DRAFT EIR
YOSEMITE LAKE
ESTATES GENERAL
PLAN
AMENDMENT
ENVIRONMENTAL
IMPACT REPORT

prepared for:
COUNTY OF MERCED

Contact:
William R. Nicholson,
Planning Director

prepared by:
THE PLANNING CENTER

Contact: Dwayne S.
Mears, AICP,
Principal

JANUARY 2003
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# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. INTRODUCTION</td>
<td>1-1</td>
</tr>
<tr>
<td>1.1 REQUIREMENTS OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT</td>
<td>1-1</td>
</tr>
<tr>
<td>1.2 TYPE OF EIR</td>
<td>1-1</td>
</tr>
<tr>
<td>1.3 NOTICE OF PREPARATION AND INITIAL STUDY</td>
<td>1-2</td>
</tr>
<tr>
<td>1.4 SCOPE OF THIS EIR</td>
<td>1-2</td>
</tr>
<tr>
<td>1.5 COUNTY OF MERCED SUDP APPROVAL PROCESS</td>
<td>1-3</td>
</tr>
<tr>
<td>1.6 EIR FORMAT</td>
<td>1-4</td>
</tr>
<tr>
<td>1.7 INTENDED USES OF THIS EIR</td>
<td>1-6</td>
</tr>
<tr>
<td>1.8 PUBLIC REVIEW</td>
<td>1-6</td>
</tr>
<tr>
<td>1.9 ISSUES TO BE RESOLVED</td>
<td>1-7</td>
</tr>
<tr>
<td>1.10 AREAS OF CONTROVERSY</td>
<td>1-8</td>
</tr>
<tr>
<td>1.11 MITIGATION MONITORING</td>
<td>1-8</td>
</tr>
</tbody>
</table>

| 2. EXECUTIVE SUMMARY | 2-1 |
| 2.1 INTRODUCTION TO THE EIR | 2-1 |
| 2.2 INTRODUCTION AND SUMMARY OF THE PROJECT DESCRIPTION | 2-2 |
| 2.3 SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE AFTER MITIGATION | 2-2 |
| 2.4 SUMMARY OF PROJECT ALTERNATIVES AND RELATED IMPACTS | 2-2 |

| 3. ENVIRONMENTAL SETTING AND PROJECT DESCRIPTION | 3-1 |
| 3.1 PROJECT LOCATION AND ENVIRONMENTAL SETTING | 3-1 |
| 3.1.1 Regional Setting | 3-1 |
| 3.1.2 Local Setting | 3-1 |
| 3.1.3 Project Site Setting | 3-1 |
| 3.2 PROJECT DESCRIPTION - PROPOSED GENERAL PLAN AMENDMENT | 3-11 |
| 3.2.1 Proposed General Plan Amendment | 3-11 |
| 3.2.2 Urban Centered Concept and Definition of a SUDP | 3-11 |
| 3.2.3 Policies to be Considered by Merced County for Establishment of a New SUDP or Expansion of an Existing SUDP | 3-12 |
| 3.2.4 County of Merced Project Approval Process | 3-13 |
| 3.3 PROJECT BACKGROUND | 3-16 |
| 3.4 OBJECTIVES OF THE PROJECT | 3-16 |
| 3.5 CITY/COUNTY REVENUE SHARING AGREEMENT (COUNTY RESOLUTION NO. 97-35) | 3-16 |
| 3.6 ADJACENT ACTIVITIES NOT PART OF THE YOSEMITE LAKE ESTATES GPA PROJECT | 3-17 |
| 3.6.1 Virginia Smith Trust/Cyril Smith Trust Lands and the University Community Specific Urban Development Plan (SUDP) | 3-18 |
| 3.6.2 University Community Plan | 3-18 |
| 3.6.3 UC Merced Campus | 3-19 |
| 3.6.4 Fahrens Creek | 3-19 |
| 3.7 PROJECT APPROVALS | 3-20 |

| 4. ENVIRONMENTAL ANALYSIS | 4-1 |
| 4.1 SUMMARY OF PROJECT ASSUMPTIONS | 4-1 |
| 4.2 SUMMARY OF INFRASTRUCTURE SYSTEMS | 4-2 |
| 4.2.1 Water Supply | 4-3 |
Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.2 Wastewater</td>
<td>4-3</td>
</tr>
<tr>
<td>4.2.3 Storm Drainage</td>
<td>4-3</td>
</tr>
<tr>
<td>4.2.4 Circulation and Access</td>
<td>4-3</td>
</tr>
<tr>
<td>4.3 AESTHETICS</td>
<td>4-5</td>
</tr>
<tr>
<td>4.3.1 Environmental Setting</td>
<td>4-5</td>
</tr>
<tr>
<td>4.3.2 Regulatory Setting</td>
<td>4-21</td>
</tr>
<tr>
<td>4.3.3 Methodology Related to Aesthetics</td>
<td>4-22</td>
</tr>
<tr>
<td>4.3.4 Impacts and Mitigation Measures</td>
<td>4-23</td>
</tr>
<tr>
<td>4.4 AIR QUALITY</td>
<td>4-31</td>
</tr>
<tr>
<td>4.4.1 Environmental Setting</td>
<td>4-31</td>
</tr>
<tr>
<td>4.4.2 Regulatory Setting</td>
<td>4-35</td>
</tr>
<tr>
<td>4.4.3 Methodology Related to Air Quality</td>
<td>4-38</td>
</tr>
<tr>
<td>4.4.4 Impacts and Mitigation Measures</td>
<td>4-38</td>
</tr>
<tr>
<td>4.5 BIOLOGICAL RESOURCES</td>
<td>4-51</td>
</tr>
<tr>
<td>4.5.1 Environmental Setting</td>
<td>4-51</td>
</tr>
<tr>
<td>4.5.2 Regulatory Setting</td>
<td>4-71</td>
</tr>
<tr>
<td>4.5.3 Methodology Related to Biological Resources</td>
<td>4-75</td>
</tr>
<tr>
<td>4.5.4 Impacts and Mitigation Measures</td>
<td>4-76</td>
</tr>
<tr>
<td>4.6 CULTURAL RESOURCES</td>
<td>4-91</td>
</tr>
<tr>
<td>4.6.1 Environmental Setting</td>
<td>4-91</td>
</tr>
<tr>
<td>4.6.2 Regulatory Setting</td>
<td>4-94</td>
</tr>
<tr>
<td>4.6.3 Methodology Related to Cultural Resources</td>
<td>4-95</td>
</tr>
<tr>
<td>4.6.4 Impacts and Mitigation Measures</td>
<td>4-99</td>
</tr>
<tr>
<td>4.7 HYDROLOGY, WATER SUPPLY AND WATER QUALITY</td>
<td>4-105</td>
</tr>
<tr>
<td>4.7.1 Environmental Setting</td>
<td>4-105</td>
</tr>
<tr>
<td>4.7.2 Regulatory Setting</td>
<td>4-110</td>
</tr>
<tr>
<td>4.7.3 Methodology Related to Hydrology and Water Quality</td>
<td>4-114</td>
</tr>
<tr>
<td>4.7.4 Impacts and Mitigation Measures</td>
<td>4-114</td>
</tr>
<tr>
<td>4.8 LAND USE AND PLANNING</td>
<td>4-127</td>
</tr>
<tr>
<td>4.8.1 Environmental Setting</td>
<td>4-127</td>
</tr>
<tr>
<td>4.8.2 Regulatory Setting</td>
<td>4-137</td>
</tr>
<tr>
<td>4.8.3 Methodology Related to Land Use</td>
<td>4-145</td>
</tr>
<tr>
<td>4.8.4 Impacts and Mitigation Measures</td>
<td>4-145</td>
</tr>
<tr>
<td>4.9 NOISE</td>
<td>4-167</td>
</tr>
<tr>
<td>4.9.1 Environmental Setting</td>
<td>4-167</td>
</tr>
<tr>
<td>4.9.2 Regulatory Setting</td>
<td>4-167</td>
</tr>
<tr>
<td>4.9.3 Methodology Related to Noise</td>
<td>4-172</td>
</tr>
<tr>
<td>4.9.4 Impacts and Mitigation Measures</td>
<td>4-175</td>
</tr>
<tr>
<td>4.10 PUBLIC HEALTH AND SAFETY</td>
<td>4-185</td>
</tr>
<tr>
<td>4.10.1 Environmental Setting</td>
<td>4-185</td>
</tr>
<tr>
<td>4.10.2 Regulatory Setting</td>
<td>4-187</td>
</tr>
<tr>
<td>4.10.3 Methodology Related to Public Health and Safety</td>
<td>4-187</td>
</tr>
<tr>
<td>4.10.4 Impacts and Mitigation Measures</td>
<td>4-187</td>
</tr>
<tr>
<td>4.11 PUBLIC SERVICES AND UTILITIES</td>
<td>4-197</td>
</tr>
<tr>
<td>4.11.1 Environmental Setting</td>
<td>4-197</td>
</tr>
<tr>
<td>4.11.2 Regulatory Setting</td>
<td>4-204</td>
</tr>
<tr>
<td>4.11.3 Methodology Related to Public Services and Utilities</td>
<td>4-207</td>
</tr>
<tr>
<td>4.11.4 Impacts and Mitigation Measures</td>
<td>4-207</td>
</tr>
<tr>
<td>4.12 SOCIOECONOMICS</td>
<td>4-225</td>
</tr>
<tr>
<td>4.12.1 Environmental Setting</td>
<td>4-225</td>
</tr>
</tbody>
</table>
# Table of Contents

## Section | Page
--- | ---
4.12.2 Regulatory Setting | 4-228
4.12.3 Methodology Related to Socioeconomics | 4-228
4.12.4 Impacts and Mitigation Measures | 4-228
4.13 SOILS, GEOLOGY AND MINERAL RESOURCES | 4-231
4.13.1 Environmental Setting | 4-231
4.13.2 Regulatory Setting | 4-237
4.13.3 Methodology Related to Soils and Geology | 4-240
4.13.4 Impacts and Mitigation Measures | 4-240
4.14 TRAFFIC AND CIRCULATION | 4-253
4.14.1 Environmental Setting | 4-253
4.14.2 Regulatory Setting | 4-257
4.14.3 Methodology Related to Traffic and Circulation | 4-259
4.14.4 Proposed Project Impacts | 4-275

5. IMPACTS FOUND NOT TO BE SIGNIFICANT | 5-1
5.1 ASSESSMENT IN THE INITIAL STUDY | 5-1
5.2 ASSESSMENT IN THE EIR | 5-1

6. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES | 6-1

7. GROWTH-INDUCING IMPACTS OF THE PROJECT | 7-1
7.1 INTRODUCTION | 7-1

8. CUMULATIVE IMPACTS | 8-1
8.1 OVERVIEW | 8-1
8.2 OTHER PROJECTS CONSIDERED IN THE CUMULATIVE IMPACTS ANALYSIS | 8-1
8.3 CUMULATIVE IMPACTS RELATED TO AESTHETICS | 8-1
8.4 CUMULATIVE IMPACTS RELATED TO AIR QUALITY | 8-2
8.5 CUMULATIVE IMPACTS RELATED TO BIOLOGICAL RESOURCES | 8-5
8.6 CUMULATIVE IMPACTS RELATED TO CULTURAL RESOURCES | 8-5
8.7 CUMULATIVE IMPACTS RELATED TO HYDROLOGY AND WATER QUALITY | 8-6
8.8 CUMULATIVE IMPACTS RELATED TO LAND USE | 8-6
8.9 CUMULATIVE IMPACTS RELATED TO NOISE | 8-7
8.10 CUMULATIVE IMPACTS RELATED TO PUBLIC HEALTH AND SAFETY | 8-7
8.11 CUMULATIVE IMPACTS RELATED TO PUBLIC SERVICES AND UTILITIES | 8-8
8.12 CUMULATIVE IMPACTS RELATED TO SOCIOECONOMICS | 8-8
8.13 CUMULATIVE IMPACTS RELATED TO SOILS AND GEOLOGY | 8-8
8.14 CUMULATIVE IMPACTS RELATED TO TRAFFIC AND CIRCULATION | 8-9

9. ALTERNATIVES | 9-1
9.1 INTRODUCTION | 9-1
9.2 NO PROJECT/EXISTING PHYSICAL CONDITIONS ALTERNATIVE | 9-1
9.2.1 Aesthetics | 9-1
9.2.2 Air Quality | 9-2
9.2.3 Biological Resources | 9-2
9.2.4 Cultural Resources | 9-2
9.2.5 Hydrology and Water Quality | 9-2
## Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.2.6</td>
<td>Land Use and Relevant Planning</td>
</tr>
<tr>
<td>9.2.7</td>
<td>Noise</td>
</tr>
<tr>
<td>9.2.8</td>
<td>Public Health and Safety</td>
</tr>
<tr>
<td>9.2.9</td>
<td>Public Services and Utilities</td>
</tr>
<tr>
<td>9.2.10</td>
<td>Socioeconomics</td>
</tr>
<tr>
<td>9.2.11</td>
<td>Soils and Geology</td>
</tr>
<tr>
<td>9.2.12</td>
<td>Traffic and Circulation</td>
</tr>
<tr>
<td>9.2.13</td>
<td>Conclusion</td>
</tr>
<tr>
<td>9.3</td>
<td>NO PROJECT/BUILD-OUT PURSUANT TO EXISTING LAND USE DESIGNATIONS ALTERNATIVE</td>
</tr>
<tr>
<td>9.3.1</td>
<td>Aesthetics</td>
</tr>
<tr>
<td>9.3.2</td>
<td>Air Quality</td>
</tr>
<tr>
<td>9.3.3</td>
<td>Biological Resources</td>
</tr>
<tr>
<td>9.3.4</td>
<td>Cultural Resources</td>
</tr>
<tr>
<td>9.3.5</td>
<td>Hydrology and Water Quality</td>
</tr>
<tr>
<td>9.3.6</td>
<td>Land Use and Relevant Planning</td>
</tr>
<tr>
<td>9.3.7</td>
<td>Noise</td>
</tr>
<tr>
<td>9.3.8</td>
<td>Public Health and Safety</td>
</tr>
<tr>
<td>9.3.9</td>
<td>Public Services and Utilities</td>
</tr>
<tr>
<td>9.3.10</td>
<td>Socioeconomics</td>
</tr>
<tr>
<td>9.3.11</td>
<td>Soils and Geology</td>
</tr>
<tr>
<td>9.3.12</td>
<td>Traffic and Circulation</td>
</tr>
<tr>
<td>9.3.13</td>
<td>Conclusion</td>
</tr>
<tr>
<td>9.4</td>
<td>LIMITED DEVELOPMENT AREA (WEST OF CANAL ONLY) ALTERNATIVE</td>
</tr>
<tr>
<td>9.4.1</td>
<td>Aesthetics</td>
</tr>
<tr>
<td>9.4.2</td>
<td>Air Quality</td>
</tr>
<tr>
<td>9.4.3</td>
<td>Biological Resources</td>
</tr>
<tr>
<td>9.4.4</td>
<td>Cultural Resources</td>
</tr>
<tr>
<td>9.4.5</td>
<td>Hydrology and Water Quality</td>
</tr>
<tr>
<td>9.4.6</td>
<td>Land Use and Relevant Planning</td>
</tr>
<tr>
<td>9.4.7</td>
<td>Noise</td>
</tr>
<tr>
<td>9.4.8</td>
<td>Public Health and Safety</td>
</tr>
<tr>
<td>9.4.9</td>
<td>Public Services and Utilities</td>
</tr>
<tr>
<td>9.4.10</td>
<td>Socioeconomics</td>
</tr>
<tr>
<td>9.4.11</td>
<td>Soils and Geology</td>
</tr>
<tr>
<td>9.4.12</td>
<td>Traffic and Circulation</td>
</tr>
<tr>
<td>9.4.13</td>
<td>Conclusion</td>
</tr>
<tr>
<td>9.5</td>
<td>EXPANSION OF THE UC MERCED SUDP TO ENCOMPASS THE PROJECT SITE ALTERNATIVE</td>
</tr>
<tr>
<td>9.5.1</td>
<td>Aesthetics</td>
</tr>
<tr>
<td>9.5.2</td>
<td>Air Quality</td>
</tr>
<tr>
<td>9.5.3</td>
<td>Biological Resources</td>
</tr>
<tr>
<td>9.5.4</td>
<td>Cultural Resources</td>
</tr>
<tr>
<td>9.5.5</td>
<td>Hydrology and Water Quality</td>
</tr>
<tr>
<td>9.5.6</td>
<td>Land Use and Relevant Planning</td>
</tr>
<tr>
<td>9.5.7</td>
<td>Noise</td>
</tr>
<tr>
<td>9.5.8</td>
<td>Public Health and Safety</td>
</tr>
<tr>
<td>9.5.9</td>
<td>Public Services and Utilities</td>
</tr>
<tr>
<td>9.5.10</td>
<td>Socioeconomic</td>
</tr>
</tbody>
</table>
Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5.11</td>
<td>Soils and Geology ................................................................. 9-14</td>
</tr>
<tr>
<td>9.5.12</td>
<td>Traffic and Circulation ............................................................ 9-14</td>
</tr>
<tr>
<td>9.5.13</td>
<td>Conclusion .................................................................................. 9-14</td>
</tr>
<tr>
<td>9.6</td>
<td>DEVELOPMENT ON A SPECIFIC SITE WITHIN THE CITY OF MERCED (FAHRENS CREEK PROJECT) ................................................................. 9-15</td>
</tr>
<tr>
<td>9.6.1</td>
<td>Aesthetics .................................................................................... 9-17</td>
</tr>
<tr>
<td>9.6.2</td>
<td>Air Quality .................................................................................. 9-18</td>
</tr>
<tr>
<td>9.6.3</td>
<td>Biological Resources ................................................................... 9-18</td>
</tr>
<tr>
<td>9.6.4</td>
<td>Cultural Resources ...................................................................... 9-20</td>
</tr>
<tr>
<td>9.6.5</td>
<td>Hydrology and Water Quality ........................................................ 9-21</td>
</tr>
<tr>
<td>9.6.6</td>
<td>Land Use and Relevant Planning ..................................................... 9-22</td>
</tr>
<tr>
<td>9.6.7</td>
<td>Noise ............................................................................................. 9-23</td>
</tr>
<tr>
<td>9.6.8</td>
<td>Public Health and Safety ............................................................... 9-23</td>
</tr>
<tr>
<td>9.6.9</td>
<td>Public Services and Utilities .......................................................... 9-23</td>
</tr>
<tr>
<td>9.6.10</td>
<td>Socioeconomics ........................................................................... 9-24</td>
</tr>
<tr>
<td>9.6.11</td>
<td>Soils and Geology ...................................................................... 9-24</td>
</tr>
<tr>
<td>9.6.12</td>
<td>Traffic and Circulation ................................................................. 9-26</td>
</tr>
<tr>
<td>9.6.13</td>
<td>Conclusion .................................................................................. 9-26</td>
</tr>
<tr>
<td>9.7</td>
<td>ENVIRONMENTALLY SUPERIOR ALTERNATIVE .................................... 9-26</td>
</tr>
<tr>
<td>10.</td>
<td>ORGANIZATIONS AND INDIVIDUALS CONTACTED ................................. 10-1</td>
</tr>
<tr>
<td>11.</td>
<td>REPORT PREPARATION PERSONNEL .................................................. 11-1</td>
</tr>
<tr>
<td>12.</td>
<td>BIBLIOGRAPHY .............................................................................. 12-1</td>
</tr>
</tbody>
</table>

APPENDICES (Under Separate Cover)

A. MERCED CITY/COUNTY TAX SHARING AGREEMENT
B. REVISED NOTICE OF PREPARATION AND SERVICE CORRESPONDENCE (DECEMBER 14, 2001)
C. NOTICE OF PREPARATION (JANUARY 1999)
D. AIR QUALITY DATA
E. CULTURAL RESOURCES SURVEY
F. NOISE DATA
G. WATER SUPPLY, STORMWATER DRAINAGE, AND WASTEWATER STUDY
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 3.1-1</td>
<td>Regional Location</td>
<td>3-3</td>
</tr>
<tr>
<td>Figure 3.1-2</td>
<td>Project Vicinity</td>
<td>3-5</td>
</tr>
<tr>
<td>Figure 3.1-3</td>
<td>Local Setting</td>
<td>3-7</td>
</tr>
<tr>
<td>Figure 3.1-4</td>
<td>Project Site</td>
<td>3-9</td>
</tr>
<tr>
<td>Figure 4.3-1a</td>
<td>Site Photographs</td>
<td>4-7</td>
</tr>
<tr>
<td>Figure 4.3-1b</td>
<td>Site Photographs</td>
<td>4-9</td>
</tr>
<tr>
<td>Figure 4.3-1c</td>
<td>Site Photographs</td>
<td>4-11</td>
</tr>
<tr>
<td>Figure 4.3-1d</td>
<td>Site Photographs</td>
<td>4-13</td>
</tr>
<tr>
<td>Figure 4.3-1e</td>
<td>Site Photographs</td>
<td>4-15</td>
</tr>
<tr>
<td>Figure 4.3-1f</td>
<td>Site Photographs</td>
<td>4-17</td>
</tr>
<tr>
<td>Figure 4.3-2</td>
<td>Photograph Location Map</td>
<td>4-19</td>
</tr>
<tr>
<td>Figure 4.5-1</td>
<td>Yosemite Lake Jurisdictional Wetlands</td>
<td>4-53</td>
</tr>
<tr>
<td>Figure 4.5-2</td>
<td>Yosemite Lake Soil Map</td>
<td>4-63</td>
</tr>
<tr>
<td>Figure 4.8-1</td>
<td>City of Merced Specific Urban Development Plan Boundary</td>
<td>4-133</td>
</tr>
<tr>
<td>Figure 4.8-2</td>
<td>North Merced Conceptual Land Use Plan</td>
<td>4-135</td>
</tr>
<tr>
<td>Figure 4.9-1</td>
<td>Noise and Land Use Compatibility</td>
<td>4-169</td>
</tr>
<tr>
<td>Figure 4.10-1</td>
<td>Fire Hazard Severity Zones</td>
<td>4-199</td>
</tr>
<tr>
<td>Figure 4.13-1</td>
<td>Regional Faults</td>
<td>4-233</td>
</tr>
<tr>
<td>Figure 4.13-2</td>
<td>Maximum Expectable Earthquake Intensity</td>
<td>4-235</td>
</tr>
<tr>
<td>Figure 4.14-1</td>
<td>Project Site and Surrounding Area</td>
<td>4-255</td>
</tr>
<tr>
<td>Figure 4.14-2</td>
<td>Existing Peak Hour Turning Movement Volumes</td>
<td>4-263</td>
</tr>
<tr>
<td>Figure 4.14-3</td>
<td>Roadway Segment Two-Way P.M. Peak Traffic Volumes</td>
<td>4-267</td>
</tr>
<tr>
<td>Figure 4.14-4</td>
<td>Existing + Approved Peak Hour Turning Movement Volumes</td>
<td>4-271</td>
</tr>
<tr>
<td>Figure 4.14-5</td>
<td>Near-Term Project –Only Trip Distribution and Assignment</td>
<td>4-281</td>
</tr>
<tr>
<td>Figure 4.14-6</td>
<td>Existing + Approved + Project Peak Hour Turning Movement Volumes</td>
<td>4-283</td>
</tr>
<tr>
<td>Figure 4.14-7</td>
<td>Near-Term Intersection Lane Configuration</td>
<td>4-287</td>
</tr>
<tr>
<td>Figure 4.14-8</td>
<td>Long-Term Project –Only Trip Distribution and Assignment</td>
<td>4-293</td>
</tr>
<tr>
<td>Figure 4.14-9</td>
<td>Year 2010 P.M. Peak Hour Turning Movement Volumes</td>
<td>4-295</td>
</tr>
<tr>
<td>Figure 4.14-10</td>
<td>Year 2010 Intersection Lane Configuration</td>
<td>4-299</td>
</tr>
<tr>
<td>Figure 4.14-11</td>
<td>Year 2020 P.M. Peak Hour Turning Movement Volumes</td>
<td>4-307</td>
</tr>
<tr>
<td>Figure 4.14-12</td>
<td>Year 2020 Intersection Lane Configuration</td>
<td>4-311</td>
</tr>
</tbody>
</table>
# List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.3-1</td>
<td>Summary of Environmental Impacts, Mitigation Measures and Levels of Significance After Mitigation</td>
<td>2-5</td>
</tr>
<tr>
<td>Table 4.1-1</td>
<td>Summary of Study Assumptions for Land Use Yosemite Lake Estates General Plan Amendment and SUDP</td>
<td>4-2</td>
</tr>
<tr>
<td>Table 4.3-1</td>
<td>County of Merced Applicable General Plan Goals and Objectives Open Space and Conservation Element</td>
<td>4-22</td>
</tr>
<tr>
<td>Table 4.4-1</td>
<td>Ambient Air Quality Standards</td>
<td>4-34</td>
</tr>
<tr>
<td>Table 4.4-2</td>
<td>Merced Ambient Air Quality</td>
<td>4-36</td>
</tr>
<tr>
<td>Table 4.4-3</td>
<td>Projected Construction Emissions (lb/day)</td>
<td>4-43</td>
</tr>
<tr>
<td>Table 4.4-4</td>
<td>Project-Related Emissions Inventory (Lbs/Day)</td>
<td>4-47</td>
</tr>
<tr>
<td>Table 4.4-5</td>
<td>Intersection Carbon Monoxide Concentrations (Year 2020)</td>
<td>4-48</td>
</tr>
<tr>
<td>Table 4.4-6</td>
<td>Twelve Potentially Significant Cultural Features</td>
<td>4-101</td>
</tr>
<tr>
<td>Table 4.5-1</td>
<td>Sensitive Plants Possibly Occurring In The Project Area</td>
<td>4-59</td>
</tr>
<tr>
<td>Table 4.5-2</td>
<td>Special-Status Animals Potentially Occurring in The Project Area</td>
<td>4-66</td>
</tr>
<tr>
<td>Table 4.5-3</td>
<td>Goals, Objectives and Policies Relevant to the UCP Area</td>
<td>4-71</td>
</tr>
<tr>
<td>Table 4.5-4</td>
<td>Applicable Objective and Policies to Cultural Resources</td>
<td>4-95</td>
</tr>
<tr>
<td>Table 4.7-1</td>
<td>Interception Levels of Service - Summary of Near-Term Scenarios</td>
<td>4-285</td>
</tr>
<tr>
<td>Table 4.7-2</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.7-3</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.7-4</td>
<td>School Impacts From the Proposed Yosemite Lakes GP Amendment</td>
<td>4-215</td>
</tr>
<tr>
<td>Table 4.7-5</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-1</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-2</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-3</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-4</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-5</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-6</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-7</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-8</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-9</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-10</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-11</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-12</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-13</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-14</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-15</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-16</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-17</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-18</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-19</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-20</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-21</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-22</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-23</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-24</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-25</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-26</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-27</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-28</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-29</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-30</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-31</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-32</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-33</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-34</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-35</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-36</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-37</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-38</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-39</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-40</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-41</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-42</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-43</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-44</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-45</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-46</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-47</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-48</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-49</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-50</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-51</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-52</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-53</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-54</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-55</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-56</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-57</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-58</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-59</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-60</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-61</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-62</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-63</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-64</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-65</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-66</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-67</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-68</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-69</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-70</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-71</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-72</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-73</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-74</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-75</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-76</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-77</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-78</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-79</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-80</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-81</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-82</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-83</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
<tr>
<td>Table 4.8-84</td>
<td>County of Merced Noise Standards For Residential Land Use Compatibility</td>
<td>4-171</td>
</tr>
<tr>
<td>Table 4.8-85</td>
<td>Population Trends</td>
<td>4-225</td>
</tr>
<tr>
<td>Table 4.8-86</td>
<td>Existing Exterior Noise Exposure</td>
<td>4-174</td>
</tr>
<tr>
<td>Table 4.8-87</td>
<td>Noise Levels Generated by Typical Construction Equipment</td>
<td>4-177</td>
</tr>
<tr>
<td>Table 4.8-88</td>
<td>Comparison of Long-Term Traffic-Related Exterior Noise Levels</td>
<td>4-180</td>
</tr>
<tr>
<td>Table 4.8-89</td>
<td>Long-Term Traffic Related Noise Increases on Local Roadways</td>
<td>4-183</td>
</tr>
<tr>
<td>Table 4.8-90</td>
<td>Analysis of Expansion/Creation of SUDP Boundaries</td>
<td>4-153</td>
</tr>
</tbody>
</table>
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
</table>

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1. Introduction

1.1 REQUIREMENTS OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

The California Environmental Quality Act requires that all state and local governmental agencies consider the environmental consequences of projects over which they have discretionary authority prior to taking action on those projects. This Draft Environmental Impact Report (EIR) has been prepared to satisfy CEQA, as set forth in the Public Resources Code Section 21000, et.seq., and the State CEQA Guidelines, 14 California Code of Regulations, Section 15000, et.seq. The EIR is the public document designed to provide decision makers and the public with an analysis of the environmental effects of the proposed project, to indicate possible ways to reduce or avoid environmental damage and to identify alternatives to the project. The EIR must also disclose significant environmental impacts that cannot be avoided; growth inducing impacts; effects found not to be significant; and significant cumulative impacts of all past, present and reasonably foreseeable future projects.

This EIR has been prepared in accordance with requirements of the:

- California Environmental Quality Act (CEQA) of 1970, as amended (Public Resources Code Section 21000 et seq.)
- State Guidelines for the Implementation of the CEQA of 1970 (herein referenced as CEQA Guidelines), as amended (California Code of Regulations Sections 15000 et seq.)

The overall purpose of this EIR is to inform the lead agency, responsible agencies, decision makers and the general public of the potential environmental effects of the designation of a proposed new Specific Urban Development Plan (SUDP) study area, which requires approval of the proposed Yosemite Lake Estates General Plan Amendment. (See Section 3.2, Project Description - Proposed General Plan Amendment, of this EIR for a definition of a SUDP and Merced County’s approval process for their establishment.) This action is defined as the “project” under CEQA. This EIR addresses the potential environmental effects of this action based upon a defined set of assumptions regarding future land use character, mix, and intensity outlined in Chapter 4, Environmental Analysis. The EIR also evaluates a number of alternatives to the defined project and identifies program level mitigation measures to reduce or avoid adverse effects of the proposed project.

1.2 TYPE OF EIR

This EIR is considered a Program EIR, pursuant to Section 15168 of the CEQA Guidelines. A Program EIR assesses the impacts of a series of related actions that can be characterized as one project and are related in one of four ways described in Section 15168 (a), as follows:

1) Geographically;

2) As logical parts in a chain of contemplated actions;
1. Introduction

3) In connection with issuance of rules, regulations, plans or other general criteria to govern the conduct of a continuing program; or

4) As individual activities carried out under the same authorizing or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.

Consistent with Section 15146 of the CEQA Guidelines, the level of detail included in an EIR is guided by the level of specificity of the project under consideration. This EIR for the proposed formation of the Yosemite Lake Estates Specific Urban Development Plan (SUDP) area establishes a constraints and mitigation framework for the preparation of a subsequent Community Specific Plan (CSP), in compliance with the established procedures of the County of Merced. While this Program EIR analyzes the potential build-out of the plan area, the formation of an SUDP study area does not convey any development entitlements. The level of detail in this analysis and the formulation of mitigation measures is consistent with a program level document. More detailed analysis and the development of more specific mitigation measures would occur with subsequent environmental analysis associated with the required Community Specific Plan.

1.3 NOTICE OF PREPARATION AND INITIAL STUDY

The County of Merced Board of Supervisors approved a Guidance Package for the Yosemite Lake Estates Specific Urban Development Plan (SUDP) on June 23, 1998. The County of Merced determined that an EIR would be required for this project and issued a Notice of Preparation (NOP) and Initial Study on January 7, 1999.

In November 2001, the County of Merced circulated an updated Notice of Preparation that reflected the modification of the project description to pursue only an amendment to the General Plan land use designation of the project site from Agricultural to Specific Urban Development Plan study area. The updated Notice of Preparation noted that no specific development is currently under consideration, and no development entitlements would be issued under this project description. The updated Notice of Preparation and comments received during the 30-day public review period, which ran from November 1 to December 1, 2001, are contained in Appendix B.

The NOP process is used to help determine the scope of the environmental issues to be addressed in the EIR. Based on this process and the Initial Study for the project, certain environmental categories were identified as having the potential to result in significant impacts. Issues considered significant or potentially significant are addressed in this EIR. Issues identified as less than significant or no impact are not addressed beyond the discussion contained in the Initial Study. Issues to be addressed in this EIR are listed in the following section.

1.4 SCOPE OF THIS EIR

Based on the results of the Initial Study prepared in 1999, and consideration of comments received during the public and agency scoping periods during 1999 and 2001, a number of environmental issues were identified as requiring more detailed review in this EIR. The following is a list of these broad categories.
1. Introduction

- Land Use and Planning;
- Traffic and Circulation;
- Air Quality;
- Noise;
- Public Health and Safety;
- Aesthetics;
- Geology and Soils;
- Cultural Resources;
- Biological Resources;
- Water Resources and Hydrology;
- Public Services and Utilities; and
- Socioeconomics.

The 1999 Initial Study identified specific issues within each of these categories that were determined to require further review, and issues that have been determined to have either “No Impact” or “Less than Significant Impacts” based on preliminary assessment. These issues will not be further addressed in this EIR. Briefly, the following issues have been eliminated from further review:

- Disruption or division of the physical arrangement of an established community;
- Displacement of existing housing;
- Landslide or mudslide issues;
- Creation of objectionable odors;
- Rail, waterborne or air traffic impacts;
- Wasteful or inefficient use of non-renewable resources;
- Risk of accidental explosion or release of hazardous substances; and
- Creation of a health hazard.

1.5 COUNTY OF MERCED SUDP APPROVAL PROCESS

The project approval process established by the County of Merced for new or expanded urban areas, called Specific Urban Development Plans (SUDP) by the Merced County General Plan\(^1\), involves a two-step effort. The first step involves this proposed General Plan amendment to establish a Specific Urban Development Plan study area. Approval of a General Plan amendment would not constitute the approval of any specific development plan. A second tier of discretionary review, consisting of a Community Specific Plan (CSP), would subsequently occur if the proposed General Plan amendment were approved. A CSP would outline local community development policy and specific land use and zoning designations within the defined SUDP. Other subsequent approvals such as Site Plans and Subdivision Maps would also be required to permit urban development of the project area.

In order to evaluate the potential environmental effects of the approval of the proposed GPA and establishment of an SUDP boundary, it is necessary to formulate a reasonable set of assumptions.

\(^1\) For a definition and additional information regarding SUDPs, please refer to Section 3.2, Project Description - Proposed General Plan Amendment, of this EIR.
1. Introduction

with respect to land use character, mix, and intensity. These assumptions are described in Chapter 4, *Environmental Analysis*. It must be emphasized, however, that the applicant has not applied for approval of any specific development proposal at this time, and that assumptions outlined in this EIR are for the purposes of analysis only.

Subsequent environmental documentation and clearances will be necessary in conjunction with future actions involving more detailed project approvals listed above. At the time of submittal of such actions, the County of Merced will conduct an Initial Study assessment to determine the appropriate level and character of any additional CEQA documentation.

1.6 EIR FORMAT

This Draft EIR has been formatted as described below.

Chapter 1. Introduction

This section describes the purpose of the EIR; background on the project, the Notice of Preparation/Initial Study; the format of the Draft EIR; the use of incorporation by reference; anticipated approvals for the project; Final EIR certification; and any critical issues remaining to be resolved.

Chapter 2. Executive Summary

This section summarizes the description of the proposed Yosemite Lake Estates General Plan Amendment and the potential environmental impacts and mitigation measures for the project. The analysis of alternatives to the proposed project is also summarized in this Chapter.

Chapter 3. Environmental Setting and Project Description

The purpose the Environmental Setting section is to provide a description of the general physical environmental conditions in the vicinity of the project, as they exist at the time the Notice of Preparation is published, from both a local and regional perspective. The environmental setting provides a set of baseline physical conditions from which the lead agency must determine the significance of environmental impacts resulting from the proposed project. The Local Setting includes a description of neighboring projects that are included in the assessment of cumulative impacts throughout the EIR.

The Project Description includes a description of the background of the proposed Yosemite Lake Estates General Plan Amendment, the project review and approval procedures of the County of Merced, the objectives of the General Plan Amendment; the nature of the General Plan amendment request; and required discretionary approvals presently under consideration.

Chapter 4. Environmental Analysis

This section provides an Introduction to the Environmental Analysis describing the conceptual project assumptions (including potential development characteristics and infrastructure concepts) that form the basis of the assessment of potential project specific and cumulative impacts. Other
sections of this chapter assess the potential environmental effects of implementing the proposed project. For each environmental topic, these analyses describe the Existing Environmental Setting, the Regulatory Setting for the topic involved, thresholds used to determine if a significant impact would occur with respect each impact topic; the methodology to identify and evaluate the potential impacts of the project; the potential adverse effects of the project; the level of impact significance before mitigation; proposed mitigation measures for the project; and the level of significance of impacts after mitigation for each environmental topic analyzed.

Chapter 5. Impacts Found Not to be Significant

This section describes impacts of the project that would not be significant and adverse as analyzed in this EIR, and the Initial Study prepared to determine the scope of this EIR.

Chapter 6. Irreversible and Irretrievable Commitment of Resources

This section describes the irreversible and irretrievable commitment of resources that would be associated with the construction and long-term operation of the proposed project.

Chapter 7. Growth-Inducing Impacts of the Project

This section describes the potential growth inducing impacts that would be associated with the proposed project.

Chapter 8. Cumulative Impacts

This section describes the potential cumulative impacts that would be associated with the proposed project and other existing, approved and proposed development in the area.

Chapter 9. Alternatives

This section describes the process of selecting alternatives to the project, the general characteristics of each, and the impacts of defined alternatives compared to the proposed project, including the following: 1) No Project Alternative (Existing Conditions); 2) No Project (Build-out pursuant to existing land use designations); 3) Limited Development Area (west of canal only); 4) Expansion of the UC Merced SUDP to encompass the Project Site; and 5) Development on a Specific Site within the City of Merced (Fahrens Creek project).

Chapter 10. Organizations and Individuals Contacted

This section lists the people and organizations contacted during the preparation of the Draft EIR for the proposed Yosemite Lake Estates General Plan Amendment.

Chapter 11. Report Preparation Personnel

This section lists the people who prepared and contributed to the Draft EIR for the proposed project.
1. Introduction

Chapter 12. Bibliography

This section provides a bibliography by topic of the technical reports and other documentation used in the preparation of the Draft EIR for the proposed Yosemite Lake Estates General Plan Amendment.

Appendices (Under Separate Cover)

The appendices contain supporting documents and other material too detailed and voluminous to be included in the body of the EIR. The Draft EIR summarizes the findings and refers to these documents throughout analyses. The following appendices are contained under separate cover for this EIR:

- Appendix A: Merced City/County Tax Sharing Agreement
- Appendix B: Revised Notice of Preparation and Service Correspondence (December 14, 2001)
- Appendix C: Notice of Preparation (January 1999)
- Appendix D: Air Quality Data
- Appendix E: Cultural Resources Survey
- Appendix F: Noise Data
- Appendix G: Water Supply, Stormwater Drainage, and Wastewater Study.

1.7 INTENDED USES OF THIS EIR

This EIR is intended to serve as the environmental documentation for consideration of the Yosemite Lake Estates General Plan Amendment by the County of Merced, the Lead Agency, and any Responsible Agencies. This EIR allows the decision makers and the public to understand what, if any significant environmental impacts would be associated with the proposed project. It may also serve as a foundation for the preparation of subsequent environmental documentation and clearances associated with any future Community Specific Plan (CSP) subject to the requirements of Section 15168 of the California Environmental Quality Act.

1.8 PUBLIC REVIEW

This Draft EIR is being circulated for public review for a period of 45 days. Interested agencies and members of the public are invited to provide written comments on the Draft EIR to the County address shown on the title page of this document. Upon completion of the 45-day review period, the County of Merced will review all written comments received and prepare written responses for each comment. A Final EIR will then be prepared incorporating all of the comments received, responses to the comments and any changes to the Draft EIR that result from the comments received. This Final EIR will then be presented to the County of Merced Board of
1. Introduction

Supervisors for potential certification as the environmental document for the project. All persons who commented on the Draft EIR will be notified of the availability of the Final EIR and the date of the public hearing before the County.

1.9 ISSUES TO BE RESOLVED

This document is the EIR for the Yosemite Lake Estates General Plan Amendment. The County Board of Supervisors, upon certification of the EIR, will make a determination whether to identify a Specific Urban Development Plan (SUDP) study area boundary on the General Plan Land Use Policy Diagram. Assuming a SUDP study area is established, the Board of Supervisors would subsequently be asked to adopt a Community Specific Plan, which would become a component of the County General Plan. Further environmental review will be required prior to approval of a Community Specific Plan for the project area, as has been noted previously.

The City of Merced’s role in the decision-making process is not clearly defined. According to the City/County Tax Sharing Agreement, the City of Merced and the County of Merced have agreed not to approve changes in land use designations from non-urban to urban without the prior agreement of the other party. No specific process is outlined in the Agreement by which the County is to obtain agreement of the City, nor is what would constitute agreement defined.
1. Introduction

1.10 AREAS OF CONTROVERSY

- Change in intensity of land use
- Water supply
- Wastewater services
- Protection of vernal pools on site

1.11 MITIGATION MONITORING

Public Resources Code Section 21081.6 requires that agencies adopt a monitoring or reporting program for any project for which it has made findings pursuant to Public Resources Code 21081 or adopted a Negative Declaration pursuant to 21080(c). Such a program is intended to ensure the implementation of all mitigation measures adopted through the preparation of an EIR or Negative Declaration. A Mitigation Monitoring Program for the Yosemite Lake Estates General Plan Amendment EIR will be completed as part of the Final EIR.
2. Executive Summary

2.1 INTRODUCTION TO THE EIR

This Environmental Impact Report (EIR) is being prepared to assess the impacts of the proposed project pursuant to the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (14 California Administrative Code Section 15000 et seq.). CEQA requires all state and local governmental agencies to consider the environmental consequences of projects over which they have discretionary authority prior to taking action on those projects. An EIR is an informational document used in the local planning and decision-making process. It is not the purpose of an EIR to recommend either approval or denial of a project.

The EIR is the public document used to analyze the environmental effects of a proposed project, to indicate ways to reduce or avoid possible environmental degradation, and to identify alternatives to the project that would reduce or avoid the significant adverse effects of the proposed project. The EIR must also disclose project-related significant adverse environmental impacts that cannot be avoided; growth inducing impacts; effects not found to be significant; and significant cumulative impacts. Throughout this document the word “impact” refers to an adverse effect on the environment.

Based on the results of an Initial Study prepared by Merced County in 1999 and consideration of comments received during circulation of the Notices of Preparation during the public and agency scoping periods in 1999 and 2001, a number of environmental issues were identified as requiring more detailed review in this EIR. The following is a list of these broad categories:

- Land Use and Planning
- Traffic and Circulation
- Air Quality
- Noise
- Public Health and Safety
- Aesthetics
- Geology and Soils
- Cultural Resources
- Biological Resources
- Water Resources and Hydrology
- Public Services and Utilities
- Socioeconomics

Issues eliminated from further review on the basis of the Initial Study and scoping include:

- Disruption or division of the physical arrangement of an established community;
- Displacement of existing housing;
- Landslide or mudslide issues;
- Creation of objectionable odors;
- Rail, waterborne or air traffic impacts;
- Wasteful or inefficient use of non-renewable resources;
- Risk of accidental explosion or release of hazardous substances; and
- Creation of a health hazard.
2. Executive Summary

2.2 INTRODUCTION AND SUMMARY OF THE PROJECT DESCRIPTION

The Yosemite Lake Estates General Plan Amendment proposes designation of a 655-acre site for urban land uses. The site is located immediately adjacent to, and northwest of, Lake Yosemite. The proposed project consists of a General Plan Amendment establishing the Yosemite Lake Estates Specific Urban Development Plan (SUDP) study area boundary. If Merced County approves the requested General Plan Amendment, it would indicate that it would be County policy that the project area would eventually be urbanized, and that agricultural and rural uses would eventually cease. However, approval of this General Plan amendment would not constitute the approval of any specific development plan. A second tier of discretionary review, consisting of a Community Specific Plan (CSP), would subsequently occur if the proposed General Plan amendment were approved. (See Section 3.2.4, County of Merced Project Approval Process.) A CSP would outline local community development policy and specific land use and zoning designations within the defined SUDP. Other subsequent approvals such as Site Plans and Subdivision Maps would also be required to permit urban development of the project area.

Even if the General Plan Amendment were approved, the zoning of the property would remain A-2 (Exclusive Agriculture, with a 160 acre minimum parcel size) with a small portion on the west side of the property zoned A-1 (General Agriculture, with a 20 acre minimum parcel size).

2.3 SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES, AND LEVELS OF SIGNIFICANCE AFTER MITIGATION

Table 2.3-1 (beginning on the following page) summarizes the conclusions of the environmental analysis contained in this EIR. Impacts are identified as significant or less than significant, and for all significant impacts, mitigation measures are identified. The level of significance after imposition of the mitigation measures is also presented.

2.4 SUMMARY OF PROJECT ALTERNATIVES AND RELATED IMPACTS

Under the “No Project (Existing Physical Conditions)” alternative, the agricultural General Plan and zoning designations would not be altered and the project site would not be developed. Existing grazing uses would continue to occur on the project site and no improvements would be made to the property. The “No Project (Existing Physical Conditions)” alternative would be environmentally superior to the proposed project in terms of land use and relevant planning, traffic and circulation, noise, air quality, soils and geology, hydrology and water quality, biological resources, cultural resources, public health and safety, public services and utilities, and aesthetics; however, it would be inferior to the proposed project in terms of promoting socioeconomic growth.

Under the “No Project (Build-out Pursuant to Existing Land Use Designations)” alternative, the agricultural General Plan and zoning designations would not be altered and would primarily
remain A-2 (Exclusive Agriculture, with a 160 acre minimum parcel size). Approximately 200 acres (31%) of the site would be maintained as open space to protect sensitive biological resources identified on the site. Given that open space requirements could be satisfied through the establishment of easements, the 655 acres of the project site could be developed with a maximum of four residential structures on 160-acre size parcels (a total of 640 acres). The Build-out Pursuant to Existing Land Use Designations alternative would be environmentally superior to the proposed project in terms of land use, traffic and circulation, noise, air quality, soils and geology, cultural resources, public health and safety, public services and utilities, biological resources, aesthetics, hydrology, and, in some aspects, water quality; however, it would be inferior to the proposed project in terms of promoting socioeconomic growth and in terms of overall potential impacts to water quality.

Under the “Limited Development Area (West of Canal Only)” alternative, only that portion of the proposed project site would be developed that lies west of the Crocker-Huffman Canal that traverses the site in a NW-SE direction and connects to Yosemite Lake, which borders the site on the southeast. The Limited Development (West of the Canal) alternative would be environmentally superior to the proposed project in terms of aesthetics, air quality, biological resources, cultural resources, soils and geology, hydrology and water quality, noise, public services and utilities, traffic and circulation and public health and safety; however, it would be environmentally neutral to the proposed project in terms of land use and relevant planning and inferior to the proposed project in terms of promoting socioeconomic growth.

Under the “Expansion of the UC Merced SUDP to Encompass the Project Site” alternative, the UC Merced SUDP would be expanded to encompass the proposed project site, and on-site development site plans would remain the same. The Expansion of the UC Merced SUDP to Encompass the Project Site alternative would be environmentally superior to the proposed project in terms of public services and utilities; in all other regards environmental impacts would not differ from those of the proposed project.

Under the “Development on a Specific Site Within the City of Merced (Fahrens Creek)” alternative, development would occur on approximately 1,366 acres north of the City of Merced. The project site lies within the City’s Specific Urban Development Plan Boundary, and it is anticipated that the project would be annexed to the City of Merced. Under the “Development on a Specific Site Within the City of Merced (Fahrens Creek Project)” alternative, development would occur within the City of Merced Specific Urban Development Plan (SUDP) and be designed to implement the development goals of the Merced Vision 2015 General Plan. The Fahrens Creek Project would consist of the development of seven parcels that cover approximately 273.6 acres in the northwest portion of the City of Merced. The Fahrens Creek alternative would be environmentally superior to the proposed project in terms of aesthetics, air quality, biological resources, cultural resources, land use and relevant planning, noise, public health and safety, public services and utilities, socioeconomics and traffic and circulation. The Fahrens Creek alternative would be environmentally inferior to the proposed project in terms of hydrology and water quality, and neutral to the proposed project in terms of soils and geology.
2. Executive Summary

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## 2. Executive Summary

### TABLE 2.3-1
**SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND LEVELS OF SIGNIFICANCE AFTER MITIGATION**

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Level of Significance Before Mitigation</th>
<th>Mitigation Measures</th>
<th>Level of Significance After Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>4.3 AESTHETICS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Substantially Affect A Scenic Vista or Scenic Highway</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings</td>
<td>Significant</td>
<td>4.3.1 As part of the required Community Specific Plan, the project applicant shall develop a Conceptual Landscape Plan that includes measures to minimize adverse visual impacts on adjacent land uses that are considered sensitive in character. The Community Specific Plan shall also incorporate landscape guidelines and community design parameters to address “edge conditions” with all surrounding land uses. Native plant species shall be utilized to the extent feasible in achieving objectives of the Landscape Concept Plan and the Community Specific Plan. 4.3.2 Non-recreational land uses should be buffered from sensitive public recreation lands through site design and other techniques to be formulated in the Community Specific Plan. 4.3.3 Principles and guidelines contained in City of Merced Vision 2015 General Plan – Urban Design Element should be utilized to the extent feasible in the formulation of the required subsequent Community Specific Plan for Yosemite Lake Estates.</td>
<td>Significant</td>
</tr>
<tr>
<td>Creation of a New Source of Substantial Light or Glare that Would Adversely Affect Day and Nighttime Views in the Area</td>
<td>Potentially significant</td>
<td>4.3.4 The subsequent Community Specific Plan shall include a Conceptual Lighting Plan and shall incorporate policies and guidelines to ensure that light and glare impacts on sensitive receptors both on-site and off-site are minimized. Measures may include, but shall not necessarily be limited to, the following: - Outdoor lighting fixtures shall be located and designed to minimize ambient levels of illumination and glare, consistent with provision of adequate lighting for public safety purposes;</td>
<td>Potentially significant</td>
</tr>
</tbody>
</table>
2. **Executive Summary**

### TABLE 2.3-1

SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND LEVELS OF SIGNIFICANCE AFTER MITIGATION

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</thead>
<tbody>
<tr>
<td>Outdoor lighting fixtures</td>
<td></td>
<td>• Outdoor lighting fixtures shall be located and designed to limit spillage beyond the property line in areas adjacent to sensitive receptors;</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>• Buildings shall use low reflective glass and building materials to minimize daytime glare to the extent possible;</td>
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<tr>
<td></td>
<td></td>
<td>• All lighting sources shall be designed and installed in order to direct light and glare away from sensitive receptors both on-site and off-site;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The Community Specific Plan shall establish standards to minimize levels of illumination for outdoor signage to the extent practicable;</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>• The Community Specific Plan shall address measures to control construction related light and glare, including but not limited to the use of non-glare directional lighting when lights are required for safety and security in construction areas.</td>
<td></td>
</tr>
<tr>
<td>4.3.5 Prior to construction</td>
<td></td>
<td>Prior to construction of any subsequent development project, detailed lighting plans shall be prepared consistent with development standards formulated in the subsequent Yosemite Lake Community Specific Plan.</td>
<td></td>
</tr>
</tbody>
</table>

#### 4.4 AIR QUALITY

**Temporary Construction Emissions**

<table>
<thead>
<tr>
<th>Level of Significance</th>
<th>Mitigation Measures</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potentially significant</td>
<td>4.4.1 Heavy diesel equipment shall use low-sulfur fuel.</td>
<td>Less than significant</td>
</tr>
<tr>
<td></td>
<td>4.4.2 Heavy equipment shall not remain idling for prolonged periods of time (i.e., 10 minute maximum).</td>
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<tr>
<td></td>
<td>4.4.3 Heavy equipment shall be properly tuned and maintained to manufacturer’s specifications.</td>
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<tr>
<td></td>
<td>4.4.4 Electric-powered equipment shall be utilized in lieu of gasoline-powered engines where possible (provided they are not run via a portable generator set).</td>
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</tr>
</tbody>
</table>
## 2. Executive Summary

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<th>Level of Significance After Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temporary Construction Fugitive Dust Emissions</td>
<td>Potentially significant</td>
<td>4.4.5 Construction activities shall minimize obstruction of through traffic lanes adjacent to the site and, if necessary, a flag-person shall be retained to maintain safety adjacent to existing roadways. 4.4.6 Limit traffic speeds on unpaved roads to 15 mph. 4.4.7 Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1%. For construction located near sensitive receptors: 4.4.8 Install wheel washers for all exiting trucks to wash off all trucks and equipment leaving the site. 4.4.9 Install wind breaks at windward side(s) of construction areas. 4.4.10 Suspend excavation and grading activity when winds exceed 20 mph. 4.4.11 Limit areas subject to excavation, grading and other construction activity at any one time.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Long Term Regional Impacts Due to Emissions Attributable to the Change in Land Use</td>
<td>Significant</td>
<td>No mitigation measures are feasible.</td>
<td>Significant</td>
</tr>
</tbody>
</table>

### 4.5 BIOLOGICAL RESOURCES

Degradation or Loss of Significant On-Site Vernal Pool/Swale and Associated Habitats | Potentially Significant | 4.5.1 Future site specific development plans shall be evaluated and designed to provide avoidance of vernal pool and swale habitats to the maximum extent practicable and in consideration of the indirect impact considerations discussed in this document. Open space zones should be designated to retain larger areas of concentrated vernal pool habitat on the higher portions of the property in the north eastern and eastern portion of the site that can be more readily protected from urban runoff and associated impacts. Open space zones should also be designated in a 500 foot wide zone along the northern edge of the property in order to provide a buffer between the proposed development area and | Less than significant |
2. Executive Summary

TABLE 2.3-1
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<tbody>
<tr>
<td>bordering portions of the Virginia Smith Trust property, which would be set aside as a natural preserve as part of the proposed UC Merced and associated campus community development. For all on-site preservation areas, management plans shall be prepared and approved by the County and applicable resource agencies such as the USFWS and CDFG that provide for long term monitoring, maintenance, and management of the open space habitats. All site-grading plans shall be designed to prevent urban runoff from entering the vernal pool preserve areas.</td>
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<tr>
<td>4.5.2 No irrigation or ornamental landscape planting shall be allowed in the on-site avoidance/preserve areas. Limited public foot access may be provided on a limited number of established and maintained trails. A funding mechanism shall be provided to maintain all trails and provide enforcement of leash laws and provide enforcement to prohibit non-pedestrian access (except for maintenance vehicles). USFWS, CDFG and the County of Merced shall review and approve all public access plans as part of the precise development plan(s) for the site.</td>
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<tr>
<td>4.5.3 For unavoidable impacts to vernal pool complex habitats, the USFWS and other resource agencies typically require a combination of preservation of existing vernal pool complex habitats and restoration or construction of new vernal pool/swale habitat. At a minimum, the project applicant shall provide a 2:1 preservation to impact ratio and a 1:1 construction to impact ratio prior to or concurrent with impacts to vernal pool habitat. All ratios will be based on the acres of wetland (pool, swale, seep, etc.) habitat impacted. These requirements may be reduced if additional on-site avoidance is provided consistent with Mitigation Measure 4.5.1. The on-site avoidance and off-site</td>
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</table>
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<table>
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<tr>
<td>mitigation shall also conform to the following guidelines and requirements unless prior approval is obtained from the County, Corps, USFWS, CDFG and RWQCB:</td>
<td></td>
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</tr>
<tr>
<td>Preservation and construction mitigation should be limited to northern hardpan vernal pool types, preferably occupying a similar range of soil types as are present on the project site.</td>
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</tr>
<tr>
<td>Preservation and construction should preferably be located in eastern Merced County or a similar geographic region extending from Stanislaus County on the north to Madera County on the south. As much as practicable, the mitigation areas should be consistent with the conservation strategies that are expected to be developed as part of the Eastern Merced County Habitat Conservation Plan (HCPO)/Natural Communities Conservation Plan (NCCP).</td>
<td></td>
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<tr>
<td>As much as practicable, the mitigation areas should preserve large contiguous blocks of habitat and restored/constructed habitats should be contiguous with blocks of preserved natural habitats.</td>
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<tr>
<td>Mitigation areas shall be established in perpetuity through dedication of fee title or conservation easement to an approved environmental organization. A conservation easement shall also be provided in the name of an approved party, preferably the CDFG, or other approved management agency consistent with the proposed HCP/NCCP if it is implemented and adopted.</td>
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<tr>
<td>Applicant shall prepare and obtain approval for a long-term management plan and shall provide adequate long term funding, in the form of an endowment that can only be used for the benefit of the mitigation areas, to the approved conservation organization.</td>
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</tbody>
</table>
## 2. Executive Summary

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<tbody>
<tr>
<td></td>
<td></td>
<td>• All proposed mitigation plans and requirements must be reviewed and approved by the agencies with jurisdiction over the vernal pool resources. The agencies include the County of Merced, USFWS, CDFG, Corps and RWQCB. Participation in an approved regional conservation/mitigation bank, if approved by applicable regulatory agencies, may substitute for situations provided above. The State of California, USFWS, Corps and EPA have endorsed the use of conservation banks as a means to accomplish resource management goals. The State has published its “Official Policy on Conservation Banks” (Wheeler and Strock 1995) and the Corps, EPA and USFWS have established similar federal guidance for mitigation banking. These policies recognize that conservation banks provide a viable alternative to the current practice of requiring piecemeal mitigation for individual project impacts. Individualized mitigation projects that have little connection with their surrounding ecosystems are often much more prone to failure than a mitigation project that is incorporated into a larger, ecosystem-based conservation bank or regional conservation plan.</td>
<td></td>
</tr>
<tr>
<td>Loss of Habitat for Sensitive Plant Species</td>
<td>Potentially significant</td>
<td>4.5.5 Prior to application for precise development plans for the area, the applicant shall conduct appropriately timed and intensive surveys to verify the assumptions and findings of this assessment. All surveys shall be conducted by a qualified botanist according to protocols acceptable to and approved by the USFWS and the CDFG and shall be designed to determine the presence/absence and distribution of special-status plant species on the site. Results of the surveys shall be submitted to the County Planning Department, CDFG, and USFWS for review and approval of the adequacy of the surveys.</td>
<td>Less than significant</td>
</tr>
</tbody>
</table>
## 2. Executive Summary

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</tr>
</thead>
<tbody>
<tr>
<td>4.5.6</td>
<td>Where populations of Henderson’s bent grass, shining navaretia, succulent owl’s clover, and dwarf downingia or other similarly classified, non-listed plant species are found, they shall be avoided to the maximum extent practicable. Areas supporting special-status species designated for preservation shall be provided with appropriate buffers and incorporated into viable project open space reserves. Such buffers shall be a minimum 150 feet where development is in the down-slope watershed of the population and a minimum of 300 feet where development is in the up-slope watershed of the population. For development outside of the immediate watershed, but within the above-described limits, of the plant population, the development setback buffers shall be a minimum of the watershed boundary plus 50 feet.</td>
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<tr>
<td>4.5.7</td>
<td>For unavoidable impacts to Henderson’s bent grass, shining navaretia, succulent owl’s clover, and dwarf downingia or other similarly classified plant species, the applicant shall develop and implement appropriate means for salvage and relocation of effected populations. The plan shall be incorporated as much as possible with and contain similar requirements as the vernal pool/swale construction/restoration described in Mitigation Measure 4.5.3 above. The plan should include measures to salvage topsoil from impacted pools and swales that can be used to inoculate restored and constructed vernal pools and swales. (The salvage of topsoil has been shown to be an effective measure for preserving impacted vernal pool flora and fauna (Northern and Holve-Hensill 2000, S. Foreman, LSA, personal experience).) The special-status species salvage and relocation plan shall be submitted for review and approval to the County of Merced Planning Department, USFWS, and CDFG prior to approval of any final development plans for the SUDP area.</td>
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2. Executive Summary

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</table>
| Loss of Habitat for Sensitive Animal Species | Potentially significant                | 4.5.8 The preservation habitat described Mitigation Measure 4.5.3 above should to the maximum extent practicable contain populations of the special-status plant species present on the project site.  
4.5.9 If Colusa grass, San Joaquin orcut grass, and Keck’s checkerbloom which are extremely uncommon plant species with limited known distributions, are found to be present as a result of the surveys required in Mitigation Measure 4.5.5 (or other verified observations), the applicant shall redesign the precise development plans to avoid the plant populations (unless prior approval is granted by the USFWS, CDFG, and County of Merced) and provide appropriate buffers and natural habitat linkages to preserved viable habitat areas. Buffers shall be a minimum 250 feet where development is in the down-slope watershed of the population and a minimum of 500 feet where development is in the up-slope watershed of the population. For development outside of the immediate watershed, but within the above described limits of the plant population, the development setback buffers shall be a minimum of the watershed boundary plus 150 feet in order to minimize the direct and indirect of development on these species and their habitats from increased runoff, human and domestic animal disturbance, and other associated development activities. | Less than significant |

TABLE 2.3-1
SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND LEVELS OF SIGNIFICANCE AFTER MITIGATION
2. Executive Summary

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| animal species on the site. Results of the surveys shall be submitted to the County Planning Department, CDFG, and USFWS for review and approval of the adequacy of the surveys. 4.5.11 For unavoidable impacts to vernal pool crustacean habitat, the applicant shall develop and implement appropriate measures for salvage and relocation of effected populations. The plan shall be incorporated as much as possible with and contain similar requirements as the vernal pool/swale construction/ restoration described in Mitigation Measures 4.5.3 and 4.5.7 above. The plan should include measures to salvage topsoil from impacted pools and swales that can be used to inoculate restored and constructed vernal pools and swales. (The salvage of topsoil has been shown to be an effective measure for preserving impacted vernal pool flora and fauna (Northern and Holve-Hensill 2000, S. Foreman, LSA, personal experience).) The special-status species salvage and relocation plan shall be submitted for review and approval to the County of Merced Planning Department, USFWS, and CDFG prior to approval of any final development plans for the SUDP area. 4.5.12 If the Conservancy fairy shrimp is an uncommon species with a limited known distribution and is limited to apparently narrow range habitat conditions, is found to be present as a result of the surveys required in Mitigation Measure 4.5.10 (or other verified observations), the applicant shall redesign the precise development plans to avoid the suitable habitat (unless prior approval is granted by the USFWS, CDFG and County of Merced) and provide appropriate buffers and natural habitat linkages to preserved viable habitat areas. Buffers shall be a minimum 250 feet where development is in the down-slope watershed of the population and a minimum of 500 feet where development is in the up-slope watershed of the population. For
2. Executive Summary

