to an expressway, and on Dale Road between Kiernan Avenue and Pelandale Avenue. A Class I bicycle facility would also be provided on the north side of the MID Lateral No. 6 Canal, which parallels Bangs Avenue along the project frontage and would ultimately connect to SR 99 in the west and Standiford Avenue at Prescott Road in the east.

Transit service is limited within the immediate vicinity of the Project site. However, it is likely that with development of Kaiser Medical Center and the Project, new bus routes would be added to serve the area. To encourage transit use to the site, transit amenities including bus pullouts and shelters should be provided on the major roadways surrounding the site and on the internal roadway network. The Project applicant should consult with Modesto Area Express to determine appropriate locations within the site for such amenities. The tentative maps should be reviewed and approved by the Transit Manager to ensure that bus pullouts and associated amenities are included. Building entrances should be located to minimize walking distances to the transit facilities. Additionally, any sound walls proposed within the Project site should consider pedestrian connectivity to transit and other planned pedestrian facilities.

The following should be considered in development of the final site plan:

- Consult with Modesto Area Express and City staff to determine appropriate locations within the site for transit amenities
- Locate building entrances to minimize walking distances to the transit facilities
- Consider pedestrian connectivity to transit and other planned pedestrian facilities with development of any sound walls proposed within the Project site
- Construct sidewalks wide enough to comfortably accommodate two-way pedestrian travel
- Develop a bicycle signing and striping plan
- Provide bicycle parking facilities
- Consider providing on-site shower and changing facilities

8. PROJECT IMPACTS AND MITIGATION MEASURES

Project impacts and mitigation measures for Existing, Near-Term, and Cumulative conditions are discussed in this chapter. First, roadway system impacts are addressed. Then transit, pedestrian, and bicycle impacts are addressed. Since the final site plan has not yet been developed, site access, on-site circulation, and parking impacts are addressed in a more qualitative manner and recommendations to avoid or minimize impacts are provided. Future review may be needed to address site access, on-site circulation, and parking as the site plan becomes more defined.

SIGNIFICANT IMPACT CRITERIA FOR ROADWAY SYSTEM IMPACTS

Standards of significance were selected based on criteria used by the City of Modesto and accepted professional practice for transportation engineering. Roadway system impacts would be considered significant if the Project would result in any of the following:

- Deterioration of a signalized intersection from LOS D (or better) to LOS E or LOS F, ***or*** a deterioration from LOS E to LOS F, ***or*** an increase in the service volume of any approach by 5 percent or more for a signalized intersection operating at LOS E or LOS F under Baseline (No Project) conditions, ***or*** an increase in average delay of 5 or more seconds for a signalized intersection operating at LOS E or LOS F under Baseline (No Project) conditions.
- Deterioration of a controlled movement at an unsignalized intersection from LOS E or better to LOS F, or at intersections where a controlled movement already operates at LOS F, one of the following:

    1. Project traffic results in satisfaction at the peak hour volume traffic signal warrant;
    2. Project traffic increases minor movement delay by more than 30 seconds; or
    3. Where the peak hour volume signal warrant is met without the Project traffic and delay cannot be measured, Project increases traffic by 10 or more vehicles per lane on the controlled approach.

- Deterioration of a roadway segment from LOS D or better to LOS E or LOS F, ***or*** a deterioration from LOS E to LOS F, ***or*** an increase in the V/C ratio of 0.05 or more for a segment operating at LOS E or LOS F under Baseline conditions.
- Deterioration of the V/C ratio of a roundabout approach from 0.85 or better to greater than 0.85 ***or*** an increase in the V/C ratio of 0.05 or more for a roundabout approach operating with a V/C ratio greater than 0.85 under Baseline conditions.

The level of service standard for intersections and roadways within Stanislaus County is LOS C. For those locations within the sphere of influence of a City that has adopted a lower level of service standard, the City standard shall apply (Policy 2, Implementation Measure 1, p. 2-28). The following are the study roadway locations located in the County beyond the existing City of Modesto's Sphere of Influence:

Study Intersections:

1. Kiernan Avenue/Salida Boulevard
2. Kiernan Avenue/SR 99 Southbound Ramps

3. Kiernan Avenue/SR 99 Northbound Ramps
4. Kiernan Avenue/Sisk Road
5. Kiernan Avenue/Stoddard Road

Study Roadway Segments:

2. Kiernan Avenue between Salida Boulevard and west of Dale Road

Impacts at these locations are evaluated against County LOS standards.

Caltrans Facilities

Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on State Highway facilities (*Guide for the Preparation of Traffic Studies*, Caltrans, December 2002), however, Caltrans recognizes that achieving LOS C/LOS D may not always be feasible. Consistent with the City of Modesto level of service policy for roadways, a standard of LOS D or better on a peak hour basis was used as the planning objective for the evaluation of potential freeway impacts for this development. The following criteria were used to evaluate potential freeway impacts:

- If a Caltrans facility (freeway mainline, ramp merge/diverge) is projected to operate acceptably (i.e., LOS D or better) without project and the project is expected to cause the facility to operate at an unacceptable service level (i.e., LOS E or F), the impact is considered significant.

- If a Caltrans facility is projected to operate unacceptably (i.e., LOS E or F) without the project and the project is expected to increase the mainline V/C ratio by 0.05 or more or increase ramp merge/diverge area traffic volumes by 5 percent or more, the impact is considered significant.

EXISTING PLUS PROJECT ROADWAY SYSTEM IMPACTS

Significant Existing Plus Project roadway system impacts were identified using the criteria stated above. Measures to reduce the Project's impacts were also identified.

Transportation Impact 1 – The Project would have significant impacts on intersections under Existing Plus Project conditions.

The addition of Project traffic would cause a significant impact at the following signalized intersections:

- Kiernan Avenue/SR 99 Southbound Ramps (AM and PM peak hours)
- Kiernan Avenue/Sisk Avenue (PM peak hour)
- Pelandale Avenue/SR 99 Southbound Ramps (PM peak hour)
- Pelandale Avenue/Sisk Road (PM peak hour)
- Standiford Avenue/SR 99 Southbound Ramps (PM peak hour)

The project would also significantly worsen operations at the following unsignalized intersections:

- Kiernan Avenue/Stoddard Road (AM and PM peak hours)
- Kiernan Avenue/Dale Road (AM and PM peak hours)
- Kiernan Avenue/American Avenue (PM peak hour)
- Kiernan Avenue/Carver Road (PM peak hour)

- Bangs Avenue/American Avenue (AM and PM peak hours)
- Bangs Avenue/Prescott Road (PM peak hour)
- Bangs Avenue/Carver Road (AM and PM peak hours)
- Bangs Avenue/Tully Road (PM peak hour)

Transportation Mitigation Measure 1 – Implement the following measures:

The Project applicant shall be responsible for payment of the applicable Capital Facilities Fee (CFF). The proposed mitigation measures are illustrated on Figure 15, on Page 99 at the end of this chapter. The levels of service with the following mitigation measures are shown in Table 23.

- ***Kiernan Avenue/SR 99 Southbound Ramps*** – Restripe the southbound through-right-turn shared lane to a left-through-right turn shared lane, restripe the eastbound right-turn lane to a through-right shared lane, and provide a second eastbound receiving lane on the east leg of the intersection. Implementation of this measure would reduce the Project's impact to a less-than-significant level. However, as the intersection is controlled by Caltrans and the City cannot assure its implementation, this impact would remain ***significant and unavoidable***. The project applicant should pay their fair share contribution towards the ultimate interchange improvement project.

  Caltrans is evaluating future upgrades to the interchange, which include reconstruction of the overcrossing to provide three through lanes in each direction plus turn pockets and expanded on-ramp and off-ramp capacity. The project applicant should pay their fair share towards the ultimate planned improvements at this interchange.

- ***Kiernan Avenue/Sisk Road*** – Improvements needed at this intersection include widening Kiernan Avenue to provide two travel lanes in each direction. These improvements would be provided as part of the Caltrans improvement project to upgrade Kiernan Avenue to a Class B Expressway. Construction of this project by Caltrans is anticipated to start in July 2008. The project applicant should pay their fair share towards the planned improvements. With construction of this improvement, the impact would be reduced to a ***less-than-significant*** level.

- ***Kiernan Avenue/Stoddard Road*** – Improvements needed at this intersection include signalization, and widening Kiernan Avenue to provide a two travel lanes in each direction. These improvements would be provided as part of the Caltrans improvement project to upgrade Kiernan Avenue to a Class B Expressway. Construction of this project by Caltrans is anticipated to start in July 2008. The project applicant should pay their fair share towards the planned. With construction of this improvement, the impact would be reduced to a ***less-than-significant*** level.

- ***Kiernan Avenue/Dale Road*** – Improvements needed at this intersection include signalization, widening Kiernan Avenue to provide two travel lanes in each direction, and providing turn pockets on all approaches would be provided as part of the Caltrans improvement project to upgrade Kiernan Avenue to a Class B Expressway. Construction of this project by Caltrans is anticipated to start in July 2008. The project applicant should pay their fair share towards the planned improvements.

  Additional improvements to be constructed by the City of Modesto, and partially funded by the Kaiser Medical Center through their revised Development Agreement, would accommodate traffic from approved development in the area and include a second northbound left-turn lane (for a total of two), and a northbound right-turn only lane. Construction of this project is anticipated to start in Summer 2008, concurrent with the Caltrans improvement project. The project applicant should pay their fair

share to the additional improvements at the intersection. With construction of these improvements, the impact would be reduced to a ***less-than-significant*** level.

- ***Kiernan Avenue/American Avenue*** – The deficient operations are experienced by 5 vehicles in the PM peak hour. Construction of Kiernan Avenue as a Class B expressway would restrict movements at this intersection to right-in/right-out operation, eliminating the movements that would experience deficient operations. These improvements would be provided as part of the Caltrans improvement project to upgrade Kiernan Avenue to a Class B Expressway. Construction of this project by Caltrans is anticipated to start in July 2008. The project applicant should pay their fair share contribution towards the planned improvements. With construction of this improvement, the impact would be reduced to a ***less-than-significant*** level.

- ***Kiernan Avenue/Carver Road*** – Improvements needed at this intersection include signalization, and widening Kiernan Avenue to provide four through travel lanes. These improvements would be provided as part of Phase II of the Caltrans improvement project to upgrade Kiernan Avenue to a Class B Expressway. The impacts would remain ***significant and unavoidable*** until those improvements are constructed. The project applicant should pay their fair share towards the planned improvements.

- ***Bangs Avenue/American Avenue*** – Install a two-lane roundabout with a northbound right-turn by-pass lane, or install traffic signals and left-turn pockets on all approaches. Implementation of either measure would reduce the project's impact to a ***less-than-significant*** level.

- ***Bangs Avenue/Prescott Road*** – Installation of a two-lane roundabout or traffic signals on all approaches would result in acceptable intersection operations. The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain ***significant and unavoidable***.

- ***Bangs Avenue/Carver Road*** – Installation of a two-lane roundabout or traffic signals and left-turn pockets on all approaches would result in acceptable intersection operations. The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain ***significant and unavoidable***.

- ***Bangs Avenue/Tully Road*** – Installation of a two-lane roundabout or traffic signals and left-turn pockets on all approaches would result in acceptable intersection operations. The final design of the

traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain ***significant and unavoidable***.

- ***Pelandale Avenue/SR 99 Southbound Ramps*** – Improvements at this interchange are currently being studied by the City of Modesto and Caltrans. Potential improvements include loop ramps and modifications to Sisk Road, such as additional through lanes and turn lanes. However, as implementation of this improvement cannot be assured, this impact would remain ***significant and unavoidable***. The project applicant should pay their fair share contribution towards interchange improvements through the payment of the CFF.

- ***Pelandale Avenue/Sisk Road*** – Install a third westbound through lane, a second westbound left-turn lane, a second southbound through lane and a second southbound left-turn lane. These improvements would be provided as part of the City's improvement project at this intersection. Implementation of this measure would reduce the project's impact to a ***less-than-significant*** level. The project applicant should pay their fair share contribution towards these improvements through the payment of the CFF.

- ***Standiford Avenue/SR 99 Southbound Ramps*** – Install a second southbound left-turn lane. Implementation of this measure would reduce the Project's impact to a less-than-significant level. However, as the intersection is controlled by Caltrans and the City cannot assure its implementation, this impact would remain ***significant and unavoidable***. The project applicant should pay their fair share contribution towards interchange improvements through the payment of the CFF.

TABLE 23
EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE WITH MITIGATION

Intersection	Peak Hour	Existing		Existing With Project			Existing With Project With Mitigation	
		Delay (in seconds)	LOS[1]	Delay (in seconds)	LOS[1]	Increase (in delay)	Delay (in seconds)	LOS[1]
Kiernan Avenue/SR 99 Southbound Ramps	AM PM	**48** **45**	**D** **D**	***63*** **51**	***E*** **D**	15 4	30 30	C C
Kiernan Avenue/Sisk Road	AM PM	24 **41**	C **D**	26 ***53***	C ***D***	2 12	25 32	C C
Kiernan Avenue/Stoddard Road	AM PM	7 **(69)** **128 (> 50)**	A **(F)** **F (F)**	11 ***(140)*** ***>150 (>50)***	B ***(F)*** ***F (F)***	4 (> 30) > 30 (> 30)	14 14	B B
Kiernan Avenue/Dale Road	AM PM	**55** **83**	**F** **F**	***95*** ***158***	***F*** ***F***	39 56	31 29	C C
Kiernan Avenue/Carver Road	AM PM	8 **60**	A **F**	11 ***223***	B ***F***	3 > 30	13 13	B B
Pelandale Avenue/Sisk Road	AM PM	26 **72**	C **E**	27 ***84***	C ***F***	1 12	24 42	C D
Bangs Avenue/American	AM PM	0 (9) 1 (11)	A (A) A (B)	**>150** ***(>50)*** ***>150 (>50)***	***F (F)*** ***F (F)***	>30 (> 30) >30 (> 30)	7 (0.54) 6 (0.46)	A A
Bangs Avenue/Prescott Road	AM PM	10 12	A B	21 ***152***	C ***F***	9 >30	7 (0.49) 7 (0.47)	A A
Bangs Avenue/Carver Road	AM PM	13 16	B C	***37*** ***74***	***E*** ***F***	24 > 30	6 (0.50) 7 (0.65)	A A
Bangs Avenue/Tully Road	AM PM	15 **69**	B **F**	35 ***164***	D ***F***	20 > 30	5 (0.23) 6 (0.38)	A A
Standiford Avenue/SR 99 Southbound Ramps	AM PM	40 **187**	D **F**	42 ***198***	D **F**	2 11	27 53	C D

1. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement).
2. Intersections operating at unacceptable (LOS E/LOS F) levels are shown in **bold.**

Source: Fehr & Peers, 2008.

Transportation Impact 2 – The Project would have a significant impact on roadway segments under Existing Plus Project conditions.

The addition of project traffic would cause a significant impact to the following roadway segments under Existing Plus Project Conditions:

- Eastbound Kiernan Avenue from SR 99 Southbound Ramps to Dale Road (AM and PM peak hours)
- Eastbound Kiernan Avenue from American Avenue to McHenry Avenue (PM peak hour)
- Westbound Kiernan Avenue from Dale Road to Stoddard Road and Sisk Road to SR 99 Northbound Ramps (AM peak hour)
- Westbound Kiernan Avenue from Dale Road to SR 99 Northbound Ramps (PM peak hour)
- Eastbound Pelandale Avenue from Dale Road to Tully Road (PM peak hour)
- Westbound Pelandale Avenue from Tully Road to Dale Road (AM and PM peak hours)
- Westbound Pelandale Avenue from Northpointe Shopping Center to SR 99 Southbound Ramps (PM peak hour)

- Eastbound Bangs Avenue from American Avenue to Prescott Road (PM peak hour)
- Northbound and Southbound Dale Road between Kiernan Avenue and Healthcare Way (PM peak hour)

Mitigation Measure 2 – Implement the following measures:

The Project applicant shall be responsible for payment of the applicable Capital Facilities Fee (CFF). Lanes would need to be added to these roadway segments to provide acceptable roadway operations. The numbers of travel lanes to be added to each segment are summarized in Table 24.

Kiernan Avenue – Improvements needed for the roadway segments on Kiernan Avenue are the same as the improvements needed to mitigate intersection impacts on Kiernan Avenue and include signalization of the major intersections and widening Kiernan Avenue to provide two travel lanes in each direction. These improvements would be provided as part of the Caltrans improvement project to upgrade Kiernan Avenue to a Class B Expressway. Construction of this project by Caltrans is anticipated to start in July 2008. The project applicant should pay their fair share contribution towards the planned improvements to upgrade Kiernan Avenue to a Class B Expressway. With construction of this improvement, the impact would be reduced to a ***less-than-significant*** level.

Pelandale Avenue – Improvements needed for the roadway segments on Pelandale Avenue between the SR 99 Southbound Ramps and Northpointe Shopping Center are part of the interchange improvements also needed to mitigate intersection impacts. Interchange improvements are currently under development by the City of Modesto and Caltrans. However, as implementation of these improvements cannot be assured, this impact would remain ***significant and unavoidable***. The project applicant should pay their fair share contribution towards the ultimate interchange improvement project through payment of the CFF.

For the segments on Pelandale Avenue between Dale Road and Tully Road, the project applicant shall contribute their fair share to the Pelandale Expressway project through the payment of CFF.

Bangs Avenue – Improvements needed for this roadway include widening to four travel lanes between American Avenue and Prescott Road. While many of the intersections could operate at acceptable levels with only one travel lane per direction, Bangs Avenue is envisioned as a major collector roadway, with multiple driveways and intersections. With turning movements to/from parcels, increased friction would occur on the roadway, reducing the practical capacity of the facility. Providing a four lane cross section would allow for turning movements to/from parcels while maintaining acceptable operations for through traffic. Implementation of this measure would result in acceptable service levels and reduce the Project's impact to a ***less-than-significant*** level. The General Plan reclassifies Bangs Avenue as a four-lane major collector roadway.

Dale Road – Improvements needed for this roadway include widening to four travel lanes between Kiernan Avenue and Healthcare Way. Implementation of this measure would result in acceptable service levels and reduce the Project's impact to a ***less-than-significant*** level.

TABLE 24
EXISTING PLUS PROJECT ROADWAY SEGMENT MITIGATION

Roadway Segment	Facility Type[1]	Direction	Existing Lanes	Mitigated Lanes
Kiernan Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	EB	1	2
		WB	2	2
Kiernan Avenue SR 99 NB Ramps to Sisk Road	SA	EB	1	2
		WB	1	2
Kiernan Avenue Sisk Road to Stoddard Road	RR/CBE	EB	1	2
		WB	1	2
Kiernan Avenue Stoddard Road to Dale Road	RR/CBE	EB	1	2
		WB	1	2
Kiernan Avenue Dale Road to American Avenue	RR/CBE	EB	1	2
		WB	1	2
Kiernan Avenue American Avenue to Carver Road	RR/CBE	EB	1	2
		WB	1	2
Kiernan Avenue Carver Road to McHenry Avenue	RR/CBE	EB	1	2
		WB	1	2
Pelandale Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	EB	2	2
		WB	2	3
Pelandale Avenue SR 99 NB Ramps to Sisk Road	SA	EB	3	3
		WB	2	3
Pelandale Avenue Sisk Road to Northpointe Shopping Center	SA	EB	3	3
		WB	2	3
Pelandale Avenue Dale Road to American Avenue	SA/CBE	EB	1	2
		WB	1	2
Pelandale Avenue American Avenue to Prescott Road	SA/CBE	EB	1	2
		WB	1	2
Pelandale Avenue Prescott Road to Carver Road	SA/CBE	EB	1	2
		WB	1	2
Pelandale Avenue Carver Road to Tully Road	SA/CBE	EB	1	2
		WB	1	2
Bangs Avenue American Avenue to Prescott Road	RR	EB	1	2
		WB	1	2
Dale Road Kiernan Avenue to Healthcare Way	RR	SB	1	2
		NB	1	2

Facility Types: SA = Signalized Arterial; CBE = Class B Expressway; RR = Rural Road
1. Existing/Recommended facility type.
Source: Fehr & Peers, 2008.

Transportation Impact 3 – The Project would have a significant impact to freeway ramp merge/diverge areas under Existing Plus Project conditions.

The project would cause a significant impact to the following ramp merge/diverge areas under Existing Plus Project conditions:

- Kiernan Avenue southbound off-ramp diverge (PM peak hour)
- Pelandale Avenue northbound off-ramp diverge (AM peak hour)
- Standiford Avenue northbound off-ramp diverge (AM peak hour)
- Standiford Avenue southbound off-ramp diverge (PM peak hour)

SR 99 is planned to be widened to eight lanes and improvements to the SR 99/Kiernen Avenue, SR 99/Pelandale Avenue and SR 99/Standiford Avenue interchanges are being planned. These improvements would mitigate the project's impacts to these ramp merge and diverge areas. However, as the widening project and interchange improvement projects have not yet been through the Caltrans approval process, nor been designed or funded, these impacts would remain ***significant and unavoidable***. The project applicant should pay their fair share contribution towards the ultimate freeway and interchange system in the area.

NEAR-TERM PLUS PROJECT ROADWAY SYSTEM IMPACTS

Transportation Impact 4 – The Project would have a significant impact on intersections under Near-Term Plus Project conditions.

The addition of Project traffic would cause as significant impact at the following signalized intersections under Near-Term Plus Project conditions:

- Kiernan Avenue/SR 99 Southbound Ramps (AM peak hour)
- Kiernan Avenue/Sisk Road (AM and PM peak hours)
- Dale Road/Kaiser Main Entrance/The Plaza Way (PM peak hour)
- Bangs Avenue/Prescott Road (PM peak hour)
- Pelandale Avenue/SR 99 Southbound Ramps (PM peak hour)
- Pelandale Avenue/Dale Road (AM and PM peak hours)
- Standiford Avenue/SR 99 Southbound Ramps (AM and PM peak hours)
- Standiford Avenue/SR 99 Northbound Ramps (AM and PM peak hours)
- Standiford Avenue/Sisk Road (PM peak hour)

The project would also significantly worsen operations at the following unsignalized intersections under Near-Term Plus Project conditions:

- Bangs Avenue/American Avenue (AM and PM peak hours)
- Bangs Avenue/Carver Road (AM and PM peak hours)
- Bangs Avenue/Tully Road (AM and PM peak hours)

Mitigation Measure 4 – Implement the following measures:

The Project applicant shall be responsible for payment of the applicable Capital Facilities Fee (CFF). The proposed measures are illustrated on Figure 16. The levels of service with the following measures are shown in Table 25. The Project's traffic contribution to impacted locations is presented in Table 27.

- ***Kiernan Avenue/SR 99 Southbound Ramps*** – Construct a second westbound left-turn lane and associated receiving lane. Implementation of this measure would reduce the Project's impact to a less-than-significant level. However, as the intersection is controlled by Caltrans and the City cannot assure its implementation, this impact would remain ***significant and unavoidable***.

  Caltrans is evaluating future upgrades to the interchange, which would include reconstruction of the overcrossing to provide three through lanes in each direction plus turn pockets and expanded on-ramp and off-ramp capacity. The project applicant should pay their fair share towards the ultimate planned improvements at this interchange.

- ***Kiernan Avenue/Sisk Road*** – Modify the eastbound right-turn lane to provide a shared eastbound through/right-turn lane (for a total of three through lanes) and associated receiving lane, and provide a third westbound through lane and modify the traffic signal to provide protected-permitted phasing for the northbound and southbound approaches. The Project applicant should pay their fair share contribution to this improvement. However, as the intersection is controlled by Caltrans and the City cannot assure its implementation, this impact would remain ***significant and unavoidable***.

- ***Dale Road/Kaiser Main Entrance/The Plaza Way*** – Construct a third southbound through lane and a third northbound through lane. Implementation of this measure would reduce the Project's impact to a ***less-than-significant*** level.

- ***Bangs Avenue/American Avenue*** – Construct a two-lane roundabout with a northbound by-pass lane, or install a traffic signal. Signalization would require two travel lanes in each direction on Bangs Avenue in addition to left-turn pockets. On the northbound approach, signalization would require the provision of a left-turn lane, through lane, and right-turn only lane. On the southbound approach, signalization would require the provision of a left-turn lane and a through-right shared lane. Implementation of either measure would reduce the project's impact to a ***less-than-significant*** level.

- ***Bangs Avenue/Prescott Road*** – Construct a two-lane roundabout, or maintain the signal that will be installed as part of the City's improvements plan for this intersection and provide an additional through lane in both the eastbound and westbound directions. Implementation of either measure would result in acceptable intersection operations. Although a single through lane in both the eastbound and westbound directions is required to mitigate the intersection impact, two travel lanes in each direction are recommended to mitigate the roadway segment impact.

  The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain ***significant and unavoidable***.

- ***Bangs Avenue/Carver Road*** – Install a two-lane roundabout, or install traffic signals and left-turn pockets on all approaches. Implementation of either measure would result in acceptable intersection operations.

The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain ***significant and unavoidable***.

- ***Bangs Avenue/Tully Road*** – Install a two-lane roundabout; or install traffic signals and left-turn pockets on all approaches, and an eastbound right-turn only lane. Implementation of either measure would result in acceptable intersection operations. Although a single through lane in both the eastbound and westbound directions is required to mitigate the intersection impact, two travel lanes in each direction are recommended to mitigate the roadway segment impact.

  The final design of the traffic control for this intersection is not yet complete. The project sponsor will be required to pay their fair share contribution toward the improvements that will be necessary to construct the traffic control device once designed. However, there is no guarantee that the final design will be in place to provide for construction of the improvements before the project opens and begins generating traffic. Additionally, the project's fair share contribution is not adequate to fund the entire cost of the improvement. Without a final design and fair share contributions from other development projects, the improvements cannot be constructed. This would result in unacceptable intersection operations for a substantial period of time. Therefore, this mitigation measure is infeasible and the impact would remain ***significant and unavoidable***.

- ***Pelandale Avenue/SR 99 Southbound Ramps*** – Improvements at this interchange are currently being studied by the City of Modesto and Caltrans. Potential improvements that would provide acceptable service levels include loop ramps and modifications to Sisk Road, such as additional through lanes and turn lanes. However, as implementation of this improvement cannot be assured, this impact would remain ***significant and unavoidable***. The project applicant should pay their fair share contribution towards the ultimate interchange improvement project.

- ***Pelandale Avenue/Dale Road*** – Construct a third through lane on the northbound approach. Construct a free right-turn lane on the eastbound and westbound approaches. Implementation of this measure would reduce the project's impact to a ***less-than-significant*** level.

- ***Standiford Avenue/SR 99 Southbound Ramps*** – Install a second southbound left-turn lane. Implementation of this measure would reduce the Project's impact to a less-than-significant level, although the intersection would continue to operate at LOS F and additional improvements to achieve LOS D operations would be needed. However, as the intersection is controlled by Caltrans and the City cannot assure its implementation, this impact would remain ***significant and unavoidable***. This improvement has received Caltrans and FHWA approval and will be added to the City's Capital Improvement Program in the near future. The project applicant should pay their fair share contribution towards interchange improvements through the payment of the CFF.

- ***Standiford Avenue/SR 99 Northbound Ramps*** – Install a free northbound right-turn only lane. Implementation of this measure would reduce the Project's impact to a less-than-significant level.

However, as the intersection is controlled by Caltrans and the City cannot assure its implementation, this impact would remain ***significant and unavoidable***. It is recommended that the City and Caltrans establish a process to initiate improvements at this interchange. The project applicant should pay their fair share contribution towards the ultimate interchange improvement project.

- ***Standiford Avenue/Sisk Road*** – Install a third westbound through lane. Implementation of this measure would reduce the project's impact to a ***less-than-significant*** level.

TABLE 25
NEAR-TERM PLUS PROJECT INTERSECTION LEVELS OF SERVICE WITH MITIGATION

Intersection	Peak Hour	Near-Term Without Project		Near-Term Plus Project			Near-Term Plus Project With Mitigation	
		Delay (in seconds)	LOS[1]	Delay (in seconds)	LOS[1]	Increase (in delay)	Delay (in seconds)	LOS[1]
Kiernan Avenue/SR 99 Southbound Ramps	AM	**52**	**D**	***59***	***E***	7	32	C
	PM	**40**	**D**	***42***	**D**	2	31	C
Kiernan Avenue/Sisk Road	AM	**40**	**D**	***75***	***E***	35	27	C
	PM	**70**	**E**	***80***	***F***	10	32	C
Dale Road/Kaiser Main Entrance/The Plaza Way	AM	18	B	26	C	8	21	C
	PM	28	C	***88***	***F***	>30	42	D
Bangs Avenue/ American Avenue[3]	AM	3 (23)	A (C)	***>50 (>50)***	***F***	>30 (>30)	7 (0.61)	A
	PM	7 **(36)**	A **(E)**	***>50 (>50)***	***F***	>30 (>30)	7 (0.54)	A
Bangs Avenue/Prescott Road	AM	14	B	21	C	7	9 (0.70)	A
	PM	27	C	***121***	***F***	>30	8 (0.73)	A
Bangs Avenue/Carver Road	AM	**141**	**F**	***266***	***F***	> 30	8 (0.74)	B
	PM	**257**	**F**	***406***	***F***	> 30	8 (0.72)	B
Bangs Avenue/Tully Road	AM	**113**	**F**	***219***	***F***	> 30	6 (0.40)	A
	PM	**300**	**F**	***404***	***F***	> 30	7 (0.60)	A
Pelandale Avenue/Dale Road	AM	40	D	***116***	***F***	>30	40	D
	PM	**74**	**E**	***93***	***F***	19	52	D
Standiford Avenue/SR 99 Southbound Ramps	AM	53	D	***60***	***E***	7	40	D
	PM	**320**	**F**	***341***	***F***	21	**145**	**F**
Standiford Avenue/ SR 99 Northbound Ramps	AM	29	C	40	D	11	4	A
	PM	**179**	**F**	***201***	***F***	22	15	B
Standiford Avenue/Sisk Road	AM	31	C	35	D	4	31	C
	PM	**212**	**F**	***240***	***F***	28	**188**	**F**

1. For side-street stop-controlled intersections, delays for worst movement and average intersection delay are shown: intersection average (worst movement).
2. Intersections operating at unacceptable (LOS E/LOS F) levels are shown in **bold.**
3. This intersection is side-street stop-controlled before mitigations and is converted to a roundabout with mitigation. For roundabout intersections, volume/capacity ratio for worst movement and average intersection delay are shown: average delay (worst movement v/c ratio).

Source: Fehr & Peers, 2008.

Transportation Impact 5 – The Project would have a significant impact on roadway segments under Near-Term Plus Project conditions.

The addition of project traffic would cause a significant impact to the following roadway segments under Near-Term Plus Project Conditions:

- Southbound SR 99 from Hammett Road to Kiernan Avenue (PM peak hour)
- Southbound SR 99 from Pelandale Avenue to Standiford Avenue (PM peak hour)
- Southbound SR 99 from Standiford Avenue to Briggsmore Avenue (AM and PM peak hours)
- Northbound SR 99 from Briggsmore Avenue to Standiford Avenue (AM peak hour)
- Eastbound Kiernan Avenue from SR 99 southbound Ramps to Sisk Road (AM and PM peak hours)
- Westbound Kiernan Avenue from Sisk Road to SR 99 northbound Ramps (PM peak hour)
- Eastbound Pelandale Avenue from SR 99 Northbound Ramps to Dale Road (PM peak hour)
- Westbound Pelandale Avenue from Dale Road to Chapman Road, and Northpointe Shopping Center to SR 99 Southbound Ramps (PM peak hour)
- Eastbound Bangs Avenue from Dale Road to Tully Road (PM peak hour)
- Westbound Bangs Avenue from Carver Road to Dale Road (AM peak hour)
- Southbound Dale Road from Healthcare Way to Pelandale Avenue, and Snyder Avenue to Veneman Avenue (PM peak hour)
- Northbound Dale Road from Veneman Avenue to Snyder Avenue (PM peak hour)
- Northbound Dale Road from Snyder Avenue to The Plaza Way (AM and PM peak hour)

Mitigation Measure 5 – Implement the following measures:

The Project applicant shall be responsible for payment of the applicable Capital Facilities Fee (CFF).

Lanes would need to be added to these roadway segments to provide acceptable roadway operations. The numbers of travel lanes needed on each segment are summarized in Table 26. The Project's traffic contribution to impacted locations is presented in Table 27.

State Route 99 – Widening of SR 99 from Hammett Road to Kiernan Avenue and Pelandale Avenue to Briggsmore Avenue to eight lanes would reduce the Project's freeway impact to a less-than-significant level. SR 99 is planned to be widened to eight lanes in conjunction with interchange improvements. However, as the widening project has not yet been through the Caltrans approval process, nor been designed or funded, implementation of this improvement cannot be assured and the impact would remain ***significant and unavoidable***.

Kiernan Avenue – Improvements needed for the roadway segments on Kiernan Avenue include widening between the overcrossing of SR 99. The current bridge structure would need to be widened to accommodate the increased travel lanes. These same improvements would be needed to implement the intersection improvements discussed above. However, as this roadway is controlled by Caltrans and the City cannot assure its implementation, this impact would remain ***significant and unavoidable***. It is recommended that Stanislaus County and Caltrans establish a process to initiate improvements at this interchange. The project applicant should pay their fair share contribution towards interchange improvements.

Pelandale Avenue – Improvements needed for the roadway segments on Pelandale Avenue between the SR 99 Southbound Ramps and Sisk Road are part of the interchange improvements also needed to mitigate intersection impacts on these segments. Interchange improvements are currently under development by the City of Modesto and Caltrans. However, as implementation cannot be assured, this impact would remain ***significant and unavoidable***. The project applicant should pay their fair share contribution towards the ultimate interchange improvement project. However, widening the travel lanes beyond three in each direction is not recommended, as intersection operations are expected to be acceptable with a six-lane cross section with additional capacity provided at the intersections via turn pockets.

TABLE 26
NEAR-TERM PLUS PROJECT ROADWAY SEGMENT MITIGATION

Roadway Segment	Facility Type[1]	Direction	Near-Term Lanes	Mitigated Lanes
SR 99 Hammett Road to Kiernan Avenue	FWY	SB NB	3 3	4 4
SR 99 Pelandale Avenue to Briggsmore Avenue	FWY	SB NB	3 3	4 4
Kiernan Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	EB WB	2 2	3 3
Kiernan Avenue SR 99 NB Ramps to Sisk Road	SA	EB WB	2 2	3 3
Pelandale Avenue SR 99 SB Ramps to SR 99 NB Ramps	SA	EB WB	2 2	3 3
Pelandale Avenue SR 99 NB Ramps to Sisk Road	SA	EB WB	2 2	3 3
Pelandale Avenue Sisk Road to Northpointe Shopping Center	SA	EB WB	3 3	3 3
Pelandale Avenue Northpointe Shopping to Chapman Road	SA	EB WB	3 3	3 3
Pelandale Avenue Chapman Road to Dale Road	SA	EB WB	3 3	3 3
Bangs Avenue American Avenue to Prescott Road	RR/COL	EB WB	1 1	2 2
Bangs Avenue Prescott Road to Carver Road	RR/COL	EB WB	1 1	2 2
Bangs Avenue Carver Road to Tully Road	RR/COL	EB WB	1 1	2 2
Dale Road Healthcare Way to The Plaza Way	SA	SB NB	2 2	3 3
Dale Road The Plaza Way to Bangs Avenue	SA	SB NB	3 2	3 3
Dale Road Bangs Avenue to Pelandale Avenue	SA	SB NB	3 2	3 3
Dale Road Pelandale Avenue to Snyder Avenue	SA	SB NB	3 2	3 3
Dale Road Snyder Avenue to Veneman Avenue	SA	SB NB	2 2	3 3

Facility Types:
SA = Signalized Arterial, CBE = Class B Expressway, COL = Collector, RR = Rural Road
1. Existing/Recommended facility type.
Source: Fehr & Peers, 2008.

Bangs Avenue – Improvements needed for this roadway include widening to four travel lanes from Dale Road to Tully Road. While many of the intersections could operate at acceptable levels with only one travel lane per direction, Bangs Avenue is envisioned as a major collector roadway, with multiple driveways and intersections. With turning movements to/from parcels, increased friction occurs on the roadway, reducing the practical capacity of the facility. Providing a four-lane cross section would allow for turning movements to/from parcels while maintaining acceptable operates for through traffic. Implementation of this measure would result in acceptable service levels and reduce the Project's impact to a ***less-than-significant*** level. This improvement is consistent with the General Plan classification for this roadway.

Dale Road – Improvements needed for this roadway include providing three through lanes in each direction between Kiernan Avenue and Veneman Avenue. While the third through lane in some locations is not required to mitigate Project impacts, a non-uniform street cross-section can increase congestion as lane drops occur. Implementation of this measure would result in acceptable service levels and reduce the Project's impact to a ***less-than-significant*** level. This improvement is consistent with the General Plan classification for this roadway.

Transportation Impact 6 – The Project would have a significant impact to freeway ramp merge/diverge areas under Near-Term Plus Project conditions.

The project would cause a significant impact to the following ramp merge/diverge areas under Near-Term Plus Project conditions:

- Standiford Avenue southbound on-ramp merge (PM peak hour)
- Standiford Avenue northbound off-ramp diverge (AM peak hour)
- Standiford Avenue northbound on-ramp merge (AM peak hour)
- Standiford Avenue southbound off-ramp Diverge (PM peak hour)

SR 99 is planned to be widened to eight lanes and improvements to the SR 99/Kiernen Avenue, SR 99/ Pelandale Avenue and SR 99/Standiford Avenue intersections are being planned. These improvements would mitigate the project's impacts to these ramp merge and diverge areas. However, as the widening project and interchange improvement projects have not yet been through the Caltrans approval process, nor been designed or funded, implementation of these improvements cannot be assured and the impacts would remain ***significant and unavoidable***.

CUMULATIVE ROADWAY SYSTEM IMPACTS

Transportation Impact 7 – The Project would contribute to Cumulative roadway system impacts.

In the Cumulative (2025) condition, the addition of Project traffic would result in deficient service levels or increase the volume-to-capacity ratio by more than 0.05 on segments projected to operate deficiently prior to the addition of project traffic on the following roadway segments:

- Pelandale Avenue between Sisk Road and Dale Road
- Dale Road between Bangs Avenue and Veneman Avenue

Mitigation Measure 7: The Project applicant shall be required to contribute to the City Capital Facilities Fee (CFF) program.

Pelandale Avenue and Dale Road - No physical improvements are recommended for these roadways beyond the planned maximum cross-sections. Other measures such as signal timing coordination and transportation demand management measure shall be implemented to maximize through traffic efficiency and reduce vehicle trips. The Project applicant shall prepare a transportation demand management program to the satisfaction of City staff. Elements of this plan could include:

Financial Programs: These are programs that if implemented by the Project Applicant could encourage employees to participate in the TDM Program by providing financial incentives.

- Transit Ticket Subsidy
- Lottery Prizes for Use of Commute Alternatives
- Shuttles or Vanpools
- Subsidized Bicycle Purchase Programs for Employees

Services: These are services that if implemented by the Project Applicant could facilitate employee participation in the TDM Program.

- Guaranteed Ride Home Program
- On-Site Bicycle Secure Storage Facilities
- On-Site Shower and Locker Facilities
- Preferential Carpool Parking

Support Activities: These are activities that if implemented by the Project Applicant could inform and educate employees regarding the TDM Program.

- Biannual Transportation Fairs
- Distribution of TDM Program Information
- Carpool Ride Matching
- Vanpool Informational Meetings

The adjacent Kaiser Medical Center should also participate in a Transportation Demand Management program to maximize the trip reduction potential within the Kiernan Business Park. Implementation of this measure would potentially reduce the severity of Project impacts. However, given the uncertainty of vehicle trip reductions associated with TDM programs, this impact would remain ***significant and unavoidable***.

CONSTRUCTION IMPACTS

Transportation Impact 8 – Construction related traffic activity could have a significant although temporary impact on the study area.

Mitigation Measure 8 – The project applicant shall develop a construction management plan for review and approval by the City Public Works Department and the Community Development Department. The plan shall include at least the following items:

a. Development of a construction truck route that would appear on all construction plans to limit truck and auto traffic on nearby residential streets.

b. A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, with detour signs if required, lane closure procedures, sidewalk closure procedures, signs, cones for drivers, and designated construction access routes.
c. Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures would occur.
d. Location of construction staging areas for materials, equipment, and vehicles.
e. Identification of haul routes for movement of construction vehicles that would minimize impacts on vehicular and pedestrian traffic, circulation and safety; and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the project applicant.
f. Temporary construction fences to contain debris and material and to secure the site.
g. Provisions for removal of trash generated by project construction activities.
h. A process for responding to, and tracking, complaints pertaining to construction activities, including identification of an on-site complaint manager.

Implementation of this measure would reduce the project's temporary construction traffic impact to a ***less-than-significant*** level.

TABLE 27
PROJECT CONTRIBUTION TO IMPACTED INTERSECTIONS AND ROADWAY SEGMENTS

Impacted Analysis Location	Existing[1]		Kaiser[2]		Cornerstone Business Park[3]		Kiernan Business Park South[4]		Kiernan Business Park East[5] – Business Park		Kiernan Business Park East[6] – Mixed Uses		Other[7]		Total
	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	
Intersections															
Kiernan Ave./SR 99 Southbound Ramps	2,082	68.4%	183	6.0%	42	1.4%	11	0.4%	30	1.0%	90	3.0%	604	22.8%	3,042
Kiernan Ave./SR 99 Northbound Ramps	2,417	63.0%	335	8.7%	65	1.7%	15	0.4%	72	1.9%	156	4.1%	775	24.3%	3,835
Kiernan Ave./Sisk Rd.	2,823	63.5%	360	8.1%	80	1.8%	30	0.7%	107	2.4%	182	4.1%	866	23.5%	4,448
Dale Rd./Kaiser Main Entrance/The Plaza Way	1,026	22.2%	1,330	28.8%	574	12.4%	46	1.0%	670	14.5%	680	14.7%	288	21.1%	4,614
Bangs Ave./American Ave.	614	26.3%	180	7.7%	101	4.3%	386	16.5%	574	24.6%	403	17.2%	79	20.6%	2,337
Bangs Ave./Prescott Rd.	865	37.6%	180	7.8%	95	4.1%	310	13.5%	437	19.0%	304	13.2%	110	18.0%	2,301
Bangs Ave./Carver Rd.	993	46.7%	144	6.8%	80	3.8%	198	9.3%	278	13.1%	110	5.2%	325	20.3%	2,128
Bangs Ave./Tully Rd.	1,449	61.6%	119	5.1%	46	2.0%	144	6.1%	198	8.4%	69	2.9%	326	16.8%	2,351
Pelandale Ave./SR 99 Southbound Ramps	2,637	70.1%	139	3.7%	29	0.8%	93	2.5%	192	5.1%	107	2.8%	566	17.8%	3,763
Pelandale Ave./Dale Rd.	3,886	48.7%	978	12.3%	476	6.0%	273	3.4%	795	10.0%	605	7.6%	959	19.6%	7,972

TABLE 27
PROJECT CONTRIBUTION TO IMPACTED INTERSECTIONS AND ROADWAY SEGMENTS

Impacted Analysis Location	Existing[1]		Kaiser[2]		Cornerstone Business Park[3]		Kiernan Business Park South[4]		Kiernan Business Park East[5] – Business Park		Kiernan Business Park East[6] – Mixed Uses		Other[7]		Total
	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	
Standiford Ave./SR 99 Southbound Ramps	3,435	75.2%	25	0.5%	54	1.2%	34	0.7%	109	2.4%	66	1.4%	846	20.0%	4,569
Standiford Ave./SR 99 Northbound Ramps	4,700	73.2%	64	1.0%	69	1.1%	41	0.6%	132	2.1%	103	1.6%	1308	22.0%	6,417
Standiford Ave./Sisk Rd.	6,073	74.7%	91	1.1%	84	1.0%	48	0.6%	150	1.8%	114	1.4%	1570	20.8%	8,130
Roadway Segments															
SR 99 Hammett Rd. to Kiernan Ave.	9419	82.3%	176	1.5%	23	0.2%	22	0.2%	54	0.5%	129	1.1%	1625	15.3%	11,448
SR 99 Pelandale Ave. to Standiford Ave.	9285	82.1%	290	2.6%	67	0.6%	106	0.9%	223	2.0%	184	1.6%	1157	11.8%	11,312
SR 99 Standiford Ave. to Briggsmore Ave	9425	77.5%	337	2.8%	128	1.1%	132	1.1%	319	2.6%	264	2.2%	1553	14.9%	12,158
Kiernan Ave. SR 99 SB Rmp to SR 99 NB Rmp	1623	63.9%	183	7.2%	42	1.7%	11	0.4%	30	1.2%	90	3.5%	559	25.6%	2,538
Kiernan Ave. SR 99 NB Ramps to Sisk Rd.	2143	60.6%	335	9.5%	65	1.8%	15	0.4%	72	2.0%	156	4.4%	748	25.7%	3,534
Pelandale Ave. SR 99 SB Rmp to SR 99 NB Rmp	2378	68.4%	139	4.0%	29	0.8%	93	2.7%	192	5.5%	108	3.1%	539	18.6%	3,478
Pelandale Ave. SR 99 NB Ramps to Sisk Rd.	3608	69.3%	171	3.3%	39	0.7%	128	2.5%	241	4.6%	198	3.8%	825	19.6%	5,210

TABLE 27
PROJECT CONTRIBUTION TO IMPACTED INTERSECTIONS AND ROADWAY SEGMENTS

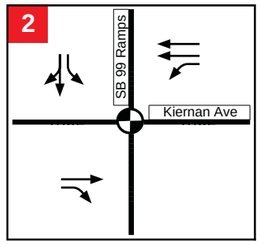
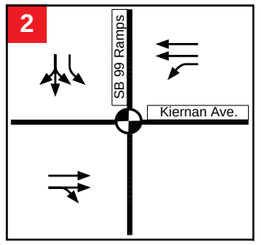
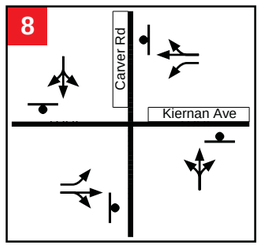
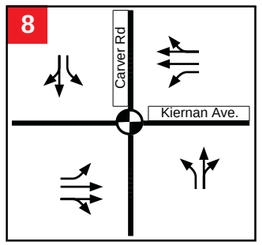
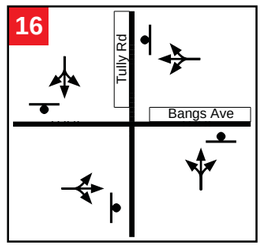
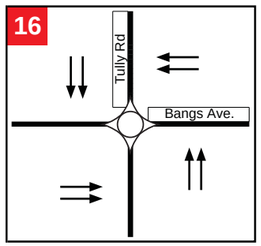
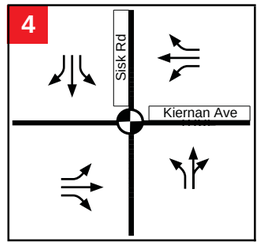
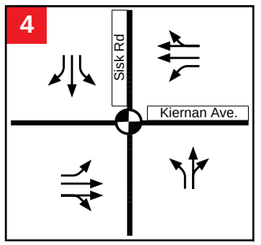
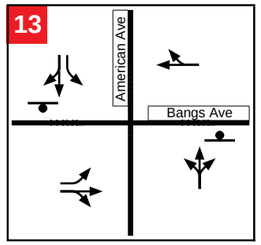
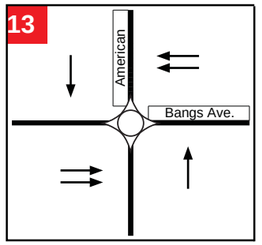
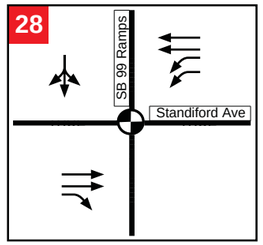
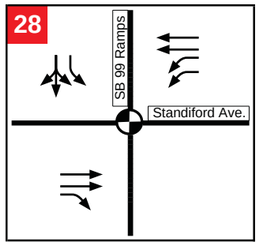
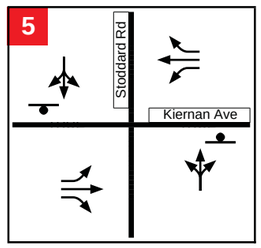
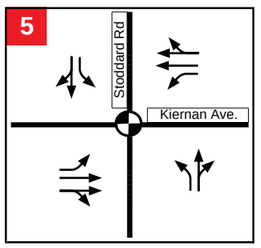
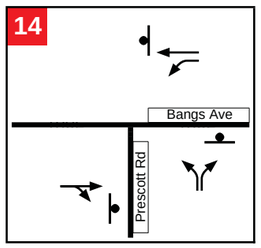
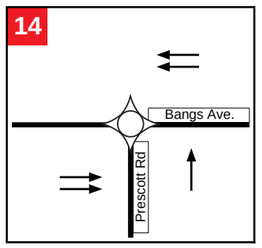
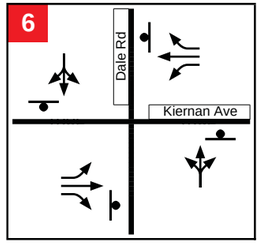
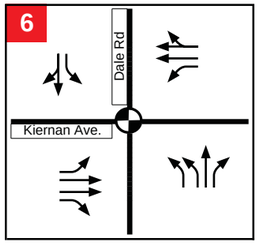
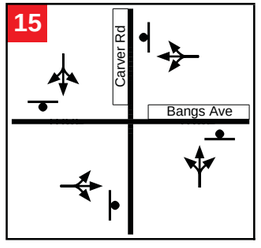
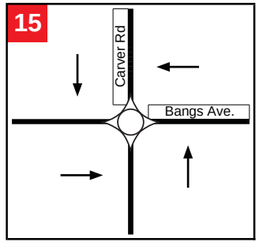
Impacted Analysis Location	Existing[1]		Kaiser[2]		Cornerstone Business Park[3]		Kiernan Business Park South[4]		Kiernan Business Park East[5] – Business Park		Kiernan Business Park East[6] – Mixed Uses		Other[7]		Total
	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	
Pelandale Ave. Sisk Rd. to Northpointe	3096	68.2%	171	3.8%	39	0.9%	141	3.1%	241	5.3%	197	4.3%	654	18.7%	4,539
Pelandale Ave. Northpointe to Chapman Rd.	2787	66.4%	171	4.1%	39	0.9%	141	3.4%	241	5.7%	197	4.7%	622	19.5%	4,198
Pelandale Ave. Chapman Rd. to Dale Rd.	2955	67.4%	171	3.9%	39	0.9%	141	3.2%	241	5.5%	197	4.5%	640	19.1%	4,384
Bangs Ave. Dale Rd. to Chopra Parkway	577	41.2%	180	12.8%	100	7.1%	202	14.4%	235	16.8%	29	2.1%	78	7.7%	1,401
Bangs Ave. Chopra Pky. to American Ave.	577	34.3%	180	10.7%	101	6.0%	156	9.3%	339	20.2%	254	15.1%	74	19.5%	1,681
Bangs Ave. American Ave. to Prescott Rd.	633	31.0%	181	8.9%	95	4.7%	310	15.2%	439	21.5%	305	14.9%	78	18.7%	2,041
Bangs Ave. Prescott Rd. to Carver Rd.	741	48.3%	145	9.5%	60	3.9%	198	12.9%	221	14.4%	95	6.2%	74	11.0%	1,534
Bangs Ave. Carver Rd. to Tully Rd.	771	54.0%	119	8.3%	47	3.3%	144	10.1%	179	12.5%	60	4.2%	108	11.8%	1,428
Dale Rd. Healthcare Way to The Plaza Way	922	30.7%	533	17.7%	574	19.1%	42	1.4%	392	13.0%	258	8.6%	285	18.1%	3,006
Dale Rd. The Plaza Way to Bangs Ave.	991	25.1%	898	22.7%	574	14.5%	46	1.2%	574	14.5%	578	14.6%	293	22.0%	3,954
Dale Rd. Bangs Ave. to Pelandale Ave.	1152	25.9%	979	22.0%	476	10.7%	156	3.5%	795	17.8%	605	13.6%	291	20.1%	4,454

TABLE 27
PROJECT CONTRIBUTION TO IMPACTED INTERSECTIONS AND ROADWAY SEGMENTS

Impacted Analysis Location	Existing[1]		Kaiser[2]		Cornerstone Business Park[3]		Kiernan Business Park South[4]		Kiernan Business Park East[5] – Business Park		Kiernan Business Park East[6] – Mixed Uses		Other[7]		Total
	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	Volume	Project Share	
Dale Rd. Pelandale Ave. to Snyder Ave.	1878	54.3%	299	8.6%	189	5.5%	96	2.8%	344	9.9%	254	7.3%	400	18.9%	3,460
Dale Rd. Snyder Ave. to Veneman Ave.	1721	56.2%	232	7.6%	154	5.0%	67	2.2%	273	8.9%	202	6.6%	415	20.1%	3,064

Notes: 1. Existing traffic volumes from recent traffic counts at the intersections and Roadway segments.
2. Traffic from the approved Kaiser Medical Center on Dale Rd.
3. Traffic from the approved Cornerstone Medical Center on Healthcare Way.
4. Traffic from the approved Kiernan Business Park South on Bangs Ave.
5. Traffic from the Proposed Business Park uses in Kiernan Business Park East.
6. Traffic from the Proposed Mixed-use development in Kiernan Business Park East.
7. Traffic from other approved projects in the study area and regional traffic growth expected to occur in the near-term scenario.

Source: Fehr & Peers, 2008.

Existing With Project Lane Configurations and Traffic Controls	Proposed Existing With Project With Mitigations Lane Configurations and Traffic Controls	Existing With Project Lane Configurations and Traffic Controls	Proposed Existing With Project With Mitigations Lane Configurations and Traffic Controls	Existing With Project Lane Configurations and Traffic Controls	Proposed Existing With Project With Mitigations Lane Configurations and Traffic Controls
					
					
					
					

LEGEND = Signalized Intersection = Stop Sign = "Free" Right Turn = Roundabout

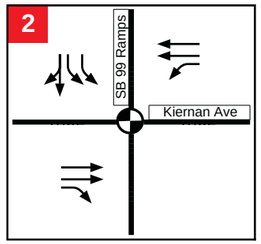
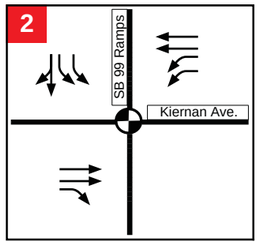
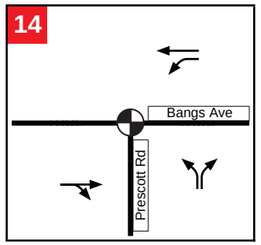
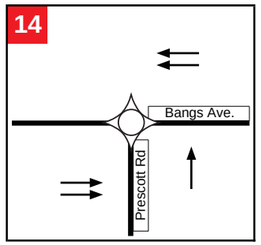
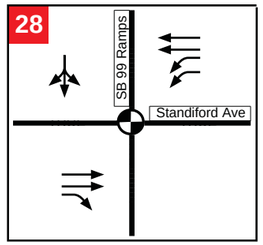
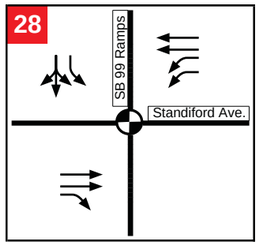
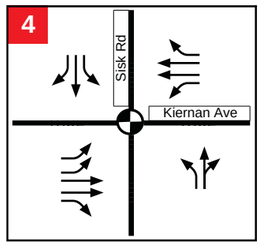
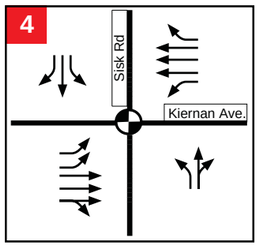
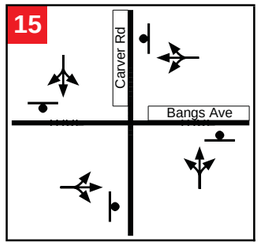
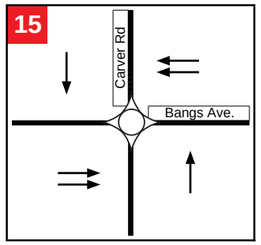
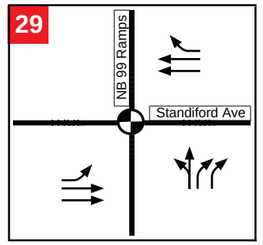
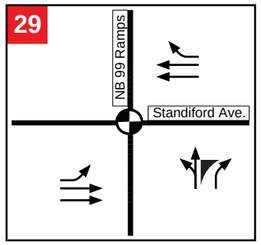
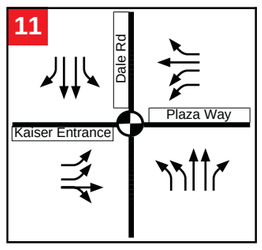
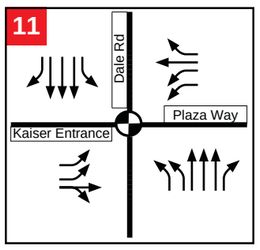
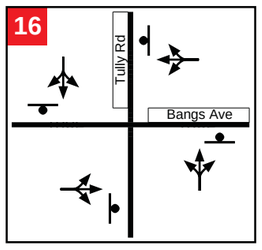
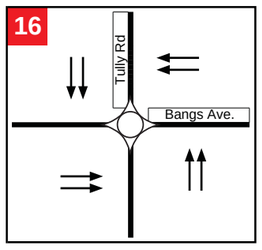
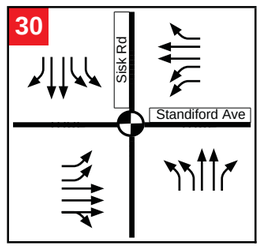
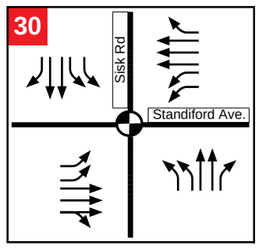
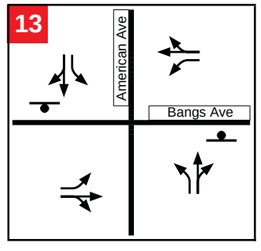
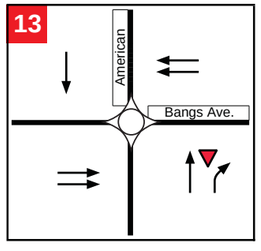
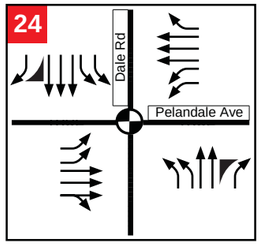
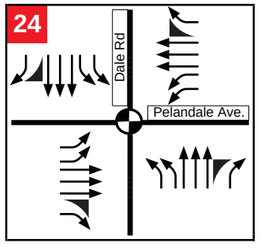
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Kiernan Business Park East

EXISTING WITH PROJECT CONDITIONS WITH MITIGATIONS LANE CONFIGURATIONS AND TRAFFIC CONTROLS SUMMARY

Figure 15

Near-Term With Project Lane Configurations and Traffic Controls	Proposed Near-Term With Project With Mitigations Lane Configurations and Traffic Controls	Near-Term With Project Lane Configurations and Traffic Controls	Proposed Near-Term With Project With Mitigations Lane Configurations and Traffic Controls	Near-Term With Project Lane Configurations and Traffic Controls	Proposed Near-Term With Project With Mitigations Lane Configurations and Traffic Controls
					
					
					
					

LEGEND = Signalized Intersection; = Stop Sign; = "Free" Right Turn; = Roundabout; = Roundabout Bypass Lane with Yield

Kiernan Business Park East

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NEAR-TERM WITH PROJECT CONDITIONS WITH MITIGATIONS LANE CONFIGURATIONS AND TRAFFIC CONTROLS SUMMARY

Figure 16

9. PROJECT ALTERNATIVES

This chapter evaluates the relative transportation impacts of Project Alternatives to the Proposed Project.

DESCRIPTION OF ALTERNATIVES

Three alternatives to the Project were evaluated, as described below.

Alternative 1 – No Project

For the No Project alternative, the site would remain as it is today. Traffic conditions would be as presented in the Without Project scenarios for the Existing, Near-term and Cumulative conditions.

Alternative 2 – Existing Kiernan Business Park Specific Plan Description

The 153-acre project site would be developed pursuant to the existing Kiernan Business Park Specific Plan Business Park (BP) designation under this alternative. The 67-acre portion within the County's jurisdiction would be annexed in to the City of Modesto limits and up to 2,664,900 square feet (based on a floor area ratio of 0.40 applied to 153 acres) of business park development would be permitted.

Under this alternative, the proposed project's changes to the Circulation Plan Diagram would not occur, including re-classification of Healthcare Way, Dale Road, and Bangs Road; and reconfiguration of the Healthcare Way street cross-section. Also, there would be no construction of internal roads proposed to serve the project site, including The Plaza Way and Chopra Parkway.

Roadways and roadway extensions under this alternative would be as described in the existing Specific Plan and summarized below:

- Quinturn Lane is an existing north-south access road. It is proposed to be a four-lane minor arterial that would extend south from a proposed signalized intersection at Kiernan Avenue to a proposed roundabout with Technology Drive.

- Technology Drive is a proposed internal east-west, four-lane major collector that parallels Kiernan Avenue. From a roundabout with Quinturn Lane, Technology Drive is proposed to extend east for about ¼ mile to the western boundary of the Kaiser Medical Center. At this boundary Technology Drive is shown to shift to the north a short distance and continue east to a signalized intersection at Dale Road. This stretch of Technology Drive is identified as Healthcare Way and defines the northern boundary of the Kaiser Medical Center property. The Healthcare Way portion of the roadway was recently constructed as part of the Kaiser Medical Center.

- Healthcare Way, shown to shift south a short distance east of the Dale Road/Healthcare Way signalized intersection, is classified as a two-lane industrial connector, and is shown to extend east to a signalized intersection at American Avenue, a proposed north-south, two-lane minor connector.

- Technology Drive is proposed to extend west for about ¼ mile from a proposed roundabout with Quinturn Lane. This stretch of Technology Drive is classified as a four-lane minor arterial. Technology Drive is shown to turn into Chapman Road at the midpoint of a southerly curve.

- American Avenue is proposed to be extended from Kiernan Avenue south to Pelandale Avenue. This north-south extension is proposed as a two-lane minor connector.

- Chapman Road is an existing north-south access road that is proposed to become a four-lane minor arterial from the point where it changes over from Technology Drive (the midpoint of the southerly curve) to its intersection with Pelandale Avenue. A portion of Chapman Road extends north from the midpoint of the southerly curve and is proposed to become a two-lane minor connector that ends as a cul-de-sac. The existing intersection of Chapman Road and Kiernan Avenue is proposed to be removed.

- Bangs Avenue is an existing east-west roadway that is proposed to be extended east from the western boundary of the Specific Plan area as a two-lane minor connector. This extension of Bangs Avenue would terminate at Chapman Road. Bangs Avenue is also an existing east-west roadway on the eastern portion of the Specific Plan area. This segment of Bangs Avenue is classified as a two-lane industrial connector from its western terminus at Dale Road east to American Avenue in the Existing Kiernan Business Park Specific Plan. It is classified as a 4-lane major collector in the General Plan.

In addition, under the Specific Plan Alternative, since Healthcare Way would not be realigned, there would be no amendment to the Class II bicycle lane along Technology Drive/Healthcare Way, as with the proposed project. Rather, as under provisions of the existing Specific Plan, north-south Class II bicycle lanes would be proposed along Dale Road between Pelandale and Kiernan Avenues and along Quinturn Lane between a proposed roundabout with Technology Drive and Kiernan Avenue. In addition, east-west Class I bicycle paths (separated from the roadway) would be proposed along Bangs Avenue and parallel to MID Lateral No. 6 on the southern portion of the Specific Plan area and along Kiernan Avenue. Both of these Class I bicycle paths would extend from the eastern boundary of the Specific Plan area to its western boundary.

Alternative 3 – Reduced Intensity Alternative

Under the Reduced Intensity Alternative, the 94-acre western portion of the project site within the City of Modesto limits would be developed with Business Park, Mixed Use, and Medium High Density Residential land uses. About 55 acres would be designated Business Professional, allowing up to 878,932 square feet of business park development. About 22 acres would be designated for Mixed Use development, and would allow up to 420,350 square feet of development area, including residential and/or office above retail; separate residential; hotels; restaurants; pharmacies; professional office; art galleries; and athletic clubs.

The Reduced Intensity Alternative would also include a 17-acre area designated for Medium High Density Residential (MHDR). Allowed uses in the MHDR area would include townhouses, condominiums, garden apartments, and conventional apartments. The MHDR area would be developed to a maximum of 354 dwelling units with an average dwelling unit size of 1,500 gross square feet. Under the Reduced Intensity Alternative, revisions to the Circulation Plan Diagram and to the Bike Paths figure would be similar to the proposed project to reflect the proposed changes in the Specific Plan. In addition, street cross-sections for Healthcare Way, The Plaza Way, and Chopra Parkway would be proposed as an amendment to the typical design standards for Class I Bike Paths for these streets in the project site.

TRIP GENERATION COMPARISONS

Trip generation estimates for the proposed Project and Project Alternatives are presented in Table 28, with detailed trip generation tables provided in Appendix I. Alternative 1 would not generate any additional trips over the current site trip generation. Alternative 2 would generate more inbound AM peak hour trips and more outbound PM peak hour trips than the Proposed Project; Alternative 2 would generate more total AM peak hour trips, less total PM peak hour trips, and less total daily trips than the Proposed Project. Alternative 3 would generate fewer daily and peak hour trips than the Proposed Project.

TABLE 28
PROJECT ALTERNATIVE
TRIP GENERATION COMPARISON

Project Alternative	New Daily Trips	New AM Peak Hour Trips			New PM Peak Hour Trips		
		In	Out	Total	In	Out	Total
Proposed Project	31,770	2,131	643	2,774	1,053	2,117	3,170
Alternative 1 – No Project	0	0	0	0	0	0	0
Alternative 2 – Specific Plan	29,390	2,998	571	3,569	711	2,382	3,093
Alternative 3 – Reduced Intensity	20,450	1,267	474	1,741	686	1,294	1,980

Source: Fehr & Peers, 2008.

No off-site traffic impacts would occur with the No Project alternative, as no development would occur on the site. Impacts of the Specific Plan Alternative are expected to be slightly worse than the Proposed Project. Impacts of the Reduced Intensity Alternative are expected to be less than the Proposed Project. Existing and Near-term intersection operations were evaluated with the project alternatives to quantify any increase or reduction in significant impacts. Roadway segment and freeway ramp impacts were also qualitatively evaluated.

PROJECT ALTERNATIVE INTERSECTION IMPACTS

Operations at the study intersections were evaluated using the level of service calculations. Results of the analysis are presented in Table 29 for the Existing condition and Table 30 for the Near-term condition. Table 31 summarizes the significant impacts of each project alternative for locations where at least one Project alternative would result in a significant impact. Locations with different impacts than the proposed project are shaded in the table.

TABLE 29
EXISTING CONDITIONS PEAK HOUR INTERSECTION OPERATING CONDITIONS
WITH PROJECT ALTERNATIVES

Intersection	Control[1]	Peak Hour	Existing		With Proposed Project		With Specific Plan Alternative		With Reduced Intensity Alternative	
			Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS
Kiernan Avenue/Salida Boulevard	Traffic Signal	AM	26	C	26	C	26	C	26	C
		PM	17	B	17	B	17	B	17	B
Kiernan Avenue/SR 99 Southbound Ramps	Traffic Signal	AM	**48**	**D**	***63***	***E***	***83***	***F***	***56***	***E***
		PM	**45**	**D**	***51***	***D***	**48**	**D**	**49**	**D**
Kiernan Avenue/SR 99 Northbound Ramps	Traffic Signal	AM	15	B	15	B	15	B	14	B
		PM	19	B	20	B	20	B	20	B
Kiernan Avenue/Sisk Road	Traffic Signal	AM	24	C	26	D	32	C	25	C
		PM	41	D	53	D	***57***	***E***	47	D
Kiernan Avenue/Stoddard Road	Side-Street Stop Control	AM	7 **(69)**	A **(F)**	11 ***(140)***	B ***(F)***	16 ***(>150)***	B ***(F)***	10 ***(110)***	A ***(F)***
		PM	**128 (> 50)**	**F (F)**	***> 150 (> 50)***	***F (F)***	***>150 (>50)***	***F (F)***	***>150 (>50)***	***F (F)***
Kiernan Avenue/Dale Road	All-Way Stop-Control	AM	**55**	**F**	***95***	***F***	***111***	***F***	***80***	***F***
		PM	**83**	**F**	***158***	***F***	***172***	***F***	***122***	***F***
Kiernan Avenue/American Avenue	Side-Street Stop Control	AM	1 (18)	A (C)	2 (30)	A (D)	2 (***36***)	A (***E***)	1 (25)	A (C)
		PM	1 (18)	A (C)	8 ***(>50)***	A ***(F)***	***96 (>50)***	***F (F)***	3 ***(37)***	A ***(E)***
Kiernan Avenue/Carver Road	Traffic Signal	AM	8	A	11	B	14	B	10	A
		PM	**60**	**F**	***223***	***F***	***279***	***F***	***151***	***F***
Dale Road/Healthcare Way	Traffic Signal	AM	4	A	29	C	55	D	20	B
		PM	7	A	24	C	29	C	21	C
Healthcare Way/American Avenue	Roundabout	AM	--	--	4	A	5	A	3	A
		PM	--	--	5	A	7	A	4	A
Dale Road/Kaiser Main Entrance	Traffic Signal	AM	5	A	19	B	14	B	15	B
		PM	8	A	31	C	14	B	22	C
Bangs Avenue/Dale Road	Traffic Signal	AM	8	A	9	A	10	A	8	A
		PM	10	A	11	B	12	B	11	B
Bangs Avenue/American Avenue	Side-Street Stop Control	AM	0 (9)	A (A)	***>150 (> 50)***	***F (F)***	***>150 (>50)***	***F (F)***	6 (25)	A (C)
		PM	1 (11)	A (B)	***>150 (> 50)***	***F (F)***	***>150 (>50)***	***F (F)***	16 (***>50***)	A (***F***)
Bangs Avenue/Prescott Road	All-Way Stop-Control	AM	10	A	21	C	33	D	13	B
		PM	12	B	***152***	***F***	***145***	***F***	***55***	***F***
Bangs Avenue/Carver Road	All-Way Stop-Control	AM	13	B	***37***	***E***	***56***	***F***	20	C
		PM	16	C	***74***	***F***	***88***	***F***	***38***	***E***
Bangs Avenue/Tully Road	All-Way Stop-Control	AM	15	B	35	D	***52***	***F***	22	C
		PM	**69**	**F**	***164***	***F***	***177***	***F***	***121***	***F***

TABLE 29
EXISTING CONDITIONS PEAK HOUR INTERSECTION OPERATING CONDITIONS
WITH PROJECT ALTERNATIVES

Intersection	Control[1]	Peak Hour	Existing		With Proposed Project		With Specific Plan Alternative		With Reduced Intensity Alternative	
			Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS
Bangs Avenue/McHenry Avenue	Traffic Signal	AM	21	C	23	C	25	C	22	C
		PM	19	B	22	C	25	C	21	C
Pelandale Avenue/Salida Boulevard	Traffic Signal	AM	24	C	24	C	25	C	24	C
		PM	18	B	18	B	18	B	18	B
Pelandale Avenue/SR 99 Southbound Ramps	Traffic Signal	AM	29	C	30	C	30	C	30	C
		PM	**90**	**F**	***102***	***F***	***107***	***F***	***96***	***F***
Pelandale Avenue/SR 99 Northbound Ramps	Traffic Signal	AM	19	B	31	C	***64***	***E***	24	C
		PM	15	B	22	C	21	C	17	B
Pelandale Avenue/Sisk Road	Traffic Signal	AM	26	C	27	C	27	C	27	C
		PM	**72**	**E**	***84***	***F***	***81***	***F***	***80***	***E***
Pelandale Avenue/Northpointe Shopping Center	Traffic Signal	AM	10	A	10	A	10	A	10	A
		PM	30	C	30	C	30	C	30	C
Pelandale Avenue/Chapman Road	Traffic Signal	AM	5	A	5	A	5	A	5	A
		PM	8	A	8	A	8	A	8	A
Pelandale Avenue/Dale Road	Traffic Signal	AM	22	C	30	C	36	D	25	C
		PM	31	C	38	D	38	D	35	C
Pelandale Avenue/Prescott Road	Traffic Signal	AM	17	B	27	C	29	C	21	C
		PM	21	C	37	D	34	C	28	C
Pelandale Avenue/Carver Road	Traffic Signal	AM	16	B	20	B	21	C	18	B
		PM	16	B	19	B	21	C	18	B
Dale Road/Snyder Avenue	Traffic Signal	AM	18	B	18	B	19	B	18	B
		PM	22	C	26	C	25	C	24	C
Standiford Avenue/SR 99 Southbound Ramps	Traffic Signal	AM	40	D	42	D	43	D	41	D
		PM	**187**	**F**	***198***	**F**	***197***	***F***	***195***	***F***
Standiford Avenue/ SR 99 Northbound Ramps	Traffic Signal	AM	19	B	29	C	41	D	22	C
		PM	34	C	42	D	40	D	40	D
Standiford Avenue/Sisk Road	Traffic Signal	AM	26	C	26	C	26	C	26	C
		PM	46	D	51	D	51	D	47	D
Standiford Avenue/Dale Road	Traffic Signal	AM	21	C	29	C	40	D	24	C
		PM	28	C	36	D	34	C	32	C

Bold indicates deficient operations. ***Bold Italics*** indicates potential significant impact.
Source: Fehr & Peers, 2008.

TABLE 30
NEAR-TERM CONDITIONS PEAK HOUR INTERSECTION OPERATING CONDITIONS
WITH PROJECT ALTERNATIVES

Intersection	Control[1]	Peak Hour	Near-Term Without Project		With Proposed Project		With Specific Plan Alternative		With Reduced Intensity Alternative	
			Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS
Kiernan Avenue/Salida Boulevard	Traffic Signal	AM	16	B	17	B	17	B	17	B
		PM	17	B	17	B	17	B	17	B
Kiernan Avenue/SR 99 Southbound Ramps	Traffic Signal	AM	**52**	**D**	***59***	***E***	***73***	***E***	**56**	**E**
		PM	**40**	**D**	***42***	**D**	**41**	**D**	**41**	**D**
Kiernan Avenue/SR 99 Northbound Ramps	Traffic Signal	AM	20	B	20	B	31	C	20	B
		PM	23	C	28	C	29	C	24	C
Kiernan Avenue/Sisk Road	Traffic Signal	AM	**40**	**D**	***75***	***E***	***67***	***E***	***46***	***D***
		PM	**70**	**E**	***80***	***F***	***83***	***F***	**72**	**E**
Kiernan Avenue/Stoddard Road	Traffic Signal	AM	32	C	32	C	32	C	33	C
		PM	29	C	31	C	32	C	30	C
Kiernan Avenue/Dale Road	Traffic Signal	AM	41	D	48	D	***64***	***E***	44	D
		PM	48	D	48	D	48	D	48	D
Kiernan Avenue/American Avenue	Side-Street Stop Control	AM	1 (13)	A (B)	1 (14)	A (B)	1 (15)	A (B)	1 (14)	A (B)
		PM	0 (12)	A (B)	8 (45)	A (E)	23 ***(108)***	C ***(F)***	3 (22)	A (C)
Kiernan Avenue/Carver Road	Traffic Signal	AM	14	B	15	B	15	B	15	B
		PM	19	B	23	C	24	C	22	C
Dale Road/Healthcare Way	Traffic Signal	AM	23	C	33	C	43	D	28	C
		PM	26	C	38	D	55	D	34	C
Healthcare Way/American Avenue	Roundabout	AM	--	--	4	A	5	A	4	A
		PM	--	--	5	A	8	A	4	A
Dale Road/Kaiser Main Entrance	Traffic Signal	AM	18	B	26	C	23	C	21	C
		PM	28	C	***88***	***F***	***134***	***F***	***82***	***F***
Bangs Avenue/Dale Road	Traffic Signal	AM	24	C	38	D	54	D	25	C
		PM	26	C	30	C	29	C	26	C
Bangs Avenue/American Avenue	Side-Street Stop Control	AM	3 (23)	A (C)	***>50 (>50)***	***F***	***>50 (>50)***	***F***	***>50 (>50)***	***F***
		PM	7 **(36)**	A **(E)**	***>50 (>50)***	***F***	***>50 (>50)***	***F***	***>50 (>50)***	***F***
Bangs Avenue/Prescott Road	Traffic Signal	AM	14	B	21	C	23	C	17	B
		PM	27	C	***121***	***F***	***117***	***F***	***64***	***E***
Bangs Avenue/Carver Road	All-way Stop	AM	**141**	**F**	***266***	***F***	***305***	***F***	***207***	***F***
		PM	**257**	**F**	***406***	***F***	***418***	***F***	***337***	***F***
Bangs Avenue/Tully Road	All-way Stop	AM	**113**	**F**	***219***	***F***	***239***	***F***	***173***	***F***
		PM	**300**	**F**	***404***	***F***	***425***	***F***	***361***	***F***

TABLE 30
NEAR-TERM CONDITIONS PEAK HOUR INTERSECTION OPERATING CONDITIONS
WITH PROJECT ALTERNATIVES

Intersection	Control[1]	Peak Hour	Near-Term Without Project		With Proposed Project		With Specific Plan Alternative		With Reduced Intensity Alternative	
			Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS	Delay (in seconds)[2]	LOS
Bangs Avenue/McHenry Avenue	Traffic Signal	AM	25	C	31	C	34	C	29	C
		PM	36	D	54	D	***64***	***E***	45	D
Pelandale Avenue/Salida Boulevard	Traffic Signal	AM	25	C	26	C	26	C	25	C
		PM	21	C	21	C	21	C	21	C
Pelandale Avenue/SR 99 Southbound Ramps	Traffic Signal	AM	29	C	29	C	25	C	28	C
		PM	**188**	**F**	***225***	***F***	***235***	***F***	***210***	***F***
Pelandale Avenue/SR 99 Northbound Ramps	Traffic Signal	AM	29	C	40	D	50	D	35	C
		PM	22	C	34	C	29	C	28	C
Pelandale Avenue/Sisk Road	Traffic Signal	AM	30	C	30	C	29	C	29	C
		PM	**98**	**F**	**99**	**F**	**98**	**F**	**98**	**F**
Pelandale Avenue/Northpointe Shopping Center	Traffic Signal	AM	8	A	8	A	8	A	8	A
		PM	36	D	45	D	50	D	39	D
Pelandale Avenue/Chapman Road	Traffic Signal	AM	6	A	6	A	6	A	6	A
		PM	9	A	10	A	11	B	10	A
Pelandale Avenue/Dale Road	Traffic Signal	AM	40	D	***116***	***F***	***156***	***F***	***73***	***E***
		PM	**74**	**E**	***93***	***F***	***89***	***F***	***82***	***F***
Pelandale Avenue/Prescott Road	Traffic Signal	AM	25	C	32	C	36	D	29	C
		PM	30	C	52	D	49	D	40	D
Pelandale Avenue/Carver Road	Traffic Signal	AM	24	C	31	C	38	D	27	C
		PM	31	C	38	D	38	D	35	C
Dale Road/Snyder Avenue	Traffic Signal	AM	26	C	28	C	30	C	27	C
		PM	31	C	43	D	41	D	36	D
Standiford Avenue/SR 99 Southbound Ramps	Traffic Signal	AM	53	D	***60***	***E***	***61***	***E***	***57***	***E***
		PM	**320**	**F**	***341***	***F***	***342***	***F***	***333***	***F***
Standiford Avenue/SR 99 Northbound Ramps	Traffic Signal	AM	29	C	40	D	45	D	36	D
		PM	**179**	**F**	***201***	***F***	***197***	***F***	***192***	***F***
Standiford Avenue/Sisk Road	Traffic Signal	AM	31	C	36	D	39	D	33	C
		PM	**212**	**F**	***240***	***F***	***242***	***F***	***229***	***F***
Standiford Avenue/Dale Road	Traffic Signal	AM	24	C	26	C	31	C	25	C
		PM	41	D	48	D	48	D	45	D

Bold indicates deficient operations. ***Bold Italics*** indicates potential significant impact.

Source: Fehr & Peers, 2008.

TABLE 31
PROJECT ALTERNATIVES INTERSECTION IMPACT COMPARISON SUMMARY

Intersection	Proposed Project	Specific Plan Alternative	Reduced Intensity Alternative
Kiernan Avenue/SR 99 Southbound Ramps	Existing and Near-term	Existing and Near-term	Existing
Kiernan Avenue/Sisk Road	Existing and Near-term	Existing and Near-term	Existing and Near-term
Kiernan Avenue/Stoddard Road	Existing	Existing	Existing
Kiernan Avenue/Dale Road	Existing	Existing and Near-term	Existing
Kiernan Avenue/American Avenue	Existing	Existing and Near-Term	No Significant Impact
Kiernan Avenue/Carver Road	Existing	Existing	Existing
Dale Road/Kaiser Main Entrance/The Plaza Way	Near-term	Near-Term	Near-term
Bangs Avenue/American Avenue	Existing and Near-term	Existing and Near-term	Existing and Near-term
Bangs Avenue/Prescott Road	Existing and Near-term	Existing and Near-term	Existing and Near-term
Bangs Avenue/Carver Road	Existing and Near-term	Existing and Near-term	Existing and Near-term
Bangs Avenue/Tully Road	Existing and Near-term	Existing and Near-term	Existing and Near-term
Bangs Avenue/McHenry Avenue	No Significant Impact	Near-term	No Significant Impact
Pelandale Avenue/SR 99 Southbound Ramps	Existing and Near-term	Existing and Near-term	Existing and Near-term
Pelandale Avenue/SR 99 Northbound Ramps	No Significant Impact	Existing	No Significant Impact
Pelandale Avenue/Sisk Road	Existing	Existing	Existing
Pelandale Avenue/Dale Road	Near-term	Near-term	Near-term
Standiford Avenue/SR 99 Southbound Ramps	Existing and Near-term	Existing and Near-term	Existing and Near-term
Standiford Avenue/SR 99 Northbound Ramps	Near-term	Near-term	Near-term
Standiford Avenue/Sisk Road	Near-term	Near-term	Near-term

Source: Fehr & Peers, 2008.

Project Alterative Intersection Mitigation Measures

Additional mitigation measures would be required for the Specific Plan Alternative to mitigate its additional impacts.

Specific Plan Alternative

The Specific Plan Alternative would result in two additional significant impacts (Bangs Avenue/McHenry Avenue and Pelandale Avenue/SR 99 Northbound ramps) that would not occur with the Proposed Project. Two intersections that were only impacted in the Existing condition by the Proposed project (Kiernan Avenue/Dale Road and Kiernan Avenue/American Avenue) would result in additional impacts in the near-term scenario.

Additional mitigation would be required to reduce these impacts to a less-than-significant level.

- ***Kiernan Avenue/Dale Road*** – The Specific Plan Alternative would result in a near-term impact at this location in addition to the Existing impact identified with the Proposed project. In the near-term condition, additional improvements including modifying the traffic signal to provide an eastbound right-turn overlap phase would mitigate the impact.

- ***Kiernan Avenue/American Avenue*** – The Specific Plan Alternative would result in a near-term impact at this location in addition to the Existing impact identified with the Proposed project. The deficient operations would be experienced by vehicles exiting the project site in the PM peak hour. As this intersection would be restricted to right-in/right-out operation only and all delay would be experienced by the side-street movement, no improvements are recommended. The impact would potentially remain ***significant and unavoidable.***

- ***Bangs Avenue/McHenry Avenue*** – The Specific Plan Alternative would result in a Near-Term conditions impact at this location. In the Near-term condition additional improvements, such as the construction of a second eastbound right-turn lane (resulting in a left-turn lane, shared through-right lane and a right-turn only lane in the eastbound direction) would be necessary to reduce this impact to a less-than-significant level.

- ***Pelandale Avenue/SR 99 Northbound Ramps*** – Improvements at this interchange are currently being studied by the City of Modesto and Caltrans. Potential improvements include loop ramps and modifications to Sisk Road, such as additional through lanes and turn lanes. However, as implementation of this improvement cannot be assured, this impact would remain ***significant and unavoidable***. The project applicant should pay their fair share contribution towards the ultimate interchange improvement project.

The mitigation measures for the Proposed Project were reviewed to verify if the measures would also mitigate the impacts for the Specific Plan Alternative. The near-term mitigation measure for the proposed Project would be required at the Kiernan Avenue/SR 99 Southbound Ramps intersection to mitigate the Existing Plus Project impact with the Specific Plan Alternative.

The construction of a westbound right-turn bypass lane in addition to a northbound right-turn bypass lane would be needed to provide acceptable operations at the Bangs Avenue/American Avenue two-lane

roundabout intersection. The additional by-pass lane is required to accommodate the additional inbound traffic during the AM peak hour with the Specific Plan Alternative. The proposed Project would result in a moderate volume-to-capacity ratio of 0.61 at the westbound approach, while the Specific Plan Alternative would increase the total intersection volume by 14 percent, including a 31 percent increase in the northbound-left movement and a 77 percent increase in the westbound-right movement. The northbound left-turn movement, northbound through movement, and all of the westbound movements currently conflict. This mitigation would move the heavy westbound right-turn movement from this conflict area, providing acceptable operations. No additional mitigation measures beyond those recommended above and those recommended for the Proposed Project would be required to mitigate the impacts of the Specific Plan Alternative.

Reduced Intensity Alternative

The Reduced Intensity Alternative would eliminate one significant impact at the Kiernan Avenue/American Avenue intersection. No additional mitigation measures would be required for the Reduced Intensity Alternative.

PROJECT ALTERNATIVE ROADWAY SEGMENTS IMPACTS

Cumulative roadway segment impacts were reviewed for the project alternatives. Development of the Specific Plan Alternative would not result in any additional existing or cumulative condition roadway segment impacts. However, additional roadway segments would be impacted by the Specific Plan alternative in the near-term condition:

- Northbound SR 99 from Standiford Avenue to Pelandale Avenue
- Westbound Pelandale Avenue from Chapman Road to Northpointe Shopping Center
- Northbound Dale Road from The Plaza Way to Healthcare Way
- Southbound Dale Road from Kiernan Avenue to Healthcare Way
- Southbound Dale Road from Pelandale Avenue to Snyder Avenue

Implementation of Mitigation Measure 5 would also mitigate the additional impacts of the Specific Plan Alternative. No additional mitigation measures would be required.

The Reduced Intensity Alternative is expected to eliminate one significant Cumulative impact that is projected to occur with the Proposed Project:

- Kiernan Avenue between Southbound SR 99 ramps and Northbound SR 99 ramps

No additional roadway segment impacts would occur with the Reduced Intensity Alternative.

PROJECT ALTERNATIVE FREEWAY RAMP IMPACTS

Freeway ramp impacts were qualitatively evaluated for the Project Alternatives. Development of either the Specific Plan or Reduced Intensity Alternative is not expected to result in any additional freeway ramp merge/diverge impacts, nor would the impacts identified with the Proposed Project be reduced to a less-than-significant level.

APPENDIX C: KIERNAN BUSINESS PARK SPECIFIC PLAN BIOTIC REPORT

KIERNAN BUSINESS PARK EAST SPECIFIC PLAN
BIOTIC REPORT

Prepared by:

H.T. Harvey & Associates

Scott B. Terrill, Ph.D., Principal
Brian B. Boroski, Ph.D., Division Head
Jeff Seay, Wildlife Biologist
Brian J. Cleary, M.S., Botanist

Prepared for:

Julie Tilley
Turnstone Consulting
330 Townsend Street, Suite 216
San Francisco, CA 94107

February 28, 2007 Project No. 2673-01

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ENVIRONMENTAL SETTING

PROJECT DESCRIPTION

The Kiernan Business Park East project is proposed for development as a business park on approximately 164 acres (66.4 ha) in Modesto, Stanislaus County, California (Figure 1). The project site is located on the east side of Dale Road, south of Kiernan Avenue, and north of Bangs Avenue. Within the 164-acre project area, 92.5 acres (37.4 ha) are within the City limits, and 71.5 acres (28.9 ha) are located within the Kiernan Business Park Specific Plan, but not yet annexed to the City.

GENERAL PROJECT AREA DESCRIPTION

The Kiernan Business Park East project site is located approximately four miles (6.4 km) southeast of the City of Ripon, east of State Highway 99 on Kiernan Avenue (State Highway 219), Stanislaus County. The majority of the project site is situated at an elevation of approximately 80 feet (25 m) National Geodetic Vertical Datum in the central San Joaquin Valley of California.

The climate of the San Joaquin Valley is characterized by hot, dry summers and cool, moist winters with frequent heavy fog. Weather patterns in the valley result from the presence of the Coast Range to the west and the Sierra Nevada Mountains to the east. Overall, the Coast Range produces a rain shadow effect, with the majority of moisture falling on the coastal side of the mountains. During winter months, however, the offshore high pressure areas move further south on the coast, allowing the San Joaquin Valley to receive the majority (90 percent) of its annual precipitation.

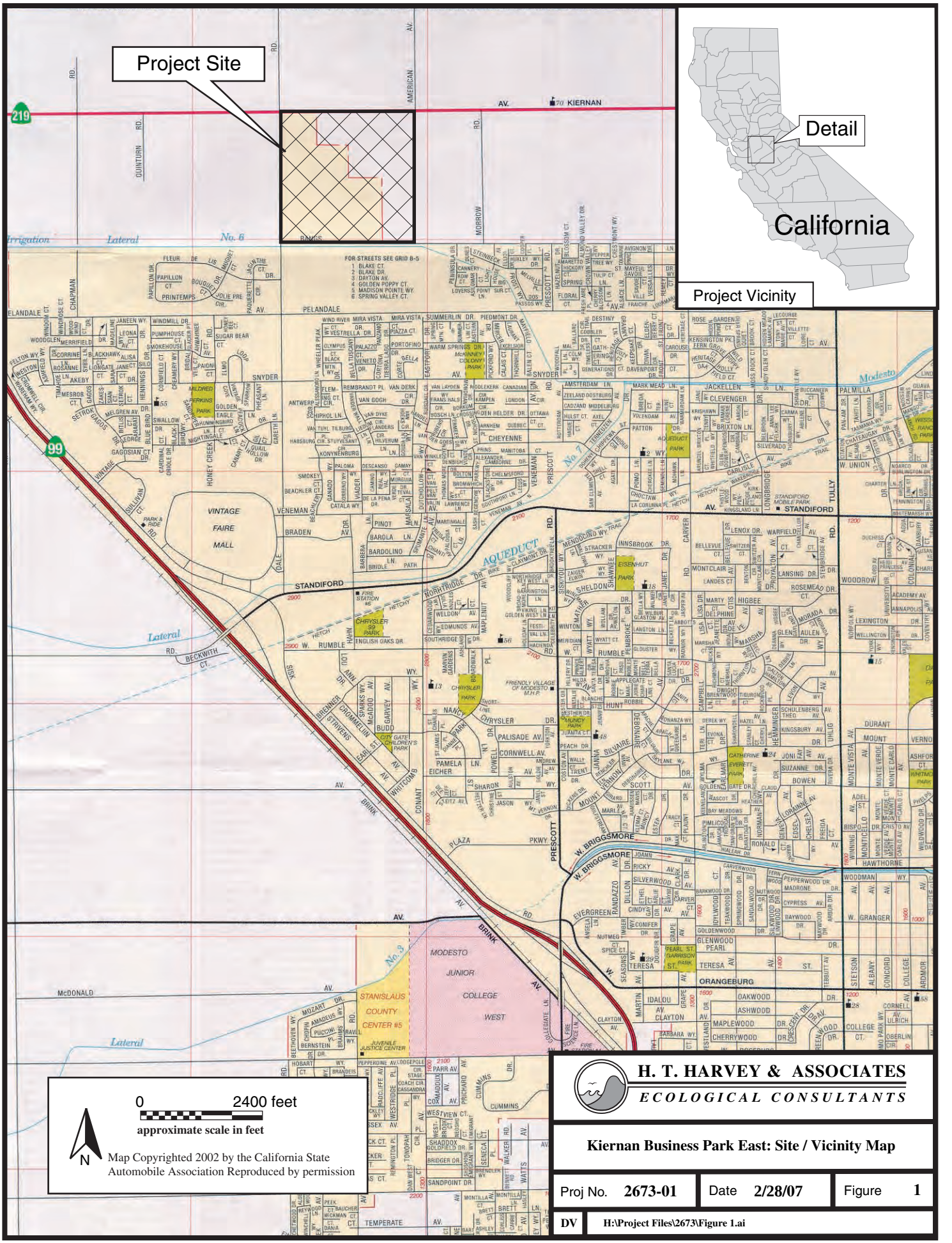
The average annual precipitation near the City of Modesto ranges from 11 to 13 inches (25.4 to 30.5 cm) (SCS 2002). Temperatures range from an average high of 96º Fahrenheit (F) (35.5º Celcius [C]) and low of 63º F (17.2º C) in the summer, to an average high of 54º F (12.2º C) and low of 37º F (2.7º C) in the winter (National Weather Service 2006).

According to the Soil Conservation Service (SCS 2002) the soils underlying the project site are deep, well drained to moderately well drained with moderate permeability. A summary of the soil types present on the project site is provided in Table 1 below.

Table 1. Summary of Soil Types Present on the Kiernan Business Park East Project Site

Soil type	Slope percentage	Soil Coverage Percentage of Project Site
Hanford Sandy Loam	0-3%	68%
Greenfield Sandy Loam	0-3%	32%
Totals		**100%**

SCS Stanislaus County, Western Part 2002



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Kiernan Business Park East: Site / Vicinity Map

Proj No.	Date	Figure
2673-01	**2/28/07**	**1**

DV H:\Project Files\2673\Figure 1.ai

BIOTIC SURVEYS

Reconnaissance-level field surveys of the project site were conducted on 18 July 2006. The biologists had access to the majority of the parcels comprising the project site. Parcels for which they did not have permission to enter (APNs 078-015-005, -010, -013, -015, and -017) were inspected from the perimeter. On-site surveys of these parcels are recommended to confirm the results of the perimeter inspections. The purpose of these surveys was to document biotic resources associated with the site that may pose constraints to the proposed development. Specifically, surveys were conducted to describe existing biotic habitats; assess the site for its potential to support special-status species and their habitats; and identify potential jurisdictional habitats, including those regulated by the USACE and CDFG.

BIOTIC HABITATS

Surveys for botanically sensitive habitats were conducted concurrently with special-status plant surveys. Six habitats occur on the project site: irrigated row crops (including disked fields between plantings), irrigated pasture, orchards, fallow field, ruderal, and developed area (Table 2, Figure 2). These biotic habitats and associated vegetation and wildlife are described in further detail below. Plant communities were described in terms of dominant tree, shrub, and herbaceous vegetation composition and, when possible, classified according to the nomenclature of Holland (1986), and Sawyer and Keeler-Wolf (1995). Figure 2 shows the distribution of these habitats and land use types. Appendix A lists the plant species observed on the site.

Table 2. Summary of Biotic Habitats and Land Use Types Present on the Kiernan Business Park East Project Site.

Habitat type	Acreage*	Percent of total
Orchards	65	41
Irrigated Row Crops	36	22
Developed	23	15
Ruderal	18	11
Fallow Field	10	6
Irrigated Pasture	8	5
Totals	**160**	**100%**

* All acreage calculations are estimates.

USDA NAIP Aerial 2005

KIERNAN AVE

DALE RD

Legend

- Project Boundary (160 acres)

Habitat Type

- Irrigated Row Crops (36 acres)
- Irrigated Pasture (8 acres)
- Orchard (65 acres)
- Fallow Field (10 acres)
- Ruderal (18 acres)
- Developed (23 acres)

* All acreage calculations are approximates

N

0 300 600

Feet

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Kiernan Business Park East: Habitat Map

File No. **2673-01** | Date **2/28/07** | Figure **2**

BIOTIC HABITATS AND EXISTING FACILITIES

ORCHARDS

Vegetation

The project site includes approximately 65 acres (26.3 ha) of the orchards, comprising approximately 41 percent of the site (Figure 2, Table 2). The orchards are located in the northeast section of the project site adjacent to the intersection of American Avenue and Kiernan Avenue, in the west section adjacent to Dale Road, and in the southern section of the site adjacent to Bangs Avenue. All of the orchards are in active agricultural production and include almond (*Prunus dulcis*) and walnut (*Juglans regia*). Some of the walnut trees associated with the western orchard adjacent to Dale Road near Bangs Avenue are dead and/or in a state of decline. The orchards are irrigated using water that is likely diverted from the Lateral Number 6 Canal. Scattered patches of ruderal (herbaceous, non-native) plants occur in the understory of the western orchard adjacent to Dale Road, including rip-gut brome (*Bromus diandrus*), Mediterranean barley (*Hordeum murinum* ssp. *gussoneanum*), black mustard (*Brassica nigra*), wild radish (*Raphanus sativus*), filaree (*Erodium cicutarium*), soft chess brome (*Bromus mollis*), fiddleneck (*Amsinckia menziesii*), cheeseweed (*Malva parviflora*), and shepherd's purse (*Capsella bursa-pastoris*). However, the majority of the remaining orchard habitat described above is devoid of vegetation, due to weed control and crop production activities.

Wildlife

Orchards provide limited habitats for wildlife, as frequent disturbances associated with crop production such as pruning, spraying, harvesting, watering, and other ground disturbances limit the potential for most wildlife species to persist in these habitats. However, some animals such as the side-blotched lizard (*Uta stansburiana*) persist under these conditions. Birds observed there included American Crows (*Corvus brachyrhynchos*) and Yellow-billed magpies (*Pica nuttalli*), which frequently utilize nut crops and can be quite abundant. Burrowing animals such as California ground squirrels (*Spermophilus beecheyi*) and gophers (*Thomomys* sp.) are normally actively discouraged because of damage these animals can cause to irrigation systems.

IRRIGATED ROW CROPS

Vegetation

Irrigated row crops (including disked fields) comprise approximately 36 acres (14.6 ha) of the project site, or approximately 22 percent (Figure 2, Table 2). Dominant crops include corn (*Zea maze*), and potato (*Solanum tuberosum*). These crops are flood-irrigated using water that is likely diverted from the Lateral Number 6 Canal located along the south side of Bangs Avenue. The north side of Bangs Avenue includes the southern boundary of the project site. The largest parcels of land supporting irrigated row crops occur in the southeast corner of the project site

adjacent to Bangs Avenue, and in the northern central section of the site adjacent to Kiernan Avenue.

Wildlife

Because they are less frequently disturbed than other crops, irrigated row crops are used by some wildlife. Species that occur in cultivated habitats are generally widespread species accustomed to disturbances such as American Kestrels (*Falco sparverius*), American Crows, Killdeer (*Charadrius vociferous*), Mourning Doves (*Zenaida macroura*), Western Meadowlarks (*Sturnella neglecta*), Brewer's Blackbirds (*Euphagus cyanocephalus*), and House Finches (*Carpodacus mexicanus*).

DEVELOPED

Vegetation

The developed area comprises approximately 23 acres (9.3 ha) of the project site, or approximately 15 percent (Figure 2, Table 2), including new and older model residential houses and associated hardscape, as well as barns, related structures, and equipment. Developed areas also include a plant nursery located in the southwest section of the site at the intersection of Dale Road and Bangs Avenue, and a single light industry business along Kiernan Avenue near American Avenue. Many of the ruderal species, as mentioned below, occur around these developments as well as a variety of native and ornamental/horticultural landscape trees.

Wildlife

Homesteads and developed areas typically provide habitat for common species accustomed to human disturbance. Common backyard birds such as Western Scrub-jays (*Aphelocoma californica*), American Robins (*Turdus migratorius*), Northern Mockingbirds (*Mimus polyglottos*), House Finches, and House Sparrows (*Passer domesticus*) are likely to be present at these sites. Where there are wood or brush piles, species such as western fence lizards (*Sceloporus occidentalis*) and desert cottontails (*Sylvilagus audobonii*) may be present.

RUDERAL

Vegetation

Ruderal habitat comprises approximately 18 acres (7.3 ha) of the project site, or approximately 11 percent (Figure 2, Table 2). Ruderal communities are assemblages of plants that thrive in disturbed areas; weedy, non-native annual forbs and grasses are typically the first species to colonize these sites following disturbances associated with agricultural practices such as disking and operation of heavy farm equipment. Ruderal habitat is located in the southwest section of the site along Bangs Avenue and in the west central section east of Dale Road. Ruderal species observed on the project site included some of the same plant species observed in the declining

portion of the orchard described above such as ripgut brome, soft chess, black mustard, wild radish, and cheeseweed. Additional ruderal plants include wild oat (*Avena fatua*), annual bluegrass (*Poa annua*), wild lettuce (*Lactuca serriola*), common sow thistle (*Sonchus oleraceus*), yellow star-thistle (*Centaurea solstitialis*), curly dock (*Rumex crispus*), and bristly ox-tongue (*Picris echioides*).

Wildlife

Ruderal habitats within the project area are of limited value to wildlife due to the lack of vegetative cover. Common species such as Mourning Doves and Killdeer occasionally forage in such areas.

FALLOW FIELD

Vegetation

Fallow fields (previously farmed but not currently planted) comprise approximately 10 acres (4 ha) of the project site, or approximately 6 percent (Figure 2, Table 2). The fallow-fields habitat consists of a single parcel of land located in the northwest section of the site adjacent to the intersection of Dale Road and Kiernan Avenue. Although this area appeared to previously contain orchard, it was recently disked and devoid of vegetation at the time of the survey.

Wildlife

Fallow fields are likely to support larger populations of small mammals, such as gophers, than actively farmed lands and may be more likely to provide nesting habitat for birds such as Killdeer. Raptors such as common Red-tailed Hawk (*Buteo junacensis*) also prey upon small mammals within fallow fields.

IRRIGATED PASTURE

Vegetation

Irrigated pasture comprises approximately eight acres (3.2 ha) of the project site, or approximately five percent (Figure 2, Table 2). This habitat includes a single parcel of land within the project site that is associated with an active equestrian ranch located in the northwest section near the intersection of Dale Road and Kiernan Avenue. Irrigated pasture is dominated by annual and perennial non-native grasses and forbs commonly grown for forage, including Bermuda grass (*Cynodon dactylon*), Italian ryegrass (*Lolium multiflorum*), white sweetclover (*Melilotus alba*), white clover (*Trifolium repens*), and filaree. The irrigated pasture is flood- and sprinkler-irrigated using water that is likely diverted from the Lateral Number 6 Canal.

Wildlife

This irrigated pasture attracts bird species typically found in pastures in the Modesto area including Killdeer, Western Kingbird, Western Meadowlark, Brown-headed Cowbird (*Molothrus ater*), Brewer's Blackbird, and Red-winged Blackbird (*Agelaius phoeniceus*).

SPECIAL-STATUS PLANT AND WILDLIFE SPECIES

SPECIAL-STATUS SPECIES REGULATIONS OVERVIEW

Federal and state endangered species legislation gives special status to several plant and animal species known to occur in the vicinity of the project site. In addition, state resource agencies and professional organizations, whose lists are recognized by agencies when reviewing environmental documents, have identified as sensitive some species occurring in the vicinity of the project site. Such species are referred to collectively as "species of special status" and include plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered under the federal Endangered Species Act (ESA) or the California Endangered Species Act (CESA); animals listed as "fully protected" under the California Fish and Game Code; animals designated as "Species of Special Concern" by the CDFG; and plants listed as rare or endangered by the California Native Plant Society (CNPS) in the *Inventory of Rare and Endangered Plants of California* (2001).

ESA provisions protect federally-listed threatened and endangered species and their habitats from unlawful take. Under the ESA, "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct." The U.S. Fish & Wildlife Service's (USFWS) regulations define harm to mean "an act which actually kills or injures wildlife." Such an act "may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering" (50 CFR § 17.3). Activities that may result in "take" of individuals are regulated by the USFWS. The USFWS produced an updated list of candidate species May 11, 2005 (50 CFR Part 17). Candidate species are not afforded any legal protection under ESA; however, candidate species typically receive special attention from federal and state agencies during the environmental review process.

Provisions of CESA protect state-listed threatened and endangered species. CDFG regulates activities that may result in "take" of individuals (*i.e.*, "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of "take" under the California Fish and Game Code. Additionally, the California Fish and Game Code contains lists of vertebrate species designated as "fully protected" (California Fish & Game Code §§ 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians], 5515 [fish]). Such species may not be taken or possessed.

In addition to federal and state-listed species, the CDFG also has produced a list of Species of Special Concern to serve as a "watch list." Species on this list are of limited distribution or the extent of their habitats has been reduced substantially, such that threat to their populations may be imminent. Species of Special Concern may receive special attention during environmental review, but they do not have statutory protection. USFWS also uses the label, Species of Concern, as an informal term that refers to those species that might be in need of concentrated conservation actions. Species of Concern receive no legal protection as a result of their designation as Species of Special Concern, and the use of the term does not necessarily mean

that the species will eventually be proposed for listing as a threatened or endangered species. However, most, if not all, of these species are currently protected by state and federal laws.

Raptors (*e.g.*, eagles, hawks, and owls) and their nests are protected under both federal and state regulations. The federal Migratory Bird Treaty Act[1] (MBTA) prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Birds of prey are protected in California under the State Fish and Game Code.[2] Section 3503.5 states it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this Code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the CDFG.

Vascular plants listed as rare or endangered by the CNPS, but which might not have designated status under state endangered species legislation, are defined as follows:

- List 1A Plants considered by the CNPS to be extinct in California.
- List 1B Plants rare, threatened, or endangered in California and elsewhere.
- List 2 Plants rare, threatened, or endangered in California, but more numerous elsewhere.
- List 3 Plants about which we need more information – a review list.

SPECIAL-STATUS PLANT SPECIES

Reconnaissance-level surveys were conducted on 18 July 2006 for habitats capable of supporting special-status plant species. Prior to the site surveys, information concerning the known distribution of threatened, endangered, or other special-status plant species with potential to occur in the area was collected from several sources and reviewed. The sources included the CDFG's Natural Diversity Data Base (CNDDB 2006) and information available through the USFWS, CDFG, and technical publications. The CNPS's *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2001) and *The Jepson Manual* (Hickman 1993) supplied information regarding the distribution and habitats of vascular plants in the vicinity.

A query of special-status plants in the CNDDB was first performed for the USGS Salida topographical quadrangle in which the project site occurs, as well as the eight quadrangles surrounding the project site. The CNPS Inventory was then queried to produce a similar list for Stanislaus County. The habitat requirements of each special-status plant species were the principal criteria used for inclusion in the list of species potentially occurring on the site.

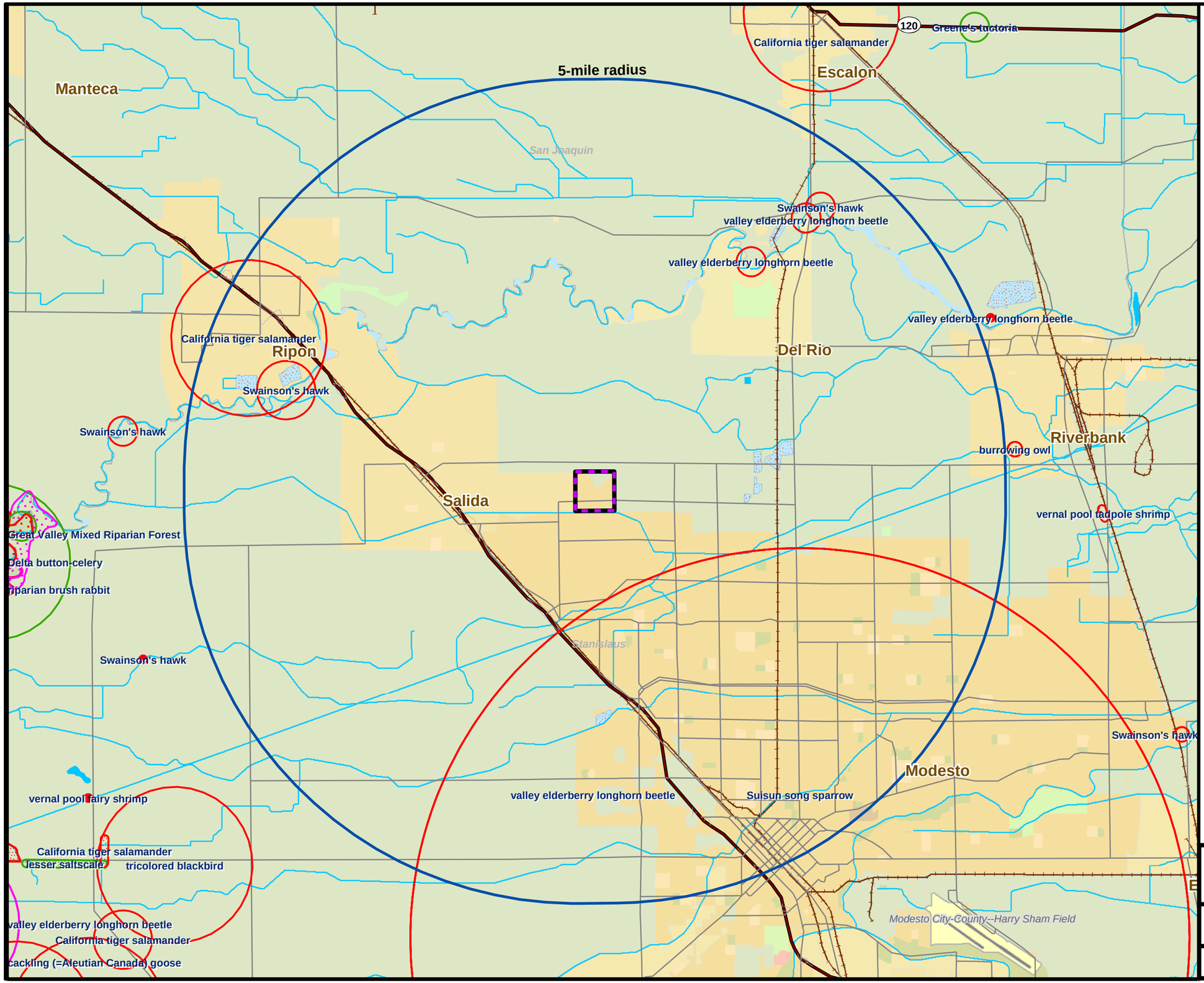
[1] 16 U.S.C., Sec. 703, Supp. I, 1989.
[2] Section 3503.5, 1992.

Many of the special-status plant species that occur in Stanislaus County are associated with habitat or soil types that do not occur on the project site, such as serpentine soils, alkaline soils, clay soils, vernal pool habitat, or cismontane woodland habitat. Eight plant species associated with valley and foothill grassland, riparian scrub, and vernal pool habitats were identified as a result of the CNDDB query (CNDDB 2006), and were analyzed for rarity. None of these species occur within five miles (8 km) of the project site (Figure 3). These include: round-leaved filaree (*Erodium macrophyllum*), big tarplant (*Blepharizonia plumosa* ssp. *plumosa*), Delta button-celery (*Eryngium racemosum*), diamond-petaled California poppy (*Eschscholzia rhombipetala*), Lemmon's jewelflower (*Caulanthus coulteri* var. *lemmonii*), lesser saltscale (*Atriplex minuscula*), legenere (*Legenere limosa*), and Greene's tuctoria (*Tuctoria greenei*) (CNDDB 2006). All eight of these special-status species were rejected from consideration due to the degraded and agricultural nature of habitat on the site, the lack of associated native species, and/or the absence of specific habitat and microhabitat variables such as vernal pools and riparian scrub habitats, soil type, elevation, or hydrology (Appendix B). Therefore, additional surveys for special-status plant species are not warranted.

SPECIAL-STATUS WILDLIFE SPECIES

Surveys were conducted on the project site for habitats capable of supporting special-status wildlife species. Prior to the site surveys, information concerning the known distribution of threatened, endangered, or other special-status wildlife species with potential to occur in the area was collected from several sources and reviewed. The sources included the CDFG's Natural Diversity Data Base (CNDDB 2006) and information available through the USFWS, CDFG, Museum of Vertebrate Zoology, and California Academy of Sciences.

The CNDDB was queried for occurrences of special-status wildlife species within the USGS Salida topographical quadrangle in which the project site occurs, as well as the eight quadrangles surrounding the project site. The specific habitat requirements and the locations of known occurrences of each special-status wildlife species were the principal criteria used for inclusion in the list of species potentially occurring on the site (Table 3). Seventeen species were rejected from consideration due to lack of suitable aquatic or terrestrial habitat (Appendix B). Expanded descriptions are included for those species for which suitable habitat is available, where specific surveys will be conducted, or where the resource agencies have expressed particular concern.



CNDDB Legend

Animals

- Specific Location
- Approximate Location
- General Area

Plants

- Specific Location
- Approximate Location
- General Area

Terrestrial Communities

- General Area

- Project Location

N

0 1.2 2.4 Miles

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Kiernan Business Park East: CNDDB Map

File No. 2673-01	Date 2/28/07	Figure 3

Table 3. Special-status Plant and Wildlife Species, Their Status, and Potential Occurrence at the Kiernan Business Park East Project Site.

NAME	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE ON-SITE
Federal or State Endangered or Threatened Species			
Greene's tuctoria *Tuctoria greenei*	SR, FE	Vernal pools; elevation 98 to 3,510 feet (30 to 1070 m).	**Absent.** No vernal pools on site.
Swainson's Hawk *Buteo swainsoni*	ST	Breeds in stands with few trees in riparian areas, oak savannah, and sometimes in suburban settings. Forages in grassland, pasture, and appropriate agricultural fields.	**Low.** Though there are nesting records within 10 miles, the majority of the site is unsuitable foraging habitat. The project site is primarily surrounded by unsuitable habitats such as orchards and developed lands, and the potential foraging habitat on the site is fragmented and distributed within unsuitable habitats.
California Species of Special Concern			
Northern Harrier *Circus cyaneus*	CSSC	Forages in marshes, grasslands, and ruderal habitats. Nests in extensive marshes and wet fields.	**Present.** Observed foraging in pasture habitats during survey.
Burrowing Owl *Athene cunicularia*	CSSC	Flat grasslands and ruderal habitats. Requires ground squirrel burrows.	**Low.** Ground squirrel burrows were lacking in open areas. However, the species could occupy the site prior to construction.
Loggerhead Shrike *Lanius ludovicianus*	CSSC	Nests in tall shrubs and dense trees. Forages in grasslands, marshes, and ruderal habitats.	**Present.** Observed on site during survey. Suitable nesting and foraging habitat exists on the project site.
Tricolored Blackbird *Agelaius tricolor*	CSSC	Freshwater Emergent Wetland, Annual grassland, Agriculture, and Valley Foothill Riparian.	**Low.** Suitable nesting habitat is absent on the site. Species may forage on the site in orchards and within agricultural fields following disking.
State Protected Species or CNPS Species			
Big tarplant *Blepharizonia plumosa* ssp. *plumosa*	CNPS 1B	Valley and foothill grassland; elevation 98 to 1,567 feet (30 to 505 m).	**Absent.** No native habitat on site.
Delta button-celery *Eryngium racemosum*	CNPS 1B/SE	Riparian scrub (vernally mesic clay depressions); elevation 10 to 98 feet (3 to 30 m).	**Absent.** No riparian scrub or vernal pools present on site.
Diamond-petaled California poppy *Eschscholzia rhombipetala*	CNPS 1B	Valley and foothill grasslands (alkaline, clay); elevation 0 to 3,198 feet (0 to 975 m).	**Absent.** No alkaline or clay soils on site.

NAME	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE ON-SITE
Lemmon's jewelflower *Caulanthus coulteri* var. *lemmonii*	CNPS 1B	Pinyon and juniper woodland, valley and foothill grassland; elevation 262 to 4,002 feet (80 to 1,220 m).	**Absent.** No native habitat present on site.
Round-leaved filaree *Erodium macrophyllum*	CNPS 2	Cismontane woodland, valley and foothill grassland/clay; elevation 49 to 3,937 feet (15 to 1,200 m).	**Absent.** No clay soils present on site.
Lesser slatscale *Atriplex minuscula*	CNPS 1B	Vernal pools (alkaline); elevation 49 to 656 feet (15 to 200 m).	**Absent.** No vernal pools on site.
Legenere *Legenere limosa*	CNPS 1B	Vernal pools; elevation 3 to 2,887 feet (1 to 880 m).	**Absent.** No vernal pools on site.

***LISTING STATUS**

FE	=	Federally listed Endangered
FT	=	Federally listed Threatened
FD	=	Federally delisted
FC	=	Federal Candidate. Sufficient biological information to support a proposal to list the species as Endangered or Threatened
SE	=	State listed Endangered
ST		State listed Threatened
CSSC	=	California Species of Special Concern
SP	=	State Protected Species

CNPS 1B	=	Plants considered by CNPS to be rare, threatened, or endangered in California, and elsewhere
CNPS 2	=	Plants rare, threatened, or endangered in California, but more numerous elsewhere
CNPS 3	=	Plants about which we need more information - A review list.
CNPS 4	=	Plants of limited distribution

Federal or State Endangered or Threatened Species

Swainson's Hawk (*Buteo swainsoni*). Federal Status: None; State Status: Threatened. The Swainson's Hawk is a large soaring bird of open habitats. Swainson's Hawks are most easily distinguished from other members of the genus Buteo, such as the familiar Red-tailed Hawk, by a relatively slender body and narrow, pointed, slightly upturned wings.

Swainson's Hawks were once one of the most common birds of prey in the grasslands of California. Populations have declined at least 90 percent since 1900, and were still believed to be declining in the 1990s (Bloom and Van De Water 1994). They once nested in the majority of the lowland areas in the state. Currently, the nesting range is restricted primarily to portions of the Sacramento and San Joaquin valleys, and northeast California (Bloom 1980). It was listed as threatened by the State of California in 1983.

Swainson's Hawks require large amounts of foraging habitat, preferably grassland or pasture habitats. Preferred prey items include voles (*Microtus* spp.), gophers, birds, and insects such as grasshoppers (Estep 1989). They have adapted to the use of some croplands, particularly alfalfa, but also forage in hay, grain, tomatoes, beets, and other row crops (Estep 1989). Crops such as cotton, corn, rice, orchards, and vineyards do not represent suitable habitat because they either lack suitable prey, or the prey is unavailable to the Swainson's Hawks due to crop structure.

In the Central Valley, Swainson's Hawks are generally tied to riparian habitat for nesting sites (Bloom 1980). Some pairs utilize eucalyptus trees and nest outside riparian areas (CNDDB 2006).

In the fall, Swainson's Hawks collect in flocks called kettles, sometimes in large numbers, and migrate together to South America. Kettles can occasionally be seen in the valley foraging behind tractors, hunting mice and insects that have been disrupted.

Land conversion for agricultural purposes in the San Joaquin Valley and the predominance of crops that are unsuitable foraging habitat have led to a loss of suitable habitat patches large enough to sustain Swainson's Hawks. However, there are numerous current and historic records of Swainson's Hawks within 10 miles (16 km) of the project site (CNDDB 2006). Most of these are west of the project site in the vicinity of the San Joaquin River. However, two CNDDB records from 1992 and 1995 exist within five miles (8 km) of the project site (Figure 3). These records are more than five years old, however, and thus would not be considered active nests according to the *Staff report regarding mitigation for impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California* (CDFG 1994a). There is one record that would be considered an active nest from 2002 near the intersection of Beckwith Road and Gates Road approximately six miles (9.7 km) southwest of the project site.

The staff report prepared by CDFG (1994a) regarding mitigation for Swainson's Hawks indicates that, because there is an active Swainson's Hawk nest within 10 miles of the project site, the cornfields (after harvesting), ruderal habitats, fallow fields, and irrigated pasture occurring on the project site could provide foraging habitat for Swainson's Hawks, and that the

loss of foraging habitat would contribute directly or cumulatively to impacts to the species. Based on the specific nature of the project site, the project is unlikely to represent primary foraging area for this species. Parcels comprising irrigated croplands, croplands (planted to corn), ruderal habitat, fallow field, and irrigated pasture represent marginal foraging habitat that is unlikely to be used by a breeding pair because the potential foraging habitat is fragmented and distributed within parcels comprising unsuitable foraging habitat in the form of orchards and residential areas. However, the appropriate habitat on-site may be occasionally used for foraging by transient individual Swainson's Hawks.

California Species of Special Concern and State Protected Species

Northern Harrier (*Circus cyaneus*). Federal Status: None; State Status: Species of Special Concern. Northern Harriers are commonly found in open grasslands, agricultural areas, and marshes. Northern Harriers nest on the ground in areas where long grasses or marsh plants provide cover and protection. Harriers hunt for a variety of prey, including rodents, birds, frogs, reptiles, and insects, by flying low and slowly in a traversing manner, utilizing both sight and sound to detect prey items.

Northern Harriers were observed foraging in the project vicinity during the field survey on 18 July 2006. While nesting habitat is absent from the project site, some marginal foraging habitat exists on the project site.

Burrowing Owl (*Athene cunicularia*). Federal Status: None; State Status: Species of Special Concern. The Burrowing Owl is a small, terrestrial owl of open country. Burrowing Owls favor flat, open grassland or gentle slopes and sparse-shrub land ecosystems. These owls prefer annual and perennial grasslands, typically with sparse or nonexistent tree or shrub canopies. In California, Burrowing Owls are found in close association with California ground squirrels. Owls use the abandoned burrows of ground squirrels for shelter and nesting.

Burrowing Owls are known to be resident within the southern San Joaquin Valley. They are likely to inhabit pastures, fallow fields, and canal and railway right-of-ways where ground squirrels have been allowed to invade. No Burrowing Owls or signs of their presence, such as feathers, droppings, pellets, or prey remains, were observed on the project site during the reconnaissance-level survey. However, habitat characteristics within fallow fields and some ruderal habitats within the project site may become suitable for Burrowing Owls prior to construction. Therefore, the species could occur on the project site.

Loggerhead Shrike (*Lanius ludovicianus*). Federal Status: None; State Status; Species of Special Concern. This predatory songbird inhabits much of the lower 48 states of the United States of America. They prefer open habitats interspersed with shrubs, trees, poles, fences or other perches from which they can hunt. Some populations of the Loggerhead Shrike, primarily those in eastern North America, have declined significantly over the last 40 years. Other populations, including those in western North America, appear to be decreasing as well. Even with this trend, Loggerhead Shrikes are still considered a fairly common species in California.

Though they are likely to be more common in less disturbed habitats, Loggerhead Shrikes are still found throughout the Central Valley.

A Loggerhead Shrike was observed on the project site during the survey. Suitable nesting and foraging habitat exists on the project site at the edge of orchards and in some vegetation associated with the residences.

Tricolored Blackbird (*Agelaius tricolor*). Federal Status: None; State Status: Species of Special Concern. Tricolored Blackbirds are found almost exclusively in the Central Valley and central and southern coastal areas of California. The Tricolored Blackbird is highly colonial in its nesting habits and forms dense breeding colonies of up to tens of thousands of pairs. This species nests primarily in tall, dense stands of cattails or tules, but also nests in blackberry, wild rose bushes, and tall herbs. Nesting colonies are typically located near standing or flowing freshwater. Tricolored Blackbirds form large, often multi-species, flocks during the non-breeding period and range more widely than during the reproductive season.

Nesting habitat for Tricolored Blackbirds is absent from the project area. Tricolored Blackbirds are known from the project vicinity (CNDDB 2006) and could occasionally forage in agricultural habitats on the project site such as orchards and recently disked fields.

REGULATED HABITATS

UNITED STATES ARMY CORPS OF ENGINEERS JURISDICTION

Regulatory Overview

Areas meeting the regulatory definition of "Waters of the U.S." (jurisdictional waters) are subject to the jurisdiction of the USACE under provisions of Section 404 of the Clean Water Act (1972) and Section 10 of the Rivers and Harbors Act (1899). These waters may include all waters used, or potentially used, for interstate commerce, including all waters subject to the ebb and flow of the tide, all interstate waters, all other waters (intrastate lakes, rivers, streams, mudflats, sandflats, playa lakes, natural ponds, etc.), all impoundments of waters otherwise defined as "Waters of the U.S.," tributaries of waters otherwise defined as "Waters of the U.S.," the territorial seas, and wetlands (termed Special Aquatic Sites) adjacent to "Waters of the U.S." (33 CFR, Part 328, Section 328.3). Wetlands on non-agricultural lands are identified using the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987).

Construction activities within jurisdictional waters are regulated by the USACE. The placement of fill into such waters must comply with permit requirements of the USACE. No USACE permit will be effective in the absence of state water quality certification pursuant to Section 401 of the Clean Water Act. The State Water Resources Control Board is the state agency (together with the Regional Water Quality Control Boards) charged with implementing water quality certification in California.

Survey Results

Field surveys for jurisdictional waters on the project site were conducted on 18 July 2006 in accordance with USACE regulations and guidelines. No potentially regulated habitats such as natural or artificial (man-induced) seasonal wetlands, freshwater emergent wetlands, natural or artificial bodies of open water such as ponds or lakes including native creeks, drainage channels and irrigation ditches occur on the project site. Therefore, the project site does not support any habitats that fall within the regulatory jurisdiction of the USACE.

CALIFORNIA DEPARTMENT OF FISH AND GAME JURISDICTION

Regulatory Overview

The CDFG potentially extends the definition of stream to include "intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams (USGS 1981), and watercourses with subsurface flows. Canals, aqueducts, irrigation ditches, and other means of water conveyance can also be considered streams if they support aquatic life, riparian vegetation, or

stream-dependent terrestrial wildlife" (CDFG 1994b). Such areas on the site were determined using methodology described in *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607* (CDFG 1994b).

Activities that result in the diversion or obstruction of the natural flow of a stream, or which substantially change its bed, channel or bank, or which utilize any materials (including vegetation) from the streambed, may require that the project applicant enter into a Streambed Alteration Agreement with the CDFG.

Survey Results

Field surveys for jurisdictional waters on the project site were conducted on 18 July 2006 in accordance with CDFG regulations and guidelines. No potentially regulated habitats such as riparian vegetation, native creeks, drainage channels, and/or irrigation ditches supporting riparian vegetation occur on the project site. In addition, no natural or artificial bodies of open water such as ponds or lakes occur on the site. Therefore, the project site does not support any habitats that fall within the regulatory jurisdiction of the CDFG.

ENVIRONMENTAL IMPACTS

SIGNIFICANCE CRITERIA

The proposed project will have a number of effects on the biological resources of the project site. The California Environmental Quality Act (CEQA) defines "significant effect on the environment" as "a substantial, or potentially substantial, adverse change in the environment" (Pub. Res. Code, §21068). Under CEQA Guidelines Section 15065, a project's effects on biotic resources are deemed significant where the project would:

- 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, and/or
- substantially reduce the number or restrict the range of a rare or endangered plant or animal.

In addition to the Section 15065 criteria, Appendix G within the CEQA Guidelines lists other potential impacts to consider when analyzing the effects of a project. While the statutorily defined criteria above provide guidance, the following criteria are applicable to the assessment of impacts to biological resources stemming from the proposed Project, and provide the basis for determinations of significance:

- Would the project 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 CDFG or USFWS?
- Would the project 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?
- Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

IMPACTS FOUND TO BE LESS THAN SIGNIFICANT

Loss of Irrigated Row Crop, Irrigated Pasture, Orchard, Fallow Field, Ruderal, and Developed Habitats

Irrigated row crop, irrigated pasture, orchard, fallow field, ruderal, and developed habitats predominately support common plant and wildlife species. These habitats are locally common, the plant species present within these areas are regionally common, and the majority of biotic resources associated with these habitats will continue to be abundant following the build-out of the Kiernan Business Park East project area. Loss of these habitats would not result in significant impacts to biological resources.

Loss of Foraging Habitat for Northern Harriers and Tricolored Blackbird

Irrigated row crops and disked fields within which Northern Harriers and Tricolored Blackbirds may forage are regionally abundant. Project implementation will not substantially reduce the foraging habitat available for these species, restrict their range, or cause their regional populations to drop below a self-sustaining level. Therefore, impacts to these species stemming from a loss of foraging habitat would be less than significant.

Loss of Nesting and Foraging Habitat for Loggerhead Shrikes

Loggerhead Shrikes were observed during the reconnaissance-level survey and could nest within the project site. Similar potential breeding and foraging habitat for Loggerhead Shrikes associated with agricultural operations and developed areas are regionally abundant. Project implementation will not substantially reduce the foraging habitat available for these species, restrict their range, or cause their regional populations to drop below a self-sustaining level. Therefore, impacts to this species would be less than significant.

Loss of Foraging Habitat for Swainson's Hawks

Irrigated row crops, ruderal habitat, fallow fields, and irrigated pasture habitat meeting the minimum definition of foraging habitat for Swainson's Hawks is distributed on the site in six parcels. The remainder of the site comprises unsuitable habitat. Furthermore, the parcels adjoining the site and the majority of the landscape surrounding the parcel consists mainly of unsuitable foraging habitat comprising urban development and orchards. Based on the isolated and fragmented nature of open habitat on the project site, it is unlikely that these habitats are utilized by foraging Swainson's Hawks to sustain reproductive effort. Therefore, direct impacts to Swainson's Hawks from loss of foraging habitat would be less than significant. However, see the discussion below regarding cumulative impacts as the site may be used for foraging by non-breeding (second-year) or transient Swainson's Hawks.

SIGNIFICANT IMPACTS THAT CAN BE MITIGATED TO A LESS THAN SIGNIFICANT LEVEL

Loss of Occupied Burrowing Owl Habitat

No Burrowing Owls or signs of their presence, such as feathers, droppings, pellets, or prey remains, were observed in the project area during the survey. The project site does not currently provide suitable Burrowing Owl habitat because there are no ground squirrel burrows or other suitable burrows in, or adjacent to, the open areas of the project site. There is evidence that ground squirrels are actively prevented from establishing burrow systems by on-going farming practices on the site. Because Burrowing Owls rely heavily on California ground squirrel for burrows in this region, Burrowing Owls are likely to inhabit pastures, fallow fields, and canal and railway right-of-ways where ground squirrels have been allowed to invade. Should ground squirrels and their burrows be present on the parcels that were not accessible or should active farming of some of the parcels cease prior to the beginning of the project, ground squirrels could become established on these areas and provide habitat for Burrowing Owls.

If Burrowing Owls are present within a construction zone, or adjacent to such an area, at the time of construction, disturbance could destroy occupied burrows or cause owls to abandon burrows. Construction during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. The loss of occupied Burrowing Owl habitat (habitat known to have been occupied by owls during the nesting season within the past 3 years) or reductions in the number of this rare species within Stanislaus County, directly or indirectly through nest abandonment or reproductive suppression, would constitute a significant impact. Furthermore, raptors, including owls and their nests, are protected under both federal and state laws and regulations, including the Migratory Bird Treaty Act and California Fish and Game Code section 3503.5 (see "Disturbance of Nesting Raptors and Migratory Birds" below). Implementation of the following mitigation measures would reduce the potential impact on this species to a less than significant level.

Mitigation 1. Implement CDFG Guidelines. In conformance with federal and state regulations regarding the protection of raptors, a habitat assessment in accordance with CDFG guidelines (CDFG 1995) for Burrowing Owls should be completed prior to the start of construction. Burrowing Owl habitat on the project site and within a 500-foot (150 m) buffer zone should be assessed ("Assessment Area"). If the habitat assessment concludes that the Assessment Area lacks suitable Burrowing Owl habitat, no additional action would be warranted. However, if suitable habitat is located on the Assessment Area, all ground squirrel colonies should be mapped at an appropriate scale, and the following mitigation measures should be implemented:

1. In conformance with federal and state regulations regarding the protection of raptors, a pre-construction survey for Burrowing Owls, in conformance with CDFG guidelines, should be completed no more than 30 days prior to the start of construction within suitable habitat at the project site(s) and buffer zone(s). An

initial site visit would be conducted to assess the habitat suitability for Burrowing Owls. If suitable habitat is present, the first of four owl surveys can be conducted during this initial visit. Three additional formal surveys should then be completed per CDFG guidelines prior to construction.

2. Occupied burrows should not be disturbed during the nesting season (February 1 through August 31) unless a qualified biologist approved by CDFG verifies through non-invasive methods whether the birds have not begun egg-laying and incubation, or that juveniles from the occupied burrows are foraging independently and are capable of independent survival. Eviction outside the nesting season may be permitted pending evaluation of eviction plans and receipt of formal written approval from the CDFG authorizing the eviction.

3. A 250-foot (76 m) buffer, within which no new activity will be permissible, will be maintained between project activities and nesting Burrowing Owls during the nesting season. This protected area will remain in effect until August 31, or at the CDFG's discretion and based upon monitoring evidence, until the young owls are foraging independently.

4. If accidental take (disturbance, injury, or death of owls) occurs, the CDFG will be notified immediately.

Mitigation 2. Compensation for loss of Burrowing Owl habitat. If surveys determine that Burrowing Owls occupy the site and avoiding development of occupied areas is not feasible, then habitat compensation on off-site mitigation lands should be implemented. Habitat Management (HM) lands comprising existing Burrowing Owl foraging and breeding habitat should be acquired and preserved. An area of 6.5 acres (2.6 ha) (the amount of land found to be necessary to sustain a pair or individual owl) should be secured for each pair of owls, or individual in the case of an odd number of birds. As part of an agreement with the CDFG, the project applicant should secure the performance of its mitigation duties by providing the CDFG with security in the form of funds that would accomplish the following:

- Allow for the acquisition and/or preservation of 6.5 acres (2.6 ha) of HM lands

- Provide initial protection and enhancement activities on the HM lands, potentially including, but not limited to, such measures as fencing, trash clean-up, artificial burrow creation, grazing or mowing, and any habitat restoration deemed necessary by CDFG

- Establish an endowment for the long-term management of the HM lands

- Reimburse the CDFG for reasonable expenses incurred as a result of the approval and implementation of this agreement

Disturbance of Nesting Raptors and Migratory Birds

Migratory birds, including raptors, are known or are expected to nest in the vicinity of the project area. Raptors (*e.g.*, eagles, hawks, and owls) and their nests are protected under both federal and state regulations. The MBTA prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the CDFG. Loss of fertile eggs or nesting birds, or any activities resulting in nest abandonment, could constitute a significant impact if the species is particularly rare in the region. Construction activities such as tree removal, site grading, etc., that disturb a rare nesting bird on-site or immediately adjacent to the construction zone could constitute a significant impact. The mitigation measures described below would reduce the potential for significant impacts to less than significant levels.

Mitigation 1. Avoidance. To the extent practicable, construction should be scheduled to avoid the nesting season, which extends from January through August.

Mitigation 2. Pre-construction Surveys. If it is not possible to schedule construction between August and January, pre-construction surveys for nesting birds shall be conducted by a qualified ornithologist or wildlife biologist to ensure that no nests of rare or protected species will be disturbed during project implementation. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of demolition/construction activities during the early part of the breeding season (January through April) and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August). During this survey, the qualified person shall inspect all potential nest substrates in and immediately adjacent to the impact areas for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the ornithologist, in consultation with CDFG, shall determine the extent of a construction-free buffer zone to be established around the nest.

CUMULATIVE IMPACTS

Modesto, as the largest city in Stanislaus County, is expected, and planned to, accommodate a substantial share of the County's projected population growth (City of Modesto 2003a). Development in the Modesto area under the Urban Area General Plan would convert approximately 26,100 acres (10,562 ha) of agricultural land identified by the California Department of Conservation as either Prime Farmland, Unique Farmland, or farmland of state or local importance (City of Modesto 2003b). These agricultural areas include habitat suitable for Swainson's Hawk and Burrowing Owl.

Continued degradation of native plant communities in the San Joaquin Valley from ongoing development will continue to contribute to the decline of listed and sensitive species or their habitat throughout the region. Loss of suitable habitat for Burrowing Owls and Swainson's

Hawks as a result of this project has the potential to combine with similar impacts of other projects and would be considered cumulatively significant.

The mitigation measures described above for Burrowing Owls would reduce cumulative impacts to this species to less than significant levels. The mitigation measure described below would reduce cumulative impacts to Swainson's Hawks to less-than-significant levels.

Based on the quality of the on-site habitat and the isolated nature of the project site in relation to other suitable habitat in the project vicinity, the cumulative loss of habitat for Swainson's Hawks should be mitigated by providing 0.25 acres (0.1 ha) of offsite Habitat Management (HM) lands comprising irrigated row crops, ruderal areas, fallow fields, and irrigated pasture. All HM lands protected under this requirement may be protected through fee title acquisition or conservation easement (acceptable to the CDFG) on agricultural lands or other suitable habitats that provide foraging habitat for Swainson's Hawks. Management Authorization holders/project sponsors shall provide for the long-term management of the HM lands by funding a management endowment (the interest on which shall be used for managing the HM lands) at a rate agreed upon by the CDFG.

INDIRECT IMPACTS

No indirect impacts on biological resources would occur from implementing the proposed project.

UNAVOIDABLE SIGNIFICANT ADVERSE IMPACTS

No unavoidable significant adverse impacts on biological resources would occur from implementing the proposed project.

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APPENDIX A.

Plant Species Observed on the Kiernan Business Park East Project Site

Appendix A. Plant Species Identified at the Kiernan Business Park East Project Site, Stanislaus County, California.		
Family Name	**Scientific Name**	**Common Name**
Asteraceae	*Centaurea solstitialis*	yellow star-thistle
	Lactuca serriola	prickly lettuce
	Picris echioides	bristly ox-tongue
	Sonchus oleraceus	common sow thistle
	Xanthium strumarium	cocklebur
Boraginaceae	*Amsinckia menziesii*	fiddleneck
Brassicaceae	*Brassica nigra*	black mustard
	Capsella bursa-pastoris	shepherd's purse
	Raphanus sativus	wild radish
Fabaceae	*Melilotus alba*	white sweetclover
	Trifolium repens	white clover
Geraniaceae	*Erodium cicutarium*	red-leaf filaree
Juglandaceae	*Juglas regia*	English walnut
Malvaceae	*Malva parviflora*	cheeseweed
Poaceae	*Avena fatua*	wild oat
	Bromus diandrus	ripgut grass
	Bromus hordeaceus	soft chess
	Cynodon dactylon	Bermuda grass
	Hordeum marinum ssp. *gussoneanum*	Mediterranean barley
	Lolium multiflorum	Italian ryegrass
	Poa annua	annual bluegrass
	Zea mays	corn
Polygonaceae	*Rumex crispus*	curly dock
Rosaceae	*Prunus dulcis*	almond
Solanaceae	*Solanum tuberosum*	potato

The species are arranged alphabetically by family name for all vascular plants encountered during the plant survey. Plants are also listed alphabetically within each family.

APPENDIX B.

Special-Status Plant and Wildlife Species Considered but Rejected for Occurrence at the Project Site

SPECIAL-STATUS PLANT SPECIES CONSIDERED BUT REJECTED FOR OCCURRENCE ON THE KIERNAN BUSINESS PARK EAST PROJECT SITE								
Scientific Name	**Common Name**	**Lack of Serpentine Soils**	**Lack of Strongly Alkaline Soils**	**Specific Edaphic Requirements Lacking**	**Outside the Elevation Range**	**Lack of Associate Species**	**Believed to Be Extirpated or Extinct**	**Lack of Suitable Habitat and/or Highly Degraded Site Conditions**
Atriplex minuscula	Lesser saltscale							X
Blepharizonia plumosa ssp. *plumosa*	big tarplant							X
Caulanthus coulteri var. *lemmonii*	Lemmon's jewelflower							X
Erodium macrophyllum	round-leaved filaree							X
Eryngium spinosepalum	spiny-sepaled button-celery							X
Eschscholzia rhombipetala	diamond-petaled California poppy							X
Legenere limosa	Legenere							X
Tuctoria greenei	Greene's tuctoria							X

SPECIAL-STATUS WILDLIFE SPECIES CONSIDERED BUT REJECTED FOR OCCURRENCE ON THE KIERNAN BUSINESS PARK EAST PROJECT SITE				
Scientific Name	**Common Name**	**Outside of known current range**	**Lack of suitable aquatic habitat**	**Lack of suitable terrestrial habitat**
Crustaceans				
Branchinecta lynchi	Conservancy fairy shrimp		X	
Branchinecta longiantenna	Longhorn fairy shrimp		X	
Branchinecta lynchi	Vernal pool fairy shrimp		X	
Lepidurus packardi	Vernal Pool tadpole shrimp		X	
Linderiella occidentalis	California linderiella		X	
Insects				
Desmocerus californicus dimorphus	Valley elderberry beetle			X
Lytta moesta	Moestan blister beetle			X
Amphibians				
Ambystoma californiense	California tiger salamander		X	
Reptiles				
Thamnophis gigas	Giant garter snake	X	X	
Birds				
Aquila chrysaetos	Golden Eagle			X
Coccyzus americanus occidentalis	Western Yellow-billed Cuckoo	X		X
Falco mexicanus	Prairie Falcon			X
Branta hutchinsii leucopareia	Aleutian Cackling Goose			X
Melospiza melodia maxillaris	Suisun Song Sparrow			X
Mammals				
Neotoma fucipes riparia	Riparian woodrat			X
Sylvilagus bachmani riparius	Riparian brush rabbit			X
Vulpes macrotis mutica	San Joaquin kit fox	X		X

APPENDIX D: KIERNAN BUSINESS PARK EAST AND SOUTH STORM DRAINAGE TECHNICAL REPORT

Kiernan Business Park East and South Final Storm Drainage Technical Report

FINAL REPORT

Prepared for:

Harris & Associates
2850 North Tracy Boulevard
Suite 200
Tracy, CA 95376
Ph (209) 833-3310

Prepared by:

Stantec Consulting Inc.
2590 Venture Oaks Way
Sacramento, CA 95833
Ph (916) 569-2500

August 2008

Kiernan Business Park
East and South
Final Storm Drainage Technical Report

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Exhibit 3 Proposed Upgrade Storm Drainage Infrastructure, Kiernan Business Park East
Exhibit 4 Proposed Upgrade Storm Drainage Infrastructure, Kiernan Business Park South
Exhibit 5 Terminal Detention Basin Volume Requirements
Exhibit 6 Opinion of Probable Cost, Kiernan Business Park East
Exhibit 7 Opinion of Probable Cost, Kiernan Business Park South
Exhibit 8 Fee Calculations, Kiernan Business Park East
Exhibit 9 Fee Calculations, Kiernan Business Park South

APPENDIX

Public street drainage exhibits from *City of Modesto Storm Water Management Program, Kiernan Business Park – East*, Chopra Development Enterprises, January 9, 2006

1.0 Introduction

1.1 PURPOSE

The purpose of this Storm Drainage Technical Report is to describe the storm drainage technical evaluation that has been completed to support the Facilities Master Plan and the Infrastructure Finance Plans for Kiernan Business Park East and South. This report is a combined report for both projects. The size and location of these projects are:

Kiernan Business Park East – Kiernan Business Park East is comprised of approximately 153 acres and is bounded to the north by Kiernan Avenue, to the west by Dale Road, to the south by Bangs Road, and to the east by undeveloped agricultural land.

Kiernan Business Park South – Kiernan Business Park South is comprised of approximately 72 acres and is bound to the north by Bangs Road, to the west by Dale Road, to the south by Pelandale Road, and to the east by existing development.

1.2 BACKGROUND

Kiernan Business Park East and South are located in Sub-basin 55 and Sub-basin 54, respectively, of the current draft version of the Storm Drainage Master Plan (SDMP) for the City of Modesto dated October 2006. The prior draft of the SDMP identified a regional detention basin on the Kiernan Business Park East property that would serve a larger portion of surrounding existing and future development. However, this proposed detention basin has been relocated to the west in the most recent draft SDMP as shown on Exhibit 1, and is no longer proposed to be utilized by Kiernan Business Park East or South. The Kiernan Business Park East and South properties are now represented in the more recent version of the draft SDMP as self contained sub-basins that are no longer shown as contributing flow to a regional detention basin. This change was made in response to input received during initial project meetings and discussions with City staff regarding Kiernan Business Park East and South.

1.3 ASSUMPTIONS

The information presented in this Storm Drainage Technical Report has been based upon technical evaluations, our professional opinions and experience, meetings with the project proponents and City staff, meetings with the Modesto Irrigation District (MID), and review and consideration of the following documents/information:

- Revised Draft *Storm Drainage Master Plan* for the City of Modesto, October 2006
- City of Modesto *Standard Specifications, Section 4, Storm Drainage Design* (2006)
- City of Modesto *Guidance Manual for New Development Stormwater Quality Control Measures* (2001)

- City of Modesto *Design Standards for Dual Use Flood Control/Recreation Facilities* (2000)
- *City of Modesto Storm Water Management Program, Kiernan Business Park – East*, Chopra Development Enterprises, January 9, 2006
- *Update to City of Modesto Storm Water Management Program, Kiernan Business Park – East*, Chopra Development Enterprises, November 2, 2006
- Kiernan Business Park – East, Specific Plan Project Description, September 25, 2006
- Mana/Wagner Plot Plan and Tentative Parcel Maps, February 24, 2006 and Mana/Wagner Storm Drain Study Alts. 3 and 4 maps

In addition to the above listed design criteria, the following items will be taken into consideration as a part of establishing the basic storm drainage system requirements for the project (East and South):

- The study area includes half of the adjacent street right-of-way, with the exception of Kiernan Avenue (which is a state highway). Therefore, the project acreages have been increased to allow for runoff from half of the right-of-way for Dale Road, American Avenue, and Bangs Road for Kiernan Business Park East (160 acres total) and Dale Road, American Avenue, and Pelandale Road for Kiernan Business Park South (77 acres total). The Kiernan Business Park developments will need to incorporate provisions to accommodate storm drainage from the half street rights-of-way for these streets. American Avenue and Pelandale Road are existing roadways. Dale Road is proposed to be three lanes in each direction with a concrete median. The traffic study shows Bangs Road needs to be a four lane major collector.

- The project will be served by a combination of onsite detention (infiltration) basins, linear detention (infiltration) basins adjacent to public streets, terminal detention basin(s), and drainage discharge to Modesto Irrigation District (MID). The onsite detention basins will incorporate elements that facilitate infiltration as the primary method for draining them. The terminal detention basin(s) and drainage discharge to MID will be utilized in the event that or to the extent that infiltration capabilities diminish permanently over time.

- Onsite detention ponds and linear detention basins adjacent to public streets will be sized for the 100-year, 24-hour runoff volume.

- Consideration should be given to combining onsite storm drainage detention facilities serving several small developments into a shared consolidated facility or facilities.

- A terminal detention basin will be provided. There will also be a low flow system of storm drains installed within public streets that will have the ability to drain residual storm water to the terminal detention basin in the event that selected infiltration facilities do not drain properly after a given storm.

- The terminal detention basin(s) will be sized for the water quality volume of runoff, which is the volume of runoff generated by a 2-year, 24-hour storm event plus an additional 20% to account for sedimentation as was negotiated between the City and MID.

- The terminal detention basin(s) will likely consist of two basins (one each for Kiernan Business Park East and South) that are hydraulically connected. The two basins may have elevated streets crossing over them, with cross-drainage structures being provided under the streets to maintain a hydrostatic connection within each.

- The combined project (East and South) will require the acquisition of a drainage agreement with MID to allow construction and use of a single pump station with a 5 cfs discharge to MID Lateral No. 6, which extends along Bangs Avenue between Kiernan Business Park East and South.

- The terminal detention basin(s) and pumping facility will be constructed by the developer(s) and dedicated to the City to allow for monitoring, operation, and maintenance to be performed by the City. The pumping facility must be provided with a SCADA system and meet other requirements to be established by MID.

- Any discharges from the terminal detention basin(s) to MID will be City responsibility; private property owners will not have authority or capability to discharge independently.

- The terminal basin(s) shall be landscaped consistent with the City's requirements for dual function basins.

- A separate entity (such as a maintenance district, association, or community services district) must be established among the property owners to fund and oversee required maintenance of onsite detention (infiltration) facilities and detention (infiltration) facilities draining public streets. These entities may be different for Kiernan Business Park East and South. Many of the storm drainage facilities are envisioned to be "shared" facilities. The City will require the owners to enter into an Access and Maintenance Agreement with the City.

- In the event that the City identifies functionality or maintenance issues with the onsite detention (infiltration) facilities or detention (infiltration) facilities draining public streets that are not corrected within a reasonable time frame after City issued notice, the City reserves the right to correct the problem(s) and receive reimbursement from the maintenance entity.

- Construction of the storm drainage facilities can be phased according to project needs. Kiernan Business Park East is anticipated to develop in two phases with the property located within the City developing first and the portion to be annexed, second. Kiernan Business Park South is not considering phasing at this time.

- A cost-sharing protocol for storm drainage facilities will need to be established, and recommendations are provided separately herein for Kiernan Business Park East and

South. It is proposed that funding will be “shared” between the East and South areas for a single, future pump station and site that will provide for combined low flow discharge to MID Lateral No. 6 from both projects at a single location. The cost of this pumping facility, SCADA system, and the connection line across Bangs Road and underneath MID Lateral No. 6 will be proportionally shared by the two project areas. All other storm drainage costs are separate costs attributable to each of the two project areas.

2.0 Drainage Infrastructure Plan

There are two drainage infrastructure plans presented herein, one each for Kiernan Business Park East and South (Exhibits 3 and 4, respectively). The components of the proposed storm drainage facilities fall into one of two categories, *upgrade infrastructure* or *onsite storm drainage costs*.