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<tbody>
<tr>
<td>Degradation or Loss of Other Wetland Habitats</td>
<td>Potentially significant</td>
<td>development outside of the immediate watershed but within the above described limits of the plant population, the development setback buffers shall be a minimum of the watershed boundary plus 150 feet in order to minimize the direct and indirect impacts of development on these species and their habitats from increased runoff, human and domestic animal disturbance, and other associated development activities. 4.5.13 The preservation habitat described in Mitigation Measure 4.5-3 above should to the maximum extent practicable support populations of the special-status vernal pool crustacean species present on the project site. Habitat replacement shall be provided under one of the following two options: 1) the applicant shall restore or construct additional acres of vernal pool/swale at a 0.5:1 impact to mitigation ratio in association with Mitigation Measure 4.5.3 above; or 2) construct new seasonal/perennial wetland habitat at a 1:1 impact to mitigation ratio at an approved location. Mitigation areas shall be established in perpetuity through dedication of fee title or conservation easement to an approved environmental organization. A conservation easement shall also be provided in the name of an approved party, preferably the CDFG, or other approved management agency. A long term management plan shall provide adequate long term funding in the form of an endowment which can only be used for the benefit of the mitigation areas to the approved conservation organization. Purchase of mitigation credits at an approved mitigation/conservation bank would fulfill this mitigation requirement. This location and implementation plan for this off-site measure shall be reviewed and approved by the CDFG, USFWS and County of Merced as part of the approvals for the precise development plans for the site.</td>
<td>Less than significant</td>
</tr>
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2. Executive Summary

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<tr>
<td>4.5.15 All urban runoff shall be effectively pre-treated through passive water quality treatment measures such as wet ponds, grassy swales, etc. prior to discharge into any preserved open space wetlands or natural waterways. Design standards for effective treatment shall include treatment of urban runoff up to the 85th percentile 24-hour runoff event, 80% volume treatment by the method recommended in California Stormwater Best Management Practices Handbook, or other comparable metric. Water quality treatment measures shall be reviewed and approved by the RWQCB, CDFG, USFWS and County of Merced as part of the approvals for the precise development plans for the site.</td>
<td>4.5.16 As part of the precise development plans, the applicant shall provide appropriate buffer zones to minimize disturbance to wildlife using these wetland areas. The exact width of the buffers needs to be determined based on adjacent proposed land uses and specific project designs.</td>
<td>4.5.17 Future development plans for this site should incorporate open space corridors along Fahrens Creek and along the Crocker-Huffman Canal. These two corridors would allow some movement through the site. For most wildlife, the blockage of movement by the residential development would result in localized reduction in wildlife populations. The corridors should include the canal, associated canal marshes/wetlands and a minimum 100 foot wide natural open space buffer. For all onsite open space areas, management plans shall be prepared and approved by the County and applicable resource agencies such as the USFWS and CDFG that provide for long term monitoring, maintenance, and management of the open space habitats.</td>
<td>4.5.18 Applicant shall cooperate with the regional planning efforts for the UC Merced/University Community planning area to develop</td>
</tr>
<tr>
<td>Interfere with the Movement Patterns of Wildlife and Localized Reduction in Wildlife Populations</td>
<td>Potentially significant</td>
<td></td>
<td>Less than significant</td>
</tr>
</tbody>
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<tr>
<td>Degradation or Loss of the Heron/Egret Rookery</td>
<td>Potentially significant</td>
<td>4.5.19 The applicant shall design and construct an artificial nesting structure for the rookery. The artificial rookery structure should be placed in the open space area in the eastern portion of the property on the northern shore of Yosemite Lake.</td>
<td>Less than significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.5.20 The rookery trees may not be removed or disturbed until after all active heron and egret nests in the rookery have fledged young or are no longer occupied for breeding activity.</td>
<td></td>
</tr>
<tr>
<td>Loss or Degradation of Natural Habitats and Species Caused by Invasive Exotic Species</td>
<td>Potentially significant</td>
<td>4.5.21 Common area and open space landscape plans shall be reviewed by a qualified biologist for plants which may pose a risk to vernal pool and associated habitats. Plants that are considered to be potentially invasive species by the California Exotic Pest Plant Council or other appropriate authority shall be eliminated from the landscape plans.</td>
<td>Less than significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.5.22 As part of the management plan requirements under Mitigation Measures 4.5.3 and 4.5.14 above, the applicant shall develop, implement, and provide a long term funding for control of invasive vegetation at on-site and off-site wetland mitigation areas. The plan shall be reviewed and approved by the CDFG, USFWS, and County of Merced prior to project development.</td>
<td></td>
</tr>
<tr>
<td>Degradation of Biological Resources on the Site Inconsistent with the County of Merced Biological Resource Guidelines</td>
<td>Potentially significant</td>
<td>4.5.23 Applicant shall be required to obtain all necessary state and federal permits/authorization from agencies such as the Corps, USFWS, RWQCB and CDFG. Applicant shall also be required to implement all of Mitigation Measures 4.5.1 to 4.5.22.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Loss of Agricultural Pastureland</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
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<tbody>
<tr>
<td>4.6 CULTURAL RESOURCES</td>
<td>Significant</td>
<td>4.6.1 Conserve all noted cultural resources on the project site prior to completing the following measures.</td>
<td>Less than significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.6.2 Prior to submission of the Community Specific Plan, the project sponsor shall consult with Native Americans identified by Merced County to determine the identification and location of known and unknown cultural resources and traditional cultural properties.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.6.3 Following this consultation, and prior to submission of the Community Specific Plan, the project sponsor shall retain a qualified archaeologist to perform an assessment of the resources identified above and any additional resources identified during Native American consultation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.6.4 If, after evaluation, a resource is judged to be of significance pursuant to CEQA Guidelines criteria, the project sponsor shall prepare a mitigation plan in accordance with appropriate guidelines and consultation with listed Native Americans, and submitted to the Merced County Planning &amp; Community Development Department for acceptance. Mitigation could include avoidance, site capping, data recovery, or a combination of these or other measures, as determined by the qualified archaeologist. The County shall require implementation of the accepted mitigation plan in the design and policies of the Community Specific Plan.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.6.5 If identified features are determined to be not significant historic resources, no further mitigation or conservation would be necessary.</td>
<td></td>
</tr>
</tbody>
</table>
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</tr>
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<tbody>
<tr>
<td>Potential Loss or Disruption of Undiscovered or Unknown Important Cultural and Historic Resources</td>
<td>Potentially significant</td>
<td>4.6.6 If evidence of historical, archaeological or paleontological resources are uncovered during grading or other construction activities, work shall be halted within 100 feet of the find and a qualified archaeologist shall be retained to conduct an on-site evaluation and provide recommendations for removal and/or preservation. Work in the vicinity of the find shall not resume until the archaeologist has conducted an examination and implement necessary mitigation measures. 4.6.7 If human remains are inadvertently discovered, California law requires that work stop immediately and that the County Coroner is notified. If the remains are Native American, AB 298 makes it mandatory that the coroner notify the Native American Heritage Commission within 24 hours of the discovery to ensure that proper treatment is given the burial site. A professional archaeologist should assist in the development of appropriate mitigation of potential impacts to heritage resources, in consultation with identified Native Americans.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Degradation of Ground and Surface Water Quality</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Increased Wastewater Discharge</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Increased Stormwater Discharge</td>
<td>Potentially significant</td>
<td>4.7.1 Construct a stormwater detention basin to capture silts and sediments before discharging to Fahrens Creek. 4.7.2 Install storm drain system signs at catch basin inlets within the project area. 4.7.3 Manage entry of runoff and sediment from surrounding agricultural land into the project storm drain system through grading, berms, and ditches.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Groundwater Overdraft</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
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<tr>
<td>Flood Hazards</td>
<td>Potentially significant</td>
<td>4.7.4 Install a telemetry device at the storm drain pump station to monitor flow in Bear Creek at McKee Road and flow in the Main Canal above the 100-year event level so it is diverted away from Fahrens Creek when either one or both of these conditions occur.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Land Use Element</td>
<td>Potentially significant</td>
<td>4.8.1 Subsequent to approval of any formation of a Specific Urban Development Plan boundary, the project applicant shall prepare a Community Specific Plan, which includes the following at a minimum: 4.8.1a A fiscal impact component to contain an assessment of projected tax revenues compared to projected County service costs; 4.8.1b a community facilities/infrastructure component to identify public and private infrastructure needs, service district or assessment area formation details, and a development phasing plan; 4.8.1c a land use component identifying the various land uses proposed including density and intensity of development, community design parameters and any special project features; 4.8.1d a circulation component identifying the relationship to the General Plan Circulation Chapter; 4.8.1e an assessment of the relationship to goals and objectives of the General Plan Housing Chapter; 4.8.1f an evaluation of the job/housing relationship of the community identifying where employment centers are located and any proposed phasing of employment generating land uses if they are provided within the SUDP;</td>
<td>Less than significant</td>
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<tr>
<td>4.8.1g</td>
<td>an open space and wildlife component identifying existing and proposed open space values; and</td>
<td></td>
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<tr>
<td>4.8.1h</td>
<td>an identification of the plan goals, objectives and policies indicating the functional character of the community that is proposed and its relationship to other existing incorporated and unincorporated communities in the region.</td>
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<tr>
<td>4.8.2</td>
<td>Concurrent with approval of any subsequent Community Specific Plan, the project applicant shall obtain initial clearance from the County Health Department for the utilization of on-site sewer and water systems.</td>
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<tr>
<td>4.8.3</td>
<td>Sewer and water systems shall be limited to only the capacity necessary to adequately service the proposed development, as determined by the County of Merced.</td>
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<tr>
<td>4.8.4</td>
<td>The Community Specific Plan shall be developed through a cooperative planning process designed to address the concerns of the County of Merced, City of Merced, University of California and the objectives of the property owners, in order to ensure functional compatibility with adjacent areas planned for urban development and the feasibility of development from the perspective of the property owner, as well as affected public agencies.</td>
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<tr>
<td><strong>Land Use Element</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Conflicts 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 (cont.).</td>
<td>Potentially significant</td>
<td>No mitigation measures are necessary, other than those specified under Goal One.</td>
<td>Less than significant</td>
</tr>
<tr>
<td><strong>Goal Two:</strong> Creation of ‘a high quality of living within unincorporated communities.”</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Land Use Element</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Project Conflicts 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 (cont.).</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
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<tr>
<td><strong>Goal Seven:</strong> “Conversion of productive agricultural and other valuable open space lands.”</td>
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<tr>
<td><strong>Land Use Element</strong></td>
<td></td>
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<tr>
<td>Project Conflicts 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 (cont.).</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
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</tr>
<tr>
<td><strong>Goal Nine:</strong> “Accommodation of public land uses and private facilities which satisfy specific County needs.”</td>
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<tr>
<td><strong>Land Use Element</strong></td>
<td>Potentially significant</td>
<td>Refer to Section 4.11, <em>Public Services and Utilities</em>, for Public Service Mitigation Measures in addition to formation of special assessment districts and approval of a Development Agreement.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Project Conflicts 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 (cont.).</td>
<td>Potentially significant</td>
<td>No mitigation measures are necessary, other than those specified under Goal 1.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Goal Ten: “County services and facilities are to be provided at adequate levels for existing and future residents.”</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Land Use Element</strong></td>
<td>Potentially significant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Conflicts 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 (cont.).</td>
<td>Potentially significant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal Eleven: Accommodation of the University of California campus and orderly development of adjacent land uses through a comprehensive planning process.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Agriculture Element</strong></td>
<td>Potentially significant</td>
<td>The County of Merced may, at its discretion, require the application of the County “Right to Farm” ordinance on subdivision applications for residential development within the Yosemite Lake Estates SUDP area.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Project Conflicts 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 (cont.).</td>
<td>Potentially significant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goal Two: Productive agricultural lands are to be conserved.</td>
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<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Project Conflicts 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 (cont.).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Goal Three: Land uses which are potentially disruptive to the agricultural economy are to be properly located and operated.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agriculture Element</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Project Conflicts 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 (cont.).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Goal Four: The management of water resources to benefit the agricultural community is improved.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conflict With Any Applicable Habitat Conservation Plan Or Natural Community Conservation Plan</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
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<tr>
<td>Adverse Effects On Agricultural Resources Operations (involving any of the following: 1) conversion to non-agricultural use of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (as designated by the California Resources Agency); 2) conflict with existing zoning for agricultural use, or a Williamson Act Contract; 3) involvement of any other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use).</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
</tbody>
</table>
| 4.9 NOISE                                                                           | Potentially significant                 | 4.9.1 The CSP and subsequent development proposals should specify noise mitigation as appropriate. Applicable mitigation includes:  
  - In accordance with Section 18.41.07 of the County Zoning Ordinance, construction shall be restricted to between the hours of 7:00 a.m. and 6:00 p.m. To further reduce the nuisance, construction shall not be permitted on Sundays or federal holidays.  
  - The contractors should strive to use the quietest equipment available. In accordance with Section 18.41.07, all internal combustion powered equipment shall be properly maintained and equipped with properly operating mufflers.  
  - Portable equipment should be located as far as possible from the noise sensitive locations as is feasible.  
  - Equipment should be stored and serviced as far as possible from sensitive receptor locations.  
  - A public awareness program should be instituted before construction to alert the public of the up-coming disturbance. | Less than significant                  |
2. Executive Summary

### TABLE 2.3-1
SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND LEVELS OF SIGNIFICANCE AFTER MITIGATION

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Level of Significance Before Mitigation</th>
<th>Mitigation Measures</th>
<th>Level of Significance After Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>• A disturbance coordinator responsible for responding to noise complaints should be designated. This person's name and telephone number should be clearly posted at the construction site. This person would be responsible to respond to complaints about noise, determine the cause, and implement measures to mitigate the impact if feasible. Examples include enforcing the allowable hours of construction, identifying poorly muffled equipment and requiring its repair or replacement.</td>
<td></td>
</tr>
<tr>
<td>Potential Noise-Related Impacts to On-Site Receptors Due to Long-Term Traffic Generation</td>
<td>Potentially significant</td>
<td>4.9.2 The CSP shall provide for a minimum 100-foot setback for any residential use planned along Old Lake Road; or The minimum distance may be reduced if a berm and/or sound wall is constructed, such that the County’s 65 CNEL standard is maintained; or Measures to achieve required noise attenuation of residential development may include additional acoustic insulation, forced-air ventilation, and sound-rated windows and doors to maintain an interior CNEL of no more than 45 dBA, if the dwelling units are provided with exterior habitable spaces that are shielded from roadway noise (e.g., back yards). Specific measures to be incorporated into each unit will vary with placement of dwelling units and shall be determined in an acoustical analysis to be prepared when development plans are available and prior to approval of any Tentative Tract Map.</td>
<td>Less than significant</td>
</tr>
</tbody>
</table>
2. Executive Summary

### TABLE 2.3-1

**SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND LEVELS OF SIGNIFICANCE AFTER MITIGATION**

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<tr>
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<th>Level of Significance After Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Noise-Related Impacts Due to Project-Generated Traffic Creating Significant Increases in Noise at Off-Site Sensitive Receptor Locations Along Local Roadways</td>
<td>Potentially significant</td>
<td>4.9.3 The County shall require that a dedicated acoustic study for those routes included in Table 4.9-5 be conducted prior to approval of a CSP. The study shall identify the locations of any sensitive land uses and shall identify appropriate mitigation such as sound walls and berms to ensure exterior noise levels increase by no more than 3 dBA above ambient conditions for those uses located in areas in excess of 65 dBA CNEL and 5 dBA above ambient conditions where the resultant noise level is not projected to exceed 65 dBA CNEL. 4.9.4 Where the exterior noise standards are exceeded and berms and/or sound walls are not feasible, the acoustic study shall identify structural modifications to ensure that interior noise levels are reduced to the extent reasonably feasible or other modifications shall be made in the CSP to ensure that acceptable noise levels are achieved. 4.9.5 Any off-site mitigation requirements identified in the above-two mitigation measures shall be limited to a fair-share contribution of actual construction costs.</td>
<td>Potentially significant</td>
</tr>
</tbody>
</table>

### 4.10 PUBLIC HEALTH AND SAFETY

| Potential Impacts from Hazardous Material Releases in the Project Vicinity | Less than significant | No mitigation measures are necessary | Less than significant |
| Potential Impacts from Previous Uses and Unknown Buried Hazardous Materials On-Site | Potentially significant | 4.10-1 Prior to approval of a Community Specific Plan, a Phase I Environmental Site Assessment shall be performed. On-site areas that include or previously included agriculture shall be tested for pesticide and herbicide residue in the soil. The locations and number of soil samples shall be determined by a California registered civil engineer with methodology acceptable to the Regional Water Quality Control Board (RWQCB). Any areas of soil contamination in excess of regulatory levels shall be remediated to the satisfaction of the RWQCB. | Less than significant |
TABLE 2.3-1
SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND LEVELS OF SIGNIFICANCE AFTER MITIGATION

<table>
<thead>
<tr>
<th>Environmental Impact</th>
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<th>Mitigation Measures</th>
<th>Level of Significance After Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential Impacts from San Joaquin Valley Fever</td>
<td>Less than significant</td>
<td>Prior to issuance of any grading permits associated with subsequent development, which may be approved, construction specifications shall be established describing appropriate health and safety procedures. Such procedures shall require that work be stopped when discolored or odorous soil or unknown containers are encountered in the immediate area of the discovery. Health and safety procedures shall contain, at a minimum, emergency medical, evacuation, and notification actions. Notification shall include, but would not be limited to, such agencies as: County of Merced, City of Merced, CAL-EPA’s Department of Toxic Substances Control, the County of Merced Fire Department, and the Regional Water Quality Control Board. Additionally, a Phase II ESA for the areas of potential contamination shall be required to evaluate and determine the type of contamination encountered and the appropriate remediation procedures to be utilized.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Conflict with Emergency Evacuation Routes</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>4.11 PUBLIC SERVICES AND UTILITIES</td>
<td></td>
<td>4.11.1 At the time that a Community Specific Plan is approved, the fees necessary to fund additional fire services and facilities required by the proposed project shall be part of an agreement between the County of Merced and the developer.</td>
<td>Less than significant</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.11.2 A developer fee shall be established by the County and paid for by the project applicant to provide for early fire protection staffing and related needs generated as a result of the proposed project. Extended service fees may also be deemed necessary and these can be assessed through property owner assessments.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Increased Demand for Fire Protection Services</td>
<td>Potentially significant</td>
<td>4.11.3 At the time that a Community Specific Plan is approved, the fees necessary to fund additional police services and facilities required by the proposed project shall be part of an agreement</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Increased Demand for Police Protection Services</td>
<td>Potentially significant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Executive Summary

### TABLE 2.3-1
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<thead>
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<th>Level of Significance Before Mitigation</th>
<th>Mitigation Measures</th>
<th>Level of Significance After Mitigation</th>
</tr>
</thead>
</table>
| Increased Demand for School Services  | Potentially significant                 | 4.11.4 The state statutory fee of $2.14 per square foot of residential development and $0.34 per square foot for commercial/industrial development shall be levied upon any development project proposed under a subsequent Community Specific Plan.  
4.11.5 If required by the Merced City School District or Merced Union High School District, adequate land needed for new school facilities shall be provided by the landowner in the CSP in exchange for fee credits. School sites shall be located with the approval of the school district concerned; be developed on a schedule coordinated with phasing of project build-out in a manner satisfactory to the affected school district, and conform to size guidelines set by the State and school district concerned. | Less than significant                  |
| Increased Demand for Gas and Electric Service | Less than significant                   | No mitigation measures are necessary                                                                                                                                                                                  | Less than significant                  |
| Increased Demand for Telephone Services | Less than significant                   | No mitigation measures are necessary                                                                                                                                                                                  | Less than significant                  |
| Increased Demand for Water Service    | Less than significant                   | No mitigation measures are necessary                                                                                                                                                                                  | Less than significant                  |
# 2. Executive Summary

## TABLE 2.3-1
SUMMARY OF ENVIRONMENTAL IMPACTS, MITIGATION MEASURES AND LEVELS OF SIGNIFICANCE AFTER MITIGATION

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<tr>
<th>Environmental Impact</th>
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<th>Mitigation Measures</th>
<th>Level of Significance After Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased Demand for Wastewater Services</td>
<td>Potentially significant</td>
<td>4.11.6 The project applicant shall prepare a wastewater treatment plan as part of the Specific Plan prepared for this project. The wastewater treatment plan shall identify requirements for wastewater treatment and storage facilities. 4.11.7 A wastewater discharge permit shall be secured from the Regional Water Quality Control Board prior to project construction.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Increased Demand for Solid Waste Services</td>
<td>Potentially significant</td>
<td>4.11.8 In the periodic update of its Waste Management Program, the County shall incorporate the population projections for the Yosemite Lake Estates General Plan Amendment project in order to plan for sufficient future landfill capacity and shall include the area in its education, recycling and cost recovery efforts.</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Increased Demand for Parks and Recreation Services</td>
<td>Potentially significant</td>
<td>4.11.9 At the time of a Community Specific Plan, the developer and the Merced County Division of Parks and Recreation shall reach a mutual agreement on access to Lake Yosemite Regional Park such that public safety and revenue generation for the Park are maximized.</td>
<td>Potentially significant</td>
</tr>
</tbody>
</table>

### 4.12 SOCIOECONOMICS

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Level of Significance</th>
<th>Mitigation Measures</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceed Established Population Projections</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Induce Substantial Growth of Population in an Area Either Directly or Indirectly</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
</tbody>
</table>

### 4.13 SOILS, GEOLOGY AND MINERAL RESOURCES

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Level of Significance</th>
<th>Mitigation Measures</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fault Induced Ground Rupture</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Seismic Ground Shaking</td>
<td>Potentially significant</td>
<td>4.13.1 Prior to approval of a tentative tract map, a qualified soils engineer shall prepare a detailed analysis of specific characteristics and capabilities of underlying soils and shall identify potential geologic hazards. The report shall recommend appropriate measures for the design of proposed structures to reduce any potential safety hazards related to ground shaking, liquefaction, subsidence and unstable or expansive soils to the</td>
<td>Less than significant</td>
</tr>
</tbody>
</table>
## 2. Executive Summary

### Table 2.3-1
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<th>Level of Significance After Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seismic Ground Failure, Including Liquefaction</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Subsidence</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Expansive Soils</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Erosion or Unstable Soil Conditions</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Mineral Resources</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
<tr>
<td>Unique Geologic or Physical Features</td>
<td>Less than significant</td>
<td>No mitigation measures are necessary</td>
<td>Less than significant</td>
</tr>
</tbody>
</table>

### 4.14 TRAFFIC AND CIRCULATION

**Existing Plus Approved Projects plus Proposed Project Traffic Conditions (Background plus Project)**

- Potentially significant

  **4.14-1** When a final proposal for the proposed project is put forward, a full traffic analysis will be required. As part of the required Community Specific Plan, the project applicant shall complete a traffic analysis that includes mitigation measures designed to minimize adverse impacts on adjacent streets and roadways.

  **4.14-2** Principles and guidelines contained in the *City of Merced Vision 2015 General Plan – Transportation and Circulation Element* shall be utilized, to the greatest extent feasible, in the formulation of the required subsequent Community Specific Plan for Yosemite Lake Estates.

**Cumulative Year 2010 Traffic Conditions (Background plus Project)**

- Potentially significant

  **4.14.3** When a final proposal for the proposed project is put forward, a full traffic analysis will be required. As part of the required Community Specific Plan, the project applicant shall complete a traffic analysis that includes mitigation measures designed to minimize adverse impacts on adjacent streets and roadways.

  **4.14.4** Principles and guidelines contained in the *City of Merced Vision 2015 General Plan – Transportation and Circulation Element* shall be utilized, to the greatest extent feasible, in the formulation of the required subsequent Community Specific Plan for Yosemite Lake Estates.
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</tr>
</thead>
<tbody>
<tr>
<td>Cumulative Year 2020 Traffic Conditions (Background plus Project)</td>
<td>Potentially significant</td>
<td>4.14.5 When a final proposal for the proposed project is put forward, a full traffic analysis will be required. As part of the required Community Specific Plan, the project applicant shall complete a traffic analysis that includes mitigation measures designed to minimize adverse impacts on adjacent streets and roadways. 4.14.6 Principles and guidelines contained in the <em>City of Merced Vision 2015 General Plan – Transportation and Circulation Element</em> shall be utilized, to the greatest extent feasible, in the formulation of the required subsequent Community Specific Plan for Yosemite Lake Estates.</td>
<td>Less than significant</td>
</tr>
</tbody>
</table>
3. Environmental Setting and Project Description

3.1 PROJECT LOCATION AND ENVIRONMENTAL SETTING

3.1.1 Regional Setting

The project site (Figure 3.1-1, Regional Location) is located in the lower reaches of the western slopes of the Sierra-Nevada in the San Joaquin Valley, which is approximately 250 miles long and an average of 35 miles wide. To the west are the Coast Ranges, which rise to an average elevation of 3,000 feet. At the south end of the valley are the San Emigdio Mountains (part of the Coast Ranges), which rise steeply from the valley floor to a maximum height of 8,831 feet. To the southeast are the Tehachapi Mountains, part of the Sierra Nevada, with mountain peaks that rise to elevations of 6,000 to 8,000 feet.

The geographic region to the north and east of the project site is characterized by gently rolling terrain, while the area to the south and west is relatively flat and has historically been used for agricultural production. The City of Merced is located to the southwest of the project area. The UC Merced SUDP is located to the southeast. Merced County is among the top agricultural product producing counties in the State of California. Approximately 94% of the land in Merced County is usable for agricultural purposes, ranging from intense farm production to grazing land. Grazing land accounts for 46% of all agricultural land in Merced County, followed by prime soils, which accounts for 23%.

3.1.2 Local Setting

The project site is northwest of Yosemite Lake (a man-made irrigation reservoir) and approximately three miles north and east of the City of Merced (Figure 3.1-2, Project Vicinity). The City is the seat of Merced County government and the major retail/commercial/service center for the surrounding region. Merced is located at the intersection of several state highways (State Route 59, State Route 99, and State Route 140) and is one of the primary access points to Yosemite National Park. The City is served by two rail lines, Burlington Northern Santa Fe (B.N.S.F.) and the Union Pacific Railroads, which pass through the City. The Merced Municipal Airport provides air service for local residents. To the north, Castle Airport Aviation and Development Center provides regional airfreight service. The area surrounding Merced is largely used for agricultural production. The northern, western, and eastern portions of Merced contain a number of creeks and canals including Bear Creek, Black Rascal Creek, Fahrens Creek and Cottonwood Creek.

3.1.3 Project Site Setting

The project site consists of 655 acres (Figure 3.1-3, Local Setting). Old Lake Road bounds the site on the south, Lake Yosemite is on the east, and the Merced Golf and Country Club is located to on the west. The land adjacent to the north of the property boundary is held by the Cyril Smith Trust. This area has historically been used for cattle grazing and is currently used for that purpose. The area to the south of the project site, across Old Lake Road, is subdivided into a row of one-acre residential parcels with grazing land to the south. Lake Yosemite and the Virginia Smith Trust flank the property’s entire eastern boundary. The lands to the immediate west of the property, west of Golf Road, contain the Merced Golf and Country Club, which is a private 18-
3. **Environmental Setting and Project Description**

hole golf course. A large lot single-family housing development is located on the south side of the Merced Country Club, with grazing lands to the north and west.

The proposed project site consists of gently rolling terrain with slopes from 0% to 10% over the vast majority of the property. The exception is a small area near Fahrens Creek in the northwest portion of the site that contains slope banks of up to 30%. The project site is generally characterized by open and flat to gently rolling grassland that is virtually treeless. Tree cover is limited to a few willows along the site’s waterways and four to six Eucalyptus trees located along the canals. Numerous trees and shrubs also exist along an old levee constructed on the perimeter of Lake Yosemite. The Redding soils that dominate the region form a hard pan that underlies most of the project site. Vernal pools are formed in level hardpan areas in the rainy spring months.

The original grasses that dominated the landscape were tall perennial bunch grasses. However, with the cattle grazing that has occurred in the region over the last century, these have been replaced by other species. Dominant plants now include introduced annual grasses and forbs such as wild oats, soft chess and filaree, as well as native forbs such as tarweed.

The site was originally drained by a series of softly sloping swales into the Fahrens Creek watershed. Since the construction of the Merced Irrigation District (MID) (Crocker-Huffman) Main Canal in the early 1900s, this drainage pattern has been interrupted. The MID Main Canal is an earth berm canal that bisects the site, and is the primary tributary to Lake Yosemite. Several breaches in the MID Main canal exist on the upland east side of the canal, creating intermittent lagoon areas that support varying degrees of wetland habitat. Additional detail on the biological character of the site is contained in Section 4.5, *Biological Resources.*
3. Environmental Setting and Project Description
3. Environmental Setting and Project Description

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3. Environmental Setting and Project Description

Project Vicinity

Source: County of Merced Land Trust

Proposed SUDP Project Area
Proposed UC Merced Campus Site
UC Merced Land Trust

Yosemite Ave.
La Paloma Rd.
Merced Golf and Country Club
Bellevue Ranch
Old Lake Rd.
Bellevue Rd.
Main Canal
City of Merced
Hwy 59
Hwy 99
Hwy 140
3. Environmental Setting and Project Description

Local Setting

Source: County of Merced
3. Environmental Setting and Project Description

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3. Environmental Setting and Project Description

Project Site

- Fahrens Creek
- Merced Golf & Country Club
- Golf Road
- Old Lake Road
- Yosemite Lake
- Crocker Huffman (Main) Canal
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3. **Environmental Setting and Project Description**

### 3.2 PROJECT DESCRIPTION - PROPOSED GENERAL PLAN AMENDMENT

#### 3.2.1 Proposed General Plan Amendment

The proposed project consists of a General Plan Amendment establishing the Yosemite Lake Estates Specific Urban Development Plan (SUDP) study area boundary. If Merced County approves the requested General Plan Amendment, it would indicate that it would be County policy that the project area would eventually be urbanized, and that agricultural and rural uses would eventually cease. However, approval of this General Plan amendment would not constitute the approval of any specific development plan. A second tier of discretionary review, consisting of a Community Specific Plan (CSP), would subsequently occur if the proposed General Plan amendment were approved. (See Section 3.2.4, County of Merced Project Approval Process, below.) A CSP would outline local community development policy and specific land use and zoning designations within the defined SUDP. Other subsequent approvals such as Site Plans and Subdivision Maps would also be required to permit urban development of the project area.

Even if the General Plan Amendment were approved, the zoning of the property would remain A-2 (Exclusive Agriculture, with a 160 acre minimum parcel size) with a small portion on the west side of the property zoned A-1 (General Agriculture, with a 20 acre minimum parcel size).

#### 3.2.2 Urban Centered Concept and Definition of a SUDP

The Urban Centered Concept is the basic principle of land use policy in the Merced County General Plan. The Urban Centered Concept is directed at using cities and unincorporated communities or centers to accomplish anticipated urban expansion in an orderly manner, based on the ability of these communities to furnish public services along with land needs based on population demands and in balance with employment generating land uses. Urban land uses include residential, commercial, industrial, and related institutional uses.

The purpose of using the Urban Centered Concept to plan land use is to ensure that (1) growth occurs in an orderly and logical manner, (2) land is used efficiently, (3) agricultural operations are not eliminated prematurely, (4) the County’s planning efforts are complementary to those of the cities, and (5) urban development occurs where proper services are available.

The Urban Centered Concept is expressed through four area designations of the General Plan Land Use Diagram:

- The Specific Urban Development Plan (SUDP);
- The Rural Residential Center (RRC);
- The Highway Interchange Center (HIC); and
- The Agricultural Services Center (ASC).

SUDP is the broadest General Plan boundary designation, intended to accommodate all classifications of urban land use. An SUDP boundary is recognized as the ultimate growth
boundary of a community over the life of the General Plan. Whenever land is added to an SUDP (or a new SUDP is created), the decision is made that the land will ultimately be converted to urban use. As described above, the project being assessed in this EIR is the establishment of a new SUDP.

3.2.3 Policies to be Considered by Merced County for Establishment of a New SUDP or Expansion of an Existing SUDP

Under the Merced County General Plan, SUDP expansion or creation is allowed after consideration of several factors: the agricultural value of the land involved and impacts on adjacent agricultural and open space lands; urban service availability; the amount of vacant available land already within the community or adjacent communities; and consistency of the expansion with local planning goals outlined through the community specific plan or the General Plans of adjacent communities. The following Merced County General Plan policies and implementation measures under Land Use Objective 1.A relate to the expansion of an existing SUDP, as would be required for the proposed UCP.

Policy 1. Urban development shall occur only within adopted urban boundaries of cities, unincorporated communities, and other urban centers consisting of the following designations: Specific Urban Development Plan (SUDP), ...

Policy 2. Expansion of an existing urban boundary into areas designated for rural land uses shall be allowed only where deemed appropriate based on careful consideration of potential agricultural impacts, onsite limitations for development, public service availability, and impacts on open space or conservation values.

Implementation:

The following criteria is to be applied during review of General Plan Amendment and/or Zone Change applications to expand SUDP, RRC, HIC or ASC boundaries:

- **Soil:** Is the soil suitable for agriculture according to the soil class? In general, unique or higher quality soil as identified on the Important Farmland Map of the state Mapping and Monitoring Program.

- **Parcel size:** Is the present parcel a sufficient size for economic agricultural use? (In general, 20 acres or larger.)

- **Use:** Is the land presently used, or has it been recently used, for agriculture? In general, for irrigated crop or intensive livestock production within the past three years?
3. Environmental Setting and Project Description

- **Compatibility**: Will a nonagricultural use create conflicts as to compatibility with adjacent agricultural uses? In general, at least half the adjacent land area is devoted to agricultural uses.

- **Services**: Have provisions been made to provide adequate levels of public services to satisfy the demands generated by the proposed development?

- **Limitation**: Will an individual waste disposal system contaminate the surface or groundwater table?

- **Safety**: Will intensive use present hazards to public health, welfare, and safety, as identified in the Safety Chapter of the General Plan?

- **Natural Resources**: Will urban use impact significant open space and/or conservation values as identified in the Open Space/Conservation Chapter (VI) of the General Plan?

- **Land Vacancy**: Is there an adequate supply of available vacant land within the existing urban boundary to accommodate reasonably anticipated or historic growth needs over the next ten (10) years?

- **Consistency**: Is the proposal consistent with the goals and policies of the Community Specific Plan if one has been adopted for the community or area?

### 3.2.4 County of Merced Project Approval Process

Prior to initiating the proposed General Plan Amendment, the project sponsor of the Yosemite Lake Estates project requested that Merced County consider whether to process the project application and define how the County would review the application. The County approved consideration of the project, and issued instructions regarding its review process in a Guidance Package approved on July 14, 1998. This Guidance Package describes the proposed project, the entitlement process and schedule, and outlines the principles under which the project will be reviewed. The Guidance package also highlights potential planning issues that are anticipated to guide the project planning and environmental review process.

As defined in the Guidance Package, the project approval process for the Yosemite Lake Estates involves a two-step effort. The first step, which this EIR addresses, involves a General Plan Amendment to establish a “Yosemite Lake Estates SUDP study area on the General Plan Land Use Diagram. The conceptual development plan contained in the Guidance Package approved by the Board of Supervisors on July 14, 1998 establishes the study area boundary.

Approval of a General Plan Amendment would not, however, constitute approval of the conceptual development plan. A second tier of review would occur if the General Plan Amendment is approved, and would involve preparation of a Community Specific Plan document containing local community development policies, and specific land use and zoning designations. Subsequent project approvals and additional environmental assessment under the
procedures of the County of Merced and the California Environmental Quality Act would also be required.

The adopted SUDP/EIR Guidance Package highlights a range of General Plan goals and objectives that are applicable to the proposed project. These are presented below and reiterated in corresponding sections of the Environmental Analysis contained in Chapter 4, *Environmental Analysis*:

### AGRICULTURAL ELEMENT

<table>
<thead>
<tr>
<th>Goal 2</th>
<th>Productive agricultural lands are to be conserved.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 2A</td>
<td>Agricultural areas are to be protected from conversion to non-agricultural uses.</td>
</tr>
<tr>
<td>Objective 2D</td>
<td>Conflicts are to be reduced through an understanding of the agricultural industry by urban dwellers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 3</th>
<th>Land uses, which are potentially disruptive to the agricultural economy, are to be properly located and operated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 3A</td>
<td>Clear boundaries between urban and agricultural areas are to be identified and land use buffers are to be provided.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 4</th>
<th>The management of water resources to benefit the agricultural community is improved.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 4A</td>
<td>Measures to protect and improve water quality are supported.</td>
</tr>
</tbody>
</table>

### CIRCULATION ELEMENT

<table>
<thead>
<tr>
<th>Goal 1</th>
<th>“A road system which provides free movement of vehicles throughout the County.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 1A</td>
<td>All roads are appropriately classified by their existing and future use characteristics to effectively distribute vehicles.</td>
</tr>
<tr>
<td>Objective 1B</td>
<td>“Roadways are improved and maintained to provide an adequate peak period Level of Service (LOS) for existing and anticipated traffic volumes.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Goal 2</th>
<th>“A circulation system which provides for a variety of transportation modes for the safe and efficient movement of people and foods throughout the County.”</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Goal 3</th>
<th>“An adequate system for the transmission and distribution of energy, water and information.”</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Goal 4</th>
<th>“Adequate water, sewer and drainage facilities are provided to meet urban needs for the County.”</th>
</tr>
</thead>
</table>
### LAND USE ELEMENT

<table>
<thead>
<tr>
<th>Goal 1</th>
<th>Creation of a land pattern which enhances the integrity of both urban and rural areas.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 1A</td>
<td>Compact urban development boundaries, which utilize land efficiently and reduce conflicts with agricultural and open space lands.</td>
</tr>
<tr>
<td>Objective 1B</td>
<td>Creation of “New full-service SUDPs which provide an alternative to urban development on productive agricultural lands.”</td>
</tr>
<tr>
<td>Objective 1C</td>
<td>Creation of “an efficient, orderly urban development pattern which minimizes public service costs”</td>
</tr>
<tr>
<td>Goal 2</td>
<td>Creation of “a high quality of living within unincorporated communities”</td>
</tr>
<tr>
<td>Objective 2A</td>
<td>Adoption of “individual community specific plans for each Specific Urban Development Plan (SUDP) by the year 2000 which recognize local issues, needs and desires.”</td>
</tr>
<tr>
<td>Objective 2B</td>
<td>Promotion of “urban land uses at intensities and densities commensurate with the level of public services available in each SUDP.”</td>
</tr>
<tr>
<td>Objective 2C</td>
<td>Provision of “urban land uses appropriately located to avoid incompatible land uses.”</td>
</tr>
<tr>
<td>Goal 7</td>
<td>“Conservation of productive agricultural and other valuable open space lands”</td>
</tr>
<tr>
<td>Objective 7A</td>
<td>“Conversion of productive agricultural and other valuable rural land to urban uses” is to be minimized.</td>
</tr>
<tr>
<td>Goal 9</td>
<td>“Accommodation of public land uses and private facilities which satisfy specific County needs”</td>
</tr>
<tr>
<td>Objective 9A</td>
<td>Recreational areas, institutional and public facilities, hazardous and non-hazardous waste facilities, power and communications towers and airports are to be appropriately located to minimize land use conflicts while satisfying local and regional demands.</td>
</tr>
<tr>
<td>Goal 10</td>
<td>“County services and facilities are to be provided at adequate levels for existing and future residents.”</td>
</tr>
<tr>
<td>Objective 10A</td>
<td>Minimum acceptable levels of County services and facilities such as sheriff and fire protection, roads, parks, libraries, social services and courts are available to serve existing County needs through the year 2000.</td>
</tr>
<tr>
<td>Goal 11</td>
<td>Accommodation of the University of California campus and orderly development of adjacent land uses through a comprehensive planning process.</td>
</tr>
<tr>
<td>Objective 11A</td>
<td>Land use designations supporting the University are identified for the Campus site and adjacent lands in a coordinated and organized manner involving landowners, the City of Merced, University of California and the Merced Irrigation District.</td>
</tr>
<tr>
<td>Objective 11B</td>
<td>Speculative development projects, re-zonings and General Plan Amendments determined to be detrimental to a coordinated development process for the University Community are discouraged</td>
</tr>
<tr>
<td>Objective 11C</td>
<td>Access routes serving the University and adjacent land uses are appropriately classified to ensure adequate capacity.</td>
</tr>
</tbody>
</table>

### NOISE ELEMENT

<table>
<thead>
<tr>
<th>Goal 1</th>
<th>All citizens of the County should be “free from the harmful effects of excessive noise”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 1A</td>
<td>Residential areas should not be “significantly impacted by excessive exterior noise levels”</td>
</tr>
<tr>
<td>Objective 1B</td>
<td>“Interior noise levels for residential dwelling units in residential areas are not to exceed 45 dBA.”</td>
</tr>
<tr>
<td>Objective 1C</td>
<td>Hospitals and schools are not to be significantly impacted by excessive exterior noise levels.”</td>
</tr>
<tr>
<td>Goal 2</td>
<td>“Noise generating land uses and facilities important to the economic health of the County are not adversely affected by incompatible land uses.”</td>
</tr>
<tr>
<td>Objective 2B</td>
<td>New commercial and industrial areas are to be located “to minimize encroachment by incompatible noise-sensitive land uses.”</td>
</tr>
</tbody>
</table>
3. Environmental Setting and Project Description

<table>
<thead>
<tr>
<th>OPEN SPACE/CONSERVATION ELEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 1</td>
</tr>
<tr>
<td>Goal 2</td>
</tr>
<tr>
<td>Objective 2B</td>
</tr>
<tr>
<td>Objective 2E</td>
</tr>
<tr>
<td>Objective 2F</td>
</tr>
<tr>
<td>Goal 3</td>
</tr>
</tbody>
</table>

3.3 PROJECT BACKGROUND

L.B. Nelson, a previous landowner, first proposed development of the project site in 1987. Preliminary meetings with local officials occurred to evaluate a proposed plan, which included an 18-hole golf course and 2,000 single-family residential units. A formal County application was never filed for this proposed development.

Blue Star Resorts purchased the property in the early 1990s. In the fall of 1991, Blue Star Resorts submitted an application for a General Plan Amendment and Rezoning for the project site. Their project included an 18-hole links style golf course, clustered neighborhoods of varying densities, commercial development and a hotel. In June of 1992, the Board of Supervisors considered and approved the Yosemite Lake Estates Community Specific Plan/EIR Guidance Package for Blue Star Resorts proposed project. The present owner purchased the project site in early 1995. Subsequently, a Guidance Package for the proposed Yosemite Lake Estates project was submitted to the County and approved in June 1998 as described above.

3.4 OBJECTIVES OF THE PROJECT

As required by CEQA (Section 15124 (b)), the following is a list of objectives sought by the project sponsors in their proposed plan:

1) To provide for a new Specific Urban Development Plan that is consistent with all Merced County General Plan goals, policies and objectives, and that also recognizes the relevant policies of the City of Merced with respect to urban expansion.

2) To provide the potential for a range of future land uses and housing types that will, in a timely manner, interface with and complement the needs, plans and goals of the University of California, Merced.

3.5 CITY/COUNTY REVENUE SHARING AGREEMENT (COUNTY RESOLUTION NO. 97-35)

In February 1997, the City of Merced and the County of Merced adopted a property tax sharing agreement pertaining to areas in the process of annexation or that may annex to the City in the future (Appendix A). According to the relevant section of the City/County revenue sharing agreement (Section VI.D), the City of Merced and County of Merced have agreed not to approve
3. Environmental Setting and Project Description

changes in land use designations from non-urban to urban without the prior “agreement” of the other party. The project site is currently designated “Agricultural” in the County General Plan and is located within what is called the “Northern City” urban expansion area in the City of Merced 2030 Plan. No specific land use is designated on the project site on the City Plan. If approved, the proposed project would change the County General Plan to an urban SUDP designation. No specific process is outlined in the Revenue Sharing Agreement by which the County is to obtain “agreement” of the City of Merced, nor is what would constitute “agreement” defined. The Agreement does, however, state in the introduction to Section VI that “the County agrees to amend its General Plan and administer zoning and subdivision regulations to accommodate growth of the City as outlined in the City’s General Plan.”

In June 1997, an Administrative Draft Guidance Package for Yosemite Lake Estates was submitted to the County. In March 1998 the County referred the Draft Guidance Package for Yosemite Lake Estates to the City of Merced. Based on the City/County Revenue Sharing Agreement the City needed to inform the County how the City planned to proceed and whether or not it agreed with the County’s plan to process the project. The County would not take the project before the Board of Supervisors until the City Council took action on the Guidance Package for the project. The City Council passed a motion on May 4, 1998 for conditional approval of the Guidance Package, subject to modification of “Potential Planning Issues” and specification that the “Schedule” provide for solicitation of comments from the University Community Planning Group entities for consideration by the Board of Supervisors. The motion represented approval of a process and not land use per the provisions of the City/County Tax Sharing Agreement. The requested changes were incorporated into the final version of the Guidance Package, which was approved by the Merced County Board of Supervisors in June 1998.

The Land Use Section of this EIR attempts to interpret the intent of the policy framework of the City of Merced 2030 Plan and the Guidance Package, and to assess project consistency with the intent and provisions of these documents. The University Community Plan has been completed since approval of the Guidance Package and is considered in the environmental analysis throughout this EIR. The University Community Planning Group will be included in the public review of the proposed project as well. If conflicts with the intent of the City General Plan or the Guidance Package are identified that cannot be mitigated, the project proponent may have to obtain an Amendment to the City General Plan, or some other process to reach a mutually acceptable project in order to conform to the City/County Revenue Sharing Agreement.

3.6 ADJACENT ACTIVITIES NOT PART OF THE YOSEMITE LAKE ESTATES GPA PROJECT

There are a number of major projects being developed within the vicinity of Yosemite Lake Estates including UC Merced and Fahrens Creek). The following sub-sections provide a brief overview of these neighboring sites and major projects. These projects are considered in the assessment of cumulative impacts throughout the Environmental Impact Report.
3. **Environmental Setting and Project Description**

3.6.1 **Virginia Smith Trust/Cyril Smith Trust Lands and the University Community Specific Urban Development Plan (SUDP)**

Lands surrounding Lake Yosemite to the north, east and south, as illustrated in Figure 3.1-2, *Project Vicinity*, are part of the Virginia and Cyril Smith Trusts. These trusts were established as scholarship trusts with the land as the major asset.

In 1996, following selection by the State of California of an approximately 2,000 acre site located northeast of Yosemite Lake Estates for a 10th campus of the University of California, the Merced County Board of Supervisors took steps to amend the General Plan to establish the University Community Urban Development Plan (SUDP) area. The SUDP originally took in approximately 10,300 acres of land, of which all but 200 acres were Trust lands, where the campus of UC Merced and related development are planned to occur. In April 1997, the City of Merced completed a comprehensive update of its General Plan. Through this update, the City included the University Community SUDP within its Sphere of Influence and agreed to cooperate with Merced County in planning for the University Area. From 1998 through 2000, the County, the University and the City jointly undertook a variety of resource studies of the plan area, accompanied by discussions with regulatory agencies and a public outreach program. As a result of these activities, the site originally selected for the UC campus was revised to a location immediately adjacent to Yosemite Lake on its southeast edge. The campus is planned to encompass approximately 910 acres, and is projected to accommodate approximately 25,000 students at full capacity. A development area of approximately 2,100 acres has been defined in the related University Community Plan area, which is located south of the designated campus site, as illustrated in Figure 3.1-2, *Project Vicinity*. In order to accommodate the re-location of the campus site and the Community Plan area, the University Community SUDP boundary was expanded by approximately 2,100 acres as well, to a total of approximately 10,300 acres\(^2\) in which the campus of UC Merced and surrounding development and infrastructure would occur. These actions were approved by the County of Merced in 2001. Additional detail regarding the approved University Community Plan and the UC Merced Campus is provided in the following sections.

The trustees of both the Virginia Smith and Cyril Smith Trusts have expressed their interest in jointly developing the remaining 7,030 acres\(^3\) with the net proceeds from development going towards funding the scholarships set up by the Trusts. No development potential has been defined for trust lands outside the UC Community Plan Area to date.

3.6.2 **University Community Plan**

The University Community Plan area consists of approximately 2,133 acres bounded generally by Lake Road on the west, Bellevue Road to the north, and Yosemite Avenue on the south, and by the Fairfield and Le Grand Canals to the east. As noted above, the Merced County Board of Supervisors in 2002 reviewed a plan that sets parameters for future development of a planned community to support the UC campus with a mix of single and multi-family residential uses,

\(^2\) County of Merced University Community Plan Draft EIR (August 2001).

\(^3\) Source: University of California, Merced, Long Range Development Plan (July 2001).
supporting commercial, office, research and development, schools, parks and open space areas. A total of approximately 1,132 acres and 11,616 dwelling units are projected, with an estimated total population of 31,248 persons. Other land use totals approved are as follows: Retail – 716,000 square feet; Office and Research – 1.3 million square feet; Schools – 110 acres; and Parks and Open Space – 256 acres. This plan will go to hearing in early 2003.

As with the proposed Yosemite Lake Estates project, adoption of the University Community Plan does not convey development entitlements for any portion of the UCP site. The policy and programmatic framework established in the UCP will guide the subsequent preparation of Specific Plans that must also be approved by the County of Merced.

### 3.6.3 UC Merced Campus

As noted previously, a site located northeast of Yosemite Lake Estates was originally selected for the UC Campus. Due to environmental constraints identified during more detailed site selection analysis conducted over the past two years, the campus site was relocated to a 910 acre site immediately adjacent to the southeast shore of Yosemite Lake. The campus is projected to eventually accommodate as many as 25,000 students. Planned land uses include: Academic and Administrative Functions – 157 acres; Student Support Facilities – 23 acres; Student Housing – 250 acres; Athletics and Recreation – 148 acres; Campus Support Facilities – 56 acres, and Parking – 147 acres. The planned student housing is anticipated to accommodate approximately 50% of the total student population at full development of the campus. Development of the UC campus as planned would displace the existing Merced Hills Golf Course.

### 3.6.4 Fahrens Creek

The Fahrens Creek project is located within the City of Merced Specific Urban Development Plan (SUDP), which encompasses the City of Merced (approximately 13,402 acres) and about 7,138 acres of adjacent land located within Merced County. The SUDP is located within the City’s 35,000-acre Sphere of Influence, which also includes the planning area for the future 10th campus of the University of California near Lake Yosemite.

The Fahrens Creek project alternative consists of the development of seven parcels that cover approximately 273.6 acres in the northwest portion of the City of Merced. The Project is located immediately north and west of the current City limits along Yosemite Avenue (extended) and “R” Street (extended), respectively.

The Fahrens Creek annexation to the City of Merced has been designed to implement the development goals of the Merced Vision 2015 General Plan.
3.7 PROJECT APPROVALS

Discretionary actions before the Merced County Board of Supervisors subject to this EIR include:

1) Certification of this Environmental Impact Report as having been prepared in compliance with the California Environmental Quality Act; and,

2) Approval of a General Plan Amendment, establishing a “Yosemite Lake Estates Specific Urban Development Plan (SUDP) Study Area” boundary and amending the General Plan Land Use Diagram to reflect this change.
Merced County’s urban centered concept and the establishment of SUDPs are generally intended
to promote orderly urban growth and development and to provide for urban service needs.
Without knowledge of the specific types of development proposals for the Yosemite Lake
Estates project area that may be acted upon by a future Merced County Board of Supervisors, it
is reasonable to assume that the proposed General Plan Amendment to designate the project site
as an SUDP study area may result in the urbanization which could affect the whole of the
Yosemite Lake Estates project area. However, the future actions of a County Board of
Supervisors cannot be predicted with certainty. A future Board of Supervisors could promote
intensive urbanization of the entire site, maintain the area in open space, or render any number of
combinations of land use decisions.

If the Yosemite Lake Estates General Plan Amendment request is denied, it is likely that the
growth and development of the project area will be guided by the policies and land use proposals
currently contained in the Merced County General Plan as adopted and amended by Merced
County. (The land use chapter of this EIR contains an in depth discussion of Merced County
policies with respect to the Yosemite Lake Estates project area.) Any future Board of
Supervisors decision to change existing land use plans and policies would be subject to
additional future environmental review.

Because the proposed project is a General Plan Amendment to establish a SUDP study area, it is
reasonable to assume that the area within the project site would eventually be developed with
urban land uses. Although Merced County is not currently reviewing any private development
projects within the project area, placement of the Yosemite Lake Estates project area within a
SUDP study area indicates that it is the policy of Merced County that the project site be
developed with urban uses in the future. Following are assumptions used to guide the
environmental analysis of this potential urbanization.

**4.1 SUMMARY OF PROJECT ASSUMPTIONS**

As noted above, the proposed project consists of a General Plan Amendment that would provide
for the future urbanization of the Yosemite Lake Estates project area that could include
residential dwellings in a range of densities, public services, commercial and recreational uses.
The project assumptions outlined here are assumed to represent the “worst case” scenario for the
purposes of analyzing potential environmental impacts. The land use assumptions upon which
this EIR is based involve a predominantly low-density residential character, with 346 acres
assumed for average densities ranging from 2.5 to 4.5 units per acre. Another 35 acres are
assumed for medium density residential use at an average density of 6 units per acre. A total of
1,262 dwelling units are assumed, as illustrated in Table 4.1-1, *Summary of Study Assumptions
for Land Use Yosemite Lake Estates General Plan Amendment and SUDP.*

Other project assumptions include approximately 206 acres of parks, open space and public uses,
14 acres of neighborhood commercial use, 5 acres for a hotel site and 42 acres for major roads.
An overall gross density of approximately 1.9 dwelling units per acre is assumed. A summary of
the assumed land uses and average densities proposed for the project area is provided in Table
4.1-1.
4. Environmental Analysis

### Table 4.1-1

**SUMMARY OF STUDY ASSUMPTIONS FOR LAND USE**

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Acreage</th>
<th>Average Density</th>
<th>Dwelling Units or Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residential</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Very Low Density (VLDR, 2.0-3.0 du/ac)</td>
<td>88</td>
<td>2.5 du/ac</td>
<td>220 du</td>
</tr>
<tr>
<td>Low Density (LDR, 3.1-4.5 du/ac)</td>
<td>222</td>
<td>3.75 du/ac</td>
<td>832 du</td>
</tr>
<tr>
<td>Medium Density (MDR, 4.6-7.5 du/ac)</td>
<td>35</td>
<td>6 du/ac</td>
<td>210 du</td>
</tr>
<tr>
<td><strong>Major Roads</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>42</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Commercial</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>0.20 FAR</td>
<td>122,000 SF</td>
</tr>
<tr>
<td><strong>Hotel</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>0.30 FAR</td>
<td>65,340 SF</td>
</tr>
<tr>
<td><strong>School</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Open Space</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>200</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Treatment Facilities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>43</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>655</td>
<td></td>
<td>1,262 DU</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>187,340 SF</td>
</tr>
</tbody>
</table>

Notes: FAR: Floor Area Ratio; DU: Dwelling Units; SF: Square Feet; AC: Acre
Source: Thompson Hysell Engineers, 6/01

Analysis of project impacts that are derived from the magnitude and character of development are based upon the above assumptions regarding urban development within the proposed Yosemite Lake Estates SUDP. Such impacts include generation of traffic, noise, air pollutant emissions and demand for services. Analysis of other impact topics that are geographically based are evaluated assuming full urban development of the project site.

The analysis of cumulative impacts that are derived from the magnitude and character of development includes the above assumptions regarding the proposed Yosemite Lake Estates SUDP in addition to the build-out of “neighboring projects” described in Section 3.6, *Adjacent Activities not Part of the Yosemite Lake Estates GPA Project*. Other cumulative impacts are addressed on a qualitative basis. Chapter 8.0, *Cumulative Impacts*, of this EIR addresses Cumulative Impacts.

### 4.2 SUMMARY OF INFRASTRUCTURE SYSTEMS

The future development of the proposed SUDP would require new or expanded infrastructure systems. The following sections briefly describe potential systems and facilities. A subsequent Community Specific Plan (CSP) would provide more detailed information and design of infrastructure systems in coordination with land use plans.
4. **Environmental Analysis**

4.2.1 Water Supply

It is expected that the unconfined aquifer will serve Yosemite Lake Estates. Yields from wells of up to 2,100 gallons per minute with specific capacities of 22 gpm per foot have been developed from this groundwater source.

4.2.2 Wastewater

The proposed project is currently within the City of Merced’s Sphere of Influence (SOI). At the time that a specific development is proposed, various options for wastewater services will be evaluated and detailed plans will be developed. The options would likely include: 1) development of an onsite wastewater treatment facility; 2) by provision of wastewater service through connection to city infrastructure by annexation; 3) by a change in City of Merced policy to allow connection to City infrastructure in the City of Merced’s SOI without annexation. If the Yosemite Lake Estate SUDP area is served by the City of Merced, there are two primary sewer service options for the proposed Yosemite Lake Estates project area: 1) gravity flow to the Highway 59 trunk line; or 2) flow to G Street/Lake Road trunk line when the UC Merced and UCP areas come on-line. A third option could include connection to a satellite collection and treatment facility in North Merced. These options are explored further in Section 4.7, *Hydrology, Water Supply and Water Quality* and in Appendix G, which contains the hydrology study.

4.2.3 Storm Drainage

Urban development has two typical effects on storm runoff hydrology: an increase in total runoff volume and faster rising and higher peak flows. The increased area of impervious surfaces such as roads, parking lots, sidewalks, and buildings prevents natural infiltration to the soil and thus creates higher runoff volumes. More rapid transport of runoff over smooth artificial surfaces and drainage facilities, combined with the higher volume of runoff over smooth artificial surfaces and drainage facilities, combined with the higher volume of runoff, causes elevated peak flows. This increase in flows may adversely affect downstream channels. Any subsequent development proposed as part of a Community Specific Plan, would adhere to the requirements of the State Water Resources Control Board and the Regional Water Quality Control Board.

4.2.4 Circulation and Access

Upgrades to many of the surrounding roads would be required in order for intersections to have acceptable levels of standards and for traffic to flow efficiently.
4. Environmental Analysis

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4. Environmental Analysis

4.3 AESTHETICS

4.3.1 Environmental Setting

The project area is located in the lower reaches of the western slopes of the Sierra-Nevada Mountains in the San Joaquin Valley. The project site is located west of Yosemite Lake Regional Park and northeast of the City of Merced. The City of Merced is located at the intersection of several state highways and is one of the primary access points to Yosemite National Park. Two rail lines, the Atchison-Topeka/Santa Fe and the Union Pacific Railway, pass through the City.

The predominant land use pattern in the project vicinity is a mixture of agricultural and rural residential development. Open grasslands, grazing lands and scattered home sites dominate the existing visual character in the area with the foothills of the Sierra Nevada Mountain range in the distance. The most prominent visual feature in the local area of the project site is the Yosemite Lake Regional Park, located on the east boundary of the project area.

Existing Visual Character of the Project Site

The project site is vacant and is characterized by open, flat to gently rolling grassland, which slopes from 0 to 10% over the majority of the property. The land is almost treeless, with a few willows along the site’s waterways and four to six Eucalyptus trees scattered throughout. Dominant vegetation includes annual grasses and forbs. (See Figures 4.3-1 a-f, Site Photographs and Figure 4.3-2, Photograph Location Map, and Section 4.5, Biological Resources, for a complete description of vegetation and other biological resources on-site.) The Merced Irrigation District (MID) Crocker-Huffman Main Canal bisects the site. The MID Main Canal is an earthen berm canal and is the primary tributary to Yosemite Lake. Figure 4.3-2, Photograph Location Map, photograph 2, shows the entrance of the Main Canal into Yosemite Lake at the southeast of the project site. A series of vernal pools and wet marshy areas are located on site and Fahrens Creek traverses the northwest portion of the site. Figure 4.3-2, Photograph Location Map, photograph 3, shows the Main Canal embankment road as it bisects the project site. There are no distinctive visual or physical features located on the project site, and no portion of the site is designated as a scenic resource in the General Plan. (Additional description of applicable regulatory policy is contained in Section 4.3.2, Regulatory Setting, of this chapter.)
4. Environmental Analysis

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4. Environmental Analysis

**Site Photographs**

*Photograph 1: West along Lake Road*

*Photograph 2: Crocker Hoffman Canal at entry to Yosemite Lake*
4. Environmental Analysis

Site Photographs

Photograph 3: Northwest along canal embankment road

Photograph 4: Southwest from canal embankment toward Lake Road
4. Environmental Analysis

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4. Environmental Analysis

Site Photographs

Photograph 5: Pasture looking northerly from canal embankment

Photograph 6: Looking southwest from canal embankment
4. Environmental Analysis

Site Photographs

Photograph 7: North property line, looking west

Photograph 8: From north property line, looking south (Merced Country Club in the background)
4. Environmental Analysis

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4. Environmental Analysis

Site Photographs

Photograph 9: West edge of Yosemite Lake, looking east, County Park in the background

Photograph 10: West edge of Yosemite Lake, looking southeast, County Park in the background
4. Environmental Analysis

Site Photographs

Photograph 11: North end of Yosemite Lake looking southeast
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4. Environmental Analysis

Visual Character in the Vicinity of the Project Site

The project area is bounded on the south by Old Lake Road, on the east by Yosemite Lake and on the west by the Merced Golf and Country Club. Large lot single-family development is located on the south side of the Merced County Club (west of the project site), along Golf Road. The area south of the project site, along Old Lake Road, is subdivided into a row of one-acre residential parcels with grazing land further beyond to the south. A small single-family residential development borders the southwest corner of the project site. The geographic region to the north and east of the project site (beyond Yosemite Lake) is characterized by open gently rolling terrain, while the area to the south is relatively flat. The land adjacent to the east of the project site, beyond Yosemite Lake Regional Park, is part of the University Community SUDP and is planned for construction of the new University of California - Merced campus.