The *upgrade infrastructure* consists of the detention (infiltration) systems that will drain public streets and the storm drainage system within public right-of-way that connects to onsite detention (infiltration) basins and provides for secondary conveyance of low flow and discharge to MID Lateral No. 6 in the event of a failure of the detention systems to provide adequate infiltration. New development within Kiernan Business Park East and South will be required to contribute their fair share towards funding the upgrade infrastructure serving these respective project areas. The following items are included in the upgrade infrastructure:

- Low flow storm drain pipe system in public streets that may be used for low flow drainage conveyance from onsite detention basins, including stubs to the property line of individual properties
- Sluice gates for each stub from the low flow storm drain pipe system
- Terminal detention basins
- Right-of-way costs for terminal detention basins
- Storm drainage pump station with SCADA system and jack and bore pipe connection underneath Bangs Road and MID Lateral No. 6 from Kiernan Business Park East (shared cost between East and South project areas)
- Linear detention (infiltration) basins providing for drainage of public streets, including half of the right-of-way of the adjacent arterial streets (except Kiernan Avenue)
- Right-of-way costs for linear detention (infiltration) basins serving public streets and for the storm drainage pump station

The *onsite storm drainage costs* include items that are incurred on a per property basis such as the individual detention (infiltration) basins and onsite connection to storm drain pipe stubs provided at public street frontages.

2.1 UPGRADE INFRASTRUCTURE

2.1.1 Low Flow Storm Drain Pipe System

The low flow storm drain pipe system will be constructed along the public streets within Kiernan Business Park East and South to facilitate low flow drainage of onsite detention (infiltration)

basins, if needed. The system will include facilities that drain to the site of future terminal detention basins and a pumping facility (currently proposed on the south side of Bangs Road, roughly ¼ mile east of Dale Road) and will include storm drain pipes and stubs to individual property lines. Connection to the stubs will be the responsibility of individual developments (onsite cost). The stubs will have sluice gates installed that will be opened only if the storm drain system is needed as an alternative or augmentation to drain infiltration basins. The discharge capacity of the low flow storm drain system is established based on assumption that MID will allow for a 5 cfs discharge to Lateral No. 6. This system is only proposed to be used if there is a failure of detention (infiltration) systems to provide adequate infiltration.

Exhibit 2 shows calculations for the total 100-year, 24-hour runoff volumes generated by Kiernan Business Park East and South. Kiernan Business Park East will generate 30.3 ac-ft of runoff and Kiernan Business Park South will generate 14.8 ac-ft of runoff during this storm event. A constant overall drain rate of 5 cfs will drain this total volume of runoff (45.1 ac-ft) in 109 hours, under an assumption that there is zero infiltration. However, this drain time may never be realized as zero infiltration is not likely to ever occur.

Storm Drain Pipe. The storm drain pipe would convey stormwater discharge from each of the detention basins to the proposed terminal detention basins, if needed. The system has been laid out conceptually on Exhibit 3 for Kiernan Business Park East and on Exhibit 4 for Kiernan Business Park South. Given a minimum pipe size of 12" per the City's *Standard Specifications, Section 4, Storm Drainage Design* (2006) and a minimum velocity of 2 ft/s, the following pipe sizes and capacities were computed for assumed reinforced concrete pipe (RCP) using Manning's Equation with a roughness coefficient of 0.013 and a pipe slope of 0.2%:

- 12 inch 1.7 cfs
- 15 inch 3.1 cfs
- 18 inch 5.0 cfs

The low flow discharge rate of 5 cfs was prorated within tributary areas to estimate required pipe sizes. The maximum storm drain pipe size needed in Kiernan Business Park East is 18" RCP, and the maximum storm drain pipe size needed in Kiernan Business Park South is 15" RCP.

Terminal Detention Basins. The terminal detention basins will likely consist of two basins (one each serving Kiernan Business Park East and South). The terminal detention basins will be sized for the runoff volume produced by the 2-year, 24-hour storm event of 1.2 inches (water quality volume) based on the rainfall intensity-duration-frequency curve in Standard Detail No. 400 plus an additional 20% to allow for sediment storage. Exhibit 5 shows calculations for the runoff volumes generated by Kiernan Business Park East and South during this storm event. Kiernan Business Park East will generate 12.6 ac-ft of runoff and Kiernan Business Park South will generate 6.2 ac-ft of runoff during said storm. The additional 20% sediment storage requirement results in a total storage capacity requirement of 15.1 ac-ft and 7.4 ac-ft,

respectively, for the terminal detention basins serving Kiernan Business Park East and South. The terminal basins will be hydraulically connected to each other and will be drained to MID Lateral No. 6, if needed, by a single pump station.

The right-of-way costs for the terminal detention basins have been estimated by assuming an average basin depth of 5 feet, although portions of these terminal detention basins are expected to be several feet deeper in order to facilitate drainage discharges to them and between them. This results in areas of 4 acres and 2 acres, respectively, of predicted terminal detention basin right-of-way for Kiernan Business Park East and South.

The locations of the terminal detention basins shown on Exhibits 3 and 4 are subject to some degree of modification by the project developers. Kiernan Business Park East has indicated that they would like to locate their terminal detention basin within the central landscaped area of the roundabout on Chopra Parkway in the south central portion of the site. The quadrants of the terminal detention basin at the roundabout will be interconnected by cross-drainage structures and construction can be phased based on the timing of adjacent development. With proper landscaping, the terminal detention basins should become an aesthetic amenity for each project.

The terminal detention basins and pumping facility will be constructed by the developers and dedicated to the City to allow monitoring, operation, and maintenance to be performed by the City. Any discharges from the terminal detention basins to MID will be City responsibility; private property owners will not have authority or capability to discharge independently. The terminal basins shall be landscaped consistent with the City's standards for dual function basins.

Pump Station. A pump station having a pumping capacity of 5 cfs, plus redundancy, will serve the composite discharge needs for Kiernan Business Park East and South to pump from the terminal detention basins to MID Lateral No. 6 when necessary. The pump station site is currently proposed to be located on the south side of Bangs Road (and MID Lateral No. 6), roughly mid-way along the north boundary of Kiernan Business Park South. The assumed area to be reserved for the pump station site has dimensions of 50 feet by 100 feet. This will be a shared facility, with the facility cost being prorated between Kiernan Business Park East and Kiernan Business Park South (2/3 for East and 1/3 for South). The cost of the portion of an 18" RCP outfall from Kiernan Business Park East to the pump station that crosses Bangs Road and includes a jack and bore crossing underneath MID Lateral No. 6, is also a similarly shared cost as the pump station is a shared facility between Kiernan Business Park East and South. The pump station will be equipped with a SCADA system.

2.1.2 Public Street Storm Drainage Infrastructure

The public street drainage is proposed to use a standard curb inlet and maintenance manhole, but the storm drainage runoff will be conveyed into linear detention (infiltration) basins that are connected with a 12" perforated pipe for additional infiltration. In addition, a drainage swale is proposed in the 20 ft easement (10 ft public utility easement and 10 ft drainage easement)

adjacent to the roadways. The swale is proposed to have 3:1 side slopes with a maximum depth of 2.5 ft. Conceptual details of this system developed from the *Update to City of Modesto Storm Water Management Program, Kiernan Business Park – East* (Chopra Development Enterprises, November 2, 2006) report are provided in the Appendix. The actual design of these systems will require approval by the City prior to their construction.

2.1.3 Upgrade Infrastructure Costs

Estimated costs for the upgrade storm drainage infrastructure serving Kiernan Business Park South and East are shown in Exhibits 6 and 7, respectively.

2.2 ONSITE INFRASTRUCTURE

The onsite storm drainage system is not a part of the finance plan. It includes the construction of detention basins and the connection to storm drain stubs provided along the public streets.

2.2.1 Required Detention Volumes

Per the City Standards, detention basins are required to have a storage volume equivalent to the runoff produced by a 100-year, 24-hour storm. The 100-year, 24-hour precipitation depth is 2.88 inches per City Standards and the current draft SDMP. The detention volume is calculated by the formula:

$$V = CAR/12$$

Where:
V = Volume in ac-ft
C = Runoff coefficient
A = Area in acres
R = Rainfall in inches

The following detention volume per acre rates will be required and have been computed based land use as shown in Exhibit 2.

- Business Park (C = 0.8) 0.19 ac-ft/acre
- Mixed Use (C = 0.8) 0.19 ac-ft/acre
- Medium Density Residential (C = 0.7) 0.17 ac-ft/acre

2.3 MAINTENANCE

A maintenance district, association, community services district, or some other entity will need to be established to facilitate funding and maintenance of the drainage components of all of the storm drainage facilities, including the onsite detention (infiltration) basins, low flow storm drainage conveyance system, pump station, the detention (infiltration) basins serving public streets, and the terminal detention basins. Funding for maintenance may be secured via

ongoing fees or dues paid by property owners. If an entity other than the City is established to administer maintenance, the City should reserve the right to correct deficiencies themselves, if necessary, and bill the maintenance entity for the work performed. At a minimum, the City will be responsible for operation and maintenance of the pump station.

3.0 Opinion of Probable Costs and Fee Calculations

The opinion of probable costs are considered "order of magnitude" estimates and are acceptable for use in initial budgeting and for impact fee calculation purposes. Final project costs will be dependent on a number of factors at the time of bidding, including final design and project scope of work, labor and material costs, number of competing projects, allotted construction schedule, and time of year, among other things. Order of magnitude estimates are appropriate for planning level work, but it is important to note that they have been made without the benefit of detailed project specifications and design drawings.

3.1 UPGRADE INFRASTRUCTURE/SHARED COSTS

Opinions of probable costs for the upgrade storm drainage infrastructure that will serve Kiernan Business Park East and South are shown on Exhibits 6 and 7, respectively. The opinions of probable cost have been prepared for the upgrade infrastructure only (low flow storm drain pipe system, terminal detention basins, pump station, and public street storm drainage infrastructure). The onsite infrastructure (detention basins and connection to storm drain stubs) are not included in the opinions of probable cost.

3.1.1 Soft Cost Mark-Ups

Included in the opinions of probable cost shown on Exhibits 6 and 7 are soft cost mark-ups to account for additional requirements associated with administrative, management, and design work, as well as contingencies. These soft cost mark-ups are considered to fall into the following four categories:

Construction Contingency – Due to the fact that there are many unknowns related to a given project at the master planning level (i.e., site conditions, unforeseen constraints, details of design alternatives, construction schedule uncertainty, etc.), a 20 percent construction contingency is added to the construction cost estimate.

Design and Planning – These services typically include management of consultant agreements, preliminary site investigations, feasibility studies, plans and specifications, surveying and staking, and geotechnical reports. The cost of this work is estimated to be 10 percent of the estimated construction cost.

Construction Management – This category primarily covers management of the construction contract, sampling and testing of materials, and site inspections during construction. This work is estimated to be 10 percent of the estimated construction cost.

Program Implementation – Among other things, this category includes management and administrative costs, environmental review, permits, regulatory compliance, financing expenses, and legal review. This work is also estimated to be 10 percent of the estimated construction cost.

The actual costs for each item category of the soft cost mark-ups will vary according to many individual project factors (i.e., complexity of the project, existing site conditions, etc.), but, in general, they are supported historically as reasonable mark-up estimates for planning purposes (standardized as a percentage relative to the estimated construction cost).

3.1.2 Upgrade Infrastructure Opinion of Probable Costs

The total opinion of probable costs for the upgrade infrastructure are as follows:

- Kiernan Business Park East $7,005,000
- Kiernan Business Park South $3,561,000

3.2 FEE CALCULATION APPROACH

Storm drainage upgrade fees have been calculated based on a fair share allocation of costs derived on a per acre basis for the business park and mixed use land uses and on a per dwelling unit basis for medium density residential land use using a percent impervious weighting analysis as represented on Figures 8 and 9. The total storm drainage infrastructure costs by land use are:

- Business Park (KBP East) $44,402/acre
- Business Park (KBP South) $46,252/acre
- Mixed Use $44,402/acre
- Medium Density Residential $2,562/dwelling unit

4.0 Conclusions

Kiernan Business Park East and South will be served by a combination of onsite detention (infiltration) basins, terminal detention basins, and a drainage discharge to MID Lateral No. 6. The required storage volume for the onsite detention (infiltration) basins at the time of a given development will be the runoff volume of the 100-year, 24-hour storm event. The onsite detention basins will incorporate elements that facilitate infiltration as the primary method for draining them. The terminal detention basins and drainage discharge to MID will be utilized in the event that or to the extent that infiltration capabilities diminish permanently over time.

The following detention volume requirements were computed on a per acre basis:

- Business Park and Mixed Use 0.19 ac-ft/ac
- Medium Density Residential 0.17 ac-ft/ac

The terminal detention basins shall be sized for the water quality volume of runoff, which is the volume of runoff generated by a 2-year, 24-hour storm event, plus an additional 20% to account for sedimentation.

A maintenance district, association, community services district, or some other entity will need to be established to facilitate funding and maintenance of the drainage components of all the storm drainage facilities, including the low flow storm drainage conveyance system, onsite detention basins, terminal detention basins, pump station, and the infiltration basins serving public streets. At a minimum, the City will be responsible for operation and maintenance of the pump station.

The storm drainage infrastructure is separated into upgrade and onsite storm drainage infrastructure. The upgrade infrastructure includes the low flow storm drain pipe system, storm drain pipe stubs, terminal detention basins, storm drainage pump station, linear detention (infiltration) basins for public streets, and right-of-way costs. The onsite storm drainage costs include items that are incurred on a per property basis such as the individual onsite detention (infiltration) basins and connection to storm drain pipe stubs. The onsite storm drainage costs are not included as a part of this report. The opinion of probable cost for the upgrade storm drainage infrastructure is:

- Kiernan Business Park East $7,005,000
- Kiernan Business Park South $3,561,000

Storm drainage upgrade fees have been calculated based on a fair share allocation of costs derived on a per acre basis for the business park and mixed use land uses and on a per dwelling unit basis for medium density residential land use using a percent impervious weighting analysis. The total storm drainage infrastructure costs by land use are:

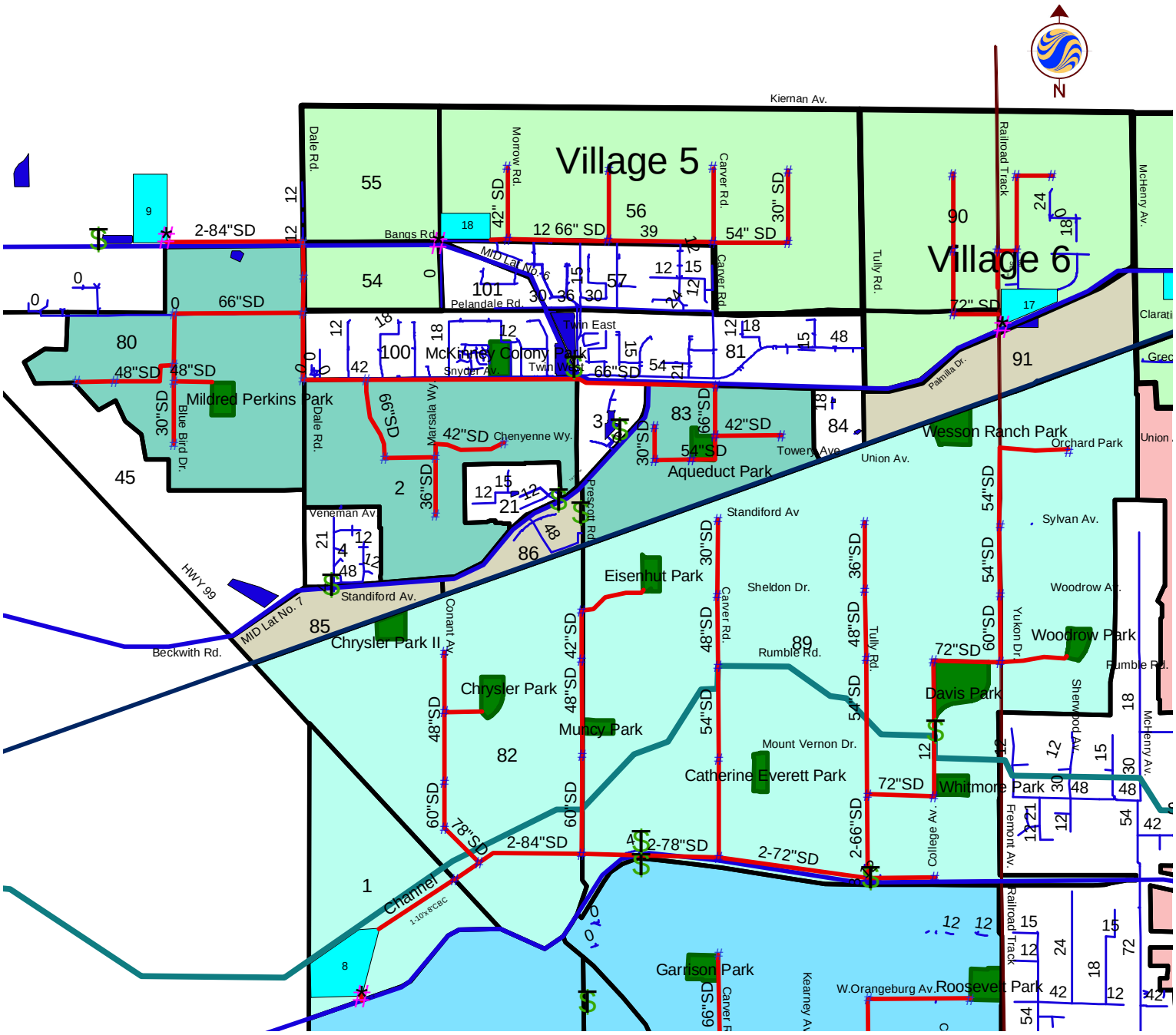
Kiernan Business Park East

- Business Park and Mixed Use $44,402/acre
- Medium Density Residential $2,562/dwelling unit

Kiernan Business Park South

- Business Park $46,252/acre

EXHIBITS



Legend

- Proposed Storm Drains
- Proposed Detention Basins
- Existing Storm Drains
- Existing Detention Basins
- Proposed Pump Stations
- Existing Pump Stations
- Existing outfall into U.S. Waters
- Parks and Open Space
- Approximate Locations of Former Landfill Areas
- Manholes
- Cavil Drain
- MID and TID Canals
- Sub-basins
- Denotes Villages with their own Existing/Proposed Drainage Infrastructure

Watershed Group

A B C D E F G H I J K L M N

Stantec

Client/Project

CITY OF MODESTO
STORM DRAINAGE MASTER PLAN

EXHIBIT 1

Title

PROPOSED INFRASTRUCTURE FROM SDMP FIGURE 6.2

OCTOBER 2006
84010174

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Kiernan Business Park, East and South
Storm Drainage Technical Report
Onsite Detention Volume Requirements

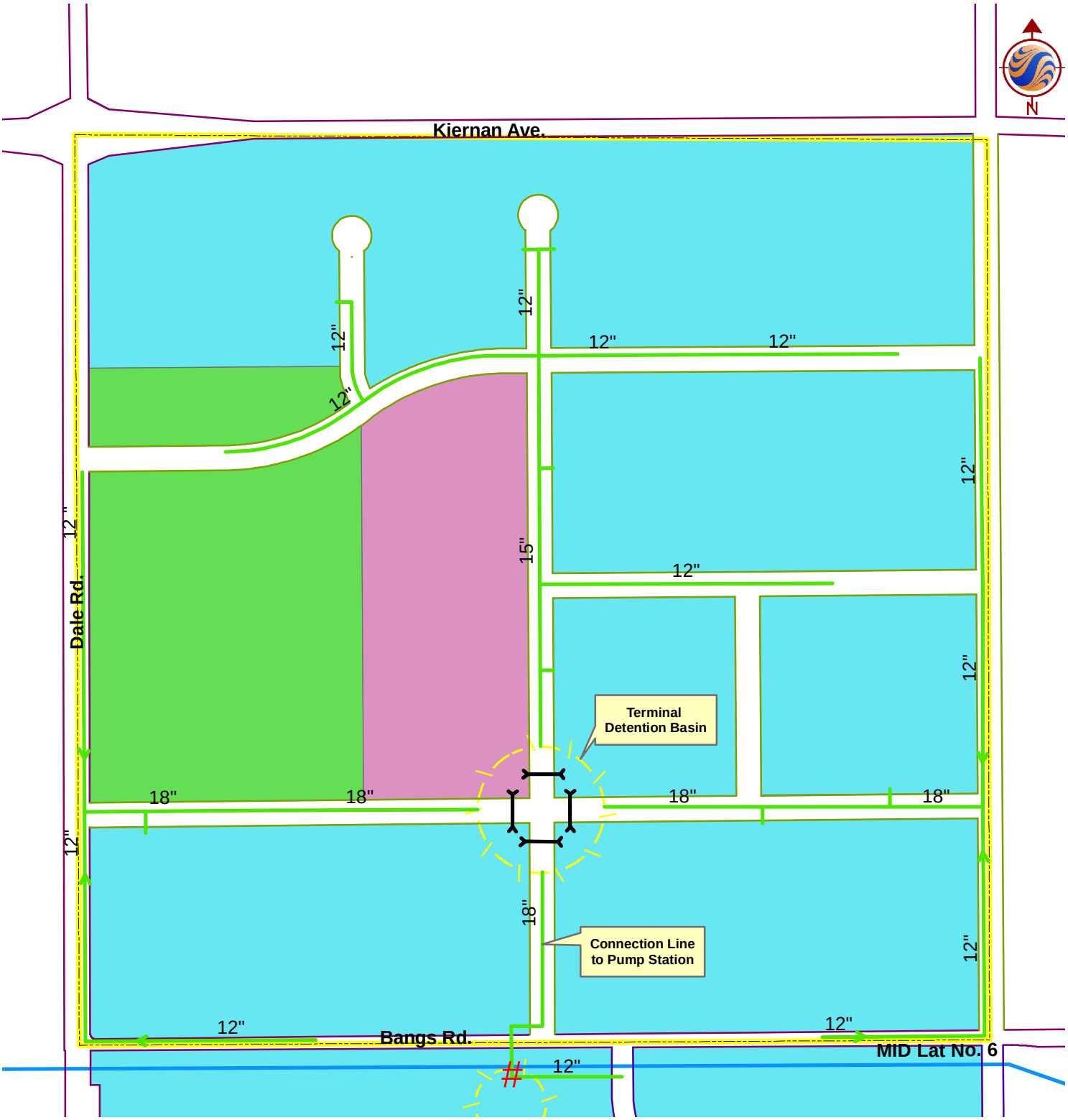
Detention Volume Required

V = CAR/12

C = Runoff coefficient (from City Standards)
A = Sub-basin area (acres)
R = 100-year, 24-hour precipitation (2.88 inches)

		East			South		
Land Use	**Runoff Coefficient**	**Area**	**Required Volume (AF)**	**Required Volume/Acre**	**Area**	**Required Volume (AF)**	**Required Volume/Acre**
Business Park	0.8	118.7	22.8	0.19	77	14.8	0.19
Mixed Use	0.8	23.7	4.6	0.19			
Med. Dens. Res.	0.7	17.5	2.9	0.17			
		160.0	30.3		77	14.8	

Based on an allowable discharge of 5 cfs to MID, the resulting time to drain is **109 hours**



Legend

- # Proposed Pump Station
- Proposed Storm Drain
- Canals
- Sub-Basin 55 Boundary (SDMP)
- Terminal Basin

LandUse Zoning

- BP
- MDR
- MU

Client/Project

City of Modesto
Kiernan Business Park East

Exhibit 3

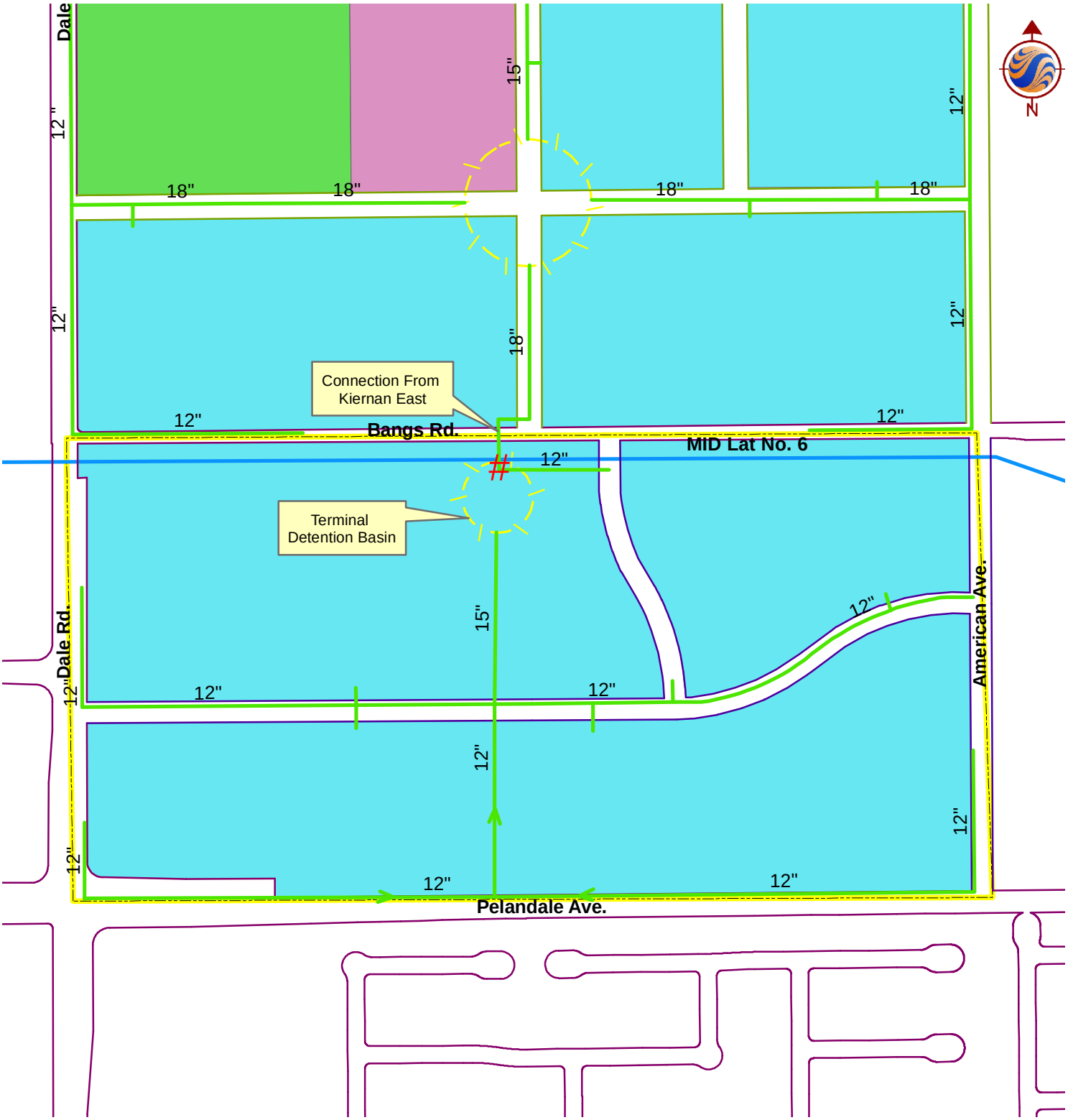
Title

Proposed Upgrade Storm Drainage Infastructure

April 2007
184010201

1 inch equals 400 feet

V:\2075\active\184010201\Arcview\MXD\KBP_SB_55_NewTemp.mxd



Legend

- # Proposed Pump Station
- Proposed Storm Drain
- Canals
- Sub-Basin 54 Boundary (SDMP)
- Terminal Basin

LandUse

Zoning

- BP
- MDR
- MU

Client/Project

City of Modesto
Kiernan Business Park South

Exhibit 4

Title

Proposed Upgrade Storm Drainage Infastructure

April 2007
184010201

1 inch equals 400 feet

V:\2075\active\184010201\Arcview\MXD\KBP_SB_54_NewTemp.mxd

Kiernan Business Park, East and South
Storm Drainage Technical Report
Terminal Detention Basin Volume Requirements

Detention Volume Required

V = CAR/12

C = Runoff coefficient (from City Standards)
A = Sub-basin area (acres)
R = 2-year, 24-hour precipitation (1.2 inches)

		East		South	
Land Use	**Runoff Coefficient**	**Area**	**Required Volume (AF)**	**Area**	**Required Volume (AF)**
Business Park	0.8	118.7	9.5	77	6.2
Mixed Use	0.8	23.7	1.9		
Med. Dens. Res.	0.7	17.5	1.2		
		160.0	12.6	77	6.2
Additional 20% Sediment Storage			2.5		1.2
			15.1		7.4

Kiernan Business Park East
Storm Drainage Technical Report
Upgrade Drainage Infrastructure
Opinion of Probable Cost

Item	Quantity	Units	Unit Cost	Cost
Low Flow Storm Drain System				
12" SD pipe	8,264	LF	$125	$1,033,000
15" SD pipe	1,133	LF	$125	$141,625
18" SD pipe	2,920	LF	$150	$438,000
Stubs[1]	10	EA	$50	$500
Sluice gates[1]	10	EA	$3,000	$30,000
Terminal Basin Excavation	34,000	CY	$10	$340,000
Terminal Basin Structure	1	EA	$50,000	$50,000
Jack and Bore 18", 2/3 cost	150	LF	$550	$55,275
Pump Station (5 cfs), 2/3 cost	1	EA	$670,000	$448,900
SCADA System, 2/3 cost	1	EA	$40,000	$26,800
Public Street Drainage				
Curb Inlet	31	EA	$1,900	$58,900
Manhole	19	EA	$2,800	$53,200
Gravel Infiltration Basin	5,102	CY	$50	$255,111
Drainage Swale	3,189	CY	$2.5	$7,972
12" PVC (perforated)	1,152	LF	$40	$46,080
Subtotal Construction				$2,985,363
Design and Planning @ 10%				$298,536
Construction Management @ 10%				$298,536
Right-of-Way Costs				
Public Street PUE (10')	1.6	AC	$350,000	$550,109
Drainage Easement (10')	1.6	AC	$350,000	$550,109
Pump Station, 2/3 cost	0.11	AC	$350,000	$26,917
Terminal Detention Basin	4.0	AC	$350,000	$1,400,000
Contingency @ 20%				$597,073
Program Implementation @ 10%				$298,536
TOTAL ESTIMATED COST				**$7,005,180**

[1] Quantity equal to number of onsite detention basins. This number is an estimate.
Landscaping and irrigation of the terminal detention basin is not included in the estimate.

Kiernan Business Park South
Storm Drainage Technical Report
Upgrade Drainage Infrastructure
Opinion of Probable Cost

Item	Quantity	Units	Unit Cost	Cost
Low Flow Storm Drain System				
12" SD pipe	6,573	LF	$125	$821,625
15" SD pipe	505	LF	$125	$63,125
Stubs[1]	5	EA	$50	$250
Sluice gates[1]	5	EA	$3,000	$15,000
Terminal Basin Excavation	16,500	CY	$10	$165,000
Terminal Basin Structure	1	EA	$50,000	$50,000
Jack and Bore 18", 1/3 cost	150	LF	$550	$27,225
Pump Station (5 cfs), 1/3 cost	1	EA	$670,000	$221,100
SCADA System, 1/3 cost	1	EA	$40,000	$13,200
Public Street Drainage				
Curb Inlet	16	EA	$1,900	$30,400
Manhole	10	EA	$2,800	$28,000
Gravel Infiltration Basin	2,489	CY	$50	$124,444
Drainage Swale	1,556	CY	$2.5	$3,889
12" PVC (perforated)	480	LF	$40	$19,200
Subtotal Construction				$1,582,458
Design and Planning @ 10%				$158,246
Construction Management @ 10%				$158,246
Right-of-Way Costs				
Public Street PUE (10')	0.68	AC	$350,000	$237,230
Drainage Easement (10')	0.68	AC	$350,000	$237,230
Pump Station, 1/3 cost	0.11	AC	$350,000	$13,258
Terminal Detention Basin	2.0	AC	$350,000	$700,000
Contingency @ 20%				$316,492
Program Implementation @ 10%				$158,246
TOTAL ESTIMATED COST				**$3,561,406**

[1] Quantity equal to number of onsite detention basins. This number is an estimate.
Landscaping and irrigation of the terminal detention basin is not included in the estimate.

Kiernan Business Park East
Storm Drainage Technical Report
Fee Analysis

Total Area 160 ac

Total Fee Estimate $7,005,180

Business Park	118.7	ac	*	80%	=	94.94	-	94.94	/	126.21	=	75.2%
Mixed Use	23.7	ac	*	80%	=	18.99	-	18.99	/	126.21	=	15.0%
MDR	17.5	ac	*	70%	=	12.28	-	12.28	/	126.21	=	9.7%
	160.0					126.21						100%

Upgrade Fee

Business Park	=	75.2%	*	$7,005,180	/	119	ac	=	$44,402	/	ac
Mixed Use	=	15.0%	*	$7,005,180	/	24	ac	=	$44,402	/	ac
MDR*	=	9.7%	*	$7,005,180	/	266	du	=	$2,562	/	du

* Note: Medium density residntial per dwelling unit cost assumes 18 dwelling units/acre.

Kiernan Business Park South
Storm Drainage Technical Report
Fee Analysis

Total Area 77 ac

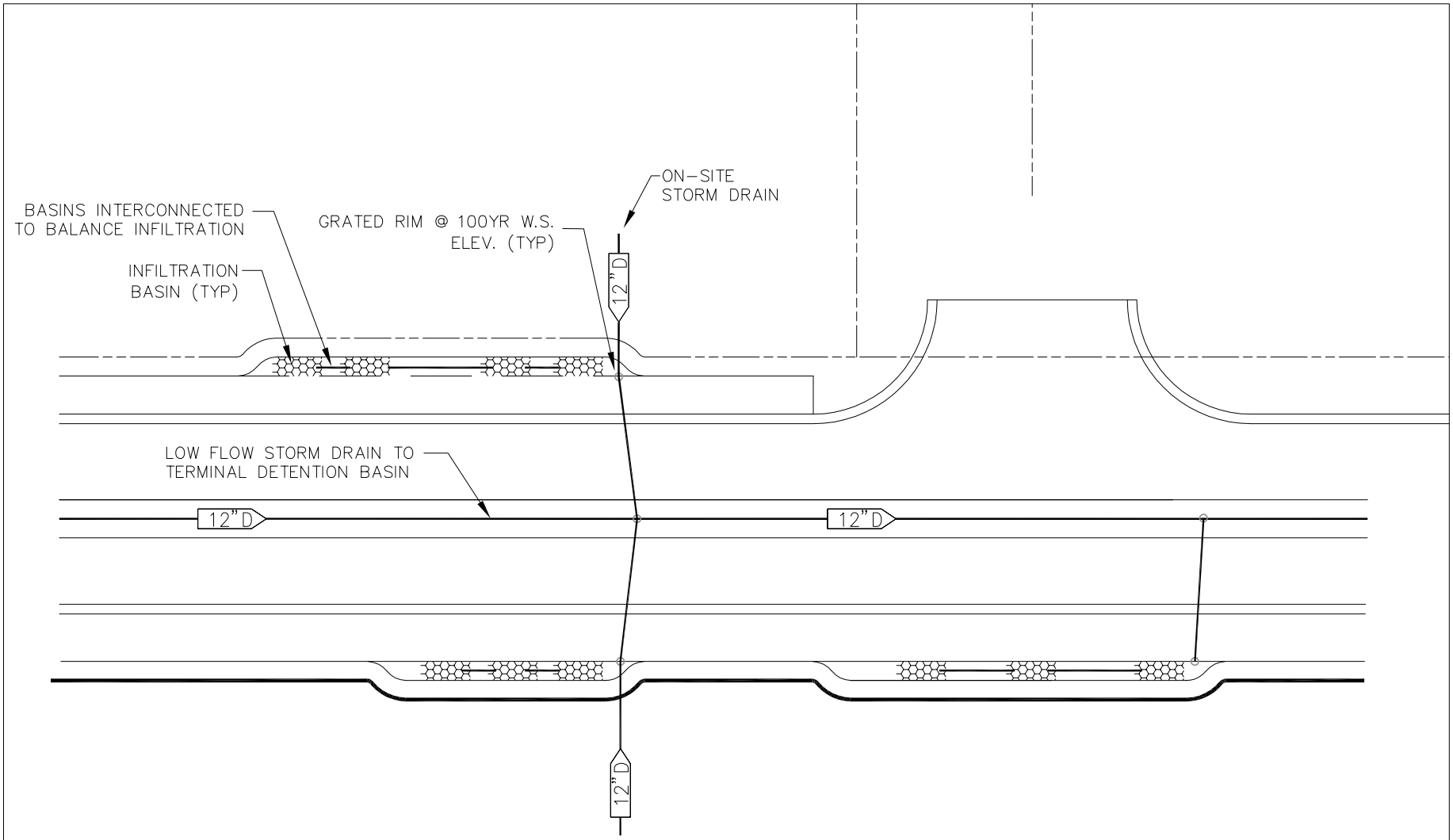
Total Fee Estimate $3,561,406

Business Park	77	ac	*	80%	=	61.60	-	61.60	/	61.60	=	100.0%

Upgrade Fee

Business Park	=	100.0%	*	$3,561,406	/	77	ac	=	$46,252	/	ac	

APPENDIX



PLAN VIEW

N.T.S.

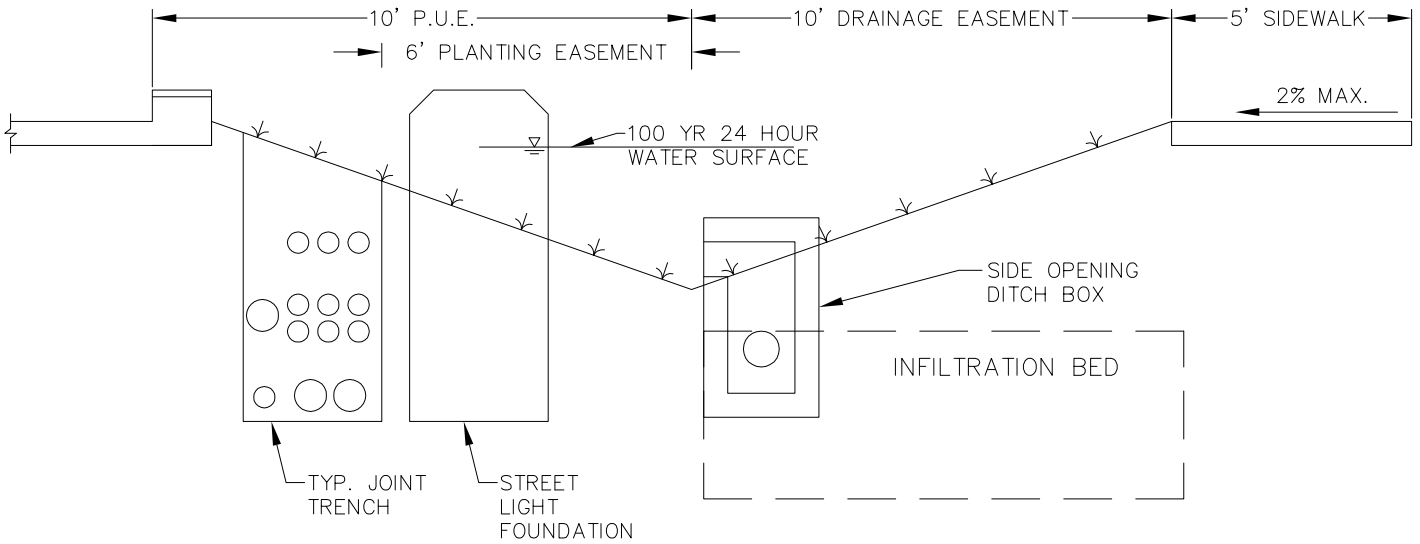
NOTE: DETAIL DEVELOPED BASED ON INFORMATION FROM UPDATE TO CITY OF MODESTO STORM WATER MANAGEMENT PROGRAM, KIERNAN BUSINESS PARK-EAST (CHOPRA DEVELOPMENT ENTERPRISES, NOVEMBER 2, 2006) REPORT

Stantec Consulting Inc.
2590 Venture Oaks Way
Sacramento CA U.S.A.
95833-3288
Tel. 916.569.2500
Fax. 916.921.9274
www.stantec.com

Client/Project
CITY OF MODESTO
KIERNAN BUSINESS PARK

Figure No.
- APPENDIX, 1 OF 2

Title
PUBLIC STREET STORM DRAINAGE INFRASTRUCTURE



SECTION VIEW

N.T.S.

NOTE: DETAIL DEVELOPED BASED ON INFORMATION FROM UPDATE TO CITY OF MODESTO STORM WATER MANAGEMENT PROGRAM, KIERNAN BUSINESS PARK–EAST (CHOPRA DEVELOPMENT ENTERPRISES, NOVEMBER 2, 2006) REPORT

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KIERNAN BUSINESS PARK

Figure No.
- APPENDIX, 2 OF 2

Title
PUBLIC STREET STORM DRAINAGE INFRASTRUCTURE

APPENDIX E: KIERNAN BUSINESS PARK WASTEWATER CAPACITY STUDY

City of Modesto

Technical Memorandum

KIERNAN BUSINESS PARK
WASTEWATER CAPACITY STUDY

FINAL
June 2007

7580 NORTH INGRAM AVENUE, SUITE 112 • FRESNO, CALIFORNIA 93711 • (559) 436-6616 • FAX (559) 436-1191
H:\Client\Modesto_FNO\Kiernan Buisness Park\Report\KCBP_TM_CapacityCharge_Final.doc

CITY OF MODESTO

KIERNAN BUSINESS PARK WASTEWATER CAPACITY STUDY

TECHNICAL MEMORANDUM

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KIERNAN BUSINESS PARK WASTEWATER CAPACITY STUDY

1.0 BACKGROUND

The purpose of this study is to identify the impacts on the City of Modesto's (City) wastewater system from a 227-acre development within the proposed Kiernan Business Park (KBP). The development consists of the east and south sections of the KBP (KBP East and KBP South). The remaining portion of KBP is not included in this study. This report also estimates the connection fee obligation for the project.

2.0 SUMMARY

The estimated wastewater generated from KBP South and KBP East was calculated in order to determine the impacts to the City's wastewater system. Wastewater flows were estimated for each area of KBP East and KBP South based on the land use from the Kimley-Horn Master Plan (KBP East) and the Mana/Wagner development group (KBP South). Estimated flows were determined using average dry weather flow coefficients for each land use type developed in the 2007 Final Wastewater Collection System Master Plan [1] (2007 Master Plan). The flow coefficients were multiplied by the project acreages to estimate wastewater flows.

2.1 Estimated Capacity Charge Summary

The estimated capacity charge for KBP South and KBP East were calculated based on the City's adopted connection fee of $4,876 dollars per EDU for residential developments. The capacity charge for commercial developments is calculated based on unit costs for projected wastewater flow, and pounds of biochemical oxygen demand (BOD) and total suspended solids (TSS) per day. The connection fee and unit costs are developed in the 2007 Final Sewer Capacity Charges Report [2] prepared by Brown and Caldwell. The executive summary of this report is provided in Appendix B.

The developer for the KBP East development is proposing to complete the project in two phases. The developer has not indicated if phasing will be included for the KBP South project. It is assumed for this study that KBP South will be completed in a single phase. Table 1 provides a summary of the total estimated capacity charge allocated to KBP East and KBP South.

Table 1	Estimated Capacity Charge Summary Kiernan Business Park Wastewater Capacity Study City of Modesto			
User Type	Capacity Charge			
	KBP East			Total KBP Costs
	Phase I	Phase II	KBP South	
	$	$	$	$
Residential	$480,000	$0	$0	$480,000
Commercial	$1,143,000	$864,300	$1,078,000	$3,085,000
Total	**$1,623,000**	**$864,300**	**$1,078,000**	**$3,565,000**
Note: Detailed calculations for residential and commercial developments are provided in Section 8 of this report				

3.0 STUDY AREA

The KBP is located within the Kiernan Carver Comprehensive Planning District (CPD), in the northern part of Modesto, near Bangs and American Avenue. The KBP consists of approximately 614 gross acres (Figure 1). The eastern and southern sections of the KBP are shown in Figure 2 (Bangs Avenue divides the two sections). The east section consists of 155 acres, the south section 72 acres.

Pelandale Avenue is to the south of the site, Kiernan Avenue on the north, Dale Road to the west and American Avenue on the east. The existing Modesto Irrigation District (MID) canal (Lateral No. 6) crosses through the KBP development running parallel to Bangs Avenue (Figure 2).

The east section is planned for business park, mixed use and medium density residential development. KBP East is planned to develop in three phases (Figure 3). Phase I and Phase II are within the CPD boundary. Phase III (Future Area) is outside the CPD boundary but has been included for sizing of sewers in American Avenue. Phase II and the Future area are currently outside the City Limits.

The Mana/Wagner development group plans to develop 40 acres of the 72 acre KBP South, but at this time is only planning development of a 10-acre business park (Mana/Wagner Development). The Mana/Wagner Development is assumed to develop at the same time as Phase I of KBP East. The remaining 32 acres of the south section is planned to develop at a later date, but has been accounted for in this study.

4.0 SEWER FACILITIES

4.1 Existing Off-Site Sewer Facilities

The City's existing wastewater collection system consists of approximately 600 miles of sanitary sewer lines ranging in diameter from 4-inches to 66-inches. The larger trunk sewers range in diameter from 10-inches to 66-inches, and are the major pipelines conveying flows to the Sutter Avenue Primary Wastewater Treatment Plant. The system utilizes 39 lift stations with capacities ranging from 200 to 19,000 gallons per minute (gpm).

The collection system is divided into ten sewer areas (Figure 4). The KBP development will be in the northern most limits of Area 1. The two major sewer lines that serve Area 1 are the North Trunk and West Trunk.

Figure 5 shows the existing wastewater collection system near the KBP. The West Trunk, at the intersection of Bangs and American Avenue, intercepts the 39-inch diameter North Trunk. An existing 30-inch trunk in Bangs Avenue, from Dale Road to American Avenue, also conveys flow to the West Trunk. As indicated by the existing sewer elevations, wastewater from KBP East will flow through the Bangs Trunk. Wastewater from KBP South would flow to the West Trunk in American Avenue. The North Trunk will not be impacted by KBP South and East. Descriptions of the City's wastewater collection facilities down stream of KBP are provided below.

4.1.1 West Trunk Sewer

The West Trunk ranges in size from 39 to 60-inch diameter (Figure 4). It begins at Bangs in American Avenues and flows south to the Woodland Lift Station. South of the Woodland Lift Station, the alignment turns east at Paradise Road and the size increases to a 60-inch diameter trunk, eventually terminating at the Sutter Avenue Primary Treatment Facility (Primary Plant).

The West Trunk conveys all the wastewater flow generated in Area 1 to the Primary Plant. Based on a condition assessment conducted as part of the 2007 Master Plan, the West Trunk is generally in good condition. The condition assessment recommended that the West Trunk receive annual chemical coating of the interior to prevent corrosion and deterioration of the reinforced concrete pipe (RCP). The chemical coating program will prevent future costly structural rehabilitation or replacement projects on this trunk sewer.

The lower reaches of the West Trunk, between South Carpenter Road and the Primary Plant, surcharge under buildout peak wet weather flow (PWWF) conditions. However, the lower reaches have sufficient capacity for the current PWWF. In order to convey the increased flow from the buildout of Area 1, the 2007 Master Plan recommended that a 48-inch diameter trunk sewer be constructed parallel to the existing 54/60-inch diameter trunk. The proposed parallel trunk sewer would run approximately 5,200 feet between Carpenter

Road and the Primary Plant. Please refer to Figure 5.2 in the 2007 Master Plan (Appendix C).

The West Trunk crosses below Highway 99. This segment is critical because it conveys nearly 75 percent of the current flow from Area 1. The existing PWWF through this trunk is approximately 18.4 mgd. The PWWF at build out, assuming storm drain connections are removed, will approach approximately 24 mgd. Some corrosion of the pipe interior is present at this location.

A parallel sewer at the crossing was recommended in the 2007 Master Plan. The second sewer will be 51-inches in diameter. This second parallel line would double the capacity of the crossing, and provide redundancy and reliability in the event that the existing trunk sewer was out of service due to circumstances such as a blockage or structural failure. With the parallel line in place, the existing trunk sewer can be rehabilitated to prevent further corrosion of the RCP. The Please refer to Figure 7.1 in the 2007 Master Plan (Appendix C).

4.1.2 Woodland Lift Station

The Woodland Lift Station (Figure 4) is scheduled to be upgraded by replacing two existing pumps; a 2,000 gallon per minute (gpm) and a 3,500 gpm pump. The new pumps will be 4,500 gpm pumps each to match the other three existing 4,500 gpm pumps. The proposed upgrade will increase the lift station's firm capacity (with one pump out of service) from 20.9 mgd to 25.9 mgd, and the total capacity up from 27.4 mgd to 32.4 mgd. Table 2 provides a summary of the lift station capacities before and after the upgrade. This improvement is to occur in the years 2022-2024.

4.2 Existing Wastewater Treatment Facilities

The City has two wastewater treatment facilities for treating domestic wastewater: the Sutter Avenue Primary Treatment Facility (Primary Plant) and the Jennings Road Secondary Treatment Facility (Secondary Plant). The Primary Plant receives raw (untreated) wastewater that is collected by the sanitary sewer system. The raw wastewater undergoes primary treatment in which the solids in the wastewater are removed by settling (clarifying). A 60-inch diameter outfall transports the clarified effluent some 6.5 miles to the southwest from the Primary Plant to the Secondary Plant (Figure 4). The Secondary Plant provides secondary treatment.

In addition to domestic wastewater, the City also manages cannery process flow. The City has been separating cannery process flow from the domestic wastewater since 1999.

A separate 60-inch diameter outfall transports cannery process flow to the City's 2,526 acres of ranch land next to the Secondary Plant where it is applied directly to the land.

Table 2	Woodland Lift Station Pumping Capacity - Existing and Proposed Kiernan Business Park Wastewater Capacity Study City of Modesto					
			Firm Capacity[1]		Total Capacity	
Lift Station	Pump Number .	Pump Capacity (gpm)	(gpm)	(mgd)	(gpm)	(mgd)
Existing	1	2,000	14,500	20.9	19,000	27.4
	2	3,500				
	3	4,500				
	4	4,500				
	5	4,500				
Proposed	1	4,500[2]	18,000	25.9	22,500	32.4
Upgrades	2	4,500[2]				
	3	4,500				
	4	4,500				
	5	4,500				

Note:
1. Firm capacity is defined as the capacity with the largest pump out of service.
2. New Pump.

The cannery process flow is discharged only during the canning season normally from July through September.

The City disposes of its treated secondary effluent from the Secondary Plant in two ways: by discharging it to the San Joaquin River (River) or using it to irrigate the City's ranch land. The City currently uses roughly two-thirds of the annual flow for irrigation. The remaining third is discharged to the River. River discharges are prohibited from May through September. During this period, not all of the effluent can be used for irrigation, because there are limits to water application rates. Excess flow that cannot be discharged to either land or the River must be stored in two large earthen storage basins. The volume of flow that can be discharged to the River is affected by the River's flow. The City must maintain a 20:1 dilution ratio (River flow to effluent flow) to comply with its discharge permit. In a dry year, River flows are usually low, so less flow can be discharged.

The design flows for both treatment facilities are provided in Tables 2 and 3 excerpted from the Engineers Report.

4.3 Proposed On-Site Facilities

The City's Kiernan Business Park Specific Plan [3] (Specific Plan) includes a sanitary sewer plan for conveying wastewater from the KBP (Appendix D). The plan proposes that the KBP East area use the existing 30-inch diameter trunk sewer that flows east in Bangs Avenue from Dale Road to American Avenue, as well as the proposed 30-inch trunk sewer in Dale Road (Proposed Improvement D-1 from the 2007 Master Plan). The Kiernan Business Park - East Facilities Master Plan [4] (prepared by Kimley-Horn and Associates, 2006) presents the proposed on-site wastewater collection system (Figure 5). The system will consist of 10 and 12-inch diameter sewers that will service Phase I, Phase II and the future business park area east of American Avenue. A map of the proposed collection system is shown in Figure 5 and Appendix D. The sewers will flow to the 30-inch sewer in Bangs Avenue, as proposed in the Specific Plan.

As proposed by the developer, KBP South will be initially constructed on 10 acres (See Appendix E and Figure 2), and development of the other 30 acres will be completed at a later date. The remaining 32 acres (of the total 72 acres) have existing developments or no current plans for development.

In addition, MWD proposes to convey wastewater from its development in a sewer of unknown size in the future "A" Road east to the existing 39-inch West Trunk in American Avenue. This approach differs from the Specific Plan, which calls for an 8-inch sewer in Pelandale Avenue to serve the entire 80 acres. However, either option conveys flow to the 39-inch West Trunk in American Avenue.

5.0 HYDRAULIC MODEL

The City's hydraulic sewer model, which was developed as a part of the 2007 Master Plan project, was used to evaluate the impact of flow from KBP on the City's existing collection system. The model was calibrated with actual dry weather and wet weather flows that were measured with temporary flow meters.

The Model was developed using MWHSoft's H2OMap Sewer hydraulic modeling software. The software algorithm performs the hydraulic calculations using a diffusion wave solution to the 1 Dimensional St. Venant flow routing equation. For more information, please refer to www.MWHSoft.com.

6.0 DESIGN FLOWS

6.1 Land Use

The Specific Plan for KBP describes the proposed land use. The land use plan from the Specific Plan was modified for this study to include some areas of residential uses within KBP East. The revised land use diagram is presented in Figure 2.

The current land consists of primarily open, fallow land, formerly used for agriculture. Exceptions are a Church of the Latter Day Saints and a few rural residences within the development boundaries.

The amended specific plan land use calls for business park, mixed use, and multi-family residential. The breakdown by land use and acreage is summarized in Table 3 and shown in Appendix D.

6.2 Flow Monitoring Program

As part of the 2007 Master Plan project, two temporary wastewater flow-monitoring programs were conducted by Villalobos and Associates (V&A) under contract with Carollo Engineers. Flow data and rain gauge data were used to calibrate the hydraulic model for the collection system for dry and wet weather flow. Results of the programs are presented in two reports dated September 2004 [5] and February 2005 [6] were submitted to the City.

The first flow-monitoring period was conducted over 3-months, from March 6, 2004 through June 11, 2004 at 35 monitoring sites. The second flow-monitoring period was conducted over 25-days, from January 6, 2005 through January 30, 2005 at 15 flow-monitoring sites and captured more rain events. Figure 6 illustrates the station locations and identifies those sites utilized in the flow-monitoring programs.

6.3 Area 1 Flows

6.3.1 Dry Weather Flow

The ADWF for KBP was calculated by multiplying the average sewer flow coefficients by the land use provided by the developer's engineer. The 2007 Master Plan project developed diurnal curves for each flow-monitoring station based on measured flow data. For the tributary area containing the KBP development, monitoring Station 1-3 (see Figure 6) was used to develop average dry weather flow (ADWF) coefficients by land use designation (e.g. residential, industrial, commercial). The coefficients were estimated by evaluating the flows measured from the flow-monitoring program and analyzing the tributary service area generating flow to each meter. For example, for monitoring Station 1-3, the ADWF during the flow-monitoring period was approximately 2.08 mgd. The tributary service area upstream of this monitoring station is developed with buildings falling into one of the following land use designations: business park, commercial, mixed-use, residential, regional commercial, and village residential.

Flow coefficients were multiplied by the acreages for each land use designation until the flows equaled 2.08 mgd. This process was repeated for the tributary areas for each of the 35 flow-monitoring stations.

Table 3 - Land Use Designation
Kiernan Business Park Wastewater Capacity Study
City of Modesto

	Property Number[1]	Land Use[2]	Acreage[3] (net acre)	Acreage[4] (gross acre)
Kiernan Business Park East				
Phase I	1	Business Park	3.60	4.25
	2	Mixed Use	10.05	11.86
	3	Mixed Use	6.19	7.30
	4	Mixed Use	3.06	3.61
	5	Business Park	8.41	9.92
	6	Existing Residential	1.00	1.18
	7	Business Park	3.71	4.38
	8	Business Park	7.40	8.73
	9	Medium Density Residential	7.52	8.87
	10	Medium Density Residential	7.23	8.53
	11	Business Park	1.43	1.69
	12	Business Park	6.20	7.31
	13	Business Park	7.83	9.24
Phase II	14	Business Park	4.15	4.90
	15	Business Park	4.15	4.90
	16	Business Park	8.53	10.06
	17	Business Park	7.84	9.25
	18	Business Park	4.28	5.05
	19	Business Park	4.27	5.04
	20	Business Park	4.55	5.37
	21	Business Park	4.22	4.98
	22	Business Park	4.09	4.83
	23	Business Park	4.09	4.83
	24	Business Park	3.79	4.47
	25	Business Park	3.79	4.47
Future	26	Business Park	8.57	10.11
	27	Business Park	8.57	10.11
	28	Business Park	8.78	10.36
	29	Business Park	8.78	10.36
Sub-Total KBP East			**131.38**	**155.00**
Sub-Total KBP East with Future Area			**166.08**	**195.94**
Kiernan Business Park South				
	A (Mana/Wagner)	Business Park	9.03	9.95
	B	Business Park	6.04	6.66
	C	Business Park	10.56	11.64
	D	Business Park	6.24	6.88
	E[5]	Business Park	33.47	36.88
Sub-Total KBP South			**65.34**	**72.00**
Total KBP (East & South)			**196.72**	**227.00**

Notes:

1. Refer to Appendix D for area designations for KBP East and Figure 2 for area designations for KBP South.
2. Acreages for KBP East taken from Kiernan Business Park - East Master Plan (Kimley Horn and Associates, 2006). Acreages for KBP South taken from Tentative Parcel Map, Mana / Wagner Development (Associated Engineering, Inc)
3. Acreage does not include right of way. Per City Staff the total area including right of way is 155 and 72 acres for KBP East and South, respectively.
4. Each area was increased in proportion to its size to account for right of way.
5. Area E includes the Church of Latter Day Saints, Bank of Stockton parcel, and the Vintage Faire Christian Center.

The flow coefficients described in the previous paragraph and those for the entire collection system were adjusted so that the calculated flows developed from the hydraulic model match the actual measured flow of 26.3 mgd at the Sutter Avenue Primary Treatment Plant. ADWF is the primary basis for calibrating the average sewer flow coefficients for all land uses within the City except future residential areas. Coefficients for future residential were calculated based on the City's Estimated Sewer Flow Projections Memo, July 2006 (Appendix F). The proposed residential land uses in KBP East are assumed to fall into this future residential land use designation.

6.3.2 Wet Weather Flow

PWWF is the highest flow experienced in the collection system caused by storm runoff entering the collection system. Stormwater enters the collection system via direct storm drain connections or manhole covers (inflow), or cracks in pipes that allow groundwater to seep in (infiltration). Infiltration and Inflow (I/I) rates depend on the age and condition of the trunk lines contained in specific tributary areas and will vary throughout the system.

The recorded rainfall during the wet weather flow-monitoring period occurred in six small events. Each of the rain events was less than a 1-year storm. Wet weather hyetographs (plots of rainfall versus time) and hydrographs (plots of wastewater flow versus time) were developed based on these wet weather data,. The model was calibrated to simulate this storm event. The purpose of the calibration was to match the measured increase in PWWF resulting from I/I response following a storm event.

For this area of the collection system, peak wet weather flows were estimated by using the measured flows at Monitoring Station 1-1 and 1-2 during rainfall events. After the model was calibrated, a 10-year 24-hour design storm was routed through the model. The simulated 10-year, 24-hour design storm generated the PWWF event for modeling the existing collection system.

6.3.3 Flow Summary

Table 4 provides the estimated flows for Area 1. Monitoring Station 1-1 captured the cumulative flow from Area 1 while Monitoring Station 1-2 captured flow from the northern half of Area 1 (north of Highway 99). The KBP flow would will be conveyed past the site location for Monitoring Station 1-3.

The PWWF values reported in Table 4 are predicted flows as derived from the hydraulic model. The ratio of model predicted PWWF to the ADWF at three different monitoring stations in Area 1 is summarized in Table 4.

Table 4 Monitoring Station Flows and Peaking Factors - Area 1 Kiernan Business Park Wastewater Capacity Study City of Modesto			
	Average Dry Weather Flow[1]	Peak Wet Weather Flow[2]	
Flowing Monitoring	(mgd)	(mgd)	Peaking Factor
1-3 (Downstream of KBP)	2.08	7.04	3.4
1-2 (near Highway 99)	5.81	18.38	3.2
1-1 (Area 1)	7.59	19.35	2.5

Notes:
1. Average dry weather flow was provided in V&A Sanitary Sewer Flow Monitoring Report [5].
2. Derived based on 10-year, 24-hour design storm event.

6.4 Kiernan Business Park Design Flows

Design flow estimates for KBP South and KBP East were computed using average flow coefficients developed in the 2007 Master Plan. The acreages for each area were multiplied by the appropriate flow coefficient to estimate the average dry weather flow. The hydraulic model calculates peak flows according the diurnal patterns and the corresponding peaking factors determined from the temporary flow monitoring program. The future area east of American Avenue was included in the design flow calculation and hydraulic analysis to verify the capacity of the proposed trunk sewer in American Avenue north of Bangs Avenue.

As shown in Table 5, the estimated ADWF for KBP East is 0.16 mgd and the PWWF is 0.39 mgd. For KBP South the estimated ADWF is 0.06 mgd and the PWWF is 0.17 mgd. The combined ADWF and PWWF for KBP East and South (excluding future area east of American Avenue) totals 0.22 mgd and 0.56 mgd. The ratio of PWWF to ADWF was approximately 2.5, which is consistent with results determined during the flow-monitoring program for Area 1. I&I was assumed to be 1,000 gallons per day per acre.

The flows presented in Table 5 were developed based on the average wastewater generation coefficients from the 2007 Master Plan. The master plan coefficients are lower than those in the City's Design Standards; therefore, the estimated flow for KBP East is approximately 30 percent lower than the estimates prepared by Kimley Horn. No flow estimates have been prepared for KBS South by the developers.

Table 5 - Design Flows
Kiernan Business Park Wastewater Capacity Study
City of Modesto

	Property Number	Land Use	Acreage[4,5] (net acre)	Acreage[7] Includes Right of Way (gross acre)	Average Flow Coefficient[3] (gal/acre/day)	Average Dry Weather Flow (gal/day)	Average Dry Weather Flow (gpm)	Peak Wet Weather Flow[6] (gal/day)	Peak Wet Weather Flow[6] (gpm)
Kiernan Business Park East									
Phase I	1	BP	3.6	4.25	890	3,780	2.63	9,648	6.70
	2	MU	10.05	11.86	1,100	13,042	9.06	30,918	21.47
	3	MU	6.19	7.30	1,100	8,033	5.58	19,043	13.22
	4	MU	3.06	3.61	1,100	3,971	2.76	9,414	6.54
	5	BP	8.41	9.92	890	8,831	6.13	22,539	15.65
	6	Existing Residential[1,2]	1.00	1.18		290	0.20	1,466	1.02
	7	BP	3.71	4.38	890	3,896	2.71	9,943	6.90
	8	BP	7.4	8.73	890	7,770	5.40	19,832	13.77
	9	MDR	7.52	8.87	1,914	16,981	11.79	34,689	24.09
	10	MDR	7.23	8.53	1,914	16,326	11.34	33,352	23.16
	11	BP	1.43	1.69	890	1,502	1.04	3,832	2.66
	12	BP	6.2	7.31	890	6,510	4.52	16,616	11.54
	13	BP	7.83	9.24	890	8,222	5.71	20,984	14.57
Phase II	14	BP	4.15	4.90	890	4,358	3.03	11,122	7.72
	15	BP	4.15	4.90	890	4,358	3.03	11,122	7.72
	16	BP	8.53	10.06	890	8,957	6.22	22,860	15.88
	17	BP	7.84	9.25	890	8,232	5.72	21,011	14.59
	18	BP	4.28	5.05	890	4,494	3.12	11,470	7.97
	19	BP	4.27	5.04	890	4,484	3.11	11,444	7.95
	20	BP	4.55	5.37	890	4,778	3.32	12,194	8.47
	21	BP	4.22	4.98	890	4,431	3.08	11,310	7.85
	22	BP	4.09	4.83	890	4,295	2.98	10,961	7.61
	23	BP	4.09	4.83	890	4,295	2.98	10,961	7.61
	24	BP	3.79	4.47	890	3,980	2.76	10,157	7.05
	25	BP	3.79	4.47	890	3,980	2.76	10,157	7.05
Future	26	BP	8.57	10.11	890	8,999	6.25	22,968	15.95
	27	BP	8.57	10.11	890	8,999	6.25	22,968	15.95
	28	BP	8.78	10.36	890	9,219	6.40	23,530	16.34
	29	BP	8.78	10.36	890	9,219	6.40	23,530	16.34
Sub-Total KBP East			**131.38**	**155.00**		**159,790**	**110.97**	**387,047**	**268.78**
Sub-Total KBP East with Future Area			**166.08**	**195.94**		**196,226**	**136.27**	**480,043**	**333.36**
Kiernan Business Park South									
	A (Mana/Wagner)	BP	9.03	9.95	890	8,856	6.15	23,199	16.11
	B	BP	6.04	6.66	890	5,924	4.11	15,518	10.78
	C	BP	10.56	11.64	890	10,356	7.19	27,130	18.84
	D	BP	6.24	6.88	890	6,120	4.25	16,031	11.13
	E[8]	BP	33.47	36.88	890	32,825	22.79	85,989	59.71
Sub-Total KBP South			**65.34**	**72.00**		**64,080**	**44.50**	**167,868**	**116.58**
Total KBP (East & South excluding Future Area)			**196.72**	**227.00**		**223,870**	**155.47**	**554,915**	**385.36**

Notes:
1. Existing residential dwelling unit. 1 EDU is equivalent to 290 gals/day per City Staff
2. Added assuming connection to City wastewater collection system in the future
3. Flow Coefficents from June 2006 Wastewater Collection System Master Plan
4. Areas do not include street right of way
5. Future areas east of American Avenue were included to evaluate the size of the wastewater pipeline in American Avenue
6. The ratio of PWWF to ADWF was 2.5
7. Each area was increased in proportion to its size to account for right of way.
8. Area E includes the Church of Latter Day Saints, Bank of Stockton, and the Vintage Faire Christian Center.

7.0 WASTEWATER COLLECTION SYSTEM AND TREATMENT SYSTEM IMPACT ANALYSIS

A hydraulic analysis was completed to determine capacity impacts to the collection system resulting from increases in flow from the KBP project. Impacts were modeled at build-out conditions for average dry weather flows and peak wet weather flows.

7.1 Sewer Hydraulics Design Criteria

The City's current design standards require that new sewer mains and trunks be sized to carry the design flows at a maximum of 70 percent of pipe capacity. The current standard will be used for designing future improvements in expansion areas. Consistent with the 2007 Master Plan assumptions, existing sewer capacities were evaluated on the basis of a maximum depth of flow to pipe diameter ratio (d/D) of 0.85. Lift station capacities were evaluated based on firm capacity, (i.e. with the largest pump out of service).

7.2 Off-Site Collection System Impacts and Improvements

Collection system improvements in Area 1 as outlined in the 2007 Master Plan will increase hydraulic capacity, rehabilitate deteriorated pipes, and provide reliability at critical crossings (for example, pipe crossing beneath Highway 99). The proposed capital projects are categorized as follows:

- Capacity Improvement: Replace or parallel existing trunk sewers to convey peak wet weather flows and, in some cases, serve future customers.
- Rehabilitation: Repair existing trunk sewers by lining or coating the interior wall. Some reinforced concrete trunk sewers are corroded on the interior wall and rehabilitating them will prevent the need to replace these trunk sewers in the near future.
- New Service: Extend existing trunk sewers to serve new customers. The City's 2003 amended Urban Area General Plan contained policies for 22 Comprehensive Planning Districts (CPDs) that represent the majority of new growth in the City.
- Reliability: Parallel existing trunk sewers at major crossings (Highway 99 and Beard Brook) to provide redundancy. Redundancy is required to rehabilitate existing trunk sewers and to continue service uninterrupted in case of pipe collapse.

The proposed collection system improvements in Area 1 downstream of the KBP development include:

- Construct parallel 51-inch diameter trunk crossing at Highway 99 (reliability project)
- Rehabilitate existing 51-inch diameter trunk at Highway 99 (rehabilitation project)

- Upgrade existing Woodland Lift Station (capacity project)
- Construct parallel 48-inch diameter trunk in the lower reaches of the West Trunk (capacity project)

Capacity deficiencies resulting from future development accounted for flows from the KBP development. No additional capacity improvements as a result of increased flows from KBP are anticipated in Area 1.

A discussion of the collection system capital improvement costs and the pro rata cost share for the KBP development is presented in later sections of this technical memorandum.

7.2.1 Woodland Lift Station Impacts and Proposed Improvements

As previously stated, the Woodland Lift Station is scheduled to be upgraded. The proposed upgrade, planned for the year 2022-2024 will increase the firm capacity of the lift station from 20.9 mgd to 25.9 mgd, and the total capacity up from 27.4 mgd to 32.4 mgd. The PWWF at the Woodland Lift Station for existing conditions is approximately 18.9 mgd (assuming direct storm drain connections are removed from the collection system).

Projected wastewater flows from KBP East and KBP South will increase the existing PWWF at the lift station by approximately 0.55 mgd, to a total flow of 19.6 mgd (not including the future area east of American Avenue). The estimated PWWF is less than the lift station's existing firm capacity; therefore, no upgrades to the lift station are required as a result of KBP. Table 6 summarizes the Woodland lift station capacities before and after the KBP flows are added.

Table 6 Woodland Lift Station Capacity
Kiernan Business Park Wastewater Capacity Study
City of Modesto

Peak Wet Weather Flow	PWWF (mgd)	Firm Pumping Capacity[1] (mgd)	Remaining Pumping Capacity (mgd)
Current	18.9	20.9	2.0
Current with KBP East and South	19.6	20.9	1.4
Build Out	24.5	25.9[2]	1.4

Note:
1. Firm capacity is defined as the capacity with the largest pump out of service.
2. Firm capacity after lift station upgrade.

7.2.2 Highway 99 Rehabilitation and Reliability

The West Trunk crosses Highway 99 near Conant Avenue as a 51-inch diameter pipeline. The scope of this project is to construct a second 500-foot, 51-inch diameter pipeline for redundancy. Following construction of the second pipeline, the existing segment would be

lined or coated to reduce further corrosion. Please refer to Figure 7.1 in the 2007 Master Plan (Appendix C).

7.2.3 West Trunk Interceptor

The West Trunk consists of 39 to 60-inch diameter sections and runs from Bangs Avenue to the Sutter Avenue Primary Plant along the western boundary of the study area. The West Trunk has sufficient capacity to convey existing PWWF. However, at build-out of Area 1, the increased PWWF causes the lower reaches of the West Trunk to surcharge. The 2007 Master Plan proposes to construct 5,200 feet of 48-inch diameter pipe parallel to the existing 54/60-inch diameter trunk from the Sutter Avenue Primary Plant to Carpenter Road in John Street.

This capital project would benefit future users only because the pipe's current capacity is sufficient to convey existing PWWF. The implementation of this improvement is triggered by the amount of growth that occurs in Area 1. This improvement is not required until Area 1 within the sphere of influence (SOI) is nearly built-out. Please refer to Figure 5.2 in the 2007 Master Plan (Appendix C).

7.3 WWTP Impacts and Proposed Improvements

The projected ADWF from KBP East and South projects are approximately 0.22 mgd. This flow represents approximately 0.53 percent of the projected buildout flow of 41.6 mgd for the entire service area, and 1.4 percent of the projected increase in flows from 2005 to buildout.

In order to correct existing discharge and treatment deficiencies, and to also build sufficient capacity needed to accommodate increased growth in the City, several projects are proposed for the wastewater treatment plant facilities. The projects were developed in the 2007 Final Wastewater Treatment Master Plan Update [7](2007 Treatment Master Plan).

The existing primary facility has sufficient capacity to treat the ADWF at build out of the SOI area. However, the facility has insufficient capacity to convey and treat the projected PWWF. Construction of the KBP East and KBP South projects will magnify this existing deficiency. In order to correct existing discharge and treatment deficiencies, and to build sufficient capacity needed to accommodate increased growth in the City, several projects are proposed for the wastewater treatment plant facilities. The projects were developed in the 2007 Wastewater Treatment Master Plan.

The existing 60-inch diameter outfall line conveys primary effluent from the Primary Plant to the Secondary Plant. The current PWWF is 71.7 mgd and the projected build-out PWWF is 95.5 mgd, however the existing capacity of the outfall line is 50 mgd when it is surcharged (when the water level rises above the pipeline, but is still contained within the manholes). The additional flow from the KBP East and KBP South projects will increase the PWWF to

approximately 97.6 mgd. Therefore, the addition of the project flows will create an even greater deficiency in the outfall line.

7.4 Proposed On-Site Wastewater Flow Routing

Carollo conducted an analysis of the proposed on-site wastewater flow routing. Kimley-Horn's Facilities Master Plan provided a preliminary plan for routing flows from each parcel in KBP East. A system of 10 and 12-inch sewer pipelines in Dale Road, Chopra Parkway and the future northern extension of American Avenue will convey flow to Bangs Avenue. Based on the hydraulic model and the design flow presented in Section 5.2, the proposed sewer layout and size are adequate to convey the projected design flow from the KBP East development.

As discussed earlier, the first phase of KBP South will develop on approximately 10 acres. As shown in Figure 7, a new sewer will be constructed in a new east-west road right-of-way that connects with American Avenue. Based on the design flow and an evaluation of ground elevations, it has been determined that the entire KBP South area including the areas west of the Mana/Wagner Development (72 acres total) can be served by a new 8-inch pipeline. The 39-inch West Trunk on American Avenue south of Bangs Avenue would intercept wastewater conveyed in this pipeline. Figure 7 show the flow routing used during the hydraulic modeling evaluation.

8.0 CAPACITY CHARGE ESTIMATE

The City contracted with Brown and Caldwell to develop sewer capacity charges and user rates to provide funding for the capital projects described in the 2007 Master Plan and the 2007 Final Wastewater Treatment Master Plan Update (2007 Treatment Master Plan). The 2007 Final Sewer Capacity Charges Report describes the methods used to develop capacity charges for residential and commercial users. The executive summary of the Brown and Caldwell report is provided in Appendix B.

The capacity charges for residential connections were established for the financial year 2007 at a rate of $4,876 per equivalent dwelling unit (EDU). Each EDU is equivalent to 290 gallons per day. The capacity charges for commercial users are developed based on unit costs for flow, biochemical oxygen demand (BOD), and total suspended solids (TSS). Table 7 summarizes the four commercial users groups as defined in the City of Modesto Municipal Code [8].