The existing foreground and middle ground views of the proposed project site from surrounding areas are of grasslands and scattered Eucalyptus and Willow trees. The distant foothills of the Sierra Nevada Mountains form background views over the site.

4.3.2 Regulatory Setting

Merced County Regulatory Policy

Open Space/Conservation Element

Aesthetics related goals were identified in the Open Space/Conservation Element of the Specific Urban Development Plan EIR Guidance Package for Yosemite Lake Estates, adopted by the County in June 1998, as guiding principles for the planning and establishment process. These are listed in Table 4.3-1, County of Merced Applicable General Plan Goals and Objectives Open Space And Conservation Element, and analyzed in the impact discussion relative to the proposed SUDP. The proposed project is evaluated in relation to these policies in the following sections dealing with specific impact topics.

Additional Regulatory Policy

There are no state regulations related to scenic resources other than those contained in General Plan Guidelines, which are reflected in the County General Plan discussed above. There are no federal regulations related to scenic or aesthetic resources.

The City of Merced Vision 2015 General Plan, Open Space and Conservation Element contains policies similar to those contained in the County General Plan. Policy issues addressed in that portion of the City General Plan deal with open space for the preservation natural resources (wildlife habitat, creeks, scenic routes, trees, and water quality), prime regional agricultural soils, outdoor recreation, and public health and safety. The City Open Space and Conservation Element highlights Lake Yosemite Regional Park as an “Issue for Future Study” (Section 7.6 of the Open Space and Conservation Element), and recognizes area growth may place pressures upon the facility. A cooperative planning effort is recommended to address these concerns. Other policies of both the City and County General Plan also emphasize a cooperative planning
4. Environmental Analysis

process in areas adjacent to but outside the City SUDP. The City/County Tax Sharing Agreement, described in Section 3.5, *City/County Revenue Sharing Agreement (County Resolution No. 97-35)*, reinforces these General Plan policy directives.

The City of Merced General Plan also contains an Urban Design Element. This Element is not a mandatory Element of the General Plan under state General Plan law. This element offers community planning principles and urban design guidelines for the formulation of specific plans. The subsequent preparation of a Community Specific Plan is required for the proposed Yosemite Lake Estates SUDP. This process should take City urban design guidelines into consideration in plan formulation.

### Table 4.3-1
**COUNTY OF MERCED**
**APPLICABLE GENERAL PLAN GOALS AND OBJECTIVES**
**OPEN SPACE AND CONSERVATION ELEMENT**

<table>
<thead>
<tr>
<th>Goal 3</th>
<th>Open space for recreation, aesthetics and protection from hazards.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective 3A</strong></td>
<td>Recreational lands are available for local and regional needs.</td>
</tr>
<tr>
<td>Policy 4</td>
<td>Non-recreational land uses should be buffered from sensitive public recreation lands through site design and other techniques.</td>
</tr>
<tr>
<td><strong>Objective 3B</strong></td>
<td>Lands with high aesthetic value are properly managed.</td>
</tr>
<tr>
<td>Policy 7</td>
<td>Stream corridors should be maintained in a natural condition and retain the general character of natural slopes and formations.</td>
</tr>
<tr>
<td>Policy 8</td>
<td>Regional parks should be used to preserve areas of natural scenic beauty.</td>
</tr>
<tr>
<td>Policy 9</td>
<td>The location and construction of highways should occur in consideration of the surrounding landscape and topography.</td>
</tr>
<tr>
<td>Policy 10</td>
<td>Power transmission and distribution facilities should be underground whenever possible.</td>
</tr>
<tr>
<td>Policy 11</td>
<td>Structures and activities located adjacent to state designated scenic highways should receive special review to ensure that scenic vistas and local scenic values are not significantly degraded.</td>
</tr>
</tbody>
</table>

Source: Merced County Year 2000 General Plan, Open Space/Conservation Element.

4.3.3 Methodology Related to Aesthetics

The assessment of aesthetic impacts is by its nature a subjective exercise. This analysis attempts to identify and objectively examine factors that contribute to aesthetic impacts and to evaluate, at a general level, the potential changes in the visual environment that would occur if the project area were to be converted to urban land uses. It should be noted, however, that there are no defined standards or methodologies for the assessment of aesthetic impacts. In addition, there is no development plan under consideration at this time. Assumptions upon which analyses contained in this EIR are based include a maximum of 1,262 dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial uses, which could be developed within the proposed SUDP with approval of a subsequent Community Specific Plan (see Section 4.1, *Summary of Project Assumptions*). The subsequent specific plan, which will be based on a specific development project, could further reduce development intensity and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, *Summary*
of Project Assumptions. Edge conditions and viewshed alteration are considered in the context of development intensity typical of land use assumptions outlined in Section 4.1, Summary of Project Assumptions, of this EIR.

The potential impacts to existing viewsheds and sensitive receptors from the urbanization of the project area that would be allowed with SUDP formation are analyzed by establishing three basic viewing distance zones described below. Sensitive viewers are generally associated with land uses such as residential, schools, churches, and public recreational uses. In the project area, sensitive viewer locations include existing residential uses to the south, which are in the foreground and middle ground viewsheds of the project site, and Yosemite Lake Regional Park, adjacent to the east project boundary.

**Foreground Views.** These include elements that can be seen at a close distance (generally 500 feet or less) and which dominate the entire view.

**Middle ground Views.** These include elements that can be seen at a moderate distance (generally between 500 feet and one mile) and which partially dominate the view.

**Background Views.** These include elements that are seen at a long distance (greater than 1 mile) and which typically do not dominate the view, but that are part of the overall composition of the view.

### 4.3.4 Impacts and Mitigation Measures

This section will analyze the following topics: Effects on scenic vistas and scenic highways, change in the visual character of the site from possible urbanization and its affects upon surrounding areas, and generation of new light and glare.

#### 4.3.4.1 Significance Criteria

The project would have a significant effect on the environment related to aesthetics if any of the following would occur:

- A substantial adverse effect on a scenic vista or scenic highway;
- Substantial damage to scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway corridor;
- Substantial degradation of the existing visual character or quality of the site and its surroundings, or
- Creation of a new source of substantial light or glare, which would adversely affect day and nighttime views in the area.

The relationship between the potential severity of impacts related to specific visual characteristics, the location of the visual impacts relative to sensitive land uses, and the length of
4. Environmental Analysis

time these visual impacts may be visible constitute criteria for evaluating the significance of project impacts.

4.3.4.2 Impact: Substantially Affect A Scenic Vista or Scenic Highway

Impact Analysis:

- Merced County Regulatory Policy

**Visual and Aesthetic Resources:** General Plan policies related to visual resources are contained in the Open Space and Conservation Element as outlined in Table 4.3-1, *County of Merced Applicable General Plan Goals and Objectives Open Space And Conservation Element*. As shown, the General Plan does not address preservation or protection of any specific designated scenic vistas. It does, however, broadly discuss “Visual (or Aesthetic) Resources”, and notes that “Natural areas and scenic areas have much in common. Most natural areas of significance have attractive scenery. Many highly scenic areas have natural areas. Natural areas are valued for their aesthetic and scientific, wild and undisturbed character.” It further states, “Scenic qualities can be preserved through retaining the character of natural slopes and formations, and through preservation and enhancement of water courses, wildlife habitats and vegetation. Development patterns and land use activities that block vistas or views of local landmarks reduce scenic qualities.” In addition, the Open Space and Conservation Element indicates, “The major scenic vistas that need to be recognized in County policy are views of both the Coastal and Sierra mountain ranges and the Merced, San Joaquin and Bear Creek River corridors.”

Rivers, lakes and reservoirs are noted as features that add to visual quality.

While the project area is not developed and offers visual open space, it is not part of, or in proximity to, any “natural area of significance” described in the General Plan. Further, the project area has limited physical features that could be considered unique or scenic. For example, the project area has no significant natural slopes or formations; attractive scenery; scientific, wild and undisturbed character; or unusual vegetation. It does have a man-made “water course” in the form of the Crocker Canal, and scattered vernal pools and swale habitats. (Please refer to Section 4.5, *Biological Resources*, for a complete description of habitat areas.) Mitigation measures contained in Section 4.5 are designed to protect and preserve sensitive habitat areas to the maximum extent practicable. In general, the site lacks any other type of unique scenic qualities noted in the General Plan as characteristic of visual and aesthetic resources.

Urbanization would not block distant scenic vistas of mountain ranges that exist in the background of all regional views in the area, although the character of more proximate views would be altered, as described in discussion contained under Additional Analysis. Further, there are no designated landmarks on-site or in the surrounding area. No designated scenic highways exist in proximity to the project site. The preceding factors indicate that the

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4 *Merced County Year 2000 General Plan, Open Space/Conservation Element, Section 8.a., Page VI-38 and 39.*
4. Environmental Analysis

urbanization of the project area would not conflict with any adopted county policies related to visual and aesthetic resources, scenic vistas or scenic highways.

**Public Lands and Public Recreation Areas:** The Open Space and Conservation Element also addresses provision of public and private recreation areas and acknowledges that they play a part in providing visual quality. Both parks and other open spaces are described as having a “measurable, decided impact on the quality of life by providing variety and breathing spaces within the County environment.” As shown in Table 4.3-1, County of Merced Applicable General Plan Goals and Objectives Open Space And Conservation Element, Policy 4 of the Open Space and Conservation Element under Goal 3, Objective 3.A also speaks to buffering of “sensitive public recreation lands” from non-recreational land uses through site design and other techniques. The General Plan speaks broadly to the increased demand on existing facilities and need for new facilities, but notes that “the shortage of recreational facilities today is not so much in the quantity of land available, but in the access to available and suitable recreation lands.”

The potential impacts of urbanization of the site in terms of increased recreational demand are addressed in Section 4.11, Public Services and Utilities. While the Open Space and Conservation Element lists Yosemite Lake among existing public recreation areas, it is not indicated as “sensitive public recreational land” or as a scenic resource. Formulation of the required subsequent Community Specific Plan should address Policy 4 of the Open Space and Conservation Element (Goal 3, Objective 3.A) as described above, and should incorporate buffering and other design techniques, as may be determined necessary when a specific development plan is available for evaluation. This requirement is listed as a mitigation measure (with additional measures) under Section 4.3.4.3, Impact: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings. No significant conflicts with policies related to visual impacts to Yosemite Lake are anticipated based upon concerns identified in the General Plan.

- **Additional Regulatory Policy**

There are no state regulations related to scenic resources other than those contained in General Plan Guidelines, which are reflected in the County General Plan discussed above. There are no federal regulations related to scenic resources.

There are no applicable City policies regarding scenic vistas. The project area is not located in proximity to any designated scenic route on the City General Plan. No conflicts with City General Plan policy related to scenic vistas or scenic highways are anticipated.

- **Additional Impact Evaluation**

Scenic vistas are generally considered to be “horizon line” views greater than one 1 mile from a receptor. While the project area is not developed, and presently offers visual open space, it has no unique physical features, scenery or scenic qualities characteristic of “visual

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5 Merced County Year 2000 General Plan, Open Space/Conservation Element, Section 8.b., Page VI-38 and 39.
and aesthetic resources” (as defined by the General Plan). Urbanization would not block distant scenic vistas of mountain ranges that exist in the background of all regional views in the area, although the character of more proximate would be substantially altered. According to Table 4.1-1, Summary of Study Assumptions for Land Use Yosemite Lake Estates General Plan Amendment and SUDP, approximately 200 acres of the site (or 31%) would be maintained in open space in order to protect sensitive biological resources identified on the site, consistent with General Plan policies. (On-site and proximate impacts are fully addressed under “Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings”.) These factors indicate that the urbanization of the project area would not result in substantial degradation of a scenic vista or scenic highway.

- **Level of Significance Before Mitigation:** Less than significant

- **Mitigation Measures:** No mitigation measures are necessary

- **Level of Significance After Mitigation:** Less than significant

4.3.4.3 Impact: Substantial Degradation of the Existing Visual Character or Quality of the Site and Its Surroundings

**Impact Analysis:**

- **Merced County Regulatory Policy**

Merced County General Plan policies relating to visual and aesthetic resources are described under the preceding impact topic. While the project area is not developed, and offers visual open space, it is not part of, nor in proximity to, any “natural area of significance” described in the General Plan, and has no unique physical features, scenery or scenic qualities characteristic of visual and aesthetic resources. Urbanization would eliminate approximately 455 acres of visual open space and would substantially alter the character of foreground views as well. There are no designated landmarks on-site or in the surrounding area, and no designated scenic highways exist in proximity to the project site.

The County and City of Merced General Plans also both direct that a “cooperative planning process” occur in areas outside the City SUDP. The City/County Tax Sharing Agreement further reinforces this process. The preparation of any subsequent Community Specific Plan must contain certain components, as outlined in Section 4.8, Land Use and Planning. One of these measures also requires a joint planning process as directed by General Plan policy. In addition, mitigation included in this section further addresses City guidelines for urban design. With these measures, the urbanization of the project area would not conflict with any adopted county policies related to visual and aesthetic resources on-site or in adjacent areas. Additional discussion of impacts is contained in following sections below.
4. Environmental Analysis

- Additional Regulatory Policy

The City of Merced General Plan, as has been noted, contains an Urban Design Element that is focused on the “Urban Village” concept. Principles and guidelines contained in this Element should be utilized, to the extent feasible, in the formulation of the required subsequent Community Specific Plan for Yosemite Lake Estates. This element is not, however, a mandatory element of the General Plan under state law, and should be addressed within the context of a “cooperative planning process” as has been described in previous discussion, and as included in Section 4.8, Land Use and Planning. Incorporation of City urban design guidelines in the Community Specific Plan is included as a mitigation measure in this section. The City has no other policies related to visual impacts. No conflicts with adopted City policy are anticipated.

- Additional Impact Evaluation

Aesthetic impacts resulting from the development of the proposed project include changes to the overall visual character of the site, from rural pasturelands and open space to urban land use. The proposed project assumes the urbanization of the site through a subsequent Community Specific Plan. The project is assumed to include predominantly low-density residential housing, commercial and hotel land use, and open space uses (see Table 4.1-1, Summary of Study Assumptions for Land Use Yosemite Lake Estates General Plan Amendment and SUDP). The subsequent specific plan, which will be based on a specific development project, could further reduce development intensity and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, Summary of Project Assumptions. Urbanization of the proposed project would substantially alter the character of foreground views due to land use intensification.

From vantage points at the Merced Golf and Country Club and residences located to the west and south of the project site, proposed urbanization would change the foreground and middle ground visual character from open space to urban land uses. Broad views of open space and rolling grasslands would be eliminated, which can be considered substantial visual degradation of site and proximate views over the site. Background views of the distant foothills and mountains would not be obstructed.

From Yosemite Lake Park, located to the southeast of the project site, all views would also become more “urban” in character compared to the existing visual character of open space. The park, as has been noted, is not identified in any adopted County or City policy document as a scenic or aesthetic resource. The Open Space and Conservation Element, as listed in Table 4.3-1, County of Merced Applicable General Plan Goals and Objectives Open Space And Conservation Element, includes a policy that non-recreational land uses should be buffered from sensitive public recreation lands through site design and other techniques. In addition, as described under Section 4.3.2, Regulatory Setting, the City of Merced General Plan contains an Urban Design Element that offers community planning principles and urban design guidelines for the formulation of specific plans. The subsequent preparation of a Community Specific Plan is required for the proposed Yosemite Lake Estates SUDP. This process should take City urban design guidelines into consideration in plan formulation.
Implementation of appropriate design features and techniques in the Community Specific Plan would act to minimize any adverse visual impacts to adjacent areas to the extent feasible.

Evaluation of the visual character of the site is subjective. Changes to the site may be perceived by some viewers as pleasant since modern architecture and landscaping would be developed. However, other viewers could consider these changes in the visual character of the project site a substantial negative aesthetic impact. It is not anticipated that subsequent development would result in the creation of offensive views open to the public, which has been considered a criteria under CEQA. The urbanization of the project site could, however, potentially result in significant adverse visual impacts for adjacent sensitive viewers.

The overall change of the visual character of the project site would be tempered by adherence to design criteria to be set forth in the subsequent Community Specific Plan in compliance with policies of both Merced County and the City of Merced. Such measures would act to diminish negative effects but would not reduce the level of impact to a less than significant level due to the cumulative alteration of the foreground and middle ground visual character of the site.

- **Level of Significance Before Mitigation:** Significant

- **Mitigation Measures:**

  4.3.1 As part of the required Community Specific Plan, the project applicant shall develop a Conceptual Landscape Plan that includes measures to minimize adverse visual impacts on adjacent land uses that are considered sensitive in character. The Community Specific Plan shall also incorporate landscape guidelines and community design parameters to address “edge conditions” with all surrounding land uses. Native plant species shall be utilized to the extent feasible in achieving objectives of the Landscape Concept Plan and the Community Specific Plan.

  4.3.2 Non-recreational land uses should be buffered from sensitive public recreation lands through site design and other techniques to be formulated in the Community Specific Plan.

  4.3.3 Principles and guidelines contained in City of Merced Vision 2015 General Plan - Urban Design Element should be utilized, to the extent feasible, in the formulation of the required subsequent Community Specific Plan for Yosemite Lake Estates.

- **Level of Significance After Mitigation:** Significant
4. Environmental Analysis

4.3.4.4  **Impact: Creation of a New Source of Substantial Light or Glare that Would Adversely Affect Day and Nighttime Views in the Area**

**Impact Analysis:**

- **Merced County Regulatory Policy**

  There are no adopted County policies applicable at this level of review regarding the generation of light and glare and its associated aesthetic impacts. This topic is typically addressed at a project specific level based upon detailed review of development plans. The Community Specific Plan will contain design guidelines and development standards that should address lighting among many other features of future development. In order to ensure that lighting is appropriately considered in the CSP, several mitigation measures are included in this Section.

- **Additional Regulatory Policy**

  None are applicable.

- **Additional Impact Evaluation**

  Urbanization of the project area would create substantial new sources of night-time light and glare resulting from sources such as: lighting in parking areas, along streets, and around buildings, for signage and for security purposes. There is currently little night lighting in the project vicinity, associated primarily with adjacent rural residential areas and Yosemite Lake Regional Park. The addition of new sources of light and glare would alter the character of nighttime views across the project area. Construction activities associated with urbanization could also generate light and glare impacts. Such impacts would, however, be temporary in nature. Mitigation measures are recommended for incorporation in the subsequent Community Specific Plan in order to minimize adverse impacts. The urbanization of the project area would, however, substantially increase the amount of artificial light in the area, and would substantially alter the nature of nighttime views on a permanent basis.

  The impact of light and glare should be further evaluated when specific development plans are available, and project specific measures formulated to address any adverse impacts from light and glare on sensitive receptors.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.3.4  The subsequent Community Specific Plan shall include a Conceptual Lighting Plan and shall incorporate policies and guidelines to ensure that light and glare impacts on sensitive receptors both on-site and off-site are minimized. Measures may include, but shall not necessarily be limited to, the following:
• Outdoor lighting fixtures shall be located and designed to minimize ambient levels of illumination and glare, consistent with provision of adequate lighting for public safety purposes;
• Outdoor lighting fixtures shall be located and designed to limit spillage beyond the property line in areas adjacent to sensitive receptors;
• Buildings shall use low reflective glass and building materials to minimize daytime glare to the extent possible;
• All lighting sources shall be designed and installed in order to direct light and glare away from sensitive receptors both on-site and off-site;
• The Community Specific Plan shall establish standards to minimize levels of illumination for outdoor signage to the extent practical;
• The Community Specific Plan shall address measures to control construction related light and glare, including but no limited to the use of non-glare directional lighting when lights are required for safety and security in construction areas.

4.3.5 Prior to construction of any subsequent development project, detailed lighting plans shall be prepared consistent with development standards formulated in the subsequent Yosemite Lake Community Specific Plan.

• Level of Significance After Mitigation: Potentially significant
4.4 AIR QUALITY

The air quality assessment for the proposed project included estimating emissions associated with construction and operation of the proposed project. The methodology used for assessing regional air quality impacts involved estimating stationary and mobile emissions associated with the proposed project. The stationary emissions included those from electric and natural gas usage. Mobile emissions were based on the vehicle trips generated by the proposed project at build-out conditions. A microscale analysis was conducted to estimate the potential localized air quality impact of the proposed project. The impact analysis contained in this section was prepared in accordance with the methodologies provided by the San Joaquin Valley Unified Air Pollution Control District (SJVAPCD).

The analysis of long term operational air quality impacts presented in this chapter is based on the May 2002 TJKM traffic study, which assumes 2,386 dwelling units, 125 acres of parks, open space and public uses and 19 acres of neighborhood commercial development. The project assumptions upon which other analyses contained in this EIR are based (with the exception of air quality and noise), assume that a maximum of 1,262 dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial uses could be developed within the proposed SUDP with approval of a subsequent Community Specific Plan (see Section 4.1, Summary of Project Assumptions). Consequently, the long-term impacts to air quality presented are overstated and should be interpreted with caution. Temporary construction related air quality impacts presented in this Chapter are based on lower build-out assumptions described above and presented in Section 4.1, Summary of Project Assumptions, of this EIR. The subsequent specific plan, which will be based on a specific development project, could further reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, Summary of Project Assumptions.

4.4.1 Environmental Setting

Regional Air Quality

The project site is within the San Joaquin Valley Air Basin (SJVAB), which includes Merced County and San Joaquin, Stanislaus, Madera, Fresno, Kings, Tulare, and Kern Counties. Air quality conditions in the SJVAB are under the jurisdiction of the SJVAPCD. The SJVAB exceeds the state and federal standards for two of the six criteria air pollutants. The entire air basin is non-attainment for ozone and particulate levels (PM$_{10}$).

With respect to the federal ozone standards, the SJVAB is designated as “severe non-attainment” with a 2005 attainment date. This designation is based on the failure to attain the ambient ozone standard by 1999. The non-attainment classification system for the eight-hour standard has not yet been designed. The SJVAPCD is currently considering a petition to the United States Environmental Protection Agency (EPA) to revise the ozone status from “severe” to “extreme.” The Basin is also non-attainment for the state ozone standard. State classifications are based on the maximum one-hour concentration of ozone registered at any monitoring station in the air basin during the year, discounting highly irregular or exceptional events.
4. Environmental Analysis

The SJVAB is designated as “serious” non-attainment for the federal PM$_{10}$ standard and was required to reach attainment of the annual and 24-hour standards by December 31, 2001. The SJVAPCD failed to attain the 24-hour and annual standards by that date and is required to submit a new plan by December 31, 2002 to demonstrate attainment at the earliest practicable date. The Environmental Protection Agency (EPA) has not acted on the PM$_{10}$ Attainment Plan submitted in 1997, but is expected to disapprove the plan. The 1997 plan requested a five-year extension from EPA, but it has also not been approved to date. An extension, if approved, would allow the SJVAB to achieve both the annual and the 24-hour standards by December 31, 2006. The state has no separate classification scheme other than non-attainment or attainment for PM$_{10}$.

In recent years, the standard for carbon monoxide (CO) has not been exceeded in the SJVAB, however, background concentrations are still high enough for CO hot spots to be potential problems in urban areas with high levels of traffic congestion. The basin is in compliance with the federal sulfur dioxide, lead, carbon monoxide and nitrogen oxide standards.

**Climate/Meteorology**

The project area experiences hot, dry summers and cool, rainy winters. The mean annual precipitation in the City of Merced is between 12 and 13 inches. Temperatures range from an average of 42.9 degrees Fahrenheit during January, the coldest month, to an average of 78.4 degrees Fahrenheit during August, the hottest month. Extremes of 15 degrees and 108 degrees are typically reached annually.

A semi-permanent high-pressure area over the northern Pacific Ocean holds storm tracks to the north and away from California during the summer. During the winter, this pressure zone retreats southward and permits storm centers to swing across California.

Temperature inversions often occur in the San Joaquin Valley. A temperature inversion is a layer of warm air trapping cooler air beneath it. This reduces mixing of air in the lower layers and restricts the vertical dispersion of air contaminants. Surface based inversions are present on most mornings throughout the year in the San Joaquin Valley. These inversions "burn off" during warmer daytime temperatures. Elevated inversions that can trap air and exacerbate air pollution problems occur primarily during winter. The San Joaquin Valley experiences calm conditions 31% of the time during the winter contributing to stagnation and build-up of air pollutants.

**Air Pollution Constituents**

The State of California and the Federal Government have established health-based standards for six air pollutants. As shown in Table 4.4-1, *Ambient Air Quality Standards*, these pollutants include ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, suspended particulate matter (PM$_{10}$ and PM$_{2.5}$) and lead. In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.
In addition to primary and secondary air pollution standards, the State of California has established a set of episode criteria for ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide and particulate matter. These criteria refer to episode levels representing periods of short-term exposure to air pollutants which actually threaten public health. Health effects are progressively more severe as pollutant levels increase from Stage One to Stage Three.

**Ozone** (smog) is formed by photochemical reactions between NOx and reactive organic gases rather than being directly emitted. Ozone is a pungent, colorless gas that is typical of the southern California type smog. Elevated ozone concentrations result in reduced lung function, particularly during vigorous physical activity. This health problem is particularly acute in sensitive receptors such as the sick, elderly and young children. Ozone levels peak during the summer and early fall months.

**Carbon monoxide** (CO) is formed by the incomplete combustion of fossil fuels, almost entirely from automobiles. It is a colorless, odorless gas that can cause dizziness, fatigue, and impairments to central nervous system functions. CO passes through the lungs into the blood stream where it interferes with the transfer of oxygen to body tissues.

**Nitrogen oxides** (NOx) contribute to other pollution problems, including high concentration of fine particulate matter, poor visibility, and acid deposition. Nitrogen dioxide decreases lung function and may reduce resistance to infection. Nitrogen dioxide, a reddish-brown gas (NO₂), and nitric oxide (NO) a colorless, odorless gas, are formed from fuel combustion under high temperature or pressure. These compounds are referred to as nitrogen oxides or NOx. NOx is a primary component of the photochemical smog reaction.

**Sulfur dioxide** (SO₂) is a colorless irritating gas formed primarily from the incomplete combustion of sulfur containing fuels. Industrial facilities also contribute to gaseous sulfur dioxide levels in the air basin. Natural gas is low in sulfur and low-sulfur fuels are now available on the market. Sulfur dioxide irritates the respiratory tract and can injure lung tissue when combined with fine particulate matter. Sulfates reduce visibility and therefore, the level of sunlight.
4. Environmental Analysis

### TABLE 4.4-1
**AMBIENT AIR QUALITY STANDARDS**

<table>
<thead>
<tr>
<th>Air Pollutant</th>
<th><strong>California Concentration</strong></th>
<th><strong>Federal</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Primary (&gt;)</strong></td>
<td><strong>Secondary (&gt;)</strong></td>
</tr>
<tr>
<td>Ozone</td>
<td>0.09 ppm, 1-hr. avg. &gt;</td>
<td>0.12 ppm, 1-hr. avg. &gt; 0.08 ppm, 8-hr. avg.</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>9.0 ppm, 8-hr. avg. &gt;</td>
<td>9 ppm, 8-hr. avg. &gt; 35 ppm, 1-hr. avg. &gt;</td>
</tr>
<tr>
<td>Nitrogen Dioxide</td>
<td>0.25 ppm, 1-hr. avg. &gt;</td>
<td>0.053 ppm, annual avg. &gt; 0.03 ppm, 24-hr. avg. &gt;</td>
</tr>
<tr>
<td>Sulfur Dioxide</td>
<td>0.05 ppm, 24-hr. avg. &gt;</td>
<td>0.50 ppm, 3-hr. avg. &gt;</td>
</tr>
<tr>
<td>Suspended Particulate Matter</td>
<td>30 µg/m³ (PM₁₀), annual geometric mean &gt; 50 µg/m³ (PM₁₀), 24-hr. avg. &gt;</td>
<td>65 µg/m³ (PM₂·₅), annual geometric mean 50 µg/m³ (PM₁₀), annual arithmetic mean 150 µg/m³ (PM₁₀) 24-hr. avg. 15 µg/m³ (PM₂·₅)</td>
</tr>
<tr>
<td>Sulfates</td>
<td>25 µg/m³, 24-hr. avg. &gt;</td>
<td></td>
</tr>
<tr>
<td>Lead</td>
<td>1.5 µg/m³, 30-day avg. &gt;</td>
<td>1.5 µg/m³, calendar quarter 1.5 µg/m³, calendar quarter</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>0.03 ppm., 1-hr. avg. &gt;</td>
<td>No federal standard.</td>
</tr>
<tr>
<td>Vinyl Chloride</td>
<td>0.010 ppm, 24-hr. avg. &gt;</td>
<td></td>
</tr>
<tr>
<td>Visibility Reducing Particles</td>
<td>In sufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70%, 8-hr. avg. (9 am-5 pm)³</td>
<td></td>
</tr>
</tbody>
</table>

a. Effective December 15, 1982. The standards were previously 10 ppm, 12-hour average and 40 ppm, 1-hour average.
b. Effective September 13, 1985, standard changed from > 10 mg/m³ (>= 9.3 ppm) to > 9 ppm (>= 9.5 ppm).
c. Effective March 9, 1987, standard changed from > 0.25 ppm to > .25 ppm.
d. Effective July 1, 1985, standard changed from > 100 µg/m³ (> .0532 ppm) to > .053 ppm (> .0534 ppm).
e. Effective October 5, 1984. The standard was previously .5 ppm, 1-hour average.
f. Effective August 19, 1983. The standards were previously 60 µg/m³ TSP, annual geometric mean, and 100 µg/m³ TSP, 24-hour average.
g. Effective July 1, 1987. The standards were previously: Primary- Annual geometric mean TSP > 75 µg/m³, and a 24-hour average TSP > 260 µg/m³. Secondary- Annual geometric mean TSP > 60 µg/m³, and a 24-hour average TSP > 150 µg/m³. h. Effective October 18, 1989. The standard was previously "In sufficient amount to reduce the prevailing visibility to less than 10 miles at relative humidity less than 70%, 1 observation", and was based on human observation rather than instrumental measurement.

Source: Air Resources Board, 1997.
Reactive Organic Gases (ROG) are formed from combustion of fuels and the evaporation of organic solvents. ROG is a prime component of the photochemical smog reaction. Consequently, ROG accumulates in the atmosphere more quickly during the winter when sunlight is limited and photochemical reactions are slower. Although ROG is difficult to measure because of the number of compounds, emissions are closely monitored to reduce resultant ozone where possible.

Particulate matter (PM$_{10}$) refers to small suspended particulate matter with an aerodynamic diameter of 10 microns or less which is not readily filtered by the lungs. Nitrates and sulfates, as well as dust particulates, are major components of PM$_{10}$. (PM$_{2.5}$ particulate matter has also recently been added to this listing; however, the SJVAPCD does not currently have data to document ambient conditions or quantify these emissions. Therefore, PM$_{2.5}$ impacts are omitted from this analysis.) These small particles can be directly emitted into the atmosphere as a by-product of fuel combustion, through abrasion, such as wear on tires or brake linings, or through fugitive dust (wind erosion of soil). They can also be formed in the atmosphere through chemical reactions. Particulates may carry carcinogens and other toxic compounds that adhere to the particle surfaces and can enter the human body through the lungs.

Local Air Quality

Ambient air quality is measured at monitoring stations operated by the California Air Resources Boards (ARB) and individual APCDs. One monitoring station is located in the City of Merced on South Coffee Avenue that measures ozone and nitrogen dioxide. Table 4.4-2, *Merced Ambient Air Quality*, shows ambient air quality measurements from the Merced monitoring station. From the ambient air quality data, it can be seen that nitrogen dioxide levels have not equaled or exceeded the relevant state standard, while ozone has exceeded the state and federal standards.

The nearest station that monitors carbon monoxide and particulate matter is located on South Minaret Street in the City of Turlock, to the north. Monitoring in Turlock shows no violations of the CO standard in the last three years. The state standards for PM$_{10}$ were exceeded several times over the last three years while the federal standard was exceeded once in 1999.

4.4.2 Regulatory Setting

State and Local Planning Efforts

Air quality in California is regulated by the California Air Resources Board (ARB), and single and multi-county Air Pollution Control Districts (APCDs). California state ambient air quality standards shown in Table 4.4-1, *Ambient Air Quality Standards*, are set by the ARB, which also regulates mobile source emissions, research and development, and oversight and coordination of the activities of the APCDs. The ARB is also responsible for classifying air basins as attainment or non-attainment in accordance with the federal and state Clean Air Acts. The regional and local air quality agencies are primarily responsible for regulating stationary and indirect source emissions and for monitoring ambient pollutant concentrations.
### TABLE 4.4-2

<table>
<thead>
<tr>
<th>Pollutant/Standard</th>
<th>Number of Days Threshold Were Exceeded and Maximum Levels During Such Violations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1999</td>
</tr>
<tr>
<td><strong>Ozone</strong></td>
<td></td>
</tr>
<tr>
<td>State 1-Hour ≥ 0.09 ppm</td>
<td>42</td>
</tr>
<tr>
<td>Federal 1-Hour &gt; 0.12 ppm</td>
<td>2</td>
</tr>
<tr>
<td>Federal 8-Hour &gt; 0.08 ppm</td>
<td>40</td>
</tr>
<tr>
<td>Max. 1-Hour Conc. (ppm)</td>
<td>0.132</td>
</tr>
<tr>
<td>Max. 8-Hour Conc. (ppm)</td>
<td>0.117</td>
</tr>
<tr>
<td><strong>Carbon Monoxide</strong></td>
<td></td>
</tr>
<tr>
<td>State 1-Hour &gt; 20 ppm</td>
<td>0</td>
</tr>
<tr>
<td>State 8-Hour &gt; 9.0 ppm</td>
<td>0</td>
</tr>
<tr>
<td>Federal 8-Hour ≥ 9.5 ppm</td>
<td>0</td>
</tr>
<tr>
<td>Max. 8-Hour Conc. (ppm)</td>
<td>3.67</td>
</tr>
<tr>
<td><strong>Nitrogen Dioxide</strong></td>
<td></td>
</tr>
<tr>
<td>State 1-Hour &gt; 0.25 ppm</td>
<td>0</td>
</tr>
<tr>
<td>Max. 1-Hour Conc. (ppm)</td>
<td>0.078</td>
</tr>
<tr>
<td><strong>Inhalable Particulates (PM₁₀)</strong></td>
<td></td>
</tr>
<tr>
<td>State 24-Hour &gt; 50 µg/m³</td>
<td>11</td>
</tr>
<tr>
<td>Federal 24-Hour &gt; 150 µg/m³</td>
<td>1</td>
</tr>
<tr>
<td>Max. 24-Hour Conc. (µg/m³)</td>
<td>157</td>
</tr>
</tbody>
</table>

¹ Ozone and nitrogen dioxide are as monitored at the Merced monitoring station. Carbon monoxide and inhalable particulates are as monitored at the Turlock monitoring station.
² ND – No data.
ppm: parts per million; µg/m³: micrograms per cubic meter

Source: California Air Resources Board

The Merced County Air Pollution Control District (APCD) unified in March 1990 with other Valley APCDs to form the San Joaquin Valley Air Pollution Control District (SJVAPCD). The other counties in the District include San Joaquin, Stanislaus, Madera, Fresno, Kings, Tulare and the western portion of Kern. The SJVAB is currently designated non-attainment for the ozone and PM₁₀ standards. The area is unclassified for the PM₂.₅ standard, but the EPA will redesignate the area when additional data become available. The major metropolitan areas of Fresno, Modesto and Stockton are designated as non-attainment for carbon monoxide.

Under the California Clean Air Act of 1988, districts designated as non-attainment for state ambient air quality standards for ozone, carbon monoxide, sulfur dioxide, or nitrogen dioxide must submit a plan for attaining and maintaining state standards for these pollutants. In compliance with this, the SJVAB has developed an Air Quality Attainment Plan (AQAP). The San Joaquin Valley Air Pollution Control District's AQAP was adopted in 1991 and most recently updated in 1994.
4. Environmental Analysis

Like all projects within the District, the project is subject to various rules and regulations. While residential development is not subject to New Source Review regulations as would be applicable to a stationary source, such as a factory, there are various rules that do apply. Regulation VIII includes various control measures that reduce fugitive dust associated with construction, and its attendant PM$_{10}$ and PM$_{2.5}$. These measures are outlined in Rule 8021 (formerly Rule 8020), included within Regulation VIII, and list the requirements for dust abatement measures associated with construction, demolition, excavation, extraction and other earthmoving activities. Rules also applicable to the project include SJVAPCD Rule 4601 that limits the volatile organic content in paints and coatings, Rule 4641 that limits the volatile organic content in asphalt used in paving, Rule 4901 that sets restrictions on wood-burning heaters and appliances, and Rule 4902 that sets parameters for domestic water heaters.

Federal Air Quality Regulations

The Clean Air Act of 1970 was the first major federal air quality regulation. Amended in 1977 and 1990, the Clean Air Act requires the U.S. Environmental Protection Agency to establish national ambient air quality standards (NAAQS) for several pollutants. These standards (shown in Table 4.4-1, Ambient Air Quality Standards) are set by law at a level that protects public health and welfare, with an adequate margin of safety. Areas exceeding the federal standards more than two times per year can be designated "non-attainment" areas under the Clean Air Act and are then subject to more stringent planning and pollution control requirements.

Under the 1990 amendment to the Clean Air Act, non-attainment areas are divided into five categories. "Marginal" or "moderate" violators only slightly exceed the NAAQS, whereas "serious," "severe," or "extreme" violators are much further above the standards. Marginal areas are required to do little beyond what they are already doing to attain clean air, but areas designated "moderate" through "extreme" must adopt gradually tighter regulations. States with areas designated "moderate" or worse for ozone non-attainment are required to show a 3% per year reduction in emissions of volatile organic compounds.

Areas close to meeting CO standards are required to start a wintertime oxygenated fuels program and to correct problems with existing vehicle inspection programs. Areas with higher levels of CO must also start an enhanced vehicle inspection program, and those areas with the highest CO levels must adopt transportation measures.

Areas in violation of PM$_{10}$ standards that cannot meet the standard in 6 years or less are classified as moderate violators, while those areas that require more than 6 years to meet the standard are considered serious. Moderate PM$_{10}$ violators must adopt control measures for sources such as wood stoves, urban road dust and agricultural burning. Serious PM$_{10}$ violators must adopt more stringent measures for controlling particulates and, if they fail to reach attainment by the prescribed date, must achieve 5% reduction in PM$_{10}$ emissions per year.

The San Joaquin Valley Air Basin is designated "serious" for PM$_{10}$ and ozone. Based on the federal requirements of areas considered serious, the SJVAPCD is currently in the process of adopting a PM$_{10}$ Plan, which demonstrates future attainment through implementation of control
4. Environmental Analysis

measures. Sources targeted by the Plan include wood burning, automotive particulates and fugitive dust. A federal ozone attainment plan will also be required.

Merced County General Plan

Air Quality (Open Space/Conservation Element)

Air quality related goals and objectives were identified in the Open Space/Conservation Element of the Specific Urban Development Plan EIR Guidance Package for Yosemite Lake Estates, adopted by the County in June 1998, as guiding principles for the planning and establishment process. These are listed below and analyzed in the impact discussion relative to the proposed SUDP.

Goal 2: Soil, water, mineral, energy, historical and air resources are properly managed.

Objective 2F: Air Quality which meets or exceeds local and regional air quality management goals.

4.4.3 Methodology Related to Air Quality

Modeling of long-term air pollutant emissions is based upon a traffic analysis prepared by TJKM as contained in Section 4.14, Traffic and Circulation, to this EIR. Pollutant generation is derived from emissions factors published by the SJVAPCD and compared to applicable state and federal air quality standards presented in Table 4.4-1, Ambient Air Quality Standards.

4.4.4 Impacts and Mitigation Measures

Air pollutant emissions associated with the project would occur over the short-term for site preparation and construction activities to support the proposed land uses. In addition, emissions would result from the long-term operation of the completed project. Short-term and long-term air quality impacts associated with the project are detailed in the following sections.

4.4.4.1 Significance Criteria

The proposed project would be considered to have a significant effect on air quality if the project would violate any ambient air quality standards, contribute substantially to an existing air quality violation, expose sensitive receptors to substantial pollutant concentrations or conflict with adopted environmental plans and goals of the community where it is located.

Thresholds for Construction Emissions

According to the SJVAPCD, Revised Guide for Assessing and Mitigating Air Quality Impacts, (January 2002), the SJVAPCDs approach to CEQA analyses of construction PM\textsubscript{10} impacts is to require implementation of effective and comprehensive control measures rather than to require detailed quantification of emissions. Implementation of all required control measures (Regulation VIII Control Measures) and other appropriate "enhanced control measures" will constitute sufficient mitigation to reduce PM\textsubscript{10} impacts to a level considered less than significant.
However, the SJVAPCD does set a maximum opacity limitation of 40% on construction dust emissions. (Opacity refers to the ability of the emissions to obstruct light.)

The SJVAPCD recognizes that construction equipment also emits carbon monoxide and ozone precursor emissions. However, the District has determined that these emissions may cause a significant air quality impact only in cases of very large or very intense construction projects. The Guidelines note that large-scale construction could be significant if it exceeds yearly limitations of 10 tons for either NOx or ROG.

**Thresholds for Operational Emissions**

Ozone precursor emissions (ROG and NOx) that exceed 10 tons per year are considered to have significant air quality impacts. Estimated CO concentrations exceeding the CAAQS of 9 ppm averaged over 8 hours and 20 ppm for 1 hour will be considered a significant impact. The SJVAPCD has not established criteria for PM10 emissions and if the rules included in Regulation VIII are followed, the District considers these emissions to be less than significant. However, because the area is non-attainment for the particulate standard, the criterion set forth in Rule 2201 (New and Modified Stationary Source Review Rule) is used to determine significance. This value is 15 tons per year for PM10. This methodology is also in compliance with ARB methodology, which states that if there is no established CEQA threshold, the analysis shall be based on the limitations set forth in the New Source Review limitations (*CEQA Review Handbook for Local Air Pollution Control Agencies*, ARB, March 1990). An impact would also be significant if project operations were to result in dust or smoke generation that would meet or exceed 20% opacity. However, this latter requirement would apply to commercial and industrial development that could produce substantial quantities of dust or smoke. Residential development would not be expected to result in opacity issues.
4. Environmental Analysis

4.4.4.2 Impact: Temporary Construction Emissions

Impact Analysis:

- **Merced County Regulatory Policy**

  The SJVAPCD has the primary responsibility for the control of emissions in the County. The SJVAPCD operates monitoring sites that measure air pollution. The Merced County Year 2000 General Plan, states in Policy No. 25 “the County will assist in voluntary efforts to improve air quality through regional cooperation and will resist efforts to create additional state air pollution mandates which are contrary to the overall goals of the General Plan.” Policy No. 26 says “all development projects will be reviewed for compliance with applicable regional air quality plans.”

- **Additional Regulatory Policy**

  None are applicable. SJVAPCD regulations reflect all pertinent state and federal standards.

- **Additional Impact Evaluation**

  Construction operations are responsible for the emissions of CO, NOx, SOx, ROG and PM$_{10}$. These emissions are largely generated from construction operations and equipment. The amount of emissions generated is related to the level and type of construction activity. Construction-related emissions are short-term in nature and can generally be mitigated to a level of insignificance. However, it is important to estimate the total air quality impacts of a project by considering both construction-related and operational sources. The major sources of construction-related emissions that should be considered are stationary equipment, construction-related vehicle trips, mobile construction equipment, ROG from the application of asphalt and architectural coatings and fugitive dust.

  The SJVAPCD does not set construction emissions limitations per se, but notes that if those measures included in Regulation VIII are not followed, project construction should be regarded as significant. The SJVAPCD Guidelines provide additional measures, required for large-scale projects, to reduce these potential impacts to less than a level of significant. Additionally, the Guidelines note that large-scale construction has the potential to exceed yearly limitations of 10 tons per year for either NOx or ROG.

  At this planning stage, phased construction level emissions cannot be accurately estimated. The Specific Plan does not include construction schedules, circulation detours or grading plans that would be needed to quantify air quality impacts. However, a certain level of construction can be assumed based on values included in the URBEMIS7G model.

  **Stationary Equipment Emissions**

  Stationary equipment sources are classified as point and area sources. Point sources refer to a site that has one or more emission sources at a facility with an identified location (e.g.
4. Environmental Analysis

power plants, refinery boilers). Area sources comprise many small emission sources for which locations are specifically identified, but for which emissions over a given area may be calculated (e.g. water heaters, painting and coatings and fuel use and consumption). To accurately calculate emissions from stationary equipment; the types and numbers of equipment, brake emission factors, rate and quantity of fuel consumption, and phases and hours of operation all must be considered. Stationary equipment is known to generate CO, ROG, NOx and PM\textsubscript{10} emissions. The amount of emissions generated from stationary sources is typically not as significant as the emissions generated from mobile equipment and vehicles. However, the emissions do incrementally contribute to the total amount of construction related emissions generated on a given a day.

Mobile Construction Equipment Emissions

NOx, ROG and PM\textsubscript{10} are contained in the exhaust fumes emitted from mobile construction equipment, including utility engines and vehicles involved directly in construction and those that are used to transport equipment and materials to and from the site. The amount of exhaust emissions that is generated would depend on the scope of the proposed development and the construction equipment that is required.

Temporary impacts will result from project construction activities within the immediate areas proposed for development. Grading and construction activities will consume diesel fuel and thus, produce combustion by-products. Construction would be phased over a period of years and would ultimately be market-driven.

The approval of an SUDP area would subsequently allow the development of the 665-acre site. The largest portion of the project area is assumed to allow 346 acres devoted to residential development. This portion of the project area has been used to estimate construction emissions. These emissions estimates are based on the methodology provided with the URBEMIS7G computer model (Version 3.1). The model assumes a one-year construction schedule and this schedule is assumed for the residential portion of the project area. Other build-out (e.g., the commercial component) is assumed to occur in later years. In actuality, multiple components could occur simultaneously. Realistically, development would require construction well beyond the 1-year schedule that has been used to estimate a reasonable worst-case scenario.

The greatest level of construction emissions would be expected during the grading phase of construction. Equipment emissions are best estimated using \textit{AP-42 Compilation of Air Pollutant Emission Factors} ultimately used in the URBEMIS7G computer model. Because the level of construction at any one time is unknown and will vary with the contractor performing the construction effort, this analysis uses equipment-use assumptions included in the URBEMIS7G Model. As a default, URBEMIS7G assumes that one tracked loader, one wheeled loader and one motor grader (all diesel powered) would be needed for each 10 acres of land disturbed. That is, for any amount of land disturbance up to 10 acres, those three pieces of equipment each would be used for eight hours per day. The model also assumes that 25% of the site is graded at any given time and the equipment is allocated in accordance with the area to be graded. For the purposes of this analysis, it is assumed that 25% of the
4. Environmental Analysis

346 acres dedicated to housing would be graded on any given day (i.e., 86.5 acres) and 27 pieces of equipment would be required. Based on the size of the residential area, this analysis also adds three pieces of miscellaneous equipment (e.g., water trucks) to ensure compliance with SJVAPCD Regulation VIII requiring dust control.

Worker trips have also been estimated utilizing the URBEMIS7G computer model. The model estimates that 0.72 trips are generated for each residential unit constructed. Therefore, initial construction of the assumed 1,262 dwellings is estimated to require 934 workers per day. Each trip end has an average length of 10.8 miles based on the URBEMIS7G Model, resulting in approximately 20,174 miles on a daily basis. Emissions associated with these trips are included in Table 4.4-3, Projected Construction Emissions (lb/day). Emissions calculations are included in Appendix D, Air Quality Data, to this EIR.

Heavy trucks would also be required to remove debris and bring in construction supplies. The number of these trucks could vary considerably over the duration of the construction. Again, the number of truck trips was estimated using the URBEMIS7G Model as a reference source. The model estimates that one truck is used for every 10 residential structures to be constructed and 126 daily truck trips (round-trip) are estimated. Trip lengths are assumed at 10.8 miles in each direction. All calculations are presented in Appendix D, Air Quality Data, to this EIR.

The project could result in excessive levels of both NOx and ROG above the SJVAPCD 10-ton per year criterion resulting in a potentially significant impact as illustrated in Table 4.4-3, Projected Construction Emissions (lb/day). Additionally, PM_{10} emissions could exceed the 15-ton per year criterion. Mobile construction equipment emissions can be reduced by using construction equipment that has catalytic converters, using methanol or low-sulfur pile drivers, and by preventing trucks and equipment from prolonged idling. PM_{10} associated with soil disturbance can be reduced through various means such as wetting and reduced speeds across unpaved surfaces.
4. Environmental Analysis

<table>
<thead>
<tr>
<th>TABLE 4.4-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROJECTED CONSTRUCTION EMISSIONS (LB/DAY)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>CO</th>
<th>NOx</th>
<th>ROG</th>
<th>SOx</th>
<th>PM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track Loaders</td>
<td>14.5</td>
<td>59.8</td>
<td>6.8</td>
<td>5.5</td>
<td>4.2</td>
</tr>
<tr>
<td>Wheel Loaders</td>
<td>41.2</td>
<td>136.8</td>
<td>16.6</td>
<td>13.1</td>
<td>12.2</td>
</tr>
<tr>
<td>Motor Graders</td>
<td>10.9</td>
<td>51.3</td>
<td>2.8</td>
<td>6.2</td>
<td>4.4</td>
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<tr>
<td>Water Truck (Miscellaneous)</td>
<td>16.2</td>
<td>40.6</td>
<td>3.6</td>
<td>3.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Worker Trips</td>
<td>443.1</td>
<td>59.9</td>
<td>36.1</td>
<td>0.0</td>
<td>1.1</td>
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<tr>
<td>Haul Trucks</td>
<td>38.3</td>
<td>49.1</td>
<td>4.7</td>
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<tr>
<td>Dust</td>
<td>---</td>
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<td>---</td>
<td>432.5</td>
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<tr>
<td>Asphalt</td>
<td>---</td>
<td>---</td>
<td>11.0</td>
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<td>---</td>
</tr>
<tr>
<td>Architectural Coatings</td>
<td>---</td>
<td>---</td>
<td>4,932.8</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Total</td>
<td>564.2</td>
<td>397.5</td>
<td>5,014.4</td>
<td>30.9</td>
<td>460.4</td>
</tr>
<tr>
<td>Yearly Total (tons)¹</td>
<td>70.5</td>
<td>49.7</td>
<td>65.6</td>
<td>3.9</td>
<td>57.6</td>
</tr>
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</table>

¹ Based on 250 days of grading, 10 days for asphalt application, and 23 days for the release of architectural coating emissions.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:** The District does not require the detailed quantification of construction emissions or the quantification of the efficiency of the mitigation. “The SJVAPCDs recommended approach to mitigating construction emissions focuses on a consideration of whether all feasible control measures are being implemented.” To the extent feasible, the following mitigation measures (some as recommended by the District) should be implemented to minimize mobile source emissions during subsequent construction:

  4.4.1 Heavy diesel equipment shall use low-sulfur fuel.

  4.4.2 Heavy equipment shall not remain idling for prolonged period (i.e., 10 minute maximum)

  4.4.3 Heavy equipment shall be properly tuned and maintained to manufacturer's specifications.

  4.4.4 Electric-powered equipment shall be utilized in lieu of gasoline-powered engines where possible (provided they are not run via a portable generator set).

  4.4.5 Construction activities shall minimize obstruction of through traffic lanes adjacent to the site and, if necessary, a flag-person shall be retained to maintain safety adjacent to existing roadways.

- **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.4.4.3 Impact: Temporary Construction Fugitive Dust Emissions

Impact Analysis:

- **Merced County Regulatory Policy**

  According to the SJVAPCD, *Revised Guide for Assessing and Mitigating Air Quality Impacts*, (January 2002), the SJVAPCDs approach to CEQA analyses of construction PM\(_{10}\) impacts is to require implementation of effective and comprehensive control measures rather than to require detailed quantification of emissions. Implementation of all required control measures (Regulation VIII Control Measures) and other appropriate "enhanced control measures" will constitute sufficient mitigation to reduce PM\(_{10}\) impacts to a level considered less than significant.

- **Additional Regulatory Policy**

  None are applicable. SJVAPCD regulations reflect all pertinent state and federal standards.

- **Additional Impact Evaluation**

  When fugitive dust enters the atmosphere, the larger particles of dust quickly fall to the ground. The smaller particles, however, may remain suspended for long periods of time, and are referred to as Total Suspended Particulates (TSP). Within TSP are dust particles that are less than ten microns in diameter that are referred to as PM\(_{10}\). Because PM\(_{10}\) is respirable and can damage the lungs, fugitive dust is a matter of concern.

  A variety of construction-related sources generate PM\(_{10}\) emissions. These sources include: auto and truck trips on paved and unpaved roads and parking areas, dirt storage piles, dirt pushing and grading activities, truck dumping activities and demolition operations. To accurately calculate PM\(_{10}\) emissions, project specific information is needed. Such information would include the amount of vehicle miles traveled by autos, trucks and construction equipment on paved and unpaved surfaces, area covered by storage piles per day, tons of truck filling material used per day and number of acres being graded.

  At this time, the information needed to calculate PM\(_{10}\) emissions is not available. Therefore, it is not possible to accurately estimate project specific emissions. However, like exhaust emissions, fugitive dust can generally be estimated using the assumptions included in the URBEMIS7G Model. The model estimates that every acre graded produces 10 pounds of PM\(_{10}\) emissions per day associated with fugitive dust. The model also assumes that 25% of the site is graded at any given time and the equipment is allocated in accordance with the area to be graded. For the purposes of this analysis, it is assumed that 25% of the 346 acres assumed for housing would be graded on any given day (i.e., 86.5 acres). With the implementation of Regulation VIII measures, daily PM\(_{10}\) emissions are estimated at 432.5 pounds. While SJVAPCD notes that implementation of the measures included in Regulation VIII would mitigate a small project to a less than significant level, the large size of the project area means this impact is considered potentially significant.
The SJVAPCD Guidelines provide the requisite measures for small-scale projects that need to comply with Regulation VIII as outlined below:

- 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.
- All on-site unpaved roads and off-site unpaved access roads shall be effectively stabilized of dust emissions using water of 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 utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height (if applicable), all exterior surfaces of the building shall be wetted during demolition.
- 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.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each work day. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emission. Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water of chemical stabilizer/suppressant.
- 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.
- Any construction with 150 or more vehicle trips per day shall prevent carryout and trackout.

**Level of Significance Before Mitigation:** Potentially significant

**Mitigation Measures:**

The following measures are included in the SJVAPCD Guidelines for large-scale projects and are recommended as mitigation measures. The District does not require the detailed quantification of construction emissions or the quantification of the efficiency of the mitigation. “The SJVAPCDs recommended approach to mitigating construction emissions focuses on a consideration of whether all feasible control measures are being implemented.” To the extent feasible, the following mitigation measures (some as recommended by the District) should be implemented to minimize mobile source emissions during subsequent construction:

4.4.6 Limit traffic speeds on unpaved roads to 15 mph.
4. Environmental Analysis

4.4.7 Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1%.

The following measures are encouraged for construction located near sensitive receptors:

4.4.8 Install wheel washers for all exiting trucks, to wash off all trucks and equipment leaving the site.

4.4.9 Install wind breaks at windward side(s) of construction areas.

4.4.10 Suspend excavation and grading activity when winds exceed 20 mph.

4.4.11 Limit areas subject to excavation, grading, and other construction activity at any one time.

• Level of Significance After Mitigation: Less than significant

4.4.4 Impact: Long Term Regional Impacts Due To Emissions Attributable To The Change In Land Use

Impact Analysis:

• Merced County Regulatory Policy

Ozone precursor emissions (ROG and NOx) that exceed 10 tons per year are considered to have significant air quality impacts. Estimated CO concentrations exceeding the CAAQS of 9 ppm averaged over 8 hours and 20 ppm for one hour will be considered a significant impact. The SJVAPCD has not established criteria for PM$_{10}$ emissions and if the rules included in Regulation VIII are followed, the District considers these emissions to be less than significant. However, because the area is non-attainment for the particulate standard, the criterion set forth in Rule 2201 (New and Modified Stationary Source Review Rule) is used to determine significance. This value is 15 tons per year for PM$_{10}$. This methodology is also in compliance with ARB methodology, which states that if there is no established CEQA threshold, the analysis shall be based on the limitations set forth in the New Source Review limitations (CEQA Review Handbook for Local Air Pollution Control Agencies, ARB, March 1990).

• Additional Regulatory Policy

None are applicable. SJVAPCD regulations reflect all pertinent state and federal standards.

• Additional Impact Evaluation

Long-term air pollution emissions are those associated which would be associated with the change in permanent use of the project area. Two types of air pollutant sources must be considered with respect to the proposed project: stationary sources and mobile sources.
These emissions occur regionally based on the assumed trip-generating characteristics of the project and can build-up locally at intersections in the project area.

**Regional Emissions**

Stationary source emissions would be generated from on-site activities and natural gas combustion for heating requirements and cooking, as well as emissions at the power plant associated with the electrical requirements of the project. Mobile source emissions result from vehicle trips including: commuting employees, residents and visitors accessing the project, deliveries, and maintenance activities. Mobile sources represent the vast majority of emissions associated with new development, generally up to 98%.

Projections can be made for the mobile emissions generated by the assumed land uses in the build-out year (2020) by utilizing the California Air Resource Board URBEMIS7G Model. The model generates motor vehicle emissions as a function of the number of trips associated with a given land use and the vehicle miles traveled for each particular type of trip taken.

The emissions associated with the assumed project are anticipated to be 1,626 pounds of carbon monoxide, 160 pounds of reactive organic gases, 501 pounds of NOx, and 21 pounds of PM10 on a daily basis as shown in Table 4.4-4, *Projected-Related Emissions Inventory (lbs./day)*. Regional emissions and therefore project impacts are considered a significant impact of the project. The emission inventory assumptions are provided in Appendix D to this EIR.

**TABLE 4.4-4**

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>ROG</th>
<th>CO</th>
<th>NOx</th>
<th>PM10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>132</td>
<td>1,315</td>
<td>397</td>
<td>16</td>
</tr>
<tr>
<td>Neighborhood Commercial</td>
<td>28</td>
<td>306</td>
<td>102</td>
<td>4</td>
</tr>
<tr>
<td>Mixed Use (Marina)</td>
<td>&lt;1</td>
<td>5</td>
<td>2</td>
<td>&lt;1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>160</td>
<td>1,626</td>
<td>501</td>
<td>21</td>
</tr>
</tbody>
</table>


**Microscale Projections**

An assessment of the project-related impact on localized air quality requires that future ambient levels be projected. Carbon monoxide concentrations can be estimated adjacent to nearby intersections that would be assumed to carry substantial volumes of project-related traffic using the California Department of Transportation Line Source Dispersion Model (CALINE4). Carbon monoxide levels in the project vicinity during peak hour traffic were assessed with the CALINE4 computer model. A complete discussion of the CALINE4 model and modeling assumptions are provided in Appendix D to this EIR.
Existing ambient carbon monoxide concentrations are 4.7 ppm over a one-hour averaging period and 2.3 ppm over the 8-hour averaging period. Background concentrations were determined by modeling Interstate 5 at State Route 152. The freeway concentration at 200 feet from the centerline was added to 2 ppm. See Appendix D for further details.

Ambient plus project traffic volumes were analyzed for year 2020 conditions. As shown in Table 4.4-5, Intersection Carbon Monoxide Concentrations (Year 2020), carbon monoxide concentrations adjacent to the intersections most affected by the project would not exceed the current state and federal one-hour and eight-hour standards with or without the subsequent development assumed on-site.

Over a one-hour and an eight-hour averaging period, "worst-case" project-related traffic at the intersections analyzed would contribute 4.0 ppm and 2.8 ppm or less to the carbon monoxide concentration at 50 feet from the corner of the intersection. The maximum intersection carbon monoxide concentration expected in the project area would be 8.7 ppm over the one-hour averaging period and 5.1 ppm over the 8-hour averaging period at 50 feet from the intersection of State Route 59 and Bellevue Road.

The carbon monoxide levels projected in the project area reflect cumulative conditions with the project in the year 2020. The microscale analysis indicates that project-related increases in carbon monoxide levels are insignificant under cumulative conditions, since the one-hour and eight-hour standards would not be exceeded with the project. As a result, assumed project implementation would not cause an exceedance or contribute to an existing exceedance of the carbon monoxide standards.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>LOS W/Out Mitigation</th>
<th>1-Hour CO @ 50 Feet 1</th>
<th>8-Hour CO @ 50 Feet 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELLEVUE ROAD @</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- State Route 59</td>
<td>E</td>
<td>8.7</td>
<td>5.1</td>
</tr>
<tr>
<td>- G Street</td>
<td>F</td>
<td>8.3</td>
<td>4.8</td>
</tr>
<tr>
<td>- Golf Road</td>
<td>F</td>
<td>6.8</td>
<td>3.8</td>
</tr>
<tr>
<td>- Old Lake Road</td>
<td>F</td>
<td>6.9</td>
<td>3.8</td>
</tr>
<tr>
<td>WEST OLIVE AVENUE @</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- G Street</td>
<td>D</td>
<td>6.8</td>
<td>3.8</td>
</tr>
<tr>
<td>- State Route 59</td>
<td>F</td>
<td>8.3</td>
<td>4.8</td>
</tr>
<tr>
<td>OLD LAKE ROAD @</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Golf Road</td>
<td>C</td>
<td>6.6</td>
<td>3.6</td>
</tr>
<tr>
<td>- Yosemite Avenue</td>
<td>F</td>
<td>7.7</td>
<td>4.4</td>
</tr>
<tr>
<td>State Standard</td>
<td></td>
<td>20.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Federal Standard</td>
<td></td>
<td>35.0</td>
<td>35.0</td>
</tr>
</tbody>
</table>

1 As measured at a distance of 50 feet from the corner of the intersection predicting the highest value. Includes background concentrations of 4.7 and 2.3 ppm for 1- and 8-hour concentrations, respectively. Eight-hour concentrations based on a persistence of 0.7 of the 1-hour concentration.