Once the commercial group is determined, the capacity charge can be calculated using the unit costs for Flow, BOD, and TSS outlined in the Brown and Caldwell Report and provided below:

- **$14.073** per gallon per day of flow
- **$1,299.175** per pound of BOD per day
- **$345.209** per pound of TSS per day

Table 7	**Commercial User Groups Kiernan Business Park Wastewater Capacity Study City of Modesto**			
User Group	**Description**	**BOD (mg/l)**	**TSS (mg/l)**	**Combined BOD & TSS Range (mg/l)**
1	No Food, Just Toilets or Washing Facilities	200	200	<400
2	Commercial Laundromats, Service Stations, Hotels without Food	450	450	401 - 900
3	Industrial Laundromats, Hotels with Food	700	700	901 - 1,400
4	Restaurants, Bakeries, Auto Stream, Markets	1000	600	>1,400
Note:				

Table 8 provides a summary of the estimated capacity charge allocated to KBP East and KBP South development based on the capacity charge for residential connections and unit costs for commercial developments. The estimated capacity charges are as follows:

KBP East $2.49 million

KBP South $1.08 million

Total $3.57 million

9.0 CONCLUSIONS

The developers of KBP East and South have proposed preliminary flow routing plans to convey wastewater to the West Trunk in Area 1. The developers proposed 10 and 12-inch diameter sewers from KBP East to connect to the Bangs Trunk. The developer has not yet sized the proposed sewers for KBP South. However, the specific plan proposes an 8-inch diameter pipeline, which is adequate for the estimated flows from that area.

Table 8 - Estimated Capacity Charge Calculations
Kiernan Business Park Wastewater Capacity Study
City of Modesto

	Property Number	Land Use	Acreage (net acre)	Acreage Includes Right of Way (gross acre)	Average Flow Coefficient (gal/acre/day)	Average Dry Weather Flow (gal/day)	Average Dry Weather Flow (gpm)	EDUs[1]	Residential Capacity Charge[3] ($)	Commercial User Group[2]	Commercial Capacity Charge (Flow, BOD, TSS combined)[4] ($)	Total Capacity Charge ($)
Kiernan Business Park East												
Phase I	1	BP	3.6	3.60	890	3,204	2.23	11.05	$0	1	$53,900	$53,900
	2	MU	10.05	10.05	1,100	11,055	7.68	38.12	$0	4	$294,500	$294,500
	3	MU	6.19	6.19	1,100	6,809	4.73	23.48	$0	4	$181,400	$181,400
	4	MU	3.06	3.06	1,100	3,366	2.34	11.61	$0	4	$89,700	$89,700
	5	BP	8.41	8.41	890	7,485	5.20	25.81	$0	1	$125,900	$125,900
		Existing Residential[1]	1.00	1.00		290	0.20	1.00	$4,876		$0	$4,900
	7	BP	3.71	3.71	890	3,302	2.29	11.39	$0	1	$55,500	$55,500
	8	BP	7.4	7.40	890	6,586	4.57	22.71	$0	1	$110,700	$110,700
	9	MDR	7.52	7.52	1,914	14,393	10.00	49.63	$242,006		$0	$242,000
	10	MDR	7.23	7.23	1,914	13,838	9.61	47.72	$232,673		$0	$232,700
	11	BP	1.43	1.43	890	1,273	0.88	4.39	$0	1	$21,400	$21,400
	12	BP	6.2	6.20	890	5,518	3.83	19.03	$0	1	$92,800	$92,800
	13	BP	7.83	7.83	890	6,969	4.84	24.03	$0	1	$117,200	$117,200
	Sub-Total KBP East - Phase I								$479,555		$1,143,000	$1,622,600
Phase II	14	BP	4.15	4.15	890	3,694	2.56	12.74	$0	1	$62,100	$62,100
	15	BP	4.15	4.15	890	3,694	2.56	12.74	$0	1	$62,100	$62,100
	16	BP	8.53	8.53	890	7,592	5.27	26.18	$0	1	$127,700	$127,700
	17	BP	7.84	7.84	890	6,978	4.85	24.06	$0	1	$117,300	$117,300
	18	BP	4.28	4.28	890	3,809	2.65	13.14	$0	1	$64,100	$64,100
	19	BP	4.27	4.27	890	3,800	2.64	13.10	$0	1	$63,900	$63,900
	20	BP	4.55	4.55	890	4,050	2.81	13.96	$0	1	$68,100	$68,100
	21	BP	4.22	4.22	890	3,756	2.61	12.95	$0	1	$63,200	$63,200
	22	BP	4.09	4.09	890	3,640	2.53	12.55	$0	1	$61,200	$61,200
	23	BP	4.09	4.09	890	3,640	2.53	12.55	$0	1	$61,200	$61,200
	24	BP	3.79	3.79	890	3,373	2.34	11.63	$0	1	$56,700	$56,700
	25	BP	3.79	3.79	890	3,373	2.34	11.63	$0	1	$56,700	$56,700
	Sub-Total KBP East - Phase II								$0		$864,300	$864,300
Future	26	BP	8.57	8.57	890	7,627	5.30	26.30	0	1	$128,300	$128,300
	27	BP	8.57	8.57	890	7,627	5.30	26.30	0	1	$128,300	$128,300
	28	BP	8.78	8.78	890	7,814	5.43	26.95	0	1	$131,400	$131,400
	29	BP	8.78	8.78	890	7,814	5.43	26.95	0	1	$131,400	$131,400
Sub-Total KBP East			**131.38**	**131.38**		**135,485**	**94.09**	**467.19**	**$480,000**		**$2,007,000**	**$2,487,000**
Sub-Total KBP East with Future Area			**166.08**	**166.08**		**166,368**	**115.53**	**573.68**	**$480,000**		**$2,527,000**	**$3,006,000**
Kiernan Business Park South												
	A (Mana/Wagner)	BP	9.03	9.95	890	8,856	6.15	30.54	$0	1	$148,900	$148,900
	B	BP	6.04	6.66	890	5,924	4.11	20.43	$0	1	$99,600	$99,600
	C	BP	10.56	11.64	890	10,356	7.19	35.71	$0	1	$174,200	$174,200
	D	BP	6.24	6.88	890	6,120	4.25	21.10	$0	1	$102,900	$102,900
	E[8]	BP	33.47	36.88	890	32,825	22.79	113.19	$0	1	$552,000	$552,000
Sub-Total KBP South			**65.34**	**72.00**		**64,080**	**44.50**	**220.97**	**$0**		**$1,078,000**	**$1,078,000**
Total KBP (East & South excluding Future Area)			**196.72**	**203.38**		**199,565**	**138.59**	**688.16**	**$480,000**		**$3,085,000**	**$3,565,000**

Notes:

1. One EDU is equivalent to 290 gals/day per City Staff.
2. Commercial User Groups are defined in the City of Modesto Municipal Code
   - Group 1 - No Food, Just Toilets or Washing Facilities
   - Group 2 - Commercial Laundromats, Service Stations, Hotels without Food
   - Group 3 - Industrial Laundromats, Hotels with Food
   - Group 4 - Restaurants, Bakeries, Auto Stream, Markets
3. Residential capacity charge equals $4,876 dollars per EDU
4. Unit Costs for flow, BOD and TSS
   - Flow = 14.073
   - BOD = $1,299.175
   - TSS = $345.209

Based on the analysis presented in this Technical Memorandum, the developer proposed routing alternatives are adequate to convey wastewater from KBP.

Based on the capacity charge for residential users and the unit costs for commercial users defined in the 2007 Final Sewer Capacity Charges Report prepared by Brown and Caldwell, the estimated capacity charge for KBP South and KBP East totals $3.57 million.

The $3.57 million is allocated between the two phases of KBP East and KBP South based on their number of EDUs and commercial user types. KBP East capacity charges are estimated to be $2.49 million, and the capacity charge for KBP South is estimated at $1.08 million.

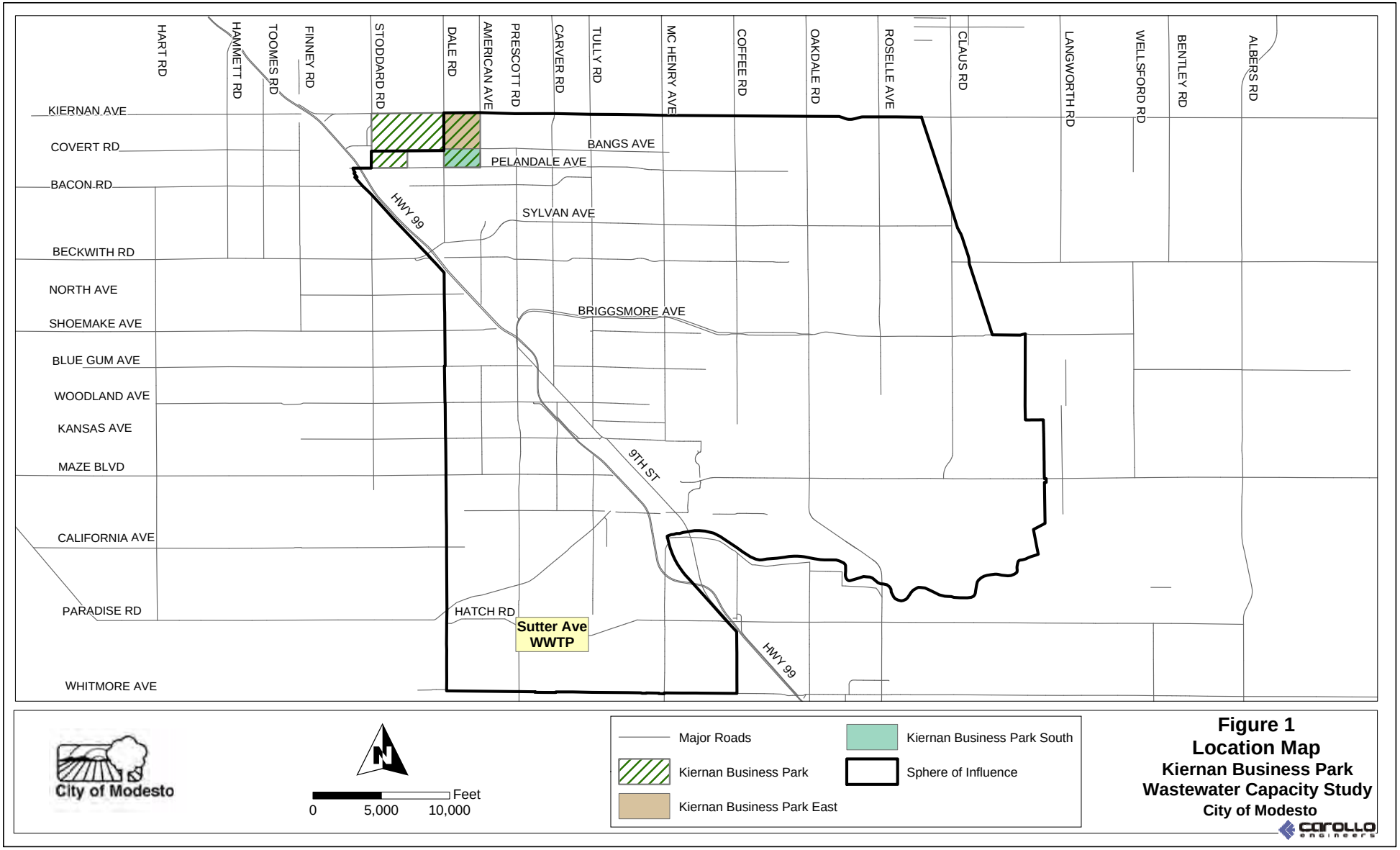


Figure 1
Location Map
Kiernan Business Park
Wastewater Capacity Study
City of Modesto

carollo engineers

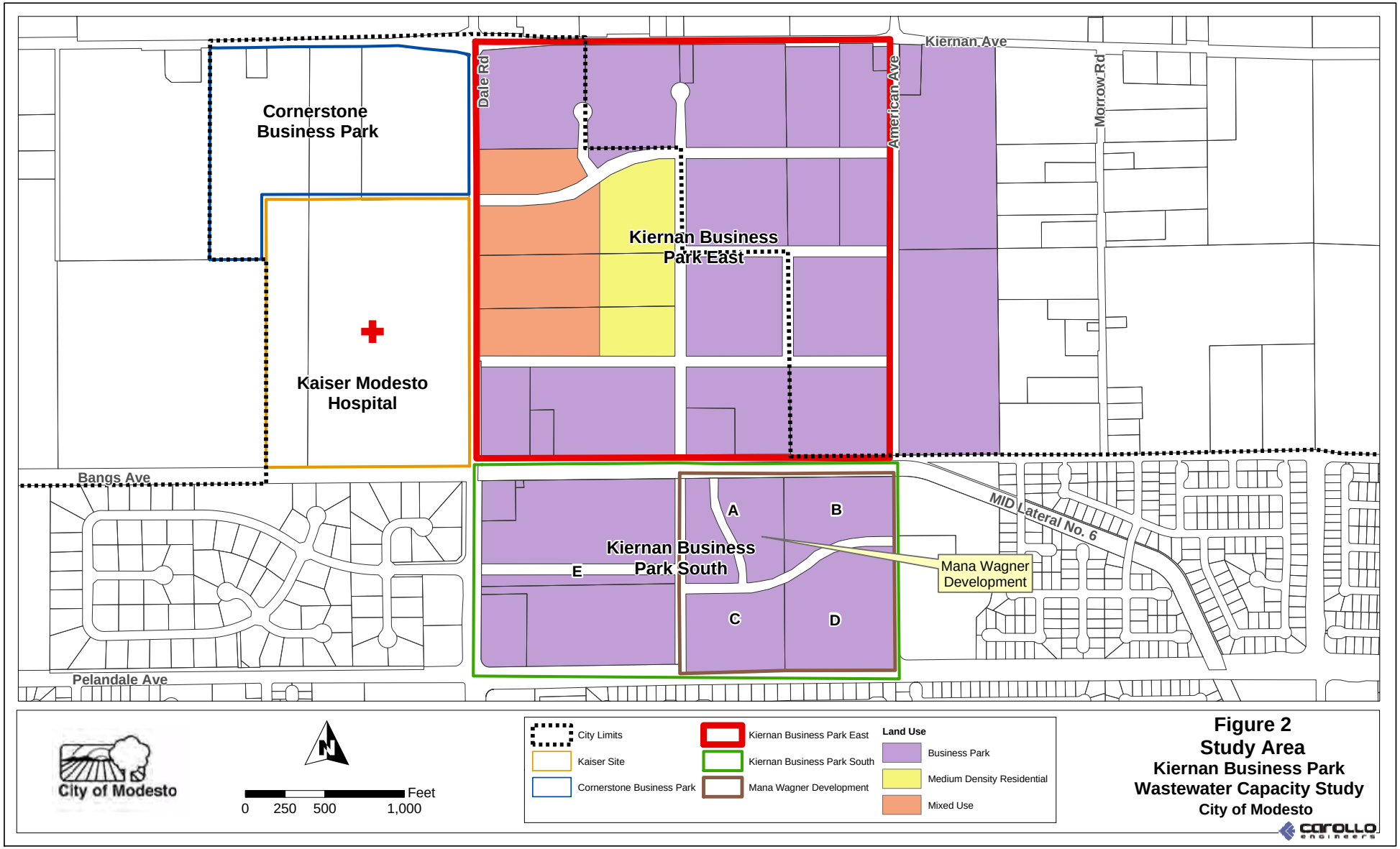


Figure 2
Study Area
Kiernan Business Park
Wastewater Capacity Study
City of Modesto

carollo engineers

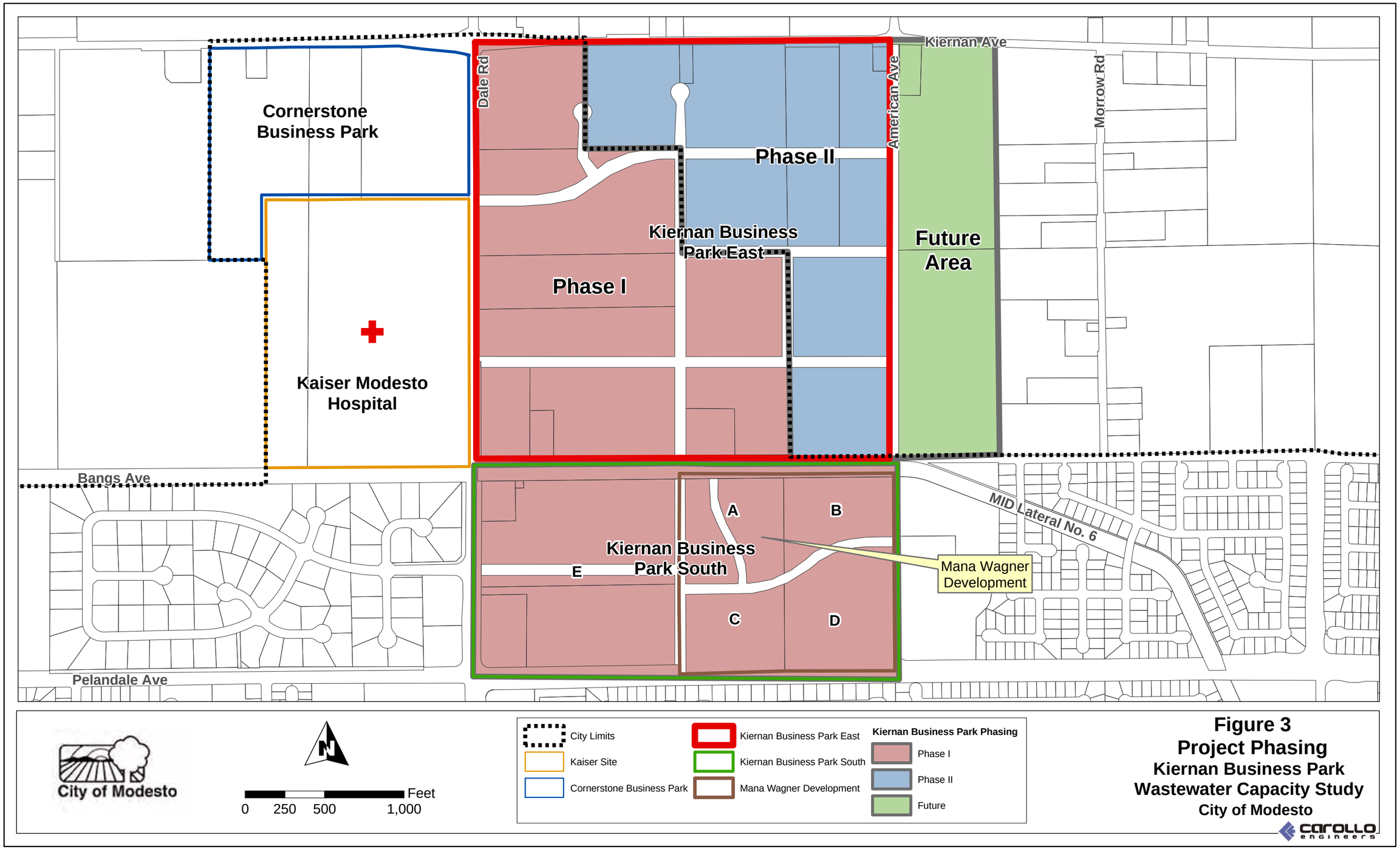


Figure 3
Project Phasing
Kiernan Business Park
Wastewater Capacity Study
City of Modesto

carollo engineers

Note: Assumes Kiernan Business Park South develops with Phase I

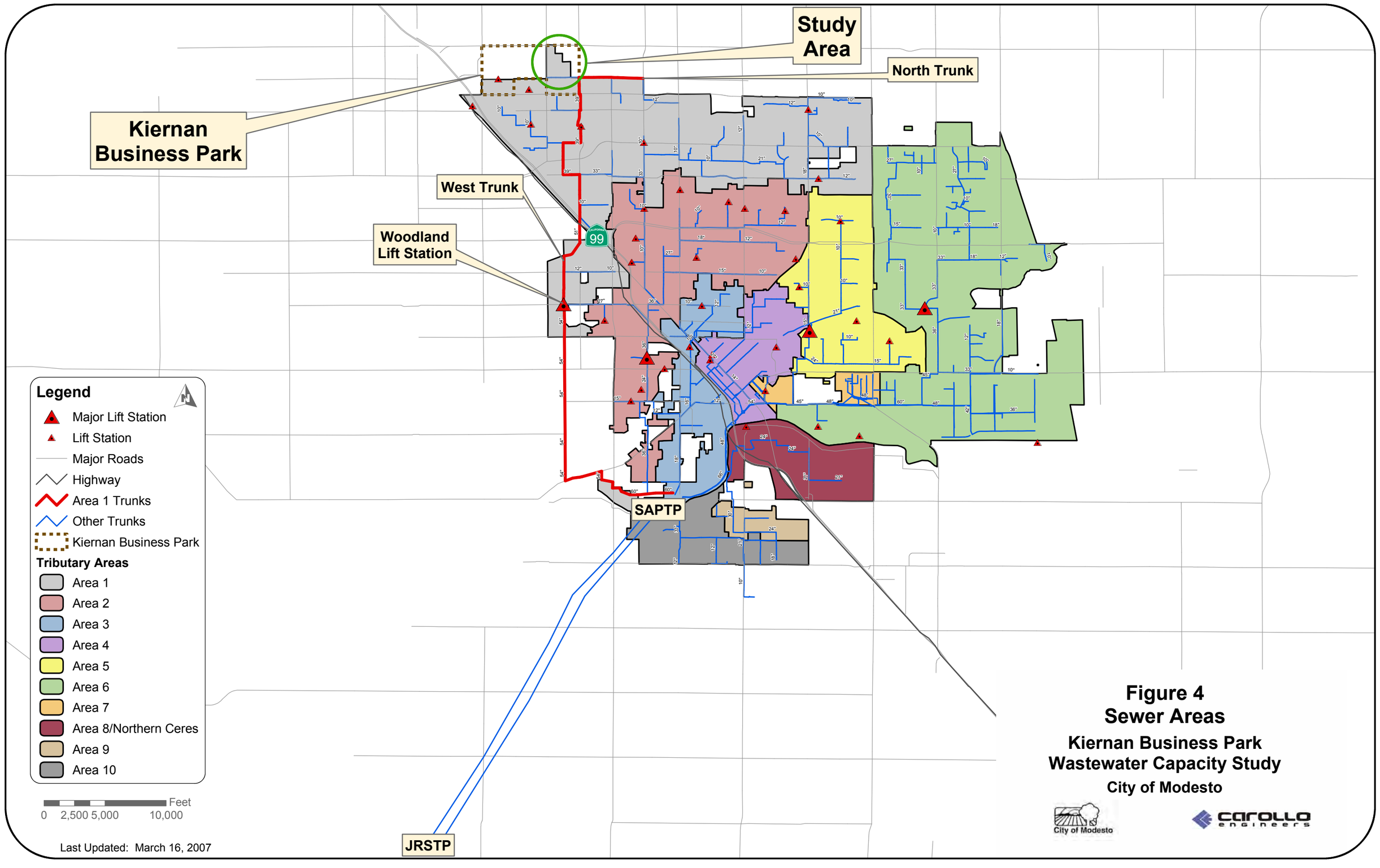
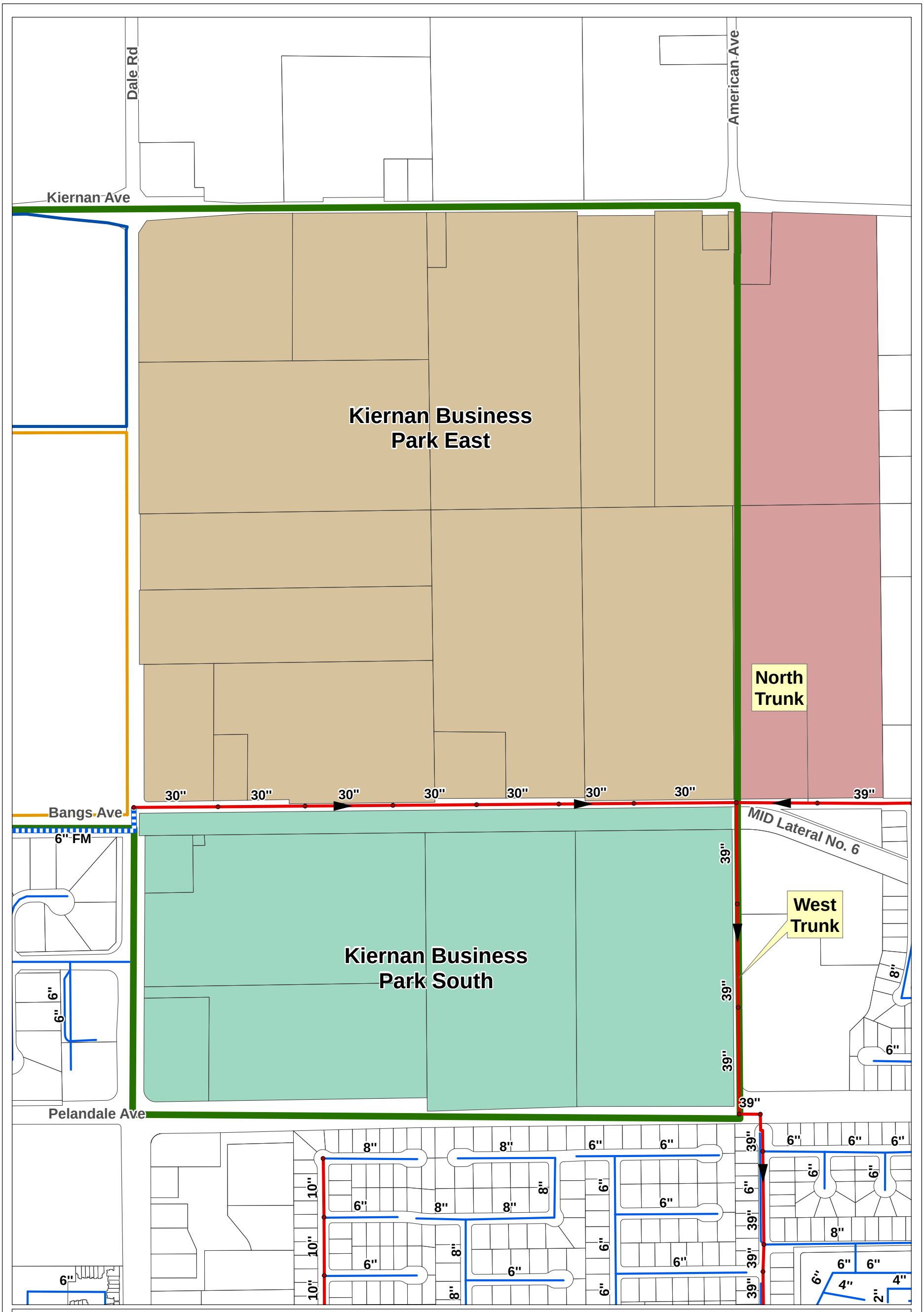
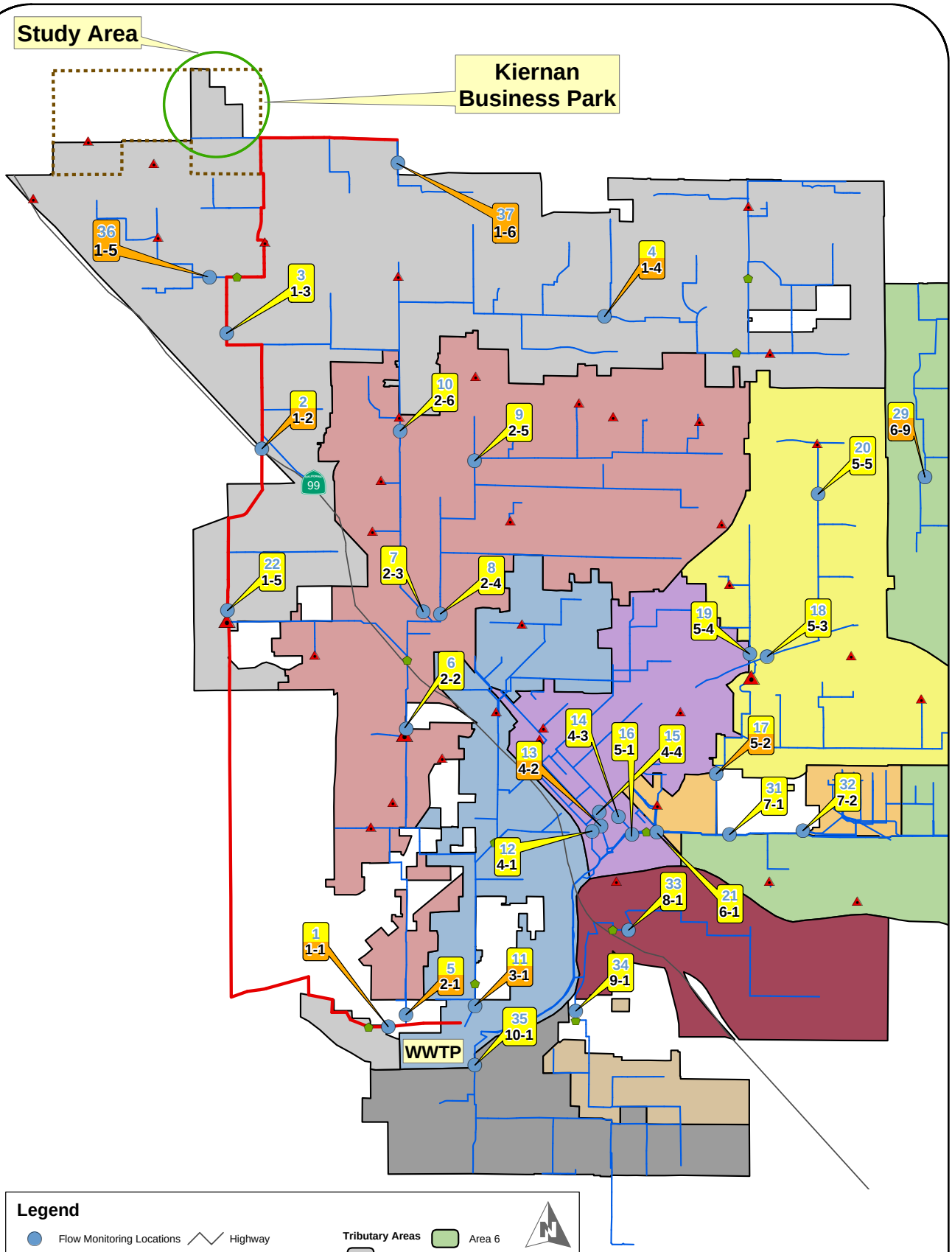


Figure 4
Sewer Areas
Kiernan Business Park
Wastewater Capacity Study
City of Modesto

City of Modesto

carollo engineers


Dale Rd
American Ave
Kiernan Ave
Kiernan Business Park East
North Trunk
30"
30"
30"
30"
30"
30"
30"
39"
Bangs Ave
6" FM
MID Lateral No. 6
39"
West Trunk
Kiernan Business Park South
8"
39"
39"
39"
Pelandale Ave
6"
6"
8"
8"
6"
6"
10"
8"
6"
8"
8"
6"
10"
6"
8"
6"
10"
8"
6"
6"
6



Legend

- Flow Monitoring Locations
- GEOtivity
- Major Lift Station
- Lift Station
- Highway
- Area 1 Trunks
- 10 - 66 Inch
- Kiernan Business Park

Text

Flow Monitor Number: 23 6-3 (Area ID)

Tributary Areas

- Area 1
- Area 2
- Area 3
- Area 4
- Area 5
- Area 6
- Area 7
- Area 8/Northern Ceres
- Area 9
- Area 10

- Dry Weather Monitor
- Wet Weather Monitor

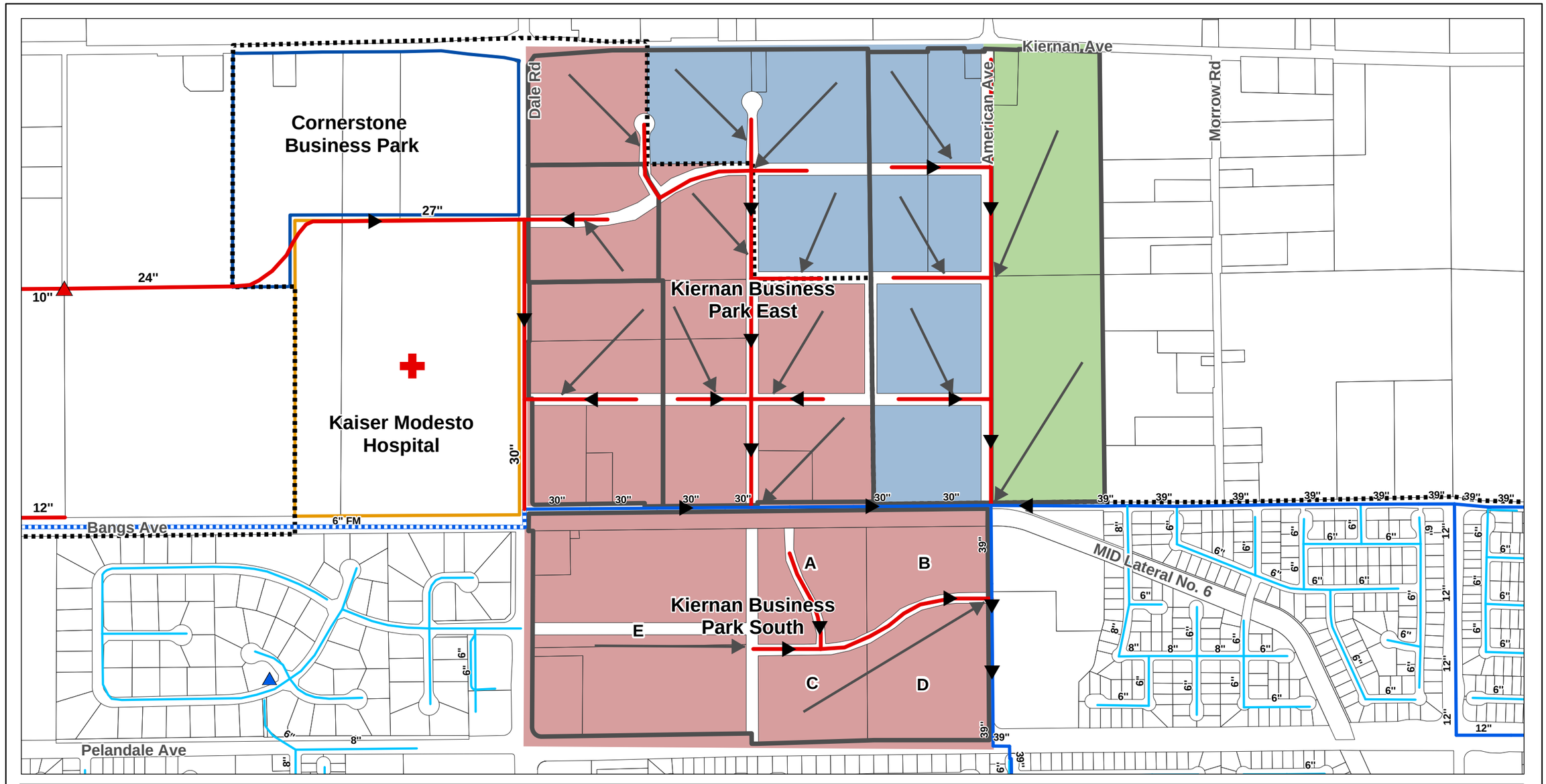
0 1,500 3,000 6,000 Feet

Figure 6
Flow Monitoring
Kiernan Business Park
Wastewater Capacity Study
City of Modesto

City of Modesto

carollo engineers

Last Updated: February 2, 2007



City of Modesto

Feet
0 250 500 1,000

Existing Lift Stations
Proposed Lift Station
Flow Arrow
Proposed Improvement
Kiernan Drainage Basins

Existing Sewer Trunks
0 - 8 inch
10 - 66 inch
Force Main

Kiernan Business Park Phasing
Phase I
Phase II
Future

Kaiser Site
Cornerstone Business Park
City Limits

Figure 7
Proposed Flow Routing
Kiernan Business Park
Wastewater Capacity Study
City of Modesto

carollo engineers

Note: Assumes Kiernan Business Park South develops with Phase I

APPENDIX A - REFERENCES

[1] Final Wastewater Collection System Master Plan, March 2007

[2] 2007 Final Sewer Capacity Charges Report, Brown and Caldwell, April 2007

[3] Kiernan Business Park Specific Plan, August 2004

[4] Kiernan Business Park East Facilities Master Plan - Kimley Horn and Associates, 2006

[5] Sanitary Sewer Flow Monitoring - City of Modesto, September 2004

[6] Sanitary Sewer Flow Monitoring - City of Modesto, February 2005

[7] Wastewater Master Plan Phase 2 Update - Master Plan Report, March 2007

[8] City of Modesto Municipal Code

APPENDIX B - 2007 FINAL SEWER CAPACITY CHARGES REPORT - EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This report documents the development of a schedule of sewer system capacity charges to recover the cost of capacity in the City of Modesto (City) sewer utility system from new applicants for service. This executive summary describes the study objectives; the conceptual approach and methodology used to calculate the recommended capacity charges; and presents the recommended schedule of capacity charges.

Study Objectives

In May 2006, Brown and Caldwell (BC) entered into an agreement with the City of Modesto to develop a schedule of sewer system capacity charges for its sewer utility. Specifically the study objectives were as follows:

- Recover the cost of capacity in facilities constructed to meet the needs necessitated by growth.
- Meet legal requirements:
    - Demonstrate a **nexus** between development and the need to expand facilities to accommodate growth.
    - Not exceed the development's **proportional share** of the cost of facilities needed to serve that development.
    - **Not be arbitrary or discriminatory** in its application to individual customers or customer classes.
- Be feasible for the City to implement and administer.

Methodology

There is no single, established method for the calculation of capacity charges that is appropriate for all utilities or eminently fair to all new applicants for service. We reviewed the two options most widely used:

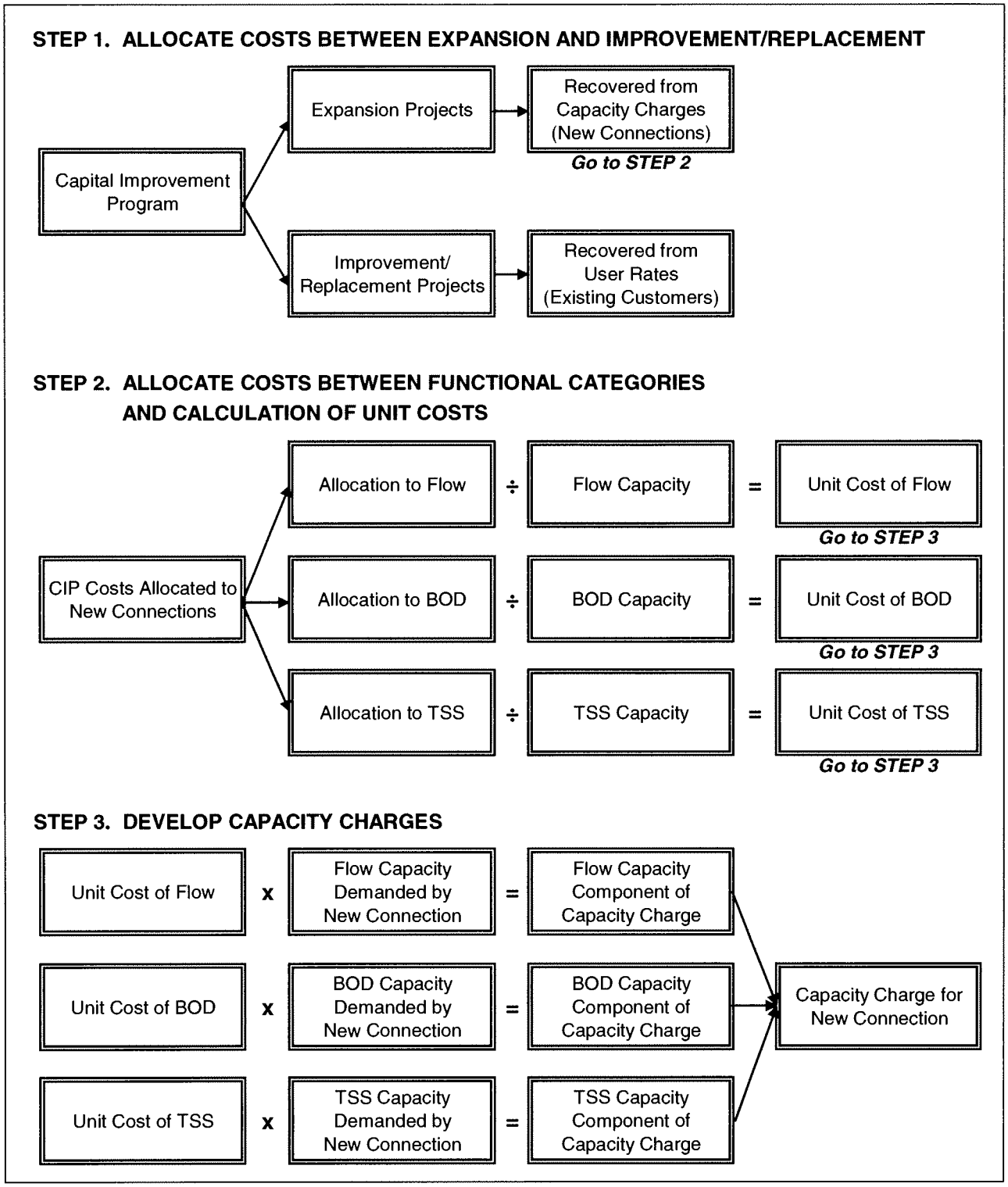
- **Average Method**. Includes recovery of cost of replacement of capacity in existing system plus the portion of the CIP allocable to growth.
- **Marginal Cost Method**. Recovers cost of the portion of the CIP allocable to growth.

The marginal cost method was chosen because it is the most appropriate for the city's wastewater utility because the existing system is at capacity and all new capacity will result from the recommended CIP.

Capacity Charge Calculation Methodology Using the Marginal Cost Method

Figure ES.1 shows schematically the calculation of the capacity charges using the Marginal Cost Method.

Figure ES.1 Capacity Charge Calculation Methodology Using the Marginal Cost Method



Information Requirements

In order to calculate the capacity charges using the marginal cost method it was necessary to have the following information:

- Capital Improvement Program (CIP)
- Portion of CIP Allocable to Growth
- Allocation of Growth Portion of CIP to Functional Cost Categories of Flow, BOD and TSS
- Amount of Capacity Added by Proposed CIP
- Future Cost Escalation
- Method of Financing CIP
- Equivalent Single Family Dwelling Unit Discharge Characteristics

Capital Improvement Program Cost Allocation

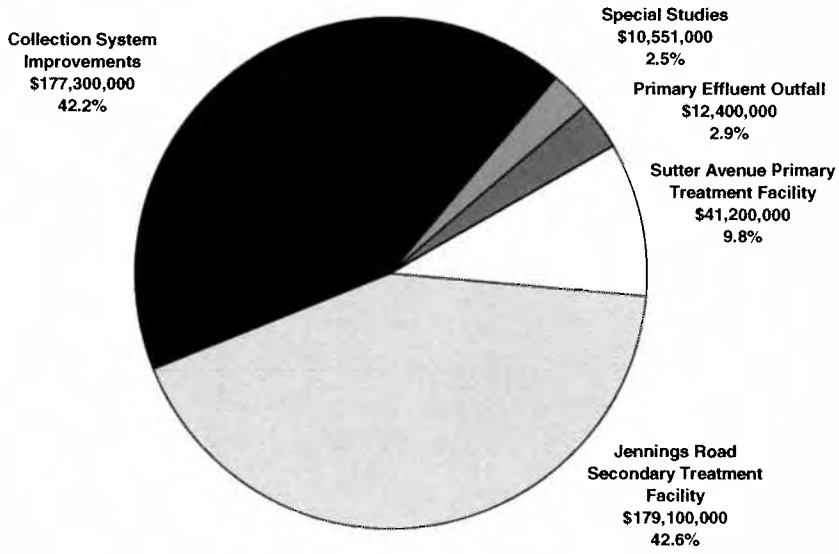
Because the marginal cost method recovers the cost of the proposed CIP, the starting point in the calculation of capacity charges is the CIP. The CIP costs (by phase) were obtained from the Carollo Engineers July 2006 draft report and subsequent updates. The CIP is shown in Figure ES.2. It totals $420,551,000. This CIP is divided into five categories of costs, collection system costs, Sutter Avenue Primary Treatment Facility costs, primary effluent outfall costs, Jennings Road Secondary Treatment Facility Expansion costs and Special Studies costs.

The details of these costs and their allocation between new customers and existing customers was provided in the Carollo reports. As summarized from the Carollo reports, $176,575,450 (excluding any financing costs) of the total $420,551,000 CIP are to be recovered from new customers.

After separating the CIP costs into those that benefit new applicants for service (and are thus recovered via capacity charges) and those that benefit existing customers (and are thus recovered via user charges), the former costs are allocated to the functional cost categories of flow, BOD and TSS as presented in the Carollo Engineers July 2006 draft report and subsequent updates. Figure ES.3 summarizes this allocation for those costs to be recovered from new customers allocated by type (collection, treatment, outfall, etc.) and functional cost category (flow, BOD and TSS).

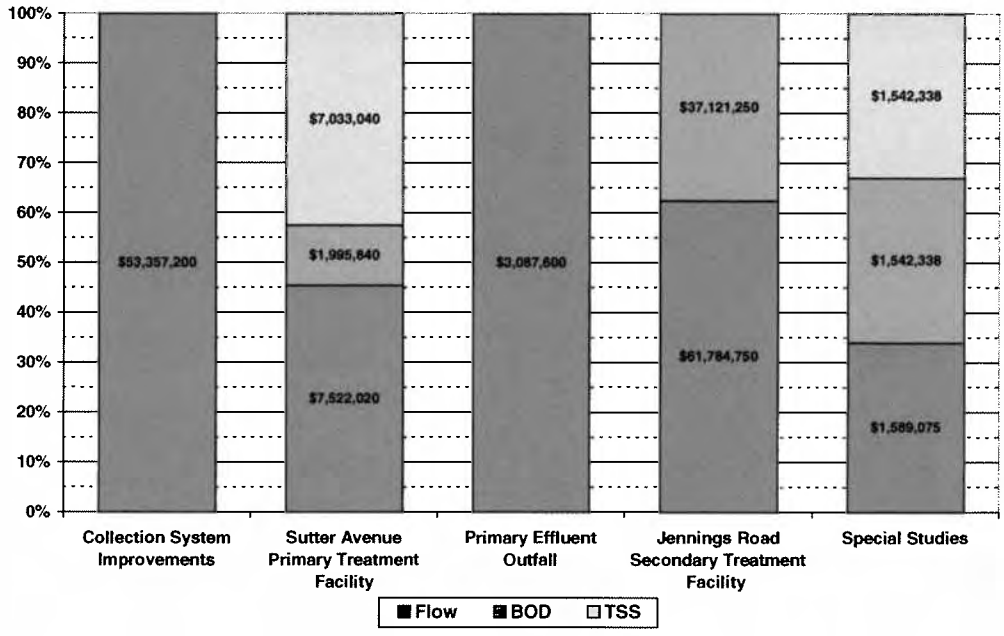
The costs allocated to the three functional cost categories are then divided by the respective amounts of capacity added (as provided by Carollo Engineers) to determine the unit costs of capacity for flow, BOD and TSS.

Figure ES.2 Capital Improvement Program Costs by Category



Total Capital Improvement Program Costs, 2006 Dollars = $420,551,000

Figure ES.3 Allocation of CIP Costs to New Connections by Category and Flow/BOD/TSS



Allocation of CIP Costs by Category and Parameter
(Total CIP Cost Allocated to Expansion = $176,575,450)

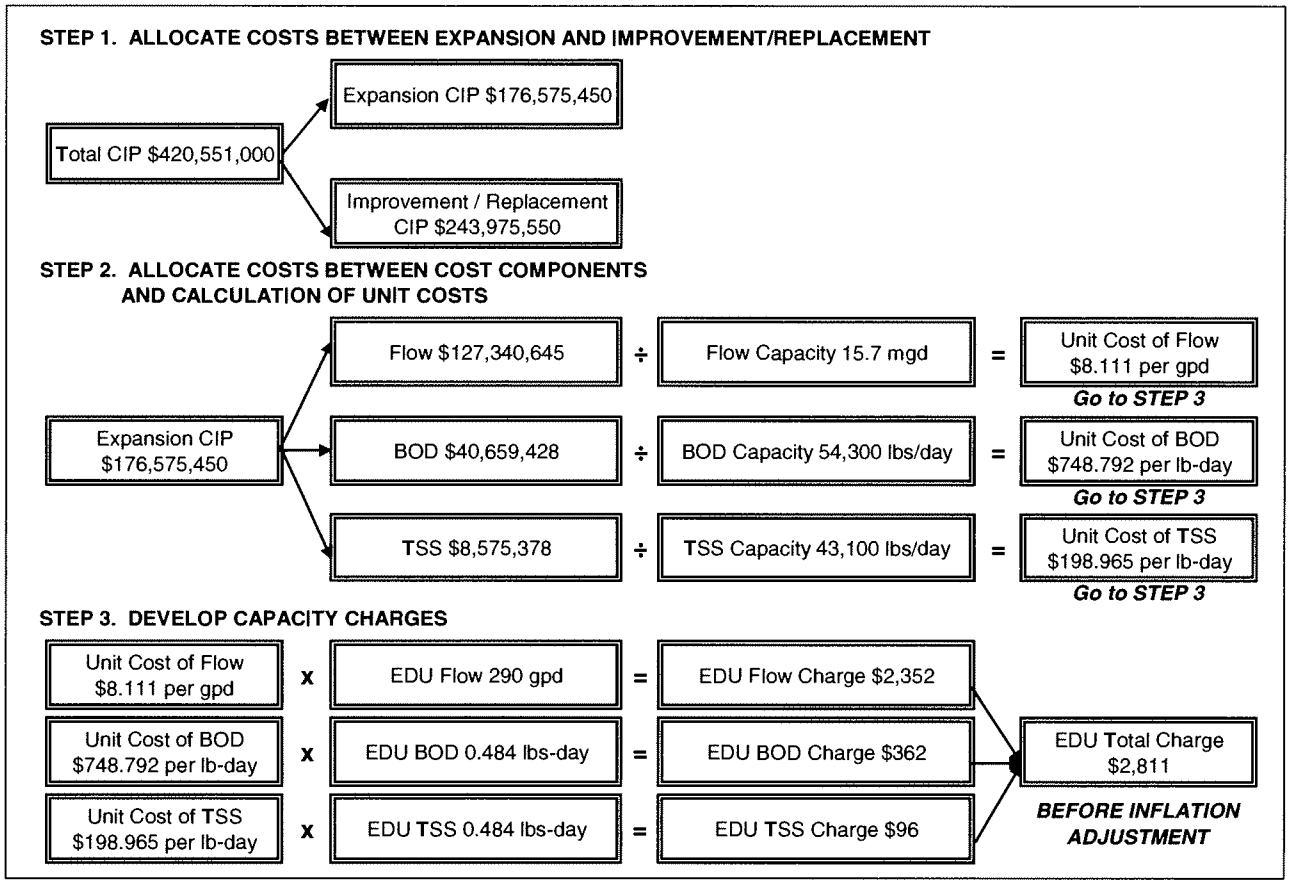
Capacity of New Facilities

The capacity available for new customers, provided by the facilities comprising the CIP, was developed from information in Table 4 of the July 2006 Carollo draft report and subsequent updates. The additional capacities provided by the facilities allocable to expansion are 15.7 million gallons per day for flow, 54,300 pounds per day for BOD, and 43,100 pounds per day for TSS.

Calculation of Unit Costs of Capacity and EDU Capacity Charges

Using the cost of capacity information shown in Figure ES.3 (which excludes interest), the capacity of new facilities stated above, and the flow, BOD, and TSS discharged by a typical EDU; the methodology shown schematically in Figure ES.1 was used to calculate unit costs of capacity in general and the capacity charge for an EDU, specifically. The results are illustrated in Figure ES. 4 below:

Table ES.4 Calculation of EDU Capacity Charges for FY 2006



Calculation of Capacity Charges for Subsequent Years with Interest Cost Included

In order to calculate capacity charges for FY 2007 and beyond that include interest on debt issued to finance the CIP, it is necessary to make the following assumptions:

- The projected cost of the CIP (in June 2006 dollars), as provided by Carollo Engineers, was escalated by 7.9 percent for FY 2007 and by 5.0 percent per year in the remaining years to forecast the cost of each project in the CIP in the year it would be built.
- The CIP is financed by the issuance of debt.
- Five debt issues are assumed in years 2008, 2009, 2010, 2012 and 2020.
- Each debt issue would be for a term of 30 years.
- Debt issuance costs were assumed to be 3 percent of the amount of the CIP funded.
- The interest rates for debt issuance were assumed to be annual rates of 5.0 percent for the first three issues and 5.5 percent for the last two issues.
- Interest was allocated to the portion of CIP allocable to expansion via its percentage of total CIP ($176,575,450 / $420,551,000).

Based on the above assumptions, capacity charges were calculated for three interest rate alternatives as follows:

- **Alternative 1: No Interest** - The portion of the CIP ($176,575,450) allocable to new customers was recovered in proportion to the amount and type (flow, BOD and TSS) of capacity added by the CIP to yield unit costs for flow, BOD and TSS applicable to any new connection. No consideration was given to the recovery of financing costs.

- **Alternative 2: Total Interest** - The same as the first alternative except that the total interest cost allocable to new customers, over the terms of the phased bond issues, was added to the portion of the CIP allocable to new customers.

- **Alternative 3: Present Value of Total Interest** - The same as the first alternative except that the present value of the total interest cost allocable to new customers, over the terms of the phased bond issues, was added to the portion of the CIP allocable to new customers.

These capacity charges for an EDU, for all three alternatives, are shown in Table ES.5.

Table ES.5 Alternative EDU Capacity Charges

	Alternative		
Fiscal Year	**1**	**2**	**3**
FY 2007	$3,033	$7,200	**$4,876**
FY 2008	$3,185	$7,352	$5,028
FY 2009	$3,344	$7,511	$5,187
FY 2010	$3,511	$7,678	$5,355
FY 2011	$3,687	$7,854	$5,530

Alternative 1: No Interest Costs
Alternative 2: Total Interest Costs
Alternative 3: Present Value of Total Interest Costs

Recommendation: Alternative 3

The unit costs of capacity applicable to all new connections were used to develop capacity charges for a hypothetical new connection for each of the commercial user groups defined in the Modesto Municipal Code (MMC) for wastewater treatment. The discharge strength characteristics (BOD and TSS) for each user group are based on user group definitions in the MMC. Flow for each user group is set at 1,000 million gallons per day (mgd) for groups 1-4 to facilitate comparison of the impact of changes in strength. The capacity charges for Alternative 3 are shown in Table ES.6.

Table ES.6 Alternative 3 Commercial User Capacity Charges

		Discharge Characteristics			FY 2007 Capacity Charges
	City of Modesto Current Commercial User Categories	**Flow [1] gpd**	**BOD [2] mg/l**	**TSS [2] mg/l**	**Alt 3**
Group 1	No Food, Just Toilets or Washing Facilities	1,000	200	200	$16,815
Group 2	Commercial Laundromats, Service Stations, Hotels w/o Food	1,000	450	450	$20,244
Group 3	Industrial Laundromats, Hotels w/ Food	1,000	700	700	$23,673
Group 4	Restaurants, Bakeries, Auto Steam, Markets	1,000	1,000	600	$26,635

1. Flow values were assumed by Brown and Caldwell to facilitate comparison among user categories. Flow values for new applicant's should be based upon determination by the City Engineer.
2. BOD and TSS values were based on commercial user category definitions in the Modesto Municipal Code shown below:
   Group 1 Combined BOD and TSS is 400 mg/l or less
   Group 2 Combined BOD and TSS is in the range of 401 mg/l to 900 mg/l
   Group 3 Combined BOD and TSS is in the range of 901 mg/l to 1,400 mg/l
   Group 4 Combined BOD and TSS is over 1,400 mg/l

Comparison of Capacity Charges

The City of Modesto capacity charge for a single family dwelling for FY 2007 is compared to both the current City capacity charge and those of other near by sewer utilities. The results are summarized in Table ES.7.

Table ES.7 Comparison of Single Family Dwelling Capacity Charges

Municipality	Capacity Charge
City of Modesto, Current	*$500*
City of Turlock	$1,839
City of Manteca	$3,961
City of Modesto, FY 2007 (Alt 3)	***$4,876***
City of Stockton	$5,700
City of Sacramento	$7,868
City of Tracy	$10,095
City of Merced	$12,500

Recommendations

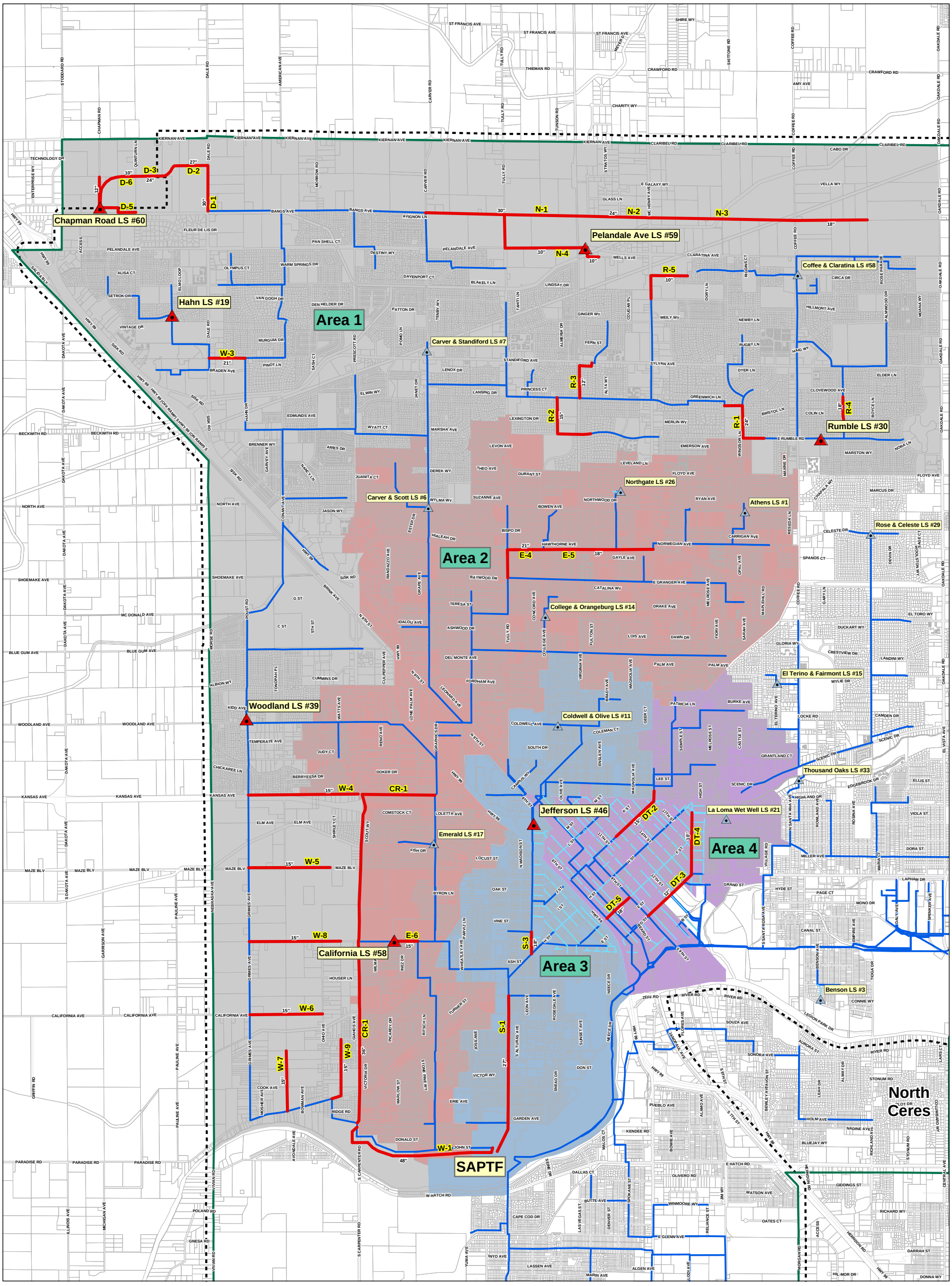
Based on the results of this study, Brown and Caldwell makes the following recommendations:

- Capacity charges should be developed based on the marginal cost methodology.
- The interest costs should be included with the CIP construction costs using the present value of future interest payments (Alternative 3).
- The CIP provided by the City's engineers (Carollo Engineers), in June 2006 dollars, should be escalated by 7.9 percent for FY 2007. The costs in subsequent were years are escalated by 5.0 percent per year to show likely levels of charges for FY 2008 – 2011.
- The capacity charges for an Equivalent Single Family Dwelling Unit for FY 2007 should be $4,876.
- The unit cost capacity charges for all users for FY 2007 should be $14.073 per gallon per day of flow; $1,299.175 per pound of BOD per day; and $345.209 per pound of TSS per day.
- If the City elects to adopt the FY 2008 unit costs and associated EDU capacity charge and calculate the unit costs and EDU charges for subsequent years by using the actual changes in the *Engineering New Record* Construction Cost Index for San Francisco, it should use the capacity charge model and do so in the manner described on page 4 of Chapter 4.1.
- After 2011 the capacity charges should be reviewed every four years and updated for the following:
    - Construction costs
    - Timing and amount of bond issues
    - Interest Rates
    - Other Cost Matters as Appropriate
- Revise the Modesto Municipal Code for the following:
    - Update definitions and terminology as necessary
    - Reflect equivalent single family dwelling unit discharge characteristics for Flow (290 gpd), BOD (200 mg/l) and TSS (200 mg/l)
    - Adopt uniform unit costs of capacity for Flow, BOD and TSS

Peer Review

The City of Modesto retained the firm of HF&H Consultants, LLC, to conduct a peer review of Brown and Caldwell's January 10, 2007 draft report titled *City of Modesto Sewer Capacity Charges*. The results of HF&H's peer review were presented in a Technical Memorandum. HF&H made several useful observations and comments. Items accepted by Brown and Caldwell and the City's Sewer Task Force are incorporated into this final report.

APPENDIX C - MASTER PLAN FIGURES



Legend

- Modeled Lift Station
- Proposed Lift Station or Upgrade
- Sphere of Influence
- Study Area Boundary

Modeled Collection System Diameter

- 8" and Smaller
- 10" and Larger
- Proposed Improvement

Tributary Areas

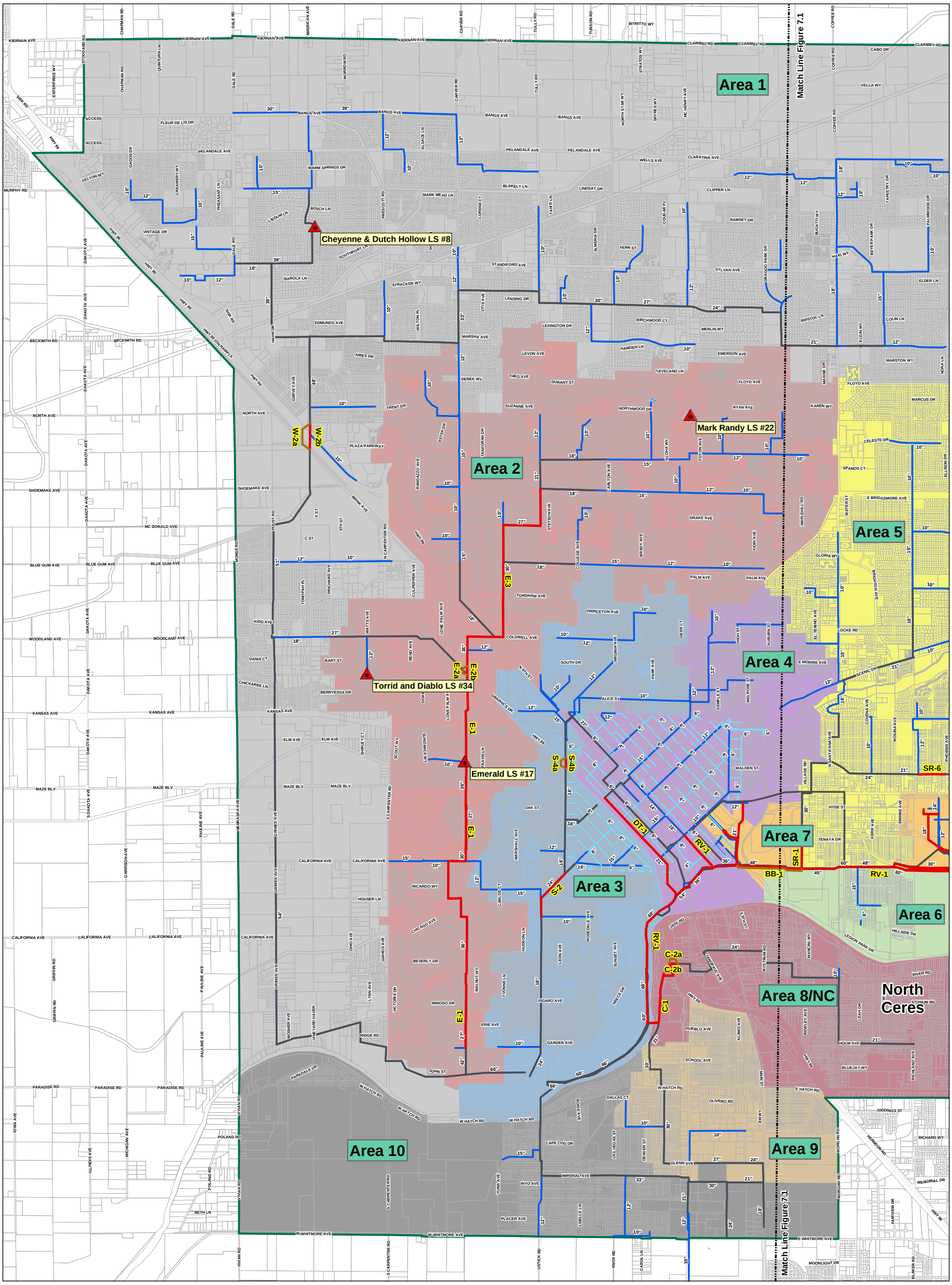
- Area 1
- Area 2
- Area 3
- Area 4

0 3,000 6,000 Feet

FIGURE 5.2
AREA 1, 2, 3, & 4
PROPOSED IMPROVEMENTS
WASTEWATER COLLECTION SYSTEM MASTER PLAN
CITY OF MODESTO

City of Modesto

carollo engineers



Legend

- Rehabilitation Lift Station
- Structural Rehabilitation Improvement
- Reliability Improvement
- Chemical Coating/CCTV

Modeled Collection System

- 8" and Smaller
- 10" and Larger
- Study Area

Tributary Areas

- Area 1
- Area 2
- Area 3
- Area 4
- Area 5
- Area 6
- Area 7
- Area 8/Northern Ceres
- Area 9
- Area 10

FIGURE 7.1
REHABILITATION AND RELIABILITY IMPROVEMENTS

WASTEWATER COLLECTION SYSTEM MASTER PLAN

CITY OF MODESTO

City of Modesto

carollo engineers

APPENDIX D - KIERNAN BUSINESS PARK SPECIFIC PLAN

City of Modesto

Kiernan Business Park Specific Plan

This document reflects all amendments to the Kiernan Business Park Specific Plan, as of August 10, 2004

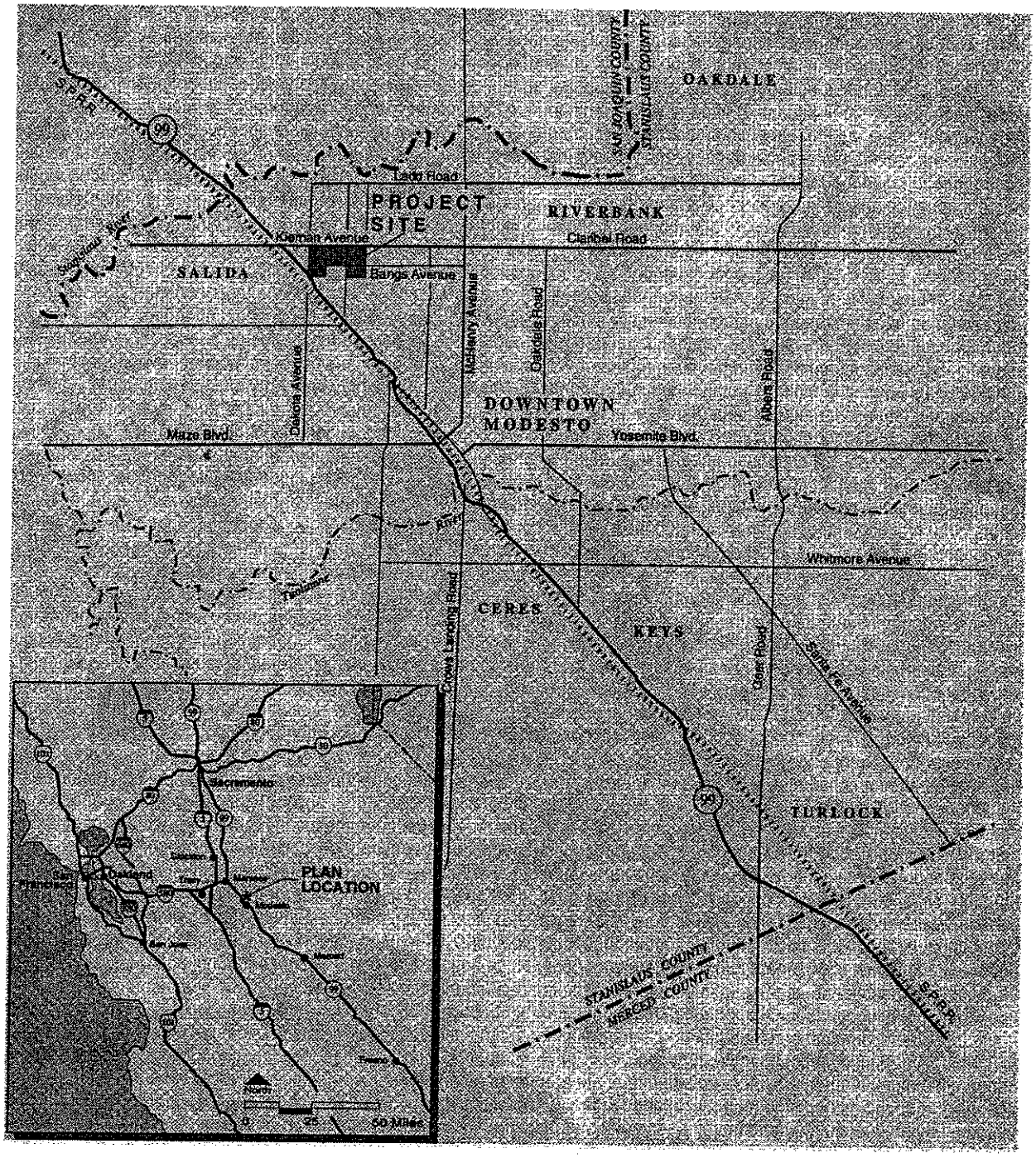
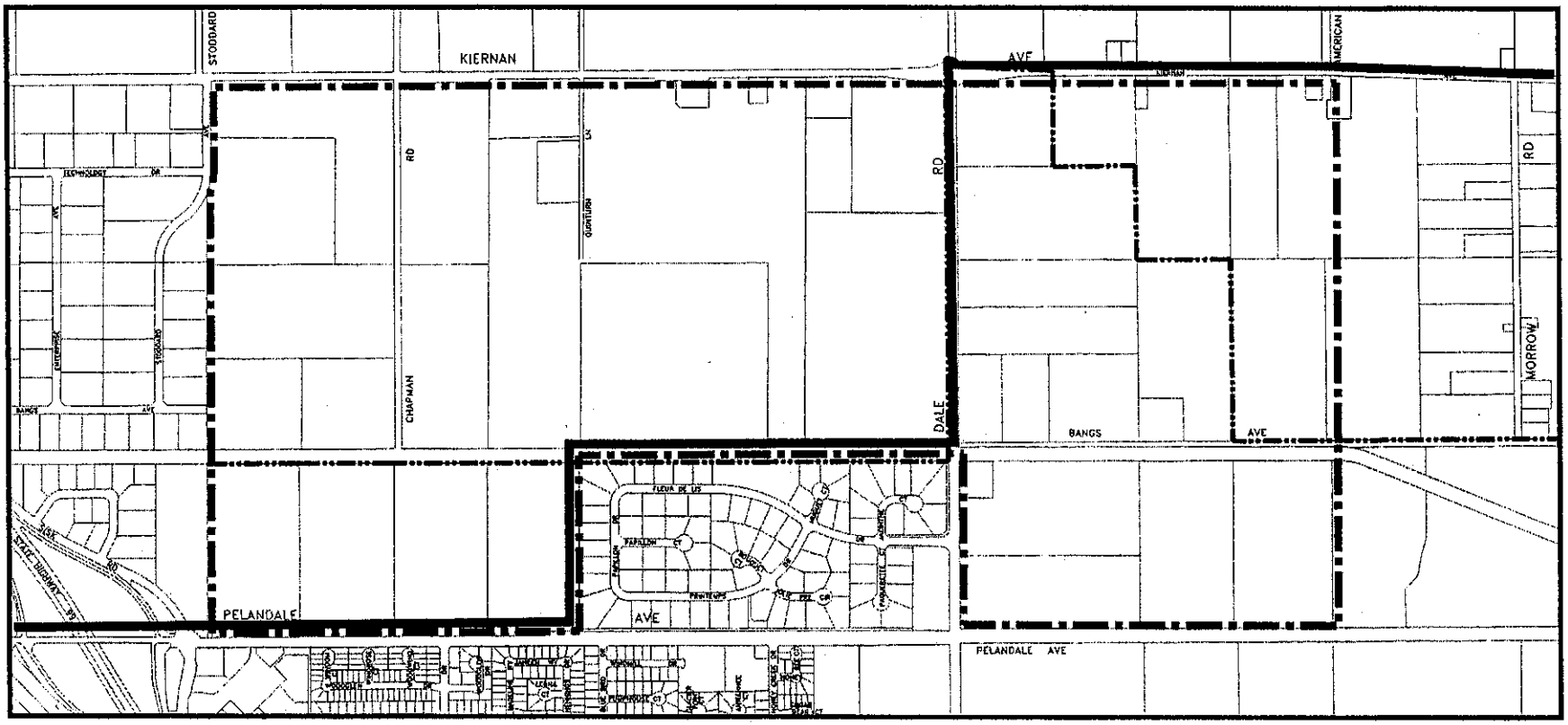


Figure II-1

Project Location



Legend :

- Specific Plan Area Boundary
- City Limits
- Sphere of Influence

North

0' 1320'
1/4 mile

Figure II-2

Existing Sphere of Influence and City Limits

KIERNAN
BUSINESS PARK

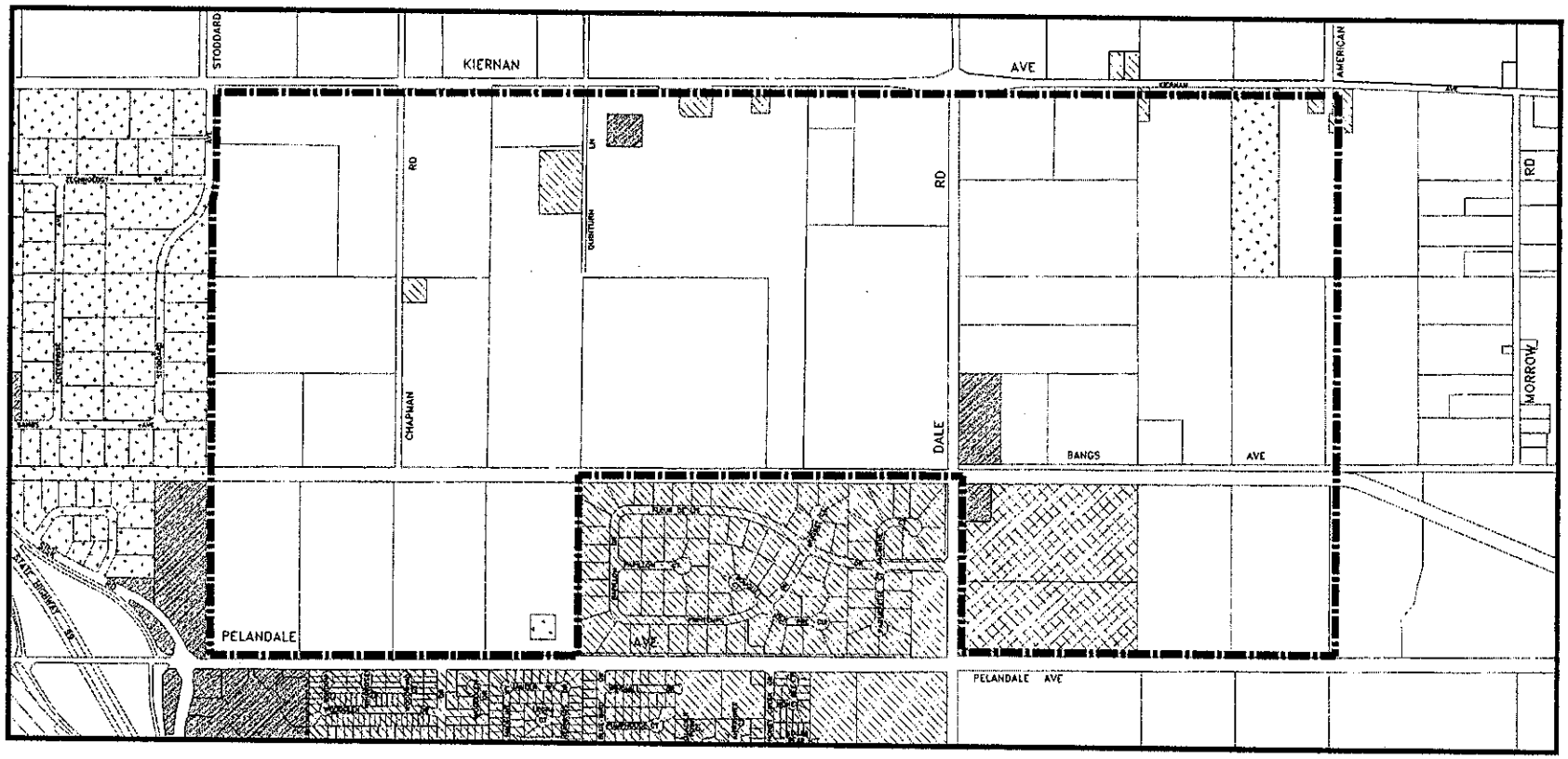
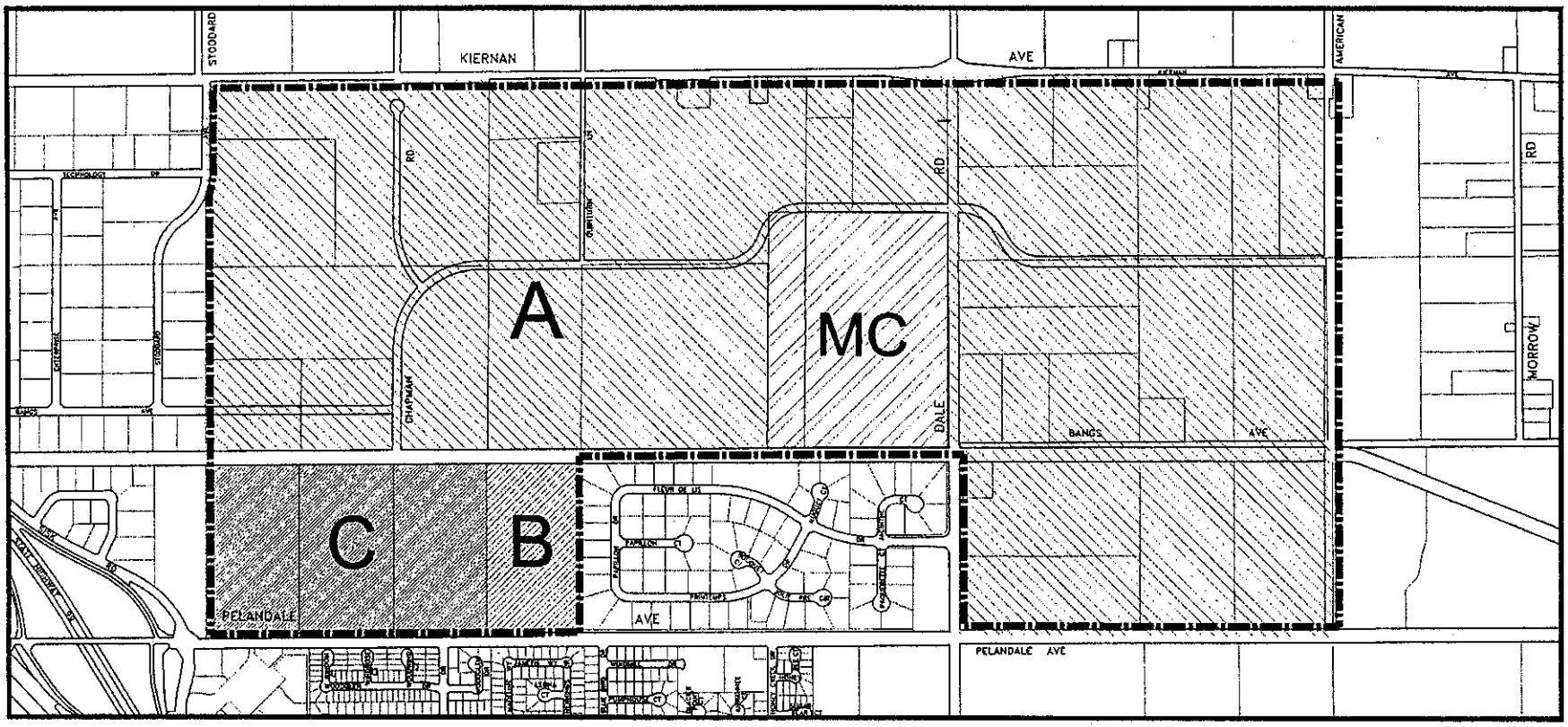


Figure II-3

Existing Land Use

KIERNAN
BUSINESS PARK



Legend :

- Specific Plan Area Boundary
- Area A - Business Park
- Area B - Office
- Subarea MC - Medical Campus Subarea
- Area C - Regional Commercial

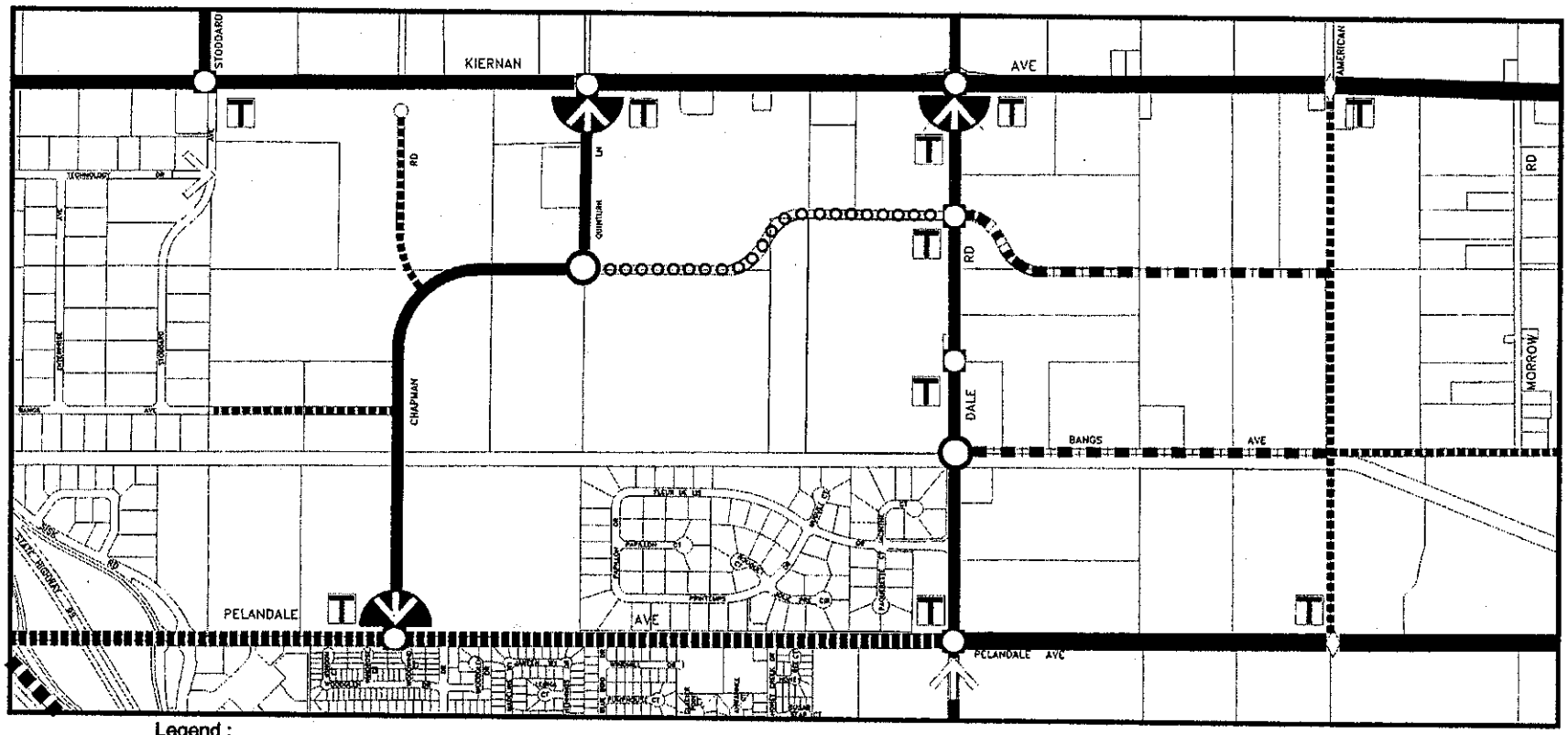
North

0' 1320' 1/4 mile

Figure III-1

Land Use Plan Diagram

KIERNAN BUSINESS PARK



Legend :

- Primary Gateway
- Secondary Entrance
- Roundabout
- Traffic Signal
- Right Turn In/Right Turn Out
- Transit Turnout
- 6 Lane Class B Expressway
- 6 Lane Class C Expressway
- 6 Lane Principal Arterial
- 4 Lane Minor Arterial
- 4 Lane Major Collector
- 2 Lane Industrial Connector
- 2 Lane Minor Connector

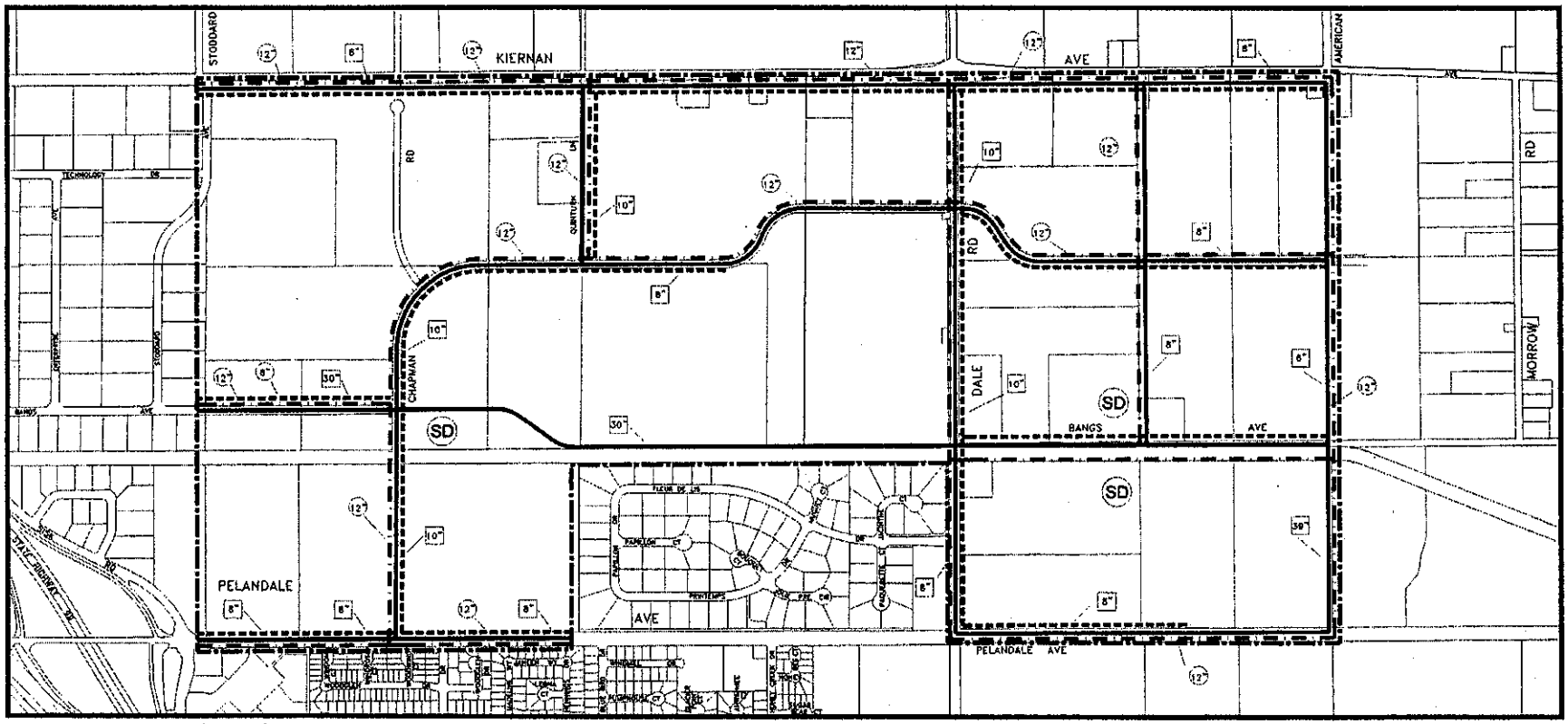
North

0' 1320' 1/4 mile

Figure IV-1

Circulation Plan Diagram

KIERNAN
BUSINESS PARK



Legend :

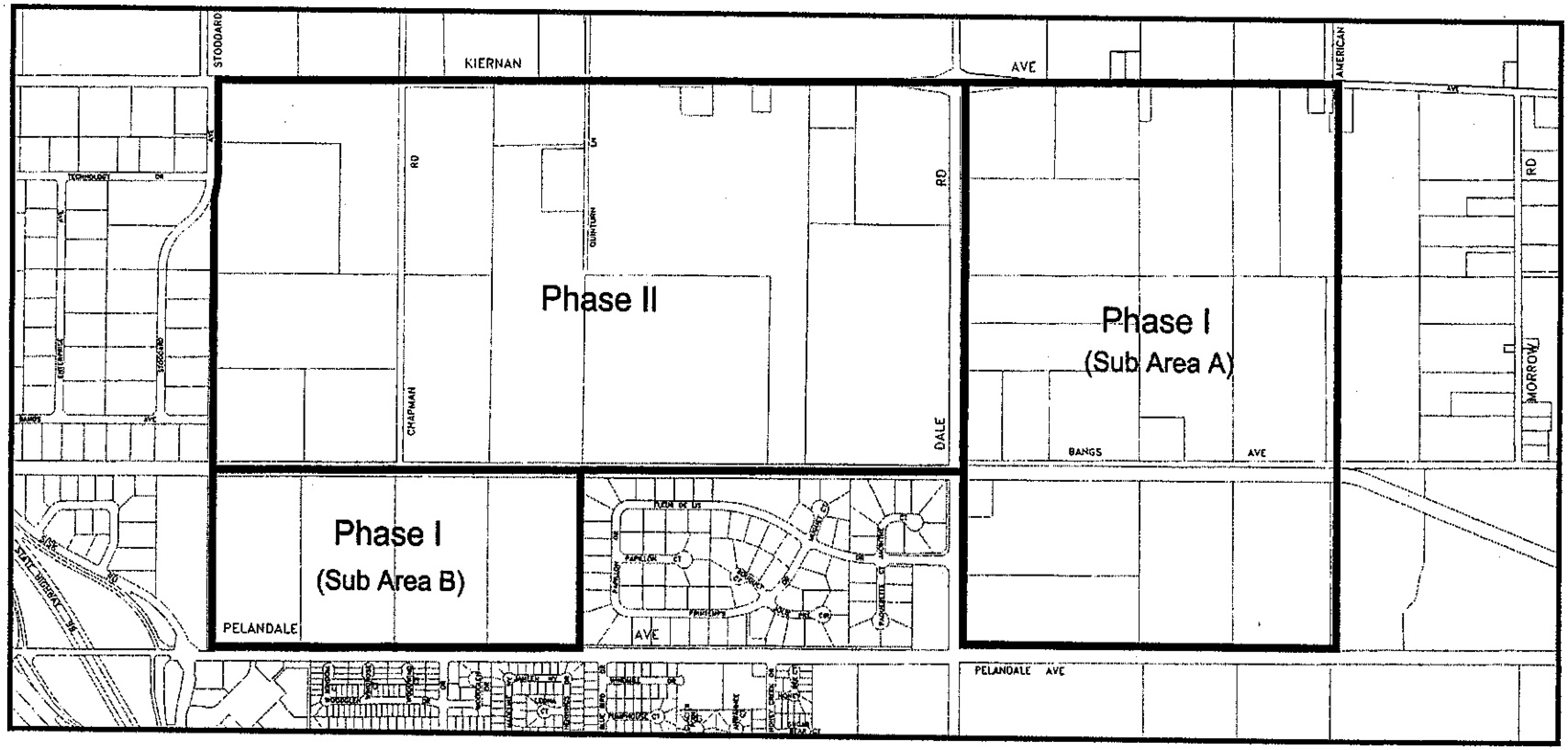
- Specific Plan Area Boundary
- Water Supply Line
- Sanitary Sewer Line
- Major Storm Drain Line
- (SD) Potential Storm Drainage Basin Site

North

0' 1320'
1/4 mile

Figure V-1
Illustrative Public Facilities Plan Diagram

KIERNAN
BUSINESS PARK



Legend :

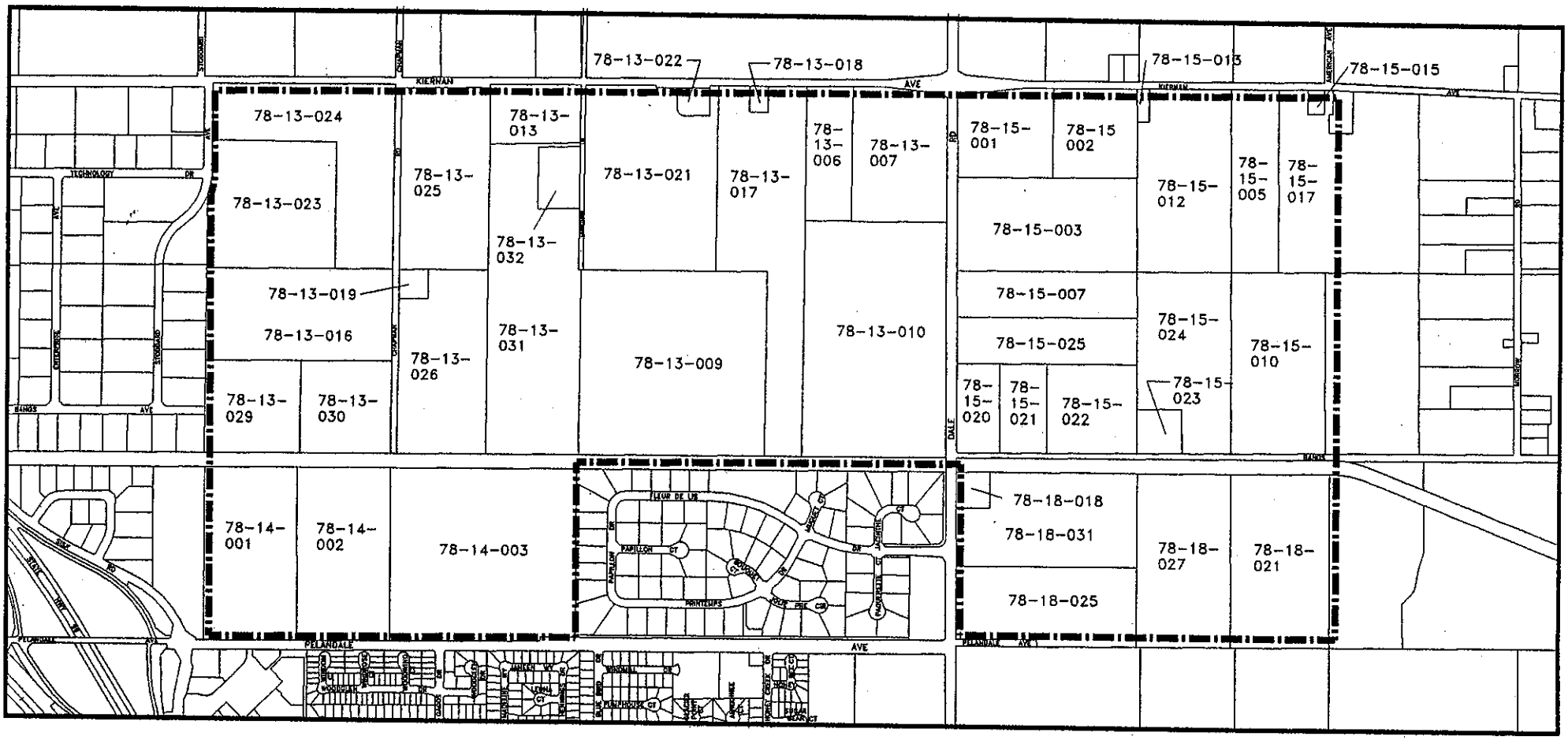
Figure VI-1

Phasing Diagram

KIERNAN
BUSINESS PARK

Appendix A
OWNERSHIP AND PARCELIZATION

◆ ◆ ◆



Legend :

Specific Plan Area Boundary

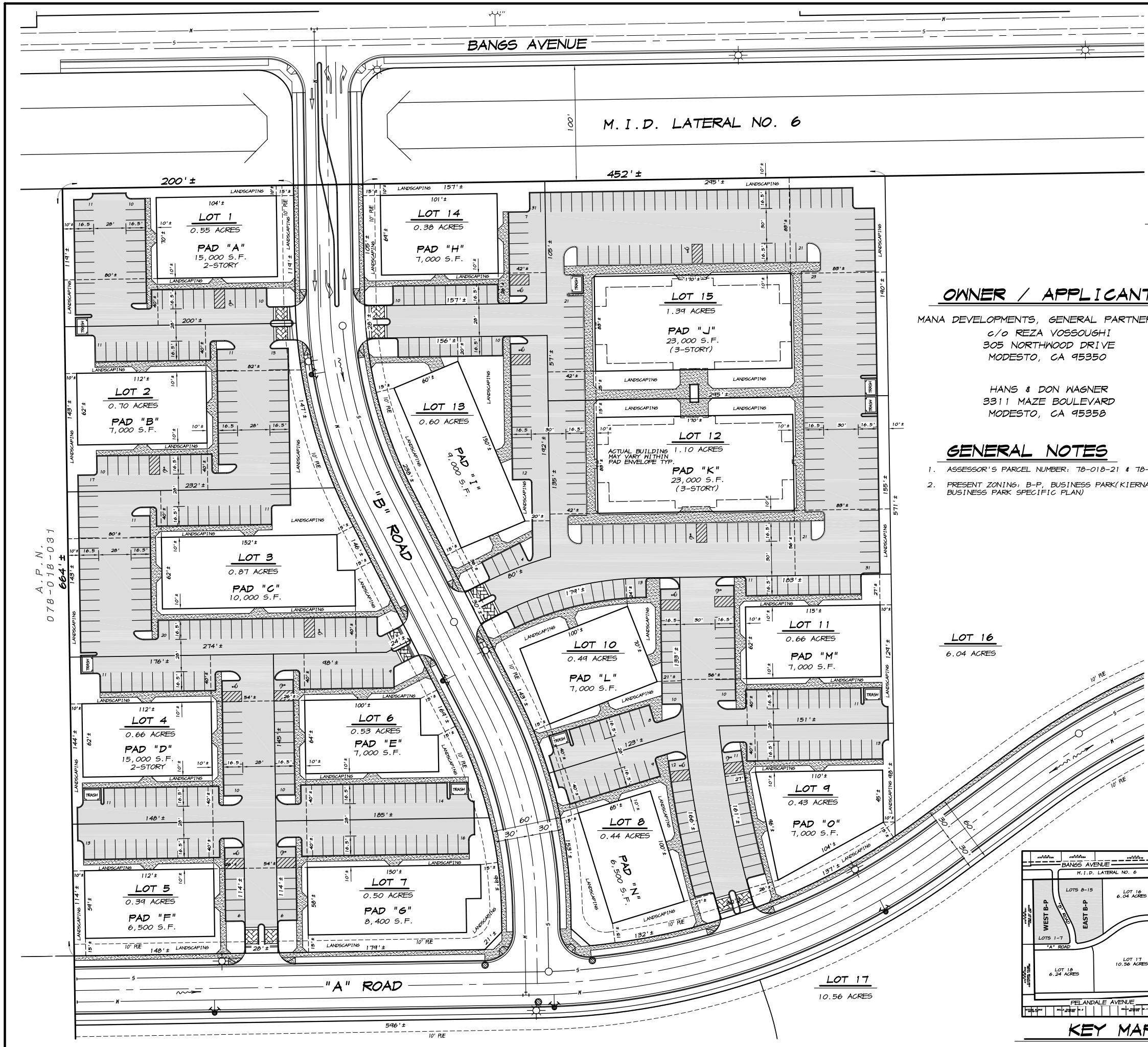
North

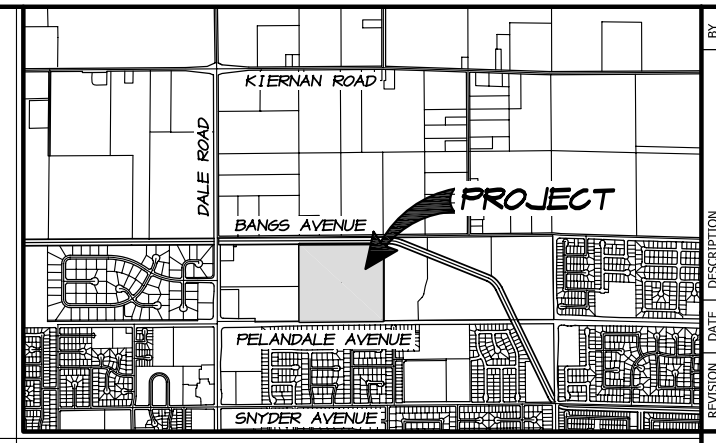
0' 1320'
1/4 mile

Figure A-1
Ownership Map

KIERNAN
BUSINESS PARK

APPENDIX E - KIERNAN BUSINESS PARK SOUTH - TENTATIVE PARCEL MAP





VICINITY MAP

NO SCALE

OWNER / APPLICANT

MANA DEVELOPMENTS, GENERAL PARTNERSHIP
c/o REZA VOSSOUGHI
305 NORTHWOOD DRIVE
MODESTO, CA 95350

HANS & DON WAGNER
3311 MAZE BOULEVARD
MODESTO, CA 95358

GENERAL NOTES

1. ASSESSOR'S PARCEL NUMBER: 78-018-21 & 78-018-27
2. PRESENT ZONING: B-P, BUSINESS PARK(KIERNAN BUSINESS PARK SPECIFIC PLAN)

WEST BUSINESS PARK

BUILDING SUMMARY

BUILDING "A"	=	15,000 #
BUILDING "B"	=	7,000 #
BUILDING "C"	=	10,000 #
BUILDING "D"	=	15,000 #
BUILDING "E"	=	7,000 #
BUILDING "F"	=	6,500 #
BUILDING "G"	=	8,400 #
TOTAL		68,900 #

PARKING SUMMARY

REQUIRED SPACES = 1 STALL PER 300 #
68,900 # / 300 # = 230 STALLS

PROVIDED

REGULAR	236 STALLS
HANDICAP	7 STALLS
TOTAL	243 STALLS

EAST BUSINESS PARK

BUILDING SUMMARY

BUILDING "H"	=	7,000 #
BUILDING "I"	=	9,000 #
BUILDING "J"	=	23,000 #
BUILDING "K"	=	23,000 #
BUILDING "L"	=	7,000 #
BUILDING "M"	=	7,000 #
BUILDING "N"	=	6,500 #
BUILDING "O"	=	7,000 #
TOTAL		89,500 #

PARKING SUMMARY

REQUIRED SPACES = 1 STALL PER 300 #
89,500 # / 300 # = 299 STALLS

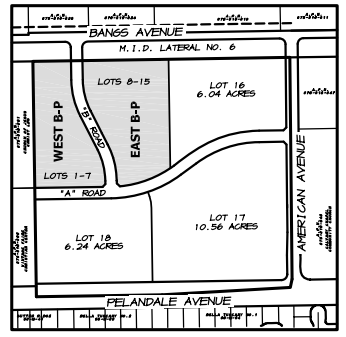
PROVIDED

REGULAR	291 STALLS
HANDICAP	8 STALLS
TOTAL	299 STALLS

SITE SUMMARY:

PROJECT SITE COVERAGE:

BUILDING COVERAGE	=	113,400 # (27% COVERAGE)
LANDSCAPED AREA	=	177,683 # (42% COVERAGE)
PAVED SURFACE AREA	=	130,332 # (31% COVERAGE)
TOTAL SITE	=	420,784 # (100% COVERAGE)



KEY MAP

SCALE: 1"=40'

ASSOCIATED ENGINEERING, INC.
Surveying · Design · Planning
4206 TECHNOLOGY DRIVE
MODESTO, CALIFORNIA 95356
PH: (209) 545-3390 FAX: (209) 545-3875

BY	DESCRIPTION	DATE	REVISION

PLAT TO ACCOMPANY VESTING TENTATIVE PARCEL MAP

PLOT PLAN

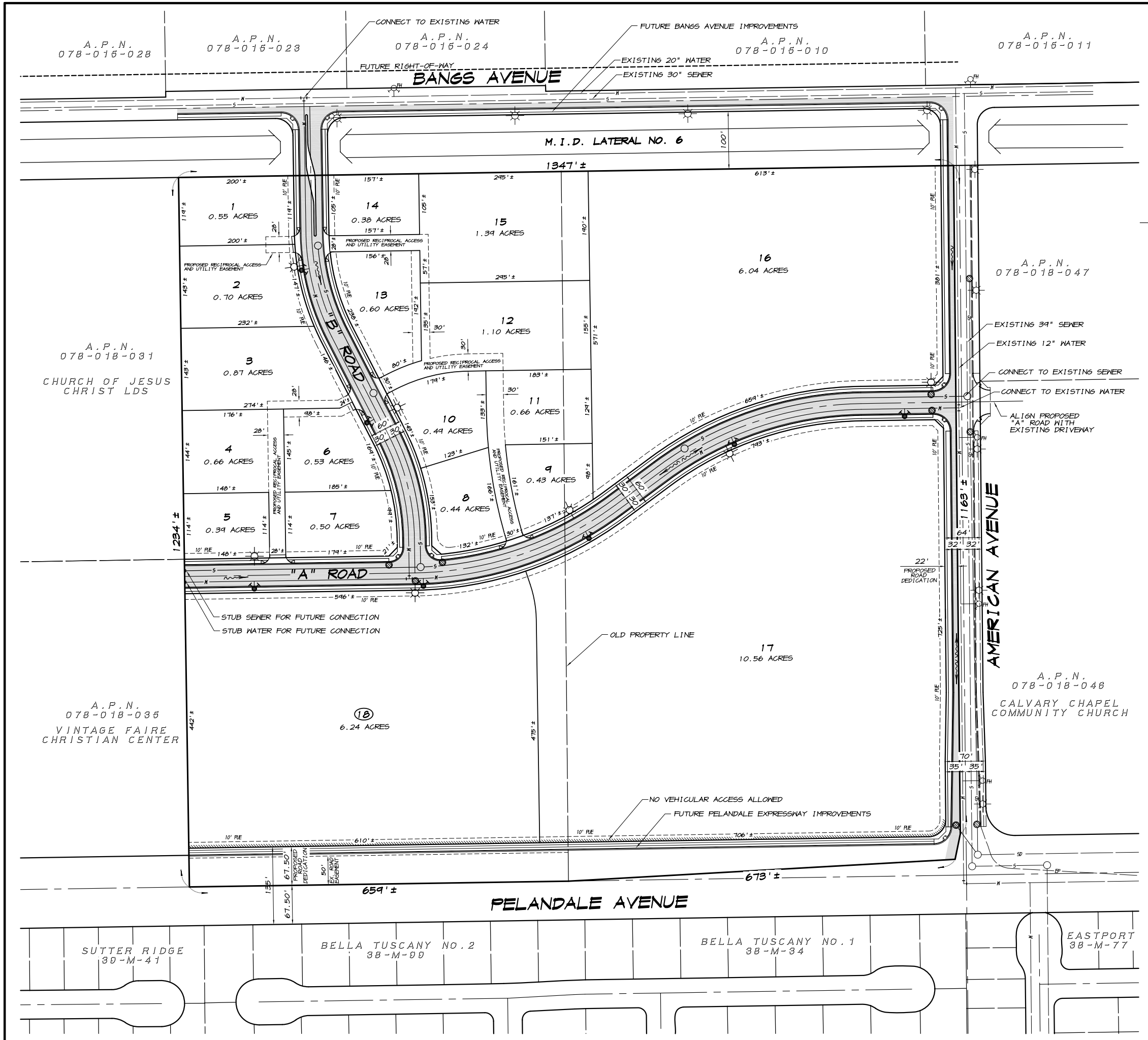
MANA / WAGNER DEVELOPMENT

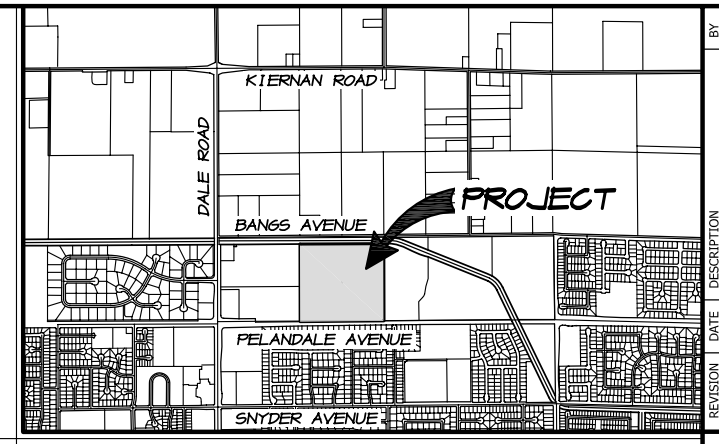
MODESTO CALIFORNIA

RYAN CARREL, R.C.E. 61619
DAVE SKIDMORE, L.S. 7126

DRAWN BY: J.F.
DATE: 2/24/06 9:23
SCALE: NOTED
DWG: 351-PLOT
CHECKED:
JOB #: 351-04

SHEET 1 OF 1





VICINITY MAP

NO SCALE

OWNER / APPLICANT

MANA DEVELOPMENTS, GENERAL PARTNERSHIP
c/o REZA VOSSOUGHI
305 NORTHWOOD DRIVE
MODESTO, CA 95350

HANS & DON WAGNER
3311 MAZE BOULEVARD
MODESTO, CA 95358

GENERAL NOTES

1. ASSESSOR'S PARCEL NUMBER: 78-018-21 & 78-018-27
2. PRESENT ZONING: B-P, BUSINESS PARK(KIERNAN BUSINESS PARK SPECIFIC PLAN)
3. SITE SUMMARY: TOTAL PROJECT SITE = 38.36 ACRES
4. ALL IMPROVEMENTS SHALL BE CONSTRUCTED AS PER THE CITY OF MODESTO'S STANDARD SPECIFICATIONS.
5. STORM DRAINAGE: STORM DRAINAGE TO BE ACCOMMODATED TO CITY OF MODESTO STANDARDS.
6. SEWAGE DISPOSAL: CITY OF MODESTO SYSTEM.
7. WATER SUPPLY: CITY OF MODESTO SYSTEM.
8. NO PUBLIC AREAS ARE PROPOSED.
9. OFF SITE LIGHTING SHALL BE INSTALLED AS PER THE CITY OF MODESTO'S STANDARD SPECIFICATIONS.
10. THE PROPERTY LINE DISTANCES, BEARINGS, AND ALL OTHER DIMENSIONS SHOWN ON THIS MAP ARE TAKEN FROM DEEDS, ASSESSOR'S MAPS, OR BOTH, AND PRELIMINARY FIELD OBSERVATIONS BY OFFICE PERSONNEL AND DO NOT REFLECT AN ACTUAL FIELD SURVEY.
11. UTILITY LINES SHOWN ON THIS MAP ARE BASED ON PRELIMINARY DESIGN AND ARE SUBJECT TO CHANGE AT TIME OF THE DEVELOPMENT OF THE PROJECT IMPROVEMENT PLANS.

LEGEND

- EX. SEWER LINE
- EX. STORM DRAIN LINE
- EX. WATER LINE
- EX. CATCH BASIN
- EX. FIRE HYDRANT
- EX. ELECTROLIER
- PROP. SEWER LINE
- PROP. WATER LINE
- PROP. STORM DRAIN LINE
- PROP. CATCH BASIN
- PROP. MANHOLE
- PROP. FIRE HYDRANT
- PROP. ELECTROLIER
- PUBLIC UTILITY EASEMENT
- DIRECTION OF SURFACE FLOW

SCALE: 1"=80'

REVISION	DATE	DESCRIPTION	BY

ASSOCIATED ENGINEERING, INC.
Surveying · Design · Planning
4206 TECHNOLOGY DRIVE
MODESTO, CALIFORNIA 95356
PH: (209) 545-3390 FAX: (209) 545-3875

VESTING TENTATIVE PARCEL MAP
MANA / WAGNER DEVELOPMENT
MODESTO CALIFORNIA

RYAN CARREL, R.C.E. 61619
DAVE SKIDMORE, L.S. 7126

DRAWN BY: J.F.
DATE: 2/24/06 9:42
SCALE: NOTED
DWG: 351-TPM1
CHECKED:
JOB # 351-04

SHEET 1 OF 1

APPENDIX F - KIERNAN BUSINESS PARK - EAST MASTER PLAN

KIERNAN BUSINESS PARK-EAST
MASTER PLAN
Projected Sewer Flows

28-Sep-06

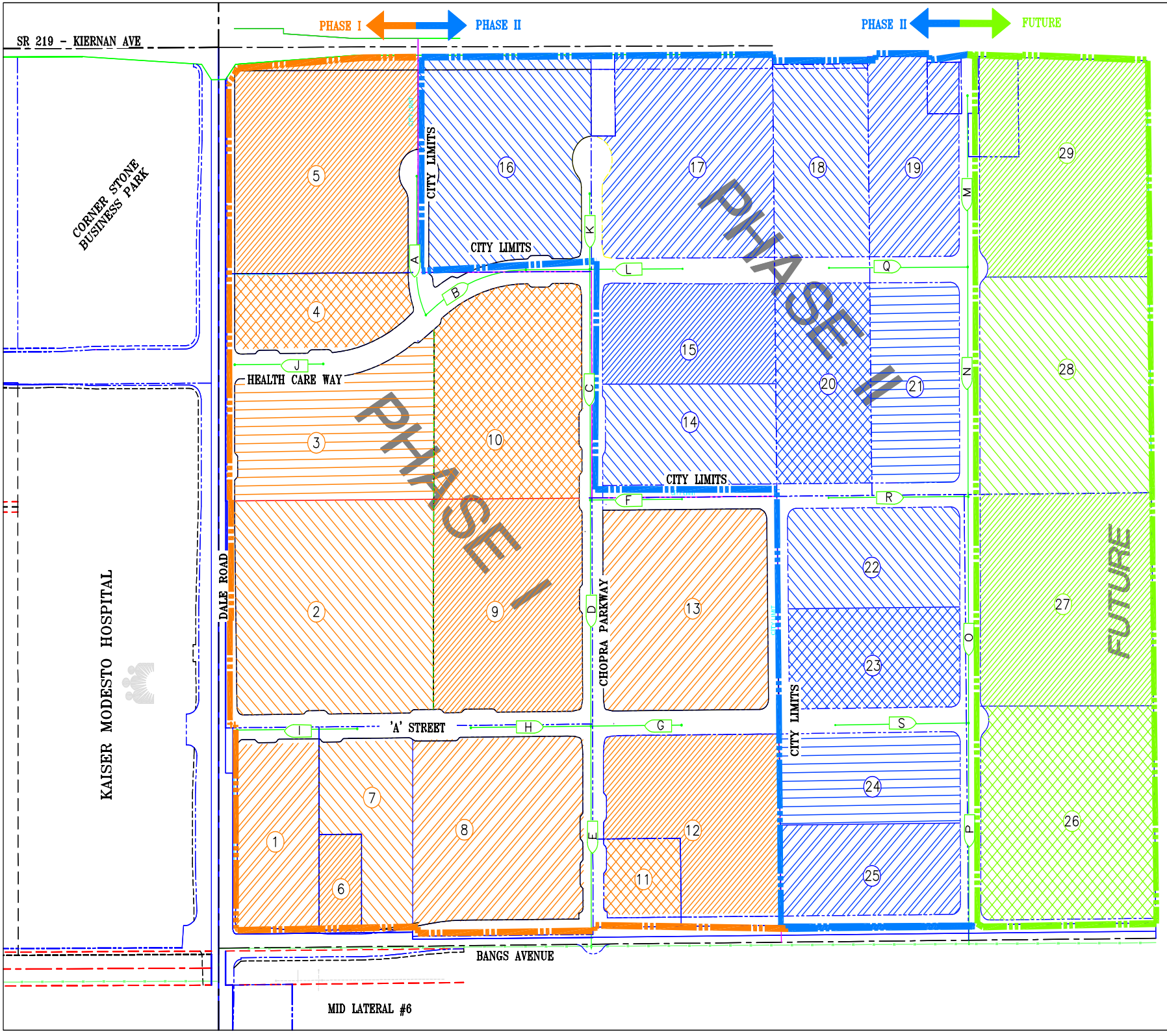
Phase 1

Property No.	Land Use	Size (Acre)	Flows to Pipe	Peak Flow (Gal/Acre/Day)	Infiltration & Inflow (Gal/Acre/Day)	Design Peak Flow (Gal/Day)	Design Peak Flow (Gal/Min)
1	Business Park	3.60	I	7,500	1,000	30,600	21.25
2	Mixed Use	10.05	I	10,450	1,000	115,047	79.89
3	Mixed Use	6.19	J	10,450	1,000	70,911	49.24
4	Mixed Use	3.06	J	10,450	1,000	35,037	24.33
5	Business Park	8.41	A	7,500	1,000	71,521	49.67
7	Business Park	3.71	I	7,500	1,000	31,535	21.90
8	Business Park	7.40	E	7,500	1,000	62,900	43.68
9	MDR	7.52	H	10,450	1,000	86,101	59.79
10	MDR	7.23	C	10,450	1,000	82,790	57.49
11	Business Park	1.43	E	7,500	1,000	12,155	8.44
12	Business Park	6.20	E	7,500	1,000	52,700	36.60
13	Business Park	7.83	G	7,500	1,000	66,555	46.22
Total						**717,851**	**499**

* Property 6 is Assumed Residential w/ Septic Tank (Therefore not included in this study)

Phase 2 & Future

14	Business Park	4.15	F	7,500	1,000	35,275	24.50
15	Business Park	4.15	C	7,500	1,000	35,275	24.50
16	Business Park	8.53	K	7,500	1,000	72,505	50.35
17	Business Park	7.84	L	7,500	1,000	66,640	46.28
18	Business Park	4.28	Q	7,500	1,000	36,380	25.26
19	Business Park	4.27	M	7,500	1,000	36,295	25.20
20	Business Park	4.55	R	7,500	1,000	38,675	26.86
21	Business Park	4.22	N	7,500	1,000	35,870	24.91
22	Business Park	4.09	R	7,500	1,000	34,765	24.14
23	Business Park	4.09	S	7,500	1,000	34,765	24.14
24	Business Park	3.79	S	7,500	1,000	32,215	22.37
25	Business Park	3.79	P	7,500	1,000	32,215	22.37
26	Business Park	8.57	P	7,500	1,000	72,845	50.59
27	Business Park	8.57	O	7,500	1,000	72,845	50.59
28	Business Park	8.78	N	7,500	1,000	74,630	51.83
29	Business Park	8.78	M	7,500	1,000	74,630	51.83
Total						**785,825**	**546**



Kinley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

CITY of MODESTO

CITY OF MODESTO
KIERNAN BUSINESS PARK-EAST
SEPTEMBER 18, 2006

SANITARY SEWER MASTER PLAN

APPENDIX Fa: WATER SUPPLY ASSESSMENT, KIERNAN BUSINESS PARK – EAST, KIERNAN BUSINESS PARK - WEST



City of Modesto
Water Supply Assessment
Kiernan Business Park – East
Kiernan Business Park – South

Final Report

Prepared for

Harris & Associates

City of Modesto

Prepared by

West Yost Associates

April 2007

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WATER SUPPLY ASSESSMENT
KIERNAN BUSINESS PARK – EAST
KIERNAN BUSINESS PARK - SOUTH
FINAL REPORT

INTRODUCTION

Need For and Purpose of Water Supply Assessment

Senate Bill 610 (SB 610) was approved by Governor Davis on October 9, 2001 and made effective January 1, 2002. SB 610 amended state law to improve the link between information on water supply availability and certain land use decisions made by cities and counties. Specifically, certain sections of the California Water Code were amended to require coordination between land use lead agencies and public water purveyors. The purpose of this coordination is to ensure that prudent water supply planning has been conducted, and that planned water supplies are adequate to meet existing demands, anticipated demands from approved projects and tentative maps, and the demands of proposed projects.

The amended Water Code Sections 10910 through 10915 (inclusive) require land use lead agencies to: (1) identify the responsible public water purveyor for a proposed development project; and (2) request from the responsible purveyor, a Water Supply Assessment (WSA). The purpose of the WSA is to demonstrate the sufficiency of the purveyors' water supplies to satisfy the water demands of the Proposed Projects, while still meeting the current and projected water demands of existing customers. Water Code Sections 10910 through 10915 delineate the specific information that must be included in the WSA.

This WSA for the Kiernan Business Park – East Project (KBP-East Project) and Kiernan Business Park – South Project (KBP-South Project) (also referred to as Proposed Projects when discussed jointly) has been prepared by West Yost Associates (WYA), as requested by the City of Modesto (City), the responsible water purveyor for the Proposed Projects.

Water Supply Assessment Format and Organization

The format of this WSA is intended to follow Water Code Sections 10910 through 10915 to clearly delineate compliance with the specific requirements for a WSA. The WSA includes the following sections:

- Description of Proposed Projects
- Required Determinations
- City of Modesto Water Service Area
- City of Modesto Water Demands

- City of Modesto Water Supplies
- Determination of Water Supply Sufficiency
- Water Supply Assessment Approval Process

Relevant citations of Water Code Sections 10910 through 10915 are included throughout this WSA in *italics* to demonstrate compliance with the requirements of SB 610.

Acronyms and Abbreviations

The following acronyms and abbreviations have been used throughout this WSA.

af	Acre-feet
af/ac/yr	Acre-feet per acre per year
af/yr	Acre-feet per year
ASR	Aquifer Storage and Recovery
BP	Business Park
CEQA	California Environmental Quality Act
City	City of Modesto
CPD	Comprehensive Planning District
DHS	California Department of Health Services
du	Dwelling units
DWR	California Department of Water Resources
EC	Electrical Conductivity
EIR	Environmental Impact Report
Et	Evapotranspiration
gpd	Gallons per day
gpm	Gallons per minute
ICI	Industrial, Commercial and Institutional
KBP-East	Kiernan Business Park East Project
KBP-South	Kiernan Business Park South Project
KBPSP	Kiernan Business Park Specific Plan
MCL	Maximum contaminant level
MHDR	Medium-High Density Residential
mgd	Million gallons per day
mg/L	Milligrams per liter
MID	Modesto Irrigation District
MRWTP	Modesto Regional Water Treatment Plant

MU	Mixed Use
OID	Oakdale Irrigation District
PCE	Tetrachloroethylene
SB 610	California State Senate Bill 610 of 2001
sf	Square feet
SOI	Sphere of Influence
STRGBA	Stanislaus and Tuolumne Rivers' Groundwater Subbasin Association
TCE	Trichloroethylene
TDA	Treatment and Delivery Agreement
TDS	Total Dissolved Solids
TGBA	Turlock Groundwater Basin Association
TID	Turlock Irrigation District
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VOC	Volatile organic compound
WSA	Water Supply Assessment
WTP	Water Treatment Plant
WYA	West Yost Associates

DESCRIPTION OF PROPOSED PROJECTS

As discussed above, this WSA includes two Proposed Projects:

1. Kiernan Business Park – East Project (KBP-East Project), and
2. Kiernan Business Park – South Project (KBP-South Project).

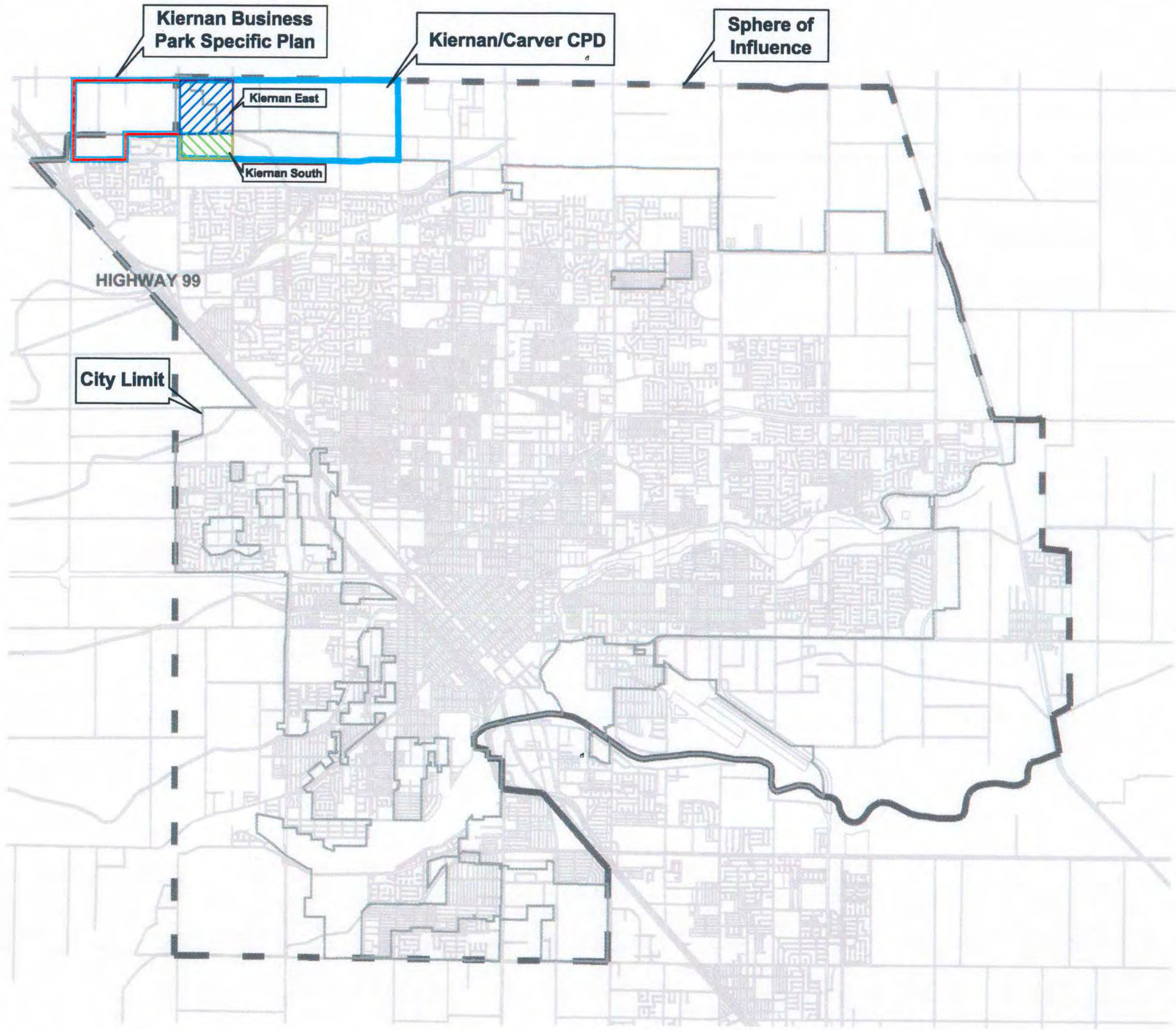
The locations of the two Proposed Projects are shown on Figure 1. Each project is described in detail below.

Kiernan Business Park – East Project

KBP-East Project Location

The Kiernan Business Park – East Project (KBP-East Project) is located in Stanislaus County, adjacent to and within the northern portion of the City of Modesto (City). The KBP-East Project is located within the Kiernan/Carver Comprehensive Planning District (CPD) of the City's General Plan, and within the Kiernan Business Park Specific Plan (KBPSP) area. The KBPSP area encompasses 614 acres, bordered on the north by Kiernan Avenue, the south by Pelandale Avenue, on the east by American Avenue, and generally Stoddard Avenue to the west. The area

O:□Clients□446 Harris & Associates□02-06-01 Kiernan Business Park-East□CAD□Figures□466-02-06-01-WSA-FIG01.dwg 1-29-07 03:07:26 PM cng



LEGEND

- CITY LIMIT BOUNDARY
- SPHERE OF INFLUENCE BOUNDARY
- CPD BOUNDARY
- SPECIFIC PLAN BOUNDARY
- KIERNAN BUSINESS PARK EAST
- KIERNAN BUSINESS PARK SOUTH

N

0 4500 9000

SCALE IN FEET

Figure 1

City of Modesto

KIERNAN BUSINESS PARK WSA

PROJECT BOUNDARIES

WEST YOST ASSOCIATES

Consulting Engineers

includes the 49-acre Kaiser Foundation Hospital Medical Campus and the 39-acre Cornerstone Business Park located on the west side of Dale Road.

The KBP-East Project site is comprised of approximately 153.9 gross acres and is located on the east side of Dale Road, south of Kiernan Avenue and north of Bangs Avenue. Figure 1 shows the location of the KBP-East Project.

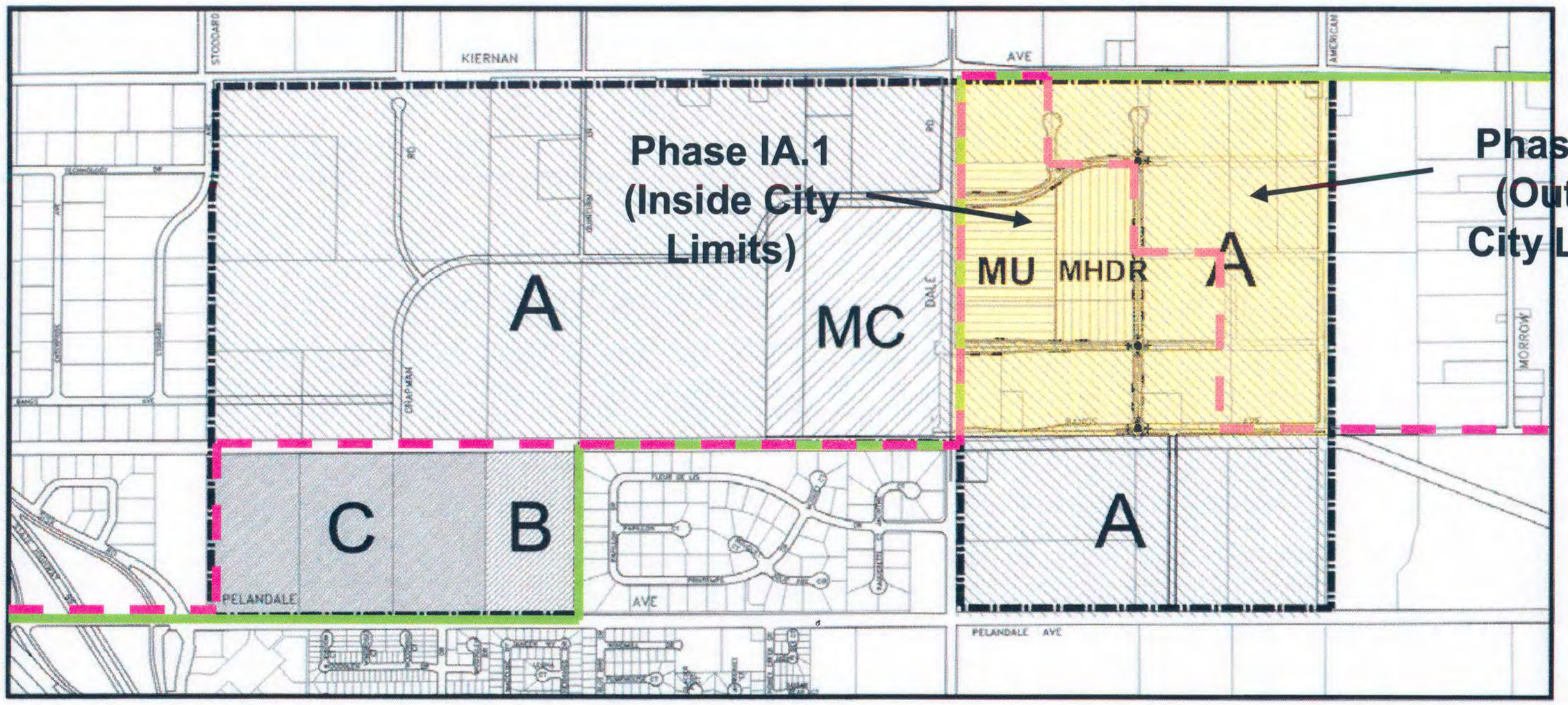
As shown on Figure 2, the KBP-East Project is not entirely located within the Modesto City Limits. Within the 153.9-acre KBP-East Project area, 86.4 gross acres in the western portion of project area (known as Phase IA.1) are within the City limits, and 67.5 gross acres in the eastern portion of the project area (known as Phase IA.2) are located within the KBPSP area, within the City's Sphere of Influence (SOI), but not yet annexed to the City.

The current land use on the KBP-East Project area is agricultural with a few single-family residences. The KBP-East Project area is bounded by agricultural land on the north, a future business park on the south, rural residential and agricultural on the east, and a medical facility and business park on the west.

KBP-East Project Proposed Land Uses and Acreages

According to the September 2006 Project Description for the proposed KBP-East Project, the area includes a mix of business park, mixed use development, and medium-high density residential covering 153.90 gross acres (132.32 net acres). The KBP-East Project area includes 95.47 net acres of business park, 19.30 net acres of mixed use (retail/commercial and residential/office), 14.75 net acres of medium-high density residential, and a 2.80 net acre substation (see Figure 2). Roadways within the KBP-East Project area make up the remaining 21.58 acres.

As shown in Table 1, the existing land use designation for the proposed KBP-East Project area within the KBPSP is Business Park (BP). The proposed KBP-East Project would convert portions of the land designated as BP to a mixture of Mixed-Use (MU) and Medium-High Density Residential (MHDR) to better serve the adjacent medical campus and BP.



Legend :

- Specific Plan Area Boundary
- Area A - Business Park
- Area B - Office
- Subarea MC - Medical Campus Subarea
- Area C - Regional Commercial
- Subarea MU - Mixed Use Subarea
- Subarea MHDR - Medium High Density Residential Subarea
- Kiernan Business Park East Project
- City of Modesto City Limits
- City of Modesto Sphere of Influence

North

0' 1320'

1/4 mile

Land Use Plan Diagram

Source: Kiernan Business Park Specific Plan, Administrative Draft November 2006

City of Modesto Kiernan Business Park East and South: Water Supply Assessment

Figure 2. Kiernan Business Park—East Project

WEST YOST ASSOCIATES
Consulting Engineers

Table 1. Proposed Kiernan Business Park - East Project Land Use

Land Use Designation	City of Modesto Kiernan Business Park Specific Plan (KBPSP) KBP-East Project Area[a]		Kiernan Business Park-East Project[b] (KBP-East Project)	
	Gross (Net) Acres	Number of Units/Square Footage (sf)	Gross (Net) Acres	Number of Units/ Square Footage (sf)
Business Park (BP)	153	Specific breakdown for project area not provided	114.79 (95.47 net acres)	1,498,224 gross sf
Mixed Use (MU): Medium-High Density Residential (MHDR)	(14.75 net acres)[a]		16.85 (14.75 net acres)	266 to 354 dwelling units (399,000 to 531,000 gross sf)
Mixed Use (MU): Retail/Commercial and Residential/Office	(19.30 net acres)[a]		22.26 (19.30 net acres)	Retail/Commercial: 420,354 gross sf Residential/Office: 64,000 gross sf 80 dwelling units
Substation	0		(2.80 net acres)	
Total	153		153.90 (132.32 net acres)[c]	Residential: 346 to 434 dwelling units (399,000 to 531,000 gross sf) Business Park/Mixed Use (BP/MU) (Retail/Commercial/Office): 1,982,578 gross sf

(a) Source: City of Modesto, Kiernan Business Park Specific Plan, last amended August 10, 2004, currently being amended (Administrative Draft dated November 2006).
(b) Source: Project Description for Kiernan Business Park-East entitlements, dated September 25, 2006.
(c) Roadways within the KBP-East Project area make up the remaining 21.58 acres (difference between total gross acres and total net acres.

KBP-East Project Phasing and Timing

The proposed KBP-East Project is proposed to be developed in two phases. Phase IA.1 would include the portions of the project area currently located within the City limits and would include 40.62 net acres of business park, 19.30 net acres of mixed use (retail/commercial and residential/office), and 14.75 net acres of medium density residential. Phase IA.2 would include the portions of the project area currently located outside of the City limits and would include 54.85 net acres of business park and a 2.80 net acre substation.

Phase IA.1 would likely be developed first, as this portion of the project is currently within City Limits, and would not require annexation. Phase IA.2 would likely then be developed sometime after Phase IA.1. The timing of the phases of the KBP-East Project is unclear. For purposes of preparing this WSA, it has been assumed that the timing of development of the KBP-East Project will be consistent with the KBPSP, for which appropriate timing assumptions have been incorporated into the City's 2005 UWMP water demand projections.

It should be noted that for this WSA, the total project area (including both Phases IA.1 and IA.2), has been evaluated to account for overall potential water supply impacts resulting from the overall project. Potential water supply impacts resulting from individual development phases have not been evaluated for this WSA.

KBP-East Project Water Demand

Based on the proposed land uses for the KBP-East Project, the projected water demand for the KBP-East Project has been calculated. Unit water use factors were previously developed by WYA for the City as part of the City of Modesto Water System Hydraulic Model Update and other related studies. Table 2 summarizes the City's unit water use factors for the land use designations applicable to the KBP-East Project.

Table 2. City of Modesto Unit Water Use Factors for KBP-East Project[(a)]

Land Use Designation	Unit Water Use Factor[(b,c)]
Business Park (BP)	2.0 af/ac/yr
Mixed Use (MU): Retail/Commercial	2.0 af/ac/yr
Mixed Use (MU): Residential/Office	225 gpd/du
Medium-High Density Residential (MHDR)(attached)(18-24 du/acre)	225 gpd/du
Landscaped Roadway Medians/Shoulders	4.5 af/ac/yr

(a) As developed in the City of Modesto Final Water Demand Evaluation, prepared by West Yost & Associates, March 19, 2003.
(b) Accounts for indoor and outdoor water uses.
(c) Af/ac/yr = acre-feet per acre per year; gpd/du = gallons per day per dwelling unit.

The water demand calculations for the KBP-East Project have been performed using the most applicable standard water use factor for each land use designation. For the residential land use designations, because information regarding the number of dwelling units is available, the standard water use factor in gallons per day per dwelling unit (gpd/du) has been utilized. For the Business Park and Mixed Use land use designations, although square footages have been specified for retail/commercial space (see Table 1), the standard water use factor in acre-feet per acre per year (af/ac/yr) has been utilized to account for both indoor and outdoor water uses.

Table 3 presents the projected water demand for the KBP-East Project. As shown, the projected water demand for buildout of the KBP-East Project is estimated to be 363 acre-feet per year (af/yr). This estimated water demand is about 55 af/yr higher than the estimated water demand for the Project area under the previous land use designation of Business Park only. This increase in water demand is primarily due to the addition of the medium-high density residential land uses within the KBP-East Project area.

The projected water demand for the KBP-East Project area (363 af/yr) is included in the City's 2005 Urban Water Management Plan (UWMP) as a portion (approximately 30 percent) of the KBPSP area estimated water demand of approximately 1,230 af/yr[1].

Kiernan Business Park – South Project

KBP-South Project Location

The KBP-South Project is located in Stanislaus County, adjacent to and within the northern portion of the City. The KBP-South Project is located within the Kiernan/Carver CPD of the City's General Plan and within the KBPSP area. The KBPSP area encompasses 614 acres, bordered on the north by Kiernan Avenue, the south by Pelandale Avenue, on the east by American Avenue, and generally Stoddard Avenue to the west. The area includes the 49-acre Kaiser Foundation Hospital Medical Campus and the 39-acre Cornerstone Business Park located on the west side of Dale Road.

The KBP-South Project site is comprised of approximately 72 acres and is located on the east side of Dale Road, south of Bangs Avenue and north of Pelandale Avenue. Figure 1 shows the location of the KBP-South Project.

As shown on Figure 1, the KBP-South Project is entirely located within the Modesto City Limits.

The current land use on the KBP-South Project area is agricultural and rural in character. The KBP-South Project area is bounded by agricultural land and some single-family residences on the north, residential development on the south and west, and rural residential and agricultural on the east.

KBP-South Project Proposed Land Uses and Acreages

Consistent with the KBPSP, the proposed KBP-South Project area is proposed to be developed as Business Park, covering approximately 72 acres (see Figure 3).

Also included in this WSA for the KBP-South Project are acreages and water demands associated with landscaping along the perimeter roadways (Bangs Avenue, American Avenue, Pelandale Avenue, and Dale Road) and the Modesto Irrigation District (MID) right-of-way (ROW) on the northern edge of the KBP-South Project. Acreages for the perimeter roadways and ROW have

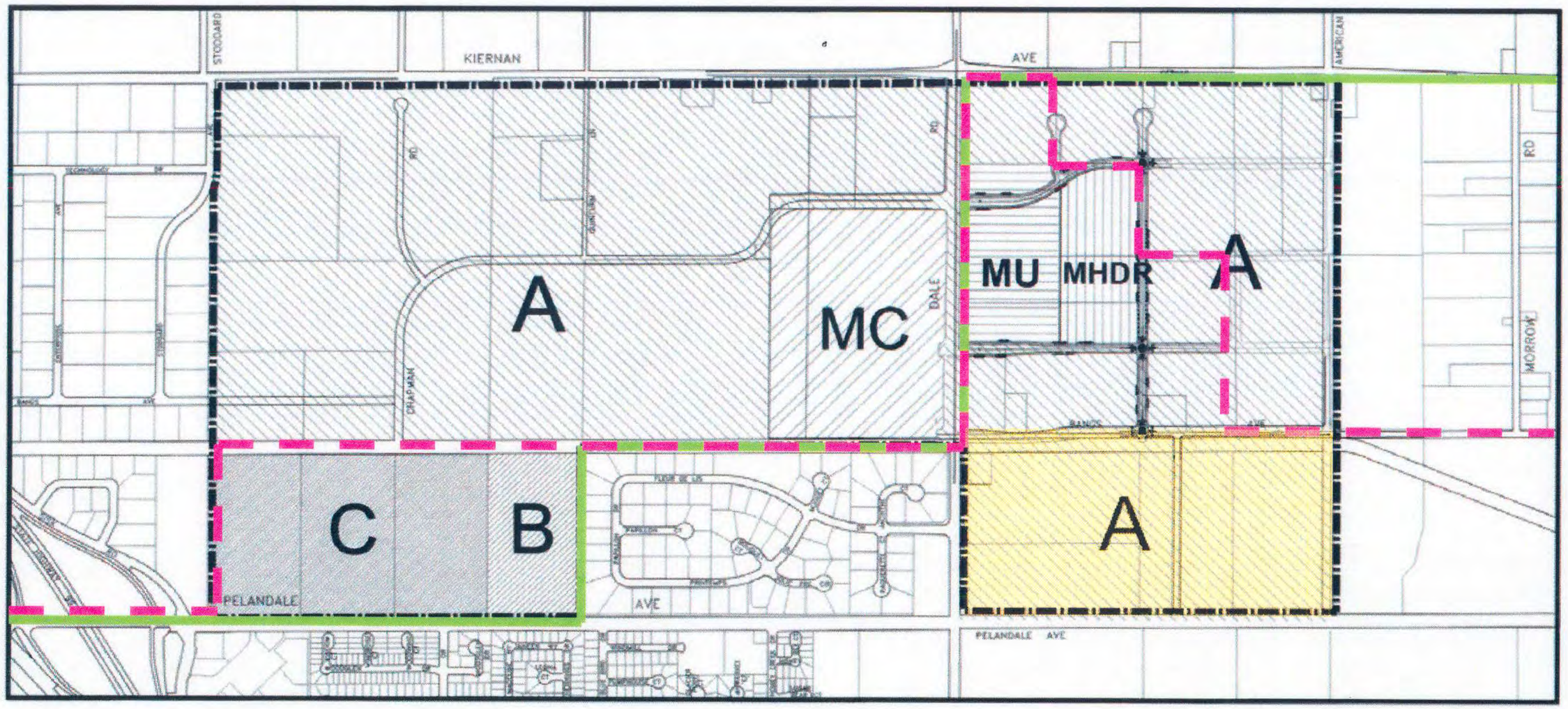
[1] The estimated water demand for KBPSP area (1,230 af/yr) was determined by multiplying the overall area of the KBPSP (614.3 acres) by the unit water use factor for Business Park land use (2.0 af/ac/yr).

Table 3. Water Demand Estimate for Kiernan Business Park - East (KBP-East)

Land Use Data [a]				Water Use Factor				Calculated Total Water Demand, af/yr
Land Use Designation	Acres	Number of Dwelling Units (DU)	Square Footage (sq ft)	gpcd	gpd/DU	af/ac/yr	gpd/sq ft	
Phase IA.1								
Business Park (BP)	40.62					2.0		81
Mixed Use (MU): Retail/Commercial	19.30					2.0		39
Mixed Use (MU): Residential/Office	0.00	80			225			20
Medium High Density Residential (MHDR)	14.75	266-354			225			89
Roadways [b]	11.73					4.5		13
Substation	0.00					0.0		0
Phase IA.1 Total	86.40	346-434						242
Phase IA.2								
Business Park (BP)	54.85					2.0		110
Mixed Use (MU): Retail/Commercial	0.00					2.0		0
Mixed Use (MU): Residential/Office	0.00				225			0
Medium High Density Residential (MHDR)	0.00				225			0
Roadways [b]	9.85					4.5		11
Substation	2.80					0.0		0
Phase IA.2 Total	67.50	346-434						121
Total KBP East Project								
Business Park (BP)	95.47					2.0		191
Mixed Use (MU): Retail/Commercial	19.30					2.0		39
Mixed Use (MU): Residential/Office	0.00	80			225			20
Medium High Density Residential (MHDR)	14.75	266-354			225			89
Roadways [b]	21.58					4.5		24
Substation	2.80					0.0		0
Proposed Project Total	**153.90**	**346-434**						**363**
Previous Land Use Designation in Kiernan Business Park Specific Plan								
Business Park (BP)	153.90					2.0		308
Increase (Decrease) in Water Demand								55

[a] Land use data from Kiernan Business Park-East Projected Description dated September 25, 2006. Total acreage confirmed by February 2, 2007 e-mail from Jim Bissell, Harris & Associates.

[b] Assumes 25 percent of total roadway acres are landscaped (i.e. medians and shoulders) and need to be irrigated, based on roadway cross-sections provided in Kiernan Business Park-East Projected Description dated September 25, 2006.



Legend :

- Specific Plan Area Boundary
- Area A - Business Park
- Area B - Office
- Subarea MC - Medical Campus Subarea
- Area C - Regional Commercial
- Subarea MU - Mixed Use Subarea
- Subarea MHDR - Medium High Density Residential Subarea
- Kiernan Business Park South Project
- City of Modesto City Limits
- City of Modesto Sphere of Influence

North

0' 1320'
1/4 mile

Land Use Plan Diagram

Source: Kiernan Business Park Specific Plan, Administrative Draft November 2006

City of Modesto Kiernan Business Park East and South: Water Supply Assessment

Figure 3. Kiernan Business Park—South Project

WEST YOST ASSOCIATES
Consulting Engineers

been estimated to be 13.4 acres, assuming half of the total roadway width for the perimeter of the KBP-South Project and the entire MID ROW width.

As shown in Table 4, the existing land use designation for the proposed KBP-South Project area within the KBPSP is Business Park. As stated above, the proposed development of the proposed KBP-South Project area is Business Park, comparable with the KBPSP.

Table 4. Proposed Kiernan Business Park-South Project Land Use

Land Use Designation	KBPSP KBP-South Area[(a)]		KBP-South Project[(b)]	
	Gross Acres	Number of Units/ Non-Residential, sf	Gross Acres	Number of Units/ Non-Residential, sf
Business Park	72	Specific breakdown for project area not provided	72	15 one- and two-story buildings in northwestern portion of eastern half of project; total square footage estimated to be 231,000, sq. Remaining areas to be developed as business park; however, detailed information not available.
Perimeter Roadways and MID ROW	13		13	Based on half of total roadway width for perimeter of KBP-South Project + 100-foot wide MID ROW
Total	85		85	To be determined

(a) Source: City of Modesto, Kiernan Business Park Specific Plan, last amended August 10, 2004, currently being amended (Administrative Draft dated November 2006).

(b) Source: Plot Plan Professional Business Park for Mana/Wagner Development, prepared by Associated Engineering, Inc., November 9, 2005 and e-mail from Jim Bissell of Harris & Associates dated February 2, 2007.