This analysis of long term operational air quality impacts is based on the May 2002 TJKM traffic study, which assumes 2,386 dwelling units, 125 acres of parks, open space and public uses and 19 acres of neighborhood commercial development. The project assumptions upon which other analyses contained in this EIR are based (with the exception of air quality and noise), assume that a maximum of 1,262 dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial uses could be developed within the proposed SUDP with approval of a subsequent Community Specific Plan (see Section 4.1, Summary of Project Assumptions). Consequently, long-term impacts to air quality described in this section are overstated and should be interpreted with caution. The subsequent specific plan, which will be based on a specific development project, could further reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, Summary of Project Assumptions.

- **Level of Significance Before Mitigation:** Significant

- **Mitigation Measures:** No mitigation measures are feasible. Impact to regional emissions. Less than significant impact associated with microscale CO emissions.

- **Level of Significance After Mitigation:** Significant
4. Environmental Analysis

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4. Environmental Analysis

4.5 BIOLOGICAL RESOURCES

This section of the EIR has been prepared by LSA Associates, Inc.

4.5.1 Environmental Setting

Regional Setting

The Yosemite Lake Estates project is located in eastern Merced County, approximately 3 miles northeast of the City of Merced on the western shore of Yosemite Lake. This area occurs along the western edge of the alluvial terrace landscape that formed along the western base of the Sierra Nevada. This alluvial terrace formation contains what is considered to be one of the largest, contiguous vernal pool landscapes remaining in California (Vollmar 2002). Figure 4.5-1, Yosemite Lake Jurisdictional Wetlands, shows the location of vernal pools on the project site.

The primary land use to the north and west of the site is open grassland used primarily for livestock grazing. Lands to the east and south contain more developed agricultural lands, a Country Club, and rural residential land uses.

Site Characteristics

The project site is and has historically been used for grazing and other agricultural purposes. Remnants of an orchard in the western portion of the south pasture appear on photos prior to 1957. By 1961 this orchard was converted to irrigated pasture. The northeast section of the site, including a portion of the middle valley, appears disced in the 1942 aerial photo; however, later photos do not show any evidence of subsequent farming activities in this area.

Construction of the Crocker-Huffman Main Canal which bisects the property, was completed in 1888. With the exception of Fahrens Creek, the main drainageways on the site flow from northeast to southwest. The canal truncates the watersheds to the west of the canal and dammed those to the east, forming the north, west, and south “lagoons” and the ponded areas (i.e., canal marshes). The lagoons and canal marshes have direct hydrologic connections to the canal either via levee breaches or pipes, and water levels in them are highest in the summer, when demand for irrigation water, and therefore canal levels, are greatest. A previous landowner, C. Ray Robinson, secured breaches in the levee sometime in the past to obtain low-cost water.

Seepage from the unlined canal has allowed the development of wetland vegetation in areas adjacent to both sides of the canal. The degree of seepage for the area north of the Upper Golf lateral has varied but generally appears to be more extensive on pre-1967 aerial photos than on more recent photos. Because the canal carries irrigation water, canal levels (and presumably seepage) are highest in the summer. A low dam/stock pond was constructed west of the canal prior to 1942. The dam holds water derived from direct precipitation on its watershed and possibly inputs from canal leakage. Based on site observations and review of various aerial photographs, this pond appears to typically dry by mid to late spring.
4. Environmental Analysis

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Yosemite Lake Jurisdictional Wetlands

Legend
- VERNAL POOLS AND SWALE
- CANAL MARSH AND OPEN
- SEEPS

Source: LSA Associates

The Planning Center • Figure 4.3-1
4. Environmental Analysis

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4. Environmental Analysis

The east-west portion of the Upper Golf lateral irrigation canal was constructed prior to 1916. The north-south portion and the Rotterdam lateral were constructed sometime between 1916 and 1942. Both the north and south pastures were leveled prior to 1942; the south pasture could have been leveled prior to 1916. Mound and swale topography was previously present over most of the pasture areas, based on a comparison to adjacent non-leveled areas and the faint but discernible “phantom” swale pattern visible on current and historical aerial photos. Based on this evidence, it is believed that the north pasture, mapped as Redding soils, formerly supported a fairly dense pattern of pools and swales. The western half of the south pasture, also mapped as Redding soils (with the exception of the extreme southwest corner, which is mapped as Raynor soils), was likely similar, although the historic swale pattern in the south pasture is not as easily discerned on historical photos. The eastern half, mapped as Hopeton soils, likely supported fewer swales and pools, as is found on Hopeton soils on other portions of the site.

Both pastures have continued to be irrigated and managed to present. Typical management of irrigated pastures in the region involves extensive, regular irrigation through the dry season and periodic burning, generally in the late spring, to control rush (*Juncus* spp.).

Historically, the main channel of Fahrens Creek meandered over an approximately 1,200-foot wide floodplain adjacent to the base of the escarpment to the east of the creek; remnants of old meanders and secondary channels remain. Flow was likely confined to a single channel with construction of the Rotterdam lateral. Photos from 1961 and earlier dates show one main, meandering creek channel; however, sometime between 1961 and 1967 this channel was partially straightened and a portion of the riparian vegetation was removed.

Vegetation

Vegetation within the project area includes non-native grassland (385 acres), approximately 790 vernal pools, seeps, and swales (totaling 17 acres), irrigated pastures (190 acres), canal and lagoon marshes along the Crocker-Huffman Main Canal (40 acres), and riparian scrub associated with Fahrens Creek (23 acres) (see Figure 4-5.1, *Yosemite Lake Jurisdictional Wetlands*). The project area is characterized by rolling hills with two exceptions: the irrigated pastures, which have been leveled, and an escarpment east of Fahrens Creek. Elevations range from 210 to 285 feet.

The most prevalent vegetation community in the project area is non-native grassland. Dominant plants include introduced annual grasses and forbs such as wild oats (*Avena* spp.), soft chess (*Bromus mollis*), and filaree (*Erodium* spp.), and native forbs such as tarweed (*Hemizonia* spp. and *Holocarpha hermanii*). Common native wildflowers include several brodiaeas (*Brodiaea* spp.), tidy tips (*Layia fremontii*), and larkspur (*Delphinium variegatum*). Grassland in the project area has likely been used for grazing for over a century, and much of it is similar to non-native grasslands throughout the Central Valley and Coast Ranges of California. However, many areas within the grassland are somewhat unusual in that they support grasses and forbs generally associated with mesic (moist) conditions, including Howell's foxtail (*Alopecurus howellii*), ryegrass (*Lolium multiflorum*), adobe popcornflower (*Plagiobothrys acanthocarpus*), and involucrate evax (*Evax caulescens*). These areas are associated with two soil series within the project area, Hopeton and Raynor. Both soils have a high clay content and therefore retain...
4. Environmental Analysis

soil moisture longer into the growing season than surrounding areas with coarser-textured soils, helping to account for the more mesic species present.

A network of vernal pools and swales within the grassland is the result of the site's underlying complex pattern of volcanic mudflow materials and alluvium. Areas of hummocky microtopography, along with clay soils and subsoils with very slow permeability, have formed on these parent materials. Depressions fill with winter rains and, because of the slow permeability of the soil, remain inundated into early spring, drying out slowly through late spring. Vernal pools exist in other areas of the state with similar soil conditions — the presence of an impermeable or slowly permeable layer — but have been greatly reduced in numbers due to agriculture and urban development. Vernal pools often support plants (and animals) that are considered rare or endangered, and provide valuable wildlife habitat. For these reasons, agencies such as the California Department of Fish and Game (CDFG) and U.S. Fish and Wildlife Service (USFWS) consider vernal pools and swales significant resources worthy of protection.

Vernal pools in the project area correspond to the northern hardpan vernal pool type in CDFG's classification of natural communities of California (Holland 1986). Dominant plants in pools on the site, at various times of the season, include the native species meadowfoam (Limnanthes douglasii var. rosea), Fremont's goldfields (Lasthenia fremontii), involucrate evax, coyote thistle (Eryngium vaseyi var. globosum), wooly marbles (Psilocarphus brevissimus), tricolored monkeyflower (Mimulus tricolor), and non-native Mediterranean barley (Hordeum geniculatum). Swales in the project area either form connections between vernal pools or are isolated. These swales often remain saturated into the spring, carrying slowly moving surface runoff and likely receiving subsurface seepage from side slopes due to their low position within the landscape. Plants within the swales are generally those associated with the higher elevations of the pools, such as Mediterranean barley and ryegrass. Non-native and mesic grassland surrounding the vernal pools and swales act as both watershed supporting the pools and as habitat for some insect species dependent on vernal pool plants. Grassland areas around the pools and swales are thus an integral part of the vernal pool/swale system.

The vernal pools on the property tend to be relatively small and shallow, with short-duration flooded/ponded conditions during their wet phase. The majority of the pools on the site are less than 0.1 acre in size, with the largest pool being approximately 0.86 acre (this larger pool was created by the damming of a swale by berm along the Golf lateral irrigation canal). The average pool size is 0.0173 acre or 754 square feet. Swale habitats are more extensive, typically covering larger drainage areas. The swales tend to be characterized by a similar suite of plants but lack areas of prolonged standing water.

Seeps are primarily associated with Redding soils, generally along the contact with Hopeton and Raynor soils or on the edges of some pools or swales. Seeps are dominated by toad rush (Juncus bufonius) or six-weeks brome (Vulpia bromoides) and Mediterranean barley.

The two irrigated pastures in the project site cover approximately 190 acres and were leveled prior to 1942 (the date of the earliest aerial photo available). The dominant plant over much of the pastures is Pacific rush (Juncus effusus var. pacificus). Other common species include Dallis grass (Paspalum dilatatum), velvet grass (Holcus lanatus), and Bermudagrass (Cynodon...
4. Environmental Analysis

*daentylon*). The northeast corner of the southern irrigated pasture contains a row of mature blue-gum eucalyptus (*Eucalyptus globulus*) trees, many of which are dead or dying. Irrigation laterals along the edges of both pastures support water-loving species such as jussiaea (*Ludwigia peploides*), water smartweed (*Polygonum coccineum*), and Pacific rush. The extent of the pasture wetlands is estimated to be 14.6 acres out of total of approximately 190 acres of irrigated pasture on the site. The extent of wetland was inferred from hydrologic analyses conducted in 1991 for the purposes of establishing the extent of Section 404 regulation in the pastures. The location of the inferred wetlands is unknown because the existing leakage from the irrigation canals and irrigation creates a similar vegetative composition through the entire pasture area and it was impossible to specifically identify regulated areas (wetlands) from the remainder of the pasture.

Freshwater marsh species occur around the borders of lagoons along the Crocker-Huffman Main Canal and in areas where the canal either seeps or has dammed natural drainageways. The lagoons have direct hydrologic connections to the canal, either via levee breaches or pipes, and water levels in them are highest during the summer irrigation season. The dominant species around the lagoons is Pacific rush. In contrast to the lagoons, areas in which drainageways have been dammed by the canal are supported primarily by runoff (although they might receive some seepage from the canal), and water levels in them are highest in the winter and spring. The dominant plant in these areas is swamp smartweed (*Polygonum hydropiperoides*).

Riparian scrub along the floodplain of Fahrens Creek consists primarily of scattered willows (*Salix spp.*), the only native trees within the project area, and the shrubs, Himalaya berry (*Rubus procerus*) and wild rose (*Rosa spp.*). Much of the floodplain supports annual grasses and some low areas support “mesic” species such as Baltic rush (*Juncus balticus*). The banks of the creek itself are lined with Pacific rush and grasses such as Bermudagrass.

The extent of wetlands/Section 404 jurisdiction on the site by community type is:

- Vernal pools: 12.62 acres
- Swales: 4.01 acres
- Seeps: 0.52 acre
- Fahrens Creek: 2.84 acres
- Canal marsh/open water: 40.41 acres
- Pasture wetlands: 14.60 acres

This jurisdictional determination was confirmed by the Natural Resources Conservation Service (NRCS) and U.S. Army Corps of Engineers (Corps) in 1997.

**Wildlife**

The communities described above provide habitat for numerous wildlife species, as evidenced during field surveys. Amphibians and reptiles are not readily observed and subsequently were poorly represented during surveys. Only the bullfrog, valley garter snake, and gopher snake were identified. However, it can be assumed that several other common salamanders, frogs, toads, lizards, and snakes are present in the project area.
4. **Environmental Analysis**

Birds were most apparent during surveys with 44 species identified. Approximately half (24) of those species identified are typically associated with wetland environments. Yosemite Lake, Main Canal, canal marshes, Fahrens Creek, and vernal pools are significant wetland features that contribute to avifaunal diversity in the project area. Birds most commonly observed during surveys were the great blue heron, great egret, mallard, red-tailed hawk, western kingbird, horned lark, western meadowlark, and red-winged blackbird.

Mammals were identified by direct observation as well as by sign (e.g., scat, tracks, burrows). Only the deer mouse was identified through live trapping efforts. Observations were limited to the black-tailed jackrabbit, Audubon cottontail, California ground squirrel, Botta pocket gopher, deer mouse, coyote, and raccoon. The hardpan soils (difficult to excavate and subject to prolonged saturation) and open (grassland) terrain of the project area provide little cover for mammalian species. Most observations, and all small mammal live-captures, were located in the low-lying area along Fahrens Creek, which is characterized by greater vegetative cover and friable soils.

**Special-Status Species**

Special-status species are plants and animals that are legally protected under the State and Federal Endangered Species Acts or other regulations, and species that are considered rare by the scientific community. Special-status species are defined as follows:

- Plants and animals that are listed or proposed for listing as rare, threatened, or endangered under the California Endangered Species Act (Fish and Game Code 1992 Sections 2050 et seq.; 14 CCR Sections 670.1 et seq.) and/or the Federal Endangered Species Act (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);

- Plants and animals that are listed or proposed for listing as threatened or endangered under the California Endangered Species Act (Fish and Game Code 1995 Section 2050 et seq.; 14 CCR Section 670.1 et seq.) and/or the Federal Endangered Species Act (50 CFR 17.12 for plants; 50 CFR 17.11 for animals; various notices in the Federal Register [FR] for proposed species);

- Plants and animals that are Candidates (Category 1) for possible future listing as threatened or endangered under the Federal Endangered Species Act (50 CFR 17.12 for plants; 61 FR 7591, February 28, 1996 and 50 CFR 17.11, April 2001, for animals);

- Plants and animals that meet the definition of rare or endangered under CEQA (14 CCR 15380) which includes species not found on State or Federal Endangered Species lists.

- Plants occurring on Lists 1A, 1B, 2, 3, and 4 of the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California (Skinner and Pavlik 1994). CDFG recognizes that Lists 1A, 1B, and 2 of the CNPS inventory contain plants that, in the majority of cases, would qualify for state listing, and CDFG requests their inclusion in EIRs as necessary.


Animals that are designated as “Species of Special Concern” by CDFG;

Animal species that are “fully protected” in California (Fish and Game Code, Sections 3511, 4700, 5050 and 5515);

Animals that are designated as federal “Species of Concern” by USFWS.

Special-status species addressed here represent baseline botanical and wildlife concerns and possible constraints. During the lifetime of the proposed project, the status of species discussed here may change and other species not presently of concern may be afforded legal protected status.

**Plants**

Special-status plants, their status, habitats, and known occurrences within the region potentially occurring in the habitat types in the project area are summarized in Table 4.5-1, *Sensitive Plants Possibly Occurring In The Project Area*. On-site surveys were conducted during the flowering periods of special-status plants potentially occurring in the project area in 1990 and 1991 by WESCO. Additional information from other existing environmental documentation pertinent to the study area (EIP Associates 1999a, 1999b, and 1999c; Vollmar 2002) and the California Natural Diversity Data Base (CNDDB 2002) were also used to assess potential presence of other special-status plants on the site.

<table>
<thead>
<tr>
<th>Scientific Name/ Common Name</th>
<th>Status Federal/ State/CNPS</th>
<th>Habitat</th>
<th>Occurrences in Region*</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Agrostis hendersonii</em>&lt;br&gt;Henderson’s bent-grass</td>
<td>-/- /List 3</td>
<td>Vernal pools, grassland</td>
<td>Reported on UC Merced/Virginia Smith Trust property to north of the site. Possible occurrences on site.</td>
</tr>
<tr>
<td><em>Calycadenia hooveri</em>&lt;br&gt;Hoover’s Calycadenia</td>
<td>-/- /List 1B</td>
<td>Woodland, grassland, east side of Central Valley</td>
<td>Scattered occurrences in region, occurs in association with Ione formation sandstone outcrops. Suitable habitat lacking on site.</td>
</tr>
<tr>
<td>Castilleja campestris ssp. Succulent</td>
<td>FPT/CE/List 1B</td>
<td>Vernal pools</td>
<td>Known from Smith Trust Lands adjacent to property. Assumed to be present.</td>
</tr>
<tr>
<td><em>Chamaesyce hooveri</em>&lt;br&gt;Hoover’s spurge</td>
<td>FT/- /List 1B</td>
<td>Vernal pools, grassland</td>
<td>No known occurrences in County.</td>
</tr>
<tr>
<td>Clarkia rostrata&lt;br&gt;Beaked clarkia</td>
<td>-/- /List 1B</td>
<td>Woodland, grassland, east side of Central Valley</td>
<td>Typically associated with steep, rocky slopes. Such conditions are absent on site and this species is presumed absent.</td>
</tr>
<tr>
<td>Delphenium hansenii ssp. ewanianum&lt;br&gt;Ewan’s larkspur</td>
<td>-/-/List 4</td>
<td>Woodland, valley and foothill grassland</td>
<td>Known from only a few scattered locations within the County.</td>
</tr>
<tr>
<td>Downingia pusilla&lt;br&gt;(=humilis)&lt;br&gt;Dwarf downingia</td>
<td>-/-/List 1B</td>
<td>Vernal pools, mesic grassland</td>
<td>Scattered occurrences through east Merced County grasslands. Potentially present.</td>
</tr>
</tbody>
</table>
### TABLE 4.5-1

**SENSITIVE PLANTS POSSIBLY OCCURRING IN THE PROJECT AREA**

<table>
<thead>
<tr>
<th>Scientific Name/ Common Name</th>
<th>Status Federal/ State/CNPS</th>
<th>Habitat</th>
<th>Occurrences in Region*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eryngium racemosum <em>Delta button-celery</em></td>
<td>-/CE/List 1B</td>
<td>Riparian scrub</td>
<td>No known occurrences in eastern Merced County.</td>
</tr>
<tr>
<td>Eryngium spinosepalum <em>Spiny-sepaled button-celery</em></td>
<td>-/-/List 1B</td>
<td>Vernal pools and swales</td>
<td>Vollmar (2002) reports this species to be the predominant <em>Eryngium</em> in the rangelands of eastern Merced County.</td>
</tr>
<tr>
<td>Fritillaria argestris <em>Stinkbells</em></td>
<td>-/-/List 4</td>
<td>Chaparral, woodland, grassland.</td>
<td>Typically associated with lone sandstone outcrops and rocky soils. Suitable habitat lacking on site.</td>
</tr>
<tr>
<td>Gratiola heterosepala <em>Bogg’s Lake hedge-hysop</em></td>
<td>-/CE/List 1B</td>
<td>Vernal pools, vernal marshes and swamps</td>
<td>Typically found in larger, deeper playa-type vernal pools with long duration ponding. Suitable large pool/long duration habitat lacking onsite.</td>
</tr>
<tr>
<td>Hesperax caulescens <em>Hogwallow starfish</em></td>
<td>-/-/List 4</td>
<td>Mesic Grasslands, Vernal pools</td>
<td>Known scattered location on adjacent Smith Trust lands. Suitable habitat onsite.</td>
</tr>
<tr>
<td>Legenere limosa <em>Legenere</em></td>
<td>-/-/List 1B</td>
<td>Vernal pools</td>
<td>No known occurrences in region.</td>
</tr>
<tr>
<td>Monardella leucocephala <em>Merced monardella</em></td>
<td>-/-/List 1A</td>
<td>Grassland, east side of Central Valley</td>
<td>No known occurrences in region.</td>
</tr>
<tr>
<td>Navarretia myersii ssp. Myersii <em>Pincushion navarretia</em></td>
<td>-/-/List 1B</td>
<td>Vernal pools, grasslands, wetlands</td>
<td>Two known occurrences in region, but not found during UC Merced studies on Smith Trust lands. Potential habitat present</td>
</tr>
<tr>
<td>Navarretia nigelliformis ssp. radians <em>Shinning navarretia</em></td>
<td>-/-/List 1B</td>
<td>Vernal Pools</td>
<td>Potential habitat present; identified on adjacent Smith Trust lands.</td>
</tr>
<tr>
<td>Neostapfia colusana <em>Colusa grass</em></td>
<td>FT/CE/List 1B</td>
<td>Vernal pools</td>
<td>Associated with larger/deeper vernal lakes and seasonal stock ponds with long duration ponding. Suitable habitat lacking on site except for one seasonal stock pond.</td>
</tr>
<tr>
<td>Orcuttia inaequalis <em>San Joaquin Valley Orcutt grass</em></td>
<td>FT/CE/List 1B</td>
<td>Vernal pools</td>
<td>Associated with larger/deeper vernal lakes and seasonal stock ponds with long duration ponding. Suitable habitat lacking on site except for one seasonal stock pond.</td>
</tr>
<tr>
<td>Orcuttia pilosa <em>Hairy orcutt grass</em></td>
<td>FE/CE/List 1B</td>
<td>Vernal pools</td>
<td>Associated with larger/deeper vernal lakes and seasonal stock ponds with long duration ponding. Suitable habitat lacking on site except for one seasonal stock pond.</td>
</tr>
<tr>
<td>Phacelia ciliata var. opaca <em>Merced Phacelia</em></td>
<td>-/-/List 1B</td>
<td>Class of soils of grasslands, east side of County</td>
<td>Potential habitat present.</td>
</tr>
<tr>
<td>Pseudobahia bahiifolia <em>Hartweg’s golden sunburst</em></td>
<td>FE/CE/List 1B</td>
<td>Vernal pools, grasslands</td>
<td>Associated with Valley Springs and Ione Formation soils. Suitable habitat lacking on site.</td>
</tr>
<tr>
<td>Sagittaria sanfordii <em>Sanford’s arrowhead</em></td>
<td>-/-/List 1B</td>
<td>Marshes and swamps</td>
<td>Potential habitat present in Canal Marshes on site.</td>
</tr>
</tbody>
</table>
4. Environmental Analysis

<table>
<thead>
<tr>
<th>Scientific Name/ Common Name</th>
<th>Status Federal/ State/CNPS</th>
<th>Habitat</th>
<th>Occurrences in Region*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sidalcea keckii</td>
<td>FPT/-/List 1B</td>
<td>Woodland, grassland</td>
<td>Outside of current known range; one Sidelcea specimen collection onsite in 1990 was considered to potentially be Sidalcea keckii. Positive identification was not possible.</td>
</tr>
<tr>
<td>Tuctoria greenei</td>
<td>FE/CR/List 1B</td>
<td>Vernal pools</td>
<td>Associated with larger/deeper vernal lakes and seasonal stock ponds with long duration ponding. Suitable habitat lacking on site except for one seasonal stock pond</td>
</tr>
</tbody>
</table>

**STATUS:**
State: CE=State endangered, CR=State listed as rare.
CNPS (California Native Plant Society): List 1A=Species considered extinct, List 1B=Species considered rare, threatened, or endangered in California and elsewhere, List 3: More information needed; a review list, List 4=Species of limited distribution; a watch list.

**OCCURRENCE:**
Onsite surveys in 1990 and 1991 by Western Ecological Services Company

Although no state or federally listed rare, threatened, or endangered plants were observed within the project area during the 1990 and 1991 botanical surveys, two other special-status species, shining navaretia (CNPS 1B) and possibly Henderson’s bent grass (FSC, CNPS List 1B) were found on the property. However, because rainfall for the winter of 1989 to 1990 (and for the preceding three years) was below normal, it is possible that additional special-status plants on the site flowered in extremely small numbers or not at all, and were therefore not observable. In 1990, several known populations of special-status plants in the vicinity were far smaller than in previous years. For example, on the nearby Flying M Ranch, no San Joaquin Valley Orcutt Grass (*Orcuttia inaequalis*) was observed in a known location, and only a few Colusa Grass (*Neostapfia colusana*) plants were observed in a location where there had been millions in previous years (R. Holland, pers. comm., as reported in WESCO 1991). An immature specimen of another unidentified species could also not be positively identified during the previous surveys, but considered potentially to be a federally proposed threatened species, Keck’s checkerbloom (*Sidalcea keckii*). Information on this and other special-status species known or suspected of occurring on the property are discussed below.

Surveys conducted in 1999 by EIP Associates (1999b) on the adjacent Smith Trust lands/proposed UC Merced/Community Planning Area identified six species of special-status plants during a more favorable rainfall year. These six species included the two special-status species identified on the property during the 1990-91 surveys by WESCO. These plant species include:

- Henderson’s bent grass;
- shining navaretia;
• succulent owl’s clover;
• dwarf downingia;
• Colusa grass; and
• San Joaquin orcut grass.

**Henderson’s bent grass** (*Agrostis hendersonii*) is a native annual grass between 6 and 70 cm in height. It has a reddish coloration. On the UC Merced site, this species was found in a limited number of the sampled vernal pools, primarily on the eastern portions of the study area. The WESCO studies identified *Agrostis microphylla* as occurring on the project site. Henderson’s bent grass was formerly identified as a subspecies of *Agrostis microphylla*. The WESCO data does not provide a sufficient discussion of this observation to determine if the plants observed were Henderson’s bent grass or the more common species, *Agrostis microphylla*. The plants were apparently found in several of the vernal pools on the project site.

**Shining navarretia** (*Navarretia nigelliformis* spp. *radians*) is an annual vernal pool plant species with yellow flowers. It is found primarily associated with vernal pools and open clay flats. On the project site, it is expected to occur primarily in the pools, swales, and sparsely vegetated high clay soils associated with the Hopeton and Raynor soil series (see Figure 4.5-2, *Yosemite Lake Soil Map*).

**Succulent owl’s clover** (*Castilleja campestris* ssp. *succlenta*) was not identified during the 1990-91 surveys on the project site. However, this species is widely distributed within the adjacent UC Merced/University Community Planning Area (EIP 1999b), including vernal pools bordering the project site. Therefore, this species is assumed to be present on the project site.

A single individual of a species of **checkerbloom** was collected during WESCO's May, 1991 site visit, but was not observed during WESCO’s 1990 surveys, possibly because of grazing during that year. The checkerbloom was observed in low numbers on the high clay and slightly alkaline content Raynor and Hopeton soils with a sparse cover of non-native grasses. The specimen was sent to Dr. Steven Hill, an expert on the genus *Sidalcea*, who could not positively identify the collection because of its immature state. However, Dr. Hill believed there is a possibility that the unidentified checkerbloom was Keck’s checkerbloom (*Sidalcea keckii*). *Sidalcea keckii* was listed by the FWS as an endangered species in February 2000. Limited information is known about *Sidalcea keckii*. This annual plant is known from two populations, one in Tulare County and one in Fresno County, and appears to be associated with serpentine-derived clay soils in the foothill annual grasslands of the central western Sierra Nevada (50 CFR Part 17, Volume 65, Number 32, February 16, 2000).
4. Environmental Analysis

Yosemite Lake Soil Map

Source: LSA, from WESCO Section 404 Jurisdictional Study, Soil Map

The Planning Center • Figure 4.5-2
Three species of checkerbloom were identified on the UC Merced site (EIP 1999b). These species were *S. calycosa*, *S. hartwegii*, and *S. hirsuta*. All three species closely resemble and have ranges that overlap with *S. keckii*. Given the findings of the UC Merced studies, it is most likely the unidentified checkerbloom was one of these three species; however, additional studies will be needed to confirm the identity of the *Sidalcea* species on the project site.

**Dwarf downingia**, (*Downingia pusilla*) was identified in a number of vernal pools on the UC Merced site in vernal pools characterized by sparsely vegetated bottoms and with red, acid-based soils such as Redding gravelly loam 0% to 8%. Similar vernal pool habitats occur on the project site and it is assumed this species is also present, although it was not identified during the previous surveys in 1990 and 1991.

**Colusa grass** (*Neostapfia colusana*) and **San Joaquin orcutt grass** (*Orcuttia inaequulis*) are typically associated with large, deep vernal pools with long inundation/wet periods. Typically, the pools in which these two species occur have limited vegetation growth in the bottoms of the pools. On the UC Merced site, Colusa grass was found in several sandy-bottomed stock ponds and in one large clay-bottomed vernal pool. These larger-type pools are not present on the project site. The only aquatic habitat that may have the prolonged inundation period is a <0.1 acre stock pond between Fahrens Creek and the Crocker-Huffman Canal in the North Central portion of the site (ID number H1000). Given the lack of suitable, large pool habitat, it is assumed these species are not likely present on the project site; however, appropriately timed and thorough surveys will be needed to confirm this conclusion prior to approval of specific development plans for this site.

The FWS (1999) also listed the federally endangered, **hairy Orcutt grass** (*Orcutta pilosa*) as another species that may occur in or be affected by projects in the Yosemite Lake USGS Quad: 421B, where the project site is located. As with Colusa grass and San Joaquin orcutt grass, this species is typically associated with the larger, playa type pools which are lacking on the site. It is presumed that populations of the species do not occur.

**Animals**

Special-status animal species, their status, habitats, and occurrence in the project area or vicinity are summarized in Table 4.5-2, *Special-Status Animals Potentially Occurring in The Project Area*.

Most vernal pools in the project area were observed to support one or more species of fairy shrimp during the April 3 and 4, 1991 surveys. The two species identified were **vernal pool fairy shrimp** (*Brachinecta lynchi*) and **linderiella** (*Linderiella occidentalis*). The vernal pool fairy shrimp is federally threatened and was the most widespread abundant fairy shrimp species, being present in almost all vernal pools and in quiet pools in some of the constructed irrigation canals. This species was also identified during the brief surveys of the site in the winter of 2000.
### TABLE 4.5-2
SPECIAL-STATUS ANIMALS POTENTIALLY OCCURRING IN THE PROJECT AREA

<table>
<thead>
<tr>
<th>Scientific Name/ Common Name</th>
<th>Status</th>
<th>Habitat/Life History</th>
<th>Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desmocerus californicus dimorphus Valley elderberry longhorn beetle</td>
<td>FT</td>
<td>Riparian. Adults feed and lay eggs on elderberry shrubs.</td>
<td>Absence of elderberry in the project area precludes presence.</td>
</tr>
<tr>
<td>Lytta molesta Molestan blister beetle</td>
<td>FSC</td>
<td>Adults feed on a variety of flowers; subterranean larvae feed on bee larvae. Seasonal distribution April to July.</td>
<td>Potential habitat is present and the species has been reported in the vicinity.</td>
</tr>
<tr>
<td>Branchinecta lynchii Vernal pool branchinecta</td>
<td>FT</td>
<td>Vernal pools. Grassed swale, earth slump, or basalt-flow depression pools in unplowed grasslands. Also sandstone depression ponds. Occurs at temperatures of 6-20 degrees Celsius.</td>
<td>Present in most vernal pools on-site during April 1991 surveys.</td>
</tr>
<tr>
<td>Branchinecta conservatio Conservancy fairy shrimp</td>
<td>FE</td>
<td>Vernal pools. Typically associated with large, often several acre vernal pools. Known distribution limited.</td>
<td>Potential habitat is present, although the vernal pools on the site tend to be small and not of the size associated with this species.</td>
</tr>
<tr>
<td>Lepidurus packardi Vernal pool tadpole shrimp</td>
<td>FE</td>
<td>Vernal pools. Seasonally astatic pools and ponds.</td>
<td>Potential habitat is present; not identified on-site during April 1991 surveys.</td>
</tr>
<tr>
<td>Lampetra hubbi Kern brook lamprey</td>
<td>FC/CSC</td>
<td>Aquatic. Known to the San Joaquin and Kern River systems.</td>
<td>Not expected in discontiguous aquatic habitats of the project site.</td>
</tr>
<tr>
<td>Oncorhynchus tshawytscha Winter-run chinook salmon</td>
<td>FE/CE</td>
<td>Aquatic. Known to the Sacramento River systems.</td>
<td>Not expected in discontiguous aquatic habitats of the project site.</td>
</tr>
<tr>
<td>Oncorhynchus mykiss Central Valley steelhead ESU</td>
<td>FT</td>
<td>Aquatic.</td>
<td>Not expected in discontiguous aquatic habitats of the project site.</td>
</tr>
<tr>
<td>Hypomesus transpacificus Delta smelt</td>
<td>FT/CT</td>
<td>Aquatic. Known only to tidally-influenced portions of the Bay-Delta.</td>
<td>No suitable habitat is present on the project site.</td>
</tr>
<tr>
<td>Pogonichthys macrolepidotus Sacramento splittail</td>
<td>*</td>
<td>Aquatic.</td>
<td>Not expected in the San Joaquin River drainage system.</td>
</tr>
<tr>
<td>Ambystoma californiense California tiger salamander</td>
<td>FSC/CSC</td>
<td>Grassland and grassy understory of valley foothill hardwoods. Frequents quiet waters of temporary rain pools, ponds, lakes, reservoirs, and streams.</td>
<td>Potential habitat is present. Identified on adjacent Smith Trust lands breeding in several stock ponds and larger vernal pools. On site pools and stock pond do not appear to have sufficient hydroperiod for successful breeding.</td>
</tr>
<tr>
<td>Rana aurora draytonii California red-legged frog</td>
<td>FT</td>
<td>Grasslands and woodlands. Frequents ponds, lakes, and streams.</td>
<td>Not likely to occur since species has not been found in suitable habitat in the area.</td>
</tr>
<tr>
<td>Gambelia silus Blunt-nosed leopard lizard</td>
<td>FE/CE</td>
<td>Grassland, alkai flats, and washes. Seek refuge in the burrows of small animals.</td>
<td>Marginal habitat of the project area is not likely to support the lizard.</td>
</tr>
</tbody>
</table>
## TABLE 4.5-2
**SPECIAL-STATUS ANIMALS POTENTIALLY OCCurring IN THE PROJECT AREA**

<table>
<thead>
<tr>
<th>Scientific Name/ Common Name</th>
<th>Status</th>
<th>Habitat/Life History</th>
<th>Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Thamnophis couchi gigas</em> Giant garter snake</td>
<td>FT/CT</td>
<td>Aquatic. Low gradient streams, freshwater sloughs, and irrigation canals in the San Joaquin and Sacramento Valleys.</td>
<td>Aquatic habitats of the project area would not be expected to support the garter snake. Isolation from known populations, high water velocity, little emergent vegetation, and channel maintenance likely preclude species presence.</td>
</tr>
<tr>
<td><em>Ardea herodias</em> Great blue heron</td>
<td>*</td>
<td>Marshes, vernal pools, lake margins, rivers, irrigation ditches and tidal flats. Colonial nester; rookeries are located in tall trees, cliffsides, and sequestered sites on marshes.</td>
<td>Suitable foraging and nesting habitat for the heron. An active heron/egret nesting colony was identified in a eucalyptus grove during surveys.</td>
</tr>
<tr>
<td><em>Casmerodius albus</em> Great egret</td>
<td>*</td>
<td>Marshes, vernal pools, lake margins, rivers, irrigation ditches.</td>
<td>An active heron/egret nesting colony was identified.</td>
</tr>
<tr>
<td><em>Branta canadensis leucopareia</em> Aleutian Canada goose</td>
<td>FT</td>
<td>Marshes, vernal pools, lake margins, rivers, irrigation ditches.</td>
<td>Not likely to occur since the traditional use areas in Merced County are located near the San Joaquin River.</td>
</tr>
<tr>
<td><em>Aquila chrysaetos</em> Golden eagle</td>
<td>CSC</td>
<td>Forages over open terrain. Nests on cliffs and trees.</td>
<td>Suitable foraging habitat for breeding and wintering. One individual observed in 1991.</td>
</tr>
<tr>
<td><em>Haliaeetus leucocephalus</em> Bald eagle</td>
<td>FE/CE</td>
<td>Widespread during migration. Winters at lakes, reservoirs, rivers, and some rangelands and coastal wetlands.</td>
<td>Potential wintering habitat present; However, no local records exist. Could be expected as a rare visitor during migration and winter.</td>
</tr>
<tr>
<td><em>Elanus caeruseus</em> White-tailed kite</td>
<td>*</td>
<td>Open grassland, meadows, or marshes for foraging and dense-topped trees for perching and nesting.</td>
<td>Suitable foraging and potential nesting habitat is present. One pair was observed along Fahrens Creek (April, 1991) but no nest was found. One individual observed over irrigated pasture (April, 1991).</td>
</tr>
<tr>
<td><em>Numenius americanus</em> Long-billed curlew</td>
<td>CSC</td>
<td>Migration: Grassland, marshes, tidal flats, coastal beaches during migration and winter. Elevated interior grasslands during breeding season. Only breeding population/habitat is presently of concern.</td>
<td>Suitable foraging habitat for wintering and migratory birds. One individual observed (April, 1991).</td>
</tr>
<tr>
<td><em>Agelaius tricolor</em> Tricolored blackbird</td>
<td>FSC/CSC</td>
<td>Freshwater marshes and adjacent uplands during breeding season; flooded lands, pond margins, grassy fields during non-breeding season.</td>
<td>Observed foraging in grasslands and margins of vernal pools; small numbers observed, and likely nest adjacent to Main Canal east levee. Nesting colony reported from Yosemite lake.</td>
</tr>
</tbody>
</table>
4. Environmental Analysis

<table>
<thead>
<tr>
<th>Scientific Name/ Common Name</th>
<th>Status</th>
<th>Habitat/Life History</th>
<th>Occurrence</th>
</tr>
</thead>
</table>
| Perognathus inornatus inornatus  
San Joaquin pocket mouse      | FSC/CSC| Grassland, blue oak savanna and alkali sink areas, friable soils | Hardpan soils that encompass much of the project area and prolonged soils saturation likely preclude presence. Potential habitat is present in lowland areas along Fahrens Creek. However, no pocket mice were found. |
| Vulpes macrotis mutica       
San Joaquin kit fox           | FE/CT  | Grasslands and savanna communities. | Suitable habitat present, but not known to occur at the project site. FWS (1998) includes site as movement corridor between populations to the south and west of Merced and southeastern Stanislaus County. |
| Taxidea taxus                
American badger               | CSC    | Grasslands and savanna communities. | Suitable habitat is present and individuals have been observed at the adjacent UC Merced site. |
| Dipodomys nitratoides exilis  
Fresno kangaroo rat           | FE/CE  | Grasslands and savanna communities. | Not likely to occur due to lack of suitable habitat and outside of known range. |
| Dipodomys heermanni dixoni   
Merced kangaroo rat           | FSC    | Grassland and savanna communities. Need fine, deep well-drained soil for burrowing. | Hardpan soils likely preclude presence. Potential habitat is present in lowland areas along Fahrens Creek. However, no kangaroo rats were found. Individuals were captured at the adjacent UC Merced site. |

Federal: FE=Federally endangered, FT=Federally threatened, FSC=Federal species of concern*.
State: CE=State endangered, CT=State threatened, CSC=State species of special concern*
* FSC and CSC: Species of special concern do not have legal protection under state of federal Endangered Species Acts. However, some species in these categories may be considered as threatened or endangered under CEQA Section 15380 standards. Special concern species typically fall into one or more of the following categories: a) biologically rare, restricted in distribution, or declining throughout the taxon’s range; b) populations that may be peripheral to major portion of taxon’s range, but threatened with extirpation in California; c) taxa closely associated with a habitat that is declining at an alarming rate (e.g. vernal pools).

Linderiella is not listed as threatened or endangered. A second federally endangered vernal pool crustacean, the **vernal pool tadpole shrimp** (*Lepidurus packardi*) could also be present although it was not identified during the 1991 surveys. Its presence cannot be ruled out because the field surveys were not conducted to USFWS protocols, which require two seasons of surveys to demonstrate absence. This species was also found in three vernal pools on the UC Merced site where it co-occurred with the vernal pool fairy shrimp (EIP 1999a). Pools in which the species was found are similar in size and characteristics to pools on the site and it is presumed that the species would occur on the project site as well.

The **midvalley fairy shrimp** (*Branchinecta mesovaliensis*) was also identified in about 8% of the sampled pools on the UC Merced site where it co-occurred with both the tadpole shrimp and vernal pool fairy shrimp. This species does not have any current state or federal status and has
only recently been officially recognized as a distinct species. Although not identified during the previous on-site surveys, it is assumed this species is also present on the project site.

The **Conservancy fairy shrimp** (*Branchinecta conservatio*) was also found on the UC Merced study area. The Conservancy fairy shrimp is a federally-listed endangered species with a very restricted known distribution. It is known from six, disjunctive populations, including Tehama, Butte, Glenn, Solano, Merced, and Ventura counties where it appears to be restricted to larger, deeper, vernal pools and vernal lakes that typically have a long inundation duration and turbid water. Given the lack of the large, playa-type vernal pools on the project site, this species is presumed to be absent.

Surveys were also conducted in 1990 and 1991 to assess the potential presence of other special-status species, in particular, the **California tiger salamander** and other special-status amphibians such as the **western spadefoot toad**. Neither of these species was identified. Bullfrogs and Pacific tree frogs (*Hyla regilla*) were the only amphibian species observed. Pacific tree frogs are a common and widespread species in temporary and some permanent water bodies in grassland and woodland habitats in most of the state. Bullfrogs are not native to California. This introduced species from the southeastern United States is widespread throughout the state and is a major predator and competitor of many native aquatic reptiles and amphibians. Where bullfrogs are abundant, many native species are usually absent. On the project site, most of the vernal pools are relatively shallow (likely because of historic farming and ranching activities on the site) and do not appear to retain ponded water for sufficient periods to allow full development of tiger salamander or spadefoot toad tadpoles. The canal marshes and the one stock pond provide this adequate ponding, but these areas are essentially permanent water bodies inhabited by substantial numbers of bullfrog larvae and adults. Metamorphosed juvenile bullfrogs have also been observed some distance away from the canal marshes into the vernal pool habitats on the lower slopes above the canal. While tiger salamanders were identified in a few stock ponds on the UC Merced site, the limited availability of suitable breeding habitat and the presence of the bullfrogs suggest that the project site is unlikely to provide significant breeding habitat for the tiger salamander. However, given the presence on the adjacent property, tiger salamanders may occasionally attempt to breed on the site or live in underground rodent burrows where adults spend most of their life.

The project site as well as the UC Merced site lie in an area identified by the FWS (1998) in the *Recovery Plan for Upland Species in the San Joaquin Valley* as being a movement corridor for the **San Joaquin kit fox** (*Vulpes macrotis mutica*) that lies between known populations to the south and west of Merced and southeastern Stanislaus County. The FWS also has expressed concerns in relation to the UC Merced Campus about the potential for the **Fresno kangaroo rat** (*Dipodomys nitratoides exilis*) to be present in the area. Although neither species was identified on the UC Merced site and it is unlikely that a resident population of either species occupies the area (EIP 1999c), Vollmar (Ed. 2002) reports a number of reliable observations of kit fox in eastern Merced County. The potential importance of the continuous band of natural habitats and wildlife-compatible farmlands along the western edge of the valley in providing a linking corridor is still unknown and requires a more regional analysis approach. Although the kit fox and Fresno kangaroo rat were not identified, the field studies conducted at the UC Merced site (EIP 1999c) did identify the **Merced kangaroo rat** (*Dipodomys heermanni dixoni*), and the
American badger (*Taxidea taxus*), both a species of concern. Since habitat conditions are similar, it is presumed that populations of these two species likely exist at the nearby project site as well.

The valley elderberry longhorn beetle, blunt-nosed leopard lizard, giant garter snake, and bald eagle are listed animal species that potentially occur in this region. Absence of elderberry (host plants) precludes the presence of the valley elderberry longhorn beetle in the project area. Hardpan soils, prolonged soil saturation, and few burrows in the project area would not be expected to support the blunt-nosed leopard lizard. The site also lies north of this species’ generally accepted range. Perennial aquatic habitats of the project area, characterized by high water velocity, little emergent vegetation, regular channel maintenance, or isolation from known populations, do not provide suitable habitat for the giant garter snake. Finally, the bald eagle is a wide-ranging species that would be expected to occur only as a rare migrant or winter visitor.

Based on WESCO surveys, two federal species of special concern for listing are known to occur in the project area. These are the long-billed curlew and tricolored blackbird. The long-billed curlew occurs locally as a winter visitor and migrant. Presently, only breeding populations of this species (restricted to northeastern California) are of concern. In contrast, the tri-colored blackbird has been reported to nest in the vicinity of Yosemite Lake (colony size 400 to 1,000 birds; Beedy et al. 1991) and likely nests in small numbers in the project area. Tri-colored blackbirds (up to 20 at one time) were observed foraging in open grassland, vernal pool, and freshwater habitats. Several pairs were observed within the freshwater marsh community east of the Crocker-Huffman Main Canal in 1991.

Other special-status species observed during WESCO surveys include the great blue heron, great egret, golden eagle, and white-tailed kite. Although not a declining species, the heron and egret are colonial nesters that are vulnerable to significant reproductive failure if disturbed. The eucalyptus windrow located in proximity to the existing golf course was observed to support a heron/egret nesting colony or rookery (approximately 20 to 25 nests) in both 1990 and 1991. In recent years, the size of the rookery appears to be declining as the eucalyptus trees are dying or dead and major limbs capable of supporting nests have fallen. The golden eagle and white-tailed kite were observed foraging in the project area, but no nests were found.

The FWS (1999) listed several additional endangered and threatened species that may occur in or be affected by projects in the Yosemite Lake USGS Quad: 421B, where the project site is located. These species include: the threatened Aleutian Canada goose (*Branta canadensis leucopareia*), the threatened California red-legged frog (*Rana aurora draytonii*), the endangered winter-run chinook salmon (*Oncorhynchus tshawytscha*), the threatened Central Valley steelhead (*Oncorhynchus mykiss*), the threatened delta smelt (*Hypomesus transpacificus*), and the special-status Sacramento splittail (*Pogonichthys macrolepidotus*). These species have not been identified on the project site and given the present environmental conditions, it is presumed that populations of these species do not occur at the site.
4. Environmental Analysis

4.5.2 Regulatory Setting

Merced County General Plan

Biological resource related goals were identified in the Open Space/Conservation Element of the Specific Urban Development Plan EIR Guidance Package for Yosemite Lake Estates, adopted by the County in June 1998, as guiding principles for the planning and establishment process. These are listed below and analyzed in the impact discussion relative to the proposed SUDP.

The Open Space/Conservation Element of the Merced County General Plan contains goals, objectives, and policies pertaining to plant and animal resources of Merced County. Those goals, objectives, and policies that are relevant to the UCP area are presented in Table 4.5-3.

<table>
<thead>
<tr>
<th>TABLE 4.5-3</th>
<th>GOALS, OBJECTIVES AND POLICIES RELEVANT TO THE UCP AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 1:</td>
<td>Habitats which support rare, endangered or threatened species are not substantially degraded.</td>
</tr>
<tr>
<td>Objective 1A:</td>
<td>Rare and endangered species are protected from urban development and are recognized in rural areas.</td>
</tr>
<tr>
<td>Policy 1</td>
<td>Recognize as significant wetland habitats those which meet the definition of having a high wetland habitat value based on Adamus methodology and based on the Corps delineation method.</td>
</tr>
<tr>
<td>Policy 2</td>
<td>Continue to regulate the location, density and design of development to minimize adverse impacts and encourage enhancement of rare and endangered species habitats.</td>
</tr>
<tr>
<td>Policy 3</td>
<td>The redesignation of land from rural to an urban designation should occur in careful consideration of the potential impact on significant habitats and conformance with the Open Space Action Plan.</td>
</tr>
<tr>
<td>Policy 4</td>
<td>Urban designated areas should not include identified threatened species habitat areas unless specific provisions are made for their protection.</td>
</tr>
<tr>
<td>Implementation:</td>
<td>Where sensitive habitat areas are threatened by urban development or other activities, the County may use area plans in order to address resource, open space, land use, circulation, infrastructure, or conservation issues.</td>
</tr>
<tr>
<td>Policy 5</td>
<td>Urban uses, which could result in significant loss of sensitive habitat, should be directed to less sensitive wetland, wildlife, and vegetation habitat areas if possible.</td>
</tr>
<tr>
<td>Policy 7</td>
<td>In wetland areas, all public utilities and facilities, such as roads, sewage disposal ponds and gas, electrical and water systems, should be located and constructed to minimize or avoid significant loss of wetland resources.</td>
</tr>
<tr>
<td>Policy 8</td>
<td>Development approval adjacent to rare and endangered species habitat or within identified significant wetland should include mechanisms to ensure adequate on going protection and monitoring occurs.</td>
</tr>
<tr>
<td>Policy 9</td>
<td>Significant aquatic and waterfowl habitats should be protected against excessive water withdrawals which would endanger or interrupt normal migratory patterns.</td>
</tr>
</tbody>
</table>
4. Environmental Analysis

The Merced County General Plan also contains an Open Space Action Plan (OSAP, referred to in Policy 3, above). The OSAP contains a series of Sensitive Resource Mitigation Principles that “define goals for sensitive wetland, wildlife and vegetation resource mitigation measures and how to select appropriate measures for individual projects and to provide guidelines for successful implementation of those measures.” The Principles outline the following goals for wildlife mitigation:

1) A central goal of wildlife mitigation in the County will be to pursue a consistent, fair, and cost effective approach to wildlife mitigation that provides the greatest protection for the most sensitive resources.

2) Goals for significant wildlife areas will be to:
   - provide possible protection for designated significant habitat areas and to maintain or enhance their present value for wildlife;
   - in rare and endangered habitat areas, to avoid impacts to the extent possible, minimize or compensate for avoidable significant impacts and encourage voluntary efforts to enhance such areas for wildlife;
   - to the extent feasible, to channel future development to less sensitive habitat areas if consistent with other policies of the County;
   - improvement of the same habitats as those lost, but at an appropriate site elsewhere (in-kind, off-site); and
   - improvement of alternative habitat types on or adjacent to the project site (in-kind, on-site).

3) In preserving or restoring a sensitive habitat to benefit a particular species, it must be recognized that some departures from historic conditions may be necessary - but such departures should be minimized.

4) In selecting a mitigation option, priority should usually be given to improving or replicating natural ecosystem natural ecosystems rather than artificial ones.

5) The range of mitigation options will depend on the parcel size involved.

6) Mitigation options may be limited by the intensity of development on a parcel.

In addition to the above-described principles, the OSAP also contains recognition of the need for long-term monitoring to measure the effectiveness of various approaches to mitigation for plant and animal resources and sensitive habitats.

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over species that are formally listed as threatened or endangered under the federal Endangered Species Act (ESA). The primary protective requirement in the case of projects requiring federal permits, authorizations,
or funding is Section 7's requirement for federal lead agencies to consult (or “confer” in the case of proposed species) with USFWS to ensure that their actions do not jeopardize the continued existence of threatened or endangered species.

In addition to Section 7 requirements, Section 9 of the ESA protects listed wildlife species from “take”. The term “take” is broadly defined as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct”. An activity is defined as a “take” even if it is unintentional or accidental.

Section 9 of the ESA provides less protection to listed plant species. Although Section 9 of the ESA and the applicable regulations restrict certain activities with respect to endangered and threatened plants, these restrictions are much less stringent than those applicable to fish and wildlife species. The provisions prohibit the removal or malicious damage to or destruction of any listed plant species “from areas under federal jurisdiction.” Listed plants may not be removed, cut, dug up, damaged or destroyed from or on any other area (including private lands) in knowing violation of a state law or regulation.

An endangered plant or wildlife species is one that is considered in danger of becoming extinct throughout all or a significant portion of its range. A threatened species is one that is likely to become endangered within the foreseeable future.

California Department of Fish and Game

The California Department of Fish and Game (CDFG) has jurisdiction over state-listed endangered and threatened species. The state and federal lists are generally similar; however, a species present on one list may be absent from the other.

CDFG also maintains lists of Species of Special Concern, which are plants and animals that may have shown population declines, restricted distribution within the state, and/or are associated with habitats that are declining in California. These species, along with other special interest species, are inventoried in the California Natural Diversity Data Base (CNDDB). Impacts on special-status plants and animals may be considered significant under CEQA, depending on the particular circumstances.

Fish and Game Codes 1601/1603 require that CDFG be notified of any activity that could affect the bank or bed of any stream. Upon notification, the CDFG has the authority to execute a Streambed Alteration Agreement. CDFG does not have a formal definition of water courses under their jurisdiction. In the past, their practice has been to include any “blue line” stream shown on a USGS topographic map. However, jurisdiction may extend to any channel with a definable bank and bed that is capable of conveying water flow at any time of the year. Wetlands need not be present for CDFG to exercise its authority. On the project site, Fahrens Creek and the shores of Lake Yosemite would likely fall under CDFG jurisdiction.

U.S. Army Corps of Engineers

The Corps administers the Section 404 program on behalf of the Secretary of the Army. The Environmental Protection Agency (EPA) has a key role in the program. The EPA has the
authority to determine the scope of Section 404 jurisdiction, to issue guidelines on whether a
discharge of dredged or fill material will be allowed (Section 404(b)(1), 33 USC § 1344(b)(1) -
the “Section 404(b)(1) Guidelines”), and to prohibit a discharge in an area if the EPA determines
under Section 404(c) of the Clean Water Act, 33 USC § 1344(c), that the discharge will have
unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas
wildlife or recreational areas. The EPA can exercise its Section 404 (c) authority to veto a
Section 404 Permit that the Corps proposes to issue.

The Corps' Section 404 permit review involves “the consideration of the full public interest by
balancing the favorable impacts against the detrimental impacts” (33 CFR § 320.1a). The Corps
evaluates the probable impacts of the proposed activity and its intended use on the public
interest. This requires the Corps to carefully weigh the benefits reasonably likely to accrue
against foreseeable detriments (33 CFR § 320.4a). The Corps’ public interest analysis reflects a
wide variety of factors including land use, economics, considerations of property ownership, and
general needs and the welfare of people (33 CFR § 320.4a).

The Corps regulations address the relationship between the Corps and state and local land use
planning agencies. The regulations expressly state that “the primary responsibility for
determining zoning and local land use matters rest with state and local and tribal authorities”
(33 CFR § 320.4(j)(2)). The regulations direct that upon compliance with the Corps rules and
other applicable federal law, in the absence of “overriding national factors of the public interest”
that may be revealed during a permit application, a permit “will be generally issued following
receipt of a favorable state determination” (33 CFR § 320.4(j)(4)).

As part of the public review process, the regulations require the Corps to determine whether a
permit complies with the Section 404(b)(1) Guidelines found in 40 CFR § Part 230.33 CFR
§ 320.4(a)(1). The Section 404(b)(1) Guidelines prohibit the discharge of dredged or fill
materials to waters of the United States if there is a “practicable alternative to the proposed
discharge that would have less impact on the aquatic ecosystem, provided that the alternative
does not have other, more adverse environmental impacts” (40 CFR § 230.10a). Practicable
alternatives include activities that do not involve a discharge or involve a discharge at another
location. An alternative is “practicable” if it is “available and capable of being done after taking
into consideration cost, existing technology and logistics in light of overall project purposes”
(40 CFR § 230.10(a)(2)).

If the proposed activity would involve a discharge into a special aquatic site such as a wetland,
the Section 404(b)(1) Guidelines distinguish between those projects that are water dependent and
those projects that are not. A water dependent project is one that requires access to water to
achieve its basic purpose. A marina is an example of a water dependent project. A non-water
dependent project is one that does not require access to water for its basic purpose. A restaurant
is an example of a non-water dependent project.

The Section 404(b)(1) Guidelines establish two “presumptions” for non water dependent projects
that propose a discharge into a special aquatic site. The first presumption is that a practicable
alternative is available that does not involve discharging into a special aquatic site. The second
presumption is that all practicable alternatives to a proposed discharge into a special aquatic site
4. Environmental Analysis

are presumed to have less impact to aquatic resources. The applicant has the burden of clearly demonstrating that these presumptions do not apply in a particular case (40 CFR § 230.10(a)(4)).

A Memorandum of Agreement between the EPA and the Corps Concerning the Determination of Mitigation Under the Clean Water Act Section 404(b)(1) Guidelines (1990) (“MOA”) summarizes the thrust of the Section 404(b)(1) Guidelines as first to avoid impacts, second to minimize impacts and third to provide practicable compensatory mitigation for unavoidable impacts with a preference for on-site, in-kind mitigation and an overall no net loss of functions and values.

The Section 404(b)(1) Guidelines have substantive requirements apart from the “practicable alternative” standard. These include prohibiting discharges that cause or contribute to water quality standards, violate any toxic effluent limit under Section 307 of the Clean Water Act, jeopardize the continued existence of any endangered species or destroy or modify its critical habitat (40 CFR § 230.10(b)). The Section 404(b)(1) Guidelines also prohibit any discharge that causes or contributes to significant degradation of the waters of the United States.

State Water Resources Control Board/Regional Water Quality Control Board

Pursuant to Section 401 of the Clean Water Act, projects that require a Corps permit for discharge of dredge or fill material must obtain water quality certification or waiver from the Regional Water Quality Control Board (RWQCB) indicating that the project is consistent with state water quality standards. The RWQCB may choose to impose mitigation requirements even if the Corps does not. The state also maintains independent regulatory authority over the placement of waste, including fill, into waters of the State under the Porter-Cologne Act.

4.5.3 Methodology Related to Biological Resources

Information contained in this section is based on biological studies that were conducted on the property in 1990, 1991, 1996, and 2000 and review of and comparison of the previous surveys with the findings of the baseline environmental studies conducted on the adjacent proposed UC Merced/University Community Planning Area (EIP Associates 1999a, 1999b, and 1999c). The 1990 and 1991 studies were conducted by biologists from Western Ecological Services Company, Inc. (WESCO). These studies included detailed field surveys for special-status plants, amphibians, and vernal pool crustaceans and delineation of wetlands and other waters of the United States (Section 404 jurisdiction). The 1996 studies were conducted by Resource Management International (RMI) to reconfirm and refine the extent of wetlands/Section 404 jurisdiction on the property. The 2000 studies were conducted by LSA Associates, Inc. and primarily involved attempts to update the vernal pool crustacean surveys; however, the below normal and limited, late rainfall precluded completing comprehensive surveys. Updated information was also obtained from literature and existing environmental documentation pertinent to the study area (EIP Associates 1999a, 1999b, and 1999c; Vollmar 2002) and the California Natural Diversity Data Base (CNDDB 2002).
4.5.4 Impacts and Mitigation Measures

The following impacts are addressed to the level suitable for review of the proposed SUDP. In some instances, more detailed studies and analysis will be required when specific development projects are brought forward. The primary impacts of proposed development of the project site include:

- degradation or loss of vernal pool/swale/grassland habitat;
- loss of habitat for special-status plant species;
- loss of habitat for special-status animal species;
- degradation or loss of other wetland habitats;
- interfere with the movement patterns of wildlife;
- loss of heron/egret rookery;
- introduction of invasive exotic species;
- compliance with County of Merced biological resource guidelines; and
- loss of agricultural pasture land.

4.5.4.1 Significance Criteria

The proposed application represents the first step approving urban development on the property. Development of the property would result in the loss or substantial modification of the existing biological resource values on the site. These impacts may or may not represent significant adverse effects. The State CEQA Guidelines provide guidance for evaluating project impacts and determining their significance. CEQA defines a “significant effect on the environment” as “a substantial adverse change in the physical conditions which exist in the area affected by the project.”

The significance criteria related to biotic resources follow CEQA Guidelines (Section 15065) and policies of the County of Merced. The project's effects on biological resources would be considered significant if the project:

- Substantially diminishes habitat for fish, wildlife, or plants or threatens to eliminate a plant or animal community;
- Substantially affects a rare, threatened, or endangered plant or animal species (including those species that meet the definition of rare and endangered according under Section 15380 of CEQA), or the habitat of such species;
- Interferes substantially with the movement of any resident or migratory fish or wildlife species;
- Causes a fish or wildlife population to drop below self-sustaining levels; or
- Creates runoff that significantly impacts wildlife habitat.

4.5.4.2 Impact: Degradation Or Loss Of Significant On-Site Vernal Pool/Swale And Associated Habitats

Impact Analysis: Vernal pools and swales are a significant resource on the site. As described in the setting section, vernal pools are typically considered to be of high resource value for native
plants and animals, many of which are considered to be rare, threatened, and endangered species. The vernal pools on the site are known to support at least one federally-listed threatened species, the vernal pool fairy shrimp, and likely support several other special-status plant and animal species. The vernal pools are typically relatively small (average size approximately 0.01 acre) and widely distributed through the grassland portions of the site. Over 700 pools, comprising a total estimated acreage of 12.62 acres, have been identified on the project site. A total of 4.01 acres of wetland swales also exist on the project site. Swales in the project area either form hydrological connections between vernal pools or, in a few instances, are isolated.

Vernal pools occur in a mosaic of upland, grassland habitat. Although the vernal pool and swale communities comprise a relatively small percentage of the total site area (<5% of the total grassland habitat, but reaching densities in the range of 30% in localized areas), the surrounding uplands provide watershed supporting the pools and habitat for some insect species dependent upon vernal pool plants. Grassland areas around the pools and swales are thus an integral part of the vernal pool/swale system. Development in and around vernal pool habitats would result in a substantial and significant change in the ecological values of the site. Although specific site plans are not considered in this EIR, vernal pools habitats would be eliminated directly through development (grading, building). Even if vernal pool habitats were avoided, these habitats could be indirectly impacted through changes in water quality and hydrology:

- Summer irrigation either as direct runoff or through underground flow or seepage would adversely impact vernal pool/swale habitats. Vernal pool systems are adapted to summer drought or dry out and many endemic vernal pool species are adapted to and require this dry phase to complete their life cycle. Perhaps more importantly, the long dry period allows many native annuals characteristic of vernal pools to maintain a competitive advantage over other native and non-native wetland-adapted plants. Typically, vernal pools exist because of an impermeable soil layer, or duripan, that prohibits downward percolation. Most water movement or loss from the pools is through evaporation or lateral movement along the duripan. The vernal pools typically occur in depressions where the depth of the soils over the duripan is shallower. Since the duripan usually underlies the entire area supporting pools, excess water that is applied to the uplands may inundate or saturate the soils of retained pools which are some distance from developed, irrigated areas.

- Development in the watersheds of pool and swale complexes may significantly increase runoff entering the system because of the increase in impermeable surfaces (pavement, roofs, sidewalks, etc.). Increases in runoff could extend the flooded period of the pools causing a shift in species composition from the characteristic native annual plants to nonnative grasses and forbs, or even perennial native marsh species. Vernal pools are often flooded for 4 to 5 months of the year. A slight increase in the hydroperiod to 6 months of continual flooding could allow marsh species such as cattail (Typha spp.) to establish and take over a pool.

- Winter runoff containing herbicides, pesticides, or chlorine could also adversely effect vernal pools and associated flora and fauna. Many of the broad-leaf herbicides typically used on turf would affect endemic vernal pool plants. The vernal pools on the site also support endemic invertebrates such as the endangered vernal pool fairy shrimp, which could be
affected by pesticides and chlorine. Oil, grease, and heavy metals typically associated with urban runoff may also adversely impact vernal pool resources.

- Vernal pools need periodic disturbance, such as grazing or fire, to maintain the vigor of the endemic plants and to reduce competition and the build up of thatch from nonnative grasses. Simple preservation or setting aside of vernal pools does not guarantee the long-term viability of the system.

- Upland buffers are needed to provide a protected watershed and to support insects that pollinate some vernal pool plants.

Under the proposed SUDP, all of the vernal pool habitat on the site could be developed. This habitat covers 402 acres and supports approximately 17.2 acres of vernal pools, swales, and other associated seep wetlands. Avoidance of pools or establishment of small preserves on the property within the overall envelope of the development, while potentially feasible, would be difficult given the proposed development and the potential further isolation of the site's resources; therefore, these impacts are considered potentially significant.

- **Merced County Regulatory Policy**
  
  None are applicable.

- **Additional Regulatory Policies**
  
  The proposed project would be required to comply with applicable wetland permitting requirements established by agencies such as the Corps, RWQCB, CDFG, and FWS. The project applicant would also be required to comply with all applicable legislation related to wetland permitting, such as the Federal Clean Water Act, the California Fish and Game Code, the Porter-Cologne Water Quality Act, the Fish and Wildlife Coordination Act, and the Federal and State Endangered Species Acts. The following mitigation measures would ensure that appropriate mitigation is provided and that the project would meet all federal, State, and local requirements for impact mitigation and wetland restoration.

- **Additional Impact Evaluation**
  
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**
  
  4.5.1 Future site specific development plans shall be evaluated and designed to provide avoidance of vernal pool and swale habitats to the maximum extent practicable and in consideration of the indirect impact considerations discussed above. Open space zones should be designated to retain larger areas of concentrated vernal pool habitat on the higher portions of the property in the north eastern and eastern portions of the site that can be more readily
4. Environmental Analysis

protected from urban runoff and associated impacts. Open space zones should also be designated in a 500 foot wide zone along the northern edge of the property in order to provide a buffer between the proposed development area and bordering portions of the Virginia Smith Trust property, which would be set aside as a natural preserve as part of the proposed UC Merced and associated campus community development. For all onsite preservation areas, management plans shall be prepared and approved by the County and applicable resource agencies such as the USFWS and CDFG that provide for long term monitoring, maintenance, and management of the open space habitats. All site-grading plans shall be designed to prevent urban runoff from entering the vernal pool preserve areas.

4.5.2 No irrigation or ornamental landscape planting shall be allowed in the on-site avoidance/preserve areas. Limited public foot-access may be provided on a limited number of established and maintained trails. A funding mechanism shall be provided to maintain all trails and provide enforcement of leash laws and provide enforcement to prohibit non-pedestrian access (except for maintenance vehicles). FWS, CDFG, and the County of Merced shall review and approve all public access plans as part of the precise development plan(s) for the site.

4.5.3 For unavoidable impacts to vernal pool complex habitats, the FWS and other resource agencies typically require a combination of preservation of existing vernal pool complex habitats and restoration or construction of new vernal pool/swale habitat. At a minimum, the project applicant shall provide a 2:1 preservation to impact ratio and a 1:1 construction to impact ratio prior to or concurrent with impacts to vernal pool habitat. All ratios will be based on the acres of wetland (pool, swale, seep, etc.) habitat impacted. These requirements may be reduced if additional on-site avoidance is provided consistent with Mitigation Measure 4.5.1. The on-site avoidance and off-site mitigation shall also conform to the following guidelines and requirements unless prior approval is obtained from the County, Corps, FWS, CDFG, and RWQCB:

- Preservation and construction mitigation should be limited to northern hardpan vernal pool types, preferably occupying a similar range of soil types as are present on the project site.

- Preservation and construction should preferably be located in eastern Merced County or a similar geographic region extending from Stanislaus County on the north to Madera County on the south. As much as practicable, the mitigation areas should be consistent with the conservation strategies which are expected to be developed as part of the Eastern Merced County Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP).
4. Environmental Analysis

- As much as practicable, the mitigation areas should preserve large contiguous block of habitat and restored/constructed habitats should be contiguous with blocks of preserved natural habitats.

- Mitigation areas shall be established in perpetuity through dedication of fee title or conservation easement to an approved environmental organization. A conservation easement shall also be provided in the name of an approved party, preferably the CDFG, or other approved management agency consistent with the proposed HCP/NCCP if it is implemented and adopted.

- The applicant shall prepare and obtain approval for a long term management plan and shall provide adequate long term funding in the form of an endowment which can only be used for the benefit of the mitigation areas to the approved conservation organization.

- All proposed mitigation plans and requirements must be reviewed and approved by the agencies with jurisdiction over the vernal pool resources. These agencies include the County of Merced, FWS, CDFG, Corps, and RWQCB.

4.5.4 Participation in an approved regional conservation/mitigation bank, if approved by applicable regulatory agencies may substitute for situations provided above. The State of California, FWS, Corps, and EPA have endorsed the use of conservation banks as a means to accomplish resource management goals. The State has published its “Official Policy on Conservation Banks (Wheeler and Strock 1995) and the Corps, EPA, and FWS have established similar federal guidance for mitigation banking. These policies recognize that conservation banks provide a viable alternative to the current practice of requiring piecemeal mitigation for individual project impacts. Individualized mitigation projects that have little connection with their surrounding ecosystem are often much more prone to failure than a mitigation project which is incorporated into a larger, ecosystem-based conservation bank or regional conservation plan.

- **Level of Significance After Mitigation:** Less than significant

4.5.4.3 **Impact: Loss Of Habitat For Sensitive Plant Species**

**Impact Analysis:** No state or federally listed rare, threatened, or endangered plants were positively identified within the project area during botanical surveys. However, it is possible that Keck’s checkerbloom (*Sidalcea keckii*), a federally-listed endangered species, may be present. Several other special-status plant species are known or suspected to occur on the property given their presence and documented distribution on the adjacent UC Merced/University Community planning area. Species known or suspected to occur include:

- Henderson’s bent grass;
- shining navaretia;
4. Environmental Analysis

- succulent owl’s clover; and
- dwarf downingia.

Two additional listed species, Colusa grass and San Joaquin orcut grass, found in the UC Merced/University Community planning area are not expected to occur on the project site because of the lack of the large vernal pool/vernal lake habitat with which these two species are dependent upon.

The status of the unidentified checkerbloom identified on the project site in 1991 is unknown. While the plant is likely a related species of checkerbloom, the presence of Keck’s checkerbloom cannot be discounted.

Development of the site would result in the loss of an unknown number of the four special-status plant species, plus other potentially occurring species, known or suspected to occur on the site; therefore, the impact would be considered potentially significant.

- **Merced County Regulatory Policy**
  
  None are applicable.

- **Additional Regulatory Policy**
  
  None are applicable.

- **Additional Impact Evaluation**
  
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.5.5 Prior to application for precise development plans for the area, the applicant shall conduct appropriately timed and intensive surveys to verify the assumptions and findings of this assessment. All surveys shall be conducted by a qualified botanist according to protocols acceptable to and approved by the FWS and the CDFG and shall be designed to determine the presence/absence and distribution of special-status plant species on the site. Results of the surveys shall be submitted to the County Planning Department, CDFG, and FWS for review and approval of the adequacy of the surveys.

  4.5.6 Where populations of Henderson’s bent grass, shining navaretia, succulent owl’s clover, and dwarf downingia or other similarly classified, non-listed plant species are found, they shall be avoided to the maximum extent practicable. Areas supporting special-status species designated for preservation shall be provided with appropriate buffers and incorporated into viable project open space reserves. Such buffers shall be a minimum 150 feet
4. Environmental Analysis

where development is in the down-slope watershed of the population and a minimum of 300 feet where development is in the up-slope watershed of the population. For development outside of the immediate watershed, but within the above described limits, of the plant population, the development setback buffers shall be a minimum of the watershed boundary plus 50 feet.

4.5.7 For unavoidable impacts to Henderson’s bent grass, shining navaretia, succulent owl’s clover, and dwarf downingia or other similarly classified plant species, the applicant shall develop and implement appropriate means for salvage and relocation of effected populations. The plan shall be incorporated as much as possible with and contain similar requirements as the vernal pool/swale construction/restoration described in Mitigation Measure 4.5.3 above. The plan should include measures to salvage topsoil from impacted pools and swales that can be used to inoculate restored and constructed vernal pools and swales. (The salvage of topsoil has been shown to be an effective measure for preserving impacted vernal pool flora and fauna (Northern and Holve-Hensill 2000, S. Foreman, LSA, personal experience).) The special-status species salvage and relocation plan shall be submitted for review and approval to the County of Merced Planning Department, FWS, and CDFG prior to approval of any final development plans for the SUDP area.

4.5.8 The preservation habitat described Mitigation Measure 4.5.3 above should to the maximum extent practicable contain populations of the special-status plant species present on the project site.

4.5.9 If Colusa grass, San Joaquin orcut grass, and Keck’s checkerbloom which are extremely uncommon plant species with limited known distributions, are found to be present as a result of the surveys required in Mitigation Measure 4.5.5 (or other verified observations), the applicant shall redesign the precise development plans to avoid the plant populations (unless prior approval is granted by the FWS, CDFG, and County of Merced) and provide appropriate buffers and natural habitat linkages to preserved viable habitat areas. Buffers shall be a minimum 250 feet where development is in the down-slope watershed of the population and a minimum of 500 feet where development is in the up-slope watershed of the population. For development outside of the immediate watershed, but within the above described limits of the plant population, the development setback buffers shall be a minimum of the watershed boundary plus 150 feet in order to minimize the direct and indirect of development on these species and their habitats from increased runoff, human and domestic animal disturbance, and other associated development activities.

- **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.5.4.4 Impact: Loss Of Habitat For Sensitive Animal Species

Impact Analysis: Most vernal pools in the project area were observed to support one or more species of fairy shrimp. The vernal pool fairy shrimp (*Brachinecta lynchi*) is federally threatened and was widespread at the project site. A second federally endangered vernal pool crustacean, the vernal pool tadpole shrimp, and the non-listed mid-valley fairy shrimp are assumed also to be present, although these species were not identified during on-site surveys. This assessment assumes that the Conservancy fairy shrimp is absent from the site because of the lack of suitable, large vernal pool/vernal lake habitat on the property.

Two species of special concern for listing are also known to occur in the project area. These are the long-billed curlew and the tri-colored blackbird. The long-billed curlew occurs locally as a winter visitor and migrant. Presently, only breeding populations of this species are of concern. However, the tri-colored blackbird has been reported to nest in the vicinity of Yosemite Lake (colony size 400 to 1,000 birds) and likely nests in small numbers in the project area. Tri-colored blackbirds (up to 20 at one time) were observed foraging in open grassland, vernal pool, and freshwater habitats. Several pairs were observed within the freshwater marsh community east of the Main Canal. The development of the project is not expected to significantly impact the population levels of either of these two species.

Other special-status species observed during on-site surveys include the great blue heron, great egret, golden eagle, and white-tailed kite. The golden eagle and white-tailed kite were observed foraging in the project area, but no nests were found. Other potentially occurring species on the property include the California tiger salamander and western spadefoot toad. Impacts to the great blue heron and great egret rookery are discussed below.

Impacts to special-status species designated under the State or federal Endangered Species Act would be subject to applicable statutes governing impact mitigation and as required by Mitigation Measure 4.5.3.

Development of the proposed project would damage the habitat of the species discussed above and would lead to the loss of some species; therefore, impacts would be considered potentially significant.

- **Merced County Regulatory Policy**
  
  None are applicable.

- **Additional Regulatory Policy**
  
  None are applicable.

- **Additional Impact Evaluation**
  
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant
4. Environmental Analysis

- **Mitigation Measures:**

  4.5.10 Prior to application for precise development plans for the area, the applicant shall conduct appropriately timed and sufficient intensity surveys to verify the assumptions and findings of this assessment with respect to vernal pool crustaceans and vernal pool amphibians. All surveys shall be conducted by a qualified biologist(s) according to protocols acceptable to and approved by the FWS and the CDFG and shall be designed to determine the presence/absence and distribution of these special-status animal species on the site. Results of the surveys shall be submitted to the County Planning Department, CDFG, and FWS for review and approval of the adequacy of the surveys.

  4.5.11 For unavoidable impacts to vernal pool crustacean habitat, the applicant shall develop and implement appropriate measures for salvage and relocation of affected populations. The plan shall be incorporated as much as possible with and contain similar requirements as the vernal pool/swale construction/restoration described in Mitigation Measures 4.5.3 and 4.5.7 above. The plan should include measures to salvage topsoil from impacted pools and swales that can be used to inoculate restored and constructed vernal pools and swales. (The salvage of topsoil has been shown to be an effective measure for preserving impacted vernal pool flora and fauna (Northern and Holve-Hensill 2000, S. Foreman, LSA, personal experience).) The special-status species salvage and relocation plan shall be submitted for review and approval to the County of Merced Planning Department, FWS, and CDFG prior to approval of any final development plans for the SUDP area.

  4.5.12 If the Conservancy fairy shrimp is an uncommon species with a limited known distribution and is limited to apparently narrow range habitat conditions, is found to be present as a result of the surveys required in Mitigation Measure 4.5.10 (or other verified observations), the applicant shall redesign the precise development plans to avoid the suitable habitat (unless prior approval is granted by the FWS, CDFG, and County of Merced) and provide appropriate buffers and natural habitat linkages to preserved viable habitat areas. Buffers shall be a minimum 250 feet where development is in the down-slope watershed of the population and a minimum of 500 feet where development is in the up-slope watershed of the population. For development outside of the immediate watershed but within the above described limits of the plant population, the development setback buffers shall be a minimum of the watershed boundary plus 150 feet in order to minimize the direct and indirect impacts of development on these species and their habitats from increased runoff, human and domestic animal disturbance, and other associated development activities.

  4.5.13 The preservation habitat described in Mitigation Measure 4.5.3 above should to the maximum extent practicable support populations of the special-status vernal pool crustacean species present on the project site.
4. Environmental Analysis

Level of Significance After Mitigation: Less than significant

4.5.4.5 Impact: Degradation Or Loss Of Other Wetland Habitats.

Impact Analysis: The other major wetlands on the site, except Fahrens Creek, are essentially man-induced or created wetland. These wetlands the canal marshes and pasture wetlands, are less sensitive to disturbances with respect to maintaining physical habitat quality and quantity. The canal marshes exist along the Crocker-Huffman Canal. These wetlands are primarily fed by water from the canal and up-slope development would have little effect on wetland extent. The functions and values of these wetlands, however, will be effected through increased runoff from urban development, reduced watersheds, and increased public presence in the immediate area.

Development of the site could also result in the direct loss of “pasture wetland” habitat in the existing irrigated north and south pastures. The environmental characteristics of these wetlands have been significantly altered. Except for values related to some for waterfowl feeding and resting, the pastures lack significant habitat for most endemic plants and animals such as are associated with the site’s vernal pools. As described in the setting section, the wetland areas are indistinguishable from the remaining pasture because of the existing land uses and ongoing irrigation. Although in a degraded condition, these wetlands represent potentially restorable vernal pool complex habitat and the wetland acreage is also significant in terms of the cumulative and historic loss of wetlands in the region and state; therefore the degradation or loss of these wetland habitats would be considered potentially significant.

The site also contains 2.84 acres of wetlands in the Fahrens Creek corridor, much of which could be impacted by future development.

- **Merced County Regulatory Policy**
  
  None are applicable.

- **Additional Regulatory Policy**
  
  None are applicable.

- **Additional Impact Evaluation**
  
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.5.14 Habitat replacement shall be provided under one of the following two options: 1) the applicant shall restore or construct additional acres of vernal pool/swale at a 0.5:1 impact to mitigation ratio in association with Mitigation Measure 4.5.3 above; or 2) construct new seasonal/perennial wetland habitat at a 1:1 impact to mitigation ratio at an approved location. Mitigation areas shall be
established in perpetuity through dedication of fee title or conservation easement to an approved environmental organization. A conservation easement shall also be provided in the name of an approved party, preferably the CDFG, or other approved management agency. A long term management plan and shall provide adequate long term funding in the form of an endowment which can only be used for the benefit of the mitigation areas to the approved conservation organization. Purchase of mitigation credits at an approved mitigation/conservation bank would fulfill this mitigation requirement. This location and implementation plan for this off-site measure shall be reviewed and approved by the CDFG, FWS, and County of Merced as part of the approvals for the precise development plans for the site.

4.5.15 All urban runoff shall be effectively pre-treated through passive water quality treatment measures such as wet ponds, grassy swales, etc. prior to discharge into any preserved open space wetlands or natural waterways. Design standards for effective treatment shall include treatment of urban runoff up to the 85th percentile 24-hour runoff event, 80% volume treatment by the method recommended in California Stormwater Best Management Practices Handbook, or other comparable metric. Water quality treatment measures shall be reviewed and approved by the RWQCB, CDFG, FWS, and County of Merced as part of the approvals for the precise development plans for the site.

4.5.16 As part of the precise development plans, the applicant shall provide appropriate buffer zones to minimize disturbance to wildlife using these wetland areas. The exact width of the buffers needs to be determined based on adjacent proposed land uses and specific project designs.

- **Level of Significance After Mitigation:** Less than significant

4.5.4.6 **Impact: Interference With Movement Patterns Of Wildlife And Localized Reduction In Wildlife Population**

**Impact Analysis:** Residential and associated commercial development of the project site would result in the alteration of normal terrestrial animal movements patterns across the site. The project site as well as the UC Merced site lie in an area identified by the FWS (1998) in the *Recovery Plan for Upland Species in the San Joaquin Valley* as being a movement corridor for San Joaquin kit fox (*Vulpes macrotis mutica*) between known populations to the south and west of Merced and southeastern Stanislaus County. This species was not identified on the UC Merced site and it is unlikely that a resident population occupies the area given the shallow rocky soils on much of the site that limit potential denning sites. The potential importance of the continuous band of natural habitats and wildlife-compatible farmlands along the western edge of the valley in providing a linking corridor is still unknown and requires a more regional analysis approach. However, since the project site includes normal terrestrial animal movement patterns across the site and has been identified as a movement corridor for the federally endangered San Joaquin kit fox, impacts caused by development would be considered potentially significant.
4. Environmental Analysis

- **Merced County Regulatory Policy**
  
  None are applicable.

- **Additional Regulatory Policy**
  
  None are applicable.

- **Additional Impact Evaluation**
  
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.5.17 Future development plans for this site should incorporate open space corridors along Fahrens Creek and along the Crocker-Huffman Canal. These two corridors would allow some movement through the site. For most wildlife, the blockage of movement by the residential development would result in localized reduction in wildlife populations. The corridors should include the canal, associated canal marshes/wetlands and a minimum 100 foot wide natural open space buffer. For all onsite open space areas, management plans shall be prepared and approved by the County and applicable resource agencies such as the USFWS and CDFG that provide for long term monitoring, maintenance, and management of the open space habitats.

  4.5.18 The applicant shall cooperate with the regional planning efforts for the UC Merced/University Community planning area to develop a regional plan for providing a linking corridor between known populations to the south and west of Merced and southeastern Stanislaus County.

- **Level of Significance After Mitigation:** Less than significant

4.5.4.7 Impact: Degradation Or Loss Of The Heron/Egret Rookery

**Impact Analysis:** Although not declining as species, the great blue heron (*Ardea herodias*) and great egret (*Casmerodius albus*) are colonial nesters that are vulnerable to significant reproductive failure if disturbed. The eucalyptus windrow located in proximity to the existing golf course was observed to support a heron/egret nesting colony (approximately 20 to 25 nests) in both 1990 and 1991, although the rookery use appears to be declining as the nest trees are dying and losing limbs. Project development is also likely to result in loss or abandonment of the heron and egret rookery. While this rookery location would be lost, the birds using the rookery would likely relocate to another nearby area. Abandonment and relocation of rookeries occurs naturally and could occur with or without the project. The project represents a loss of a rookery site, but unlikely a loss or reduction in heron numbers or populations. However, since
development of the site would cause the degradation or loss of the rookery, impacts would be considered potentially significant.

- **Merced County Regulatory Policy**
  None are applicable.

- **Additional Regulatory Policy**
  None are applicable.

- **Additional Impact Evaluation**
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**
  4.5.19 The applicant shall design and construct an artificial nesting structure for the rookery. The artificial rookery structure should be placed in the open space area in the eastern portion of the property on the northern shore of Yosemite Lake. The structure design shall be reviewed and approved by the CDFG and County of Merced.

  4.5.20 The rookery trees may not be removed or disturbed until after all active heron and egret nests in the rookery have fledged young or are no longer occupied for breeding activity.

- **Level of Significance After Mitigation:** Less than significant

4.5.4.8 **Impact: Loss Or Degradation Of Natural Habitats And Species Caused By Invasive Exotic Species**

**Impact Analysis:** Invasive exotic species are a significant threat to natural habitats and endemic species. A reported 35% to 46% of the species on the federal endangered species list are present partly or entirely because of the effects of invasive species (Wilcove et al. 1998 as cited in Jewell 2000). In vernal pool habitats, the heavy thatch from common introduced upland annual grasses as well as several species which invade the wetter portions of vernal pools can impair and displace native vernal pool plant and animal species. Therefore, development of the project site would be considered potentially significant.

- **Merced County Regulatory Policy**
  None are applicable.
4. Environmental Analysis

- **Additional Regulatory Policy**
  
  None are applicable.

- **Additional Impact Evaluation**
  
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.5.21 Common area and open space landscape plans shall be reviewed by a qualified biologist for plants which may pose a risk to vernal pool and associated habitats. Plants that are considered to be potentially invasive species by the California Exotic Pest Plant Council or other appropriate authority shall be eliminated from the landscape plans.

  4.5.22 As part of the management plan requirements under Mitigation Measures 4.5.3 and 4.5.14 above, the applicant shall develop, implement, and provide a long term funding for control of invasive vegetation at on-site and off-site wetland mitigation areas. The plan shall be reviewed and approved by the CDFG, FWS, and County of Merced prior to project development.

- **Level of Significance After Mitigation:** Less than significant

  4.5.4.9 Impact: Degradation Of Biological Resources On The Site Inconsistent With The County Of Merced Biological Resource Guidelines

  **Impact Analysis:** The proposed project would lead to the degradation of on-site biological resources including known and potential habitat for a number or rare, threatened, and endangered species. This habitat loss and degradation would be in conflict with Goal 2 and associated policies and the OSAP of the Merced County General Plan.

- **Merced County Regulatory Policy**
  
  None are applicable.

- **Additional Regulatory Policy**
  
  None are applicable.

- **Additional Impact Evaluation**
  
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant
**Mitigation Measures:**

4.5.23 The applicant shall be required to obtain all necessary state and federal permits/authorizations from agencies such as the Corps, FWS, RWQCB, and CDFG. The applicant shall also be required to implement all of Mitigation Measures 4.5.1 to 4.5.22.

**Level of Significance After Mitigation:** Less than significant

The implementation of mitigation measures described in this Draft EIR would require that appropriate off-site habitat is provided and that the requirements of the federal and State Endangered Species Acts are met. Mitigation Measures 4.5.1, 4.5.2, 4.5.6, 4.5.8, 4.5.9, 4.5.12, 4.5.13, and 4.5.17 provide for avoidance and protection of sensitive on-site habitat areas. Mitigation Measure 4.5.1 also establishes a natural open space buffer between the site and the adjacent Smith Trust Lands which are to be set aside as a preserve as part of the UC Merced campus. These measure are also consistent with the need for future applicants to avoid aquatic habitats to the maximum extent practicable in compliance with Section 404(b)(1) Alternatives Analysis. The implementation of these mitigation measures would address compliance with Merced County General Plan Goal 1 policies 1, 2, 3, and 4, implementation policies 5 and 7, and OSAP goals 1, 2, 3, and 6. Mitigation Measures 4.5.3, 4.5.7, 4.5.11, and 4.5.14 address compensatory (replacement) habitat mitigation in compliance with OSAP goals 1, 2, and 4.

**4.5.4.10 Impact: Loss of Agricultural Pasture Land**

**Impact Analysis:** The environmental characteristics of the irrigated pastures have been significantly altered. Except for values related to some for waterfowl feeding and resting, the pastures lack significant habitat for most endemic plants and animals such as are associated with the site’s vernal pools and nonnative grassland habitats. Loss or alteration of the pasture lands is not considered a significant effect in and of itself; therefore impacts would be considered less than significant.

- **Merced County Regulatory Policy**
  
  None are applicable.

- **Additional Regulatory Policy**
  
  None are applicable.

- **Additional Impact Evaluation**
  
  None are applicable.

- **Level of Significance Before Mitigation:** Less than significant

- **Mitigation Measures:** No mitigation measures are necessary

- **Level of Significance After Mitigation:** Less than significant
4.6 CULTURAL RESOURCES

A cultural resources survey report was prepared for the proposed project site by Charla Meacham Francis, M.A. The text of this report can be found in Appendix E. Ms. Francis was certified in Field Research by the Society of Professional Archaeologists in 1990 and continues certification by the Register of Professional Archaeologists.

4.6.1 Environmental Setting

4.6.1.1 Ethnographic Background

When western Europeans settled California, Yokuts Indians inhabited all of the San Joaquin Valley. Knowledge of Yokuts is somewhat limited because most of the Northern Valley Yokuts, in whose territory the project is situated, died in a malaria epidemic in the 1830s. The Yokuts had also been seriously affected by the efforts to “missionize” them by removal to Bay Area and South Coast Range missions in the early 1800s. By the time serious ethnographic data collection commenced, few Northern Valley Yokuts remained to interview. However, the principal sources of information are Kroeber (1925), Latta (1977), Powers (1877), and Wallace (1978:462-470). The Yokuts chronology has been divided into three periods:

Pre-Contact/Prehistoric Period (Unknown - 1769)

During this period, the Yokuts had a hunting and gathering economic subsistence relying primarily on acorn harvesting, hunting elk and small mammals, waterfowl, and an abundant supply of fisheries. This abundance of staples allowed the Yokuts to lead a semi-sedentary lifestyle with movement occurring during seed procurement, spring flooding, and in later years, disease (Wallace 1978:462-470).

The Spanish-Mexican Period (1769 - 1846)

This period saw an increase in California's population associated with Spanish missionization. Yokuts population may have declined as a result of, first, Yokuts forced relocation to the missions. The malaria outbreak of 1833 decimated 75% of the remaining Yokuts population.

The American Conquest Period (1846-1860)

This period began with the Bear Flag Revolt. The discovery of gold in the Sierra Nevada and with it one of the largest population influxes into this region severely impacted the Yokuts, and ultimately resulted in removal of all the remaining Yokuts from their tribal lands (Latta 1977).

The Yokuts were unique among California Indian groups because they were divided into true tribes, each with a name, dialect, and territory. Yokuts territory covered the entire San Joaquin Valley as well as portions of the higher elevations to the east and west above the valley floor. Villages were permanent and sedentary, occupied by up to several hundred persons. Principal settlements were on low mounds adjacent to the major rivers and streams (Wallace 1978:466). These villages may have been abandoned during the spring and early summer when snow melt...
4. Environmental Analysis

from the Sierra Nevada made their occupation impossible as much of the low-lying areas along
the rivers were inundated. The plains between the rivers were sparsely populated. Early
explorers noted village names along the major rivers only. Kroeber (1925:485) notes the
Chauchila resided in the plains along the channels of the Chowchilla River, with their principal
village Shehamniu a few miles below Buchanan. Along the Merced River, the term “Coconoon”
has been applied to inhabitants of the area, although a Spanish expedition in the early 1800s
recorded other specific village names (Wallace 1978:466). The origin of the name “Coconoon”
is unclear.

The exact nature of subsistence organization is unclear, but Mayfield (1993) demonstrated that
there was a partially transitory pattern. There was a heavy reliance on fish, waterfowl, large
mammals, and valley oak acorns (Wallace 1978:464). Bow and arrow, nets, baskets, pottery,
bedrock mortars, portable stone or wooden mortars, pestles, and various other technological
items including flaked stone, were used to obtain, process, prepare, cook, and store various
foods. Lithic materials were locally obtained cryptocrystalline silicates and obsidian that was
obtained through trade. Of these technological items, those that are non-perishable will most
likely be observed during archaeological survey.

Other archaeological indicators include locally darkened soil, know as a midden, which
represents an increased organic content due to the presence of ash from cooking/heating fires and
animal and plant residue from processing activities.

The Yokut people also built at least five types of dwellings (Wallace 1978:464-465; Napton
1992:59):

- Ceremonial house, earth-covered, large, up to 93 feet across.
- Family house, oval, hard-packed dirt floor, 25-40 feet across, tule mat covering.
- Bark house, samish.
- Shade house, flat roof on posts.
- Sweathouse, semi-subterranean, pole structure covered with hide and earth.

House remains, if visible during a surface inspection, are noted as shallow depressions.

4.6.1.2 Historical Background

Merced County was created from a portion of Mariposa County in 1855. Merced is the third
county seat, with the first being at the Turner and Osborn (later, Givens) Ranch on Mariposa
Creek while the second was at Snelling between 1857 and 1872 (Hoover et al. 1966).

Settlement and Agriculture

Settlement in the county commenced when four Mexican land grants were created in Merced
County in the early 1840s, all being on the San Joaquin River and the western part of what
became Merced County. However, the Gold Rush created the most pronounced impact on the region beginning in the later 1840s when gold was discovered in the Sierra Nevada foothills. The eastern Merced County area was situated on the travel routes to the Southern Mines in Mariposa County. Once the easy placer gold played out in the foothills, many saw the potential for agriculture in the valley.

Township 6 South, Range 14 East (the area of the project) was surveyed by the General Land Office beginning in 1853. On the 1855 GLO plat resulting from these surveys, Fahrens Creek is labeled Dry Creek. As early as 1853 a road is depicted on this map coursing in a southeasterly direction across Section 29 outside the project area. Little use is evident, since no structures, fields, creeks, or fences are shown on the southern half of this township plat, an area of 13,440 acres. On the 1874 county map, a road courses southeasterly across the northeast corner of Section 29 and the southwest corner of Section 28, in the project area.

Stock raising, especially in the western side of the county, and dry-land farming of wheat were the primary activities in early Merced history. When a railroad was contemplated and eventually constructed in 1872, other farming activities became common (Lewis Publishing Company 1892:69). In the later 1800s, a system of subdivisions called “colonies” was developed within several miles of the city of Merced. These colonies seem to be land-holding farming cooperatives owned by a number of individuals. The Rotterdam colony is partially within the project area (Cowell 1909). It comprised 3,190 acres, of which 1,500 were planted by 1892 (Lewis Publishing Company 1892:76).

Water Resources

Water was critical to agricultural development given the low rainfall amounts of the San Joaquin Valley. This was recognized by W. G. Collier, a civil engineer and surveyor, in 1870 in Merced County. Collier began work on what ultimately became the Main Canal of the Merced Irrigation District. The headworks of this canal system are on the Merced River between Snelling and Merced Falls, and ends at Yosemite Lake. This twenty-plus mile canal was begun from the river in 1870 as the Robla Canal Company. In 1873, Collier sold to the Farmers Canal Company, which expended a substantial sum ($180,000) to extend and maintain the system. After nine years and in financial straits, the men who made up the Farmers Canal Company sold to C.H. Huffman and Charles Crocker.

C.H. Huffman, originally from Louisiana, arrived in the county in 1868. He engaged in a variety of activities after arriving in California in 1849: miner, freighter, grain purchaser, wheat grower, land owner, rancher, banker, and water developer. Crocker was one of the “Big Four” who developed the Union Pacific transcontinental railroad; Crocker financed Huffman's idea to purchase, expand and improve the canal. In 1882, Crocker and Huffman formed the Merced Canal and Irrigation Company, and commenced the construction activities on the canal and Yosemite Lake dam that were completed in early 1888. Not only capable of irrigating 600,000 acres, the system also supplied water to the city of Merced.
4. Environmental Analysis

The importance of the system is conveyed by the following description (Lewis Publishing Company 1892:81):

The opening of the canal formally was made the occasion during 1888 for a great demonstration, and at the ceremony of turning in the water to the lake was participated in by some 5,000 or 6,000 people, including many from abroad. The Governor of the State and many officials . . . of the railroad company were amongst those who graced the event by their presence . . . . The two men whose enterprise and capital had made success possible were present to witness the happy result of their labors, and Charles Crocker turned on the water for the first time into the reservoir.

That same year, Huffman, who had been purchasing hundreds of acres of land in the county, deeded the land to a new company, the Crocker-Huffman Land and Water Company, which also became owner of the assets of the Merced Canal and Irrigation Company (Maniery 1992:9). Crocker owned slightly less than half of the new company, while Huffman owned the majority share. Once water was available from the canal for irrigation purposes, Huffman’s land became much more valuable and agricultural development boomed. The company sold land as “colonies” and included a water clause in the sale contract. Rotterdam was one of the first colonies.

Historic maps depict C. H. Huffman's ownership of the lands comprising most of the project area as early as 1885. Crocker-Huffman ownership is depicted on the 1909 Cowell map as being the entire current project lands with the exception of the Rotterdam Colony lands owned by the Holland California Land Company (Merced County Records 3555/86) and the small Section 27 acreage. After the canal and lake system was sold to the Merced Irrigation District in 1922 (Merced County Records OR 12/1), the small acreage in Section 27 around the upper end of Yosemite Lake was retained by the Crocker-Huffman Company.

4.6.2 Regulatory Setting

4.6.2.1 State Regulation

Public Resources Code, Section 5024.1 establishes a California Register of Historical Resources that is to maintain a list of historic resources identified within the state. The section further sets out criteria to determine the significance of properties and defines how to determine if a property is eligible. Further, PRC Section 5024.1, paragraphs (b) and (c) explicitly identifies the National Register criteria as the means for determining eligibility of historic properties for listing on the California Register. Consequently a property that is determined to be eligible for the NRHP, or that appears eligible for the NRHP is automatically assumed to be eligible for the California Register, or to appear eligible for the California Register.

These criteria are enumerated in section (c) as follows:

(c) A resource may be listed as an historical resource in the California Register if it meets any of the following National Register of Historic Places criteria:
4. Environmental Analysis

(1) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.

(2) Is associated with lives of persons important in our past.

(3) 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.

(4) Has yielded, or may be likely to yield, information important in prehistory or history. [PRC 5024.1 Section (c)]

The California Environmental Quality Act (CEQA), PRC Division 13. Sections 21083.2 and Section 21084.1, and the CEQA Guidelines CCR, Title 14, Chapter 3, Section 15064.5 further regulate and clarify California law regarding historic and archaeological cultural resources.

4.6.2.2 Merced County

Cultural Resources (Open Space/Conservation Element)

Cultural resources are discussed by the Merced County General Plan. The following objective and policies (Table 4.6-1) of the Open Space / Conservation Element apply to this topic.

<table>
<thead>
<tr>
<th>TABLE 4.6-1</th>
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<tbody>
<tr>
<td><strong>APPLICABLE OBJECTIVE AND POLICIES TO CULTURAL RESOURCES</strong></td>
</tr>
<tr>
<td>Objective 2E: Significant archaeological and cultural resources are recognized and managed.</td>
</tr>
<tr>
<td>Policy 21: Projects which affect archaeological sites and artifacts should be carefully managed to avoid damage.</td>
</tr>
<tr>
<td>Policy 22: The original architectural character of significant historic structures should be maintained whenever possible.</td>
</tr>
<tr>
<td>Policy 23: To discourage looting and vandalism, significant historical and archaeological resources should be subject to limited or controlled public access.</td>
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</table>

4.6.3 Methodology Related to Cultural Resources

An archaeological records search for areas within one mile of the project site was conducted at the Central California Information Center on 21 September 1998. The only recorded cultural resource is the Crocker-Huffman Canal. No previous archaeological survey had taken place on the project lands, although four surveys were documented within 1 mile of the exterior boundary of the project.

The record search also included a review of the National Register of Historic Places (Listed properties and Determinations of Eligibility 1996), the California Inventory of Historic Resources (State of California 1976), California Historical Landmarks (California Department of...
4. Environmental Analysis

Parks and Recreation 1990 and updates), California Points of Historical Interest (1992 and updates), Directory of Properties in the Historical Resources Inventory (1996), Caltrans Local Bridge Survey (1987), and some general historic texts and maps. The Yosemite Lake Water Tower, about a quarter-mile south of the project lands, is Point of Historical Interest MER-006 and is also listed in the California Inventory of Historic Resources. The Crocker-Huffman Canal, P-24-000488, was evaluated as eligible (rating - 2S2) by Maniery (1992). The other sources did not indicate any additional listed resources.

A letter describing the project was sent to the Native American Heritage Commission (NAHC) on 24 September 1998 and to the NAHC referrals, Lorie Planas and Stanley J. Alec on 20 October 1998. The envelope sent to Mr. Alec was returned unopened. No other response was received.

As part of the prefield research phase of the project, a limited number of repositories and individuals were contacted to identify known historic land uses and the locations of research materials pertinent to the project area. These repositories included the California State Library, California Room; and the University of California at Berkeley Water Resources Archive Center. The Merced County Historical Society was contacted by letter in February 1999. Suzanne Stewart, who had conducted a preliminary review of the proposed University of California Merced campus lands, was contacted regarding her findings. A physical inspection was made of the project parcels on various dates in October 1998. Other major sources of information consulted include United States Geological Survey Maps and miscellaneous local inventories and histories of historic and prehistoric resources.

Fieldwork occurred in four visits. The reconnaissance survey was done on 15 and 19 October 1998. A third field visit took place on 30 October 1990. A final survey occurred on 8 March 1999 to examine the relationship of the irrigation laterals.

Visual inspection of the project lands resulted in the inventory of twelve cultural resources including eight water conveyance-related resources (YL-2, 3, 5, 6, 7, 10, 11, and 12), two water impoundment resources (YL-8 and 9), a historic-era artifact scatter (YL-1), and a historic-era activity area of unknown function containing several features (YL-4). No prehistoric archaeological resources were discovered. Following is a discussion of these resources.

**YL-1.** This resource is composed of a small scatter of historic-era artifacts in a small vernal pool. All artifacts noted were: metal such as barrel hoop fragments, a shovel head, a metal hoop with spokes, an oil lamp top (crushed), and other sheet metal scraps, glass such as dark brown bottle base, a sun-colored amethyst condiment bottle base; and ceramics such as a dark brown glazed clay stoneware shard, and a white porcelain plate shard. Site size is about 20 feet in diameter. Set in open rangeland, the site appears undisturbed other than effects of cattle trampling. The site may be the remains of a historic camping event.

**YL-2.** This resource is composed of two adjacent bridge/spillway structures at the Crocker-Huffman Canal (Main Canal) terminus at Yosemite Lake. The property line was unknown during fieldwork at this particular location and, in case these features were on the project parcel, they were recorded. The bridges appear different in construction and perhaps age. Bridge #1,
4. Environmental Analysis

which crosses the old Le Grand Canal, is a poured concrete single-span structure with four under-weirs. The gate boards are missing and may no longer be in use. “MERCED FISH + GAME” is embossed on the west face of the concrete stationary gate. The aggregate concrete structure is 44.5 ft long (N-S) by 15.5 ft outside width (E-W). The deck railings are 5.5 in. thick. Bridge #2, located on the Main Canal, has been removed. It functioned as a spillway. In 1927 it had 9 openings 4.5 ft wide. In 1957 it was described as being 47 ft wide, having 9 openings 4.5 ft wide with concrete sidewalls and a 5 ft bridge across the spill-gate. Now the northern sidewall is breached and the superstructure is missing. What remains is of poured concrete, with cobble fill in the footings.

**YL-3.** This is an earth-berm ditch that appears to have taken water from the Crocker-Huffman Canal and flowed generally west-southwest towards what is now the Merced Golf and County Club. The terminus of the ditch is uncertain. It is possible that the segment recorded here is the entire ditch.

The ditch used natural contours and gravity for flow. Much of the ditch contains cobbles, but these are common in the area. Portions of the ditch are excavated into the side of a mudflow ridge. A riveted, rectangular iron box, 5 feet by 22 inches by 10 inches deep, was found in the ditch. Top width of the ditch is 4 to 5 feet, bottom width is 22 inches, depth is 12 inches, and the observed length is 1860 feet. It is quite eroded by siltation.

**YL-4.** This resource is composed of two coarse-rock-and-concrete features (Features 2 and 3), an earthen berm pond (Feature 1), scattered red bricks, and several metal artifacts. Feature 1 measures 50 ft. N-S by 32 ft. E-W with a 10-11 ft. berm and is up to 19 in. deep. It is somewhat silted in. It lies just downslope of a side-hill ditch. Feature 2 is a concrete trough, 51 ft. long, about 26 in. deep and 26 in. wide at the top. The outer, downhill wall (top is 12 in. wide) is battered. The uphill wall is subterranean. On the south end of Feature 2 are milled 5½ x 3¾ in. lumber posts about 5½ ft. tall embedded in the trough. Two other post impressions are in the inside wall, about 24 in. from the existing posts. At the north end is a concrete floor, with fine finish concrete around the edge. Feature 3 is a concrete foundation ruins, jumbled with many pieces. Wire rope was used as reinforcement in the concrete. Artifacts include red and gray bricks, metal strapping, iron ring, 2 iron boiler halves, various milled lumber pieces, galvanized trough (upside down), corroded iron pipe (1¾ in. outside diameter), 10½ x 33 in. thick gauge ferrous metal stove part and stove pipe, possible handmade cut-type nails. Charcoal pieces were noted. Thick grass cover may obscure other artifacts and/or features.

**YL-5.** This resource is the Crocker-Huffman (Main) Canal in the project area. It is a National Register of Historic Places-eligible resource with a rating of 2S2 (determined eligible for separate listing through a consensus determination between a federal agency and the State Historic Preservation Officer). This determination was based on an evaluation of the Merced Irrigation District Main Canal by Maniery (1992). A brief Primary Record attached to four USGS topographic quadrangles showing the Main Canal and its associated features within the Merced Irrigation District right of way is on file at the Central California Information Center, receiving the Primary Number P-24-000488. A brief history of the canal was presented above, and is discussed in greater detail by Maniery (1992), McSwain (1977), and the Lewis Publishing Company (1892), among others. Within the Yosemite Lake Estates project area, the canal is on
a 150-foot wide right-of-way owned by the Merced Irrigation District. A segment designated YL-5 was recorded as a supplement for the Main Canal segment in the project limits.

**YL-6.** The historic Lateral 103 of the Crocker-Huffman Canal is present on the project site. The USGS Yosemite Lake topographic quadrangle depicts a portion of the historic system that is now called the Upper Golf Lateral. In the project, laterals 103, 103.1, 103.2, 103.3, and 103.11 were in existence by 1913 and probably had been constructed much earlier. Additional historic research would be needed to identify the specific construction date(s). Of the historic system, only Lateral 103.1 is no longer clearly usable in the sense that it has not been maintained.

**YL-7.** The historic Lateral 101 of the Crocker-Huffman Canal is also present on the project site. The USGS Yosemite Lake topographic quadrangle depicts a portion of the historic system that is now called the Rotterdam Lateral. On the project site, Lateral 101 was in existence by 1913 and probably had been constructed much earlier. Additional historic research would be needed to identify the specific construction date(s). This lateral is overgrown while Lateral A, paralleling the section line and just north of the fence, is still used. Water reached the lateral from the Crocker-Huffman via Fahrens Creek. A concrete diversion dam on the creek turned water into both Lateral A and the Rotterdam Lateral. The diversion structure appears to be just outside the project area. The diversion structure is of concrete with four gates with removable wood flashboards, a concrete sill, and a 2-foot wide catwalk. The catwalk and abutments appear to be more recent, of finer concrete. The dam is approximately 60 feet in length.

**YL-8.** This resource is a pond formed by an earthen berm dam that impounds water from rainfall runoff. It is situated near the northern property boundary just west of the Main Canal. The berm is curved downslope (downstream), forming a roughly circular pond about 150 feet in diameter. Its age is unknown, but it is depicted on the 1962 USGS topographic quadrangle and may be older than that. Its function appears to be for cattle watering.

**YL-9.** A second pond has been breached near the middle of the earthen berm dam. The pond is somewhat triangular in shape, and backs up a 200-foot long lake behind the 300-foot long dam. Its age is unknown, but it is depicted on the 1962 USGS topographic quadrangle and may be older than that. Its function appears to be for cattle watering.

**YL-10.** This resource is a concrete lined irrigation ditch supplied by the Crocker-Huffman Canal of the Merced Irrigation District. Its age is unknown, although it is known that the adjacent field was leveled prior to 1942 (RRM Design n.d.:15). The ditch measures approximately 1,000 feet long, 45 inches wide at the top, 15 inches wide at the bottom, and 17 inches deep. At varying intervals (13 to 18 feet apart) along the ditch, there are rectangular openings in the side facing the field. These small openings are 6½ inches high by 4 inches wide.

**YL-11.** The historic Lateral 115 of the Crocker-Huffman Canal is also present on the project site. The USGS Yosemite Lake topographic quadrangle depicts a portion of the historic system which is now unnamed. Laterals 115 and 115.1 were in existence by 1913 and probably had been constructed much earlier. Additional historic research would be needed to identify the specific construction date(s). Water reached the lateral from the canal via a 12-inch Calco gate. Like the other laterals recorded on the project site, this one provided water to the Rotterdam
4. Environmental Analysis

Colony. This lateral appears to have a different flow layout now than in 1913. First, Lateral 115.1 where it is perpendicular to the Main Canal is not visible; it may have been abandoned and subsequently obliterated. Lateral 115.1 where it parallels the Main Canal appears to connect to the historic Lateral 117 that is recorded as YL-12. A second change appears to connect laterals 103 and 115. A ditch paralleling the Main Canal is continuous north to south from a gate on the Upper Golf Lateral to YL-12. Formerly, these were considered, and have been recorded as, three separate water delivery systems.

YL-12. A final historic lateral of the Crocker-Huffman Canal is recorded as YL-12. The lateral number on the 1913 Dockweiler map is unclear, but appears to be “117” and has been so designated for the purposes of this report. Again, the water delivery was to the Rotterdam Colony. While the 1913 map implies a diversion directly from the Main Canal, there is presently no obvious diversion. Currently, the water appears to come from Lateral 115.

4.6.4 Impacts and Mitigation Measures

4.6.4.1 Significance Criteria

The following standards derived from §15064.5 and Appendix G of the CEQA Guidelines set forth the standards for determining a significant impact to cultural and historic resources.

15064.5

(b) A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

(1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.

(2) The significance of an historical resource is materially impaired when a project:

(A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or

(B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020. I(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1 (g) of the Public Resources Code, unless the public agency reviewing the effects of the
4. **Environmental Analysis**

... project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

(C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

Additionally, pursuant to Appendix G of the CEQA Guidelines, an activity would have a significant, adverse effect if it disturbed any human remains, including those interred outside of a formal cemetery.

4.6.4.2 **Impact: Potential Loss Or Disruption Of Important Cultural And Historic Resources**

**Impact Analysis:**

- **Merced County Regulatory Policy**

  Please refer to Table 4.6-1, *Applicable Objective and Policies to Cultural Resources*, for the objective and policies of the Open Space / Conservation Element that apply to this topic.

- **Additional Regulatory Policy**

  Public Resources Code, Section 5024.1 establishes a California Register of Historical Resources that is to maintain a list of historic resources identified within the state. The section further sets out criteria to determine the significance of properties and defines how to determine if a property is eligible. Further, PRC Section 5024.1, paragraphs (b) and (c) explicitly identifies the National Register criteria as the means for determining eligibility of historic properties for listing on the California Register. Consequently a property that is determined to be eligible for the NRHP, or that appears eligible for the NRHP is automatically assumed to be eligible for the California Register, or to appear eligible for the California Register.

  These criteria are enumerated in section (c) as follows:

  (c) *A resource may be listed as an historical resource in the California Register if it meets any of the following National Register of Historic Places criteria:*

  (1) *Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage.*

  (2) *Is associated with lives of persons important in our past.*
(3) Embody 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.

(4) Has yielded, or may be likely to yield, information important in prehistory or history. [PRC 5024.1 Section (c)]

The California Environmental Quality Act (CEQA), PRC Division 13. Sections 21083.2 and Section 21084.1, and the CEQA Guidelines CCR, Title 14, Chapter 3, Section 15064.5 further regulate and clarify California law regarding historic and archaeological cultural resources.

- Additional Impact Evaluation

As noted above, reconnaissance surveys of the project site identified the following twelve potentially significant cultural features (see Table 4.6-2).

<table>
<thead>
<tr>
<th>Resource Number / Name</th>
<th>Characteristics</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>YL-1</td>
<td>Small artifact scatter, pre-dates 1925</td>
<td>In vernal pool</td>
</tr>
<tr>
<td>YL-2/Bridges at Yosemite Lake</td>
<td>Bridge/spillways near Main Canal terminus.</td>
<td>Le Grand Canal bridge intact; Main Canal spillway abutments only remain</td>
</tr>
<tr>
<td>YL-3</td>
<td>Side-hill ditch</td>
<td>May be associated with YL-4</td>
</tr>
<tr>
<td>YL4</td>
<td>Rock-and-concrete features, water impoundment, artifact scatter</td>
<td>Unknown function</td>
</tr>
<tr>
<td>YL-5/Crocker-Huffman Canal</td>
<td>Major irrigation development, ca. 1888</td>
<td>NRHP 2S2 rating; P-24-000488</td>
</tr>
<tr>
<td>YL-6/Lateral 103</td>
<td>Lateral irrigation ditch, ca. 1890</td>
<td>Upper Golf Lateral</td>
</tr>
<tr>
<td>YL-7/Lateral 101</td>
<td>Lateral irrigation ditch, ca. 1890</td>
<td>Rotterdam Lateral</td>
</tr>
<tr>
<td>YL-8/Upper Pond</td>
<td>Water impoundment</td>
<td>Unknown age, prior to 1962</td>
</tr>
<tr>
<td>YL-9/Lower Pond</td>
<td>Water impoundment</td>
<td>Unknown age, prior to 1962</td>
</tr>
<tr>
<td>YL-10/Field Ditch</td>
<td>Concrete irrigation feature</td>
<td>Unknown age</td>
</tr>
<tr>
<td>YL-11/Lateral 115</td>
<td>Lateral irrigation ditch, pre-1913</td>
<td></td>
</tr>
<tr>
<td>YL-12/Lateral 117 (?)</td>
<td>Lateral irrigation ditch, pre-1913</td>
<td></td>
</tr>
</tbody>
</table>

Additionally, four isolated artifacts were located within the project area. These isolated features were determined not to be important historical resources. Thus, no additional work is recommended for these features.

The resources identified in Table 4.6-2, Twelve Potentially Significant Cultural Features, attest to the importance of water containment and conveyance in the project area, where all
but one of the 12 documented resources involves water. One of these, the Crocker-Huffman Canal is a National Register of Historic Places-eligible property and is automatically listed on the California Register of Historical Resources. The remaining 11 resources have not been evaluated, thus it has not been determined if these are historical resources pursuant to Public Resources Code 15064.5). Further research would be necessary to determine the significance of impacts to historical resources pursuant to PRC 15064.5.

- **Level of Significance Before Mitigation:** Significant

- **Mitigation Measures:**

  4.6.1 Conserve all noted cultural resources on the project site prior to completing the following measures.

  4.6.2 Prior to submission of the Community Specific Plan, the project sponsor shall consult with Native Americans identified by Merced County to determine the identification and location of known and unknown cultural resources and traditional cultural properties.

  4.6.3 Following this consultation, and prior to submission of the Community Specific Plan, the project sponsor shall retain a qualified archaeologist to perform an assessment of the resources identified above and any additional resources identified during Native American consultation.

  4.6.4 If, after evaluation, a resource is judged to be of significance pursuant to CEQA Guidelines criteria, the project sponsor shall prepare a mitigation plan in accordance with appropriate guidelines and consultation with listed Native Americans, and submitted to the Merced County Planning & Community Development Department for acceptance. Mitigation could include avoidance, site capping, data recovery, or a combination of these or other measures, as determined by the qualified archaeologist. The County shall require implementation of the accepted mitigation plan in the design and policies of the Community Specific Plan.

  4.6.5 If identified features are determined to be not significant historic resources, no further mitigation or conservation would be necessary.

- **Level of Significance After Mitigation:** Less than significant

  4.6.4.3 **Impact:** Potential Loss Or Disruption Of Undiscovered Or Unknown Important Cultural And Historic Resources

**Impact Analysis:**

- **Merced County Regulatory Policy**

Refer to the Merced County policies listed under impact 4.6.4.2 above.
4. Environmental Analysis

- Additional Regulatory Policy

Refer to the state policies listed under impact 4.6.4.2 above.

- Additional Impact Evaluation

Archaeological and paleontological resources may exist on-site that were not discovered during the cultural evaluation of the site. These resources could either be buried or hidden beneath vegetation. Thus, it is possible that significant direct impacts could occur to buried or concealed heritage resources during project construction activities. Project impacts are thus considered potentially significant due to the moderate to high cultural sensitivity of the region in general.

Prehistoric materials might include flaked stone tools (projectile points, knives, scraping tools), or obsidian, chert, or basalt toolmaking debris; cultural darkened soil (midden) containing heat-affected rock and prehistoric materials; and stone milling tools (mortars, pestles, handstones, and millingstones). Historic materials might include stone or adobe footings or walls, building remains, or deposits of metal, glass, and or ceramics.

- Level of Significance Before Mitigation: Potentially significant

- Mitigation Measures:

4.6.6 If evidence of historical, archaeological or paleontological resources are uncovered during grading or other construction activities, work shall be halted within 100 feet of the find and a qualified archaeologist shall be retained to conduct an on-site evaluation and provide recommendations for removal and/or preservation. Work in the vicinity of the find shall not resume until the archaeologist has conducted an examination and implement necessary mitigation measures.

4.6.7 If human remains are inadvertently discovered, California law required that work stop immediately and that the County Coroner be notified. If the remains are Native American, AB 298 makes it mandatory that the coroner notify the Native American Heritage Commission within 24 hours of the discovery to ensure that proper treatment is given the burial site. A professional archaeologist should assist in the development of appropriate mitigation of potential impacts to heritage resources, in consultation with identified Native Americans.

- Level of Significance After Mitigation: Less than significant
4. Environmental Analysis

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4.7 HYDROLOGY, WATER SUPPLY AND WATER QUALITY

This section of the EIR was prepared by Thompson-Hysell, Inc. The analysis contained herein is based on the Water Supply, Stormwater Drainage and Wastewater Study prepared by Thompson-Hysell Engineers, which is contained in Appendix G of the Draft EIR Technical Appendices (under separate cover).

4.7.1 Environmental Setting

Regional Hydrology

An indistinct divide that interrupts the lengthwise slope of the Valley separates the San Joaquin Valley into two hydrologic sub-basins. The San Joaquin sub-basin is located to the north and the Tulare sub-basin is located to the south; Merced County is located within the San Joaquin sub-basin. The San Joaquin sub-basin drains into the Pacific Ocean, and the Tulare sub-basin has an outlet only when rare flood flows carry its water into the San Joaquin sub-basin. Merced County is further divided into the two major sub-basins’ drainage basins, the Merced River and the San Joaquin River.6

The United States Environmental Protection Agency’s (EPA) Unified Watershed Assessment (UWA) Clean Water Action Plan places the project site within the Middle San Joaquin-Lower Chowchilla watershed (United States Geological Survey Cataloging Unit No. 1804001). There are six UWA watersheds located within the Merced County boundaries. The other five watersheds include the following: Middle San Joaquin-Lower Merced-Lower Stanislaus; Upper Chowchilla-Upper Fresno; Upper Merced; Panoche-San Luis Reservoir; and Pajaro.

Within the Middle San Joaquin-Lower Chowchilla watershed are nine rivers and streams, 217 lakes, and 8926 total watershed acres.7 The Middle San Joaquin-Lower Chowchilla watershed is included in the UWA program as a Priority Category I Watershed, indicating that the environmental quality of the watershed needs restoration.

Topography

The project site is located in the lower reach of the western slope of the Sierra Nevada Mountains. The project area is characterized by gently rolling undeveloped grassland that is used for livestock grazing. The land adjacent to the north of the property boundary is held by the Cyril Smith Trust. This area has historically been used for cattle grazing and is currently used for that purpose. The area to the south of the project site, across Old Lake Road, is subdivided into a row of one-acre home site parcels with grazing land to the south. Lake Yosemite and the 7,000-acre Virginia Smith Trust flank the property’s entire eastern boundary. Land to the immediate west of the property, west of Golf Road; contain the Merced Golf and Country Club,

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a private 18-hole golf course. A large lot single-family housing development is located on the south side of the Merced Country Club, with grazing lands to the north and west.

The primary natural drainage feature in the project site is the Fahrens Creek that traverses the northwest portion of the site. Fahrens Creek is a tributary of Bear Creek that eventually flows into the San Joaquin River in the western portion of the County. The creeks and rivers generally originate in the mountains and the foothills to the east and seasonally flow from east to west.

In addition to the natural drainage, The Crocker-Hoffman (Main) Canal flows across the site in a 150-foot wide right-of-way from the north, providing the main source of water for Yosemite Lake.

At the time a project specific development is proposed, it must take into account the existing canal and drainage system. These systems will continue to supply irrigation water and flood inundation prevention functions even after development occurs.

**Rainfall**

The heaviest rainfall in the Merced area occurs between the months of October and April. The average annual precipitation for the Merced area is approximately 12 inches. The one-day maximum precipitation between 1948 and 2000, as measured at the Merced Municipal Airport, is 2.10 inches.\(^8\)

**Surface Water**

The proposed Yosemite Lake Estates project would be located on the eastern side of the San Joaquin Valley, north of the City of Merced. A divide that interrupts the lengthwise slope of the valley separates the San Joaquin Valley into two hydrologic basins. The two basins include the San Joaquin Subbasin to the north (including Merced County), which drains to the Pacific Ocean, and the Tulare Subbasin to the south, which has an outlet only when rare flood flows carry its water across the divide and into the San Joaquin Subbasin.\(^9\)

The Central Valley Water Quality Control Plan refers to the San Joaquin Basin as the San Joaquin River drainage basin. The San Joaquin River drainage basin covers 15,880 square miles and includes the entire area drained by the San Joaquin River. It includes all watersheds tributary to the San Joaquin River and the Delta south of the Sacramento River and south of the American River watershed. The principal streams in the basin are the San Joaquin River and its larger tributaries: the Consumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla and Fresno Rivers. Major reservoirs and lakes include Pardee, New Hogan, Millerton, McClure, Don Pedro, and New Melones.\(^10\)

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4. Environmental Analysis

The United States Geologic Survey (USGS) further divides the San Joaquin Basin into smaller basins, or watersheds, with hydrologic unit codes (HUCs) to identify each watershed. The proposed project site would be located in the Middle San Joaquin-Lower Chowchilla watershed (HUC # 18040001), which is an area of approximately 2,704 square miles.¹¹

The proposed project site is located north of the City of Merced adjacent to Lake Yosemite. Surface water on and in the vicinity includes rivers and creeks, irrigation canals, and a reservoir. The Merced River flows east to west and is located approximately 6 miles west of the proposed project site.

Fahrens Creek, which originates in the higher elevations north of the site, bisects the western portion of the site. The majority of the flood flows from Fahrens Creek and intercepted local drainages discharge into Lake Yosemite.

The Main Canal is generally a north-south flowing irrigation canal that feeds Lake Yosemite, a constructed reservoir. This canal bisects the proposed project site in a north-south manner. Both the Main Canal and Lake Yosemite are operated and maintained by the Merced Irrigation District (MID). Lake Yosemite feeds two MID irrigation canals, the Fairfield and Le Grand canals. Neither of these canals is on the proposed project site.

The operational regime of the MID system is to open the irrigation gates at Lake Yosemite on March 31 and close them on October 31. The Fairfield and Le Grand canals deliver irrigation water to downstream agricultural users in the Merced area during this time. During the winter months, Lake Yosemite acts as flood control detention, releasing excess flows to Le Grand Canal. Water levels in Lake Yosemite can be increased to serve demand by importing water from the Merced River via an upstream canal.

The Yosemite lateral is a small irrigation and drainage channel that is located along the access road to the Merced Hills Golf Course clubhouse. This MID controlled channel serves minor irrigation users and eventually discharges into Cottonwood Creek just north of Yosemite Avenue.

Surface Water Quality

Water quality in the County differs from east to west and from north to south, due to varying degrees of turbidity, color, odor, and chemical characteristics. The differences in surface water quality are caused by the climate and the differences in the physical character of the geology in the smaller watersheds. The Sierra Nevada Mountains dispense low amounts of dissolved solids into east side streams and rivers, while the west side streams have a much higher salinity rate due to the sediments that comprise the Diablo Range of the Coastal Mountains. Similarly, the stream flow into the Merced River in the northern part of the County is of very good quality, but gradually decreases south through the Valley due to the inflow of excess irrigation waters.¹²

4. Environmental Analysis

Flooding

The project site is not located in a 100-year flood plain hazard area, as defined by the Federal Emergency Management Agency’s (FEMA) Flood Insurance Rate Map program.\(^\text{13}\)

The areas west and southwest of Lake Yosemite, outside of the boundaries of the project site, adjacent to Fahrens Creek, Rascal Creek, and Bear Creek, are located within the FEMA 100-year flood plain as defined by FEMA.