KBP-South Project Phasing and Timing

The proposed KBP-South Project is proposed to be developed in several phases. Only the northwest portion of the 38.3-acre eastern half of the proposed KBP-South Project area has been planned at any level of detail. Plans for this area include fifteen one- and two-story buildings with building pad areas ranging from 6,500 to 23,000 sf.[2] Total proposed building square footage is estimated at 231,000 sf. Two roadways are planned for the eastern half of the proposed

[2] Per Plot Plan Professional Business Park for Mana/Wagner Development, prepared by Associated Engineering, Inc., November 9, 2005.

KBP-South Project area: Road "A" is proposed to run east-west through the middle of the project area; Road "B" is proposed to run north-south from Bangs Avenue to Road "A".[3]

The remaining parcels within the eastern half of the proposed KBP-South Project area, and those within the western half, are not proposed for development at this time; however, according to the Project Description prepared by Mana/Wagner Development, these areas are planned as Business Park under the KBPSP, and development of a future business park is anticipated for these parcels.[4]

The currently planned northwest portion of the eastern half of the proposed KBP-South Project would likely be developed first, as this portion of the project is currently planned. The remaining portions of the KBP-South Project would likely then be developed sometime later. The timing of the phases of the KBP-South Project is unclear. For purposes of preparing this WSA, it has been assumed that the timing of development of the KBP-South Project will be consistent with the KBPSP, for which appropriate timing assumptions have been incorporated into the City's 2005 UWMP water demand projections.

It should be noted that for this WSA, development of the total proposed KBP-South Project area (including perimeter roadways and the MID ROW) (approximately 85 acres, including those areas currently and not currently planned) has been evaluated to account for the overall potential water supply impacts resulting from the overall project; potential water supply impacts resulting from individual development phases have not been evaluated for this WSA.

KBP-South Project Water Demand

Based on the proposed land uses for the KBP-South Project, the projected water demand for the KBP-South Project has been calculated. Unit water use factors were previously developed by WYA for the City as part of the City of Modesto Water System Hydraulic Model Update, and were documented in the Final Water Demand Evaluation Technical Memorandum dated March 19, 2003. Table 5 summarizes the City's unit water use factors for the land use designations applicable to the KBP-South Project.

Table 5. City of Modesto Unit Water Use Factors for the KBP – South Project[(a)]

Land Use Designation	Unit Water Use Factor[(b)]
Business Park (BP)	2.0 af/ac/yr
Landscaped Roadway Medians/Shoulders/MID ROW	4.5 af/ac/yr

(a) As developed in the City of Modesto Final Water Demand Evaluation, prepared by West Yost & Associates, March 19, 2003.

(b) Accounts for indoor and outdoor water uses.

[3] Per Vesting Tentative Parcel Map for Mana/Wagner Development, prepared by Associated Engineering, Inc., February 24, 2006.

[4] Per Project Description prepared by Mana/Wagner Development, not dated.

The water demand calculations for the KBP-South Project have been performed using the most applicable standard water use factor for each land use designation. For the Business Park land use designation, although square footages have been specified for proposed buildings in a portion of the project area (see Table 4), the standard water use factor in af/ac/yr has been utilized to account for both indoor and outdoor water uses.

Table 6 presents the projected water demand for the KBP-South Project. As shown, the projected water demand for buildout of the KBP-South Project is estimated to be 148 af/yr, based on the limited, but best currently available, data regarding anticipated land uses.

The projected water demand for the KBP-South East Project area (148 af/yr) is included in the City's 2005 UWMP as a portion (approximately 12 percent) of the KBPSP area estimated water demand of approximately 1,230 af/yr[5].

REQUIRED DETERMINATIONS

Kiernan Business Park – East Project

Does SB 610 Apply to the Proposed KBP-East Project?

10910 (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

10912 (a) "Project" means any of the following:

(a) A proposed residential development of more than 500 dwelling units.

(b) A proposed shopping center or business establishments employing more than 1,000 persons or having more than 500,000 square feet of floor space.

(c) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.

(d) A proposed hotel or motel, or both, having more than 500 rooms.

(e) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

(f) A mixed use project that includes one or more of the projects specified in this subdivision.

[5] The estimated water demand for KBPSP area (1,230 af/yr) was determined by multiplying the overall area (614.3 acres) by the unit water use factor for Business Park land use (2.0 af/ac/yr).

Table 6. Water Demand Estimate for n Business Park - South (KBP-South)

Land Use Data[a]				Water Use Factor				
Land Use Designation	Acres	Number of Dwelling Units (DU)	Square Footage (sq ft)	gpcd	gpd/DU	af/ac/yr	gpd/sq ft	Calculated Total Water Demand, af/yr
Phase 1 (Parcels 1-15)								
Business Park (BP)	9.66					2.0		19
Roadways[b,c]	5.86					4.5		7
Substation	0.00					0.0		0
Phase 1 Total	15.52		-					26
Phase 2 (Parcel 16)								
Business Park (BP)	6.04					2.0		12
Roadways[b]	0.00					4.5		0
Substation	0.00					0.0		0
Phase 2 Total	6.04		-					12
Phase 3 (Parcel 17)								
Business Park (BP)	10.56					2.0		21
Roadways[b]	0.00					4.5		0
Substation	0.00					0.0		0
Phase 3 Total	10.56		-					21
Phase 4 (Parcel 18)								
Business Park (BP)	6.24					2.0		12
Roadways[b]	0.00					4.5		0
Substation	0.00					0.0		0
Phase 4 Total	6.24		-					12
Subtotal Phases 1 to 4 (Mana/Wagner Project)	38.36							72
Phase 5 (Western Parcels)								
Business Park (BP)	26.91					2.0		54
Roadways[b,d]	6.73					4.5		8
Substation	0.00					0.0		0
Phase 5 Total	33.64		-					61
Subtotal KBP South Project	**72.00**							**133**
Perimeter Road & MID Right of Way								
Roadways and ROW [b,e]	13.40					4.5		15
Perimeter Road & MID Right of Way Total	13.40							15
Total KBP South Project (including perimeter roadways & MID ROW)								
Business Park (BP)	59.41					2.0		119
Roadways[b]	25.99					4.5		29
Substation	0.00					0.0		0
Proposed Project Total	**85.40**		-					**148**
Previous Land Use Designation in Kiernan Business Park Specific Plan								
Business Park (BP)	85.40					2.0		171
Increase (Decrease) in Water Demand								(23)

[a] Land use data for Phases 1-4 based on Vesting Tentative Parcel Map dated February 24, 2006. Land use data for Phase 5 assumed (no data available). Overall area (72 acres) based on e-mail from Jim Bissell, Harris & Associates, February 2, 2007.

[b] Assumes 25 percent of total roadway acres are landscaped (i.e. medians and shoulders) and need to be irrigated, based on roadway cross-sections provided in Kiernan Business Park-East Projected Description dated September 25, 2006.

[c] Roadway acreage for Phase 1 estimated based on total project area for Phases 1, 2, 3 and 4 (38.36 acres) minus the Phase 1, 2, 3 and 4 developed acreages (9.66 acres, 6.04 acres, 10.56 acres, and 6.24 acres). Includes roadways for Phases 1, 2, 3 and 4.

[d] Roadway acreage for Phase 5 estimated to be 20 percent of total Phase 5 acres (20% of 33.64 acres = 6.73 acres).

[e] Roadway acreage for perimeter roadways equals half of width of perimeter roadways plus MID ROW located on south side of Bangs Avenue (northern border of KBP South).

Based on the following facts, SB 610 does apply to the KBP-East Project.

- The City has determined that the KBP-East Project is subject to the California Environmental Quality Act (CEQA) and that an Environmental Impact Report (EIR) is required.
- The proposed KBP-East Project, with its proposed 346 to 434 dwelling units and 1,982,578 gross sf of business park and mixed use development, meets the definition of a "Project" as specified in Water Code Section 10912(a).

Also, the proposed KBP-East Project has not been the subject of a previously adopted WSA and has not been included in an adopted WSA for a larger project. Therefore, according to Water Code Section 10910(a), a WSA is required for the proposed KBP-East Project.

Who is the Responsible Public Water System for the Proposed KBP-East Project?

10910(b) The city or county...shall identify any water system that...may supply water for the project.

The proposed KBP-East Project is located partially with the City of Modesto City Limits and wholly within the City's SOI, as defined in the City's General Plan. Specifically, the proposed KBP-East Project is located within the KBPSP area. The City's water system service area includes all areas within the City Limits and within the General Plan SOI as they are annexed into the City. Therefore, the City is the responsible public water system for the proposed KBP-East Project.

Does the City Have an Adopted Urban Water Management Plan (UWMP) and Does the UWMP Include the Projected Water Demand for the Proposed KBP-East Project?

10910(c)(1) The city or county...shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included in the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).

The City's 2005 UWMP is anticipated to be adopted by the City Council in April 2007[6]. The City's 2005 UWMP includes existing and projected water demands for existing and projected future land uses within the City's General Plan SOI. A future water demand of approximately 1,230 af/yr is included in the 2005 UMWP for the area designated as the KBPSP area[7].

As described above, the proposed KBP-East Project is located in the northeastern portion of the KBPSP area, and proposed land uses and projected water demand for the proposed KBP-East Project are comparable with those designated in the KBPSP (see Tables 1 and 3). Therefore, projected water demands for the proposed KBP-East Project are included in the City's 2005 UWMP.

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[6] City of Modesto Draft 2005 Urban Water Management Plan dated March 2007.

[7] The estimated water demand for KBPSP area (1,230 af/yr) was determined by multiplying the overall area (614.3 acres) by the unit water use factor for Business Park land use (2.0 af/ac/yr).

Kiernan Business Park – South Project

Does SB 610 Apply to the Proposed KBP-South Project?

10910 (a) Any city or county that determines that a project, as defined in Section 10912, is subject to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) under Section 21080 of the Public Resources Code shall comply with this part.

10912 (a) "Project" means any of the following:

(a) A proposed residential development of more than 500 dwelling units.

(b) A proposed shopping center or business establishments employing more than 1,000 persons or having more than 500,000 square feet of floor space.

(c) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space.

(d) A proposed hotel or motel, or both, having more than 500 rooms.

(e) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area.

(f) A mixed use project that includes one or more of the projects specified in this subdivision.

Based on the following facts, SB 610 does apply to the proposed KBP-South Project:

- The City has determined that the proposed KBP-South Project is subject to CEQA and that an EIR is required.
- The proposed KBP-South Project, with its currently proposed 231,000 sf of buildings and additional future business park development, will likely meet the definition of a "Project" as specified in Water Code Section 10912(a).

Also, the proposed KBP-South Project has not been the subject of a previously adopted WSA and has not been included in an adopted WSA for a larger project. Therefore, according to Water Code Section 10910(a), a WSA is required for the proposed KBP-South Project.

Who is the Responsible Public Water System for the Proposed KBP-South Project?

10910(b) The city or county...shall identify any water system that...may supply water for the project.

The proposed KBP-South Project is located wholly within the City of Modesto City Limits and within City's SOI, as defined in the City's General Plan. Specifically, the proposed KBP-South Project is located within the KBPSP area. The City's water system service area includes all areas within the City Limits and within the General Plan SOI as they are annexed into the City. Therefore, the City is the responsible public water system for the proposed KBP-South Project.

Does the City Have an Adopted Urban Water Management Plan (UWMP) and Does the UWMP Include the Projected Water Demand for the Proposed KBP-South Project?

10910(c)(1) The city or county...shall request each public water system identified pursuant to subdivision (b) to determine whether the projected water demand associated with a proposed project was included in the most recently adopted urban water management plan adopted pursuant to Part 2.6 (commencing with Section 10610).

The City's 2005 UWMP is anticipated to be adopted by the City Council in April 2007[8]. The City's 2005 UWMP includes existing and projected water demands for existing and projected future land uses within the City's General Plan SOI. A future water demand of 1,230 af/yr is included in the 2005 UMWP for the area designated as the KBPSP area[9].

As described above, the proposed KBP-South Project is located in the southeastern portion of the KBPSP area, and proposed land uses and projected water demand for the proposed KBP-South Project are comparable with those designated in the KBPSP (see Tables 4 and 6). Therefore, projected water demands for the proposed KBP-South Project are included in the City's 2005 UWMP.

CITY OF MODESTO WATER SERVICE AREA

Water Service Area

The City is located in Stanislaus County, in California's Central Valley. The City's water service area consists of one large "contiguous" service area and several "outlying" service areas. The City's "contiguous" water service area consists of the City limits, the City's SOI, and areas within the Cities of Ceres, Empire, and Salida. The City's five outlying water service areas consists of Del Rio, Grayson, Hickman, Waterford, and portions of Turlock. Figure 4 illustrates the City's contiguous and outlying water service areas.

As shown on Figure 4, the Proposed Projects (the KBP-East Project and the KBP-South Project) are part of the City's contiguous water service area. As such, this WSA focuses on the water demands and water supplies within the City's contiguous water service area.

Population

The current (2005) population of the City is approximately 204,461 people.[10] The current (2005) estimated population for areas served outside the City limits is 59,748. Therefore, the total current service area population is approximately 264,209. Through implementation of the City's General Plan, the City's population is expected to increase at a rate of about 1.6 percent per year until 2011, and then at 1.75 percent from 2012 through buildout. Table 7 summarizes the City's current and projected water service area population through 2030.

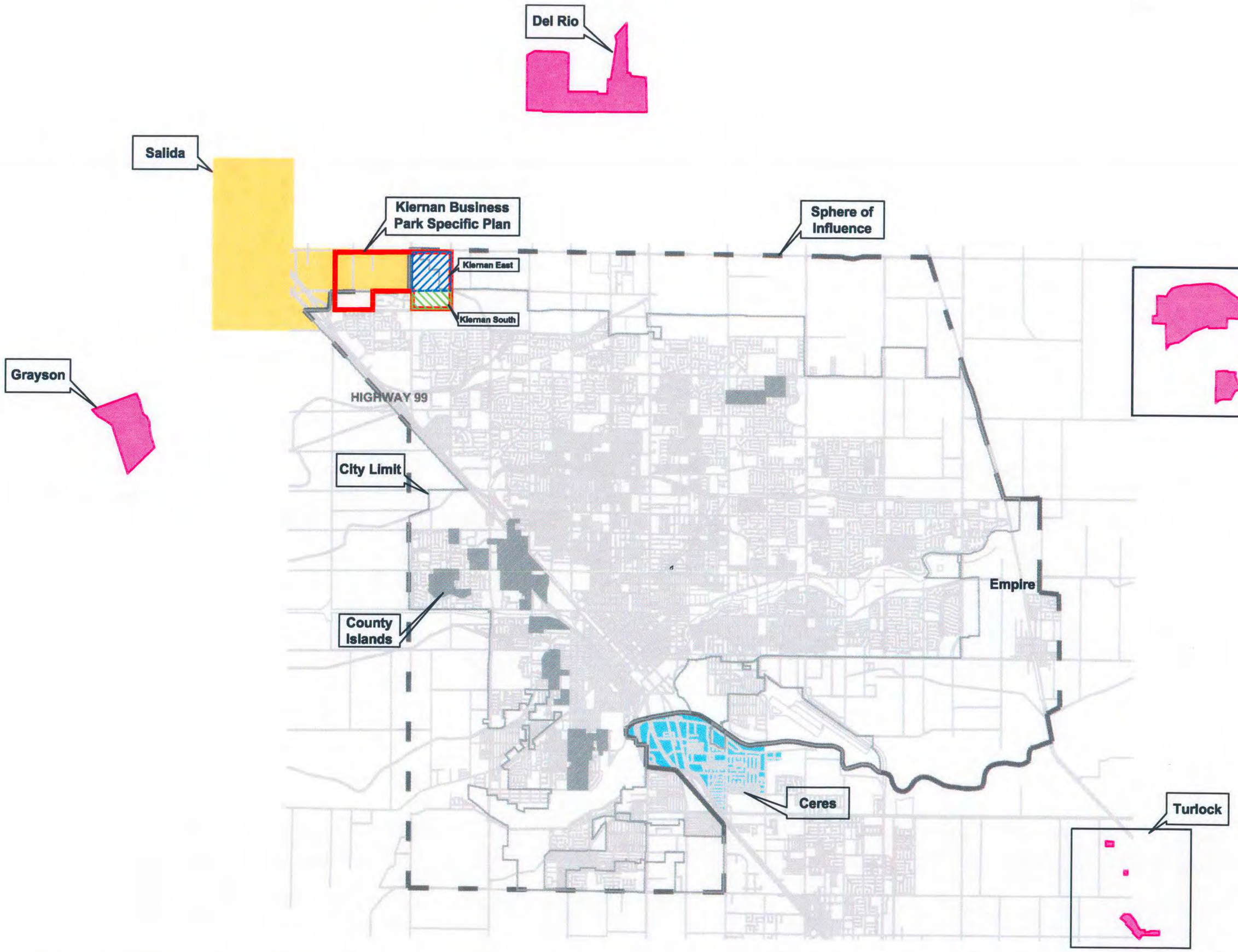
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[8] Source: City of Modesto Draft 2005 Urban Water Management Plan dated March 2007.

[9] The estimated water demand for KBPSP area (1,230 af/yr) was determined by multiplying the overall KBPSP area (614.3 acres) by the unit water use factor for Business Park land use (2.0 af/ac/yr).

[10] Source: City of Modesto 2005 Draft UWMP (Table 2-4) dated March 2007.

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LEGEND

- CITY LIMIT BOUNDARY
- SPHERE OF INFLUENCE BOUNDARY
- SPECIFIC PLAN BOUNDARY
- OUTLYING SERVICE AREAS
- COUNTY ISLANDS
- KIERNAN BUSINESS PARK EAST
- KIERNAN BUSINESS PARK SOUTH

N

0 5500 11000

SCALE IN FEET

Figure 4

City of Modesto

KIERNAN BUSINESS PARK WSA

WATER SERVICE AREA

WEST YOST ASSOCIATES

Consulting Engineers

Table 7. Historic and Projected City Water Service Area Population[a]

Year	2005	2010	2015	2020	2025	2030
Population within City Limits (City of Modesto)[b]	204,461	221,350	241,052	262,895	286,718	312,699
Population Outside City Limits[c]	59,748	63,078	66,893	69,666	72,132	74,787
Total Service Area Population	**264,209**	**284,428**	**307,945**	**332,561**	**358,850**	**387,486**
Population within "Contiguous" Water Service Area[d]	247,831	267,024	289,342	312,627	337,465	364,520
Population within "Outlying" Water Service Area[e]	16,377	17,404	18,603	19,934	21,383	22,964

(a) Source: Table 2-4, City of Modesto 2005 UWMP dated March 2007.
(b) Includes only the population within the City of Modesto City Limits.
(c) Includes population in the following City water service areas: Empire, Salida, Waterford, Del Rio, Hickman, Grayson, Turlock, Bret Harte, Shackelford, West Modesto and North Ceres (Bystrom).
(d) "Contiguous" water service area includes North Modesto, South Modesto, Salida, and Ceres.
(e) "Outlying" water service area includes Waterford, Del Rio, Hickman, Grayson, and Turlock.

Climate

Spring, summer, and fall are generally hot in the City, with temperatures often climbing to over 100 degrees Fahrenheit (°F)on summer days. The City's winters are usually mild. Mean winter temperatures range from 40 to 50 degrees °F. Most precipitation occurs during the winter. The average annual precipitation from the years 1931 to 2005 is recorded by the Western Regional Climate Center as 12.48 inches. Table 8 summarizes the City's average temperature and rainfall data per month.

Table 8. City of Modesto Climate Data, Average per Month

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Total
Average Evapotranspiration (Et_o), inches[a]	0.87	1.71	3.43	5.24	6.70	7.40	7.85	6.75	4.93	3.37	1.66	0.87	50.78
Average Max Temperature, °F[b]	53.8	60.9	66.9	73.3	81.1	88.2	94.1	92.1	87.7	77.9	64.4	54.3	74.6
Average Min Temperature, °F[b]	37.8	40.9	43.5	46.9	51.8	56.5	59.9	58.7	56.0	49.7	41.8	37.8	48.4
Average Rainfall, inches[b]	2.38	2.12	1.95	1.09	0.48	0.09	0.03	0.04	0.20	0.63	1.34	2.12	12.48

(a) Source: CIMIS Website: wwwcimis.water.ca.gov, Station 71 Modesto, Monthly Average Et_o Report, downloaded November 2006.
(b) Source: Western Regional Climate Center website: www.wrcc.dri.edu, Modesto Weather Station (No. 045738), Period of Record 01/01/31 to 12/31/05.

CITY OF MODESTO WATER DEMANDS

10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).

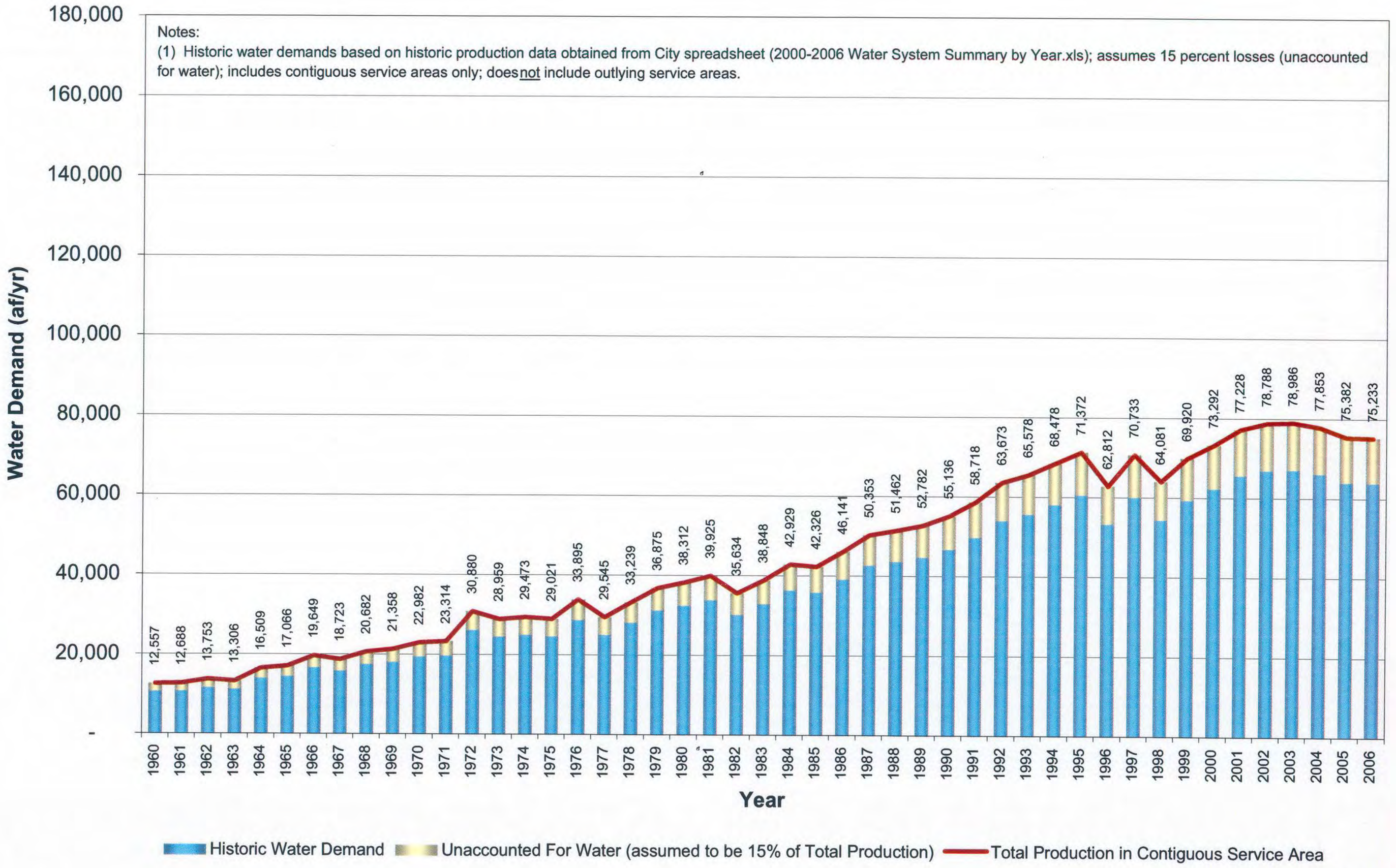
As described above, the water demands for the Proposed Project are included in the City's 2005 UWMP as part of the City's General Plan SOI. Therefore, the descriptions provided below for the City's water demands have been taken from the City's Draft 2005 UWMP, which is anticipated to be adopted in April 2007. Supplemental information from other available reports has also been included to provide the most recent data available and to meet the specific requirements of SB 610.

Historic and Current Water Demand

The City's water demand within its contiguous water service area has increased by over 36 percent in the last fifteen years. In 1990, the City's water demand (including unmetered or unaccounted for water) was 55,136 af/yr and, in 2005, the City's water demand was 75,382 af/yr, a 2.4 percent average increase per year. Figure 5 shows the City's historic annual water demand within its contiguous water service area from 1960 through 2006. Because most of the City's water users are not metered, water use data by sector is not available. However, based on the number of water accounts in 2001, it was estimated that about 62 percent of the City's water accounts are residential and 38 percent are industrial, commercial, and institutional (ICI)[11]. Applying this percentage split to the City's total water demand, Table 9 shows the estimated water demand for residential and ICI customers since 1990.

[11] Based on 2001 data for unmetered versus metered accounts, as documented in Final Water Demand Evaluation, prepared by West Yost Associates, March 2003.

Figure 5. City of Modesto Historic Water Demand and Water Production
"Contiguous" Water Service Area Only



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City of Modesto
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Table 9. Historic Water Demand by Water Use Sector

Water Use Sector	Historic Potable Water Demand, af/yr			
	1990	1995	2000	2005
Contiguous Service Area				
Residential[a]	34,184	44,251	45,441	46,737
Industrial, Commercial and Institutional (ICI)[a]	20,952	27,121	27,851	28,645
Total Water Use in Contiguous Service Area[b]	55,136	71,372	73,292	75,382
Outlying Service Areas[c]	Data not available		2,089	3,420
Total Water Use in City's Water Service Area (includes Unaccounted for Water)			75,381	78,802

(a) Based on 62 percent/38 percent split between residential and ICI customers (based on 2001 water account data).

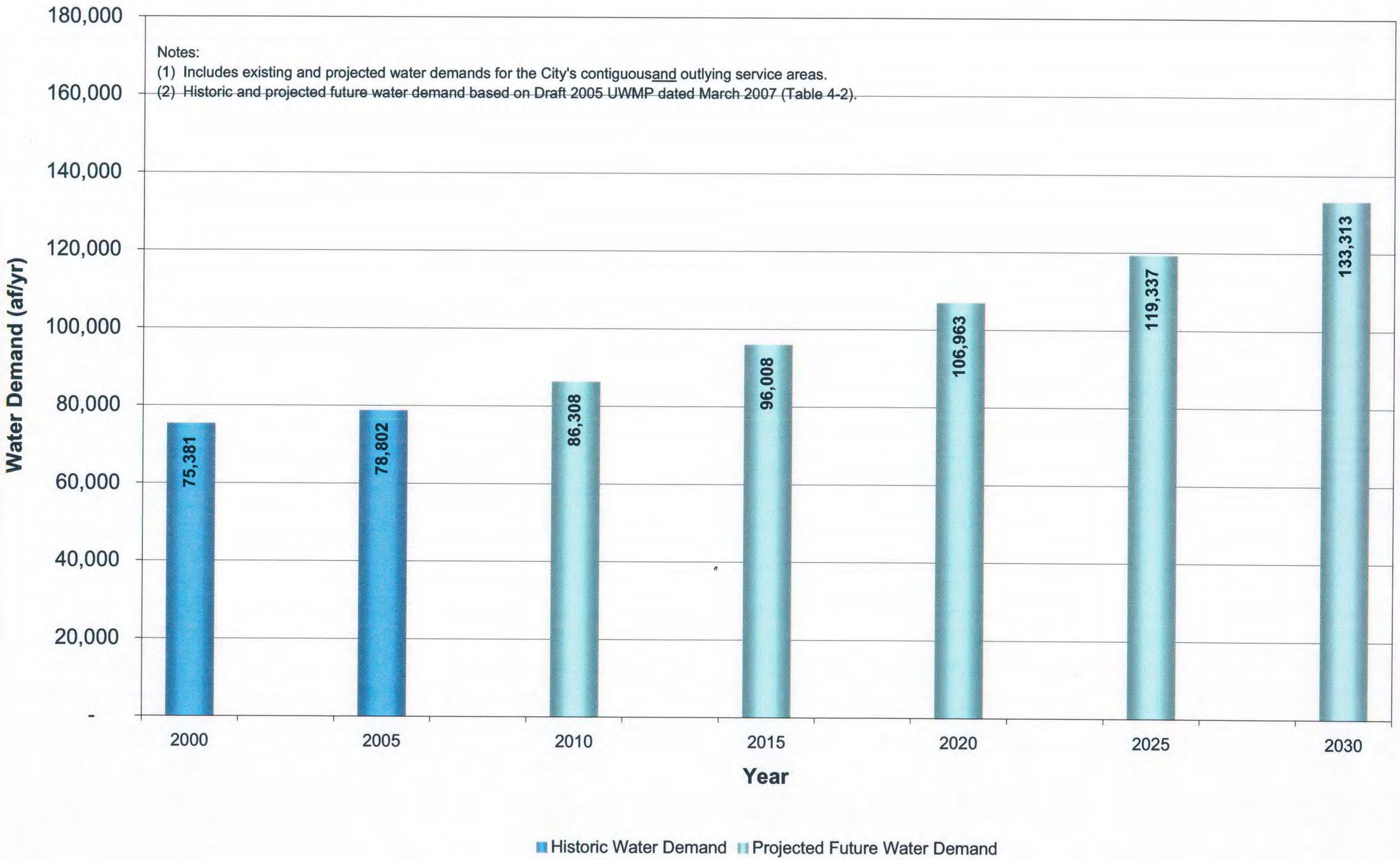
(b) Based on historic annual production data provided by the City (spreadsheet: total prod summary.xls) and data provided in Table 4-2 of Draft 2005 UWMP dated March 2007..

(c) Based on 2000 to 2005 Monthly System Flow Totals provided by the City (spreadsheet: 2006 Water System Summary by Year.xls).

Future Water Demand

The City's total water demand is anticipated to continue to increase as new developments are approved and constructed within the City's water service area. Table 10 shows the projected water demand by water use sector for the next twenty-five years (2005 through 2030) for both the contiguous and outlying water service areas. As indicated above, these projected water demands include the projected water demand for the Proposed Projects (included as part of projected water demands within the City's General Plan SOI). Figure 6 shows the projected water demand through 2030. Per the City's Draft 2005 UWMP, it should be noted that the year of buildout has not been determined. However, in the City's Draft 2005 UWMP, water demands for 2030 are assumed to equal buildout demands as a conservative planning assumption; however, buildout may actually occur later than 2030.

Figure 6. City of Modesto Historic and Projected Future Water Demand "Contiguous" and "Outlying" Water Service Areas



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Table 10. Projected Future Water Demand

Water Use Sector	Potable Water Demand, af/yr[a,b]					
	2005	2010	2015	2020	2025	2030
Total Projected Future Water Production	78,802	86,308	96,008	106,963	119,337	133,313

(a) Total water production for 2005 based on actual production data provided by the City (spreadsheet: total prod summary.xls). Includes unaccounted for water.
(b) Projected future water demand based on the City's Draft 2005 UWMP dated March 2007 (Table 4-2).

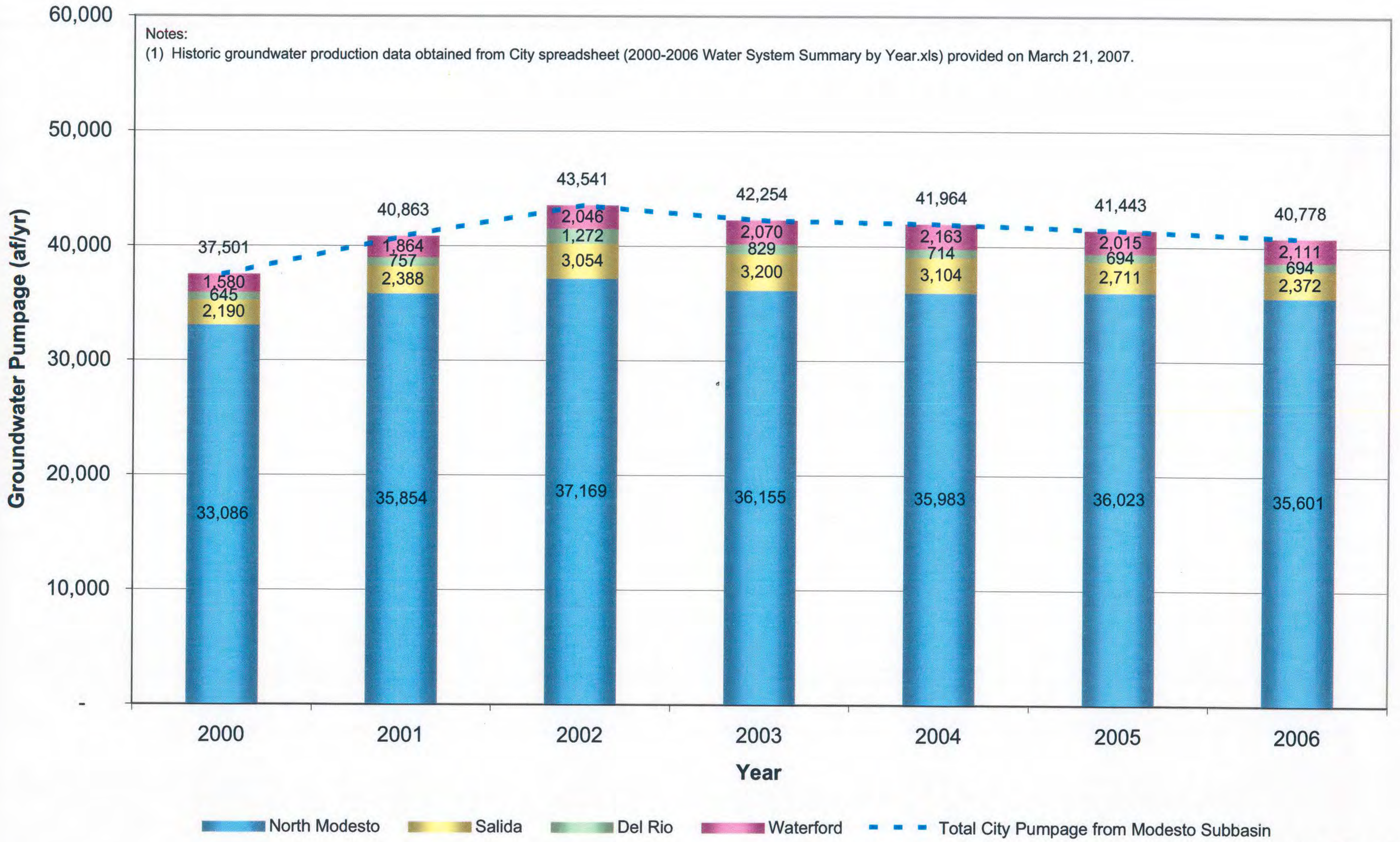
Table 11 summarizes the City's projected water demand based on existing users, development of the Proposed Projects, development of other currently proposed projects and buildout of the City's General Plan. As shown, the City's total projected future water demand at buildout (assumed to occur in 2030) is estimated to be 133,313 af/yr.

Figure 7 shows the City's projected water demand by development stage based on the currently available water demand estimates.

Dry Year Water Demand

The City currently has a water conservation program in place, as described in Chapter 5 of the City's 2005 UWMP. The projected future water demands presented in Table 10 above include continued implementation of the City's water conservation program, and are anticipated for future normal hydrologic years. Although, the projected future water demands would likely decrease as a result of mandatory water conservation measures and public awareness in single dry or multiple dry years, as a conservative assumption for purposes of this WSA, projected future water demands are not assumed to be reduced for single dry or multiple dry year conditions. Table 12 presents the City's estimated future water demand during a dry year.

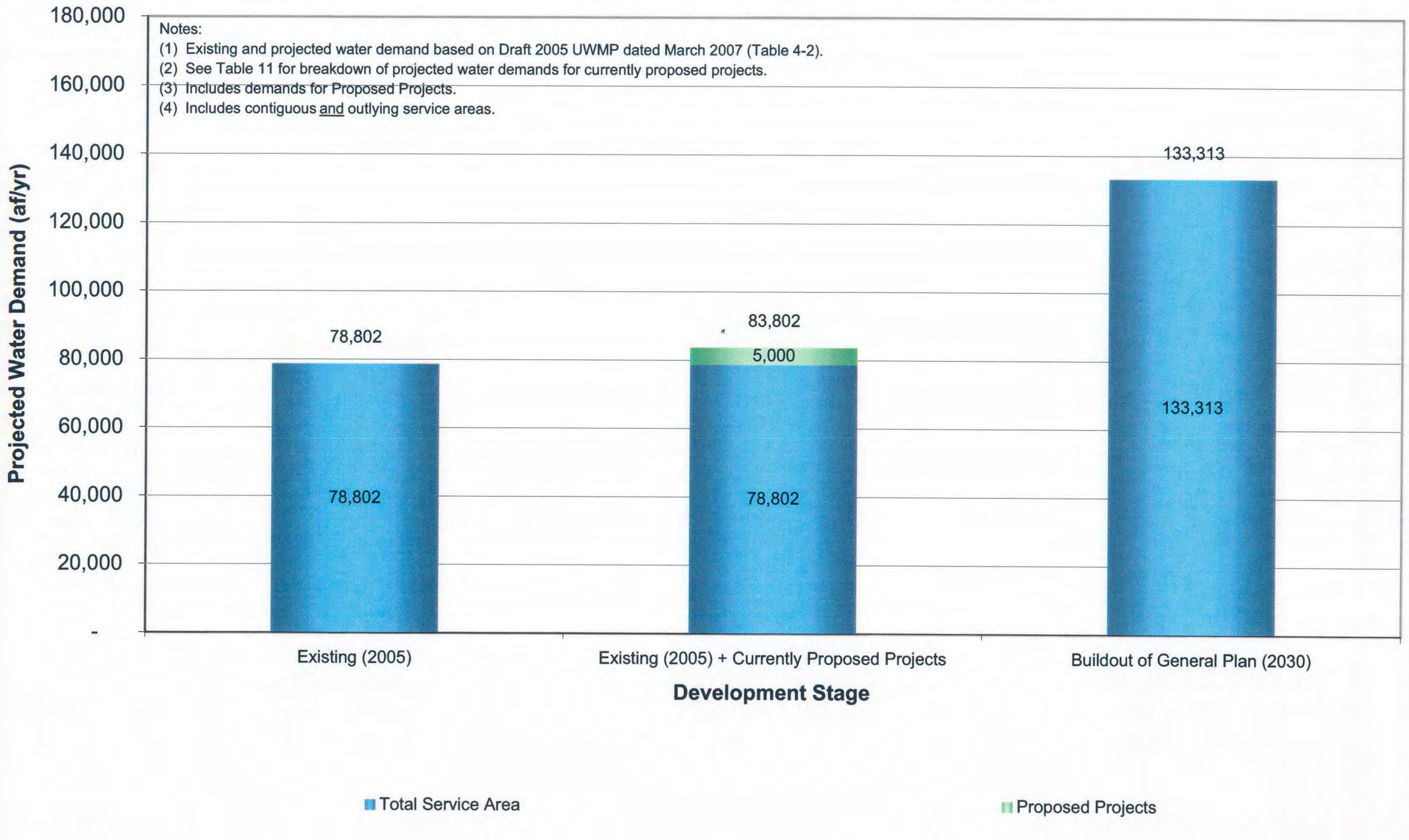
Figure 11. City of Modesto Groundwater Pumpage from the Modesto Subbasin
North Modesto, Salida, Del Rio, and Waterford Service Areas



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Figure 7. City of Modesto Projected Future Water Demand by Development Stage "Contiguous" and "Outlying" Water Service Areas



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Table 12. Projected Future Dry Year Water Demand

Hydrologic Condition	Potable Water Demand, af/yr					
	2005	2010	2015	2020	2025	2030
Normal Year	78,802	86,308	96,008	106,963	119,337	133,313
Single Dry Year[(a)]	78,802	86,308	96,008	106,963	119,337	133,313
Multiple Dry Years[(a)]	78,802	86,308	96,008	106,963	119,337	133,313

(a) Although water demands in single dry and multiple dry years may be reduced due to additional mandatory water conservation measures, as a conservative assumption for purposes of this WSA, and to provide consistency with the City's 2005 draft UWMP, projected future water demands are not assumed to be reduced for single dry or multiple dry year conditions.

CITY OF MODESTO WATER SUPPLIES

10910(c)(2) If the projected water demand associated with the proposed project was accounted for in the most recently adopted urban water management plan, the public water system may incorporate the requested information from the urban water management plan in preparing the elements of the assessment required to comply with subdivisions (d), (e), (f) and (g).

10910(d)(1) The assessment required by this section shall include an identification of any existing water supply entitlements, water rights, or water service contracts relevant to the identified water supply for the proposed project, and a description of the quantities of water received in prior years by the public water system...under the existing water supply entitlements, water rights, or water service contracts.

10910(e) If no water has been received in prior years by the public water system...under the existing water supply entitlements, water rights, or water service contracts, the public water system...shall also include in its water supply assessment...an identification of the other public water systems or water service contract-holders that receive a water supply or have existing water supply entitlements, water rights, or water service contract, to the same source of water as the public water system.

The Proposed Projects, if approved and annexed[12] by the City, will be served by the City from the City's existing and future water supplies. The water supply for the Proposed Projects will have the same water supply reliability and water quality as the water supply available to all of the City's other existing and future water customers.

As described above, the water demands for the Proposed Project are included in the City's 2005 UWMP. Therefore, the descriptions provided below for the City's water supplies have been taken, for the most part, from the City's Draft 2005 UWMP, which is anticipated to be adopted in April 2007. Supplemental information from other available reports has also been included to provide the most recent data available and to meet the specific requirements of SB 610.

[12] Annexation applies to only the eastern portion of the KBP-East Project. The western portion of the KBP-East Project and the entire KBP-South Project are located with City Limits.

Current Water Supplies

The City currently receives (as of June 2006) water supplies from two sources:

- Surface water from the Modesto Irrigation District (MID), and
- Groundwater pumped from 105 active groundwater wells located within the City's service area[13].

These existing supplies are described below. Summary tables listing the City's current and anticipated future supplies and historic and anticipated future quantities are provided following the discussion of the City's future water supplies. Figure 8 shows the City's historic use of these water supplies within its contiguous water service area.

Modesto Irrigation District (MID) Phase 1 Surface Water Supply

MID has historic surface water rights for the Tuolumne River. These water rights have been employed to deliver raw water to the Modesto Regional Water Treatment Plant (MRWTP). The MWRTP is located at the Modesto Reservoir, approximately 14 miles east of the City. The plant is a complete conventional treatment facility providing flocculation, sedimentation, and filtration, along with ozonation for primary disinfection. The site was master planned for a total capacity of 67,204 af/yr, with an initial capacity of 32,507 af/yr.[14] The MWRTP and the transmission pipeline are owned and operated by MID, and provide treated surface water to the City's Municipal Water System by agreement.

The MRWTP's EIR was completed in March 1990. It was anticipated at that time that the proposed water treatment plant would be constructed in two phases of 32,507 af/yr each. Phase 1 was completed in January 1995. Phase 2 is currently anticipated to be complete by summer 2009 (see discussion below under **Future Water Supplies**).

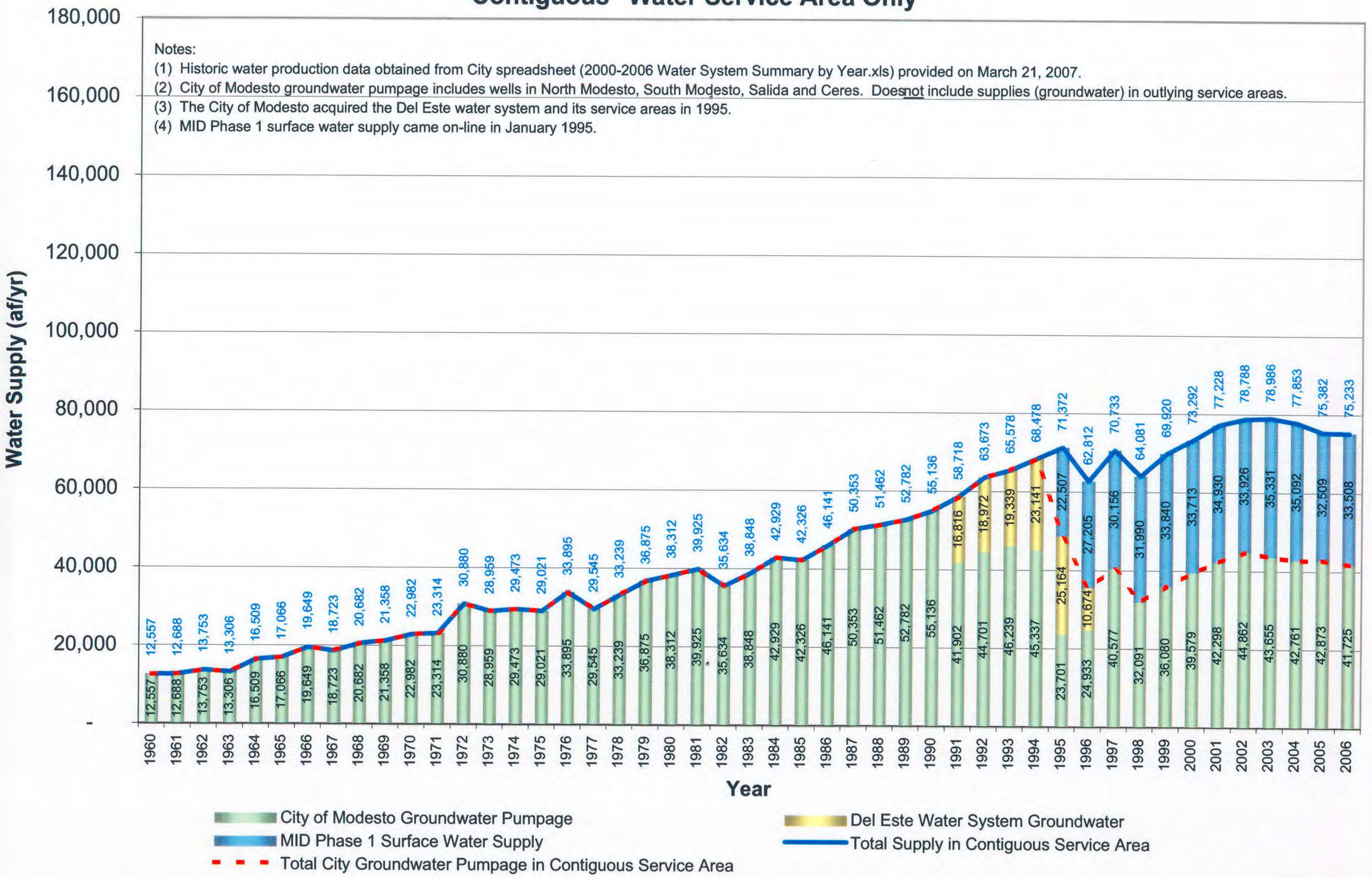
The Treatment and Delivery Agreement (TDA) is the document controlling the delivery of treated water to the City (a copy of the TDA is provided in Appendix A of this WSA). It obligates MID to deliver 32,507 af of treated surface water, commencing on May 1 and ending the following April 30, during normal years. There is a formula to reduce deliveries in drier than average years based on the number of inches allocated to agricultural customers. During supply shortage years, the delivery of surface water by MID may be reduced in equal proportions with deliveries to its agricultural customers. The City, however, will have the option of making up these shortages by delivering an equal amount of groundwater to the irrigation canal system in exchange for treated surface water, which could lead to short-term increased pumpage from the groundwater basin. There is also a provision to supply more than 32,507 af/yr, should the supplies be available, up to a maximum 67,204 af.

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[13] Number of active wells as of June 2006, per City of Modesto Public Works Department memorandum "City of Modesto Drinking Water Wells Out of Service in June 2006," July 3, 2006.

[14] Source: Water Supply Assessment for the Tivoli Project, prepared by the City of Modesto, June 2006.

Figure 8. City of Modesto Historic Water Supplies
"Contiguous" Water Service Area Only



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City of Modesto
Water Supply Assessment
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Groundwater

10910(f) If a water supply for a proposed project includes groundwater, the following additional information shall be included in the water supply assessment.

10910(f)(1) *A review of any information contained in the urban water management plan relevant to the identified water supply for the proposed project.*

10910(f)(2) *A description of any groundwater basin or basins from which the proposed project will be supplied. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), has the legal right to pump under the order or decree. For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most recent bulletin of the department that characterizes the condition of the groundwater basin, and a detailed description by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), of the efforts being undertaken in the basin or basins to eliminate the long-term overdraft condition.*

10910(f)(3) *A detailed description and analysis of the amount and location of groundwater pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), for the past five years from any groundwater basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

10910(f)(4) *A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the public water system, or the city or county if either is required to comply with this part pursuant to subdivision (b), from any basin from which the proposed project will be supplied. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.*

10910(f)(5) *An analysis of the sufficiency of the groundwater from the basin or basins from which the proposed project will be supplied to meet the projected water demand associated with the proposed project. A water assessment shall not be required to include the information required by this paragraph if the public water system determines, as part of the review required by paragraph (1), that the sufficiency of groundwater necessary to meet the initial and projected water demand associated with the project was addressed in the description and analysis required by paragraph (4) of subdivision (b) of Section 10631.*

Groundwater Overview

The San Joaquin Valley is surrounded on the west by the Coast Ranges, on the south by the San Emigdio and Tehachapi Mountains, on the east by the Sierra Nevada and on the north by the Sacramento-San Joaquin Delta and Sacramento Valley. The northern portion of the San Joaquin Valley drains toward the Delta by the San Joaquin River and its tributaries, the Fresno, Merced, Tuolumne, and Stanislaus Rivers. The southern portion of the San Joaquin Valley is internally drained by the Kings, Kaweah, Tule, and Kern Rivers that flow into the Tulare drainage basin including the beds of the former Tulare, Buena Vista, and Kern Lakes.

The City's water service area overlies a portion of three subbasins of the San Joaquin Valley Groundwater Basin:

- the Modesto Subbasin,
- the Turlock Subbasin, and
- the Delta-Mendota Subbasin.

As of June 2006 the City had a total of 105 active groundwater supply wells within its contiguous and outlying service areas. The City's contiguous service area overlies portions of the Modesto and Turlock Subbasin, and within the contiguous service area, the City operates 88 groundwater wells[15]. However, between June 2006 and March 2007, the City was required (by the California Department of Health Services) to cease operation of five (5) previously active groundwater production wells due to water quality issues, losing approximately 8 mgd of production capacity. Therefore, as of March 2007, the City had a total capacity of approximately 77 mgd within the contiguous water service area.

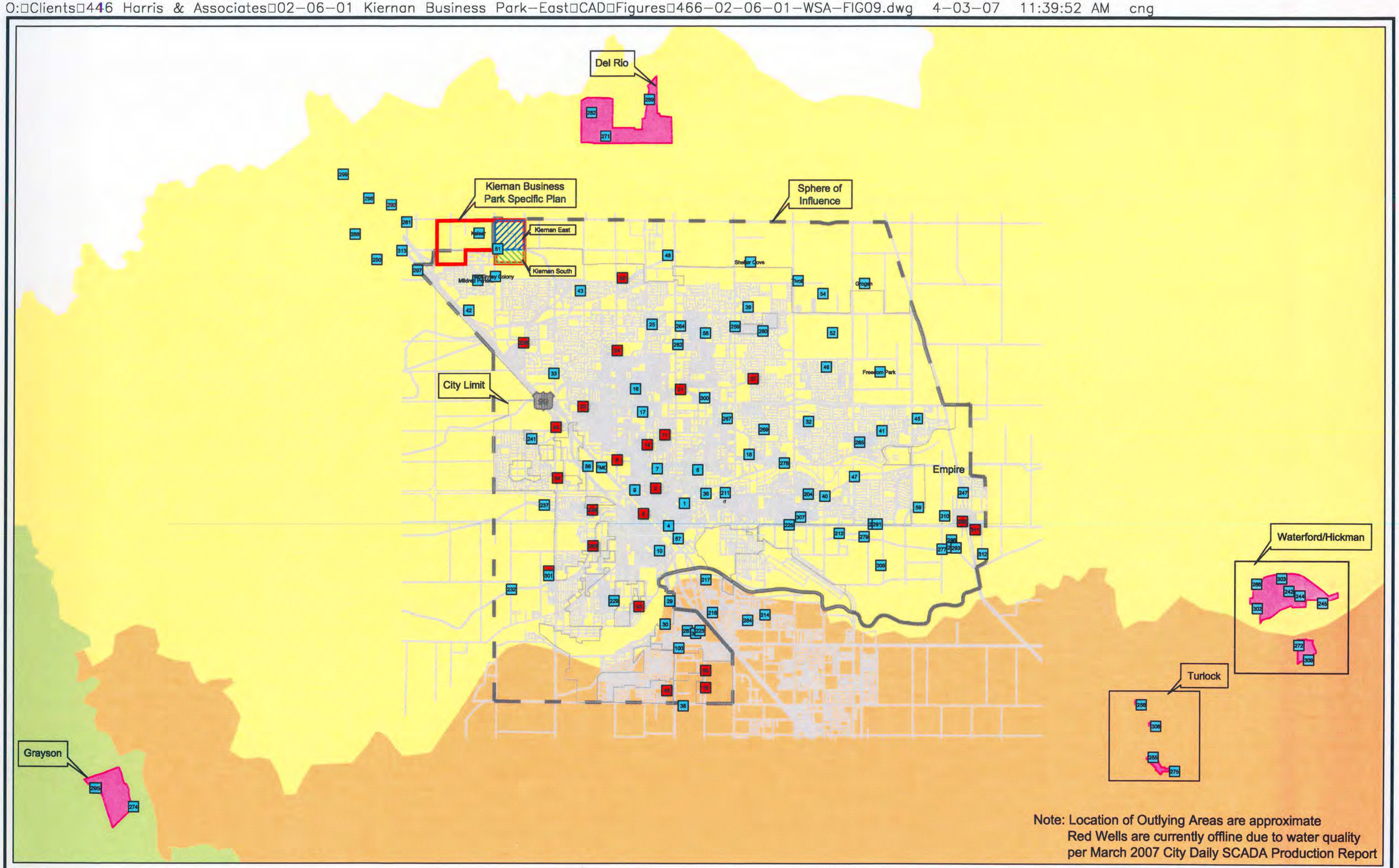
As discussed previously, the City also serves five separate outlying service areas using groundwater supplies. The Del Rio (3 wells) and Waterford (6 wells) service areas overlie the Modesto Subbasin. The Turlock (4 wells) and Hickman (2 wells) service areas overlie the Turlock Subbasin. And the Grayson service area (2 wells) overlies the Delta-Mendota Subbasin.

Table 13 provides a summary of the subbasin characteristics and the number of active City wells within each subbasin. Figure 9 shows the locations of the City's wells and the Modesto, Turlock and Delta-Mendota Subbasins.

The following sections describe the Modesto, Turlock and Delta-Mendota Subbasins, including their water-bearing formations, water levels, and water quality. Except where noted, the description of the subbasin is based largely on information provided in the 2003 California DWR Bulletin 118, in which the groundwater basin descriptions were last updated in either February 2004 (Modesto Subbasin) or January 2006 (Turlock and Delta-Mendota Subbasins) (see Appendix B).

[15] Source: City of Modesto, Justification and Cost Allocation for Proposed Water System Improvements, West Yost Associates, September 2004,

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LEGEND

- CITY LIMIT BOUNDARY
- SPHERE OF INFLUENCE BOUNDARY
- SPECIFIC PLAN BOUNDARY
- OUTLYING SERVICE AREAS
- MODESTO SUBBASIN
- TURLOCK SUBBASIN
- DELTA MENDOTA SUBBASIN
- KIERNAN BUSINESS PARK EAST
- KIERNAN BUSINESS PARK SOUTH

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SCALE IN FEET

Figure 9

City of Modesto

KIERNAN BUSINESS PARK WSA

GROUNDWATER SUBBASINS & CITY WELLS

WEST YOST ASSOCIATES
Consulting Engineers

Table 13. Groundwater Subbasins Underlying the City of Modesto Water Service Area and Number of City of Modesto Active Wells

Groundwater Subbasin Name	Department of Water Resources (DWR) Subbasin Number	Total Surface Area	City of Modesto Service Area Served	Number of City of Modesto Active Wells[(a)]
Modesto Subbasin	5-22.02	247,000 acres	North Modesto	61
			Salida	8
			Del Rio	3
			Waterford	6
Total Active City of Modesto Wells in Modesto Subbasin				78
Turlock Subbasin	5-22.03	347,000 acres	South Modesto	7
			Ceres	5
			Turlock	4
			Hickman	2
Total Active City of Modesto Wells in Turlock Subbasin				18
Delta-Mendota Subbasin	5-22.07	747,000 acres	Grayson	2
Total Active City of Modesto Wells in Delta-Mendota Subbasin				2
Total Active City of Modesto Wells				98

(a) As of March 2007, per City of Modesto Daily SCADA Production Report.

Modesto Subbasin

Basin Description:

The Modesto Subbasin lies between the Stanislaus River to the north and Tuolumne River to the south and between the San Joaquin River on the west and crystalline basement rock of the Sierra Nevada foothills on the east. The northern, western, and southern boundaries are shared with the Eastern San Joaquin Valley, Delta-Mendota, and Turlock Groundwater Subbasins, respectively. The subbasin comprises land primarily in the MID and the southern two-thirds of the Oakdale Irrigation District (OID). The City is in the southwestern portion of the subbasin. Average annual precipitation for this subbasin is 11 to 15 inches, increasing eastward.

The primary hydrogeologic units in the Modesto Subbasin include both consolidated and unconsolidated sedimentary deposits. The consolidated deposits include the Ione Formation of Miocene age, the Valley Springs Formation of Eocene age, and the Mehrten Formation, which was deposited during the Miocene to Pliocene Epochs. The consolidated deposits lie in the eastern portion of the subbasin and generally yield small quantities of water to wells except for the Mehrten Formation, which is an important aquifer. In the subbasin, the Mehrten Formation is composed of up to 300 feet of sandstone, breccia, conglomerate, tuff siltstone and claystone. The unconsolidated deposits were laid down during the Pliocene to present, and from oldest to

youngest, include continental deposits lacustrine and marsh deposits, older alluvium, younger alluvium, and flood-subbasin deposits. The continental deposits and older alluvium are the main water yielding units in the unconsolidated deposits. The lacustrine and marsh deposits (which include the Corcoran, or "E-" Clay), and the flood-subbasin deposits, yield little water to wells; and the younger alluvium in most places probably yields only moderate quantities of water to wells. The continental deposits consist of poorly sorted gravel, sand, silt and clay varying in thickness from 0 to 450 feet, occurring at the surface on the eastern side of the subbasin to over 400 feet deep in the western portion. These deposits are the equivalent of the North Merced Gravels and the lower Turlock Lake Formation. The older alluvium consists of intercalated beds of gravel, sand, silt and clay with some hardpan. This alluvium is up to 400 feet thick and is generally present near, or at the surface of the western one-half of the subbasin. The older alluvium is largely equivalent to the Riverbank and Modesto Formations.

Groundwater occurs under unconfined, semi-confined, and confined conditions. The unconfined water body occurs in the unconsolidated deposits above and east of the Corcoran Clay, which underlies the southwestern portion of the subbasin at depths ranging from 150 to 250 feet. Where clay lenses restrict the downward flow of groundwater, semi-confined conditions occur. The confined water body occurs in the unconsolidated deposits below the Corcoran Clay and extends downward to the base of fresh water. The estimated average specific yield of this subbasin is 8.8 percent.

Groundwater flow is primarily to the southwest, following the regional dip of basement rock and sedimentary units. The lower to middle reaches of the Stanislaus and Tuolumne Rivers in the subbasin appear to be gaining streams with groundwater flow into both, especially the Tuolumne River. No faults have been identified that affect the movement of fresh groundwater. This groundwater flow is evident on the groundwater contour maps for the Modesto Subbasin (provided in Appendix B of this WSA).

Groundwater recharge is primarily from deep percolation of applied irrigation water and canal seepage from MID and OID facilities. Seepage from Modesto Reservoir is also significant. Lesser recharge occurs as a result of subsurface flows originating in the mountains and foothills along the east side of the subbasin, losses from minor streams, and from percolation of direct precipitation.

Groundwater Level Trends:

Changes in groundwater levels are based on annual water level measurements by DWR and others. Based on these measurements, DWR evaluated water level changes by quarter township using a custom DWR computer program using geostatistics. DWR determined that, on average, the subbasin water level has declined nearly 15 feet from 1970 through 2000. The period from 1970 through 1978 showed steep declines totaling about 12 feet. The six-year period from 1978 to 1984 saw stabilization and rebound of about 7 feet, with 1984 through 1995 again showing steep declines, bottoming out in 1995 at nearly 20 feet below the 1970 level. Water levels then rose about 5 feet from 1996 to 2000. Water level declines have been more severe in the eastern portion of the subbasin, but have risen faster in the eastern subbasin between 1996 and 2000 than in any other portion of the subbasin.

Hydrographs for the City's wells in the Modesto Subbasin, as well as the groundwater contour maps for the Modesto Subbasin (provided in Appendix B of this WSA), indicate similar trends. Most of the City wells which have data from the 1970s to present, indicate a decline in water levels in the late 1980s and early 1990s, and a rebound in water levels in the mid to late 1990s to currently stabilized levels that are at or above historic levels. These trends are also evident on the groundwater contour maps for the Modesto Subbasin, which show a groundwater depression in the area beneath the City in the late 1980s and the early 1990s. These changes in water levels are consistent with, and likely related to the City's historic groundwater pumpage (see Figure 8), which peaked in the mid 1990's, just before surface water supplies become available from the MID Phase 1 Project in January 1995. Figure 10 demonstrates the correlation between water level increases in selected City wells and historic reduced City groundwater pumpage quantities.

Groundwater Storage, Budget and Yield:

Estimations of the total storage capacity of the subbasin and the amount of water in storage as of 1995 were calculated using an estimated specific yield of 8.8 percent and water levels collected by the California DWR and others. According to these calculations, the total storage capacity of this subbasin is estimated to be approximately 6,500,000 af to a depth of 300 feet. According to published literature, the amount of stored groundwater in this subbasin, as of 1961, is 14,000,000 af to a depth of less than 1,000 feet.

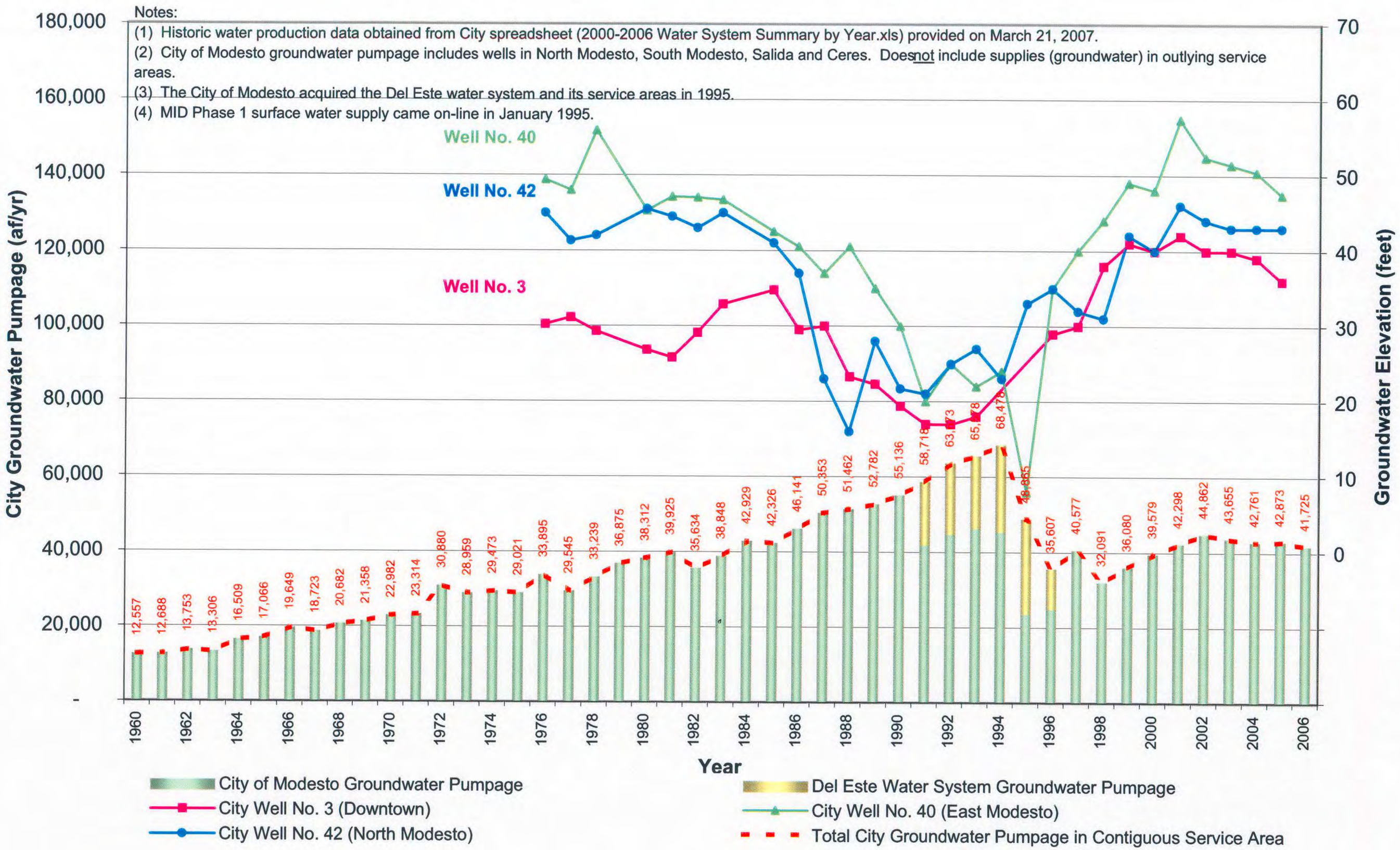
Although a detailed budget was not available for this subbasin, an estimate of groundwater demand was calculated based on the 1990 normalized year and data on land and water use. A subsequent analysis was done by a California DWR water budget spreadsheet to estimate overall applied water demands, agricultural groundwater pumpage, urban pumping demand and other extraction data.

Natural recharge into the subbasin is estimated to be 86,000 af. Artificial recharge and subsurface inflow values were not determined. There is approximately 92,000 af of applied water recharge. Annual urban and agricultural extractions are estimated to be 81,000 and 145,000 af, respectively. There are no other extractions, and values for subsurface outflow were not determined.

A 2004 United States Geological Survey (USGS) study evaluating the hydrogeologic characteristics of the Modesto area, computed a water budget for the greater Modesto area. The USGS study area included a 900 square mile area including the Modesto and Turlock groundwater subbasins. The study area is bounded on the west by the San Joaquin River, on the north by the Stanislaus River, on the south by the Merced River, and on the east by the consolidated rocks and deposits of the Sierra Nevada. The study found that in 2000, for the overall study area, the total groundwater pumpage was 825,400 af, while the total recharge was 1,146,900 af with 58 percent of the recharge from irrigation and the remaining 42 percent from precipitation).

According to the 1995 Groundwater Management Plan for the Modesto Subbasin (see discussion below), the total municipal sustainable yield for the Modesto Subbasin was estimated to be 50,000 af/yr. Approximately 91 percent of this total sustainable yield was allocated to the City (45,625 af/yr), and this quantity has been historically used as an estimate of the City's municipal sustainable yield from the Modesto Subbasin. However, for the City's 2005 UWMP, the City has

Figure 10. City of Modesto Historic Groundwater Pumpage vs. Groundwater Levels in Selected City Wells "Contiguous" Water Service Area Only



estimated a revised "operational yield" for the subbasins underlying the City's service area (see discussion below under *Projected Future Groundwater Use*).

Groundwater Quality:

The groundwater in this basin is of a calcium bicarbonate type in the eastern subbasin to a calcium-magnesium bicarbonate or calcium-sodium bicarbonate type in the western portion. Total dissolved solids (TDS) values range from 60 milligrams per liter (mg/L) to as high as 8,300 mg/L, with a typical range of 200 to 500 mg/L. The California Department of Health Services (DHS), which monitors Title 22 water quality standards, reports TDS values in 88 wells ranging from 60 to 860 mg/L, with an average value of 295 mg/L.

There are areas of hard groundwater and localized areas of high chloride, boron, DBCP, nitrate, iron, and manganese. Some sodium chloride waters with high TDS concentrations are found along the east side of the subbasin. There are also some areas of shallow groundwater in the subbasin that require dewatering wells.

A recent study by the USGS (USGS 2004), also found that of the forty (40) public supply wells sampled in the spring of 2001 in the greater Modesto area, volatile organic compounds (VOCs) were detected in 92 percent of them. The concentrations of nearly all of the VOCs detected were at least an order of magnitude below action levels set by drinking water standards. However, concentrations of the solvents trichloroethylene (TCE) and tetrachloroethylene (PCE) were detected at levels exceeding federal and state maximum contaminant levels (MCLs) in Modesto. The City operates wellhead treatment systems on a number of its wells in North Modesto for removal of these types of contaminants.

In North Modesto, the City has also had to shut down a number of wells due to water quality issues[16]. A number of wells have been shut down due to high uranium concentrations (Well Nos. 2, 11, 14, 22, 24, 34, 44, 283, and 304). Well No. 37 has been shut down due to high gross alpha concentrations. Well Nos. 50, 53, 226, 236, and 295 have been shut down due to high nitrate concentrations. Other wells such as Well No. 3 and Well No. 49 have been shut down due to PCE and arsenic, respectively.

Groundwater Management:

A number of groundwater management plans have been prepared by various agencies for the Modesto Subbasin. Table 14 lists the groundwater management plans which have been prepared to date for the Modesto Subbasin.

[16] Based on March 2007 City of Modesto Daily SCADA Production Report.

Table 14. Adopted Groundwater Management Plans for Modesto Subbasin[(a)]

Title	Agency	Adoption Date
Groundwater Management Plan for the Modesto Subbasin	Stanislaus and Tuolumne Rivers' Groundwater Subbasin Association (STRGBA)	1995
OID Groundwater Management Plan	OID	November 1995
Groundwater Management Plan for the MID	MID	March 1996
Integrated Regional Groundwater Management Plan for the Modesto Basin	STRGBA	June 2005

(a) Source: California DWR Groundwater Information Center, www.groundwater.water.ca.gov

In 1994, the Stanislaus and Tuolumne Rivers' Groundwater Subbasin Association (STRGBA) was formed to provide a forum for coordinated planning and management of the Modesto Subbasin. STRGBA is made up of the following member agencies: City of Modesto, Del Este Water Company, County of Stanislaus, Oakdale Irrigation District, City of Riverbank, and the Modesto Irrigation District. In 1995, STRGBA prepared a groundwater management plan for the Modesto Subbasin in accordance with the requirements of AB 3030.

In June 2005, an updated groundwater management plan entitled "Integrated Regional Groundwater Management Plan for the Modesto Basin," was prepared for STRGBA by Bookman-Edmonston in compliance with the Groundwater Management Planning Act of 2002 (SB 1938) and the Integrated Regional Water Management Planning Act of 2002 (SB 1672). The plan includes the following:

- Description of water resources setting;
- Description of groundwater resources in the Modesto Subbasin;
- Description of basin management objectives and groundwater protection measures;
- Overview of stakeholder involvement; and
- An implementation plan for integration of monitoring activities; setting local, statewide and regional priorities; data management; and financial planning.

Turlock Subbasin

Basin Description:

The Turlock Subbasin lies between the Tuolumne and Merced Rivers and is bounded on the west by the San Joaquin River and on the east by crystalline basement rock of the Sierra Nevada foothills. The northern, western, and southern boundaries are shared with the Modesto, Delta-Mendota, and Merced Groundwater Subbasins, respectively. The subbasin includes lands in the Turlock Irrigation District, the Ballico-Cortez Water District, the Eastside Water District, and a small portion of Merced Irrigation District. Average annual precipitation is estimated as 11 to 13 inches, increasing eastward, with 15 inches in the Sierra foothills.

The primary hydrogeologic units in the Turlock Subbasin include both consolidated and unconsolidated sedimentary deposits. The consolidated deposits include the Ione Formation of Miocene age, the Valley Springs Formation of Eocene age, and the Mehrten Formation, which was deposited during the Miocene to Pliocene Epochs. The consolidated deposits lie in the eastern portion of the subbasin and generally yield small quantities of water to wells except for the Mehrten Formation, which is an important aquifer. The Mehrten Formation is composed of up to 800 feet of sandstone, breccia, conglomerate, tuff siltstone and claystone. Unconsolidated deposits include continental deposits, older alluvium, younger alluvium, and flood-basin deposits. Lacustrine and marsh deposits, which constitute the Corcoran or E-clay aquitard, underlie the western half of the subbasin at depths ranging between about 50 and 200 feet. The continental deposits and older alluvium are the main water-yielding units in the unconsolidated deposits. The lacustrine and marsh deposits and the flood-subbasin deposits yield little water to wells. The younger alluvium, in most places, probably yields only moderate quantities of water.

There are three groundwater bodies in the Turlock Subbasin: the unconfined water body, the semi-confined and confined water body in the consolidated rocks, and the confined water body beneath the E-clay in the western subbasin. The estimated average specific yield of the subbasin is 10.1 percent.

Groundwater flow is primarily to the southwest, following the regional dip of basement rock and sedimentary units. Based on recent groundwater measurements, a paired groundwater mound and depression appear beneath the City of Turlock and to its east, respectively, and the lower to middle reaches of the Tuolumne River and the reach of the San Joaquin River in the subbasin appear to be gaining streams. No faults have been identified that affect the movement of fresh groundwater. This groundwater flow is evident on the groundwater contour maps for the Turlock Subbasin (provided in Appendix B of this WSA).

Groundwater Level Trends:

Changes in groundwater levels are based on annual water level measurements by DWR and others. Based on these measurements, DWR evaluated water level changes by quarter township using a custom DWR computer program using geostatistics. DWR determined that, on average, the subbasin water level has declined nearly 7 feet from 1970 through 2000. The period from 1970 through 1992 showed a generally steep decline totaling about 15 feet. Between 1992 and 1994, water levels stayed near this low level. From 1994 to 2000, the water levels rebounded about 8 feet, bringing them to within approximately 7 feet below the 1970 levels. Water level

declines have been more severe in the eastern portion of the subbasin after 1982. From 1970 to 1982, water level declines were more severe in the western portion of the subbasin.

Hydrographs for the City's wells in the Turlock Subbasin (provided in Appendix B of this WSA) indicate similar trends. Most of the City wells which have data from the 1970's to present, indicate a decline in water levels in the late 1980's and early 1990's, and a rebound in water levels in the mid to late 1990's, probably due to the above normal rainfall during this period.

Groundwater Storage, Budget and Yield:

Estimations of the total storage capacity of the subbasin and the amount of water in storage as of 1995 were calculated using an estimated specific yield of 10.1 percent and water levels collected by DWR and others. According to these calculations, the total storage capacity of this subbasin is estimated to be 15,800,000 af to a depth of 300 feet and 30,000,000 af to the base of fresh groundwater. These same calculations give an estimate of 12,800,000 af of groundwater to a depth of 300 feet stored in this subbasin as of 1995. According to published literature, the amount of stored groundwater in this subbasin as of 1961 was 23,000,000 af to a depth of less than 1,000 feet.

Although a detailed budget was not available for this subbasin, an estimate of groundwater demand was calculated based on the 1990 normalized year and data on land and water use. A subsequent analysis was done by a California DWR water budget spreadsheet to estimate overall applied water demands, agricultural groundwater pumpage, urban pumping demand and other extraction data.

Natural recharge of the subbasin was estimated by California DWR to be approximately 33,000 af. Artificial recharge and subsurface inflow were not determined. Applied water recharge was calculated to be 313,000 af. Annual urban extraction and annual agricultural extraction were calculated at 65,000 and 387,000 af, respectively. Other extractions and subsurface inflow were not determined.

A 2004 USGS study evaluating the hydrogeologic characteristics of the Modesto area, computed a water budget for the greater Modesto area. The USGS study area included a 900 square mile area including the Modesto and Turlock groundwater subbasins. The study area is bounded on the west by the San Joaquin River, on the north by the Stanislaus River, on the south by the Merced River, and on the east by the consolidated rocks and deposits of the Sierra Nevada. The study found that in 2000, for the overall study area, the total groundwater pumpage was 825,400 af, while the total recharge was 1,146,900 af (with 58 percent of the recharge from irrigation and the remaining 42 percent from precipitation).

According to the 1997 Groundwater Management Plan for the Turlock Subbasin (see discussion below), the City's municipal sustainable yield for the Turlock Subbasin was previously estimated to be 4,587 af/yr. However, for the City's 2005 UWMP, the City has estimated a revised "operational yield" for the subbasins underlying the City's service area (see discussion below under *Projected Future Groundwater Use*).

Groundwater Quality:

The groundwater in this subbasin is predominately of the sodium-calcium bicarbonate type, with sodium bicarbonate and sodium chloride types at the western margin and a small area in the north-central portion. TDS values range from 100 mg/L to as high as 8,300 mg/L, with a typical range of 200 to 500 mg/L. DHS reports TDS values in 71 wells ranging from 100 to 930 mg/L, with an average value of 335 mg/L. Electrical conductivity (EC) values range from 168 to 1,000 µmhos/cm, with a typical range of 244 to 707 µmhos/cm.

There are localized areas of hard groundwater, nitrate, chloride, boron, and DBCP. Some sodium chloride waters with high TDS concentrations are found along the west side of the subbasin.

The USGS Study (USGS 2004) also found that of the forty (40) public supply wells sampled in the spring of 2001 in the greater Modesto area, VOCs were detected in 92 percent of them. The concentrations of nearly all of the VOCs detected were at least an order of magnitude below action levels set by drinking water standards. However, concentrations of the solvents TCE and PCE were detected at levels exceeding federal and state MCLs in Modesto. The City operates wellhead treatment systems on a number of its wells in South Modesto (within the Turlock Subbasin) for removal of these types of contaminants.

In South Modesto (within the Turlock Subbasin), the City has also had to shut down wells due to water quality issues[17]. One well (Well No. 55) has been shut down due to high uranium concentrations. Well No. 19 has been shut down due to the presence of high nitrate concentrations.

Groundwater Management

A number of groundwater management plans have been prepared by various agencies for the Turlock Subbasin. Table 15 lists the groundwater management plans which have been prepared to date for the Turlock Subbasin.

In 1995, the Turlock Groundwater Basin Association (TGBA) was formed for the purposes of studying and evaluating the condition of the Turlock Subbasin, and developing a groundwater management plan for the preservation, protection and enhancement of the subbasin. The Turlock Groundwater Basin Groundwater Management Plan was adopted by the local public agencies in late 1997. Following completion of the groundwater management plan, the TGBA dissolved. However, following the dissolution of the TGBA in 1997, the local public agencies continued to meet on a regular basis in their efforts to cooperatively manage groundwater resources within the Turlock Subbasin.

[17] Based on July 3, 2006 City of Modesto Drinking Water Wells Out of Service in June 2006.

Table 15. Adopted Groundwater Management Plans for Turlock Subbasin[(a)]

Title	Agency	Adoption Date
Eastside Water District Groundwater Management Plan	Eastside Water District	March 1993
Turlock Groundwater Basin Groundwater Management Plan	Turlock Groundwater Basin Association (TGBA)	Late 1997
Groundwater Management Plan	Turlock Irrigation District (TID)	1997
Turlock Groundwater Basin Groundwater Management Plan Update	Turlock Groundwater Basin Association (TGBA)	August 2006 (Draft Report)

(a) Source: DWR Groundwater Information Center, www.groundwater.water.ca.gov

In 2001, the TGBA was reformed to provide a mechanism for the local public agencies to collectively implement the groundwater management plan. In August 2006, the TGBA prepared a draft update to the groundwater management plan. The update is intended to update and supersede the 1997 plan and includes pertinent information contained within the original plan, with additional or updated data inserted as needed to comply with the current groundwater management requirements.

Delta-Mendota Subbasin

Basin Description:

The Delta-Mendota Subbasin is bounded on the west by the Tertiary and older marine sediments of the Coast Ranges, and on the north by the Stanislaus/San Joaquin county line. The eastern boundary follows the San Joaquin River to Township 11 South, where it jogs eastward and follows the eastern boundary of Columbia Canal company to the San Joaquin River, then follows the Chowchilla Bypass and the eastern border of Farmer's Water District. It then trends southerly through Township 14 South Range 15 East on the eastern side of Fresno Slough, then follows the Tranquility Irrigation District boundary to its southern extremity. Heading northward, it follows the eastern, northern, and northwestern boundary of San Joaquin Valley – Westside Groundwater Subbasin (corresponding with Westlands Water District boundaries). Average annual precipitation is 9 to 11 inches, increasing northwards.

The geologic units that make up the groundwater units in the Delta-Mendota Subbasin are the Tulare Formation, terrace deposits, alluvium, and flood-basin deposits. The Tulare Formation is composed of beds, lenses, and tongues of clay, sand, and gravel that have been alternately deposited in oxidizing and reducing environments. The Corcoran Clay Member of the formation underlies the basin at depths ranging from about 100 to 500 feet and acts as a confining bed. Terrace deposits of Pleistocene age lie up to several feet higher than present streambeds. They are

composed of yellow, tan, and light-to-dark brown silt, sand, and gravel with a matrix that varies from sand to clay. The water table generally lies below the bottom of the terrace deposits.

Alluvium is composed of interbedded, poorly to well-sorted clay, silt, sand, and gravel and is divided based on its degree of dissection and soil formation. The flood-basin deposits are generally composed of light-to-dark brown and gray clay, silt, sand, and organic materials with locally high concentrations of salts and alkali. Stream channel deposits of coarse sand and gravel are also included.

Groundwater in the Delta-Mendota Subbasin occurs in three water-bearing zones. These include the lower zone, which contains confined fresh water in the lower section of the Tulare Formation, an upper zone which contains confined, semi-confined, and unconfined water in the upper section of the Tulare Formation, and a shallow zone which contains unconfined water within about 25 feet of the land surface.

The estimated specific yield of this subbasin is 11.8 percent. Land subsidence up to about 16 feet has occurred in the southern portion of the basin due to artesian head decline.

Groundwater flow was historically northwestward parallel to the San Joaquin River. However, recent data show flow to the north and eastward, toward the San Joaquin River. Based on current and historical groundwater elevation maps, groundwater barriers do not appear to exist in the subbasin. This groundwater flow is evident on the groundwater contour maps for the Delta-Mendota Subbasin (provided in Appendix B of this WSA).

Groundwater Level Trends:

Changes in groundwater levels are based on annual water level measurements by DWR and others. Based on these measurements, the California DWR evaluated water level changes by quarter township using a custom DWR computer program using geostatistics. The California DWR determined that on average, the subbasin water level has increased by 2.2 feet from 1970 through 2000. The period from 1970 through 1985 showed a general increase in water levels, topping out in 1985 at 7.5 feet above the 1970 water level. The nine-year period from 1985 to 1994 saw general declines in groundwater levels, with water levels declining to 1970 groundwater levels in 1994. Groundwater levels rose in 1995 to about 2.2 feet above the 1970 groundwater level. Water levels fluctuated around this value until 2000.

Groundwater Storage, Budget and Yield:

Estimations of the total storage capacity of the subbasin and the amount of water in storage, as of 1995, were calculated using an estimated specific yield of 11.8 percent and water levels collected by DWR and others.

According to these calculations, the total storage capacity of this subbasin is estimated to be 30,400,000 af to a depth of 300 feet, and 81,800,000 af to the base of fresh groundwater. These same calculations give an estimate of 26,600,000 af of groundwater to a depth of 300 feet stored in this subbasin as of 1995. According to published literature, the amount of stored groundwater in this subbasin as of 1961 is 51,000,000 af to a depth of less than 1,000 feet.

Although a detailed budget was not available for this subbasin, an estimate of groundwater demand was calculated based on the 1990 normalized year and data on land and water use. A subsequent analysis was done by a California DWR water budget spreadsheet to estimate overall applied water demands, agricultural groundwater pumpage, urban pumping demand and other extraction data.

Natural recharge is estimated to be 8,000 af. Artificial recharge and subsurface inflow were not determined. Applied water recharge is approximately 74,000 af. Annual urban and agricultural extractions were estimated to be 17,000 af and 491,000 af, respectively. Other extractions were estimated to be approximately 3,000 af, and subsurface outflow is not determined.

For the City's 2005 UWMP, the City has estimated a revised "operational yield" for the subbasins underlying the City's service area (see discussion below under *Projected Future Groundwater Use*).

Groundwater Quality:

The groundwater in this subbasin is characterized by mixed sulfate to bicarbonate types in the northern and central portion of the subbasin, with areas of sodium chloride and sodium sulfate waters in the central and southern portion. TDS values range from 400 to 1,600 mg/L in the northern portion of the subbasin and from 730 mg/L to as high as 6,000 mg/L in the southern portion of the subbasin. DHS reports TDS concentrations in 44 public supply wells to range from 210 to 1,750 mg/L, with an average value of 770 mg/L. A typical range of water quality in wells is 700 to 1,000 mg/L.

Shallow, saline groundwater occurs within about 10 feet of the ground surface over a large portion of the subbasin. There are also localized areas of high iron, fluoride, nitrate, and boron in the subbasin.

The USGS Study (USGS 2004) also found that of the forty (40) public supply wells sampled in the spring of 2001 in the greater Modesto area, VOCs were detected in 92 percent of them. The concentrations of nearly all of the VOCs detected were at least an order of magnitude below action levels set by drinking water standards. However, concentrations of the solvents TCE and PCE were detected at levels exceeding federal and state MCLs in Modesto. The City operates wellhead treatment systems on one of its wells in the Grayson service area for removal of these types of contaminants.

Groundwater Management:

A number of groundwater management plans have been prepared by various agencies for various portions of the Delta-Mendota Subbasin. Table 16 lists the groundwater management plans which have been prepared to date for the Delta-Mendota Subbasin.

Table 16. Adopted Groundwater Management Plans for Delta-Mendota Subbasin[(a)]

Title	Agency	Adoption Date
AB 3030 Groundwater Management Plan	San Joaquin River Exchange Contractors Water Authority	1997
Fresno County Groundwater Management Plan	County of Fresno	March 1997
Groundwater Management Plan for the Northern Agencies in the Delta-Mendota Canal Service Area and a Portion of San Joaquin County	San Luis and Delta-Mendota Water Authority North	December 1997

(a) Source: DWR Groundwater Information Center, www.groundwater.water.ca.gov

Historic Groundwater Use

As described above, the City currently operates 105 groundwater wells within its contiguous and outlying service areas. Groundwater currently accounts for about 57 percent of the City's contiguous service area water supply; 42,873 acre-feet of groundwater was pumped within the contiguous service area by the City in 2005[18]. Prior to 1995, before the MID Phase 1 surface water supply became available, groundwater accounted for 100 percent of the City's supply, and annual extractions were as high as 68,478 acre-feet, including extractions within the former Del Este Water Company service areas that were acquired by the City in 1995[19].

For the City's outlying service areas, including Del Rio, Hickman, Waterford, Turlock and Grayson, groundwater still accounts for 100 percent of the water supply within the City's service area.

A summary of the total groundwater production by the City by subbasin for the last five years is provided in Table 17.

[18] Based on 2005 production data.

[19] Based on 1994 production data.

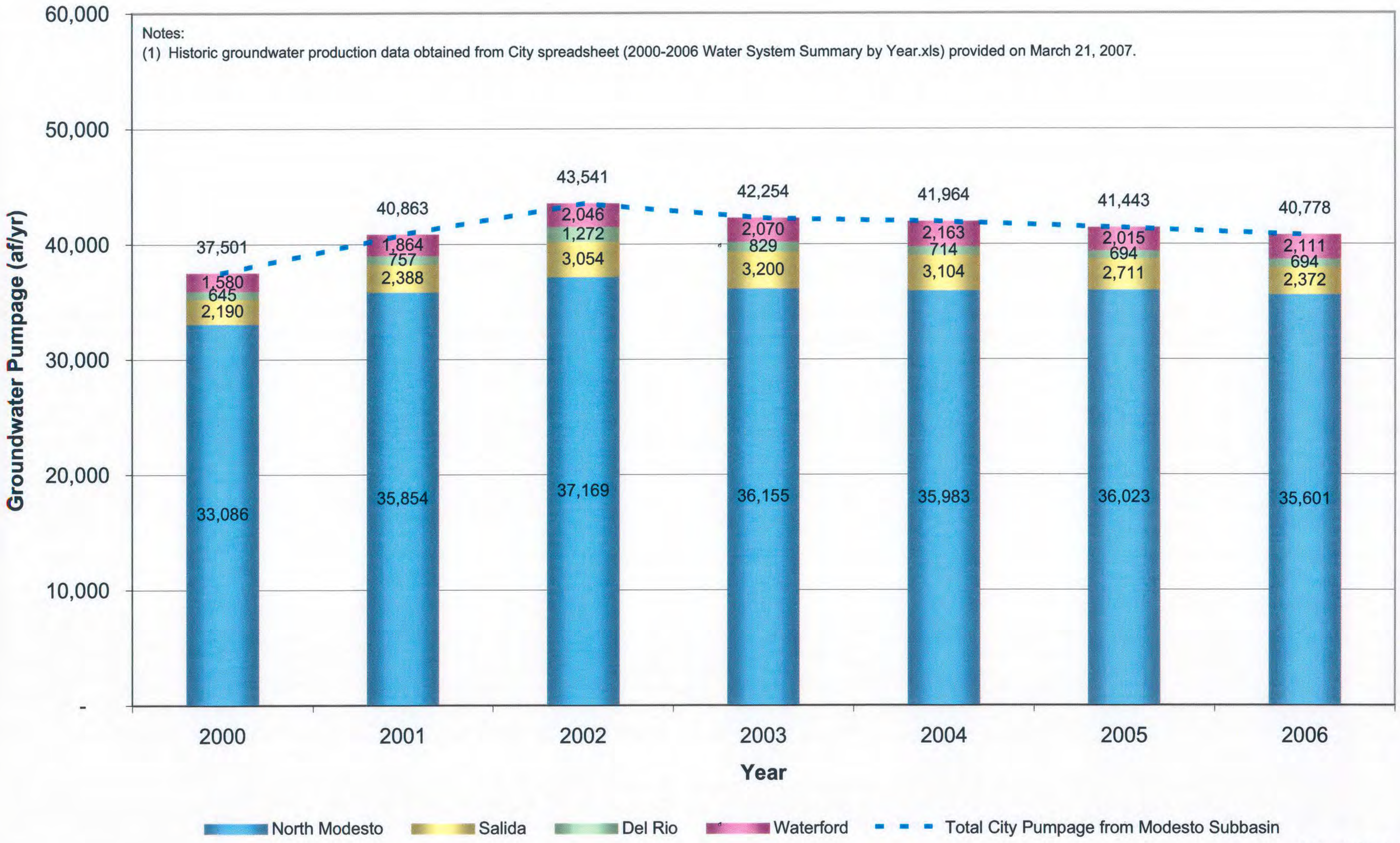
Table 17. City of Modesto Historic Groundwater Production[(a)]

Subbasin and Service Area	Groundwater Production, af/yr					
	2001	2002	2003	2004	2005	2006
Modesto Subbasin						
North Modesto	35,854	37,169	36,155	35,983	36,023	35,601
Salida	2,388	3,054	3,200	3,104	2,711	2,372
Del Rio	757	1,272	829	714	694	694
Waterford	1,864	2,046	2,070	2,163	2,015	2,111
Subtotal Modesto Subbasin	40,863	43,541	42,254	41,964	41,443	40,778
Turlock Subbasin						
South Modesto	3,986	4,571	2,493	1,805	2,354	2,180
Ceres	71	67	1,806	1,869	1,785	1,571
Turlock	518	541	419	541	494	353
Hickman	264	266	261	265	270	194
Subtotal Turlock Subbasin	4,839	5,445	4,979	4,480	4,903	4,298
Delta-Mendota Subbasin						
Grayson	297	324	287	261	237	176
Subtotal Delta-Mendota Subbasin	297	324	287	261	237	176
Total Groundwater Production, af/yr	45,999	49,310	47,520	46,705	46,583	45,252
Average Groundwater Production (2001-2006), af/yr	46,895					

(a) Source: City of Modesto Department of Public Works spreadsheet, 2000 to 2006 Water System Summary by Year, 03/21/07.

Average total groundwater pumpage by the City from all three subbasins over the past six years (2001 through 2006) has been approximately 46,895 af/yr. Figures 11, 12, and 13 show the City's groundwater pumpage over the past five years from the Modesto, Turlock, and Delta-Mendota Subbasins, respectively.

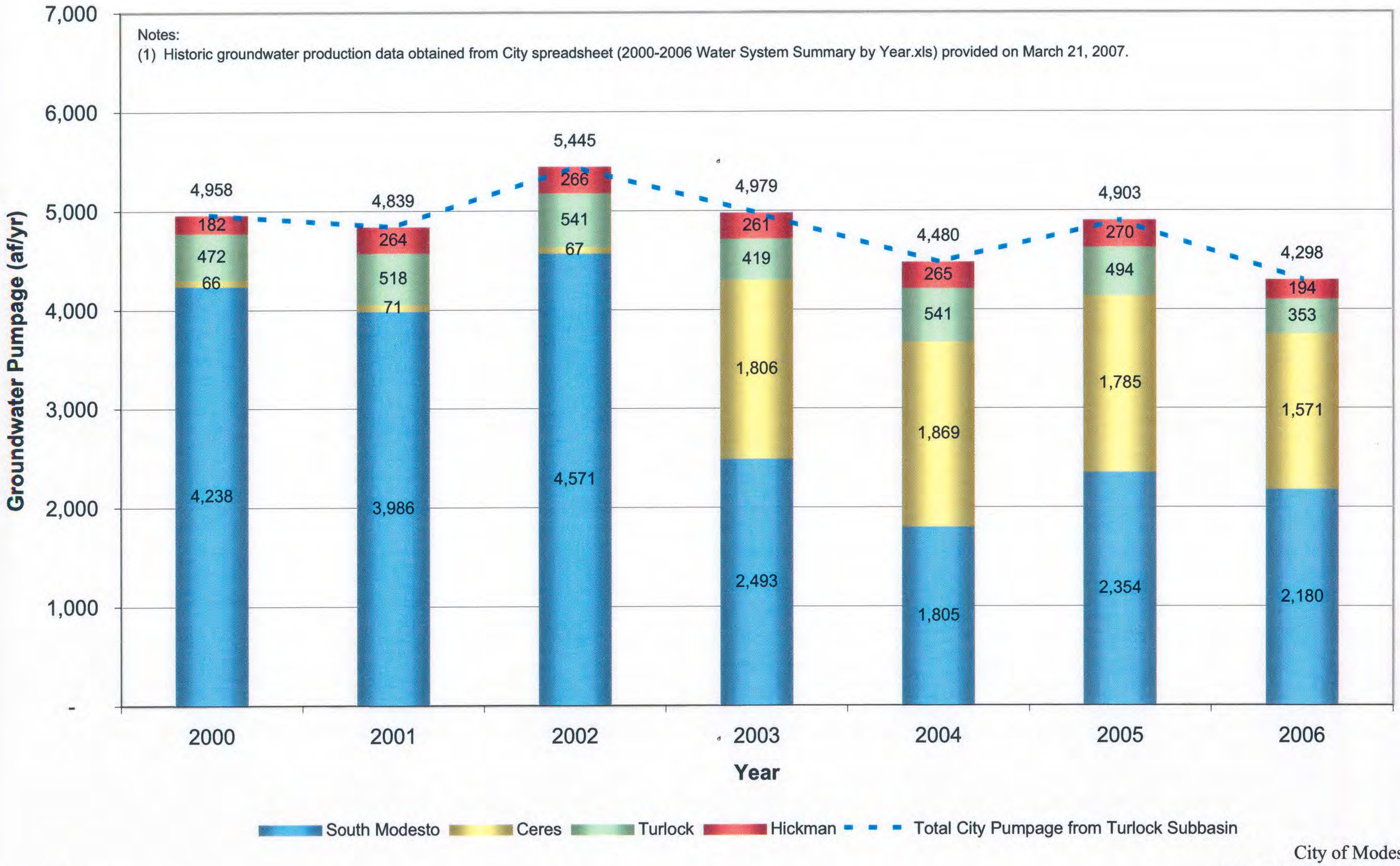
Figure 11. City of Modesto Groundwater Pumpage from the Modesto Subbasin
North Modesto, Salida, Del Rio, and Waterford Service Areas



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City of Modesto
Water Supply Assessment
Kiernan Business Park East
Kiernan Business Park South

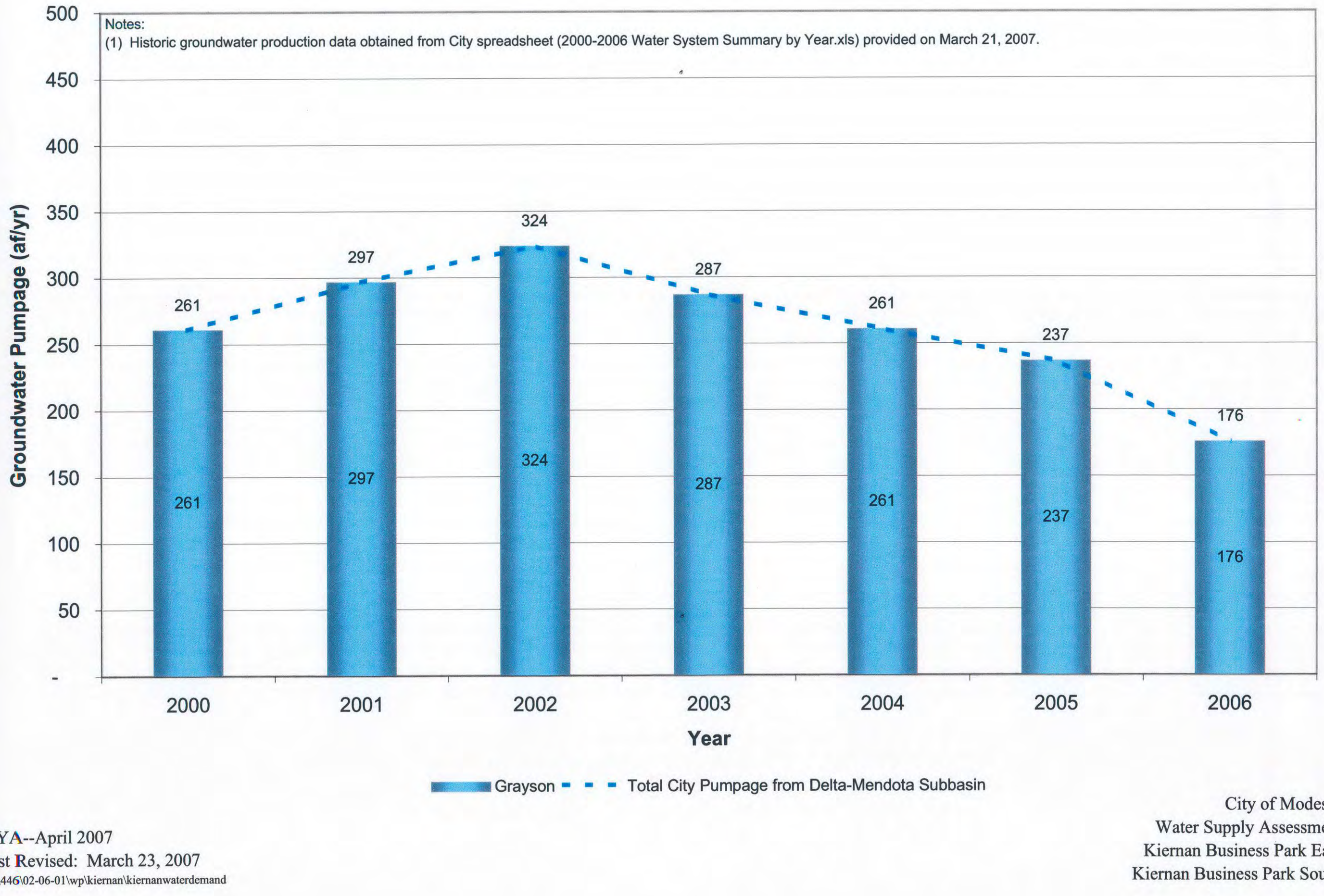
Figure 12. City of Modesto Groundwater Pumpage from the Turlock Subbasin
South Modesto, Ceres, Turlock, and Hickman Service Areas



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City of Modesto
Water Supply Assessment
Kiernan Business Park East
Kiernan Business Park South

Figure 13. City of Modesto Groundwater Pumpage from the Delta-Mendota Subbasin
Grayson Service Area



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City of Modesto
Water Supply Assessment
Kiernan Business Park East
Kiernan Business Park South

Projected Future Groundwater Use

As discussed in the City's 2005 UWMP, the City has estimated the operational yield of the groundwater basins underlying the City's service area to be 53,500 af/yr, based on historic groundwater pumpage by the City in the Modesto, Turlock, and Delta-Mendota Subbasins, and maintaining a minimum average groundwater elevation of 40 feet above mean sea level. The City believes that if the long-term groundwater pumpage quantity is held at 53,500 af/yr, then stable groundwater levels will result. If groundwater pumpage is less than 53,500 af/yr, groundwater levels should rise, increasing the quantity of groundwater stored within the basin. If the City intermily extracts more than 53,500 af/yr, groundwater levels will probably decline slightly. However, one must consider the total net increase in groundwater storage (number of years when pumpage was less than 53,500 af/yr, and associated quantity of "previously stored groundwater"), compared to the extractions (number of years when pumpage exceeds 53,500 af/yr, and associated quantity, to calculate the net change in groundwater storage volume). Therefore, in years in which groundwater pumping falls below the current average pumping volume, it is assumed that the unused groundwater is banked in the basin for later use. Table 18 shows the projected future groundwater production by the City in normal years, assuming that no other supplies (besides MID Phase 1 and 2) become available to the City in the future. The availability of other supplies in the future would allow the City to reduce future groundwater pumpage.

Table 18. City of Modesto Projected Future Groundwater Production (Normal Years)

	Future Groundwater Production, af/yr					
	2005	2010	2015	2020	2025	2030
Total Projected Future Groundwater Production, af/yr[(a)]	46,295	19,104	28,804	39,759	52,133	66,109 [(b)]

(a) According to the City's Draft 2005 UWMP dated March 2007 (Table 3-2). Assumes no other supplies (beside MID Phase 1 and 2) are available to the City in the future.

(b) Includes pumpage of groundwater previously banked in groundwater basin.

Groundwater Sufficiency

As discussed previously, the City historically pumped as much as 68,478 af/yr of groundwater from the subbasins underlying the City's service area, and groundwater levels decreased as a result of this pumping. However, since augmenting the City's water supply with treated surface water from the MID Phase 1 Project in 1995, City groundwater pumpage has decreased and groundwater levels have risen, particularly in the Modesto Subbasin.

As discussed in the City's 2005 Draft UWMP, the City's average groundwater pumpage over the last six years (2000 to 2005) has been approximately 46,895 af/yr, groundwater levels have risen above historic lows, and the current pumpage amount is less than the previously assumed "safe yield." From this, the City has assumed that the current pumpage amount is within the "operational yield" of the subbasins underlying the City's service area. Based on the current

groundwater levels and the anticipated future reduction in groundwater pumpage by the City (when MID Phase 2 becomes available), the City has estimated that it can increase current groundwater pumpage up to an "operational yield" of 53,500 af/yr without adversely affecting groundwater levels.[20] The City's Draft 2005 UWMP also assumes that when MID Phase 2 becomes available in late 2009, groundwater pumping by the City will decrease significantly, allowing groundwater to be banked in the groundwater basin for later use when the need for groundwater pumping increases in the future.

However, if any phase of either the KBP-East or KBP-South proceeds prior to the availability of MID Phase 2 supplies, a new groundwater supply well will be required to provide interim supply until the MID Phase 2 supply is available for use.

It should also be noted that the projected future groundwater pumpage assumes that no other supplies (besides MID Phase 1 and 2) become available to the City in the future. The availability of other supplies in the future would allow the City to reduce future groundwater pumpage.

Future Water Supplies

The City is currently anticipating and/or evaluating the following future water supplies:

- MID Phase 2 Surface Water Supply,
- MID Phase 3 Surface Water Supply,
- Turlock Irrigation District (TID) Surface Water Supply,
- Recycled Water,
- Aquifer Storage and Recovery (ASR) Program, and
- Other Proposed Programs (including Metering and Conjunctive Use).

Each of these anticipated future supplies is described below. Summary tables listing the City's current and anticipated future supplies, and historic and anticipated future quantities, are provided at the end of this section.

MID Phase 2 Surface Water Supply

As discussed above, the MRWTP was originally planned for a total capacity of 67,204 af/yr, to be completed in two phases. Phase 1 was completed in January 1995. Phase 2 is currently anticipated to be complete by late 2009. Completion of Phase 2 would provide the City with up to 33,602 af/yr of additional treated surface water.

[20] Source: City of Modesto Draft 2005 UWMP dated March 2007, anticipated to be adopted by the City in April 2007.

MID Phase 3 Surface Water Supply

An MID Phase 3 expansion may be possible if there is future conversion of agricultural land to urban uses which would allow for a corresponding redistribution of MID's existing surface water rights. The City has engaged in preliminary discussions with MID regarding development of Phase 3. However, since this supply has not yet been confirmed or negotiated, it has not been included as a potential future supply source in this WSA.

TID Surface Water Supply

The proposed TID Water Treatment Plant (WTP) is currently being evaluated and designed by the TID. Potential participants, such as the City, are evaluating whether they would like to participate. The development of a new WTP with TID would provide the City with an estimated additional 11.5 mgd (12,881 af/yr) of treated surface water to South Modesto. The City is currently working under a design agreement for surface water treatment and transmission facilities with the TID that is intended, through a future TDA, to provide the estimated 12,882 af/yr of surface water to South Modesto. TID surface water supply deliveries could be available as early as 2011. However, since this supply has not yet been confirmed or negotiated, it has not been included as a potential future supply source in this WSA.

Recycled Water

The City completed a feasibility study regarding the development of a recycled water system to offset potable demand. Tier I of this project has the potential to provide an additional 6,720 to 11,200 af/yr (6 to 10 mgd) of water by using recycled water for irrigation at existing golf courses, parks, schools, and industrial uses, and in future Comprehensive Planning Districts. However, much of this additional supply will not affect potable water supply needs, because most of the golf course and park's irrigation is currently supplied by non-potable sources. The City anticipates that the Tier I system, if found to be economically feasible, could be developed and operational within 5 to 10 years. For the purposes of this WSA, since the feasibility of recycled water has not yet been determined, the future availability of recycled water has not been included in this WSA.

ASR Program

The City does not anticipate the need to use the entire 67,204 af/yr of surface water supply under the TDA with MID until 2018. However, the City will be evaluating the feasibility of purchasing and utilizing the full 67,204 af/yr of MID surface water under the TDA prior to 2018 to be able to reduce the use of groundwater supplies. The annual reductions in groundwater pumpage would be highest right after the MID Phase 2 surface water supply becomes available in 2009, and would then diminish over time until 2018 when the City anticipates the need for both the full surface water and sustainable yield of groundwater supplies. Reduced annual groundwater usage between 2009 and 2018 could result in annual reductions in groundwater pumpage and thus an increase in groundwater levels during the same period. This could allow the City to essentially 'store' or 'bank' the unused groundwater in the Modesto Basin aquifer on an annual basis until 2018. After 2018, the City could start to 'recover' this previously stored groundwater supply. The feasibility of an ASR program in South Modesto to reduce future groundwater supply needs through use of

TID surface water could also be studied, because the City does not anticipate the demand for the entire estimated 12,882 af/yr allocation of TID water in the early years.[21]

For the purposes of this WSA, since the feasibility of an ASR Program has not yet been determined, the future availability of additional groundwater supplies through an ASR Program has not been included in this WSA.

Other Proposed Programs

The City has two other programs which may result in additional water supplies in the future: metering and conjunctive use.

The City requires installation of water meters with all new development and is currently retrofitting existing water services with meters (approximately 5,000 dwelling units per year) but, has not started billing residential customers on metered usage. Typical water use reductions expected from conversion to metered use billing is approximately 10 percent. The City would expect to notice residential demand reductions of 5 to 10 percent with metered-based billing. Another benefit of metering is that the City's water conservation effort can utilize direct system audits to identify significant water leaks (leaky toilets, irrigation pipe breaks, etc).

The City is moving to a water supply management strategy as discussed above, involving an ASR Program. The strategy consists of maximizing the use of available surface water supplies and utilizing groundwater supplies for peaking and emergency supply needs. This offers several benefits to the City including:

- The ability to make maximum use of high quality surface water.
- Allow for the City's planned well rehabilitation program to proceed.
- Allows for the "in-lieu" banking of groundwater by taking maximum deliveries of surface water as it becomes available through MID and TID projects.
- Allows for balancing of groundwater and surface water use for the maximum beneficial use of water resources within the City's water service areas.

Table 19 provides a summary of the City's existing and anticipated future water supply entitlements.

[21] Source: Water Supply Assessment for the Tivoli Project, prepared by the City of Modesto, June 2006.

Table 19. Summary of City of Modesto Existing and Future Water Supplies

Supply	Water Right or Available Supply Quantity, af/yr	Type of Supply			Ever Used by City
		Entitlement	Right	Contract	
Existing Supplies					
MID Phase 1 Treated Surface Water	32,507			✔	Yes
Groundwater (Estimated Operational Yield)	53,500		✔		Yes
Anticipated Future Supplies					
MID Phase 2 Treated Surface Water (anticipated to be available in late 2009)	34,697			✔	No

Table 20 provides a summary of historic water supply deliveries and anticipated future available supply during normal years from each of the City's water supplies. A discussion of the future anticipated availability of these supplies during dry years is provided in the next section.

Dry Year Water Supplies

The reliability of each of the City's current and future water supplies and their projected availability during normal, single dry, and multiple dry years is described below and summarized in Table 21.

Table 21. Water Supply Reliability in Normal, Single Dry, and Multiple Dry Years

Supply	Anticipated Reliability (% of Entitlement)		
	Normal Year	Single Dry Year[(a)]	5th Year of Multiple Dry Year[(b)]
Existing Supplies			
MID Phase 1 Treated Surface Water	100%	78.57%	78.57%
Groundwater	100%	100%	100%
Anticipated Future Supplies			
MID Phase 2 Treated Surface Water	100%	78.57%	78.57%

(a) Based on MID delivery of 33 out of 42 inches of the total MID water allocation (see discussion below).

(b) Based on MID delivery of 33 out of 42 inches of the total MID water allocation in the fifth year of a five-year dry period (see discussion below).

Table 20. Quantity of Historic Water Deliveries and Projected Future (Normal Year) Water Supplies

Supply	Historic Water Deliveries, af/yr							Projected Future Available Supplies, af/yr				
	1975	1980	1985	1990	1995	2000[a]	2005[a]	2010	2015	2020	2025	2030
Existing Supplies												
MID Phase 1 Treated Surface Water					22,507	33,713	32,507	32,507	32,507	32,507	32,507	32,507
Groundwater	29,021	38,312	42,326	55,136	48,865	42,720	46,295	19,104	28,804	39,759	52,133	53,500
Groundwater (beyond Operational Yield) [b]												12,609
Total Existing Supplies	29,021	38,312	42,326	55,136	71,372	76,433	78,802	51,611	61,311	72,266	84,640	98,616
Anticipated Future Supplies												
MID Phase 2 Treated Surface Water								34,697	34,697	34,697	34,697	34,697
Total Future Supplies								34,697	34,697	34,697	34,697	34,697
Total Supplies	29,021	38,312	42,326	55,136	71,372	76,433	78,802	86,308	96,008	106,963	119,337	133,313

(a) Includes groundwater pumpage in outlying service areas.

(b) Groundwater pumpage beyond Operational Yield is previously banked groundwater pumped out of storage.

Normal Year

Normal or wet water years are those water years that match or exceed median rainfall and runoff levels. The reliability of each of the City's current and future water supplies, and their projected availability during normal and wet years, is outlined below and in Table 22. Figure 14 shows the City's projected future supply versus demand in normal years.

The Treatment and Delivery Agreement (TDA) between MID and the City is the document controlling the delivery of treated water to the City. It obligates MID to deliver 32,507 af of treated surface water, commencing on May 1 and ending the following April 30, during normal years.

The reliability of future MID Phase 2 supplies in normal years is anticipated to be the same as the reliability of the City's MID Phase 1 supplies. Normal year MID Phase 2 supplies, anticipated to become available in 2009, are anticipated to be 34,697 af/yr.

The City obtains groundwater supplies from the Modesto, Turlock and Delta-Mendota Subbasins. The estimated operational yield of the City's groundwater supply is 53,500 af/yr. Groundwater pumpage beyond the operational yield is previously banked groundwater pumped out of storage.

Table 22. Projected Future Supplies Available in Normal Years

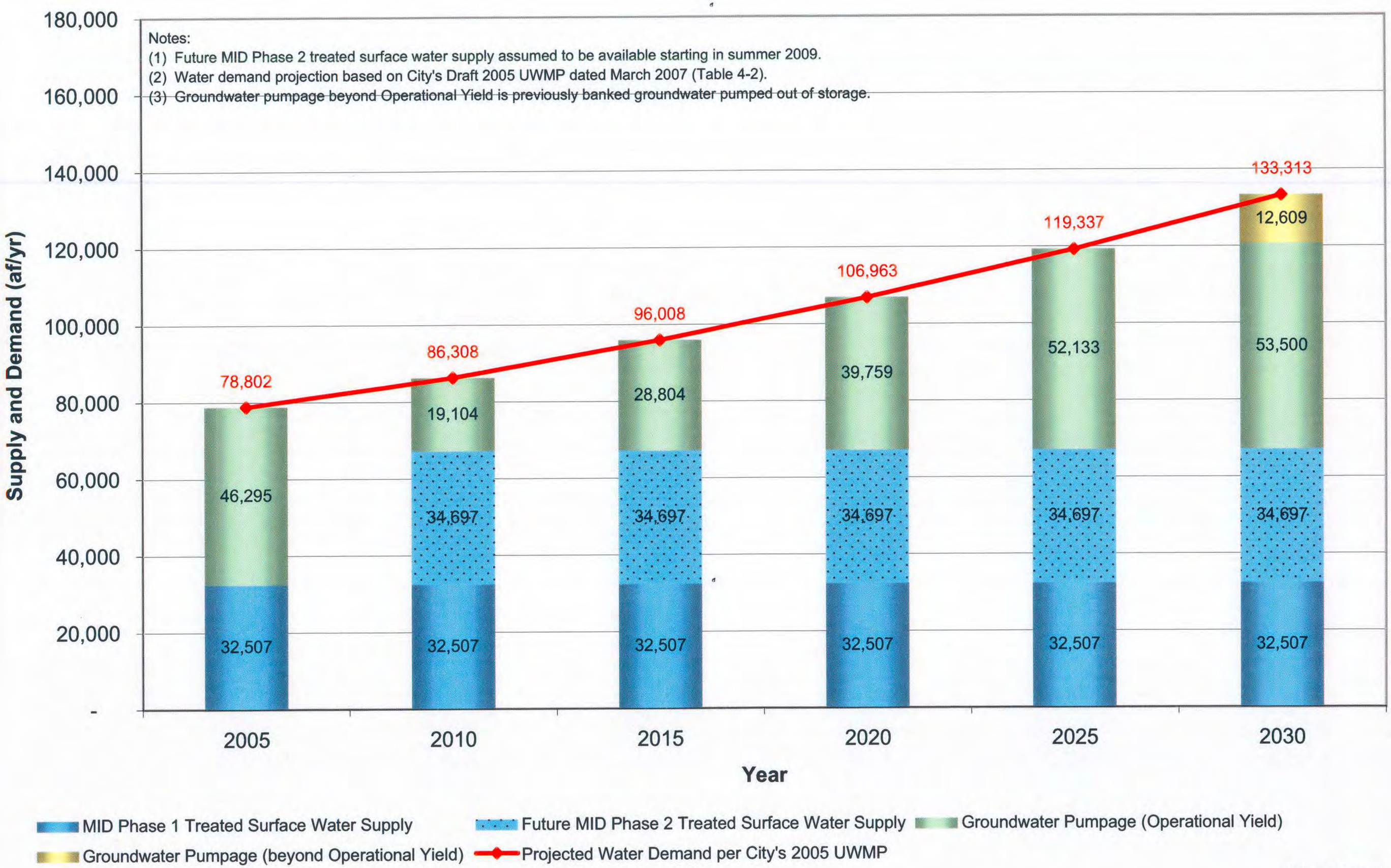
Supply	Anticipated Reliability (% of Entitlement)	Projected Future Available Supply, af/yr					
	Normal Years	2005	2010	2015	2020	2025	2030
Existing Supplies							
MID Phase 1 Treated Surface Water	100%	32,507	32,507	32,507	32,507	32,507	32,507
Groundwater (a)	100%	46,295	19,104	28,804	39,759	52,133	66,109
Anticipated Future Supplies							
MID Phase 2 Treated Surface Water	100%	0	34,697	34,697	34,697	34,697	34,697
Total Projected Supply		78,802	86,308	96,008	106,963	119,337	133,313
% Cutback from Normal Year		0%	0%	0%	0%	0%	0%

(a) Groundwater pumpage beyond the operational yield is previously banked groundwater pumped out of storage.

Single Dry Year

A single dry year is generally considered to be the lowest annual runoff for a watershed recorded since the 1903-04 water year. The reliability of each of the City's current and future water supplies and their projected availability during a single dry year, are outlined below and are shown in Table 23. Figure 15 shows the City's projected future supply versus demand in single dry years.

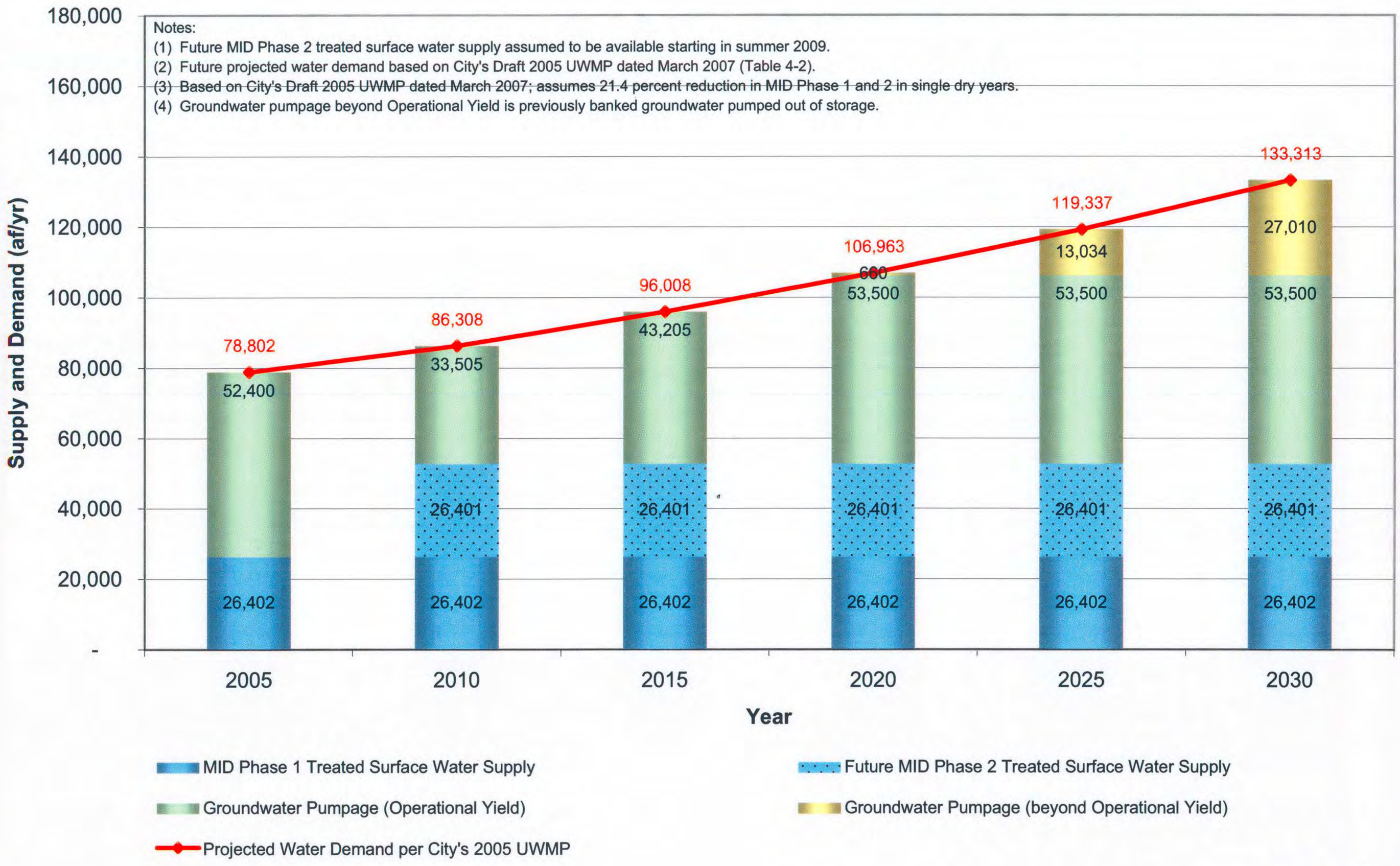
Figure 14. City of Modesto Future Supply vs. Demand in Normal Years "Contiguous" and "Outlying" Water Service Areas



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Figure 15. City of Modesto Future Supply vs. Demand in Single Dry Years "Contiguous" and "Outlying" Water Service Areas



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Table 23. Projected Future Supplies Available in Single Dry Years

Supply	Anticipated Reliability (% of Entitlement)	Projected Future Available Supply, af/yr					
	Single Dry Years[a]	2005	2010	2015	2020	2025	2030
Existing Supplies							
MID Phase 1 Treated Surface Water	78.57%	26,402	26,402	26,402	26,402	26,402	26,402
Groundwater[b]	100%	52,400	33,505	43,205	54,160	66,534	80,150
Anticipated Future Supplies							
MID Phase 2 Treated Surface Water	78.57%	0	26,401	26,401	26,401	26,401	26,401
Total Projected Supply		78,802	86,308	96,008	106,963	119,337	133,313
% of Normal Year		100%	100%	100%	100%	100%	100%

(a) Reliability of MID and TID supplies in single dry years based on delivery of 33 out of 42 inches of the total water allocation from MID (see discussion below).

(b) Groundwater pumpage beyond the operational yield is previously banked groundwater pumped out of storage.

The TDA is the document controlling the delivery of treated water to the City. It obligates MID to deliver 32,507 af of treated surface water, commencing on May 1 and ending the following April 30, during normal years. However, during dry years, the delivery of surface water by MID may be reduced. Section 17.2 of the TDA provides a formula for water allocation in drier than average years; however, the amount of reduction is not determined until the time of the shortage. For example, in 1991, 33 inches of the 42 inches of total water allocation was defined as the base supply and the remaining 9 inches were available as options, which resulted in a 100 percent allotment. For purposes of this WSA, MID supply delivery during a single dry year is assumed to be 33 inches (base supply), or 78.57 percent (33 inches divided by 42 inches). This results in an MID Phase 1 delivery of 26,402 af/yr.

The reliability of future MID Phase 2 supplies in single dry years is anticipated to be the same as the reliability of the City's MID Phase 1 supplies. Single dry year MID Phase 2 supplies are anticipated to be 78.57 percent of normal (33 inches divided by 42 inches), or 26,401 af/yr.

The City obtains groundwater supplies from the Modesto, Turlock and Delta-Mendota Subbasins. The estimated operational yield of the City's groundwater supply is 53,500 af/yr. Groundwater pumpage beyond the operational yield is previously banked groundwater pumped out of storage.

Multiple Dry Years

A multiple dry year period is generally considered to be the lowest average runoff recorded for a consecutive multiple year period (three years or more) for a watershed since 1903. For example, 1928-1934 and 1987-1992 were the two multi-year periods of lowest average runoff during the 20th Century in the Central Valley Basin. The reliability of each of the City's current and future water supplies, and their projected availability during a multiple dry year period, are outlined

below and shown in Table 24. Figure 16 shows the City's projected future supply versus demand in multiple dry years.

Table 24. Projected Future Supplies Available in Multiple Dry Years

Supply	Anticipated Reliability (% of Entitlement)	Projected Future Available Supply, af/yr					
	5th Year of Multiple Dry Years[a]	2005	2010	2015	2020	2025	2030
Existing Supplies							
MID Phase 1 Treated Surface Water	78.57%	26,402	26,402	26,402	26,402	26,402	26,402
Groundwater [b]	100%	52,400	33,505	43,205	54,160	66,534	80,150
Anticipated Future Supplies							
MID Phase 2 Treated Surface Water	78.57%	0	26,401	26,401	26,401	26,401	26,401
Total Projected Supply		78,802	86,308	96,008	106,963	119,337	133,313
% of Normal Year		100%	100%	100%	100%	100%	100%

[a] Based on assumed conditions in the fifth year of a five-year dry period (see discussion below).

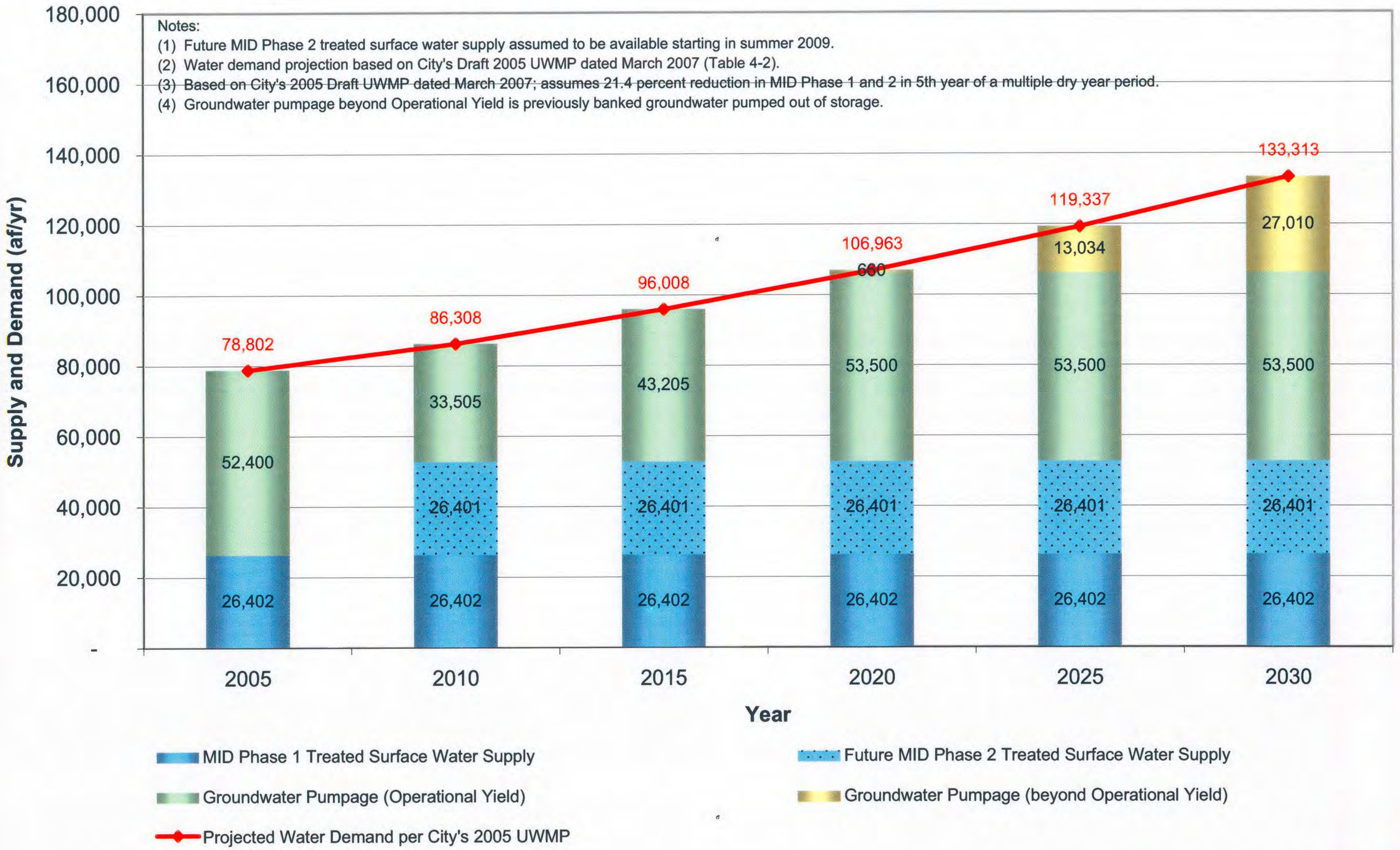
[b] Groundwater pumpage beyond the operational yield is previously banked groundwater pumped out of storage.

The TDA is the document controlling the delivery of treated water to the City. It obligates MID to deliver 32,507 af of treated surface water, commencing on May 1 and ending the following April 30, during normal years. However, during dry years, the delivery of surface water by MID may be reduced. Section 17.2 of the TDA provides a formula for water allocation in drier than average years; however, the amount of reduction is not determined until the time of the shortage. For example, in 1991, 33 inches of the 42 inches of total water allocation was defined as the base supply and the remaining 9 inches were available as options, which resulted in a 100 percent allotment.

For purposes of this WSA, MID Phase 1 supply delivery during multiple dry years is as follows:

- First year of five-year multiple dry year period: 40.2 of 42 inches (95.71 percent of normal): 31,112 af/yr
- Second year of five-year multiple dry year period: 38.4 of 42 inches (91.43 percent of normal): 29,721 af/yr
- Third year of five-year multiple dry year period: 36.6 of 42 inches (87.14 percent of normal): 28,327 af/yr

Figure 16. City of Modesto Future Supply vs. Demand in Multiple Dry Years
"Contiguous" and "Outlying" Water Service Areas



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- Fourth year of five-year multiple dry year period: 34.8 of 42 inches (82.86 percent of normal): 26,935 af/yr
- Fifth year of five-year multiple dry year period: 33 of 42 inches (78.57 percent of normal): 26,402 af/yr

The reliability of future MID Phase 2 supplies in multiple dry years is anticipated to be the same as the reliability of the City's MID Phase 1 supplies. For purposes of this WSA, MID Phase 2 supply delivery during multiple dry years is as follows:

- First year of five-year multiple dry year period: 40.2 of 42 inches (95.71 percent of normal): 33,208 af/yr
- Second year of five-year multiple dry year period: 38.4 of 42 inches (91.43 percent of normal): 31,723 af/yr
- Third year of five-year multiple dry year period: 36.6 of 42 inches (87.14 percent of normal): 30,235 af/yr
- Fourth year of five-year multiple dry year period: 34.8 of 42 inches (82.86 percent of normal): 28,750 af/yr
- Fifth year of five-year multiple dry year period: 33 of 42 inches (78.57 percent of normal): 26,401 af/yr

The City obtains groundwater supplies from the Modesto, Turlock and Delta-Mendota Subbasins. The estimated operational yield of the City's groundwater supply is 53,500 af/yr. Groundwater pumpage beyond the operational yield is previously banked groundwater pumped out of storage.

DETERMINATION OF WATER SUPPLY SUFFICIENCY

10910(c)(4) If the city or county is required to comply with this part pursuant to subdivision (b), the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20-year projection, will meet the projected water demand associated with the proposed project, in addition to existing and planned future uses, including agricultural and manufacturing uses.

Based on the analysis described above, this Water Supply Assessment demonstrates that the City's existing and future water supplies are sufficient to meet the City's existing and projected future water demands, including those future water demands associated with the Proposed Projects, to the year 2030 under all hydrologic conditions.

It should be noted that under all of the conditions evaluated in this WSA, the projected future groundwater pumpage (sometimes requiring pumpage out of banked groundwater storage) assumes that no other supplies (besides MID Phase 1 and 2) become available to the City in the future. The availability of other supplies in the future would allow the City to reduce groundwater pumpage in the future.

Normal Years

Table 25 summarizes the City's projected existing and future water supplies and water demands in normal years to 2030 (see Figure 14). The projected water demands shown include the projected water demands for the Proposed Projects. As shown, for normal years, the City's existing and future supplies are sufficient to meet the City's projected future water demands. This assumes that groundwater will be banked and pumped out of storage in the future when needed to meet demands. Based on this assumption, no supply shortages are anticipated during normal years for the period.

Table 25. Projected Future Supplies Available in Normal Years vs. Demand

Supply	Anticipated Reliability (% of Entitlement)	Projected Future Available Supply, af/yr					
	Normal Years	2005	2010	2015	2020	2025	2030
Existing Supplies							
MID Phase 1 Treated Surface Water	100%	32,507	32,507	32,507	32,507	32,507	32,507
Groundwater [(a)]	100%	46,295	19,104	28,804	39,759	52,133	66,109
Anticipated Future Supplies							
MID Phase 2 Treated Surface Water	100%	0	34,697	34,697	34,697	34,697	34,697
Total Projected Supply		78,802	86,308	96,008	106,963	119,337	133,313
% Cutback from Normal Year		0%	0%	0%	0%	0%	0%

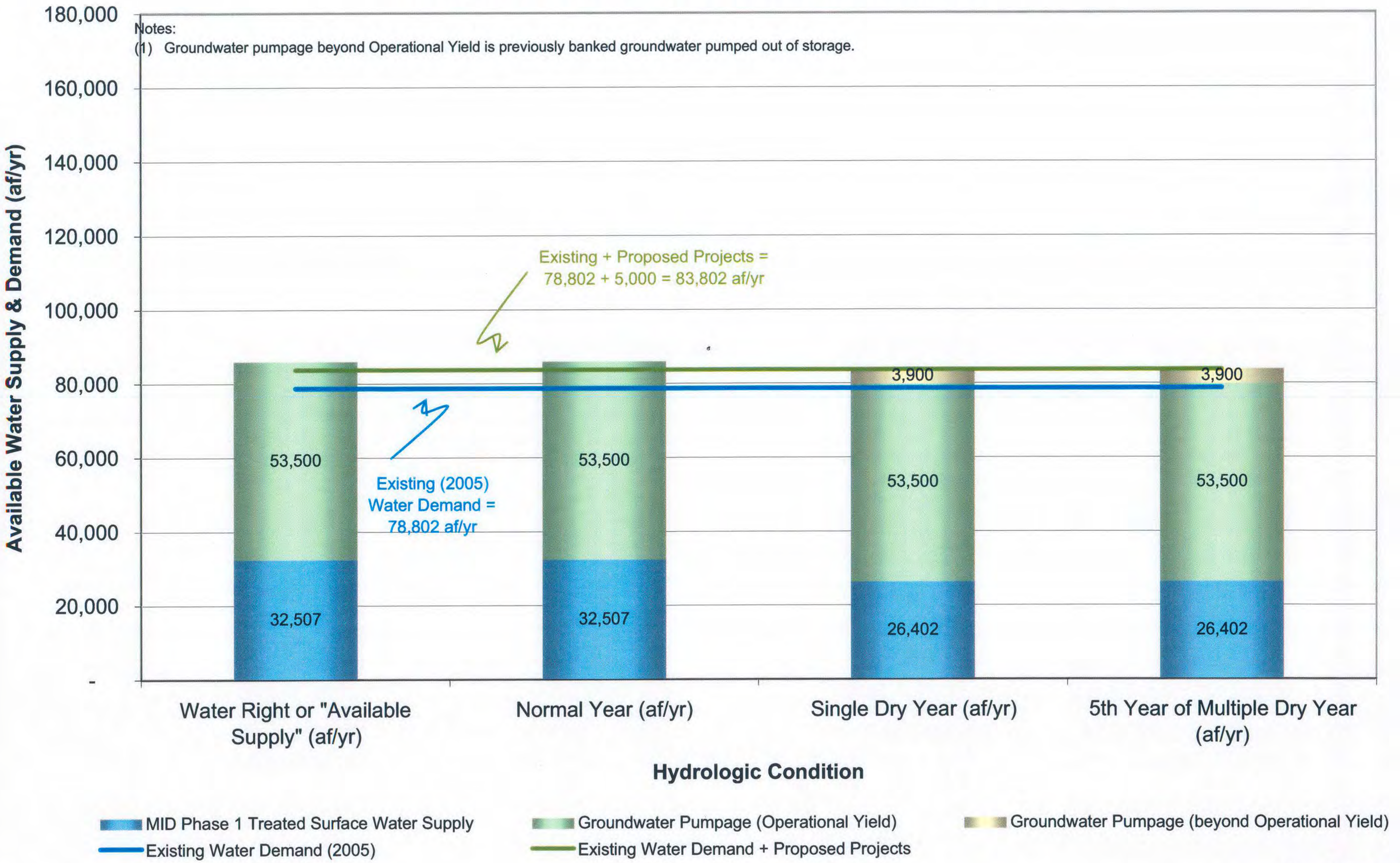
(a) Groundwater pumpage beyond the operational yield is previously banked groundwater pumped out of storage.

Single Dry Years and Multiple Dry Years

Table 26 summarizes the City's current (2005) water supplies and water demands in normal, single dry, and multiple dry years (see Figure 17). As shown, for all of the hydrologic conditions, the City's existing supplies are sufficient to meet the City's current (2005) water demands, including water demands associated with currently proposed projects, including the KBP – East and KBP – South Projects, assuming that groundwater will be banked and pumped out of storage in the future when needed to meet demands.. Based on this assumption, no supply shortages are anticipated for any of the hydrologic conditions based on current (2005) demands.

As described earlier in Tables 22 through 24, for all of the hydrologic conditions for future years through 2030, the City's existing and future supplies are sufficient to meet the City's projected water demands, assuming that groundwater will be banked and pumped out of storage in the future when needed to meet demands.

Figure 17. City of Modesto Existing (2005) Water Supplies vs. Demand
"Contiguous" and "Outlying" Water Service Areas



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Near-Term Conditions

Even in the near-term, in the years before the MID Phase 2 supply becomes available in 2009, although some groundwater will need to be pumped out of storage in the interim if dry year conditions occur, the City's supplies are adequate to meet projected demands in both normal and dry conditions. This is demonstrated on Figures 18 and 19, which show supply and demand over the next five years under normal and dry conditions, respectively. As shown in Figure 18, under normal conditions, no supply shortfall is anticipated over the next five years. As shown in Figure 19, under dry year conditions (either a single dry year or the fifth year of a multiple year drought) no supply shortfall is anticipated if it is assumed that groundwater beyond the operational yield (up to 2,844 af/yr) will be pumped out of storage in the interim period before MID Phase 2 comes on-line. It should be noted that if either the KBP-East or KBP-South Projects proceed prior to the availability of MID Phase 2 treated surface supplies, a new groundwater well will be required to provide interim service to either or both of these projects.

Table 26. Current (2005) Dry Year Water Supply vs. Demand

Supply	Current (2005) Dry Year Water Supply Availability, af/yr		
	Normal Years	Single Dry Year	5th Year of Multiple Dry Year
Existing Supplies			
MID Phase 1 Treated Surface Water	32,507	26,402	26,402
Groundwater [(a)]	53,500	57,400	57,400
Total Water Supply	86,007	83,802	83,802
Current Water Demand (2005)	78,802	78,802	78,802
Current Water Demand (2005) with Currently Proposed Projects[(b)]	83,802	83,802	83,802
Projected Shortfall	0	0	0

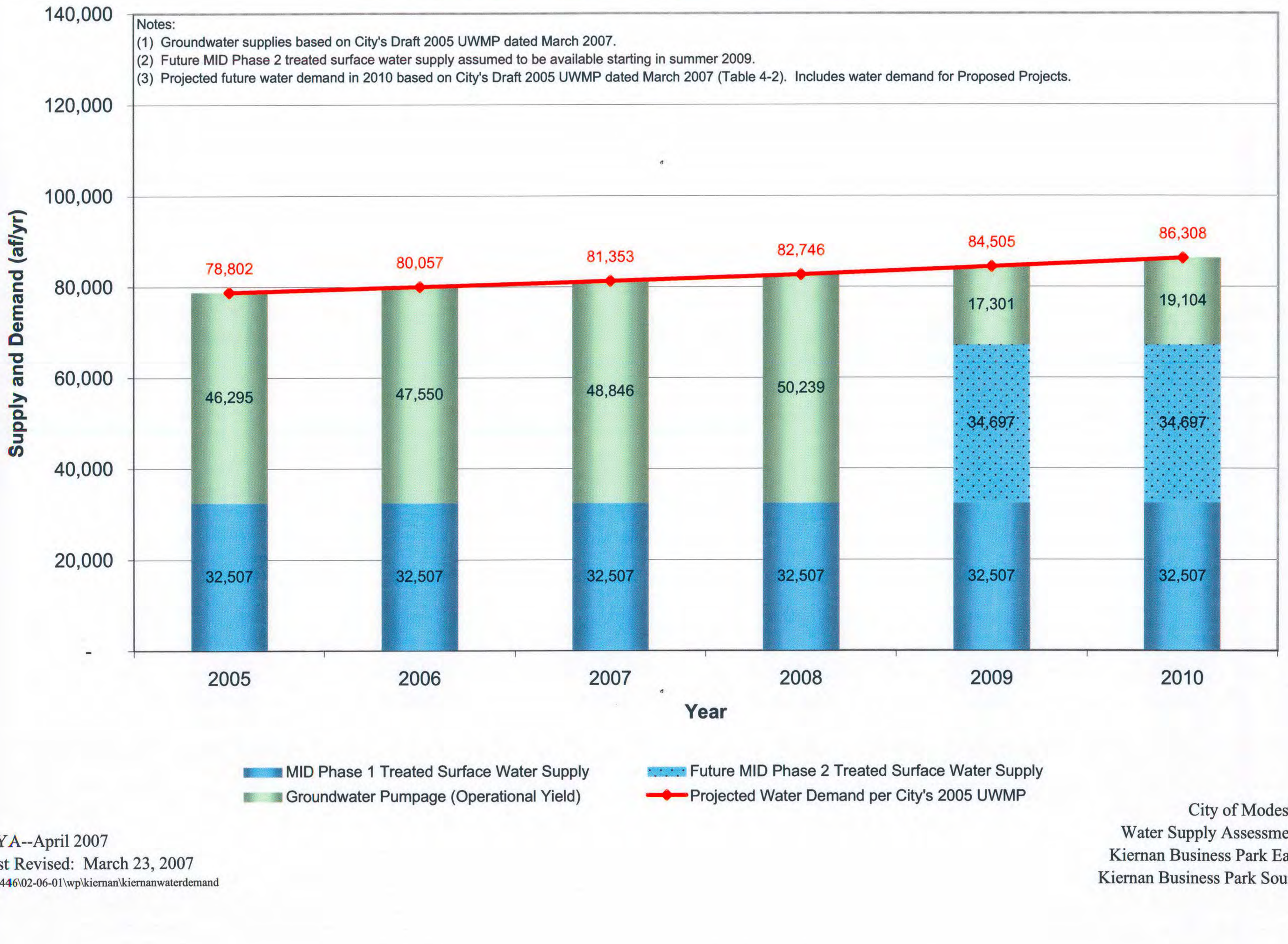
(a) Groundwater pumpage beyond the operational yield is groundwater pumped out of storage in the interim until MID Phase 2 supplies become available in 2009.

(b) Proposed projects include the KBP-East and KBP-South Projects, as well as other currently proposed projects (see Table 11).

Buildout Conditions

Table 27 summarizes the City's Year 2030 water supplies and water demands in normal, single dry, and multiple dry years (see Figure 20). The projected water demands shown include the projected water demands for the Proposed Projects. As shown, for all of the hydrologic conditions, the City's existing and future supplies are sufficient to meet the City's Year 2030 water demands, assuming that groundwater will be banked and pumped out of storage in the

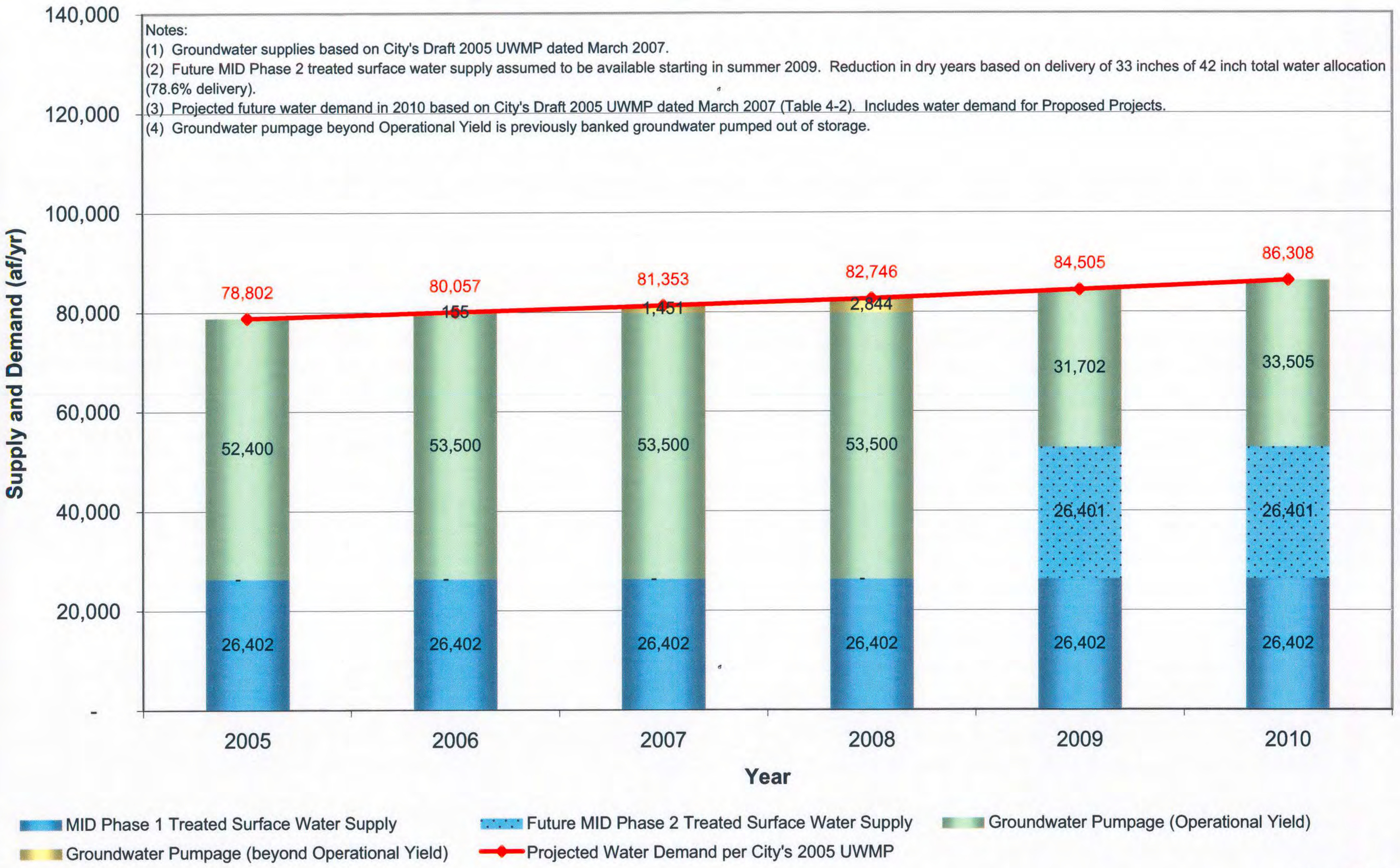
Figure 18. City of Modesto Near-Term Supply vs. Demand in Normal Years "Contiguous" and "Outlying" Water Service Areas



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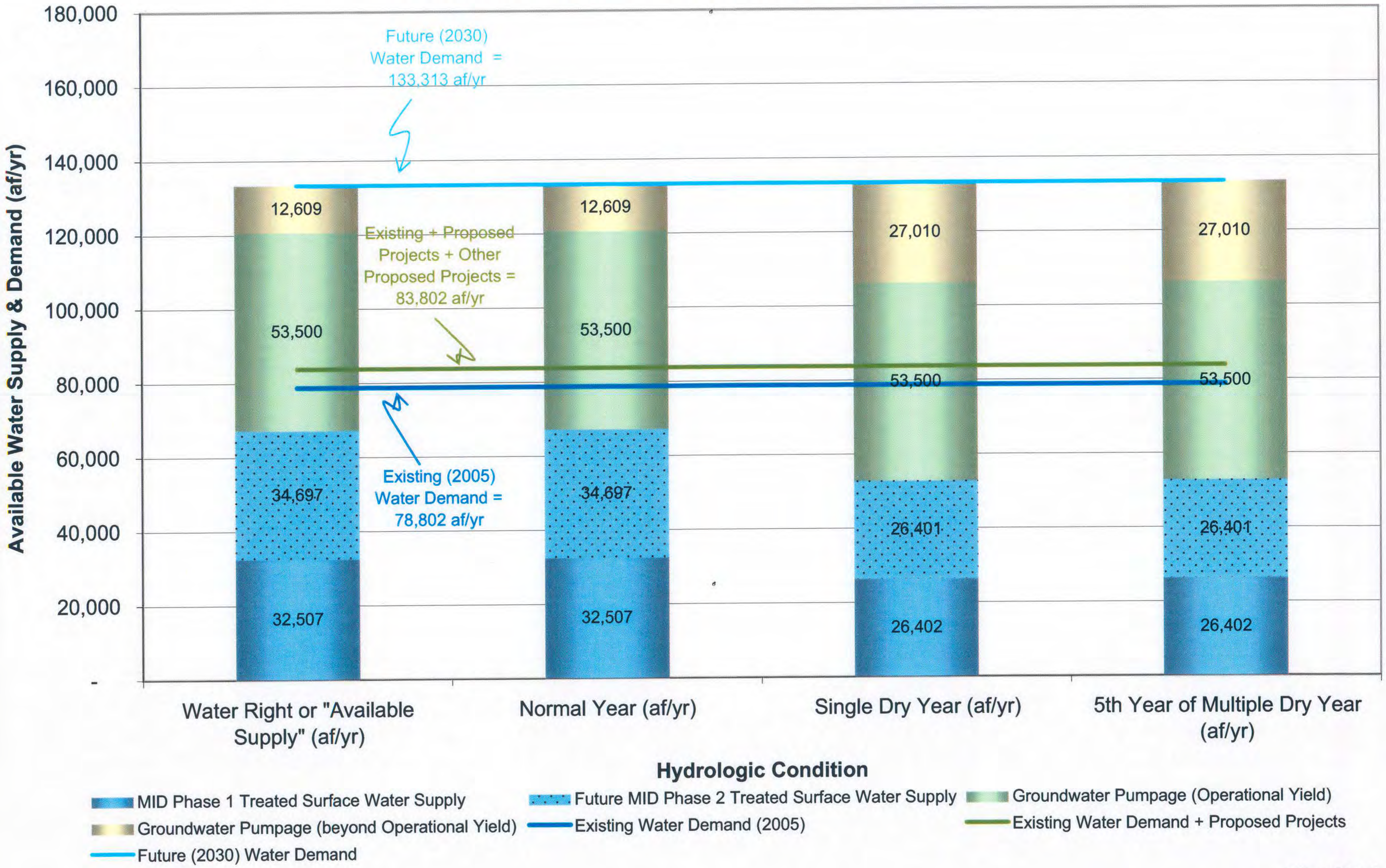
Figure 19. City of Modesto Near-Term Supply vs. Demand in Dry Years (Single Dry Year or Fifth Year of Multiple Dry Year Period) "Contiguous" and "Outlying" Water Service Areas



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Figure 20. City of Modesto Future Buildout (2030) Water Supplies vs. Demand
"Contiguous" and "Outlying" Water Service Areas



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future when needed to meet demands.. Based on this assumption. no supply shortages are anticipated for any of the hydrologic conditions based on Year 2030 demands.