Dam Inundation

Lake Yosemite Dam is a 53-foot-high earthen dam located along the southwest side of Lake Yosemite. Lake Yosemite Dam is owned by Merced Irrigation District (MID), and is regulated by the Department of Water Resource’s (DWR) Division of Safety of Dams (DSOD). The dam failure inundation zone calculated for Lake Yosemite Dam by DWR would not affect the project site. The area southwest of Lake Yosemite, on the south side of Lake Road would experience flooding if the earthen dam were to fail.\(^\text{14}\)

Levee Failure

The Main Canal that bisects the northwest portion of the site is constructed of earthen embankments. The canal is owned by MID, which maintains a 150-foot easement along the canal. The proposed project site would be affected by flooding conditions if the canal levees were to unexpectedly fail, or if the levees were simply overtopped due to an excess volume of water. In addition, the levees are subject to breaching due to animal burrowing within the levees. The only inspection program that MID performs on the canal systems is visible inspections conducted while driving alongside the top of the levees.

Groundwater

Groundwater is a very significant source of water in the County, especially for urban land uses. It is supplied by runoff from foothills and mountains, which percolates through the soil to the San Joaquin basin underground aquifer. Water from one of the three general levels of aquifer is pumped to the surface through wells. Due to the variety of depths that occur regionally, the groundwater basin experiences fluctuation in the depth of its water table resulting from local irrigation practices.

The three distinct groundwater aquifers in the Modesto-Merced area are (1) The unconfined aquifer, (2) the confined aquifer, and (3) the consolidated aquifer. The unconfined aquifer occurs in the unconsolidated deposits lying above the Corcoran clay, except in the western and southern parts of the area where clay lenses occur and semi-confined conditions exist. The confined aquifer occurs in the unconsolidated deposits below the Corcoran clay and extends downward to the base of fresh water. The consolidated aquifer occurs within consolidated rocks as perched and confined groundwater conditions.

\(^\text{14}\) Ibid.
The 1995 Merced Water Supply Plan summarized the Merced Groundwater Basin characteristics as follows:

“The groundwater basin that underlies the study area consists of a wedge of unconsolidated sedimentary deposits of sand, gravel, and silt and clay that thicken from a featheredge at the mountain front in the east to its greatest thickness at the western margin as the study area nears the San Joaquin River. The thickness of the sedimentary deposits is estimated to be more than 12,000 feet near the San Joaquin River but the effective thickness of usable aquifer is only about 1,000-feet because the deeper sedimentary aquifers contain salt water. Although the entire study area is underlain by aquifers, the most prolific aquifers of the area are west of the eastern boundary of Merced Irrigation district where well yields are adequate for agriculture and municipal supplies.

The groundwater basin represents a huge reservoir of fresh water. About 30-million acre-feet of water is stored beneath the ground surface in the Merced Water Plan Study Area. Although this is a large amount of water, not all of this water can be safely removed from the basin because it would cause excessive declines in groundwater levels, intrusion of poor quality water into currently clean aquifers and subsidence of the overlying land surface.”

The Merced groundwater basin is generally described as being bordered by the Merced River to the north, the Merced/Mariposa county line to the east, the Chowchilla River to the south, and the San Joaquin River to the west. The basin is not designated critically overdraft by the California Department of Water Resources.

It is expected that the unconfined aquifer will serve the proposed Yosemite Lake Estates project. Yields from wells of up to 2,100 gallons per minute with specific capacities of 22 gpm per foot have been developed from this groundwater source. Although some plumes of groundwater contamination from industrial and agricultural related operations are known to occur in the Merced area, groundwater from this source is considered to be of good quality requiring only disinfecting to meet State of California and EPA drinking water standards.

Merced Golf and Country Club, as well as other residents in the immediate area, currently rely upon groundwater as their sole source for potable water. The County of Merced maintains several wells located at the Lake Yosemite recreational use area. Several of these wells are reported to yield 300 gallons per minute and greater. MID owns and maintains a well in the project area that yields 898 gallons per minute.

Groundwater Depth and Movement

Groundwater is found at shallow depths in the Merced area, and groundwater flow is generally from northwest to southwest. Groundwater pumping creates localized cones of depressions, and irrigation may cause mounding, complicating the flow patterns and causing them to change in time. From 1982 to 1993, groundwater depths in the Merced area have ranged from between 1
to 15 feet below ground surface (bgs), with strong seasonal variation of up to 4 feet. Depths to water are the shallowest during the summer irrigation.\(^{15}\)

**Groundwater Quality**

The quality of groundwater in Merced County is determined primarily by salt concentrations, and to a lesser degree, by levels of nutrients (i.e., nitrate-nitrogen), pesticides (i.e., dibromochloropropane [DBPC]), and other contaminants. Overall, groundwater quality is generally similar to surface water quality; which is good to excellent in the higher foothill areas and decreases in quality toward the San Joaquin Valley’s center low areas. The major land use related pollution problem in Merced County appears to be nitrates that are present in both surface water and groundwater throughout the county as a result of past and present cattle grazing.\(^{16}\)

**4.7.2 Regulatory Setting**

The project description does not include a specific development proposal; instead it proposes to change the land use designation from rural to urban. This opens the door for future development. In order to have a basis for analysis one possible use for the project site is outlined in Section 4.1, *Summary of Project Assumptions*.

The following is a summary of the regulatory context under which issues associated with water quality, drainage, and on-site and off-site flooding is managed and regulated at the Federal, State and local level based on the potential project outlined in Section 4.1, *Summary of Project Assumptions*.

**Federal and State Regulations**

**Water Quality**

Section 303 of the Federal Clean Water Act (CWA) requires states to adopt water quality standards for all surface water of the United States. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) are responsible for ensuring implementation and compliance with the provisions of the federal CWA and California’s Porter-Cologne Water Quality Control Act of 1969. Along with the SWRCB and RWQCB, water protection is the responsibility of numerous water supply and wastewater management agencies, as well as city and county governments, and requires the coordinated efforts of these various entities.

The project site is within the jurisdiction of the Central Valley Region of the RWQCB (Region 5). The Central Valley Region of the RWQCB has the authority to implement water quality


4. Environmental Analysis

protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction. Water quality objectives for the Sacramento River and its tributaries are specified in *The Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin* (Basin Plan) prepared by the Central Valley RWQCB in compliance with the federal CWA and the Porter-Cologne Water Quality Control Act. The Basin Plan establishes water quality objectives and implementation programs to meet stated objectives and to protect the beneficial uses of water in the Sacramento-San Joaquin River Basin. Because the project site is located within the Central Valley RWQCBs jurisdiction, all discharges to surface water or groundwater are subject to the Basin Plan requirements.

*National Pollutant Discharge Elimination System*

The National Pollutant Discharge System (NPDES) permit system was established in the CWA to regulate municipal and industrial discharges to surface waters of the U.S. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that EPA must consider in setting effluent limits for priority pollutants.

Non-point pollution sources diffuse and originate over a wide area rather than from a definable point. Non-point pollution often enters receiving water in the form of surface runoff and is not conveyed by way of pipelines or discrete conveyances. As defined in the federal regulations, such non-point sources are generally exempt from federal NPDES permit program requirements. However, two types of non-point source discharges are controlled by the NPDES program; non-point source discharges caused by general construction activities and the general quality of storm water in municipal storm water systems (either as part of a combined system or as a separate system in which runoff is carried through a developed conveyance system to specific discharge locations).

The 1987 amendments to the CWA directed the federal EPA to implement the storm water program in two phases. Phase 1 addressed discharges from large (population 250,000 or above) and medium (population 100,000 to 250,000) municipalities and certain industrial activities. Phase 2 addresses all other discharges defined by EPA that are not included in Phase 1, and construction activities that affect one to five acres. The Phase 2 regulations were published in the Federal Register on December 8, 1999. The SWRCB is required to issue general permits for Phase 2 regulated jurisdictions by December 8, 2002, and operators of Phase 2 jurisdictions are required to obtain permit coverage by March 10, 2003. Fully implemented Phase 2 programs must be in place by the end of the first permanent term, typically five years. Merced County would fall into the Phase 2 NPDES compliance category.

*Reclaimed Water*

Regulation of reclaimed water in California is governed by the nine RWQCBs and the Department of Health Services (DHS). The California Water Code (Section 13578) establishes the SWRCB as the agency with primary authority for water reclamation, and the Central Valley RWQCB would administer this authority at the project site. The SWRCB provides reuse plans
and policy guidelines, while the RWQCBs establish regulations for specific projects. Section 13521 of the California Water Code states that DHS shall establish uniform statewide recycling criteria for each varying type of use of recycled water where the use involves the protection of public health. These criteria appear in the CCR Title 22, Division 4, and Article 3. Additional design criteria appear in CCR Title 17, Division 1, and Chapter 5. The DHS publishes several documents to aid in reclaimed water planning and design such as: Guidelines for Use of Reclaimed Water; Guidelines for the Preparation of an Engineering Report on the Production, Distribution, and Use of Reclaimed Water; Guidelines for the Use of Reclaimed Water for Construction Purposes; Demonstration of Equivalency to Full Title 22 Treatment; and Criteria for Mosquito Prevention in Wastewater Reclamation or Disposal Projects. The American Water Works Association also publishes several reclaimed water guidelines. The SWRCB publishes a guidance manual, which includes water quality parameters and the effects on soils and plants entitled Irrigation with Reclaimed Municipal Wastewater, a Guidance Manual, Report No. 84-1, July 1984.

Water Supply

The Merced Irrigation District and the City of Merced have taken the lead in development of the Merced Basin Groundwater Management Plan (MBGMP). Completed under the rules of AB3030, the MBGWMP qualifies as a SB610 water management plan. The following Merced area public agencies have prepared and adopted or have formally agreed to adopt the Merced Basin Groundwater Management Plan:

a) County of Merced;
b) Merced Irrigation District;
c) Le Grand-Athlone and Turner Island Water Districts;
d) Winton Water & Sanitation District; Merquin County Water District;
e) Planada and LeGrand Community Service Districts;
f) Black Rascal and Meadowbrook Water Companies;
g) Stevinson Water District; and
h) East Merced Resources Conservation District.

The proposed Yosemite Lake Estates project lies within the boundaries of the Merced Groundwater Basin Management Plan. With Merced County’s adoption of the Merced Basin Groundwater Management Plan, the Merced Groundwater Management Plan also applies to those areas lying outside of the boundaries of the agencies that have adopted the groundwater management plan. This includes the land encompassed by Yosemite Lake Estates.

No urban water supplier currently serves the Yosemite Lake Estates project site. However, in compliance with SB610, it is assumed that the project will connect with the City of Merced’s infrastructure for both water and wastewater as indicated in the North Merced Sewer Master Plan Summary Report-Preliminary Findings (November 2002). Applicable SB610 pumping records do not currently exist. However, Merced County maintains several potable water wells serving the Yosemite Lake Recreation Area. A review of records for these wells indicates potable water is available at pumping rates in the 300-gpm range. At the time that a Community Specific Plan is developed for the proposed Yosemite Lake Estates project site, further study would be
4. Environmental Analysis

required evaluating the options available for connection to City of Merced water and wastewater systems.

Local Regulations

Merced County General Plan

The following goals and policies (see Table 4.7-1) from the Merced County General Plan are applicable to the proposed project:

<table>
<thead>
<tr>
<th>TABLE 4.7-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>GOALS AND POLICIES APPLICABLE TO HYDROLOGY AND WATER QUALITY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Open Space and Conservation Element</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 2</td>
<td>Soil, water, air, mineral, energy, and historical resources are properly managed.</td>
</tr>
<tr>
<td>Objective 2B</td>
<td>Surface and groundwater resources are protected from contamination, evaporation and inefficient use.</td>
</tr>
<tr>
<td>Policy 5</td>
<td>Ensure that land uses and development on or near water resources will not impair the quality or productive capacity of these resources.</td>
</tr>
<tr>
<td>Policy 6</td>
<td>Methods to prevent the depletion of groundwater resources and promote the conservation and reuse of water should be encouraged.</td>
</tr>
<tr>
<td>Policy 11</td>
<td>Promote the development of community drainage systems to manage, control, and reduce degradation of wetlands and other riparian areas from urban runoff.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Safety Element</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal 4</td>
<td>Merced County residents and structures protected from harmful effects of flooding.</td>
</tr>
<tr>
<td>Objective 4A</td>
<td>People and structures in areas subject to flood hazards are protected.</td>
</tr>
<tr>
<td>Policy</td>
<td>Information provided by the Federal Emergency Management Agency shall be used to identify areas subject to 100-year frequency floods.</td>
</tr>
</tbody>
</table>

Source: Merced County General Plan

Merced County Drainage Design Standards

As a condition of approval, new development is required to be designed so that natural drainage channels can pass the 100-year, 24-hour storm (the high water line or peak flows). The Drainage Design Standards also require that increased runoff due to new development not result in an increase in natural drainage flow beyond pre-development 100-year, 24-hour storm flows (no change in existing peak flows). Drainage collection and transmission infrastructure should be designed to pass the 5-year, 24-hour storm. The drainage standards assure that detention facilities are designed to detain the 10-year, 24-hour storm.

The storm water drainage system for any proposed development within the County of Merced shall be designed in accordance with the Merced County Department of Public Work Storm Drainage Design Manual.
4. Environmental Analysis

Merced County Code Chapter 16.40

This chapter of the County Code addresses the conversion of water and preservation of water quality through the use of drought tolerant plant material and retention of natural landscaping.


The City of Merced Water Supply Plan, prepared in conjunction with Merced Irrigation District, presents a general plan for overall water system expansion. This Plan was developed to assure a reliable water supply through 2030 recognizing that the population growth in eastern Merced County will continue to outpace the state.

The plan was updated in September of 2001 due to a number of new conditions that might influence the long-term projections made in the 1995 Plan. These include the decision to locate the new University of California campus in the study area, the preparation of a Groundwater Management Plan for the area, the preparation of an Agricultural Water Management Plan for the area, changing instream flow conditions on the Merced River and better data and understanding of the study area’s water resources.

4.7.3 Methodology Related to Hydrology and Water Quality

The project description does not include a specific development proposal; instead it proposes to change the land use designation from rural to urban. This opens the door for future development. In order to have a basis for analysis one possible use for the project site is outlined in Section 4.1, Summary of Project Assumptions.

The analysis of regional and local conditions is based on a review of available information related to regional and local hydrology and water quality. These documents included: the Merced Water Supply Plan (1995 and 2001); Merced County Year 2000 General Plan; Merced Groundwater Basin Management Plan; “Preparing for the 21st Century” Merced Irrigation District Groundwater Management Plan; the City of Merced Vision 2015 General Plan, and Ecologic’s North Merced Sewer Master Plan Summary Report-Preliminary Findings (November 2002). Additional information was also obtained through discussions with staff at Merced Irrigation District.

4.7.4 Impacts and Mitigation Measures

The impacts that will be discussed in the following section include the degradation of ground and surface water quality, the increased stormwater discharge, increased wastewater discharge, groundwater overdraft and flood hazards.

4.7.4.1 Significance Criteria

The project description does not include a specific development proposal; instead it proposes to change the land use designation from rural to urban. This opens the door for future development. In order to have a basis for analysis one possible use for the project site is outlined in Section 4.1, Summary of Project Assumptions, and it will be the basis for the Significance Criteria.
The following standards of significance are based on Appendix G of the State CEQA Guidelines, Hydrology and Water Quality. For the purposes of this EIR impacts associated with hydrology and water quality would be considered significant if the potential project would:

- Substantially degrade water quality;
- Contaminate a public water supply;
- Interfere substantially with groundwater recharge; or
- Cause substantial flooding, erosion, or siltation.

### 4.7.4.2 Impact: Degradation of Ground and Surface Water Quality

Maintaining the quality of existing groundwater resources is of regional importance since wastewater and stormwater runoff from the project site have the potential to be used for groundwater recharge both on and off-site. The eventual urban development of the site would be required to obtain appropriate NPDES permits prior to site occupancy, prepare a Surface Water Pollution Protection Plan (SWPPP), and implement Best Management Practices (BMPs). Due to the requirements imposed by the NPDES the degradation of ground and surface water would be less than significant.

**Impact Analysis:** Existing runoff from the project site could contain sediment containing nutrients, naturally occurring metals and minerals, pesticides or herbicides, and organic matter, which may have already affected water quality at the project site. Activities that could increase the types or quantities of non-naturally occurring pollutants in runoff due to development include motor vehicle operations, residential maintenance, littering, careless material storage and handling, domestic animal and wildlife wastes, and pavement wear. Pesticides, herbicides, and other landscape maintenance products typically used in landscaping and lawn maintenance could also be present in the urban runoff.

- **Merced County General Plan**

  **Open Space and Conservation Element**

  **Goal 2:** Soil, water, air, mineral, energy, and historical resources are properly managed.

  **Objective 2B:** Surface and groundwater resources are protected from contamination, evaporation and inefficient use.

- **Additional Regulatory Policy**

  None are applicable.

- **Additional Impact Evaluation**

  The proposed project would be required to obtain appropriate NPDES permits prior to site occupancy. These permits would include site-specific controls that would ensure that any water leaving the site does so in a manner consistent with applicable California water quality
requirements. Therefore, design features to drain surface waters to appropriate facilities would be incorporated into the proposed project.

Examples of appropriate facilities developed on the site would include: detention ponds, retention ponds, bio-filtration channels for water quality treatment, oil water separators, wet ponds within the detention facilities, erosion control features during construction, and the implementation of best management practices within the final storm water design and construction processes (please refer to the technical study contained in Appendix G). These facilities will be incorporated within the project design and during construction to control the runoff rate and improve the quality of storm water discharged to the existing natural drainage conveyance features. The retention pond design would result in seepage of runoff water into the ground within the area located east of the MID canal. Runoff water entering the retention pond would pass through oil water separators, bio-filtration channels, a siltation pond, and a wet pond prior to entering the retention pond facility. These water quality features will utilize the best management practices available. Two irrigation wells exist on site and currently are not being used. They may be utilized as a source of potable water for the project. However, this is a decision that would be made at the time that a Community Specific Plan is proposed.

With future urbanization, wastewater treatment could be addressed either by extending City of Merced sewer service to the project area (Ecologic 2002) or by construction of an onsite wastewater treatment plant (Appendix G). If the City were to provide sewer service for development near Golf and Lake Roads, a separate new trunk sewer system would be required. The North Merced Sewer Master Plan Summary Report-Preliminary Findings reported that the Golf and Lake Road developments can gravity flow to the Highway 59 trunk (Future Study Area 2 in Ecologic Report). Conveyance and treatment at the existing wastewater treatment plant is still cost effective compared to construction of separate reclamation facilities. However, a new trunk line south of Lake Road to Gerald Road could raise potentially significant environmental issues that would need to be examined at the time that a Community Specific Plan is proposed.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary.
- **Level of Significance After Mitigation:** Less than significant

### 4.7.4.3 Impact: Increased Wastewater Discharge

The eventual urban development of the project site would result in an increase in wastewater discharge from the current condition. No sanitary sewer collection, treatment, or disposal facilities exist on the project site. The proposed project is within the City of Merced’s SOI, but is not within the City’s current boundaries. Therefore, at the time that a specific development is proposed, wastewater discharge could be addressed by implementation of one of the following methods. First, an onsite wastewater treatment facility could be developed. Second, wastewater service could be provided to the project site through connection to city infrastructure by
annexation. Third, a change in City of Merced policy and code to allow connection to City infrastructure in the City of Merced’s SOI would also allow for the provision of wastewater services to the project site. Estimated flow and sewer system options were outlined in Ecologic’s North Merced Sewer Master Plan Summary Report-Preliminary Findings (November 2002). The construction of an onsite treatment plant is discussed in Thompson-Hysell’s Water Supply, Stormwater Drainage and Wastewater Study contained in Appendix G of this EIR. Preliminary analysis for these options is presented below.

**Impact Analysis:** Under either scenario where the proposed project is connected to and served by the City of Merced’s wastewater infrastructure, growth in the area north of the City of Merced will require modifications to the trunk sewer collection system to accommodate the full extent of growth that is projected north and east of the City. The extent of modification and expansion to the system will depend on the extent of additional urban development. Major trunk line interceptors were originally sized and configured to accept some future flows from the north at the following points: Yosemite Avenue, G Street, M Street, R Street, and along Highway 59.

Existing residences, businesses, and industries within the City of Merced currently generate approximately 7.8 million gallons of wastewater per day (mgd). Peak flows increase to approximately 13 mgd at the City’s wastewater treatment plant during heavy rain events. The proposed Yosemite Lake Estates project is estimated to contribute an average flow of 0.45 mgd and a peak flow of 0.87 mgd. Future flows from the total North Merced area are estimated to be 23.6 mgd (average flow) and 35.4 mgd (peak flow). Expressed as a percent of the total potential flow for the North Merced area, the proposed Yosemite Lake Estates project is approximately 2 percent of the total projected flow.

There are three primary sewer service options for the proposed Yosemite Lake Estates project area as described in Ecologic’s study. Which sewer service option is chosen ultimately depends on the extent and timing of development surrounding the proposed project. The first option may be an interim option until the UC Merced and UCP areas are developed, which may result in some rerouting of flow for the proposed project. First, any development at Golf and Old Lake Roads can gravity flow to the Highway 59 trunk line, southwest of the project site. Since the projected flow from the project site is relatively small compared to the total estimated volume for the North Merced area, the Highway 59 trunk line is estimated to be able to accommodate the flow from the proposed project. Secondly, when the UC Merced and UCP areas come online, flow from this area would be routed to the Lake Avenue trunk line. Because this option would involve the extension of the G Street trunk line to the south and east of the proposed project site, it may be more feasible to route sewer flow south along Lake Road (which would require a trunk line upgrade) to connect with the upgraded G Street trunk line to the southeast. Third, it may eventually become feasible to construct a satellite collection and treatment facility in North Merced to avoid or reduce major conveyance improvements. The satellite treatment facility may provide a source of reclaimed water for urban or agricultural areas within north Merced (including UC Merced). The satellite treatment facility may also reduce expansion needs at the existing treatment facilities. However, at least at the current time, the study found that the cost

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17 This area combines the Specific Urban Development Plan (SUDP) area, the Sphere of Influence (SOI), UC Merced and the University Community Plan (UCP) area.
for irrigation and potable water is between $10 and $30 an acre-foot, and thus, construction of satellite facilities to generate a reclaimed water source is not cost effective. In general, the total cost of expanding the sewer system and the City’s wastewater treatment plant was determined to be significantly less expensive than constructing separate satellite reclamation facilities to serve portions of North Merced.

If the proposed project area does not annex to the City or there is no change in City of Merced General Plan and sewer code to allow connection to city infrastructure, then the specific development proposal would need to include the development of an onsite wastewater treatment facility. If an onsite treatment facility is to be constructed, the recommended method for treating wastewater at Yosemite Lake Estates is advanced tertiary treatment (Appendix G). Disposal of treated effluent would occur under ground percolation irrigation on agricultural pastureland or a nearby golf course, or solids would be transported to a landfill. During the non-irrigation season, a winter storage pond could be constructed to retain treated effluent or recycled water for later irrigation use. The water balance used to establish the required storage and land disposal areas for disposal of treated effluent generated by the project is included in the technical study in Appendix G. In summary, the proposed advanced tertiary treatment method would provide wastewater treatment by means irrigation, evaporation, and percolation. The total acreage estimated to be required for the proposed wastewater treatment plant is 5 acres.

If treated wastewater is used for reclamation, a discharge permit issued by the Regional Water Quality Control Board (RWQCB) would be required and facilities must conform to the requirements of Title 22 of the California Administrative Code. Tertiary treated wastewater effluent meeting the requirements of Title 22 California Code of Regulations can be used for irrigation in orchards, crops for farm animals, parks, roadway landscaping, fish hatcheries, golf courses, and school playgrounds. All discharge permits will require maximum reuse of the treated wastewater. Disinfected Tertiary Recycled Water has the fewest restrictions to its final disposal. Disinfected Tertiary Recycled Water is defined as secondary wastewater effluent that has been oxidized, coagulated, clarified and filtered followed disinfecting by to a level where the median number of bacteria in the recycled water does not exceed 2.2 per 100 ml. If treated wastewater is to be used at Yosemite Lake Estates, it will meet the criteria for Disinfected Tertiary Recycled Water. If necessary, open space, parks and roadway landscape areas will be provided in the Yosemite Lake Estates project to safely handle all effluent disposal requirements of the RWQCB effluent disposal permit(s). The onsite wastewater treatment facility would require permits from the Regional Water Quality Control Board and County Health Department.

- **Merced County Regulatory Policy (General Plan)**

  Goal 4 of the Circulation Element states, “Adequate water, sewer, and drainage facilities are provided to meet urban needs for the County.”

  Goal 10 of the Land Use Element states, “County services and facilities are to be provided at adequate levels for existing and future residents.” Further, Objective 1C of the Land Use Element states the creation of “an efficient, orderly urban development pattern, which minimizes public service costs.”
4. **Environmental Analysis**

- **Additional Regulatory Policy**

  If the proposed project connects to city wastewater infrastructure, one of the following City of Merced actions would be required:
  - Annexation of the project area by the City of Merced; or
  - Change in the City of Merced General Plan and sewer code allowing connection to city infrastructure with the City’s Sphere of Influence.

- **Additional Impact Evaluation**

  At the time that a Community Specific Plan is proposed, additional analysis of the environmental impacts of the development of an onsite wastewater treatment facility would be required.

  - **Level of Significance Before Mitigation:** Potentially significant

  - **Mitigation Measures:** Depending upon which wastewater service provision option is chosen, applicable mitigation measures would be developed at the time that a Community Specific Plan (CSP) is proposed.

  - **Level of Significance After Mitigation:** Less than significant

4.7.4.4 **Impact: Increased Stormwater Discharge**

Eventual urban development within the project site would replace the natural soil and vegetation with roadways, building pads, and structures. This would result in an increase of impermeable surfaces within the project site. An increase in the runoff would be anticipated due to the increase in impermeable surfaces. It will be feasible for the developer to implement adequate storm runoff detention and retention onsite, in compliance with Merced County policies and standards, to prevent increased runoff from affecting downstream receiving waters. Because of existing policies and design standards, the increase in storm water runoff will be less than significant.

**Impact Analysis:** Urban development has two typical effects on storm runoff hydrology: an increase in total runoff volume and faster rising and higher peak flows. The increased area of impervious surfaces such as roads, parking lots, sidewalks, and buildings prevents natural infiltration to the soil and thus creates higher runoff volumes. More rapid transport of runoff over smooth artificial surfaces and drainage facilities, combined with the higher volume of runoff over smooth artificial surfaces and drainage facilities, combined with the higher volume of runoff, causes elevated peak flows. This increase in flows may adversely affect downstream channels.

A detailed hydrology study would be required to quantify the rate and volume of runoff once a site-specific development is proposed.
4. Environmental Analysis

- **Merced County Regulatory Policy (General Plan)**

As a condition of approval, new development is required to be designed so that natural drainage channels can pass the 100-year, 24-hour storm (the high water line or peak flows). The Drainage Design Standards also require that increased runoff due to new development not result in an increase in natural drainage flow beyond pre-development 100-year, 24-hour storm flows (no change in existing peak flows). Drainage collection and transmission infrastructure should be designed to pass the 5-year, 24-hour storm. The drainage standards assure that detention facilities are designed to detain the 10-year, 24-hour storm.

- **Additional Regulatory Policy**

None are applicable.

- **Additional Impact Evaluation**

The project’s drainage area is currently bisected by the MID Main Canal. Runoff from the portion of the subject site located west of the existing MID Main Canal currently discharges through a series of swales, roadside ditches and laterals eventually into Fahrens Creek. The southwest 20% of the subject site (west of the canal) discharges through existing roadside ditches along Golf Road and Lake Road to Fahrens Creek. Existing development within the surrounding area to the west and southwest is sparse. Runoff from the existing golf course and its surrounding residential area discharges to Fahrens Creek.

Field inspection of the existing conveyance systems from the subject site to Fahrens Creek determined that no constrictions exist to restrict the runoff in the existing condition. They are adequate to receive and convey the existing condition runoff from the subject site west of the MID Crocker Hoffman Main Canal to Fahrens Creek. However, prior to discharge from the subject site, detention ponds would be installed to detain peak runoff. These detention ponds would be designed to release the metered discharge assimilating the existing runoff rates from the site. There was no evidence of flooding within these conveyance systems or within the Fahrens Creek drainage way. Figure 3.1-3, Local Setting, shows the locations of Fahrens Creek and the conveyances systems from the subject site.

Runoff from the portion of the subject site located east of the existing MID Crocker Hoffman Main Canal currently discharges in a northwest to southeast direction into an existing pond created from leakage from the canal. This runoff collects in a pond at the canals edge. Runoff into this pond does not leave the site but percolates over time into the existing soils.

Post development runoff from the portion of the site located west of the MID canal would be detained in detention ponds. Discharge from the detention ponds would be metered out at a rate assimilating the pre-developed condition of the site in its natural existing condition. The size of the detention facilities would be approximately 15 acre-feet. The location(s) and number of detention facilities will be determined during the specific plan phase of the project.
Post development runoff from the portion of the site located east of the MID canal would also be retained in a retention pond. There will be no discharge from the retention pond. The retention pond would be located within the 50 acre open space area proposed for the project and would be approximately 35 acre-feet. It is likely that the retention pond would be an expansion of the existing pond located in the southerly portion of the east basin next to the MID canal.

The increased storm water flows from the portion of the site located west of the MID Canal would be detained in detention ponds sized using the 100 year storm event for peak flow calculations. Discharge from the site would be metered out of the detention facilities into the existing conveyance systems tributary to Fahrens Creek at pre-development rates or less. Since the point(s) of discharge to Fahrens Creek is near the headwaters, in-stream 100-year flood flows and levels are not projected. Discharge from the on site detention facilities would not occur during peak runoff periods of a specific storm event.

The increased storm water flows from the portion of the site located east of the MID canal would also be retained. No surface water would discharge off site to any existing water bodies including Yosemite Lake. Seepage may occur from the retention pond through the ground to Yosemite Lake. However, seepage from the natural pond could be ending up in Yosemite Lake in the existing condition.

The storm water drainage system for future development on the project site and within the County of Merced shall be designed in accordance with the Merced County Department of Public Work Storm Drainage Design Manual. It is practical and feasible to implement adequate storm runoff detention and retention onsite, in compliance with Merced County policies and standards, to prevent increased runoff from affecting downstream receiving waters. Therefore, the impact would be less than significant.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:** In an effort to reduce pollutants in stormwater discharges and to comply with Best Management Practices, the following shall be implemented with storm drain improvements:

  4.7.1 Construct a stormwater detention basin to capture silts and sediments before discharging to Fahrens Creek.

  4.7.2 Install storm drain system signs at catch basin inlets within the project area.

  4.7.3 Manage entry of runoff and sediment from surrounding agricultural land into the project storm drain system through grading, berms, and ditches.

- **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.7.4.5 Impact: Groundwater Overdraft

Eventual urban development on the project site would require a water supply. As detailed in Thompson-Hysell’s Water Supply, Stormwater Drainage and Wastewater Study (Appendix G), options available for water supply are groundwater, surface water, or a combination of the two. Three distinct groundwater aquifers underlie the Modesto-Merced area: (1) the unconfined aquifer, (2) the confined aquifer, and (3) the consolidated aquifer. The unconfined aquifer can yield up to 2,100 gallons per minute (gpm) with specific capacities as large as 22 gpm per foot. The project is expected to use groundwater from the unconfined aquifer as the water supply for the project site. It is estimated that there is an estimated 30-million acre-feet of water in the underlying aquifer. The eventual withdrawal of water to serve the project site will have a less than significant impact on the underlying aquifer.

Impact Analysis: The 1995 Merced Water Supply Plan (MWSP) describes the aquifer underlying the water supply plan study area as a “huge reservoir of fresh water”. “An estimated 30-million acre-feet of water are stored beneath the ground surface in the Merced Water Plan Study Area.” The Yosemite Lake area is “water rich” with an abundant supply of both naturally occurring and manmade surface water features that contribute to the groundwater supply.

- **Merced County Regulatory Policy (General Plan)**

  Open Space and Conservation Element

  **Goal 2:** Soil, water, air, mineral, energy, and historical resources are properly managed.

  **Objective 2B:** Surface and groundwater resources are protected from contamination, evaporation and inefficient use.

  **Policy 5:** Ensure that land uses and development on or near water resources will not impair the quality or productive capacity of these resources.

  **Policy 6:** Methods to prevent the depletion of groundwater resources and promote the conservation and reuse of water should be encouraged

- **Additional Regulatory Policy**

  None are applicable.

- **Additional Impact Evaluation**

  Incidental groundwater recharge occurs naturally as percolation from the nearby Yosemite Lake, Crocker-Hoffman (MID Main) Canal and Fahrens Creek. Currently, groundwater withdrawal from the area surrounding Yosemite Lake Estates is limited to domestic groundwater wells serving a limited number of large-lot rural residences, the Merced Golf and Country Club and Merced County’s Yosemite Lake Recreation Area.
4. Environmental Analysis

Using estimated average day water demand at potential buildout conditions, the proposed Yosemite Lake Estates is projected to withdraw approximately 680-acre feet of groundwater per annum from the underlying aquifer. Applying historic potable water use averages, approximately 40% (260-acre feet) of this water will be used non-consumptively and will be returned to the land where it will percolate downward and find its way back into the groundwater as incidental recharge. The net result will be a reduction in groundwater withdrawal to about 420-acre feet per annum (680 acre-feet – 260 acre-feet) before the additional benefits of water conservation and reuse are realized. The 420 acre-feet represents about one-thousandth of 1% (0.001%) of the reported 30-million acre-feet of water in the Merced Basin Aquifer.

It is important to note that the Merced Groundwater Basin is not in an overdraft condition. The Merced Basin Groundwater Master Plan (MGBMP) responded to a declining groundwater surface elevation generally confined to areas of intense agricultural activity. The Merced Basin Groundwater Master Plan did not identify a condition where demand exceeded safe yield. The plan did identify areas within the basin where use of groundwater in lieu of surface water for irrigation coupled with a severe 5-year drought resulted in accelerated decline of groundwater surface elevation in some areas. The plan concluded that agricultural practices had resulted in a change in irrigation water supply from surface water delivered by the MID system of irrigation canals and laterals to a system of groundwater pumps and pressure irrigation systems. This change was not the result insufficient surface water but rather resulted from a change to smaller farms raising higher value crops being farmed by weekend farmers who worked in other fields during the week. Convenience and instant access to irrigation water were determined to be responsible for the declining groundwater elevation. Intentional groundwater recharge in constructed recharge basins was identified as a logical method to replace the incidental recharge lost through a change from flood irrigation using MID surface water to “on-demand” application of groundwater pumped from the underlying aquifer. The conclusion reached by the MBWMP was to implement a more stringent water conservation program and implement conversion of MIDs gravity conveyance system delivering raw water on a scheduled delivery basis to a pressure system delivering filtered surface water on a demand basis.

If demand exceeds safe yield there are two remedies that can be utilized: 1) Reduce demand for groundwater through conservation; or 2) Increase the volume and reliability of groundwater supplies through intentional groundwater recharge.

Located in an area of abundant natural groundwater recharge from Yosemite Lake and Crocker-Hoffman Canal, the volume and surface elevation of the underlying groundwater will remain essentially unchanged as a result of the development of Yosemite Lake Estates. Therefore, the impact would be less than significant.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.7.4.6 Impact: Flood Hazards

The project site is not within the 100-year flood plain as defined by the Federal Emergency Management Agency’s Flood Insurance Rate Map although almost all of the City of Merced south of the project site has been designated as lying within the 100-year floodplain. Eventual urban development on this project site would not expose the site to flood hazards. Therefore, the impact would be less than significant.

Impact Analysis: Almost the entire City of Merced is currently designated as lying within the 100-year floodplain as defined by the Federal Emergency Management Agency’s (FEMA) Flood Insurance Rate Map (FIRM). However, the proposed project site lies outside the 100-year floodplain. Senior staff from MID and Merced County Public Works met in August 2000 to discuss drainage from the proposed project. Both agencies concluded that a metered drainage discharge into Fahrens Creek, downstream from MID’s Main Canal, is the only viable flood management option for those areas south of the proposed project site.

- Merced County Regulatory Policy (General Plan)
  
  Safety Element
  
  Goal 4: Merced County residents and structures protected from harmful effects of flooding.
  
  Objective 4A: People and structures in areas subject to flood hazards are protected.
  
  Policy: Information provided by the Federal Emergency Management Agency shall be used to identify areas subject to 100-year frequency floods.

- Additional Regulatory Policy

  None are applicable.

- Additional Impact Evaluation

  Historically, flooding has occurred within the watershed of lower Fahrens Creek. The Merced Irrigation District has indicated that the source of flooding was the failure of the Bear Creek Levees, which allowed the floodwaters to flow north and inundate the lower Fahrens Creek area.

  The Merced Irrigation District maintains an extensive system of canals, levees and ditches including Main Canal. The Main Canal intercepts flows from the upper Elendale, Parkinson, and Fahrens Creek’s watersheds as well as several unnamed tributaries east of Main Canal. The Main Canal conveys a portion of these flows to Yosemite Lake, located adjacent to the eastern boundary of the project site. However, during a severe storm a breach is made by MID in the west levee of the Main Canal near Fahrens Creek allowing excessive flows from the upper Fahrens and Parkinson Creek watersheds to flow down the lower Fahrens Creek channel. Historically, the west levee of the Main Canal has been breached several times. It
4. Environmental Analysis

is these flows from the upper watersheds that constitute a large portion of the overall runoff conveyed along Fahrens Creek that results in downstream flooding.

In addition to the above mentioned flood hazards, the southernmost portion of the project site is located in the potential dam failure inundation area of Lake Yosemite, as defined by the Merced County General Plan. Neither the State Office of Emergency Services nor the Department of Water Resources formulates a probability factor for dam failure. However, dams are inspected to evaluate structural integrity and the State has judged all of the dams in Merced County to be safe. Therefore, no significant impacts to the proposed project site are anticipated from flooding of Yosemite Lake.

Implementation of a post development storm drainage plan would not result in breaching of the existing levees on Fahrens Creek. Metered runoff from the detention ponds within the project site will be conveyed to Fahrens Creek via existing conveyance systems presently discharging to the creek. The metered runoff will discharge at the rate assimilating the capacity of the existing conveyance system so that no improvements will be required to the existing Fahrens Creek levee system. Fahrens Creek is approximately 40 feet lower in elevation than the proposed areas of development within the site. Therefore, future occupants of the site will not be exposed to flood hazards from Fahrens Creek. Flooding hazards will have a less than significant impact on the future urbanization of this site.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**
  
  4.7.4 Install a telemetry device at the storm drain pump station to monitor flow in Bear Creek at McKee Road and flow in the Main Canal above the 100-year event level so it is diverted away from Fahrens Creek when either one or both of these conditions occur.

- **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.8 LAND USE AND PLANNING

This section analyzes the following topics in accordance with land use and agriculture issues contained in the CEQA Checklist: Land use impacts caused by physical division of an established community; Consistency of project land use assumptions presented in Chapter 4, Environmental Analysis, Section 4.1, Summary of Project Assumptions, of this EIR with applicable policy plans and regulations meant to avoid or protect the environment; Conflict of the project land use assumptions with any applicable habitat conservation plan or natural community conservation plan; and Adverse affects on agricultural resources or operations. (Issues related to Recreation are addressed in Section 4.11, Public Services and Utilities.)

4.8.1 Environmental Setting

4.8.1.1 Existing Agriculture in Merced County

Merced County ranked as the fifth most agriculturally productive county in California in the year 2000, based on the value of commodities produced. The highest value commodities produced in the county are livestock and poultry and the products associated with them. Field crops and vegetable crops ranked third and fourth in value, as illustrated in Table 4.8-1. Other high value crops included fruit and nut crops. In addition to the above crops, Merced County’s agricultural businesses include seeds, nursery products, a bee industry, and an aquaculture industry.

Table 4.8-2 shows the six crops most widely planted throughout the County in 1999. Table 4.8-1 indicates the most valuable crops produced during the year 2000.

<table>
<thead>
<tr>
<th>Agricultural Category</th>
<th>Total Value for Agricultural Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Livestock and related products</td>
<td>$618,737</td>
</tr>
<tr>
<td>Poultry and related products</td>
<td>$233,796</td>
</tr>
<tr>
<td>Field Crops</td>
<td>$230,750</td>
</tr>
<tr>
<td>Vegetable Crops</td>
<td>$229,355</td>
</tr>
<tr>
<td>Fruit and Nut</td>
<td>$215,522</td>
</tr>
</tbody>
</table>


4. Environmental Analysis

Table 4.8-2
TOP SIX CROPS HIGHEST ACREAGE HARVESTED IN MERCED COUNTY 1999

<table>
<thead>
<tr>
<th>Crop</th>
<th>Acres Harvested</th>
<th>Value per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almonds</td>
<td>77,461</td>
<td>$1,800.00/ton</td>
</tr>
<tr>
<td>Alfalfa</td>
<td>77,119</td>
<td>$104.55/ton</td>
</tr>
<tr>
<td>Cotton</td>
<td>65,109</td>
<td>$396.11/500 lbs</td>
</tr>
<tr>
<td>Silage – Corn</td>
<td>63,403</td>
<td>$19.25/ton</td>
</tr>
<tr>
<td>Silage other</td>
<td>60,510</td>
<td>$21.75/ton</td>
</tr>
</tbody>
</table>


4.8.1.2 Agricultural Soils

Farmland Classification

The California Department of Conservation has developed a Farmland Mapping and Monitoring Program that classifies the different agricultural soil types related to their ability to sustain agricultural crops. The soil type classifications are as follows:

Prime Farmland

Prime Farmland is defined as farmland with the best combination of physical and chemical features able to sustain long-term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.

Farmland of Statewide Importance

Farmland of Statewide Importance is similar to Prime Farmland but with minor shortcomings, such as greater slopes or with less ability to hold and store moisture. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.

Unique Farmland

Farmland of lesser quality soils used for the production of the State’s leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. The land must have been cropped at some time during the two update cycles prior to the mapping date.

Farmland of Local Importance

Farmland of local importance is defined as and of importance to the local agricultural economy, as determined by each county’s board of supervisors and a local advisory committee.
4. Environmental Analysis

Grazing Land

Grazing land is defined as land on which the existing vegetation is suited to the grazing of livestock. This category is used only in California and was developed in cooperation with the California Cattlemen’s Association, the University of California Cooperative Extension Service, and other groups interested in knowing the extent of grazing activities. The minimum mapping unit for Grazing Land is 40 acres.

Urban and Built-up Land

Land occupied by structure with a building density of at least one unit to one and one-half acres, or approximately six structures to a ten-acre parcel.

Other Land

Other land is defined as land that does not meet the criteria of any other category.

The Department of Conservation’s Farmland Mapping and Monitoring Program (FMMP) identifies land that is lost as well as gained during two-year periods. Farmland monitoring is dependent upon farmland classifications, which are largely based on soil surveys. Agricultural land is quantified based upon acreage and classified as Prime, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The FMMP also quantifies the amount of urban land and grazing lands within the County. Every two years, the FMMP inventories the amount of farmland lost and gained and the amount of urban land gained.

According to the 1998 FMMP report, Merced County currently has 289,067 acres of Prime Farmland, 160,066 acres of Farmland of Statewide Importance, 47,929 acres of Farmland of Local Importance, and 9,593 acres of Unique Farmland.19

Agricultural Soils and Activities On-site

Land within the project site located east of the Main Canal is classified as Grazing Land on the Important Farmland Map for Merced County prepared by the California Department of Conservation. A portion of the area west of the Main Canal is designated as Farmland of Local Importance. No portion of the project area is designated as “Unique Farmland,” “Farmland of Statewide Importance” or as “Prime Farmland.” No portion of the project area is under a Williamson Act Contract. Soils must be Prime Class I or II in order to qualify for consideration for a Williamson Act Contract. According to the Land Use Element, only soils of “Unique or higher quality” are considered valuable agricultural land in Merced County. Figure 4.5-2, Yosemite Lake Soil Map, illustrates agricultural soils on-site.

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Agricultural Soils and Activities in the Surrounding Area

Adjacent areas immediately to the south across Old Lake Road are presently rural residential in character and are not in agricultural production. Other areas to the north and east across Lake Yosemite are open pastureland. Area immediately adjacent to the west of the project site is occupied by a golf course. Soils in adjacent areas to the west, north, and east of Lake Yosemite are designated as Grazing Land on General Soils Quality Map contained in the Agriculture Element of the County General Plan, and are not highly rated in terms of farmland potential. Soils further to the west near the City of Merced SUDP boundary are designated as Farmlands of Local Importance. To the southeast, portions of the area now planned for construction of the UC Merced campus and University Community are Prime and Unique Farmland and are actively cultivated. (See additional discussion under Agricultural impacts in this section). The only Williamson Act Contracts existing in the surrounding areas are located to the east and south of the planned University Community area. Figure 4.5-2, Yosemite Lake Soil Map, illustrates agricultural soils on-site.

4.8.1.3 Existing Conditions Related to On-Site Land Use and Zoning

The Yosemite Lake Estates SUDP site is approximately 655 acres in size and predominantly characterized by gently rolling grasslands, with slopes of less than 10%, which have historically been utilized for cattle grazing. The Crocker-Huffman Canal (MID Main Canal) traverses the site in a NW-SE direction where it connects to Yosemite Lake, which borders the site on the southeast. The canal is an earthen berm structure and is the primary tributary to Lake Yosemite, a man-made reservoir utilized for irrigation purposes. Several breaches in the Crocker-Huffman Canal exist, which have created intermittent lagoon areas that support varying degrees of wetland habitat. A number of vernal pools and marshy areas also exist on-site, created primarily by intermittent flows from canal breaches that have been made by the MID for flood control purposes during periods of high flow. (Refer to Section 4.5, Biological Resources, for a discussion of biological resources.) Fahrens Creek also traverses a portion of the site in the northwestern portion of the property. There are presently no structures on-site. The project area does not incorporate any recreational facilities, and is not accessible to the public for any recreational purposes. The majority of the property within the proposed SUDP boundary is zoned A-2 (Exclusive Agriculture). Photographs of the project area are contained in Section 4.3, Aesthetics.

4.8.1.4 Surrounding Land Use and Zoning

The area to the north of the project area is zoned agricultural (A-2) and used for cattle grazing. The area to the south is zoned RCC (Rural Residential Center) and is subdivided into one acre parcels. To the east is Lake Yosemite and to the west, an 18-hole golf course and single-family housing (see Figure 3.1-2, Project Vicinity).

4.8.1.5 Planned and Approved Land Uses On-site and in the Project Vicinity

Relevant related land use designations and policies are located in the County of Merced General Plan (Land Use and Agriculture Elements), and the City of Merced General Plan and policies.
4. Environmental Analysis

relating to Urban Expansion. Applicable goals, objectives and policies from these documents are described in the following sections. Other pertinent policies include the Merced County Right-to-Farm Ordinance, LAFCO policies regarding conversion of open space lands and the City/County Revenue Sharing Agreement.

The project site is located in an unincorporated area approximately 3 miles northeast of the current corporate boundaries of the City of Merced, abutting the University Community SUDP boundary to the north and east (see Figure 3.1-2, Project Vicinity). The project area also abuts the City of Merced SUDP boundary generally to the west and south, and is within the City’s expanded Sphere of Influence boundary (see Figure 4.8-1, City of Merced Specific Urban Development Plan Boundary). Area to the south of Old Lake Road, which forms the southerly site boundary, is designated as an existing Rural Residential Center (RRC) on the County General Plan and the City of Merced General Plan.

The area surrounding the proposed Yosemite Lake Estates SUDP is predominantly rural in character, as previously described. Areas to the north are zoned A-2. These areas are contained within the UC Merced Community SUDP, which potentially could allow the intensification of land use in areas adjacent to the proposed Yosemite Lakes SUDP. Areas to the southwest (in the vicinity of Old Lake Road and Golf Road) are designated within the North Merced Conceptual Land Use Plan (see Figure 4.8-2, North Merced Conceptual Land Use Plan). Although the area is presently characterized by scattered suburban and rural residential development, future plans anticipate substantial land use intensification. Areas to the south of the proposed Yosemite Lake Estates SUDP are designated as a Rural Residential Center on the County as well as City General Plans. Presently, development is predominantly one-acre parcels. Home sites of one acre or larger, which typify the RRC south of the project area are considered by County Land Use Policy to be “urban” uses.²⁰ It should be noted, that the Rural Residential Center designation also permits densities up to 3 dwelling units per acre with a Conditional Use Permit.

UC Merced Campus

A site located northeast of Yosemite Lake Estates was originally selected for the UC Campus and community. Due to environmental constraints identified during more detailed site selection analysis conducted over the past two years, the campus site was relocated to a 910 acre site immediately adjacent to the southeast shore of Yosemite Lake. The campus is projected to eventually accommodate as many as 25,000 students. Planned land uses include: Academic and Administrative Functions – 157 acres; Student Support Facilities – 23 acres; Student Housing – 250 acres; Athletics and Recreation – 148 acres; Campus Support Facilities – 56 acres, and Parking – 147 acres. The planned student housing is anticipated to accommodate approximately 50% of the total student population at full development of the campus. Development of the UC campus as planned would displace the existing Merced Hills Golf Course.

²⁰ County of Merced, Land Use Element “The Urban Centered Concept”, page I-5.
4. Environmental Analysis

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4. Environmental Analysis

City of Merced Specific Urban Development Plan Boundary

1995 City of Merced SUDP Boundary/Sphere of Influence
- Proposed Merced 2015 SUDP Boundary
- Existing Rural Residential Centers

Source: City of Merced 2015 General Plan-3/97

The Planning Center • Figure 4.8-1
4. Environmental Analysis

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North Merced Conceptual Land Use Plan
4. Environmental Analysis

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University Community Plan

The University Community Plan area consists of approximately 2,133 acres bounded generally by Lake Road on the west, Bellevue Road to the north, and Yosemite Avenue on the south, and by the Fairfield and Le Grand Canals to the east. The Merced County Board of Supervisors in 2001 approved a plan that sets parameters for future development of a planned community to support the UC campus with a mix of single and multi-family residential uses, supporting commercial, office, research and development, schools, parks and open space areas. A total of approximately 1,132 acres and 11,616 dwelling units are projected, with an estimated total population of 31,248 persons. Other land use totals approved are as follows: Retail – 716,000 square feet; Office and Research – 1.3 million square feet; Schools – 110 acres; and, Parks and Open Space – 256 acres. As with the proposed Yosemite Lake Estates project, adoption of the University Community Plan does not convey development entitlements for any portion of the UCP site. The policy and programmatic framework established in the UCP will guide the subsequent preparation of Specific Plans that must also be approved by the County of Merced.

Fahrens Creek

The Fahrens Creek project is located within the City of Merced Specific Urban Development Plan (SUDP), which encompasses the City of Merced (approximately 13,402 acres) and about 7,138 acres of adjacent land located within Merced County. The SUDP is located within the City’s 35,000-acre Sphere of Influence, which also includes the planning area for the future 10th campus of the University of California near Lake Yosemite.

The Fahrens Creek project alternative consists of the development of seven parcels that cover approximately 273.6 acres in the northwest portion of the City of Merced. The Project is located immediately north and west of the current City limits along Yosemite Avenue (extended) and “R” Street (extended), respectively.

The Fahrens Creek annexation to the City of Merced has been designed to implement the development goals of the Merced Vision 2015 General Plan.

4.8.2 Regulatory Setting

4.8.2.1 County of Merced General Plan

Land Use Element

Urban Centered Concept and Definition of a SUDP

The Urban Centered Concept is the basic principle of land use policy in the Merced County General Plan. The Urban Centered Concept is directed at using cities and unincorporated communities or centers to accomplish anticipated urban expansion in an orderly manner, based on the ability of these communities to furnish public services along with land needs based on population demands and in balance with employment generating land uses. The term “Urban” is used to describe land uses common to a city or unincorporated community. Urban land uses...
include: residential, commercial, industrial and related institutional uses. Home sites of one acre or larger found in Rural Residential Centers are also considered urban. These urban uses are generally more “intensive” in character than rural land uses.21

The purpose of using the Urban Centered Concept to plan land use is to ensure that (1) growth occurs in an orderly and logical manner; (2) land is used efficiently; (3) agricultural operations are not eliminated prematurely; (4) the County’s planning efforts are complementary to those of the cities; and (5) urban development occurs where proper services are available.

The Urban Centered Concept is expressed through four area designations of the General Plan Land Use Diagram:

- The Specific Urban Development Plan (SUDP);
- The Rural Residential Center (RRC);
- The Highway Interchange Center (HIC); and
- The Agricultural Services Center (ASC)

SUDP is the broadest General Plan boundary designation, intended to accommodate all classifications of urban land use. An SUDP boundary is recognized as the ultimate growth boundary of a community over the life of the General Plan. Whenever land is added to an SUDP (or a new SUDP is created), the decision is made that the land will ultimately be converted to urban use.

The establishment of new SUDPs is dependent upon meeting dual goals of locating areas for growth off productive agricultural land and providing “urban centers” in geographic locations that will help accommodate growth, which traditionally occurs in the unincorporated portions of Merced County. However, rather than accommodating only residential needs in scattered suburban subdivisions, the County SUDP policies are oriented at providing balanced communities involving full urban infrastructure and services with employment generating land uses and institutional facilities. To satisfy other General Plan goals, new SUDPs must be accompanied by adoption of a Community Specific Plan that identifies the purpose and function of the community and details the mixture of land uses including any proposed affordable housing or employment generating land uses. As has been described in the Chapter 4, Environmental Analysis, and formulation of a subsequent Community Specific Plan is anticipated for the Yosemite Lake Estates SUDP, if approved.

Policies to be Considered by Merced County for Establishment of a New SUDP or Expansion of an Existing SUDP

Under the Merced County General Plan, SUDP expansion or creation is allowed after consideration of several factors: the agricultural value of the land involved and impacts on adjacent agricultural and open space lands; urban service availability; the amount of vacant available land already within the community or adjacent communities; and consistency of the expansion with local planning goals outlined through the community specific plan or the General

21 County of Merced, Land Use Element “The Urban Centered Concept”, page I-5.
4. Environmental Analysis

Plans of adjacent communities. Criteria that are to be applied during the review of General Plan Amendments to expand or create new SUDP boundaries are listed in Table 4.8-3.

<table>
<thead>
<tr>
<th>TABLE 4.8-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>REVIEW CRITERIA FOR EXPANSION/CREATION OF SUDP BOUNDARIES</td>
</tr>
<tr>
<td>MERCED COUNTY LAND USE ELEMENT</td>
</tr>
</tbody>
</table>
| **Criteria**

| (1) SOIL: | Is the soil suitable for agriculture according to the soil capability? |
| (2) PARCEL SIZE: | Is the present parcel a sufficient size for economic agricultural use? |
| (3) USE: | Is the land presently used, or has it been recently used for agriculture? |
| (4) COMPATIBILITY: | Will a nonagricultural use create conflicts as to compatibility with adjacent or nearby agricultural uses? |
| (5) SERVICES: | Have provisions been made to provide adequate levels of public services to satisfy the demands generated by the proposed development? |
| (6) LIMITATION: | Will an individual waste disposal system contaminate the surface or groundwater table? |
| (7) SAFETY: | Will intensive use present hazards to public health, welfare, and safety, as identified in the Safety Chapter (V) of the General Plan? |
| (8) NATURAL RESOURCES: | Will urban use impact significant open space and/or conservation values as identified in the Open Space/Conservation chapter (VI) of the General Plan? |
| (9) LAND VACANCY: | Is there an adequate supply of available vacant land within the existing urban boundary to accommodate reasonable anticipated or historic growth needs over the next ten (10) years? |
| (10) CONSISTENCY: | Is the proposal consistent with the goals and policies of the Community Specific Plan if one has been adopted for the community or area? |


The Land Use Element of the County General Plan presently designates the Yosemite Lake SUDP area as rural land use. The nature of the project area is more characteristic of the “Foothill Pasture” designation than the “Agricultural” designation of rural land use (See Figure 4.5-2, Yosemite Lake Soil Map). Land use and agricultural related goals and objectives contained in the General Plan that are relevant to the establishment of a new SUDP are listed in Table 4.8-3, Review Criteria For Expansion/Creation of SUDP Boundaries, and analyzed in the impact discussion relative to the proposed project area. (Numbers listed correspond to the General Plan.) Implementation policies correlating to goals and policies are listed in Table 4.8-4.
## 4. Environmental Analysis

### TABLE 4.8-4
COUNTY OF MERCED
APPLICABLE GENERAL PLAN GOALS AND OBJECTIVES
PROPOSED YOSEMITE LAKE SDDP

<table>
<thead>
<tr>
<th>Goal</th>
<th>Land Use Element</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Goal 1</strong></td>
<td>Creation of a land use pattern which enhances the integrity of both urban and rural areas</td>
</tr>
<tr>
<td>Objective 1A</td>
<td>Compact urban development boundaries which utilize land efficiently and reduce conflicts with agricultural and open space lands.</td>
</tr>
<tr>
<td>Objective 1B</td>
<td>Creation of “New full-service SUDP’s which provide an alternative to urban development on productive agricultural lands.”</td>
</tr>
<tr>
<td>Objective 1C</td>
<td>Creation of “an efficient, orderly urban development pattern which minimizes public service costs.”</td>
</tr>
<tr>
<td><strong>Goal 2</strong></td>
<td>Creation of “a high quality of living within unincorporated communities.”</td>
</tr>
<tr>
<td>Objective 2A</td>
<td>Adoption of “individual community specific plans for each Specific Urban Development Plan (SUDP) by the year 2000 which recognize local issues, needs and desires.”</td>
</tr>
<tr>
<td>Objective 2B</td>
<td>Promotion of “urban land uses at intensities and densities commensurate with the level of public services available in each SUDP.”</td>
</tr>
<tr>
<td>Objective 2C</td>
<td>Provision of “urban land uses appropriately located to avoid incompatible land uses.”</td>
</tr>
<tr>
<td><strong>Goal 7</strong></td>
<td>“Conservation of productive agricultural and other valuable open space lands.”</td>
</tr>
<tr>
<td>Objective 7A</td>
<td>“Conversion of productive agricultural and other valuable rural land to urban uses” is to be minimized.</td>
</tr>
<tr>
<td><strong>Goal 9</strong></td>
<td>“Accommodation of public land uses and private facilities which satisfy specific County needs.”</td>
</tr>
<tr>
<td>Objective 9A</td>
<td>Recreational areas, institutional and public facilities, hazardous and non-hazardous waste facilities, power and communications towers and airports are to be appropriately located to minimize land use conflicts while satisfying local and regional demands.</td>
</tr>
<tr>
<td><strong>Goal 10</strong></td>
<td>“County services and facilities are to be provided at adequate levels for existing and future residents.”</td>
</tr>
<tr>
<td>Objective 10A</td>
<td>Minimum acceptable levels of County services and facilities such as sheriff and fire protection, roads, parks, libraries, social services and courts are available to serve existing County needs through the year 2000.</td>
</tr>
<tr>
<td>Objective 10B</td>
<td>County services and facilities are not reduced below minimum acceptable levels as a result of new development.</td>
</tr>
<tr>
<td><strong>Goal 11</strong></td>
<td>Accommodation of the University of California campus and orderly development of adjacent land uses through a comprehensive planning process.</td>
</tr>
<tr>
<td>Objective 11A</td>
<td>Land use designations supporting the University are identified for the Campus site and adjacent lands in a coordinated and organized manner involving landowners, the City of Merced, University of California and the Merced Irrigation District.</td>
</tr>
<tr>
<td>Objective 11B</td>
<td>Speculative development projects, re-zonings and General Plan Amendments determined to be detrimental to a coordinated development process for the University Community are discouraged.</td>
</tr>
</tbody>
</table>

### Agricultural Element

<table>
<thead>
<tr>
<th>Goal 2</th>
<th>Productive agricultural lands are to be conserved.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective 2A</td>
<td>Agricultural areas are to be protected from conversion to non-agricultural uses.</td>
</tr>
<tr>
<td>Objective 2B</td>
<td>Conflicts are to be reduced through an understanding of the agricultural industry by urban dwellers.</td>
</tr>
</tbody>
</table>
4. Environmental Analysis

### TABLE 4.8-4
**COUNTY OF MERCED**
**APPLICABLE GENERAL PLAN GOALS AND OBJECTIVES**
**PROPOSED YOSEMITE LAKE SDDP**

<table>
<thead>
<tr>
<th>Goal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Land uses, which are potentially disruptive to the agricultural economy, are to be properly located and operated.</td>
</tr>
<tr>
<td>Objective 3A</td>
<td>Clear boundaries between urban and agricultural areas are to be identified and land use buffers are to be provided.</td>
</tr>
<tr>
<td>Goal 4</td>
<td>The management of water resources to benefit the agricultural community is improved.</td>
</tr>
<tr>
<td>Objective 4A</td>
<td>Measures to protect and improve water quality are supported.</td>
</tr>
</tbody>
</table>

Source: Merced County Year 2000 General Plan, Land Use and Agriculture Elements.

**Agricultural Element**

The Agricultural Element of the General Plan is intended to “improve the viability of agricultural operations and promote the conservation of agricultural land.” These goals are focused upon what are defined as “productive agricultural land or soils”. This includes all “good quality soils – Prime, Statewide Importance, and Unique Farmland, and Capability Class I-IV on the Soil Survey of the USDA Soil Conservation Service, - as well as poor soils that are presently or potentially producing agricultural commodities.”

The Agriculture Element notes that “perhaps the most important factor affecting agricultural productivity in the County is soil quality.” Merced County, it is noted, has a “large amount” of Prime soils. High quality agricultural soils, however, “pose a problem for urban growth.” The Agricultural Element notes that “all the major and most of the minor SUDPs are located on Prime or Statewide Importance Soils.”

An analysis of vacant land available within existing SUDP areas conducted as part of a update to the Agricultural Element in 1989 concluded that sufficient land was available within existing SUDP boundaries to accommodate growth expected at that time, such that expansion of urban use onto other productive soils would represent “premature conversion” of productive agricultural land. While the Agricultural Element deals with conservation of productive agricultural soils, it is the Land Use Element that establishes a set of criteria that are to be used in evaluating General Plan Amendments to changes in SUDP boundaries. While the formation of new SUDP areas is not specifically mentioned as an application of these review criteria, they are assumed to represent issues that the County considers of importance in this situation as well.