Table 27. Year 2030 Dry Year Water Supply vs. Demand

Supply	Year 2030 Dry Year Water Supply Availability, af/yr		
	Normal Years	Single Dry Years	5th Year of Multiple Dry Year[(a)]
Existing Supplies			
MID Phase 1 Treated Surface Water	32,507	26,402	26,402
Groundwater [(b)]	66,109	80,510	80,510
Anticipated Future Supplies			
MID Phase 2 Treated Surface Water	34,697	26,401	26,401
Total Water Supply	133,313	133,313	133,313
Projected 2030 Water Demand[(c)]	133,313	133,313	133,313
Projected Shortfall	0	0	0

(a) Multiple dry year supply based on conditions during fifth year of a five-year dry period.
(b) Groundwater pumpage beyond the operational yield is previously banked groundwater pumped out of storage.
(c) Projected 2030 water demand includes projected water demand for the Proposed Projects.

WATER SUPPLY ASSESSMENT APPROVAL PROCESS

10910 (g)(1) Subject to paragraph (2), the governing body of each public water system shall submit the assessment to the city or county not later than 90 days from the date on which the request was received. The governing body of each public water system, or the city or county if either is required to comply with this act pursuant to subdivision (b), shall approve the assessment prepared pursuant to this section at a regular or special meeting.

The Modesto City Council must approve this WSA at a regular or special meeting. Furthermore, the City must include this WSA in the Draft EIR being prepared for the two Proposed Projects: Kiernan Business Park-East and Kiernan Business Park-South.

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Turlock Groundwater Basin Groundwater Management Plan, prepared by Turlock Groundwater Basin Association, draft report dated August 7, 2006.

United States Geological Survey, *Assessing the Susceptibility to Contamination of Two Aquifer Systems Used for Public Water Supply in the Modesto and Fresno Metropolitan Areas, California, 2001 and 2002*, by Michael T. Wright, Kenneth Belitz, and Tyler Johnson, USGS Scientific Investigations Report 2004-5149, 2004.

United States Geological Survey, *Hydrogeologic Characterization of the Modesto Area, San Joaquin Valley, California*, by Kren R. Burrow, Jennifer L. Shelton, Joseph A. Hevesi, and Gary S. Weissmann, USGS Scientific Investigations Report 2004-5232, 2004.

Vesting Tentative Parcel Map for Mana/Wagner Development (portion of Kiernan Business Park-South Project), prepared by Associated Engineering, Inc., dated February 24, 2006.

APPENDIX A

Existing City of Modesto Water Supply Agreements

- Treatment and Delivery Agreement between MID and City of Modesto

APPENDIX B

Groundwater Documentation

- DWR Bulletin 118 Description of San Joaquin Valley Groundwater Basin-Modesto Subbasin
- DWR Bulletin 118 Description of San Joaquin Valley Groundwater Basin-Turlock Subbasin
- DWR Bulletin 118 Description of San Joaquin Valley Groundwater Basin-Delta-Mendota Subbasin
- Groundwater Hydrographs for City of Modesto Wells in the Modesto Subbasin
- Groundwater Hydrographs for City of Modesto Wells in the Turlock Subbasin
- Groundwater Hydrographs for City of Modesto Wells in the Delta-Mendota Subbasin
- Groundwater Level Contour Maps for Modesto Groundwater Basin
- Groundwater Level Contour Maps for Turlock Groundwater Basin
- Groundwater Level Contour Maps for Delta-Mendota Groundwater Basin

APPENDIX Fb: TECHNICAL MEMORANDUM, EVALUATION OF THE KIERNAN BUSINESS PARK EAST PROJECT'S HYDRAULIC IMPACTS ON THE CITY'S EXISTING WATER SYSTEM

WEST YOST ASSOCIATES
Consulting Engineers



FINAL

TECHNICAL MEMORANDUM

DATE: June 4, 2007 Project No.: 446-02-06-01.001

TO: Jim Bissell, Harris and Associates

CC: Violet Jakob, City of Modesto

FROM: Gerry Nakano, Principal-in-Charge
Carman Ng, Staff Engineer

SUBJECT: Revised Evaluation of the Kiernan Business Park East Project's Hydraulic Impacts on the City's Existing Water System

This Technical Memorandum (TM) summarizes West Yost Associates' (WYA) technical evaluation of the potential hydraulic impacts of the proposed Kiernan Business Park East Project (Project) on the City of Modesto's (City) existing water system. This evaluation addresses concerns regarding water supply availability and the recommended size and location of water system infrastructure which is required to provide the Project with adequate pressures, flow and system reliability under a variety of water demand conditions, without hydraulically impacting other, existing City water customers. WYA's analysis also estimates the costs associated with these required water system facility improvements, and discusses whether these costs for the required water system improvements are included in an existing City Program, such as the City's Connection Fee Program, or the City's Ongoing Strengthening and Repairing Water Pipelines Program, or not.

SUMMARY

WYA updated the City's existing water system hydraulic model (model) to include the Project's estimated water demands and proposed connections into the City's water system. The hydraulic water system model was then used to determine system pressures during various demand conditions. The analysis showed that the existing water system could not maintain pressures above the minimum City requirements with the increased Project demands, under peak hour demand conditions.

To mitigate these water system distribution infrastructure deficiencies, and be able to meet the City's minimum pressure criteria, numerous water system facility improvements will be required, which can be categorized into the following three system improvements groupings:

1. Project Specific Improvements – includes on-site backbone water system infrastructure defined as pipelines 12-inches in diameter or larger, (all smaller pipelines are also the financial responsibility of the Project Proponents, but not accounted for here) funded by the Project Proponents,

2. Localized System Improvements – water system improvements required to mitigate existing water system deficiencies funded by the City's Ongoing Strengthening and Repairing Water Pipelines Program, and

3. System-Wide Improvements – water system improvements required to serve future developments and new customers funded by the City's Connection Fee Program.

Based on our hydraulic evaluation of the Project's impacts to the City's existing water system, Project Specific Improvements that cost approximately $2.4 million are required to provide adequate water service to the Project and mitigate the hydraulic impact to other existing City customers. In addition, localized system improvements of $3.7 million and system-wide improvements of $44.3 million are required. The funding for design and construction of these local and system-wide improvements is provided through existing City funding programs.

A specific connection fee calculation for the proposed Project, consistent with the City of Modesto Municipal Code Paragraph 11-1.05(a) and Resolution 2005-282 is not possible at this time, as the City's connection fee is based on the actual number and size of services to individual buildings, and this level of detail has not been provided by the Project Proponents.

It should be noted that if any of the assumptions for this analysis, including, but not limited to, land use designations or pipelines configurations or diameters, and/or City wells assumed to be operating are changed, the recommendations should be re-evaluated for their hydraulic impact to the City's water system.

OVERVIEW OF PROJECT

The Project is located on the east side of Dale Road between Kiernan Avenue and Bangs Avenue, as shown in Figure 1. The 153-acre Project is divided into two phases that are differentiated by whether or not the area of the phase is in or out of the current City limits. The first phase is located entirely within the existing City limits. The second phase is located outside the existing City limits and must first be annexed into the City. Within the Project area, there is a mix of business park, mixed land use, and medium-high density residential land uses which were used to calculate Project water demands. Adjacent to the Project location there is currently a 20-inch diameter pipeline in Bangs Avenue south of the Project, and one 12-inch diameter pipeline along Dale Road (See Figure 2).

Based on information provided by electronic plans from the City, this Project is proposed to connect into the existing water system at four different locations: American Avenue and Bangs Avenue, future Chopra Parkway and Bangs Avenue, future "A Street" and Dale Road, and future Health Care Way and Dale Road as indicated on Figure 2. Since City policy is to maintain pipelines equal to or larger than 18-inches in diameter as dedicated transmission mains, any proposed connections along Bangs Avenue must be to a smaller diameter pipeline (proposed to be a new 12-inch diameter pipeline), which is included as a project specific pipeline recommendation. However, due to existing conditions, the existing 20-inch transmission main in Bangs Avenue has already been taped in several places. Therefore, if approved by the City Engineer, it might be possible for the Project Proponents to tie into this existing 20-inch pipeline, in-lieu of installing the recommended 12-inch diameter parallel distribution line in Bangs

Avenue. Pipelines connected to the City system along Dale Road will connect into the existing 12-inch diameter main in that street. Also, though not proposed by the Project Proponent, a new 16-inch pipeline in Kiernan Avenue, along the northerly border of this Project will also be required as previously identified and recommended as part of the City's SOI water system infrastructure. This 16-inch pipeline should connect to an extension of the existing north-south pipeline along Dale Road at Kiernan Avenue.

HYDRAULIC MODEL AND ASSUMPTIONS

The updated 2006 calibrated water system hydraulic model was used for this analysis. The previously calibrated hydraulic model (2003) was modified to match 2006 maximum day and peak hour demand conditions for flow and system pressures, using actual observed SCADA information provided by City staff.

These modifications included adjusting overall system demands and facilities available for operation within the City's system. In 2003, the SCADA recorded maximum day demand was 123 mgd, approximately 3 percent higher than the 2006 SCADA recorded maximum day demand of 120 mgd. As a result of this slight decrease in the observed maximum day demand, some City service areas that were previously "border-line" with respect to being able to maintain the City's minimum required system pressure are now slightly above the minimum pressure requirement. In addition, the system had two fewer groundwater wells operating in 2006 (taken out of service due to water quality issues in 2006) than in 2003, decreasing the available pumping capacity. It should also be noted that this updated 2006 hydraulic model does not specifically take into account the effects of the Project on the City's existing water system if the City were to experience a sudden increase in demands due to higher temperatures or an emergency situation, such as the loss of a major supply source, transmission main rupture, or source contamination.

It should be further noted that since June 2006 (system condition used to recalibrate and update the hydraulic model), the City has had to cease operation of five (5) additional wells (status as of March 2007) due to water quality issues. The wells that had to be taken out of service were Wells 3, 49, 50, 226, and 285. The loss of these 5 wells decreased the available groundwater pumping capacity of the City's system by approximately 4300 gpm, which further limits the amount of groundwater the existing water system can provide for this Project. Work by the City is on-going to bring Wells 49 and 50 back into service, therefore, as directed by City staff, it has been assumed that Wells 49 and 50 will be available to provide potable water service. Wells 3, 226, and 285 are assumed to be unavailable for this hydraulic analysis.

In addition to efforts to bring Wells 49 and 50 back into service, City staff is currently seeking approval to construct blending pipelines for Wells 236 and 283 so that these supplies can be brought back online during the summer of 2007. As requested by City staff, it was assumed that these two wells were available for this hydraulic analysis.

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HYDRAULIC ANALYSIS

The City's existing water system hydraulic model was modified to include the water system and associated demands proposed for the Project. Maximum day and peak hour demand conditions were simulated to evaluate the hydraulic impacts of the proposed Project on the City's existing water system. A maximum day plus concurrent fire flow demand condition was also simulated to assess the ability of the City's existing water system to supply fire flows to the Project site.

WYA performed several different hydraulic analyses to develop a water system configuration that addressed system deficiencies and provided operational flexibility and system redundancy.

A discussion of our analyses and findings is presented below.

Water Demands

Based on information provided to WYA by the City, the total Project will increase the City's water demands by approximately 225 gallons per minute (gpm), 391 gpm, and 569 gpm under average day, maximum day, and peak hour conditions, respectively (or 363 acre-feet per year). These demands were calculated based on land use as shown on Table 1, provided by the City, and previously determined water duty factors as presented in the Water Demand Evaluation TM dated March 19, 2003 by WYA.

Table 1. Kiernan Business Park East Project Average Day Demand Calculation

Land Use	Water Duty	Phase 1		Phase 2	
	[demand/unit]	Units	Demand	Units	Demand
Business Park	2.0 af/ac/yr	40.62 ac	50 gpm	54.85 ac	68 gpm
Mixed Use: Retail Commercial	2.0 af/ac/yr	19.30 ac	24 gpm	--	
Mixed Use: Residential/ Office	225 gpd/du	80 du	12 gpm	--	
Medium-High Density Residential	225 gpd/du	226-354 du	55 gpm	--	
Landscaping	4.5 af/ac/yr	11.73 ac	8 gpm	9.85 ac	7 gpm
Substation	0.0 af/ac/yr	--		2.80 ac	0 gpm
Total			150 gpm		75 gpm

Table 2 provides a breakdown of demand increase by phase for different demand condition.

Table 2. Kiernan Business Park East Project Demands

Demand Condition	Phase 1, gpm	Phase 2, gpm	Total, gpm
Average Day	150	75	225
Maximum Day[(a)]	261	130	391
Peak Hour[(b)]	380	189	569

(a) Maximum Day Demand = 1.74 * Average Day Demand.
(b) Peak Hour Demand = 2.53 * Average Day Demand.

Since the Project has multiple land uses, the fire flow requirement based on the City's performance and design criteria are listed on Table 3.

Table 3. Kiernan Business Park East Project Fire Flow Requirements

Land Use	Fire Flow, gpm	Duration, hours
Business Park	4,000	4
Mixed Use	4,000	4
Medium-High Density Residential	2,500	2

Note: Assumes buildings all have sprinklers.

Project's Water Supply Source

The City's March 2007 Daily Operations Report was used to determine the City's operating groundwater wells at that time. In addition to the wells still in service on the report, City staff has directed WYA to assume Wells 49, 50, 236, and 283 are available to provide potable supply to the water system (as of March 2007 these wells were not operational due to water quality issues). Since the City did not identify a specific, new groundwater supply well to provide interim supply to this Project, the hydraulic analysis was conducted assuming that additional supplies could be provided from the existing Modesto Irrigation District (MID) 30 million gallon (MG) treated surface water supply and nearby, existing wells. If these supplies are unable to reliably meet the demands of the proposed Project and existing customers, additional supplies and/or facilities will be recommended. Within a mile of the Project area, there is one existing well (Well 51) and two potential new wells, Well 64 (McKinney Colony Well) and the Kaiser Well, both have been drilled, but neither is equipped.

Storage Capacity Evaluation

The City defines the minimum storage capacity required for a Project to consist of the sum of emergency storage (100 percent of the Project's average day demand), plus operational storage (25 percent of the maximum day demand), and fire flow storage (the required fire flow times the duration of the fire). Therefore, the minimum total required storage capacities for each phase and the entire Project are 1.27 MG, 1.12 MG, and 1.43 MG, respectively, for the operational, fire flow, and emergency components (see Table 4).

Table 4. Kiernan Business Park East Project Storage Requirements

Storage Component	Criteria[(a)]	Storage Required, MG		
		Phase 1	Phase 2	Total
Operational	0.25 x max day demand	0.09	0.05	0.14
Fire Flow	4,000 gpm for 4 hours	0.96	0.96	0.96
Emergency	1.00 x average day demand	0.22	0.11	0.33
Project Storage Requirement		1.27	1.12	1.43

(a) Based on City's design and performance criteria

This additional required storage capacity is already incorporated in the City's planned backbone water system infrastructure improvements, and associated costs have already been accounted for within the City's connection fee calculation.

Project Infrastructure

Based on information provided by the City, 12-inch diameter distribution pipelines are planned for construction on the planned streets with the exception of Chopra Parkway. Along Chopra Parkway, a 10-inch diameter pipeline is proposed (see Figure 2). In addition, a 12-inch diameter pipeline is recommended along Bangs Avenue, from Dale Road east to American Avenue, as this smaller diameter pipeline is required to connect the proposed Project to the City's water system infrastructure.

In addition to the infrastructure proposed by the Project Proponents, WYA recommends that a 16-inch diameter pipeline be constructed in Kiernan Avenue along the entire northern boundary of the Project site as required and identified in, and consistent with, the City's ultimate water system configuration. This pipeline will enhance system reliability to the Project, by providing a system loop, and an alternate route for the delivery of water supplies.

Hydraulic Analysis

The City's existing water distribution system model was modified to reflect the proposed infrastructure and demands for the Project. The system configuration was then hydraulically evaluated by WYA, and our technical findings and recommendations are provided in the following section of this TM. WYA evaluated the Project's water distribution system and its

ability to meet City adopted water system performance and planning criteria under the following demand conditions:

- Average Day Demand
- Maximum Day Demand
- Peak Hour Demand
- Maximum Day Demand plus concurrent Fire Flow

The various simulated conditions and the resultant hydraulic impact of each individual phase to the existing water system are discussed in the sections that follow.

Existing Distribution System Evaluation

A steady state water system analysis was conducted under various demand conditions to identify areas of the City's water system where the service pressure might decrease to below the City's minimum level, after adding the Project's water demands. Water system pressure differentials (after the addition of the Project water demands) were examined to assess the Project's impact on the City's existing water distribution system under average day, maximum day, peak hour, and maximum day with concurrent fire flow demand conditions.

Average Day Demand

The existing average day water demand condition was simulated with and without the Project. The hydraulic analysis showed that the addition of Project Phase One and subsequent Project Phase Two decreases system pressures by up to 1 psi (see Figure 3) across a significant area of the City's service area. However, the City's existing system is capable of maintaining the minimum 40 pounds per square inch (psi) City requirement with the addition of the Project's demands without any system improvements.

The results from the hydraulic model indicate that the increased demands of the Project are mainly supplied by an increase in flow from existing groundwater wells, mainly Well 51 (located near the south west corner of the proposed Project). This increase in flow from Well 51, coupled with the local pipeline network in the vicinity of the Project, explains the observed drop in system pressures through a significant portion of the City's water service area with the addition of the Project's demands.

Maximum Day Demand

The existing maximum day water demand condition was simulated with and without the Project. With the Project, most of the City experienced pressure drops of under 0.5 psi, including the regions directly around the Project site. However, this decrease did not cause system pressures to drop below the City's minimum of 40 psi pressure requirement anywhere in the water system, as shown on Figure 4.

Increased flows at various groundwater wells in the system, specifically Well 51, met the additional 391 gpm demand of the Project.

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Peak Hour Demand

The existing peak hour demand condition was simulated with and without the Project. As shown in Figure 5 without the Project, the City's water system existing infrastructure is not currently capable of meeting the City's minimum 40 psi system pressure requirements in three main locations: in the Blue Gum area, around Tank 6, and west of the Beard Industrial Tract. By adding the Project's Phase 1 and 2 demands to the existing system, the system pressure deficiency worsens by about 1 psi, as indicated by the pressure drops shown on Figure 6.

These pressure deficiencies can be remedied with a combination of localized and system-wide facility improvements, as illustrated on Figure 7. The recommended system-wide improvements are portions of the MID Downstream Tier 1 Improvements currently being planned by the City, which are included in the Connection Fee Program cost. The facilities specifically required to maintain adequate system pressures with the addition of the Project's demands are the control valves at 15 existing MID turnout locations, and the Orangeburg Avenue transmission main.

Additional, localized recommendations involve pipeline upsizing and constructing new pipelines to create additional system looping and redundancy. The specific localized improvements, which are not associated with the projects included as part of the City's Connection Fee Program, but funded by the City's Ongoing Strengthening and Repairing Water Pipelines Program, are listed in Table 5. Also listed on Table 5 are pipelines that reflect the required internal, on-site Project infrastructure and associated estimated costs to be borne by the Project Proponents. With these recommended improvements, the water system will be capable of meeting the City's minimum 40 psi system pressure requirement throughout the service area with the Project, as shown on Figure 8. Similar to the average day and maximum day demand conditions, the Project demand was mainly supplied by an increase in flow at nearby groundwater wells, particularly Well 51.

Maximum Day Demand Plus Concurrent Fire Flow

WYA evaluated the Project infrastructure's ability to supply the required fire flow to the fire hydrants within the Project site. As previously mentioned in the demand section, fire flows of 2,500 gpm or 4,000 gpm are required to be provided at hydrant locations within the Project area, while maintaining a minimum system residual pressure of 20 psi.

Due to the proximity of the Project to Well 51 and other available supplies, the model indicated that the existing system is capable of meeting the minimum residual pressure of 20 psi under the maximum day plus concurrent fire flow demand at fire hydrants serving the Project for both phases. This demand was met primarily by increased pumping of groundwater from Well 51. Pressures were also maintained throughout the rest of the distribution system; therefore, no improvements to the system under this demand condition are necessary.

Table 5. Estimated Improvement Costs for Kiernan Business Park East Project[a]

Project ID	Item	Unit	Quantity	Unit Cost, $[b]	Cost, $
	Project Specific Pipeline Recommendations[j]				
A	Kiernan Avenue between Dale Avenue and American Avenue[h]				
	16-inch	lf	2,610	152	396,720
	Project Infrastructure				
	12-inch	lf	10,670	128	1,365,760
A	Bangs Avenue between Dale Road and American Avenu[i]				
	12-inch	lf	2,410	128	218,903
				Project Specific Cost Subtotal	1,584,663
				Other Related Project Costs @ 50% [c]	792,332
				Total Project Specific Improvements Costs [d]	2,376,995
	Localized Pipeline Recommendations				
B	Clayton Avenue between Carver Road and North 9th Street				
	12-inch	lf	1,890	128	241,920
B	North 9th Street between Clayton Avenue and Culpepper Avenue				
	12-inch	lf	890	128	113,920
C	Blue Gum Avenue between Culpepper Avenue and Carpenter Road				
	12-inch	lf	970	128	124,160
D	Carpenter Road from Blue Gum Avenue to south of Moccasin Drive				
	12-inch	lf	7,100	128	908,800
E	Woodland Avenue between Carpenter Road and North 9th Street				
	12-inch	lf	4,160	128	532,480
F	Beverly Drive between alley west of Normandy Drive and west of Ritsch Lane				
	8-inch	lf	1,080	94	101,520
G	Alley between Ridge Road and Robertson Road from west of Dunning Lane to east of Hilltop Lane				
	8-inch	lf	970	94	91,180
H	Paradise Road near intersection with Vernon Avenue				
	8-inch	lf	130	94	12,220
I	Paradise Avenue between Martin Luther King Drive and Madison Street				
	8-inch	lf	510	94	47,940
J	Santa Rosa Avenue between Mono Drive and Oregon Drive				
	8-inch	lf	1,670	94	156,980
J	Oregon Drive between Santa Rosa Avenue and Santa Rita Avenue				
	8-inch	lf	510	94	47,940
K	Santa Rita Avenue between Mono Drive and Tenaya Drive				
	8-inch	lf	850	94	79,900
				Localized Improvements Cost Subtotal	2,458,960
				Other Related Project Costs @ 50% [c]	1,229,480
				Total Recommended Localized Improvements Costs [e]	3,688,440
	System-Wide Improvements				
	Orangeburg Avenue Transmission Pipeline				
	24-inch	lf	12,300	425	5,227,500
	Control Valves at MID Turnout Locations	valve	15	273,333 [g]	4,100,000
	6 MG North Tank and Pump Station	each	1	11,200,000	11,200,000
	North Tank Transmission Pipeline				
	24-inch	lf	12,320	354	4,364,000
	Virginia Corridor Transmission Pipeline				
	16-inch	lf	17,500	263	4,611,000
				Systemwide Improvement Cost Subtotal	29,502,500
				Other Related Project Costs @ 50% [c]	14,751,000
				Total Recommended Systemwide Improvement Costs [h]	44,253,500

[a] Does not include site specific facilities.

[b] All unit prices presented in SF May 2007 dollars (ENR Construction Index = 9116.72). Unit prices based on combination of cost curves, construction cost guidelines and similar construction projects.

[c] Other related Project cost of 50% based on a total of the following individual cost components: construction contingency at 20%, design and planning at 10%, construction management at 10%, and program implementation at 10%.

[d] Project specific infrastructure costs, as well as other on-site facilities not listed but required will be the responsibility of the Project Proponent.

[e] Project paid for using City funding reserved for ongoing CIPs related to strengthening and replacing water lines.

[f] Does not include costs for contract administration, construction management, project implementation, or contingency to changes during construction.

[g] Estimated cost includes provision for new vault, PRV, flow meter, SCADA equipment and installation. Actual cost depends on size of control valve.

[h] Projects and corresponding costs included in the City's Connection Fee Program.

[i] Cost split based on maximum day ratio between Kiernan Business Park East and sum of Kiernan Business Park East and South (391 gpm/551 gpm = 0.71)

[j] Project Specific Improvements – includes on-site backbone water system infrastructure defined as pipelines 12-inches in diameter or larger, (all smaller pipelines are also the financial responsibility of the Project Proponents, but not accounted for here) funded by the Project Proponents.

System Redundancy

Under all demand scenarios evaluated, a majority of the supply for this Project was provided by Well 51. It is interesting to note that even with the construction of all recommended infrastructure facility improvements, if Well 51 needs to be taken "off-line" for maintenance or goes "off-line" whatever reason, the Project cannot be provided with sufficient supply and pressures drop below the required 40 psi minimum requirement (see Figure 9). The only way that this situation can be mitigated is to install an additional supply source, specifically the construction of the planned North Tank and associated pump station as part of the MID Tier 1 Downstream Improvements. With this new facility providing supply, and other operating adjustments made to the system, system pressures above 40 psi can be maintained (see Figure 10).

FINDINGS AND RECOMMENDATIONS

The updated hydraulic model indicated that the City's existing water system infrastructure is not capable of providing adequate pressure or flow to the Project during a peak hour demand condition without impacting other areas of the City's existing water service area.

To remedy this situation, there are project specific, local, and system-wide water facility improvements that are required to be designed and constructed (as detailed on Table 5 and illustrated on Figures 2 and 7). As detailed above, these three categories of recommendations and estimated costs, specific to this Project, are:

1. Project Specific Improvements estimated at $2.4 million funded by the Project Proponents,
2. Localized System Improvements estimated at $3.7 million funded by the City's Ongoing Strengthening and Repairing Water Pipelines Program, and
3. System-Wide Improvements estimated at $44.3 million funded by the City's Connection Fee Program.

Included in these proposed costs detailed on Table 5 are soft cost mark-ups to account for additional requirements associated with administrative, management, and design work, as well as contingencies. These soft cost mark-ups are considered to fall into the following four categories:

- Construction Contingency – Due to the fact that there are many unknowns related to a given project at the master planning level (i.e., site conditions, unforeseen constraints, details of design alternatives, construction schedule uncertainty, etc.), a 20 percent construction contingency is added to the construction estimate cost.
- Design and Planning – These services typically include management of consultant agreements, preliminary site investigations, feasibility studies, plans and specifications, surveying and staking, and geotechnical reports. The cost of this work is estimated to be 10 percent of the estimated construction cost.

- Construction Management – This category primarily covers management of the construction contract, sampling and testing of materials, and site inspections during construction. This work is estimated to be 10 percent of the estimated construction cost.
- Program Implementation – Among other things, this category includes management and administrative costs, environmental review, permits, regulatory compliance, financing expenses, and legal review. This work is also estimated to be 10 percent of the estimated construction cost.

As previously stated in this TM, a specific connection fee for the proposed Project is not possible to determine at this time as the actual number and size of individual building connections have not been determined and provided by Project Proponents.

It should be noted that if any of the assumptions for this analysis, including, but not limited to, land use designations or pipelines configurations or diameters, and/or City wells assumed to be operating are changed, the recommendations should be re-evaluated for their hydraulic impact to the City's water system.

FINAL

Figure 1. KBPE Site Location

Figure 2. Proposed KBPE Infrastructure

Figure 3. Average Day Pressure Drop

Figure 4. Maximum Day System Pressure

Figure 5. Existing Peak Hour System Pressure

Figure 6. Peak Hour Pressure Drop

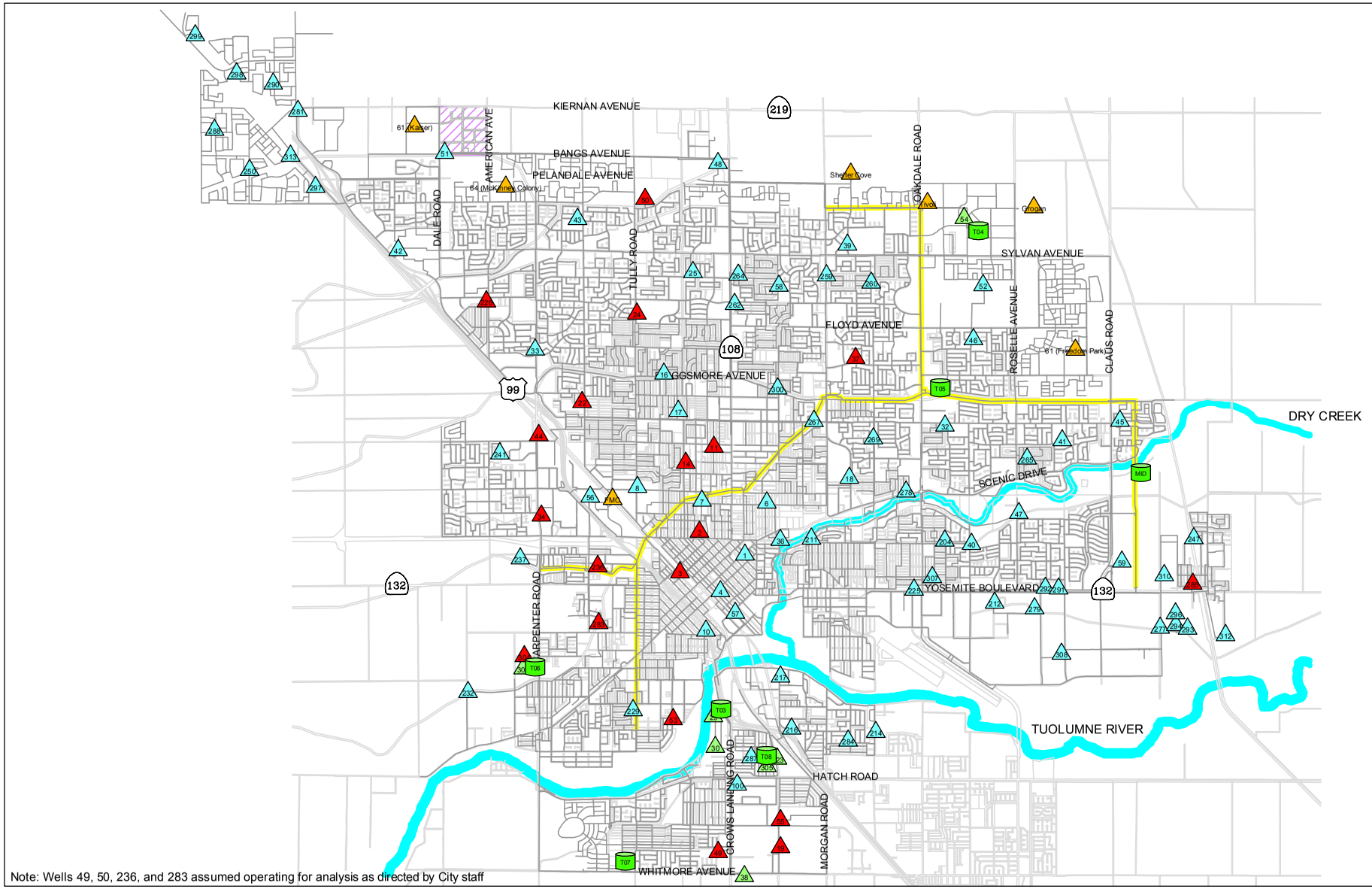
Figure 7. Recommended System Improvements

Figure 8. Peak Hour Pressure w/ Improvements

Figure 9. Peak Hour Pressure w/o Well 51

Figure 10. Peak Hour Pressure w/ North Tank for Reliability

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Note: Wells 49, 50, 236, and 283 assumed operating for analysis as directed by City staff

LEGEND

- EXISTING STORAGE TANK
- OPERATING WELL AS OF MARCH 2007
- NON-OPERATING WELL AS OF MARCH 2007
- BLENDING WELL
- PLANNED FUTURE WELL
- DISTRIBUTION PIPELINE
- MID TRANSMISSION LINE
- PROJECT SITE LOCATION

N

0 4000 8000

SCALE IN FEET

Figure 1

Harris and Associates

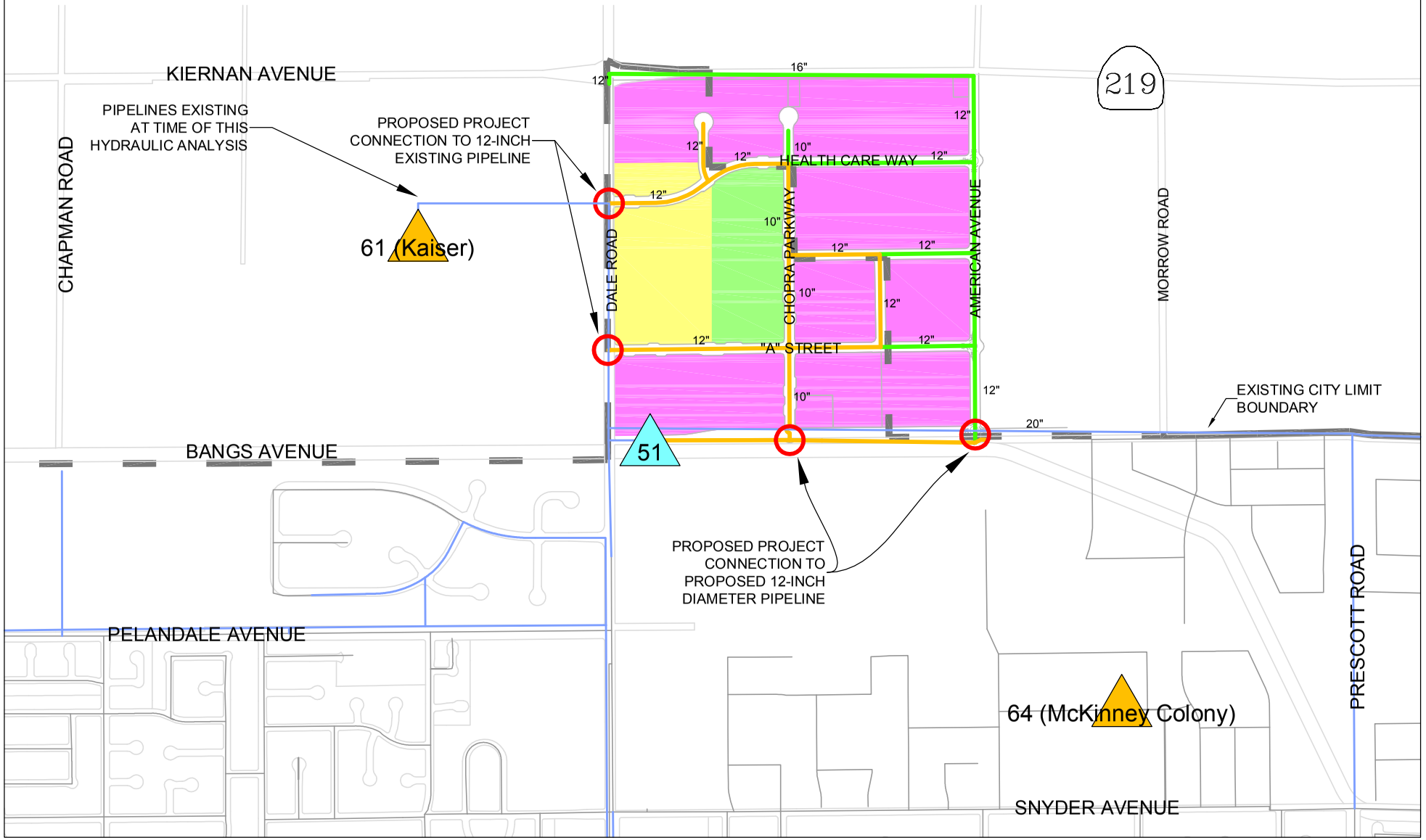
KIERNAN BUSINESS PARK EAST

PROJECT SITE LOCATION

WEST YOST ASSOCIATES

Consulting Engineers

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LEGEND

- OPERATING WELL
- FUTURE PLANNED WELL
- EXISTING PIPELINE 10-INCH AND SMALLER
- EXISTING PIPELINE 12-INCH AND LARGER
- PROPOSED PROJECT PHASE ONE PIPELINE
- PROPOSED PROJECT PHASE TWO PIPELINE
- BUSINESS PARK LAND USE
- MEDIUM-HIGH DENSITY RESIDENTIAL LAND USE
- MIXED LAND USE

N

0 500 1000

SCALE IN FEET

Figure 2

Harris and Associates

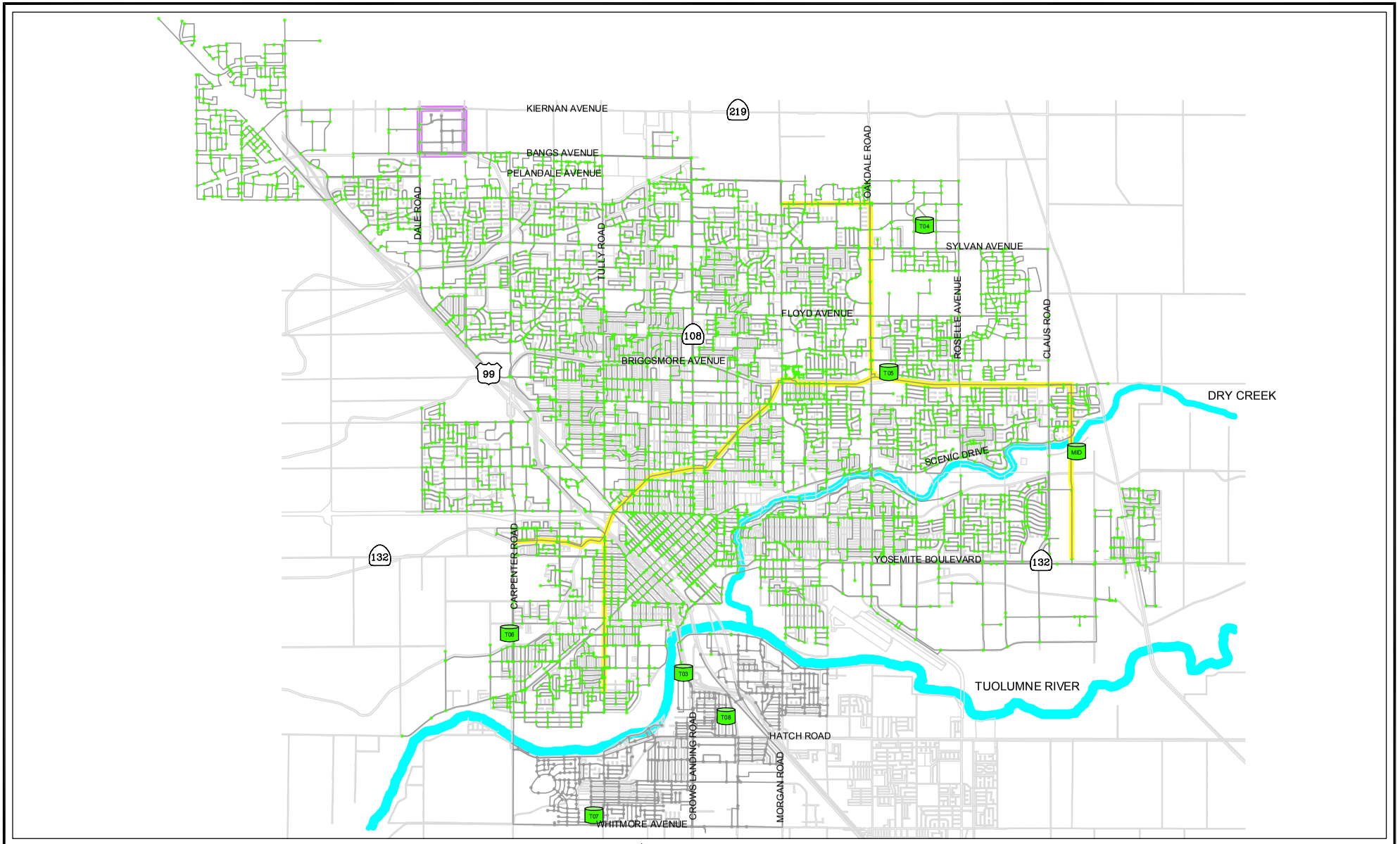
KIERNAN BUSINESS PARK EAST

DETAILED PROJECT SITE LOCATION

WEST YOST ASSOCIATES

Consulting Engineers

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LEGEND

- EXISTING STORAGE TANK
- DISTRIBUTION PIPELINE
- MID TRANSMISSION LINE
- PRESSURE DROP LESS THAN 0 PSI
- PRESSURE DROP BETWEEN 0 & 1 PSI
- PRESSURE DROP BETWEEN 1 & 2 PSI
- PRESSURE DROP MORE THAN 2 PSI

N

0 4000 8000

SCALE IN FEET

Figure 3

Harris and Associates

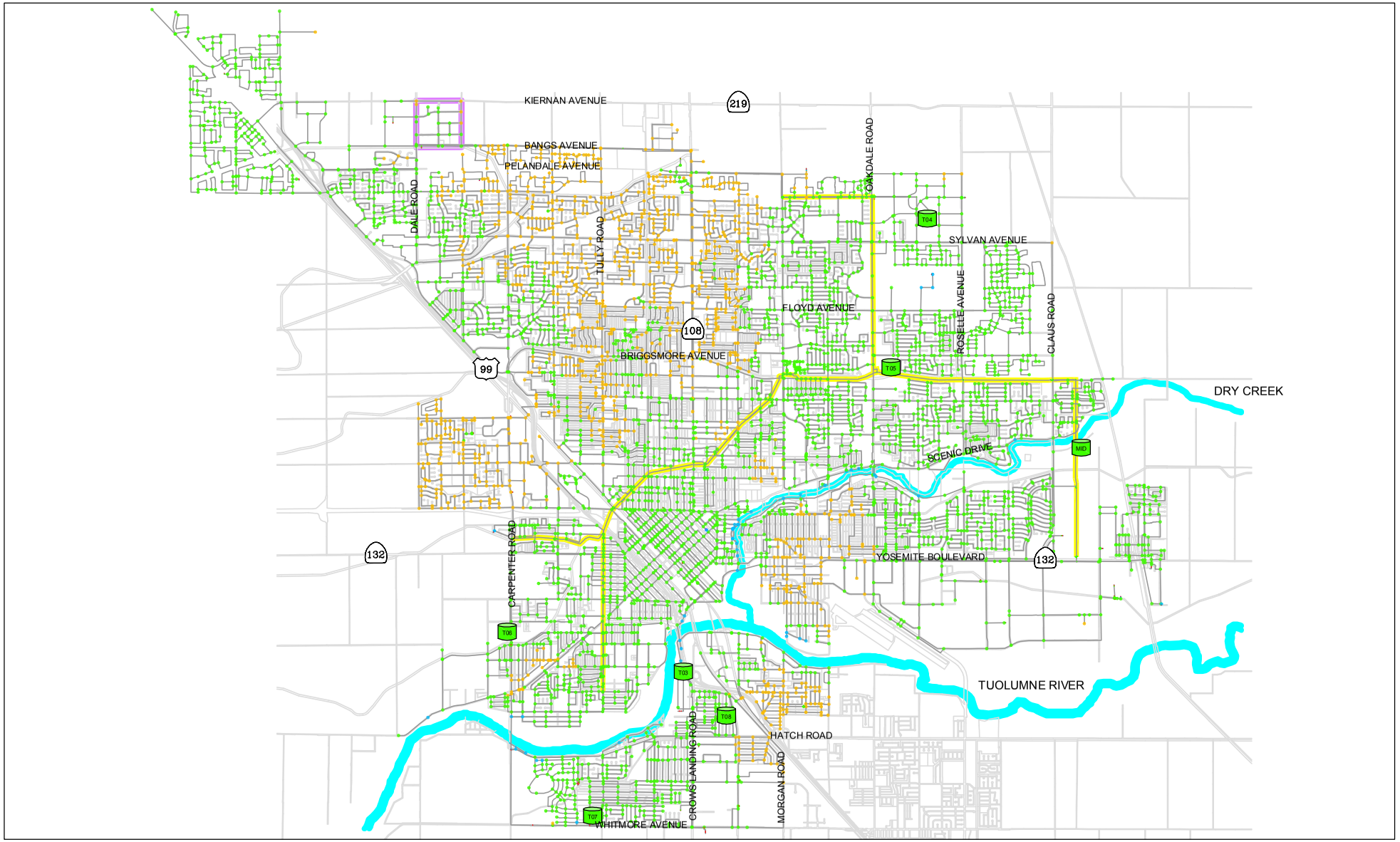
KIERNAN BUSINESS PARK EAST

AVERAGE DAY PRESSURE DROP WITH PROPOSED PROJECT (BOTH PHASES)

WEST YOST ASSOCIATES

Consulting Engineers

O:\Clients\446 Harris & Associates\02-06-01 Kiernan Business Park-East\CAD\Figures\466020601-KBPE-FIG04.dwg 5/31/2007 5:41 PM gsimard



LEGEND

- EXISTING STORAGE TANK
- DISTRIBUTION PIPELINE
- MID TRANSMISSION LINE
- PRESSURE BELOW 40 PSI
- PRESSURE BETWEEN 40 & 50 PSI
- PRESSURE BETWEEN 50 & 60 PSI
- PRESSURE BETWEEN 60 & 70 PSI
- PRESSURE ABOVE 70 PSI

N

0 4000 8000

SCALE IN FEET

Figure 4

Harris and Associates

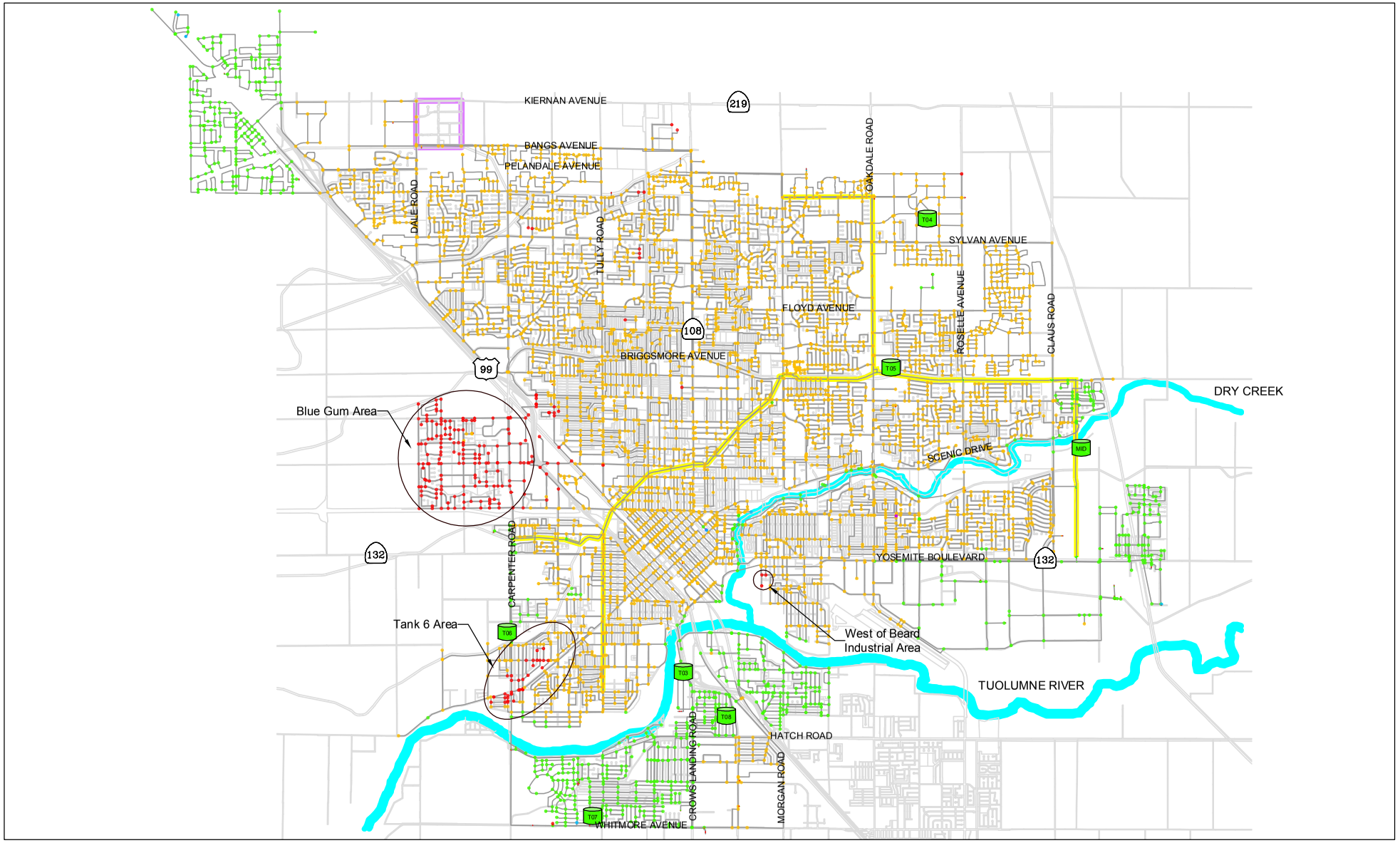
KIERNAN BUSINESS PARK EAST

MAXIMUM DAY SYSTEM PRESSURES WITH PROPOSED PROJECT (BOTH PHASES)

WEST YOST ASSOCIATES

Consulting Engineers

O:\Clients\446 Harris & Associates\02-06-01 Kiernan Business Park-East\CAD\Figures\466020601-KBPE-FIG05.dwg 5/31/2007 5:50 PM gsimard



LEGEND

- EXISTING STORAGE TANK
- DISTRIBUTION PIPELINE
- MID TRANSMISSION LINE
- PRESSURE BELOW 40 PSI
- PRESSURE BETWEEN 40 & 50 PSI
- PRESSURE BETWEEN 50 & 60 PSI
- PRESSURE BETWEEN 60 & 70 PSI
- PRESSURE ABOVE 70 PSI

N

0 4000 8000

SCALE IN FEET

Figure 5

Harris and Associates

KIERNAN BUSINESS PARK EAST

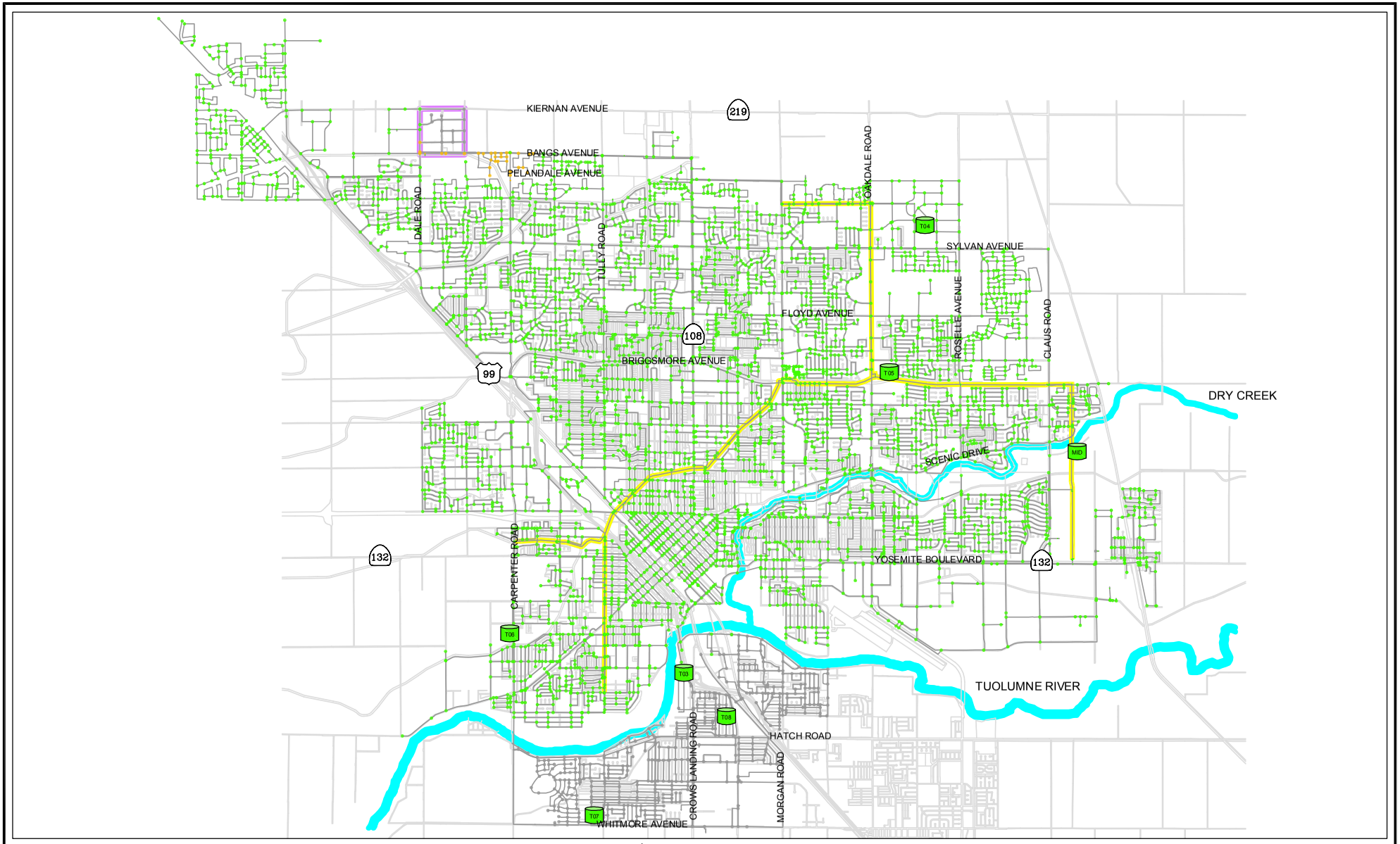
EXISTING PEAK HOUR

SYSTEM PRESSURES

WEST YOST ASSOCIATES

Consulting Engineers

O:\Clients\446 Harris & Associates\02-06-01 Kiernan Business Park-East\CAD\Figures\466020601-KBPE-FIG06.dwg 5/31/2007 5:54 PM gsimard



LEGEND

- EXISTING STORAGE TANK
- DISTRIBUTION PIPELINE
- MID TRANSMISSION LINE
- PRESSURE DROP LESS THAN 0 PSI
- PRESSURE DROP BETWEEN 0 & 1 PSI
- PRESSURE DROP BETWEEN 1 & 2 PSI
- PRESSURE DROP MORE THAN 2 PSI

N

0 4000 8000

SCALE IN FEET

Figure 6

Harris and Associates

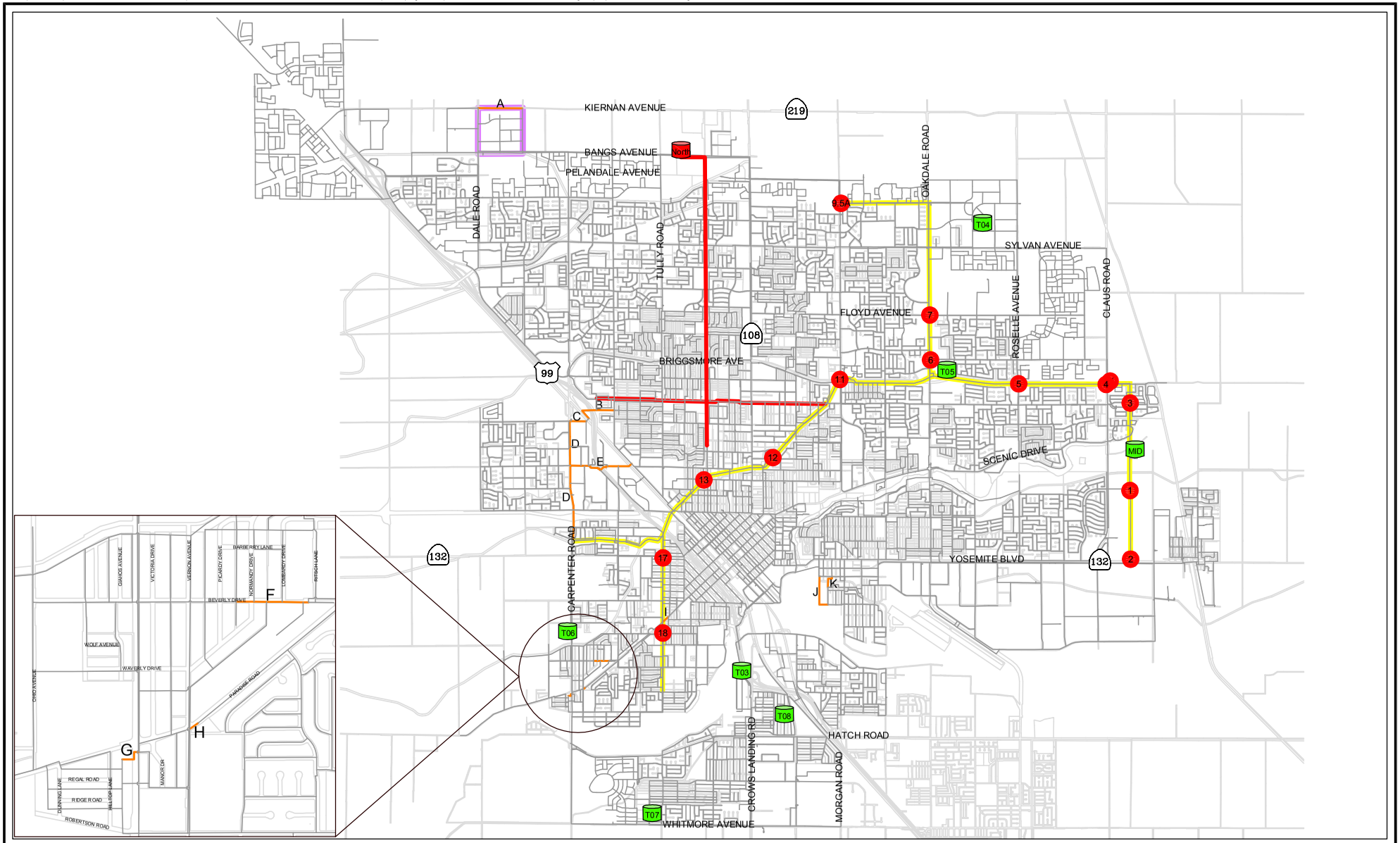
KIERNAN BUSINESS PARK EAST

PEAK HOUR PRESSURE DROP WITH PROPOSED PROJECT (BOTH PHASES)

WEST YOST ASSOCIATES

Consulting Engineers

O:\Clients\446 Harris & Associates\02-06-01 Kiernan Business Park-East\CAD\Figures\466020601-KBPE-FIG07.dwg 6/1/2007 8:59 AM gsimard



LEGEND

- EXISTING STORAGE TANK
- DISTRIBUTION PIPELINE
- MID TRANSMISSION LINE
- RECOMMENDED TANK & PUMP STATION
- RECOMMENDED IMPROVEMENT
- MID PHASE 2 DOWNSTREAM IMPROVEMENTS
- MID PHASE 2 DOWNSTREAM IMPROVEMENT VALVES

N

0 4000 8000

SCALE IN FEET

Figure 7

Harris and Associates

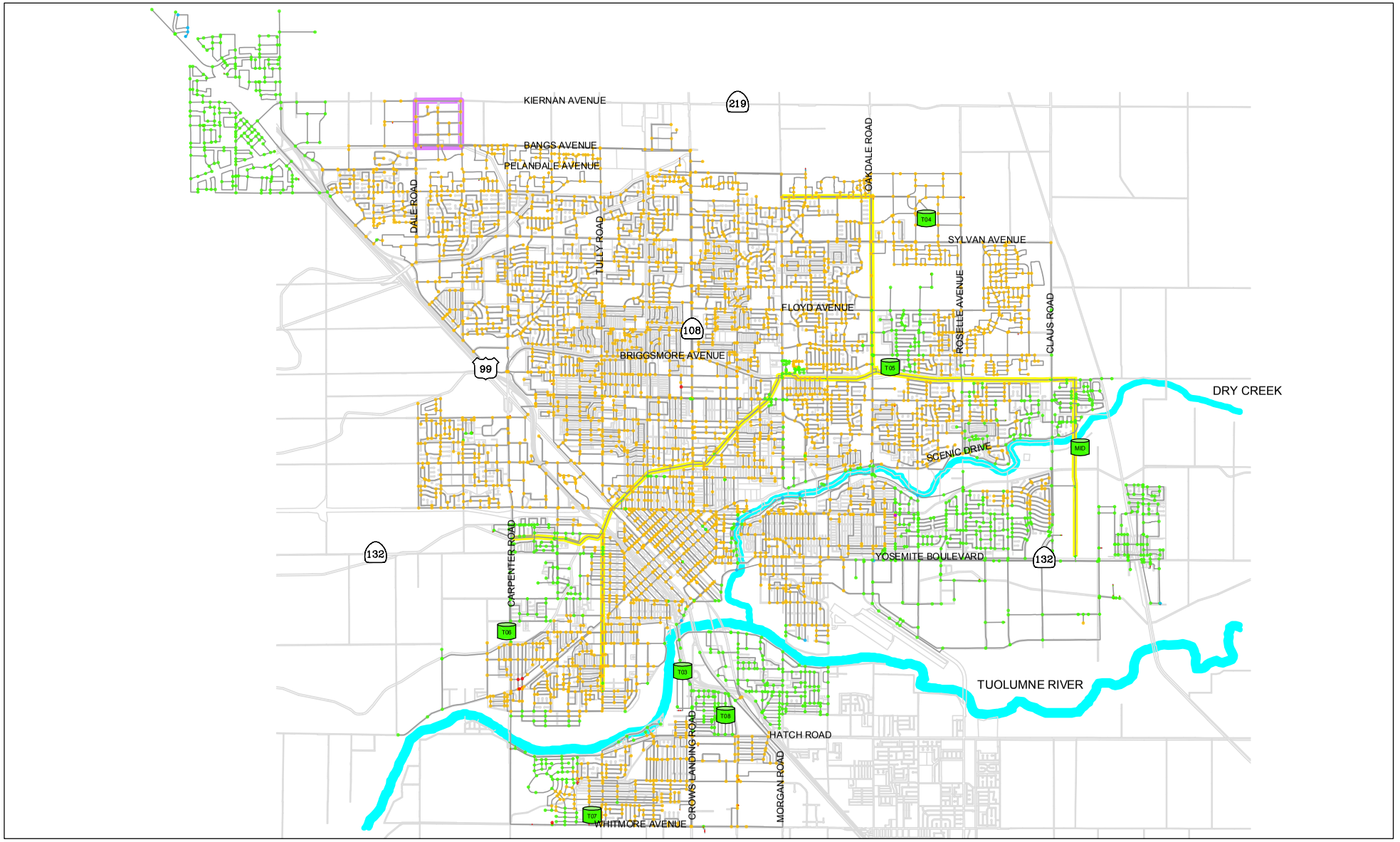
KIERNAN BUSINESS PARK EAST

RECOMMENDED SYSTEM IMPROVEMENTS

WEST YOST ASSOCIATES

Consulting Engineers

O:\Clients\446 Harris & Associates\02-06-01 Kiernan Business Park-East\CAD\Figures\466020601-KBPE-FIG08.dwg 5/31/2007 5:58 PM gsimard



LEGEND

- EXISTING STORAGE TANK
- DISTRIBUTION PIPELINE
- MID TRANSMISSION LINE
- PRESSURE BELOW 40 PSI
- PRESSURE BETWEEN 40 & 50 PSI
- PRESSURE BETWEEN 50 & 60 PSI
- PRESSURE BETWEEN 60 & 70 PSI
- PRESSURE ABOVE 70 PSI

N

0 4000 8000

SCALE IN FEET

Figure 8

Harris and Associates

KIERNAN BUSINESS PARK EAST

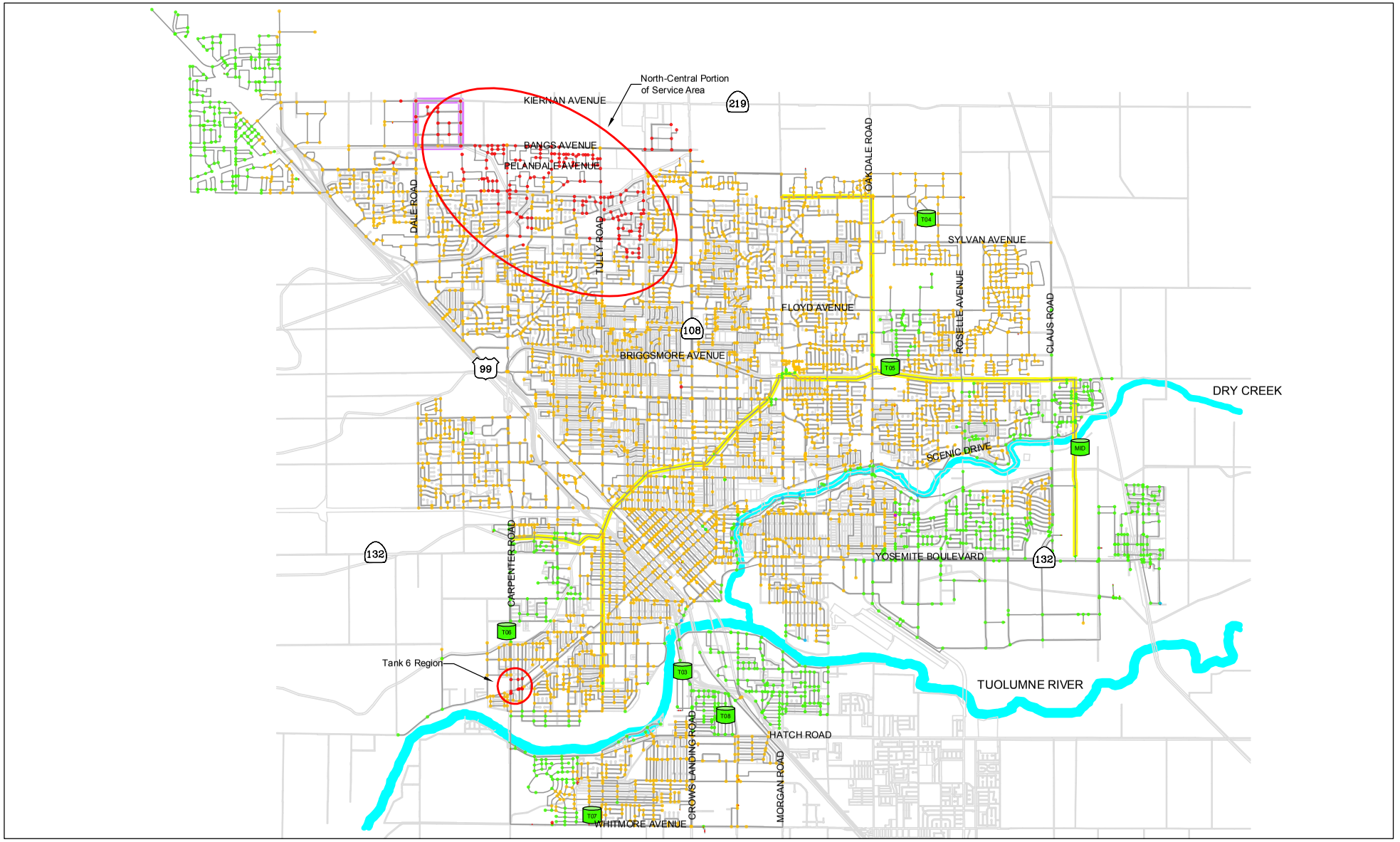
PEAK HOUR SYSTEM PRESSURE

WITH PROJECT & IMPROVEMENTS

WEST YOST ASSOCIATES

Consulting Engineers

O:\Clients\446 Harris & Associates\02-06-01 Kiernan Business Park-East\CAD\Figures\466020601-KBPE-FIG09.dwg 5/31/2007 5:59 PM gsimard



LEGEND

- EXISTING STORAGE TANK
- DISTRIBUTION PIPELINE
- MID TRANSMISSION LINE
- PRESSURE BELOW 40 PSI
- PRESSURE BETWEEN 40 & 50 PSI
- PRESSURE BETWEEN 50 & 60 PSI
- PRESSURE BETWEEN 60 & 70 PSI
- PRESSURE ABOVE 70 PSI

N

0 4000 8000

SCALE IN FEET

Figure 9

Harris and Associates

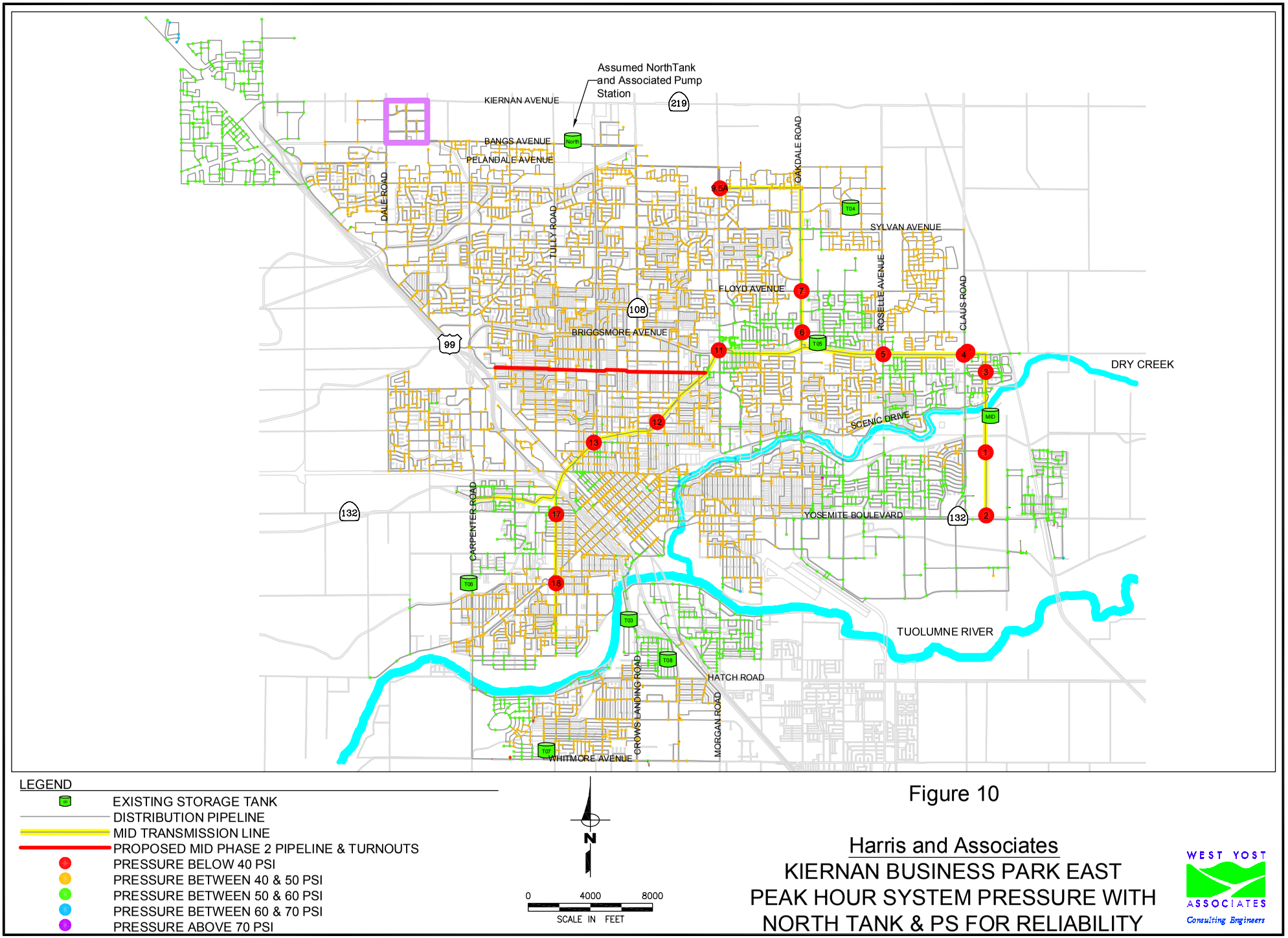
KIERNAN BUSINESS PARK EAST

PEAK HOUR SYSTEM PRESSURE WITH IMPROVEMENTS AND WELL 51 OFF

WEST YOST ASSOCIATES

Consulting Engineers

O:\Clients\446 Harris & Associates\02-06-01 Kiernan Business Park-East\CAD\Figures\466020601-KBPE-FIG10.dwg 5/31/2007 6:01 PM gsimard



LEGEND

- EXISTING STORAGE TANK
- DISTRIBUTION PIPELINE
- MID TRANSMISSION LINE
- PROPOSED MID PHASE 2 PIPELINE & TURNOUTS
- PRESSURE BELOW 40 PSI
- PRESSURE BETWEEN 40 & 50 PSI
- PRESSURE BETWEEN 50 & 60 PSI
- PRESSURE BETWEEN 60 & 70 PSI
- PRESSURE ABOVE 70 PSI

N

0 4000 8000

SCALE IN FEET

Figure 10

Harris and Associates

KIERNAN BUSINESS PARK EAST

PEAK HOUR SYSTEM PRESSURE WITH NORTH TANK & PS FOR RELIABILITY

WEST YOST ASSOCIATES

Consulting Engineers