#### 4.8.2.2 Merced County Right-to-Farm Ordinance

Merced County has adopted a Right-to-Farm ordinance, which states that residents, moving into areas where there are existing agricultural activities, “should be prepared to experience discomfort or inconveniences arising from typical agricultural operations which could include dust, smoke, noise, or odors.” The Right-to-Farm ordinance promotes understanding and

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22 County of Merced, Agriculture Element Page vii-1.
23 County of Merced, Agriculture Element Page vii-14.
24 County of Merced, Agriculture Element Page vii-16.
cooperation between urban residents and agricultural operators. Section 17.08.090 of the Merced County Code states the following:

1. Where required by this code (Title 17), every final map shall have a certificate placed on the map, or shall record by separate instrument, which notifies future buyers, leases, or financiers of the following:

The property described on the final map is in the vicinity of land utilized for agricultural purposes, and residents of this property may be subject to inconveniences or discomfort arising from the use of agricultural chemicals, including, but not limited to, pesticides and fertilizers; and from the pursuit of agricultural operations including, but not limited to, plowing, spraying and burning which occasionally may generate dust, smoke, noise, and odors.

The County of Merced has established agriculture as a priority use in agricultural zones which are outside or in an established SUDP boundary, Rural Residential Center (RRC) boundary, Highway Interchange Center (HIC) boundary, or Agricultural Service Center (ASC) boundary, and residents of property in the vicinity of such agricultural zones should be prepared to accept inconveniences or discomfort from normal, necessary agricultural operations.

2. This section shall only apply to those properties inside and within 1,000 feet of a SUDP boundary, Rural Residential Center (RRC) boundary, Highway Interchange Center (HIC) boundary, or Agricultural Service Center (ASC) boundary as designated on the General Plan Land Use Map.

4.8.2.3 Merced County LAFCO Policies regarding Conversion of Open Space Lands

Merced County Local Agency Formation Commission (LAFCO) has specific policies related to the conversion of open space lands. These policies apply to annexation of County land to a City and establishment or expansion of service boundaries.

LAFCOs have their own definition of prime agricultural lands that is utilized in the review of proposals subject to LAFCO approval. According to Section 56064 of the Cortese-Knox Local Government Reorganization Act, prime agricultural land means an area of land that has not been developed for a use other than an agricultural use that meets any one of the following qualifications:

- Land that qualifies, if irrigated, for rating as class I or class II in the USDA NRCS land use capability classification, whether or not the land is actually irrigated, provided that irrigation is feasible.
- Land that qualifies for a rating of 80 through 100 Storie Index Rating.
- Land that supports livestock used for the production of food and fiber and that has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the United
State Department of Agriculture in the National Handbook on Range and Related Grazing Lands, July, 1967, developed pursuant to Public Law 46, December 1935.

- Land planted with fruit or nut-bearing trees, vines, bushes, or crops that have a nonbearing period of less than five years and that will return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than four hundred dollars ($400) per acre.

These qualifications have been adopted by the Merced County LAFCO as policies to protect agricultural land along with the following policy:

**Implementation**

The applicant or property owner may submit a soil analysis which demonstrates how soil has been degraded to a less than “prime” classification. The soil analysis should focus on the actual soil rather than the specific crops that may be planted. As an option, the analysis could address the soil and its ability to support crops typically grown in the area on similar soils. The cost of the soil analysis shall be borne by the applicant or property owner.

**Policies:**

2. At the time of adoption of a Sphere of influence for a city, or urban service district, efforts to direct growth away from large concentrations of prime agricultural land shall be demonstrated, recognizing that some conversion of prime land may be inevitable.

4.8.2.4 City of Merced General Plan

As has been stated previously, the proposed Yosemite Lake Estates SUDP area is within the Sphere of Influence of the City of Merced and is contiguous with the Merced SUDP at the northeast boundary. As such, creation of the proposed SUDP may impact City planning and development efforts. The City of Merced VISION 2015 General Plan, adopted in 1997, contains a chapter that addresses concerns the City may have regarding urban expansion. “The General Plan guides urban development to the north towards the least productive agricultural soils in the area and away from other environmentally sensitive lands to the east, west and south.”25 (See Figure 4.8-1, City of Merced Specific Urban Development Plan Boundary, and Figure 4.8-2, North Merced Conceptual Land Use Plan).

The Urban Expansion Chapter of the City of Merced General Plan contains policies concerned with expected future growth, the density of future growth areas, and the distribution of future growth. Timing of future growth, however, is expected to be driven primarily by development demand.

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25 City of Merced, VISION 2015 General Plan, 4/97 General Plan Summary.
The City of Merced has provided comments in response to the Notice of Preparation, which highlights areas of policy concern (see Appendix B and Appendix C). Applicable Urban Expansion policies are outlined below and are analyzed with respect to the proposed Yosemite Lakes SUDP in the following sections.

In addition to Urban Expansion policies, the City and County of Merced have enacted an agreement that addresses procedures for growth within the City’s SUDP, as well as, other unincorporated areas within the City’s Sphere of Influence. This agreement is described in the following section.

Policy numbers listed below correspond to the City of Merced VISION 2015 General Plan.

**Goal Area UE-1: Urban Expansion**

**Goals**

- A Compact Urban Form
- Preservation of Agriculturally Significant Areas
- Efficient Urban Expansion

**Policies**

- UE-1.1 Designate areas for new urban development that recognize the physical characteristics and environmental constraints of the planning area.
- UE-1.2 Promote a compact urban form.
- UE-1.3 Control the annexation, timing, density and location of new land uses within the City’s urban expansion boundaries.

**4.8.2.5 City / County Revenue Sharing Agreement (County Resolution No. 97-35)**

In February 1997, the City of Merced and the County of Merced adopted a property tax sharing agreement pertaining to areas in the process of annexation or that may annex to the City in the future. According to the relevant section of the City/County revenue sharing agreement (Section VI.D), the City of Merced and County of Merced have agreed not to approve changes in land use designsations from non-urban to urban without the prior “agreement” of the other party. The project site is currently designated “Agricultural” in the County General Plan and is located within what is called the “Northern City” urban expansion area in the City of Merced 2030 Plan. No specific land use is designated on the project site on the City General Plan. If approved, the proposed project would change the County General Plan to an urban SUDP designation. No specific process is outlined in the Revenue Sharing Agreement by which the County is to obtain “agreement” of the City of Merced, nor is what would constitute “agreement” defined. The Agreement does, however, state in the introduction to Section VI, that “the County agrees to
amend its General Plan and administer zoning and subdivision regulations to accommodate
growth of the City as outlined in the City’s General Plan.”

In June 1997, an Administrative Draft Guidance Package for Yosemite Lake Estates was
submitted to the County. In March 1998 the County referred the Draft Guidance Package for
Yosemite Lake Estates to the City of Merced. Based on the City/County Revenue Sharing
Agreement the City needed to inform the County how the City planned to proceed and whether
or not it agreed with the County’s plan to process the project. The County would not take
the project before the Board of Supervisors until the City Council took action on the Guidance
Package for the project. The City Council passed a motion on May 4, 1998 for conditional
approval of the Guidance Package, subject to modification of “Potential Planning Issues” and
specification that the “Schedule” provide for solicitation of comments from the University
Community Planning Group entities for consideration by the Board of Supervisors. The motion
represented approval of a process and not land use per the provisions of the City/County Tax
Sharing Agreement. The requested changes were incorporated into the final version of the
Guidance Package, which was approved by the Merced County Board of Supervisors in June
1998.

4.8.3 Methodology Related to Land Use

The proposed Yosemite Lake Estates project has been evaluated to determine its consistency
with the Merced County Land Use and Agricultural Elements (updated as of 9/98) and other
applicable County land use related policy presented in preceding sections. In addition, it has been
reviewed to determine consistency with relevant portions of the City of Merced Vision 2015
General Plan (4/97). Topics addressed in this section include 1) existing land use and zoning
patterns; 2) consistency with adopted land use and environmental policy programs; 3)
compatibility of the proposed project with existing and planned land use in the surrounding area;
4) the effect of the proposed project on agricultural resources and operations; and 5) the effect of
the proposed project on recreational facilities and opportunities.

The project assumptions upon which analyses contained in this EIR are based (with the
exception of traffic, long-term air quality and noise impacts), assume that a maximum of 1,262
dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial
uses could be developed within the proposed SUDP with approval of a subsequent Community
Specific Plan (see Section 4.1, Summary of Project Assumptions). The subsequent specific plan,
which will be based on a specific development project, could further reduce build-out and related
impacts, but could not exceed the maximum development assumptions presented in Section 4.1,
Summary of Project Assumptions, without further analysis and public review.

4.8.4 Impacts and Mitigation Measures

This section will analyze the following topics: Land use impacts caused by physical division of
an established community; Consistency of project land use assumptions presented in Section 4.1,
Summary of Project Assumptions, of this EIR with applicable policy plans and regulations meant
to avoid or protect the environment; Conflict of the project land use assumptions with any
applicable habitat conservation plan or natural community conservation plan; and adverse affects on agricultural resources or operations.

4.8.4.1 Significance Criteria

The following criteria are utilized to evaluate the potential for significant impacts with respect to land use, in accordance with the CEQA Checklist criteria for land use and agriculture:

- Physical division of an existing community;
- Conflict with the General Plan and zoning designations or any other applicable policy plans or policies adopted for the purpose of avoiding or mitigating an environmental effect;
- Conflict with any applicable habitat conservation plan or natural community conservation plan; and
- Adverse affects on agricultural resources or operations involving any of the following: 1) conversion to non-agricultural use of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (as designated by the California Resources Agency); 2) conflict with existing zoning for agricultural use, or a Williamson Act Contract; 3) involvement of any other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

4.8.4.2 Impact: Physical Division of an Existing Community

- Merced County Regulatory Policy

Goal 1 of the Land Use Element of the General Plan policies broadly addresses land use patterns. These goal statements would discourage the possible physical division of an existing community, although the subject is not specifically addressed. The proposed formation of a Yosemite Lake Estates SUDP area would not physically divide any existing community.

- Additional Regulatory Policy

The City of Merced polices noted in the previous section and the City/County Revenue Sharing Agreement would similarly discourage physical division of an existing community although the subject is not specifically addressed. The proposed formation of a Yosemite Lake Estates SUDP area would not physically divide any existing community.

- Additional Impact Evaluation

There is no established community on the project site or in the surrounding area that would be physically divided by the formation of the proposed SUDP area.

- Level of Significance Before Mitigation: Less than significant
4. Environmental Analysis

- **Mitigation Measures:** No mitigation measures are necessary

- **Level of Significance After Mitigation:** Less than significant

4.8.4.3 **Impact:** Project Conflicts 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

- **Merced County Regulatory Policy**

The proposed formation of a new SUDP area would involve approval of a General Plan Amendment from “rural” agricultural use to urban uses on the Merced County Land Use Element. The formation of the SUDP would be followed by preparation of a Community Specific Plan (CSP), which would identify ultimate land use designations, development standards, infrastructure plans and implementation measures. Section 4.2, *Summary of Infrastructure Systems*, describes assumptions upon which analysis throughout this EIR has been based. The subsequent CSP could reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, *Summary of Project Assumptions*.

The existing Land Use Element would not allow formation of a SUDP. Consequently, the applicant has requested an amendment to the Land Use Element to establish a new SUDP area boundary. This is the only policy entitlement action under consideration by the County of Merced at this time. Approval of a General Plan Amendment would eliminate any conflict with the current Land Use Element designations. Subsequent changes in zoning designations to reflect new land uses would be considered with the CSP. Consequently, conflict with the County General Plan would not represent a significant impact. The appropriateness of the proposed General Plan Amendment, however, involves the consideration of a variety of both County and City goals and policies. Discussion below addresses County of Merced General Plan policies and objectives applicable to land use, and agriculture.

**Land Use Element**

**Goal 1:** Creation of a land use pattern which enhances the integrity of both urban and rural areas.

**Objective 1A:** Compact urban development boundaries, which utilize land efficiently and reduce conflicts with agriculture and open space lands.

**Analysis:** Implementation policies related to the above Goal 1 and Objective 1A state that urban development shall occur only within adopted urban boundaries of cities, unincorporated communities or other urban centers, including (but not limited to) Specific Urban Development Plan areas. If approved, the Yosemite Lake Estates SUDP would comply with this policy. Criteria for the creation of new SUDPs are outlined and evaluated under Objective 1B, below. Project impacts on agriculture and open space areas are discussed in the following sections.
Objective 1B: New full service SUDPs are created, which provide an alternative to urban development on productive agricultural lands or to accommodate regionally significant institutional and publicly sponsored land uses.

Implementation policies related to Objective 1B, in summary, state:

1. new SUDPs shall only be established through the adoption of a Community Specific Plan;

2. new SUDPs should be considered only when the location and size of the community promotes agricultural land conservation, urban service efficiencies and are determined compatible with existing urban areas; and

3. establishment of a new SUDP must provide positive overall economic benefits to the County and include consideration of both employment and housing opportunities (including affordable housing).

Implementation criteria for consideration of the establishment of new SUDPs state the following:

1. “The proposed urban boundary should encompass a minimum area of 320 acres to achieve efficiencies in urban service delivery and provide for long range growth needs;”

2. to ensure agricultural values are protected, the property should be located off of productive agricultural land (as defined in the Agricultural Chapter of the County General Plan), and no more than 10% of land area involved can be classified as “prime” soil; and

3. an EIR must be prepared to address creation of a new SUDP.

If the above criteria are met, an application may be submitted for a General Plan Amendment and subsequent preparation of a Community Specific Plan (CSP). Further detailed specifications for the preparation of a CSP are outlined in the General Plan and are included in this section as policy level mitigation to be implemented at the CSP level.

Analysis: On a preliminary level, the fact that the County of Merced accepted and approved a Guidance Package for the formulation of the proposed Yosemite Lake Estates SUDP and has also accepted an application for the Yosemite Lake Estates GPA and SUDP for processing, can be taken to imply that the proposed project meets the preceding criteria. An EIR must, however, explain the logic and factual information that supports such a determination of consistency. This requires elaboration with respect to the intent of the Land Use Element and Agricultural Element where relevant to the proposed SUDP.

The project area is approximately 655 acres in size, which complies with the minimum area for SUDP formation. Issues of urban service delivery are a key question in the evaluation of the feasibility of future area development and are addressed in Section 4.11, Public Services and Utilities. In general, build-out of a project of the magnitude proposed can be expected to generate a substantial demand for expansion of services and may require new facilities. The
4. **Environmental Analysis**

Preliminary land use assumptions upon which this environmental analysis is based assume an elementary school will be necessary to service the area, as well as an on-site wastewater treatment plant. Development of full infrastructure systems would be addressed in the subsequent stages of planning associated with a Community Specific Plan. The formation of special assessment districts is anticipated to provide financing in a manner which would avoid burdening the County or other public entities.

Section 4.12, *Socioeconomics*, of this EIR addresses Population and Housing issues and long-range area-wide growth. The following sections concerning the City of Merced General Plan and its urban expansion policies also address long-range growth issues. The County General Plan states that more than enough land for new development is provided within existing SUDP boundaries through the year 2000. The Land Use Element of the County General Plan states, “a legitimate need exists to accommodate the establishment of new communities on other than prime agricultural and productive soils which can be geographically located to satisfy regional growth needs.”26 It further states “while the County encourages normal, healthy growth in the existing communities, it is also recognized that with few exceptions, growth within these communities occurs at the sake of the most productive agricultural soils in the County because they are concentrated on the Valley Floor.”27 The proposed Yosemite Lakes SUDP area is predominantly grazing land and soil types that do not qualify as soils of Prime or Statewide Importance. Further discussion of agricultural resource impacts is contained in the following sections.

The preceding information and related discussion presented in other sections of this EIR, as referenced, support the general suitability of the project area for SUDP formation. The Community Specific Plan, which would follow SUDP formation, is the appropriate stage to address issues such as provision of employment and housing opportunities. As has been noted previously, this EIR is based on assumptions that may be altered with the formulation of the subsequent CSP. The preliminary land use mix assumed provides support for some commercial land use. The community concept assumed is, however, predominantly residential in character.

**Objective 1C:** Creation of “an efficient, orderly urban development pattern, which minimizes public service costs.”

Implementation policies related to Objective 1C, in summary, state:

4. New urban development within an SUDP shall connect to existing public sewer and water systems, where such systems exist; or

5. where an SUDP is without sewer and water districts, individual approval of sewer and water treatment and delivery systems is required prior to project approval;

6. public facilities must be adequate and available to serve the demands generated by new development, and

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27 Ibid.
7. infilling of development on existing vacant parcels within designated urban boundaries is encouraged.

**Analysis:** Existing public infrastructure within the project area is very limited. The project has proposed that groundwater be the primary water supply source. (Section 4.7, *Hydrology and Water Quality*, provides detailed information with respect to groundwater resources and measures proposed to meet the water and wastewater demands of the project).

Because of the size of the proposed project area and the limited percolation capabilities of soils, septic tanks and leach fields are not considered suitable. The project assumes construction of an on-site treatment system, including storage facilities. (Section 4.11, *Public Services and Utilities*, addresses specific details with respect to proposed water and sewer systems).

In accordance with Objective 1C, proposed water and sewer systems would require approval from the County Health Department (and other responsible agencies) prior to approval of any subsequent discretionary actions such as the CSP. In accordance with standard planning procedures, proposed facilities would be designed to adequately serve projected development and would be planned to be available to serve proposed new development in an appropriate timeframe determined by the County of Merced. While Objective 1C also highlights the promotion of urban infill, the scale of the proposed SUDP has been planned to respond to County policies and concerns with respect to urban service efficiencies (see Objective 1B discussion).

- **Additional Regulatory Policy**
  None are applicable.

- **Additional Impact Evaluation**
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**
  4.8.1 Subsequent to approval of any formation of a Specific Urban Development Plan boundary, the project applicant shall prepare a Community Specific Plan, which includes the following at a minimum:

  4.8.1a A fiscal impact component to contain an assessment of projected tax revenues compared to projected County service costs;

  4.8.1b A community facilities/infrastructure component to identify public and private infrastructure needs, service district or assessment area formation details, and a development phasing plan;
4. Environmental Analysis

4.8.1c A land use component identifying the various land uses proposed including density and intensity of development, community design parameters and any special project features;

4.8.1d A circulation component identifying the relationship to the General Plan Circulation Chapter;

4.8.1e An assessment of the relationship to goals and objectives of the General Plan Housing Chapter;

4.8.1f An evaluation of the job/housing relationship of the community identifying where employment centers are located and any proposed phasing of employment generating land uses if they are provided within the SUDP;

4.8.1g An open space and wildlife component identifying existing and proposed open space values; and

4.8.1h An identification of the plan goals, objectives and policies indicating the functional character of the community that is proposed and its relationship to other existing incorporated and unincorporated communities in the region.

4.8.2 Concurrent with approval of any subsequent Community Specific Plan, the project applicant shall obtain initial clearance from the County Health Department for the utilization of on-site sewer and water systems.

4.8.3 Sewer and water systems shall be limited to only the capacity necessary to adequately service the proposed development, as determined by the County of Merced.

4.8.4 The Community Specific Plan shall be developed through a cooperative planning process designed to address the concerns of the County of Merced, City of Merced, University of California and the objectives of the property owners, in order to ensure functional compatibility with adjacent areas planned for urban development and the feasibility of development from the perspective of the property owner, as well as affected public agencies.

- **Level of Significance After Mitigation:** Less than significant

**Goal 2:** Creation of “a high quality of living within unincorporated communities.”

**Objective 2A:** Adoption of “individual Community Specific Plans for each Specific Urban Development Plan (SUDP) by the year 2000 which recognize local issues, needs and desires.”

**Analysis:** If the proposed SUDP is approved, the next step in the planning process would be the formulation of a Community Specific Plan (CSP) in accordance with the specifications outlined in mitigation measures listed under Goal 1 above. These guidelines will ensure
4. Environmental Analysis

consideration of “local issues, needs and desires.” Any subsequent CSP would be required to assess and demonstrate compliance with General Plan policies in effect at the time.

Objective 2B: Promotion of “urban land uses at intensities and densities commensurate with the level of public services available in each SUDP.”

Analysis: As previously described, the proposed SUDP would be serviced by on-site water and sewer systems. All necessary support services are required to be available to provide for proposed urban development. Preparation of any subsequent CSP will review proposed population densities and building intensities to ensure provision of all necessary services.

Objective 2C: Provision of “urban land uses appropriately located to avoid incompatible land uses.”

Analysis: In the development of any subsequent Community Specific Plan, proposed land use designations will be reviewed by the County of Merced, as lead agency, for appropriateness based upon community and regional needs, and compatibility with adjacent land uses. This process may result in changes in the preliminary land use assumptions utilized in this EIR. No development plan of any sort is under consideration at this time, consequently it would be premature and speculative to attempt to evaluate possible land use compatibilities or incompatibilities, either on-site with surrounding land uses. All that can be said with any degree of certainty is that the project area would be “urbanized” at some future point, if the formation of an SUDP area boundary is approved, to a maximum intensity that could not exceed the assumptions described in Section 4.1, Summary of Project Assumptions, of the EIR. Land use driven impacts such as Traffic, Air Quality, and Noise are addressed in other sections of this EIR. The procedures for the preparation of an adequate Community Specific Plan, as outlined under mitigation measures for Goal 1, would also ensure that the intent of Goal 2 is achieved.

- **Level of Significance Before Mitigation:** Potentially significant
- **Mitigation Measures:** No mitigation measures are necessary, other than those specified under Goal 1.
- **Level of Significance After Mitigation:** Less than significant

Goal 7: “Conservation of productive agricultural and other valuable open space lands.”

Objective 7A: “Conversion of productive agricultural and other valuable rural land to urban uses” is to be minimized.

Analysis: Implementation policies relevant to Objective 7A state that “conversion of agricultural or other rural land into urban uses shall be allowed only where a clear and immediate need can be demonstrated based on anticipated growth and availability of public services and facilities.” It is also stated that urban uses should be directed to less valuable farmland when conversion is justified. These policies are to be implemented through the
4. Environmental Analysis

analysis of the criteria presented in Table 4.8-5, *Analysis of Expansion/Creation of SUDP Boundaries*. The General Plan Land Use Element states “For each criterion which raises a concern, the Board of Supervisors must make a finding(s) that the value of the project provides an overall benefit to the County that outweighs the issue(s) identified.” Table 4.8-5, *Analysis of Expansion/Creation of SUDP Boundaries*, provides an analysis of all criteria in relation to the proposed SUDP.

In reviewing criteria illustrated in Table 4.8-5, *Analysis of Expansion/Creation of SUDP Boundaries*, it can be concluded that the proposed SUDP area complies with County policy with respect to soil capability/limitations; parcel size; existing/historical land use; compatibility with adjacent agricultural uses; provisions of adequate services; waste disposal limitations; and public safety. However, urbanization of the proposed SUDP area has been determined to result in significant unavoidable aesthetic impacts and there is some question with respect to Criteria No. 9 – Land Vacancy. If the project is approved, the Board of Supervisors would be required to make specific findings with respect to these topics, according to the Land Use Element of the General Plan.

Information on vacant land availability contained in the County General Plan is out of date and therefore, cannot be considered a reliable basis upon which to evaluate the proposed project. (Estimates of vacant residentially zoned land contained in the Housing Element are dated 1992. Estimates of vacant SUDP land contained in the Agricultural Element are dated 1983.)

**TABLE 4.8-5**

**ANALYSIS OF EXPANSION/CREATION OF SUDP BOUNDARIES**

**PROPOSED YOSEMITE LAKE SUDP**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Proposed Yosemite Lakes SUDP Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) <strong>SOIL:</strong> Is the soil suitable for agriculture according to the soil capability?</td>
<td>• Land area on the project site located east of the Main Canal is classified as Grazing Land on the Important Farmland Map for Merced County. A portion of the area west of the Main Canal is designated as Farmland of Local Importance. According to the Land Use Element, only soils of “Unique or higher quality” are considered valuable agricultural land.</td>
</tr>
<tr>
<td>(2) <strong>PARCEL SIZE:</strong> Is the present parcel a sufficient size for economic agricultural use?</td>
<td>• Not applicable to project area based on low-level soil capability as described under #1 above.</td>
</tr>
<tr>
<td>(3) <strong>USE:</strong> Is the land presently used, or has it been recently used for agriculture?</td>
<td>• The project area has historically been used for grazing and pasturelands. No irrigated crop production has occurred on-site.</td>
</tr>
</tbody>
</table>
### TABLE 4.8-5
**ANALYSIS OF EXPANSION/CREATION OF SUDP BOUNDARIES**
**PROPOSED YOSEMITE LAKE SUDP**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Proposed Yosemite Lakes SUDP Formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>(4) <strong>COMPATIBILITY</strong>: Will a nonagricultural use create conflicts as to compatibility with adjacent or nearby agricultural uses?</td>
<td>• Adjacent areas to the south are presently rural residential in character. Other areas to the north and east across Lake Yosemite are open pastureland as well. In general, the adjacent areas are not highly rated in terms of farmland potential. To the southeast, portions of the area now planned for construction of the UC Merced campus and University Community are prime and unique farmland and actively cultivated. (See additional discussion under Agricultural impacts in this chapter.)</td>
</tr>
<tr>
<td>(5) <strong>SERVICES</strong>: Have provisions been made to provide adequate levels of public services to satisfy the demands generated by the proposed development?</td>
<td>• The Community Specific Plan process will address community services/infrastructure. All necessary services are proposed to be provided on-site by the project proponent.</td>
</tr>
<tr>
<td>(6) <strong>LIMITATION</strong>: Will an individual waste disposal system contaminate the surface or groundwater table?</td>
<td>• An on-site waste treatment plant is proposed. Its design and operation must comply with all applicable water quality standards and regulations.</td>
</tr>
<tr>
<td>(7) <strong>SAFETY</strong>: Will intensive use present hazards to public health, welfare, and safety, as identified in the Safety Chapter (V) of the General Plan?</td>
<td>• None of a significant nature have been identified.</td>
</tr>
<tr>
<td>(8) <strong>NATURAL RESOURCES</strong>: Will urban use impact significant open space and/or conservation values as identified in the Open Space/Conservation chapter (VI) of the General Plan?</td>
<td>• The eventual urbanization of the proposed SUDP area would result in significant unavoidable aesthetic impacts.</td>
</tr>
<tr>
<td>(9) <strong>LAND VACANCY</strong>: Is there an adequate supply of available vacant land within the existing urban boundary to accommodate reasonable anticipated or historic growth needs over the next ten (10) years?</td>
<td>• This EIR does not attempt to evaluate what the Lead Agency may consider to be an “adequate supply of available land.” Information contained in the County of Merced Land Use Element is outdated and inadequate to respond to this issue (see further discussion, below).</td>
</tr>
<tr>
<td>(10) <strong>CONSISTENCY</strong>: Is the proposal consistent with the goals and policies of the Community Specific Plan if one has been adopted for the community or area?</td>
<td>• A subsequent Community Specific Plan must be prepared if the proposed SUDP is approved.</td>
</tr>
</tbody>
</table>


The City of Merced General Plan also analyzed vacant land supply in its Housing Element, adopted in 1992. The City of Merced then estimated approximately 2,350 to 6,430 dwelling units could be accommodated on available residentially zoned land within the City limits and the Merced SUDP boundary. It also anticipated a need for approximately 3,250 to 8,500 new dwelling units in the City SUDP by 1997. Although, changes in market conditions since
1992 may have affected the accuracy of some of the city’s underlying assumptions, these estimates suggest some degree of pressure on the supply of vacant residential land in the Merced area has been recognized by the City. The “Urban Expansion” chapter of the City General Plan however, also broadly addresses projected growth within the City SUDP and surrounding areas. Population projections through the Year 2035 are provided based on “various” sources. This chapter of the City General Plan concludes that all off-campus UC-related growth, estimated to total 73,450 persons, could be accommodated within the City’s SUDP. It further states “the portion of that growth that may be accommodated within the University SUDP (or elsewhere in the County) cannot be determined until a land use plan for that area is established and further demographic studies are completed.” While additional UC related studies have been prepared in conjunction with the University Community Plan, subsequent studies are anticipated in association with subsequent Specific Plans.

Due to the state of available data it is not possible for this EIR to draw a specific conclusion with respect to Issue 9 – Land Vacancy (see Table 4.8-5, Analysis of Expansion/Creation of SUDP Boundaries). Further analysis of this issue would require demographic and market research, which is beyond the purview of the CEQA process. If such analysis is to be undertaken, it should be coordinated with joint City/County/UC planning process and subsequent CSP for Yosemite Lake Estates.

Land vacancy is, however, only one factor among ten criteria to be considered in evaluating conversion of agricultural land to urban uses. The proposed Yosemite Lake Estates SUDP meets the majority of criteria, which suggests that the intent of Goal #7 would be achieved by relieving growth pressures on other more sensitive and valuable areas of the County. For this reason, the impact to agricultural/rural land related to the proposed SUDP formation is considered less than significant (refer also to discussion under Goal 1, Objective 1A).

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant

**Goal 9:** “Accommodation of public land uses and private facilities which satisfy specific County needs.”

**Objective 9A:** Recreational areas, institutional and public facilities, hazardous and non-hazardous waste facilities, power and communications towers and airports are to be appropriately located to minimize land use conflicts while satisfying local and regional demands.

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Policies relevant to Objective 9A and the proposed Yosemite Lake Estates SUDP are highlighted below:

8. Ensure that adequate local and regional park facilities are available to serve the growing County population.

9. Public recreational areas may be designated “Recreational” on individual urban boundary diagrams.

10. Public institutions and facilities should be efficiently located to provide the greatest level of service delivery while minimizing both public costs and impacts on adjacent properties.

**Analysis:** Preliminary land use assumptions incorporate approximately 200 acres of open space area. This preliminary assumption may be refined through the Community Specific Plan process, but no less than this amount of open space area can be provided and remain consistent with the policy entitlement associated with the SUDP formation requested. Payment of parkland fees may also be considered as a means to meet public recreational needs. These measures comply with Goal 9.

The preliminary land use assumptions, as has been noted, also anticipate provision of a wastewater treatment facility and an elementary school within project area boundaries. Provision of these facilities on-site would provide the greatest level of service delivery to future area residents. No institutional uses are assumed within the SUDP boundary. These measures comply with Goal 9.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant

**Goal 10:** “County services and facilities are to be provided at adequate levels for existing and future residents.”

**Objective 10A:** Minimum acceptable levels of County services and facilities such as sheriff and fire protection, roads, parks, libraries, social services and courts are available to serve existing County needs through the year 2000.

**Objective 10B:** County services and facilities are not reduced below minimum acceptable levels as a result of new development.

**Analysis:** The County determines the minimum acceptable levels for the efficient delivery and funding of essential County services. The project applicant proposes to enter into a Development Agreement with the County and the formation of special assessment districts to provide financing necessary for provision of all necessary infrastructure and services. (Refer
4. Environmental Analysis

to Section 4.11, Public Services and Utilities, for discussion of specific project related service impacts and mitigation measures) These measures will satisfy the intent of Goal 10.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:** Refer to Section 4.11, Public Services and Utilities, for Public Service Mitigation Measures in addition to formation of special assessment districts and approval of a Development Agreement.

- **Level of Significance After Mitigation:** Less than significant

**Goal 11:** Accommodation of the University of California campus and orderly development of adjacent land uses through a comprehensive planning process.

**Objective 11A:** Land use designations supporting the University are identified for the Campus site and adjacent lands in a coordinated and organized manner involving landowners, the City of Merced, University of California and the Merced Irrigation District.

**Objective 11B:** Speculative development projects, re-zonings and General Plan Amendments determined to be detrimental to a coordinated development process for the University Community are discouraged.

**Analysis:** Policies relevant to Objective 11A directly affect only the UC SUDP area, and state that the County will prepare a Specific Plan. A University Community Plan has been prepared along with a Draft EIR, which are presently in the process of public review. Subsequent Specific Plans are anticipated within the Community Plan area. The proposed Yosemite Lakes SUDP area would follow a similar process in preparing a CSP and logically must take into account and be coordinated with the on-going UC planning process. The project area is, however, separate from the UC SUDP, the planned UC Campus area and the planned UC Community Plan area.

Objective 11B relates to the UC Campus Study Area, and directs that all applications for discretionary approvals be reviewed in light of affects to a coordinated planning process. Coordination of planning is required under adopted County policies.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:** No mitigation measures are necessary, other than those specified under Goal 1.

- **Level of Significance After Mitigation:** Less than significant

**Agriculture Element**

The following discussion relates to specific goals, objectives and policies contained in the Agriculture Element of the Merced County Year 2000 General Plan, which have been designated in the Yosemite Lake Estates SUDP EIR Guidance Package as guiding principles.
4. Environmental Analysis

for the planning and entitlement process. Preceding discussion relative to the Land Use Element has also focused on agricultural policy issues (see Goals 1 and 7). The following goals, objectives and implementation policies are extracted from the Agriculture chapter of the General Plan:

**Goal 2: Productive agricultural lands are to be conserved.**

**Objective 2A:** Agricultural areas are to be protected from conversion to non-agricultural uses.

**Objective 2D:** Conflicts are to be reduced through an understanding of the agricultural industry by urban dwellers.

**Analysis:** Implementation policies correlating with Objective 2A reiterate the same issues as contained under Land Use Element Goal #7 and direct analysis of criteria outlined in Table 4.8-4, County of Merced Applicable General Plan Goals and Objectives. Please refer to the preceding section for that discussion. The conclusion of this preceding analysis is that the proposed Yosemite Lake Estates SUDP meets the majority of evaluation criteria, which can be interpreted as satisfying the intent of Land Use Element and hence, Goal 2, Objective 2A of the Agriculture chapter as well. This conclusion was reached due to the fact that the project area is non-prime agricultural land and its conversion would support County objectives by relieving or diminishing growth pressures in other more sensitive and valuable agricultural areas of the County. The Land Use Element as well as the Agriculture Element acknowledge that the “best soils for crop production are also the easiest to develop” and that use of such soils for urban use (even within existing SUDP areas) represents a loss of the most productive land in the County. The Land Use Element further states “a legitimate need exists to accommodate the establishment of new communities on other than prime agricultural and productive soils which can be geographically located to satisfy regional growth needs.” The proposed Yosemite Lake Estates SUDP, as has been noted previously, abuts both the City of Merced SUDP and the UC Merced SUDP area, representing a logical extension of on-going and approved future areawide urbanization patterns.

Implementation of Objective 2D requires the application of the County “Right to Farm” ordinance on all subdivisions applications for residential development at the fringe of an urban community. If approved, the County may require this measure be attached to tract maps within the Yosemite Lake Estates SUDP. It should be noted, however, that the areas surrounding the proposed SUDP are predominantly rural residential or grazing lands. Hence, the potential for many types of conflicts typical between actively farmed lands and urban uses would either be diminished or would not be expected to occur at all.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:** The County of Merced may, at its discretion, require the application of the County “Right to Farm” ordinance on subdivision applications for residential development within the Yosemite Lake Estates SUDP area.

- **Level of Significance After Mitigation:** Less than significant
Goal 3: Land uses which are potentially disruptive to the agricultural economy are to be properly located and operated.

Objective 3A: Clear boundaries between urban and agricultural areas are to be identified and land use buffers are to be provided.

Analysis: Implementation policy for Objective 3A states that “land use transitions and buffers between urban and agricultural areas which reduce interference and protect agricultural land from conversion to non-agricultural uses” are to be provided. Transitional land uses are defined as Rural Residential Centers; industrial zones; public recreation areas; and natural features such as streams. It is also stated that implementation of the “Right to Farm” ordinance (see above) would serve to implement Goal 3. This measure is listed as mitigation under Goal 2.

It should also be noted, however, that the proposed SUDP abuts a designated Rural Residential Center to the south and Lake Yosemite to the east. Surrounding areas are not actively farmed and are similar in character to the existing land use on the Yosemite Lake Estates site (grazing/pastureland). The opportunity will also exist during the subsequent formulation of a Community Specific Plan to incorporate buffering measures into the urban design scheme for open space, trails, landscape setback areas, etc., as may be determined appropriate where sensitive edge conditions are identified.

- Level of Significance Before Mitigation: Less than significant
- Mitigation Measures: No mitigation measures are necessary
- Level of Significance After Mitigation: Less than significant

Goal 4: The management of water resources to benefit the agricultural community is improved.

Objective 4A: Measures to protect and improve water quality are supported.

Analysis: Implementation policies under Objective 4A, in summary, address 1) efforts to ensure adequate surface water supplies to “deficient” areas; 2) encouragement of agricultural irrigation methods which conserve water; and 3) protection of water quality of agricultural and domestic supplies from contamination by agricultural activities.

As has been previously stated, preliminary planning for Yosemite Lake Estates assume domestic water will be extracted from on-site wells and that wastewater treatment will be provided by an on-site facility. The design and operation of such facilities would have to comply with all applicable water quality standards and regulations. (See Section 4.11, Public Services and Utilities, for further discussion). Subsequent development would also be required to comply with all applicable water conservation measures required by the State of California.

Goal 4 addresses itself primarily to concern for agricultural water supplies. Due to the nature of the proposed facilities and measures assumed in project design, no significant impacts to
4. Environmental Analysis

agricultural (or domestic) water resources are anticipated. (See Section 4.7, Hydrology and Water Quality, for detailed discussion of water issues.).

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant
- Additional Regulatory Policy

**City of Merced General Plan**

*Urban Expansion Policies*

The City of Merced has provided comment in response to the Notice of Preparation, which highlights areas of potential policy concern. Applicable Urban Expansion polices highlighted by the City in their comments are outlined and analyzed below:

**Goal Area UE-1: Urban Expansion**

*Goals*

- A Compact Urban Form
- Preservation of Agriculturally Significant Areas
- Efficient Urban Expansion

*Policies*

- UE-1.1 Designate areas for new urban development that recognize the physical characteristics and environmental constraints of the planning area.
- UE-1.2 Promote a compact urban form.
- UE-1.3 Control the annexation, timing, density and location of new land uses within the City’s urban expansion boundaries.
- UE–1.6 Preserve the “Northern City” Urban Expansion Area for anticipated growth needs beyond the Year 2015.

*Analysis:* Policy UE 1.1, in summary, is focused upon promoting urban expansion policies which protect sensitive environmental and resource areas, particularly prime agricultural soils. The proposed Yosemite Lake Estates SUDP area is not characterized by prime agricultural soils and historically has been utilized for grazing and pasturelands. Refer to Goal 1, (Objective 1A and 1B) Goal 7 of the Land Use Element; and Goal 2 of the Agricultural Element of the County General Plan, for a complete policy discussion of this issue as well. No significant impacts have been identified with respect to the loss of the agricultural soils located within the proposed SUDP area. The proposed project does not conflict with City Policy UE 1.1.
Policy UE 1.2, in summary is directed at simultaneously protecting important agricultural and environmental resources through concentration of new development within existing urban areas and restriction of new Rural Residential Centers on the City’s fringe. As noted above, the proposed Yosemite Lake Estates SUDP will not impact prime agricultural soils and in fact could act to relieve pressures for urbanization in other areas with higher quality soils. (See following section on impacts to agricultural land). In addition, the proposed project is not an expansion of, or creation of, a new Rural Residential Center. The project proposal is the creation of a Specific Urban Development Plan Area, which would involve a planned urban development under a subsequent Community Specific Plan. All services are proposed to be provided by the County of Merced or by the project developer. No annexation to the City of Merced is proposed and no service impacts to the City are anticipated. Please also refer to discussion of this issue under Goal 1, Objectives 1A, 1B and 1C of the County of Merced Land Use Element. The proposed project does not conflict with City Policy UE 1.2.

Policy UE 1.3 highlights issues related to annexation to the City of Merced and provision of public services and facilities. Implementing actions state that “the City should require that all new urban development and annexations be contiguous to existing urban areas and have reasonable access to public services and facilities.” The proposed Yosemite Lake Estates SUDP is contiguous to both the City of Merced SUDP and the UC Merced Community SUDP, representing a logical extension of on-going and approved future areawide urbanization patterns. Further, no services are proposed to be provided through the City of Merced. Please refer to further discussion of these issues under Goal 1, Objective 1C of the County Land Use Element. The proposed project does not conflict with City policy UE 1.3.

Policy UE 1.6 addresses potential growth within areas that the City of Merced has designated for urban expansion beyond the Year 2015. Implementing actions suggest development of a cooperative planning process with the County of Merced for review of development proposals within the designated “expansion area”.

In February 1997, the City of Merced and the County of Merced adopted a property tax sharing agreement pertaining to areas in the process of annexation or that may annex to the City in the future. According to the relevant section of the City/County revenue sharing agreement (Section VI.D), the City of Merced and County of Merced have agreed not to approve changes in land use designations from non-urban to urban without the prior “agreement” of the other party. The proposed Yosemite Lake Estates SUDP area is located within the City of Merced’s Sphere of Influence and what is called the “Northern City” urban expansion area in the City of Merced 2030 Plan. No specific land use is designated on the project site on the City General Plan. The project area is currently designated “Agricultural” in the County General Plan. If approved, the proposed project would change the County General Plan to an urban SUDP designation. No specific process is outlined in the Revenue Sharing Agreement by which the County is to obtain “agreement” of the City of Merced, nor is what would constitute “agreement” defined. The Agreement does, however, state in the introduction to Section VI, that “the County agrees to amend its General Plan and administer zoning and subdivision regulations to accommodate growth of the City as outlined in the City’s General Plan.” Compliance with this Agreement is assumed, and could result in
modifications to the proposed project. The composition of land uses that could subsequently be approved in a CSP could vary, but could not exceed the maximum intensity that is considered in this EIR without additional review.

In June 1997, an Administrative Draft Guidance Package for Yosemite Lake Estates was submitted to the County. In March 1998 the County referred the Draft Guidance Package for Yosemite Lake Estates to the City of Merced. Based on the City/County Revenue Sharing Agreement the City needed to inform the County how the City planned to proceed and whether or not it agreed with the County’s plan to process the project. The County would not take the project before the Board of Supervisors until the City Council took action on the Guidance Package for the project. The City Council passed a motion on May 4, 1998 for conditional approval of the Guidance Package, subject to modification of “Potential Planning Issues” and specification that the “Schedule” provide for solicitation of comments from the University Community Planning Group entities for consideration by the Board of Supervisors. The motion represented approval of a process and not land use per the provisions of the City/County Tax Sharing Agreement. The requested changes were incorporated into the final version of the Guidance Package, which was approved by the Merced County Board of Supervisors in June 1998.

County policy regarding formulation of the subsequent Community Specific Plan requires that it be developed through a cooperative planning process designed to address the concerns of the County of Merced, City of Merced, University of California and the objectives of the property owners, in order to ensure functional compatibility with adjacent areas planned for urban development and the feasibility of development from the perspective of the property owner, as well as affected public agencies. These measures comply with City policy UE 1.6.

- **Additional Impact Evaluation**

Land use assumptions have been made in Section 4.1, *Summary of Project Assumptions*, of this EIR on a preliminary basis, strictly for purposes of analyzing whether or not the project area may be suitable for urbanization. This is the only policy decision that is under consideration by the County of Merced at this time and a cooperative planning process designed to address the concerns of the County of Merced, City of Merced, University of California and the objectives of the property owners is envisioned. Briefly, these assumptions envision a future Community Specific Plan (CSP) would allow a mix of residential, commercial, and public facilities (schools and parks). The subsequent specific plan, which will be based on a specific development project, could further reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, *Summary of Project Assumptions*, without additional analysis and public review.
4. Environmental Analysis

4.8.4.4 Impact: Conflict With Any Applicable Habitat Conservation Plan Or Natural Community Conservation Plan

• **Merced County Regulatory Policy**

Please refer to Section 4.5, *Biological Resources*, Section 1.2.2 for description of County General Plan policies related to Biological Resources. There is presently no designated Habitat Conservation Plan or Natural Community Conservation Plan in the project area.

• **Additional Regulatory Policy**

Please refer to Section 4.5, *Biological Resources*, Section 1.2.2 for description of applicable state and federal policies and regulations related to biological resources.

The proposed project would be required to comply with applicable wetland permitting requirements established by agencies such as the Corps, RWQCB, CDFG, and FWS. The project applicant would also be required to comply with all applicable legislation related to wetland permitting, such as the Federal Clean Water Act, the California Fish and Game Code, the Porter-Cologne Water Quality Act, the Fish and Wildlife Coordination Act, and the Federal and State Endangered Species Acts. Mitigation measures contained in Section 4.5, *Biological Resources*, would ensure that appropriate mitigation is provided and that the project would meet all federal, State, and local requirements.

• **Additional Impact Evaluation**

The Eastern Merced County Habitat Conservation Plan (HCP)/Natural Communities Conservation Plan (NCCP) while it does not encompass the project area, but may contain additional mitigation in conformance with specific guidelines and requirements consistent with the conservation strategies which are expected to be developed as part of the above HCP/NCCP.

• **Level of Significance Before Mitigation:** Less than significant

• **Mitigation Measures:** No mitigation measures are necessary

• **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.8.4.5 Impact: Adverse Effects On Agricultural Resources Operations (involving any of the following: 1) conversion to non-agricultural use of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (as designated by the California Resources Agency); 2) conflict with existing zoning for agricultural use, or a Williamson Act Contract; 3) involvement of any other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use).

- Merced County Regulatory Policy

The consistency of the proposed project relative to County agricultural policies is analyzed in Section 1.1.4.3. The proposed formation of the Yosemite Lake Estates SUDP would not conflict with any county policy adopted to protect “productive agricultural land.”

- Additional Regulatory Policy

City of Merced

The consistency of the proposed project relative to City of Merced urban growth policies, including those related to agricultural lands, is analyzed in Section 1.1.4.3. The proposed formation of the Yosemite Lake Estates SUDP would not conflict with any City policy adopted to protect “prime agricultural land.”

LAFCO Policy-Conversion of Open Space Lands

The proposed project does not seek annexation to the City of Merced. Formation of a new SUDP boundary would however, be subsequently followed by preparation of a Community Specific Plan and urbanization. Subsequent project approvals are also anticipated to involve the formation of service districts within the SUDP area. The project area, as has been noted, is classified as Grazing Land and is seasonally utilized. Although land within the proposed Yosemite Lake SUDP area is not considered “prime” agricultural land under either the State Department of Conservation System or by the County General Plan, it may be a concern under the broader definition utilized by LAFCO. In any case, the project would have to undergo LAFCO review prior to formation of any service districts. Additional investigation of the agricultural potential of the proposed SUDP area may be required at the time of preparation of the subsequent Community Specific when specific mechanisms to provide services are formulated. It is assumed that LAFCO review will be consistent with agricultural policies outlined in the County General, which have been analyzed in preceding discussion. Additional considerations that support LAFCO policy regarding the conversion of open space lands are highlighted below. No conflict with LAFCO policy is anticipated.

- Additional Impact Evaluation

Land within the project site located east of the Main Canal is classified as Grazing Land on the Important Farmland Map for Merced County prepared by the California Department of Conservation. A portion of the area west of the Main Canal is designated as Farmland of
4. Environmental Analysis

Local Importance. Approval of the proposed SUDP area would subsequently result in the urbanization of the site, with the exception of approximately 200 acres planned to remain in Open Space.

No portion of the project area is designated as “Unique Farmland,” “Farmland of Statewide Importance” or as “Prime Farmland.” No portion of the project area is under a Williamson Act Contract. Soils must be Prime Class I or II in order to qualify for consideration for a Williamson Act Contract. According to the Land Use Element, only soils of “Unique or higher quality” are considered valuable agricultural land in Merced County. No agricultural commodities are produced on the project site. The area has historically been used for cattle grazing. No “productive agricultural soils” will be lost if the proposed SUDP area is approved. Its formation, could allow urbanization on lands less valuable for agricultural purposes than exist within many other existing SUDP areas. Formation of the proposed SUDP could, thus, act to relieve some pressure on valuable and productive agricultural soils elsewhere in the County.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.9 NOISE

The following analysis provides a discussion on the fundamentals of sound, examines federal, State and City noise guidelines, policies and standards, reviews noise levels at existing receptor locations, evaluates potential noise impacts associated with the proposed project, and provides methodology to reduce noise disturbance at sensitive residential locations. Modeled traffic noise levels are based upon vehicle data contained in the traffic analysis prepared by TJKM Transportation Consultants (May 2002). This evaluation was prepared in conformance with local standards and utilizes procedures and methodologies as specified by Caltrans and the Federal Highway Administration. The technical noise data, including model run results, are provided in the Appendix F.

4.9.1 Environmental Setting

The analysis of long term operational noise impacts presented in this chapter is based on the May 2002 TJKM traffic study, which assumes 2,386 dwelling units, 125 acres of parks, open space and public uses and 19 acres of neighborhood commercial development. The project assumptions upon which other analyses contained in this EIR are based (with the exception of long term operation air quality impacts), assume that a maximum of 1,262 dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial uses could be developed within the proposed SUDP with approval of a subsequent Community Specific Plan (CSP) (see Section 4.1, Summary of Project Assumptions). Consequently, the long-term noise impacts presented in this Chapter are overstated and should be interpreted with caution. Temporary construction related noise impacts presented in this Chapter are based on lower build-out assumptions described above and presented in Section 4.1, Summary of Project Assumptions, of this EIR. The subsequent specific plan, which will be based on a specific development project, could further reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, Summary of Project Assumptions. At the CSP stage, a more detailed noise analysis will be prepared, which may reduce the level of impact and mitigation requirements associated with long-term build out of the project.

4.9.2 Regulatory Setting

To limit population exposure to physically and/or psychologically damaging, as well as intrusive noise levels, the federal government, the State of California, county governments, and most municipalities in the State have established standards and ordinances to control noise. The following sections describe noise standards and ordinances that are applicable to this project.

Federal Government

The federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) under the USEPA. Noise exposure of this type is dependent on work conditions and is addressed through a facility’s Health and Safety Plan. Site construction work will be required to operate under an approved Health and Safety Plan, thereby reducing its effects on construction workers to less than regulatory levels.
4. Environmental Analysis

The US Department of Housing and Urban Development (HUD) has set a goal of 45 dBA Ldn as a desirable maximum interior standard for residential units developed under HUD funding. This level is also generally accepted within the State of California. While HUD does not specify acceptable exterior noise levels, standard construction of residential dwellings constructed under Title 24 standards typically provide 20 dBA of attenuation with the windows closed. Based on this premise, the exterior Ldn should not exceed 65 dBA.

State of California

The California Department of Health Services Office of Noise Control (DHSONC) has studied the correlation of noise levels and their effects on various land uses. As a result, the DHSONC has established four categories for judging the severity of noise intrusion on specified land uses. The types of land uses addressed by the DHSONC and acceptable noise, by category are presented in Figure 4.9-1, Noise and Land Use Compatibility.

Noise in the "normally acceptable" category is generally acceptable with no mitigation necessary. Noise in the "conditionally acceptable" category may require some mitigation as established through a noise study. The "normally unacceptable" category would require substantial mitigation while the "clearly unacceptable" category is probably not mitigatable to a level of less than significant. As noted in Figure 4.9-1, Noise and Land Use Compatibility, there is some overlap between categories.

Applicable interior standards for new multifamily dwellings are governed by Title 24 of the California Administrative Code. These standards require that acoustical studies be performed prior to construction in areas that exceed 60 dBA Ldn. Such studies are required to establish measures that will limit interior noise to no more than 45 dBA Ldn and this level has been applied to many communities in California.
## Noise and Land Use Compatibility

### LAND USE CATEGORY

- Residential - Low density
  - Single Family, Duplex, Mobile Homes
- Residential - Multiple Family
- Transient Lodging - Motels, Hotels
- Schools, Libraries, Churches, Hospitals, Nursing Homes
- Auditoriums, Concert Halls, Amphitheaters
- Sports Arena, Outdoor Spectator Sports
- Playgrounds, Neighborhood Parks
- Golf Courses, Riding Stables, Water Recreation, Cemeteries
- Office Buildings, Business, Commercial and Professional
- Industrial, Manufacturing, Utilities, Agriculture

### COMMUNITY NOISE EXPOSURE Ldn or CNEL, dB

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### LEGEND

- **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 isolation features included in the design. Conventional construction, with closed windows and fresh air supply systems or air conditioning will normally suffice. Outdoor areas must be shielded.
- **Normally Unacceptable**
  - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made with needed noise isolation features included in the design. Outdoor areas must be shielded.
- **Clearly Unacceptable**
  - New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

*Source: California Office of Noise Control*
County of Merced

The County of Merced provides noise goals, objectives, policies and implementation measures in its Year 2000 General Plan Noise Chapter (September 1998). The goal of the noise chapter is to ensure that all citizens of the County are protected from the harmful effects of noise and that noise-generating land uses and facilities important to the economic health of the County are not adversely affected by incompatible land uses. The chapter provides a mechanism to reduce and/or eliminate existing conflicts between land uses and noise, and further ensure that future noise and land use conflicts are minimized. The County provides land use compatibility standards for residential land uses (Table 4.9-1, *County of Merced Noise Standards For Residential Land Use Compatibility*) and land use compatibility guidelines from the California Office of Noise Control. The objectives address noise levels for the exterior and interior of residential areas, and the exterior of hospitals and schools. The County seeks to reduce or eliminate noise conflicts between noise sensitive land uses and noise-generating commercial, industrial, and agricultural areas. The County General Plan identifies acceptable noise levels in the form of regulations from which all projects are evaluated. Using the County General Plan Noise Chapter and Title 24 of the California Administrative Code, consultants or County planning staff recommend specific noise conditions for each project. Typically, for any project identified as a sensitive receptor to noise (residential), a noise study would be required and appropriate setbacks, buffering and/or construction techniques would be imposed on the project generating the noise.

<table>
<thead>
<tr>
<th>Noise Source</th>
<th>Exterior Standard</th>
<th>Interior Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic on Public Roadways</td>
<td>65 dBA Ldn/CNEL&lt;sup&gt;1&lt;/sup&gt;</td>
<td>45 dBA Ldn/CNEL&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Railroad Line Operations</td>
<td>Hourly Leq of 55 dBA and a maximum level of 75 dBA</td>
<td></td>
</tr>
<tr>
<td>Aircraft in Flight</td>
<td><strong>Daytime</strong> (7 a.m.-10 p.m.)</td>
<td></td>
</tr>
<tr>
<td>Other Sources</td>
<td><strong>Nighttime</strong> (10 p.m.-7 a.m.)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hourly Leq of 45 dBA and a maximum level of 65 dBA</td>
<td>---</td>
</tr>
</tbody>
</table>

<sup>1</sup> Standards for exterior noise from Castle Air Force Base operations shall be in accordance with the most recently adopted comprehensive land use compatibility plan prepared by the Merced County Association of Governments.

<sup>2</sup> Windows and doors closed.

Source: County of Merced Year 2000 General Plan, June 1989.
4. Environmental Analysis

4.9.3 Methodology Related to Noise

Noise Definitions

Sound is a pressure wave transmitted through the air. It is described in terms of loudness or amplitude (measured in decibels), frequency or pitch (measured in Hertz [Hz] or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the loudness of sound is the decibel (DB). Typical human hearing can detect changes in sound levels of approximately 3 dBA under normal conditions. Changes of 1 to 3 dBA are detectable under quiet, controlled conditions and changes of less than 1 dBA are usually indiscernible.

Noise may be generated from a point source, such as a piece of construction equipment, or from a line source, such as a road containing moving vehicles. Because noise spreads in an ever-widening pattern, the given amount of noise striking an object, such as an eardrum, is reduced with distance from the source. This is known as spreading loss. The typical spreading loss for point source noise is 6 dBA per doubling of the distance from the noise source.

A line source of noise, such as vehicles proceeding down a roadway, will also be reduced with distance, but the rate of reduction is a function of both distance and the type of terrain over which the noise passes. “Hard” sites, such as developed areas with paving, reduce noise at a rate of 3 dBA per doubling of the distance while “soft” sites, such as undeveloped areas, open space and vegetated areas reduce noise at a rate of 4.5 dBA per doubling of the distance.

These represent the extremes and most areas will actually contain a combination of hard and soft elements with the noise reduction placed somewhere in between these two factors. Unfortunately, the only way to actually determine the absolute amount of attenuation that an area provides is through field measurement under operating conditions with subsequent noise level measurements conducted at varying distances from a constant noise source.

Objects, which block the line-of-sight attenuate the noise source if the receptor is located within the "shadow" of the blockage (such as behind a sound wall). If a receptor is located behind the wall, but has a view of the source, the wall will do little to reduce the noise. Additionally, a receptor located on the same side of the wall as the noise source may experience an increase in the perceived noise level as the wall will reflect noise back to the receptor compounding the noise.

Noise Measurement Scales

Several rating scales (or noise "metrics") exist to analyze adverse effects of noise, including traffic-generated noise, on a community. These scales include the equivalent noise level (Leq), the community noise equivalent level (CNEL), and the day/night noise level (Ldn). Leq is a measurement of the sound energy level averaged over a specified time period (usually one hour). Leq represents the amount of variable sound energy received by a receptor over a time interval in a single numerical value. For example, a one-hour Leq noise level measurement represents the average amount of acoustic energy that occurred in that hour.
4. Environmental Analysis

Unlike the Leq metric, the CNEL noise metric is based on 24 hours of measurement. CNEL also differs from Leq in that it applies a time-weighted factor designed to emphasize noise events that occur during the evening and nighttime hours (when quiet time and sleep disturbance is of particular concern). Noise occurring during the daytime period (7:00 a.m. to 7:00 p.m.) receives no penalty. Noise produced during the evening time period (7:00 p.m. to 10:00 p.m.) is penalized by 5 dBA, while nighttime (10:00 p.m. to 7:00 a.m.) noise is penalized by 10 dBA.

The Ldn noise metric is similar to the CNEL metric except that the period from 7:00 p.m. to 10:00 p.m. receives no penalty. Both the CNEL and Ldn metrics yield approximately the same 24-hour value (within 1 dBA) with the CNEL being the more restrictive of the two.

Existing Conditions Related to Noise

The project is located on land zoned for agricultural land uses. Adjoining and proximate land uses include rural residential and urban reserve. Additionally, the Merced Golf and Country Club is located to the west of the project site. These types of land uses generate little noise except where immediately adjacent to major roadways. Based on measurements obtained in similar areas, noise levels in the project area would be expected to be between 40 and 50 dBA Ldn or CNEL.

Most noise in the project area is generated by vehicles using local roadways. To assess the potential for project-generated impact, it is necessary to quantify the existing traffic-generated noise. The highway traffic noise prediction model developed by the Federal Highway Administration (RD-77-108) was used to evaluate existing noise conditions in the study area. This model utilizes various parameters including the traffic volume, vehicle mix and speed, and roadway geometry, to compute typical equivalent noise levels during daytime, evening and nighttime hours.

The traffic volumes used in this analysis are based on a value of 10 times the p.m. peak hour traffic projected by TJKM (Memo of May 6, 2002). Vehicle mix along State Route 59 is based on Caltrans projections included in 2000 Annual Average Daily Truck Traffic on the California State Highway System (December 2001) and includes 93.48% automobiles and light trucks, 0.88% medium trucks and 5.64% heavy trucks. The vehicle mix along all other routes is based on 97.42% automobiles and light trucks, 1.84% medium trucks and 0.74% heavy trucks.29

While these values may not reflect the ultimate values for the project area, small changes in these projections would not substantially change the noise projections. Travel along State Route 59 is estimated at 55 mph while all other routes are estimated at 45 mph. Finally, the day/night ratio assumes that 10% of the traffic occurs during the night period (i.e., 10:00 p.m. to 6:00 p.m.) and that each hour of both the a.m. rush (i.e., 6:00 to 9:00 a.m.) and p.m. rush (i.e., 4:00 p.m. to 7:00 p.m.) include twice the volume of non-rush, non-night traffic. The resultant noise levels are then weighted and summed over 24 hourly periods to determine the CNEL value. Noise projections were determined at a distance of 100 feet from the centerline of the road. Contours are derived through manual calculation to provide the 60 and 65 dBA CNEL locations. These contour

locations can be used as a planning tool to locate noise sensitive receptors away from major noise generators. They apply only to first line receptors, as receptors set back further from the noise source will benefit from the shielding provided by intervening land uses. The contours do not assume the presence of any sound walls or barriers.

Table 4.9-2, *Existing Exterior Noise Exposure*, estimates the current noise levels adjacent to major roadways in the project area, assuming a standard sound attenuation of 4.5 dBA with each doubling of distance. Noise levels at 100 feet from the centerline of roadways in the project area range from 51 dBA CNEL along both Golf and Old Lake Roads to 67 dBA CNEL along G Street and West Olive Avenue. With the exception of these latter two streets, the 65 dBA CNEL contour falls within 100 feet of the centerline of all local roads.

### 4.9.3.1 Significance Criteria

The project will be considered to have a significant impact on the environment related to noise if it:

- Increases existing noise levels by 3 dBA CNEL where the resultant noise level exceeds the 65 dBA CNEL standard, or by 5 dBA CNEL where the resultant noise level is below the 65 dBA CNEL standard. These increases are only significant if they impact existing sensitive receptor locations.

- Exposes people to severe noise levels. This is defined as placement of residential uses within a 65 dBA exterior noise level, or within a 45 dBA CNEL interior noise level. Because standard residential development provides at least 20 dBA of attenuation with windows closed, compliance with the exterior standard assures compliance with the interior standard.

### TABLE 4.9-2

**EXISTING EXTERIOR NOISE EXPOSURE**

<table>
<thead>
<tr>
<th>Roadway</th>
<th>ADT(^4) (Veh./Day)</th>
<th>CNEL @100 Feet(^2)</th>
<th>Distance to 65 dBA CNEL (Ft.)</th>
<th>Distance to 60 dBA CNEL (Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Route 59</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Olive Avenue to Bellevue Road</td>
<td>4,850</td>
<td>64</td>
<td>&lt;100</td>
<td>185</td>
</tr>
<tr>
<td>G Street</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Olive Avenue to Yosemite Avenue</td>
<td>23,480</td>
<td>67</td>
<td>136</td>
<td>293</td>
</tr>
<tr>
<td>Yosemite Avenue to Bellevue Road</td>
<td>4,510</td>
<td>60</td>
<td>&lt;100</td>
<td>100</td>
</tr>
<tr>
<td>Bellevue Road to Old Lake Road</td>
<td>2,900</td>
<td>58</td>
<td>&lt;100</td>
<td>&lt;100</td>
</tr>
<tr>
<td>Golf Road</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bellevue Road to Old Lake Road</td>
<td>690</td>
<td>51</td>
<td>&lt;100</td>
<td>&lt;100</td>
</tr>
<tr>
<td>Lake Road</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yosemite Avenue to Cardella Road</td>
<td>1,090</td>
<td>54</td>
<td>&lt;100</td>
<td>&lt;100</td>
</tr>
<tr>
<td>West Olive Avenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Route 59 to G Street</td>
<td>22,630</td>
<td>67</td>
<td>136</td>
<td>293</td>
</tr>
<tr>
<td>Yosemite Avenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R Street to G Street</td>
<td>12,270</td>
<td>64</td>
<td>&lt;100</td>
<td>185</td>
</tr>
<tr>
<td>G Street to Gardner Avenue</td>
<td>6,640</td>
<td>62</td>
<td>&lt;100</td>
<td>136</td>
</tr>
</tbody>
</table>
4. Environmental Analysis

### TABLE 4.9-2
EXISTING EXTERIOR NOISE EXPOSURE

<table>
<thead>
<tr>
<th>Roadway</th>
<th>ADT&lt;sup&gt;1&lt;/sup&gt; (Veh./Day)</th>
<th>CNEL@100 Feet&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Distance to 65 dBA CNEL (Ft.)</th>
<th>Distance to 60 dBA CNEL (Ft.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gardner Avenue to McKee Road</td>
<td>2,010</td>
<td>56</td>
<td>&lt;100</td>
<td>&lt;100</td>
</tr>
<tr>
<td><strong>Bellevue Road</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Route 59 to G Street</td>
<td>1,780</td>
<td>56</td>
<td>&lt;100</td>
<td>&lt;100</td>
</tr>
<tr>
<td>G Street to Golf Road</td>
<td>840</td>
<td>53</td>
<td>&lt;100</td>
<td>&lt;100</td>
</tr>
<tr>
<td><strong>Old Lake Road</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G Street to Golf Road</td>
<td>690</td>
<td>51</td>
<td>&lt;100</td>
<td>&lt;100</td>
</tr>
</tbody>
</table>

<sup>1</sup> ADT = Average Daily Traffic volume.

<sup>2</sup> CNEL = Community Noise Equivalent Level. Measured at 100 feet from roadway centerline.

Note: The noise measurements in this table reflect existing conditions in the project area. No mitigation measures, such as walls, are reflected in the noise measurements.

Source: The Planning Center, May 2002

### 4.9.4 Impacts and Mitigation Measures

The development of the Yosemite Lake Estates General Plan Amendment would allow the creation of both stationary and traffic noise sources. Potential impacts may stem from short-term construction activities as well as increases in traffic associated with long-term build-out. The traffic analysis is based on a previous proposal that was estimated to generate as many as 29,639 daily vehicle trips. The analysis of long term operational noise impacts presented in this chapter is based on the May 2002 TJKM traffic study, which assumes 2,386 dwelling units, 125 acres of parks, open space and public uses and 19 acres of neighborhood commercial development. The project assumptions upon which other analyses contained in this EIR are based (with the exception of long term operation air quality impacts), assume that a maximum of 1,262 dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial uses could be developed within the proposed SUDP with approval of a subsequent Community Specific Plan (CSP) (see Section 4.1, Summary of Project Assumptions). Consequently, the long-term noise impacts presented in this Chapter are overstated and should be interpreted with caution. Temporary construction related noise impacts presented in this Chapter are based on lower build-out assumptions described above and presented in Section 4.1, Summary of Project Assumptions, of this EIR. The subsequent specific plan, which will be based on a specific development project, could further reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, Summary of Project Assumptions.

#### 4.9.4.1 Impact: Temporary Increase In Noise Levels Due to Construction

- **Merced County Regulatory Policy**

  The significance of any potential impact would vary with the distance to local receptors. The County’s noise standards provides that daytime noise exposure is limited to an hourly Leq of 55 dBA and a maximum level of 75 dBA while nighttime noise is not to exceed an hourly Leq of 45 dBA and a maximum level of 65 dBA. Based on a projected construction noise
level of 88 dBA, the 55 dBA levels would occur at a distance of approximately 2,200 feet while the 75 dBA level would occur at approximately 225 feet. However, Section 18.41, “Performance Standards,” of the County Zoning Code acknowledges that construction does cause elevated noise levels that are difficult to control and provides exemption for such. Section 18.41.07, Noise, notes “During construction, the noise level may be temporary elevated. To minimize the impact, all construction in or adjacent to urban areas shall follow the following procedures for noise control:

- Construction hours shall be limited to the daytime hours between 7:00 a.m. and 6:00 p.m., and all construction equipment shall be properly muffled and maintained.”

**Additional Regulatory Policy**

Pursuant to Occupational Health and Safety Administration (OSHA) requirements, site construction work will be required to operate under an approved Health and Safety Plan. Under an approved Health and Safety Plan, construction noise levels would be reduced to less than regulatory levels.

**Additional Impact Evaluation**

Short-term noise impacts are those associated with construction activities necessary to implement the proposed land use. The noise levels would be higher than existing ambient noise levels in the project area today, but would subside once construction is completed.

Two types of noise impacts could occur during the construction phase. First, the transport of workers and equipment to the construction site would incrementally increase noise levels along site access roadways. Even though there could be a relatively high single-event noise exposure potential with passing trucks (a maximum noise level of 87 dBA at 50 feet), the increase in noise would be small when averaged over a longer period of time, such as in the calculation of the CNEL, and therefore, would result in a less than significant impact to noise receptors along the truck routes and within the local area.

The second type of impact is related to noise generated by on-site construction operations. Construction activities are carried out in discrete steps, each of which has its own mix of equipment, and consequently its own noise characteristics. These various sequential phases would change the character of the noise levels surrounding the construction site as work progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow noise ranges to be categorized by work phase. Table 4.9-3, *Noise Levels Generated by Typical Construction Equipment*, lists typical construction equipment noise levels recommended for noise impact assessment at a distance of 50 feet.

Noise ranges have been found to be similar during all phases of construction, although the building erection phase tends to be less noisy. Noise levels range up to 89 dBA at 50 feet during the erection phase of construction, which is approximately 2 dBA lower than the noisiest construction phases. The grading and site preparation phase tends to create the highest noise levels, because the most powerful and noisiest construction equipment is found
in the earthmoving equipment category. This category includes excavating machinery (back fillers, bulldozers, draglines, front loaders, etc.), and earthmoving and compacting equipment (compactors, scrapers, graders, etc.) Typical operating cycles may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Noise levels at 50 feet from earthmoving equipment range from 73 to 96 dBA.

From the data shown in Table 4.9-3, *Noise Levels Generated by Typical Construction Equipment*, the maximum noise level generated by each earthmover is assumed to be 88 dBA at 50 feet. Each dozer generates 88 dBA at 50 feet. The maximum noise level generated by water truck and pick up truck operations is approximately 86 dBA at 50 feet.

<table>
<thead>
<tr>
<th>Type of Equipment</th>
<th>Range of Sound Levels Measured (dBA at 50 feet)</th>
<th>Suggested Sound Levels for Analysis (dBA at 50 feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Drivers, 12,000-18,000 ft-lb/blow</td>
<td>81 - 96</td>
<td>93</td>
</tr>
<tr>
<td>Rock Drills</td>
<td>83 - 99</td>
<td>96</td>
</tr>
<tr>
<td>Jack Hammers</td>
<td>75 - 85</td>
<td>82</td>
</tr>
<tr>
<td>Pneumatic Tools</td>
<td>78 - 88</td>
<td>85</td>
</tr>
<tr>
<td>Pumps</td>
<td>68 - 80</td>
<td>77</td>
</tr>
<tr>
<td>Dozers</td>
<td>85 - 90</td>
<td>88</td>
</tr>
<tr>
<td>Tractor</td>
<td>77 - 82</td>
<td>80</td>
</tr>
<tr>
<td>Front-End Loaders</td>
<td>86 - 90</td>
<td>88</td>
</tr>
<tr>
<td>Hydraulic Backhoe</td>
<td>81 - 90</td>
<td>86</td>
</tr>
<tr>
<td>Hydraulic Excavators</td>
<td>81 - 90</td>
<td>86</td>
</tr>
<tr>
<td>Graders</td>
<td>79 - 89</td>
<td>86</td>
</tr>
<tr>
<td>Air Compressors</td>
<td>76 - 86</td>
<td>86</td>
</tr>
<tr>
<td>Trucks</td>
<td>81 - 87</td>
<td>86</td>
</tr>
</tbody>
</table>


The use of heavy equipment in site preparation has the potential of generating noise levels on the order of 88 dBA for residential development as measured at a distance of 50 feet from the active construction area. This value considers not only the number of pieces in use, but also equipment spacing typical of construction operations (USEPA, 1971).

The significance of any potential impact would vary with the distance to local receptors. As noted in Table 4.9-1, *County of Merced Noise Standards For Residential Land Use Compatibility*, the County’s noise standards provides that daytime noise exposure is limited to an hourly Leq of 55 dBA and a maximum level of 75 dBA while nighttime noise is not to exceed an hourly Leq of 45 dBA and a maximum level of 65 dBA. Based on a projected construction noise level of 88 dBA, the 55 dBA levels would occur at a distance of approximately 2,200 feet while the 75 dBA level would occur at approximately 225 feet.
Without attenuation, these levels would result in potentially significant impacts in adjacent residential areas bordering the project site along Old Lake Road.

Additional assessment of potential noise impacts from construction activities will be necessary when a CSP is submitted for review. The CSP would provide the additional detail needed to more accurately predict construction activities and their noise impacts. If at adjacent residential areas noise levels exceed standards provided in the General Plan Land Use Chapter as noted above, the impact would be considered significant.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.9.1 The CSP and subsequent development proposals should specify noise mitigation as appropriate. Applicable mitigation includes:

  - In accordance with Section 18.41.07 of the County Zoning Ordinance, construction shall be restricted to between the hours of 7:00 a.m. and 6:00 p.m. To further reduce the nuisance, construction shall not be permitted on Sundays or federal holidays.

  - The contractors should strive to use the quietest equipment available. In accordance with Section 18.41.07, all internal combustion powered equipment shall be properly maintained and equipped with properly operating mufflers.

  - Portable equipment should be located as far as possible from the noise sensitive locations as is feasible.

  - Equipment should be stored and serviced as far as possible from sensitive receptor locations.

  - A public awareness program should be instituted before construction to alert the public of the up-coming disturbance.

  - A disturbance coordinator responsible for responding to noise complaints should be designated. This person's name and telephone number should be clearly posted at the construction site. This person would be responsible to respond to complaints about noise, determine the cause, and implement measures to mitigate the impact if feasible. Examples include enforcing the allowable hours of construction, identifying poorly muffled equipment and requiring its repair or replacement.

Adherence to the requirements of the Zoning Code (i.e., time restrictions, and the requirements for equipment mufflers and maintenance) would ensure that any potential impacts remain less than significant. The additional measures would then reduce the nuisance value to the extent reasonably feasible and the residual impact would be less than significant.
4. Environmental Analysis

- **Level of Significance After Mitigation:** Less than significant

4.9.4.2 **Impact: Potential Noise-Related Impacts to On-Site Receptors Due to Long-Term Traffic Generation.**

- **Merced County Regulatory Policy**

  The County’s noise standards for residential land uses provide a maximum 65 CNEL for habitable exterior areas and 45 CNEL for interiors. Based on this analysis, a setback of 100 feet from both Old Lake and Golf Roads would maintain acceptable exterior and interior noise levels for any residential areas planned in this portion of the CSP. Alternatively, the use of sound-rated windows and doors, as well as additional insulation and forced-air ventilation, coupled with the provision for a noise-sheltered habitable exterior area could also satisfy the County’s standards.

- **Additional Regulatory Policy**

  The setbacks identified above would achieve both State and Federal noise guidelines as well as the County’s standards.

- **Additional Impact Evaluation**

  Table 4.9-4, *Comparison of Long-Term Traffic-Related Exterior Noise Levels*, presents existing plus approved projects future projected noise levels within the project area both without and with project implementation and compares these levels to existing traffic-generated noise. The project site lies between G Street and Lake Road North of Old Lake Road. In accordance with Table 4.9-4, *Comparison of Long-Term Traffic-Related Exterior Noise Levels*, with project implementation, traffic along both G Street and Golf Road could produce a 65 dBA CNEL at a distance of 100 feet from its centerline. Traffic along Old Lake Road is also projected to create a CNEL of 65 dBA as measured at a distance of 100 feet from its centerline. Placement of any new residential structures within these distances could result in noise exposure in excess of the goals of the County General Plan thereby producing a potentially significant impact on on-site receptors.

  Local zoning would allow the Applicant to place dwelling units at a distance of no less than 20 feet from the roadway right of way. The local roads adjacent to the project site have a right-of-way width of 30 feet to either side of the centerline (or 60 foot total). Some existing portions of these roads are only two lanes with a total width of approximately 24 feet at present. Thus, the dwellings could be as close as 32 to 50 feet from the centerline of these roads. At a distance of 32 feet, noise could be as high as 72 dBA CNEL. At a distance of 50 feet, traffic noise could be as high as 70 dBA CNEL. Therefore, the impact is considered as potentially significant. Again, it should be noted that the analysis of long term operational noise impacts presented in this chapter is based on the May 2002 TJKM traffic study, which assumes 2,386 dwelling units, 125 acres of parks, open space and public uses and 19 acres of neighborhood commercial development. The project assumptions upon which other analyses

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30 Personal communication with Steve Lyon, Merced County Department of Public Works, June 13, 2002.
4. Environmental Analysis

contained in this EIR are based (with the exception of long term operation air quality impacts), assume that a maximum of 1,262 dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial uses could be developed within the proposed SUDP with approval of a subsequent Community Specific Plan (CSP) (see Section 4.1, Summary of Project Assumptions). Consequently, the long-term noise impacts presented in this Chapter are overstated and should be interpreted with caution. The subsequent specific plan, which will be based on a specific development project, could further reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, Summary of Project Assumptions. At the CSP stage, a more detailed noise analysis will be prepared, which may reduce the level of impact and mitigation requirements associated with long-term build out of the project.

| TABLE 4.9-4
| **Comparison of Long-term Traffic-related Exterior Noise Levels** |
| --- | --- | --- |
| **Roadway** | **Existing** | **Existing Plus Approved** |
| | **CNEL @100 Feet**<sup>2</sup> | **ADT**<sup>1</sup> | **CNEL @100 Feet**<sup>2</sup> | **ADT**<sup>1</sup> | **CNEL @100 Feet**<sup>2</sup> | **ADT**<sup>1</sup> |
| State Route 59 | | | | | | |
| West Olive Avenue to Bellevue Road | 64 | 5,250 | 65 | 8,070 | 66 |
| G Street | | | | | | |
| West Olive Avenue to Yosemite Avenue | 67 | 26,120 | 68 | 31,680 | 68 |
| Yosemite Avenue to Bellevue Road | 60 | 7,380 | 62 | 19,300 | 66<sup>3</sup> |
| Bellevue Road to Old Lake Road | 58 | 3,290 | 59 | 15,110 | 65 |
| Golf Road | | | | | | |
| Bellevue Road to Old Lake Road | 51 | 690 | 51 | 15,510 | 65 |
| Lake Road | | | | | | |
| Yosemite Avenue to Cardella Road | 54 | 1,090 | 54 | 1,090 | 54 |
| West Olive Avenue | | | | | | |
| State Route 59 to G Street | 67 | 24,430 | 67 | 24,430 | 67 |
| Yosemite Avenue | | | | | | |
| R Street to G Street | 64 | 12,530 | 64 | 17,040 | 66 |
| G Street to Gardner Avenue | 62 | 6,940 | 62 | 8,140 | 63 |
| Gardner Avenue to McKee Road | 56 | 2,280 | 57 | 3,540 | 59 |
| Bellevue Road | | | | | | |
| State Route 59 to G Street | 56 | 1,830 | 56 | 9,660 | 63 |
| G Street to Golf Road | 53 | 840 | 53 | 15,030 | 65 |
| Old Lake Road | | | | | | |
| G Street to Golf Road | 51 | 890 | 53 | 15,840 | 65 |

<sup>1</sup> ADT = Average Daily Traffic volume.<br><sup>2</sup> CNEL = Community Noise Equivalent Level. Measured at 100 feet from roadway centerline.<br><sup>3</sup> Bold values denote a potentially significant impact.

The noise measurements in this table reflect existing conditions in the project area. No mitigation measures, such as walls, are reflected in the noise measurements.

Source: The Planning Center, May 2002

- **Level of Significance Before Mitigation:** Potentially significant
4. Environmental Analysis

• **Mitigation Measures:**

4.9.2 The CSP shall provide for a minimum 100-foot setback for any residential use planned along Old Lake Road; or

The minimum distance may be reduced if a berm and/or sound wall is constructed, such that the County’s 65 CNEL standard is maintained; or

Measures to achieve required noise attenuation of residential development may include additional acoustic insulation, forced-air ventilation, and sound-rated windows and doors to maintain an interior CNEL of no more than 45 dBA, if the dwelling units are provided with exterior habitable spaces that are shielded from roadway noise (e.g., back yards). Specific measures to be incorporated into each unit will vary with placement of dwelling units and shall be determined in an acoustical analysis to be prepared when development plans are available and prior to approval of any Tentative Tract Map.

• **Level of Significance After Mitigation:** Less than significant

4.9.4.3 **Impact: Potential Noise-Related Impacts Due to Project-Generated Traffic Creating Significant Increases in Noise At Off-Site Sensitive Receptor Locations Along Local Roadways**

• **Merced County Regulatory Policy**

The County’s noise standards for residential land uses provide a maximum 65 CNEL for exterior areas and 45 CNEL for interiors. Based on this analysis, a setback of 100 feet from Old Lake Road would maintain acceptable exterior and interior noise levels for any residential areas planned in this portion of the CSP.

• **Additional Regulatory Policy**

The setbacks identified above would achieve both State and Federal noise guidelines as well as the County’s standards.

• **Additional Impact Evaluation**

The project area is predominantly open space agricultural land with existing rural residential land uses concentrated to the immediate south of the project site along Old Lake Road and to the west between G Street and Golf Road both to the north and south of Old Lake Road.

Referring to Table 4.9-4, **Comparison of Long-Term Traffic-Related Exterior Noise Levels**, project-generated traffic is expected to raise ambient noise levels along Old Lake Road by as much as 12 dBA as measured at a distance of 100 feet from the centerline of the road. Similarly, project-generated traffic along Golf Road is projected to raise ambient noise levels by as much as 14 dBA CNEL and depending upon actual off-site dwelling setback, could
potentially exceed the County’s 65 dBA CNEL exterior standard. In fact, noise modeling indicates that project-generated traffic could create significant impacts along G Street (increases of 4 to 6 dBA), and Bellevue Road (increases of 7 to 12 dBA) to any sensitive receptors are located along these routes.

Table 4.9-5, *Long-Term Traffic Related Noise Increases on Local Roadways*, presents those roadway segments where the project is expected to substantially raise the ambient noise level. Any residential units located along these routes could be subject to a significant increase in ambient noise levels and mitigation is warranted to both reduce these levels and ensure that interior levels do not exceed the interior 45 dBA standard.

The existing zoning calls for a minimum setback of 30 feet for those units designated at three per acre and 50 feet for units designated at one per acre. Again, the local roads have a specified standard right-of-way width of 30 feet to either side of the section line (or 60 foot total), but some portions of these roads are only two lanes with a total width of approximately 24 feet. Thus, areas designated for three units per acre could be as close as 42 to 60 feet from the centerline of these roads. At a distance of 42 feet, noise could be as much as 6 dBA greater than the values presented in Table 4.9-5, *Long-Term Traffic Related Noise Increases on Local Roadways*. At 60 feet, noise levels could be elevated by as much as 3 dBA higher than those presented.

Those units zoned at one per acre are subject to a 50-foot setback. Again using roadway/right-of-way half widths of 12 and 30 feet, these homes could be as close as 62 to 80 feet from the centerline of the road and noise levels included in Table 4.9-5 could be elevated by 1 to 3 dBA. This is not to infer that any/all the existing homes are located within these distances, only that it is permissible under the current zoning and therefore, represents a worst-case scenario.

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31 Personal communication with Steve Lyon, Merced County Department of Public Works, June 13, 2002.
32 Again, it should be noted that the analysis of long term operational noise impacts presented in this chapter is based on the May 2002 TJKM traffic study, which assumes 2,386 dwelling units, 125 acres of parks, open space and public uses and 19 acres of neighborhood commercial development. The project assumptions upon which other analyses contained in this EIR are based (with the exception of long term operation air quality impacts), assume that a maximum of 1,262 dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial uses could be developed within the proposed SUDP with approval of a subsequent Community Specific Plan (CSP) (see Section 4.1, Summary of Project Assumptions). Consequently, the long-term noise impacts presented in this Chapter are overstated and should be interpreted with caution. The subsequent specific plan, which will be based on a specific development project, could further reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, Summary of Project Assumptions. At the CSP stage, a more detailed noise analysis will be prepared, which may reduce the level of impact and mitigation requirements associated with long-term build out of the project.
4. Environmental Analysis

TABLE 4.9-5
LONG-TERM TRAFFIC RELATED NOISE INCREASES ON LOCAL ROADWAYS

<table>
<thead>
<tr>
<th>Roadway</th>
<th>Existing Plus Approved Plus Project CNEL @ 100 Feet</th>
<th>Distance to the 65 dBA CNEL (ft)</th>
<th>Distance to the 60 dBA CNEL (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G Street</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yosemite Avenue to Bellevue Road</td>
<td>66</td>
<td>117</td>
<td>251</td>
</tr>
<tr>
<td>Bellevue Road to Old Lake Road</td>
<td>65</td>
<td>100</td>
<td>215</td>
</tr>
<tr>
<td>Golf Road</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bellevue Road to Old Lake Road</td>
<td>65</td>
<td>100</td>
<td>215</td>
</tr>
<tr>
<td>Bellevue Road</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State Route 59 to G Street</td>
<td>63</td>
<td>&lt;100</td>
<td>158</td>
</tr>
<tr>
<td>G Street to Golf Road</td>
<td>65</td>
<td>100</td>
<td>215</td>
</tr>
<tr>
<td>Old Lake Road</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G Street to Golf Road</td>
<td>65</td>
<td>100</td>
<td>215</td>
</tr>
</tbody>
</table>

1 These are roadway segments where the project is expected to substantially raise the ambient noise levels.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.9.3 The County shall require that a dedicated acoustic study for those routes included in Table 4.9-5, *Long-Term Traffic Related Noise Increases on Local Roadways*, be conducted prior to approval of a CSP. The study shall identify the locations of any sensitive land uses and shall identify appropriate mitigation such as sound walls and berms to ensure exterior noise levels increase by no more than 3 dBA above ambient conditions for those uses located in areas in excess of 65 dBA CNEL and 5 dBA above ambient conditions where the resultant noise level is not projected to exceed 65 dBA CNEL.

  4.9.4 Where the exterior noise standards are exceeded and berms and/or sound walls are not feasible, the acoustic study shall identify structural modifications to ensure that interior noise levels are reduced to the extent reasonably feasible or other modifications shall be made in the CSP to ensure that acceptable noise levels are achieved.

  4.9.5 Any off-site mitigation requirements identified in the above-two mitigation measures shall be limited to a fair-share contribution of actual construction costs.
4. Environmental Analysis

- **Level of Significance After Mitigation:** Potentially significant

It may not be possible to mitigate exterior noise levels for residences located along G Street, Old Lake Road and Golf Road that take access directly on these streets. The construction of berms or sound walls would not be feasible where their construction would block the only access to the residence.
4.10 PUBLIC HEALTH AND SAFETY

4.10.1 Environmental Setting

Existing site conditions that provide potential for health and safety effects can be naturally occurring and/or a result of past or continuing human activity. The potential existence of hazardous materials releases on-site or in the vicinity of the project site, the possible occurrence of San Joaquin valley fever, a naturally occurring soil microbe and safety evacuation routes are discussed in this section of the EIR.

On-Site Contamination From Previous Land Uses

The proposed project site has historically been used for cattle grazing. Remnants of an orchard appear on photos prior to 1957. By 1961, this orchard was converted to irrigated pasture. The northeast section of the site, including a portion of the middle valley, appears to have been disked on a 1942 aerial photo. However, later photos do not show any evidence of subsequent farming activities in this area. On-site pastures have continued to be irrigated and managed to the present. Typical management of irrigated pastures in the region involves extensive, regular irrigation through the dry season and periodic burning, generally in the late spring, to control brush. Based on the type and extent of agricultural activities that have occurred on the project site in the past, no on-site contamination from agricultural activities is anticipated.

Hazardous Materials Releases in the Vicinity

The proposed project site is located in a rural area with few potential hazardous material generators located in the project vicinity. Yosemite Lake is located to the east of the site, the Merced Golf and Country Club, agricultural uses and a few residential uses are located to the west, vacant land in the Cyril Smith Trust is located to the north and rural residential uses are located to the south. No heavy industrial uses or other large-scale generators of hazardous materials are located in the project area.

A preliminary search of hazardous materials sites in the project vicinity indicated that Yosemite Lake Park is listed as containing a Leaking Underground Storage Tank (LUST). Leaking underground storage tanks are a potential source of groundwater and soil contamination. This site is listed as closed by the Merced County of Environmental Health. The impact from this tank is associated with soil-based contamination from gasoline, which is considered a low level of risk.

Yosemite Lake Park was also listed on the Federal Reporting Data System for wells. Wells that are not properly maintained have some potential for groundwater contamination. No other hazardous materials sites have been identified within 1 mile of the project site.

San Joaquin Valley Fever

San Joaquin valley fever is caused by the fungus Coccidioides immits, and is commonly found eight to ten inches below the surface of soil in climates characterized by modest rainfall, mild
4. Environmental Analysis

winters and prolonged hot seasons. This disease is frequently referred to as San Joaquin valley fever because the first cases of this illness in the United States were in California's Central Valley. Since the disease was first recognized in 1893, more than one-half of the cases reported in California have come from the southern portion of the Central Valley, especially from Kern, Kings, Tulare and Fresno Counties. Although valley fever occurs throughout the southwestern United States, the geographical hot spot for this disease is in Kern County in central California.

In the southwestern United States, there are approximately 100,000 infections of this fungus annually, approximately the same infection rate as for chicken pox. Of these cases, approximately 10% of the patients experience upper respiratory infections severe enough to warrant physician care. This disease is frequently misdiagnosed, but nearly everyone living for many years in areas where this fungus occurs becomes exposed to and infected by the fungus. However, most people never get sick and are not aware they have been infected. About two out of every 1,000 individuals infected develop severe illness. The disease generally lasts one to three weeks, but may persist up to six weeks.

People of any age, sex, or race can contract the disease, but older children and adolescents seem to have milder infections than adults, while African Americans, Latinos and Filipinos tend to have more severe symptoms. Adults entering areas of possible infection without prior exposure are at much greater risk for this infection than people already living in the area. Most infections occur during the dry months of the year when soil particles find their way into the air as dust. An elevated risk exists for adults who are recent arrivals to an area, especially if their work involves soil disturbance such as farm work, construction and archaeology.

This infection can occur in two forms. In the first, symptoms are confined to the respiratory tract, with associated mucus production, cough and short-term fever. In less than 1% of the cases, this primary infection progresses to a more disseminated form, attacking other parts of the body. Potential attack sites include bones, joints, skin and the lining of the brain and the spinal cord. If left untreated, this progressive form of valley fever can be fatal. No safe and effective vaccine or drug has been developed and licensed to prevent the disease.

Emergency Evacuation Routes

Earthquakes, fires and flooding are all hazards that necessitate planned evacuation routes in order to move people away from areas of risk. The Circulation Chapter of the Merced County General Plan identifies freeways, arterials, and major/minor collectors in the County that would be utilized as evacuation routes. The State Highways would all serve as primary routes and include Highways 99, 59, 165, and 33, which run in a north-south direction. The east-west State routes are Highways 140 and 152. The “Crisis Relocation Movement Plan” and “Multi-Hazard Functional Plan”, prepared by the Office of Emergency Services, contain more specific procedures for diverting County residents away from risk hazard areas. A minimum 50-foot road width and 60-foot cul-de-sac bulb are required County road improvement standards that ensure an adequate opportunity for ingress and egress. The County also requires 20-foot wide all weather access roads which are capable of handling emergency vehicles in the foothills and other rural areas (Merced County General Plan, 1989).
4. Environmental Analysis

4.10.2 Regulatory Setting

Merced County General Plan

Public Health and Safety (Open Space/Conservation Element)

Public Health and Safety related goals were identified in the Open Space/Conservation Element of the Specific Urban Development Plan (SUDP) EIR Guidance Package for Yosemite Lake Estates, adopted by the County in June 1998, as guiding principles for the planning and establishment process. The following goal is relevant to this discussion.

Goal 3: Open space for recreation, aesthetics and protection from hazards.

Depending upon the nature of the public health hazard, various federal, state, and local agencies may be involved in regulation. With regard to hazardous materials releases, at the federal level, the involvement of the U.S. Environmental Protection Agency, the U.S. Department of Labor, and the U.S. Department of Transportation may be triggered depending upon whether the release occurred during the generation, transport, or disposal of the material. State agencies involved in regulation include the California Environmental Protection Agency (Cal/EPA), the Department of Toxic Substances Control (DTSC), the California Highway Patrol (CHP), the California Department of Transportation (Caltrans), the California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal/OSHA), the California Office of Emergency Services (Cal/OES), the State Water Resources Control Board and the Regional Water Quality Controls Boards.

Compliance with federal, state and local regulations would help identify the potential for soil and groundwater contamination at the project site and would ensure that continued environmental investigations be performed as the area develops.

4.10.3 Methodology Related to Public Health and Safety

The development of the proposed project site has some potential to result in impacts to public health and safety. The methodology for identifying and assessing potential public health and safety impacts of the proposed project included:

- Review of historic and recent uses of the property;
- Review of information on San Joaquin Valley fever;
- Review of hazardous materials releases in the vicinity of the project site; and
- Review of County goals and policies related to public health and safety.

4.10.4 Impacts and Mitigation Measures

This section will analyze the following topics: Potential impacts from hazardous material releases in the project vicinity, potential impacts from previous uses and unknown buried hazardous materials on-site, potential impacts from San Joaquin Valley fever, and conflict with emergency evacuation routes. The following topics were eliminated in the Initial Study as
needing further analysis: a risk of accidental explosion or release of hazardous substances and the creation of any health hazard or potential health hazard.

4.10.4.1 Significance Criteria

The proposed project would have a significant impact related to public health and safety if it would:

- Breach published national, state or local standards relating to solid waste or litter control;
- Contaminate a public water supply;
- Create a potential public health hazard or involve the use, production or disposal of materials which pose a hazard to people or animal or plant populations in the area affected; or
- Interfere with emergency response plans or evacuation plans.

The proposed project is a General Plan Amendment that would allow the formation of the Yosemite Lake Estates Specific Urban Development Plan area. Approval of a General Plan Amendment would not constitute approval of any specific development plan. However, for the purposes of this analysis, full build out of the area is assumed. Potential impacts to public health and safety are identified below.

4.10.4.2 Impact: Potential Impacts From Hazardous Material Releases in the Project Vicinity

- Merced County Regulatory Policy

The management of hazardous materials and hazardous wastes in Merced County, as they relate to public safety and environmental protection, occurs within a context of federal, State and local requirements. There are no goals or policies in the Merced County Year 2000 General Plan (1989) that specifically regulate hazardous materials in Merced County. The Land Use section of the General Plan indicates that Merced County adopted a State mandated Hazardous Waste Management Plan (HWMP). The preliminary hazardous materials management goal of the HWMP is stated below:

“Protect the health and welfare of the public, environment, and the economy of Merced County through a comprehensive countywide program to ensure the safe and efficient management of hazardous waste.”

33 The source of the discussion of regulatory setting is the Draft EIR for the UC Merced Community Plan, August 2001.
4. Environmental Analysis

- **Additional Regulatory Policy**

The primary federal agencies with responsibility for hazardous materials management include the U.S. Environmental Protection Agency (EPA), U.S. Department of Labor Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (DOT). Federal laws governing the transport, storage, and use of hazardous materials at the proposed project site include the following:

- Resources Conservation and Recovery Act (RCRA)- hazardous waste management;
- Hazardous and Solid Waste Amendments Act (HSWA)- hazardous waste management;
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)- cleanup of contamination;
- Superfund Amendments and Reauthorization Act (SARA)- cleanup of contamination;
- Emergency Planning and Community Right-to-Know (SARA Title III)- business inventories and emergency response planning;
- Toxic Substances Control Act (TSCA)-tracks and screens industrial chemicals; and
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)-controls pesticide distribution, sale, and use.

Specific requirements for implementation of these statutes are codified in Title 40 of the Code of Federal Regulations (CFR). Additional regulations that apply to workplace safety and transportation of hazardous materials are contained in CRF Titles 29 and 49, respectively.34

The California Environmental Protection Agency (Cal/EPA) has established regulations governing the use of hazardous materials in the State. Within Cal/EPA, the Department of Toxic Substance Control (DTSC) has primary hazardous materials regulatory responsibility, but can delegate enforcement responsibilities to local jurisdictions that enter into agreements with DTSC, for the generation, transport, and disposal of hazardous materials under the authority of the Hazardous Waste Control Law (HWCL). State regulations applicable to hazardous materials are contained primarily in Title 22 of the California Code of Regulations (CCR). Title 26 of the CCR is a compilation of those chapters or titles of the CCR that are applicable to hazardous materials management.

Also within the “umbrella” of the Cal/EPA, the California Integrated Waste Management Board (IWMB) is responsible for protecting the public’s health and safety and the environment through management of the solid waste generated in California. Solid waste regulations are generally enforced through local enforcement agencies (usually county agencies). The IWMB works in partnership with local government, industry, and the public to reduce waste disposal and ensure environmentally safe landfills. Solid waste management provisions are outlined in the Public Resources Code, Division 30.

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34 The source of the discussion of regulatory setting is the Draft EIR for the UC Merced Community Plan, August 2001.
4. Environmental Analysis

The California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) are the enforcement agencies for hazardous materials transportation regulations. The California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal/OSHA) assumes primary responsibility for developing and enforcing work place safety regulations within the State. Cal/OSHA standards are more stringent than federal OSHA regulations, and are presented in Title 8 of the CCR.

The California Office of Emergency Services (Cal/OES) is the state office responsible for establishing emergency response and spill notification plans related to hazardous materials accidents. In addition, Cal/OES regulates businesses by requiring specific businesses to prepare an inventory of hazardous materials, and to prepare risk management plans through the California Accidental Release Prevention Program (Title 19 of the CCR).

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB) regulate surface and groundwater quality according to the provisions of State and federal legislation including the Porter-Cologne Water Quality Act, the Toxic Pits Cleanup Act, Underground Tank Law, and Clean Water Act. Generally, all petroleum-related sites are handled by the RWQOB and all underground tank sites are managed by county environmental management agencies.

The project site is located within the jurisdiction of the Central Valley RWQCB (Regional 5). The RWQCB can delegate responsibilities, such as underground tank permitting and monitoring, to local jurisdictions, such as Merced County. Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific Environmental Site Assessment (Phase I) would be required as a standard practice. This process ensures that appropriate cleanup actions would be identified and implemented prior to approval of any development plan.

• Additional Impact Evaluation

A preliminary investigation of potential hazardous materials sites in the project vicinity revealed that Yosemite Lake Park is listed as containing a closed leaking underground storage tank. The impact from this tank is soil-based contamination from gasoline that is low risk. No potential contamination of groundwater that could impact the project site has been identified. No other potentially significant hazardous materials release sites have been identified in the project area. No significant impacts are anticipated as a result of project development.

• Level of Significance Before Mitigation: Less than significant

• Mitigation Measures: No mitigation measures are necessary

• Level of Significance After Mitigation: Less than significant
4. Environmental Analysis

4.10.4.3 Impact: Potential Impacts From Previous Uses and Unknown Buried Hazardous Materials On-Site

- **Merced County Regulatory Policy**

  The management of hazardous materials and hazardous wastes in Merced County, as they relate to public safety and environmental protection, occurs within a context of federal, State and local requirements. There are no goals or policies in the Merced County Year 2000 General Plan (1990) that specifically regulate hazardous materials in Merced County. The Land Use section of the General Plan indicates that Merced County adopted a State mandated Hazardous Waste Management Plan (HWMP). The preliminary hazardous materials management goal of the HWMP is stated below:

  "Protect the health and welfare of the public, environment, and the economy of Merced County through a comprehensive countywide program to ensure the safe and efficient management of hazardous waste."\(^{35}\)

  Programs established within the Merced County Division of Environmental Health are designed to manage issues related to hazardous waste contamination.

- **Additional Regulatory Policy**

  The primary federal agencies with responsibility for hazardous materials management include the U.S. Environmental Protection Agency (EPA), U.S. Department of Labor Occupational Safety and Health Administration (OSHA), and the U.S. Department of Transportation (DOT). Federal laws governing the transport, storage, and use of hazardous materials at the proposed project site include the following:

  - Resources Conservation and Recovery Act (RCRA)- hazardous waste management;
  - Hazardous and Solid Waste Amendments Act (HSWA)- hazardous waste management;
  - Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)- cleanup of contamination;
  - Superfund Amendments and Reauthorization Act (SARA)- cleanup of contamination;
  - Emergency Planning and Community Right-to-Know (SARA Title III)- business inventories and emergency response planning;
  - Toxic Substances Control Act (TSCA)-tracks and screens industrial chemicals; and
  - Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)-controls pesticide distribution, sale, and use.

  Specific requirements for implementation of these statutes are codified in Title 40 of the Code of Federal Regulations (CFR). Additional regulations that apply to workplace safety

\(^{35}\) The source of the discussion of regulatory setting is the Draft EIR for the UC Merced Community Plan, August 2001.
4. Environmental Analysis

and transportation of hazardous materials are contained in CFR Titles 29 and 49, respectively.\textsuperscript{36}

The California Environmental Protection Agency (Cal/EPA) has established regulations governing the use of hazardous materials in the State. Within Cal/EPA, the Department of Toxic Substance Control (DTSC) has primary hazardous materials regulatory responsibility, but can delegate enforcement responsibilities to local jurisdictions that enter into agreements with DTSC, for the generation, transport, and disposal of hazardous materials under the authority of the Hazardous Waste Control Law (HWCL). State regulations applicable to hazardous materials are contained primarily in Title 22 of the California Code of Regulations (CCR). Title 26 of the CCR is a compilation of those chapters or titles of the CCR that are applicable to hazardous materials management.

Also within the “umbrella” of the Cal/EPA, the California Integrated Waste Management Board (IWMB) is responsible for protecting the public’s health and safety and the environment through management of the solid waste generated in California. Solid waste regulations are generally enforced through local enforcement agencies (usually county agencies). The IWMB works in partnership with local government, industry, and the public to reduce waste disposal and ensure environmentally safe landfills. Solid waste management provisions are outlined in the Public Resources Code, Division 30.

The California Highway Patrol (CHP) and the California Department of Transportation (Caltrans) are the enforcement agencies for hazardous materials transportation regulations. The California Department of Industrial Relations, Division of Occupational Safety and Health Administration (Cal/OSHA) assumes primary responsibility for developing and enforcing work place safety regulations within the State. Cal/OSHA standards are more stringent than federal OSHA regulations, and are presented in Title 8 of the CCR.

The California Office of Emergency Services (Cal/OES) is the state office responsible for establishing emergency response and spill notification plans related to hazardous materials accidents. In addition, Cal/OES regulates businesses by requiring specific businesses to prepare an inventory of hazardous materials, and to prepare risk management plans through the California Accidental Release Prevention Program (Title 19 of the CCR).

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB) regulate surface and groundwater quality according to the provisions of State and federal legislation including the Porter-Cologne Water Quality Act, the Toxic Pits Cleanup Act, Underground Tank Law, and Clean Water Act. Generally, all petroleum-related sites are handled by the RWCQB and all underground tank sites are managed by county environmental management agencies. The project site is located within the jurisdiction of the Central Valley RWQCB (Regional 5). The RWQCB can delegate responsibilities, such as underground tank permitting and monitoring, to local jurisdictions, such as Merced County.

\textsuperscript{36} The source of the discussion of regulatory setting is the Draft EIR for the UC Merced Community Plan, August 2001.
4. Environmental Analysis

If the nature of the hazardous contamination is from pesticides, the federal and state agencies described above such as the U.S. Environmental Protection Agency (EPA), U.S. Department of Labor Occupational Safety and Health Administration (OSHA), California Environmental Protection Agency (Cal/EPA) and the Department of Toxic Substances Control (DTSC), the California Office of Emergency Services (Cal/OES), the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB) may be involved in regulating any pesticide cleanup.

Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific Environmental Site Assessment (Phase I) would be required as a standard practice. This process ensures that appropriate cleanup actions would be identified and implemented prior to approval of any development plan.

- **Additional Impact Evaluation**

A potential impact relates to the possible use of pesticides and herbicides in agricultural areas. Although unlikely, due to the past agricultural use of the site for grazing and an orchard, it is possible that hazardous materials may have been used or disposed of on the site without having been reported. Indications of such disposals may have been eradicated over time. Under such conditions, it may be possible that hazardous materials exist on the property and were not discovered previously. Grading and trenching activities could occur in areas of previously unknown hazardous waste deposits. Depending on substances involved, chemicals could volatize from saturated soil surfaces or from compromised containers. Chemical laden dust could also be inhaled by construction workers or be blown off-site and inhaled. Agricultural pesticides include known carcinogens and with sufficient exposure may adversely affect the health of people in contact with the contaminated medium, in this case, soil. Exposure of people to persistent pesticides at high exposure levels would represent a significant impact. Pesticides applied in accordance with manufacturer’s directions are not considered to produce hazardous waste unless the affected soil is removed from the site. If soil removed from the site and found to have pesticide or herbicide concentrations in excess of regulatory limits, it is considered hazardous waste. Unfortunately, these residues are not readily discernible (such as hydrocarbon staining) during normal excavation and grading procedures. Therefore, construction specifications require that appropriate health and safety procedures be followed during any excavations. Although the risk of exposure to on-site chemicals is considered low, potentially significant impacts could occur in the event that unknown hazardous substances are discovered on-site. The following mitigation measure would reduce potential project impacts to a less than significant level.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.10-1 Prior to approval of a Community Specific Plan, a Phase I Environmental Site Assessment shall be performed. On-site areas that include or previously included agriculture shall be tested for pesticide and herbicide residue in the
4. Environmental Analysis

soil. The locations and number of soil samples shall be determined by a California registered civil engineer with methodology acceptable to the Regional Water Quality Control Board (RWQCB). Any areas of soil contamination in excess of regulatory levels shall be remediated to the satisfaction of the RWQCB.

4.10.2 Prior to issuance of any grading permits associated with subsequent development, which may be approved, construction specifications shall be established describing appropriate health and safety procedures. Such procedures shall require that work be stopped when discolored or odorous soil or unknown containers are encountered in the immediate area of the discovery. Health and safety procedures shall contain, at a minimum, emergency medical, evacuation, and notification actions. Notification shall include, but would not be limited to, such agencies as: County of Merced, City of Merced, CAL-EPA’s Department of Toxic Substances Control, the County of Merced Fire Department, and the Regional Water Quality Control Board. Additionally, a Phase II ESA for the areas of potential contamination shall be required to evaluate and determine the type of contamination encountered and the appropriate remediation procedures to be utilized.

• Level of Significance After Mitigation: Less than significant

4.10.4.4 Impact: Potential Impacts From San Joaquin Valley Fever

• Merced County Regulatory Policy

There is no specific Merced County policy that addresses San Joaquin Valley Fever.

• Additional Regulatory Policy

None are applicable.

• Additional Impact Evaluation

According to the County Health Department, Merced County has five to eight reported cases of Valley Fever annually. It is possible that construction activities at the site could expose individuals to San Joaquin valley fever. However, the short-term disruption of soils on the project site is not expected to result in significant adverse impacts related to valley fever for two reasons. First, all site preparation, grading and construction activities require watering to reduce and minimize the creation of fugitive dust, which transmits this disease. Second, the fungus tends to occur in areas, which are particularly dry. The project site is not in a particularly dry area, due to the existence of streams, drainage channels and intermittent swales across the project site. The combination of winter rains, existing drainage areas and on-site watering is expected to substantially affect the ability of this fungus to survive, if it even exists in the soil on the project site. In the long-term, large portions of the project site

37 Personal communication with Karen Jenkins, Senior Public Health Nurse, April 30, 2002.
4. Environmental Analysis

would be covered with buildings, pavement, and landscaped areas. Landscaped areas would be developed with clean imported topsoil in most cases. Dust generated on-site as a result of exposed soil during long-term use of the project site would therefore be minimal, and below existing levels. Therefore, in the short-term, impacts would be reduced through on-site watering, while in the long-term, proposed on-site development would limit the ability of this fungus to survive. No significant impacts are anticipated to result from the development of the proposed project.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant

4.10.4.5 Impact: Conflict With Emergency Evacuation Routes

- **Merced County Regulatory Policy**

  According to the Merced County General Plan, freeways, arterials, and major and minor collectors in the County would be used as evacuation routes. The State Highways would all serve as primary routes, which includes Highways 99, 59, 165, and 33 and Interstate 5 (north-south routes) and Highways 140 and 152 (east-west routes). These routes are all regulated by California Highway Patrol as specified in the County’s “Crisis Relocation Movement Plan.” According to the Merced County General Plan, the County’s “Multi-Hazard Functional Plan” prepared by the Office of Emergency Services also contains procedures for diverting County residents from risk hazard areas.

- **Additional Regulatory Policy**

  None are applicable.

- **Additional Impact Evaluation**

  The County of Merced has assumed that freeways and major County roads would become the primary evacuation routes in the event of an emergency. These roadways are better maintained than other roads, routinely handle large traffic volumes and could be expected to carry evacuees and emergency service vehicles to and from areas of risk. In the direct vicinity of an emergency, residents would be expected to utilize local arterials to reach primary evacuation routes.

  Upon approval of a Community Specific Plan, the proposed project would involve the development of a recreation oriented community on 655 acres to the west of Lake Yosemite and would consist of a mix of commercial and residential uses. The development of the project would involve the construction of a number of on-site roads for local access to residential and commercial areas. All on-site roadways would be required to comply with established safety standards for emergency access. The project would also be required to
mitigate potentially significant impacts to off-site roadways (see Section 5.2, *Traffic and Circulation*). Therefore, the proposed project is not anticipated to involve the development of any land uses that would significantly impact existing or future emergency evacuation routes.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant
4.11 PUBLIC SERVICES AND UTILITIES

4.11.1 Environmental Setting

The proposed project is located in an undeveloped area north of the City of Merced. The key public services and utilities that would be required to service the proposed project area are described below. These services include fire protection, law enforcement, schools, and services for electricity and gas, telephone, water, wastewater, and solid waste. The analysis in this section of the EIR focuses on the ability of the existing service providers to provide services to the project area while maintaining existing services. All servicing agencies were contacted and recent correspondence is contained in Appendix C to this EIR.

Fire Protection

The project site currently receives fire protection services from the Merced County Fire Department. The Merced County Fire Department is an all risk department that supplies fire suppression, investigation and prevention, along with First Responder Level medical aid response. The Fire Department also has a Level A hazardous materials team located in Atwater. The Merced County Fire Chief is the Emergency Services Director for Merced County and a Merced County Battalion Chief is the Coordinator for Disaster Planning. According to the Draft EIR for the University Community Plan, the County assesses a $428 per dwelling unit development fee for fire protection; businesses are assessed a fee based on square footage and occupancy.

The closest fire station to the project site is Mckee Station, at a distance of approximately four miles from the project site. The following is a summary of the Fire Stations, equipment and personnel that provide fire protection services to the project site:

- **McKee Station 85, 3360 N. McKee Road, Merced**
  
  One career Firefighter, 15 on-call volunteer Firefighters, and two engines(one 1,250 gpm Engine and one 1,000 gpm Engine). No medical squad is available at this station. The closest medical squad if located at the 735 Martin Luther Jr. Way in downtown Merced. Approximate response time: 7 to 9 minutes depending on traffic conditions.

- **Merced Station 81, 735 Martin Luther King Jr. Way, Merced**
  
  1 career Fire Captain, 15 Paid Call Firefighters, 1500 gpm Engine, 3000 gallon Water Tender, Rescue Squad. Approximate response time: 11 to 14 minutes depending on traffic conditions.

- **Winton Station 88, 6825 N. Winton Way, Winton**
  
  1 career Fire Apparatus Engineer, 15 Paid Call Firefighters, 1250 gpm Engine, 750 gpm Engine, 3000 gallon Water Tender, Rescue Squad. Approximate response time: 12 to 15 minutes depending on traffic conditions.
Additional equipment and personnel could respond from anywhere in Merced County until sufficient resources are available to mitigate the emergency. Mutual Aid is also available from Stanislaus and Madera Counties, along with the State Wide Mutual Aid System. The Fire Department is also in the initial stages of planning for a fire station in the area of the UC Merced Campus. However, the specific location of this station has not been determined.

The project site is within a “mixed interface zone for wildland fires, according to the California Department of Forestry (CDF) Fire and Resource Assessment Program (FRAP). According to the Merced County General Plan, the proposed project site is located on the boundary of two service areas. One is the County’s Local Response Area (LRA) in which fire hazards are reduced due to service availability and fire prevention measures. The second is an area designated as “Very High Fire Hazard” and as result, is in the State Responsibility Area (SRA) illustrated on Figure 4.11-1, Fire Hazard Severity Zones. The LRA is the Merced County Fire Department’s (MCFD) jurisdiction while the SRA is in CDF’s jurisdiction. During the year, when additional resources are needed, the MCFD may call upon the Merced City Fire Department for additional help in fighting wildland fires. The area designated Very High fire hazard is in the northeast portion of the project site where flammable vegetation exists; this area consists of non-irrigated grass covered grazing land. However, the MCFD has indicated that the existing fire hazard in the project area is considered low to moderate.

Wildland fire hazards exist in varying degrees over approximately 90% of Merced County. The fire season extends approximately five to six months, from spring to late fall, and hazards arise from a combination of climatic, vegetative and physiographic conditions. As indicated in the Merced County General Plan, a portion of the project site is in the area designated “Very High Fire Hazard Severity.”

Many steps can be take to reduce the potential for loss of life and property from wildfires including: compliance with established building codes, use of greenbelts to create buffer zones, prescribed burning to control fire load, implementation of fire safe practices, and adequate water supply systems.

Factors contributing to rapid spread of urban fires are poor building construction, lack of built-in fire protection such as sprinklers, highly flammable contents, delay in detection and alarm, inadequate fire protection equipment and lack of sufficient water supply. In order to protect against the risk of urban fires, the following measures could be implemented: Minimum peak-load water supply standards for developments in urban areas with public water systems, where a public water system does not exist, ensure adequate water supplies are available for fire suppression prior to occupancy of any structure, and where the Fire Department determines alternative fire protection measures are not adequate, sprinkler systems should be installed.

38 Source: County of Merced University Community Plan Draft EIR, August 2001.
4. Environmental Analysis

Fire Hazard Severity Zones

Legend

VH - Very High

LRA - Local Response Area
(Area serviced by Merced County Fire Dept. and in which fire hazards are reduced because of fire prevention measures)

Source: County of Merced

The Planning Center • Figure 4.10-1
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4. Environmental Analysis

The County Fire Code (Section 10.301(c)) requires developers to provide approved water supplies capable of delivering adequate fire flow for fire protection to all premises upon which buildings or portions of buildings are constructed. Water supply may consist of reservoirs, pressure tanks, elevated tanks, water mains or other fixed systems capable of supplying the required fire flow.

**Police Protection**

Police protection services are provided by the Merced County Sheriff’s Department. The Sheriff’s Department maintains stations in Merced, Los Banos, and Hilmar and also operates the Sandy Mush Correctional Center in El Nido. Additionally, Merced County also maintains a total of six Sheriff’s Community Law Enforcement Office (CLEO) stations throughout the County, with one of these stations located in Merced. The Merced Area Station (MAS) is the station that would provide services to the project. The station has approximately 40 sworn officers. The other two stations in the vicinity of the project site are the North Area Station (NAS) in Hilmar and the Westside Substation (WSS) in Los Banos. Both would respond to major events at the project site. The estimated response time to the area is estimated at six to eight minutes for non-life threatening calls.

The goal of the Sheriff’s Department is to provide one officer per 750 residents. According to the County of Merced University Community Plan DEIR, the Merced County Sheriff’s Department (MCSD) currently serves the County of Merced at a ratio of approximately one officer per 3,000 residents. The MCSD employs 80 total sworn officers (49 patrol staff, 13 detectives, with the remainder acting as special assignment officers who provide support to patrol staff with between 20 and 25 patrol vehicles. Additional units include a narcotics task force, an investigation unit, a major crimes unit, and a federal drug trafficking task force.

The California highway Patrol Office handles all traffic enforcement and automobile accident investigations for the unincorporated parts of Merced County. The Sheriff’s Office, in cooperation with the California Department of Forestry, also provides disaster planning and implementation of the emergency evacuation plan. The response time provided in the event of an emergency is dependent on the location of the nearest deputy at the time of the call. There are currently no plans to expand existing police facilities or services. Capital facilities and personnel for the Sheriff’s Department are funded through tax revenues collected by the County.\(^{39}\)

**School Services**

The proposed project site is located within the Merced City Elementary School District for grades K-8 and the Merced Union High School District for grades 9-12, which are located in the northeastern half of Merced County, straddling State Highway 99. Within the Merced City Elementary School District, the City of Merced is the only incorporated City and currently generates the majority of students attending District schools. The Merced High School District encompasses the cities of Atwater, Merced and Livingston. Both school districts were contacted to obtain information on existing conditions and potential project impacts.

\(^{39}\) Source: County of Merced University Community Plan Draft EIR, August 2001.
4. Environmental Analysis

Within the Merced City School District, the project site would be served by Peterson Elementary School and Rivera Middle School. Peterson Elementary School, which accommodates students in grades K-5, has a capacity of 908 students and an enrollment of 768 students. Rivera Middle School, which accommodates students in grades 6-8, has a capacity of 901 students and an enrollment of 956 students. Peterson Elementary is currently using 5 portable classrooms and Rivera Middle School is using 9 portables. The School District is planning two new elementary schools, which could accommodate some of the students generated by the proposed project. These schools are not currently funded, but construction is anticipated within the next 10 years.

Within the Merced High School District, the project site to the east of Main Canal is located in the Golden Valley High School attendance area and the project site to the west of Main Canal is located in the Merced High School attendance area. The proposed project site is located six miles from Merced High School and ten miles from Golden Valley High School, both of which have been projected to serve the proposed development. Merced High School is built for a permanent capacity of 2,018 students with another 220 seats at East Campus Educational Center (ECEC). Merced High School currently has an enrollment of more than 2,700 students with 21 portable classrooms accommodating 462 students. Merced High School is considered to be in excess of capacity. Golden Valley High School has a permanent capacity of 2,004, but currently houses 2,157 students, in excess of its capacity, with 110 students attending the ECEC campus.

Electricity and Natural Gas Service

Electrical and natural gas service in the vicinity of the project site is currently provided by Pacific Gas & Electric Company. While there are no gas lines onsite, gas can be provided from Yosemite Avenue. The nearest gas facilities are located at the intersection of G Street and Yosemite Avenue. Electrical facilities are located adjacent to the project site, along Old Lake Road and Golf Road. PG&E is currently in discussion with the University of California regarding the provision of service to the UC Merced campus site and plans for expansion of existing facilities will depend on campus needs. Although PG&E anticipates serving the campus at distribution or transmission voltages for electrical service and at distribution or transmission service for gas, at the present time proposed expansion or system improvements are unknown. However, it is anticipated that the proposed project will not require additional staff, but will require the upgrade of existing facilities, particularly along Bellevue and Lake Roads. Additional rights-of-way for the expansion of overhead and underground electric and gas facilities will be necessary along these roadways.

Telephone Service

Telephone service in the vicinity of the project site is currently provided by Pacific Bell, which provides telephone services to other residential uses in the area.

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40 Source: County of Merced University Community Plan Draft EIR, August 2001.
41 Ibid.
4. Environmental Analysis

Parks and Recreation\textsuperscript{43}

The focus of this section is on the closest recreational facilities to the proposed project site: Lake Yosemite Regional Park, the Merced Hills Golf Course, and the Merced Golf and Country Club.

Lake Yosemite Regional Park

Lake Yosemite Regional Park, located to the east of the project site, is a 486-acre regional park that offers boating, water-skiing, windsailing, swimming, canoeing, and picnicking. Lake Yosemite is a water-retention facility created by the Merced Irrigation District (MID) in 1887. The Lake provided domestic water for the City of Merced until 1914 and now is used primarily to regulate irrigation water for 63,000 acres of agricultural land, and secondarily for flood control. MID owns the lake and the surrounding shoreline, but leases the lake and its shoreline to Merced County for recreational use.

Park facilities and services include two boat launching ramps, sixty sailboat slips, mooring slips for powerboats (day use only), boat rental concession for non-powered boats (paddle, sail, windsurfing), Main Beach and Bedesen Beach swim areas, walking pier surrounding Main Beach, food concession and first aid buildings, six restrooms and four domestic water wells, two baseball fields, paved parking, picnic tables and barbecue pits throughout the Park, fishing from the lakeshore or the MID-maintained dam, three playgrounds, volleyball courts, bicycling on the paved trails, and various rental facilities including Fish and Game building, an enclosed structure with a barbecue, Scout Island with overnight camping for youth groups, and three picnic shelters with barbecues. Revenues that support the Park come from vehicle entrance and parking, boat launch and equipment rental fees, and County General Fund monies.\textsuperscript{44}

Merced Hills Golf Course

The Merced Hills Golf Course is located southwest of the proposed project site. It is a public 18-hole golf course owned by the Virginia Smith Trust. Its revenues are used to fund higher education scholarships for young people living in Merced County. As stipulated in the County of Merced University Community Plan DEIR, the County of Merced will cooperate with UC Merced to maintain the use of Merced Hills Golf Course for as long as feasible in planning and siting campus buildings, to allow sufficient time for evaluation of alternative public golf course sites.

Merced Golf and Country Club

The Merced Golf and Country Club is a private golf course located west of the project site.

Water Service

No public or private water suppliers currently provide water services to the project site. The Main Canal and Yosemite Lake are the primary sources of surface water in the project area and

\textsuperscript{43} The source for this section is the Merced County University Community Plan Policy Discussion Paper, May 2001.

\textsuperscript{44} Ibid.
4. Environmental Analysis

could be developed for potable uses. The water in these two bodies is currently used for
agricultural irrigation and is distributed by the Merced Irrigation District (MID). Groundwater is
also available beneath the project site and could provide a source of potable water through the
drilling of wells on-site. Water service is addressed in greater depth in Section 4.7, Hydrology,
Water Supply and Water Quality, of this EIR.

Wastewater

Presently, no sanitary sewer facilities exist on the project site since it has primarily been used for
cattle grazing. The Yosemite Lake Estates development is outside the service area of the City of
Merced. However, connection to the City of Merced’s sewer system may be the most viable
option (Ecologic 2002). Section 4.7, Hydrology, Water Supply and Water Quality, addresses
wastewater service provision in greater depth.

The area to the immediate south of the project site, across Old Lake Road, is subdivided into
one-acre parcels. These parcels are currently using septic systems. The lands to the immediate
west of the property, west of Golf Road, support the Merced Golf and Country Club, a private
18-hole golf course and country club. Wastewater is addressed in greater depth in Section 4.7,
Hydrology and Water Quality, of this EIR.

Solid Waste

There are two solid waste facilities that would provide services to the project site. Both the
Highway 59 Landfill and the Highway 59 Compost Facility are located at 6040 North Highway
59 in Merced. The Highway 59 Landfill was expanded in 2001 and no further expansion of the
facility is currently planned. Any additional expansion that could possibly be necessary as a
result of the proposed project would be funded by “tipping fees.” Expansion of the current
facilities would be determined as a result either of an increase in the solid waste stream at the
landfill or as a result of state diversion mandates which require additional activities at the
facilities and would necessitate increased staff or equipment. The proposed project site is located
within the service area of the Winton Garbage and Disposal Company.

The Merced County Department of Public Works Solid Waste Division indicated that
unincorporated areas of the county have mandatory yard waste collection, which is estimated to
be 11% of the waste stream. Rate differentials also exist to encourage source separation by
individuals and companies. The household hazardous waste program is currently implemented
by the Merced County Division of Environmental Health.

4.11.2 Regulatory Setting

Merced County General Plan

Public Services and Utilities (Open Space/Conservation Element)

Energy related goals were identified in the Open Space/Conservation Element of the Specific
Urban Development Plan EIR Guidance Package for Yosemite Lake Estates, adopted by the
County in June 1998, as guiding principles for the planning and establishment process. These
are listed below and analyzed in the impact discussion relative to the proposed SUDP. The relevant goal is listed below.

**Goal 2: Soil, water, mineral, energy, historical and air resources are properly managed.**

*Fire Protection*

The Merced County General Plan contains the following goals, policies, and implementing actions related to fire protection services.

*Safety*

**Goal 5: The risk of injury and property damage resulting from wildland and urban fires is minimized.**

**Objective 5A:** An adequate level of fire safety is provided in urban areas.

**Policy 1:** Minimum peak-load water supply standards for developments in urban areas with public water systems should be established.

**Policy 2:** In urban areas where a public water system does not exist, ensure adequate water supplies are available for fire suppression prior to occupancy of any structure.

**Policy 3:** Sprinkler systems shall be considered in areas where the Fire Department determines alternative fire protection measures are not adequate.

Implementation: All buildings and structures shall be reviewed during the building permit stage to ensure that they are constructed to fire safety standards prescribed in the Building Code and the County Fire Prevention Ordinance. Where minimum fire flow water pressure is not available to satisfy Fire Department standards, alternate fire protection measures shall be identified and incorporated into the development.

**Objective 5A:** An adequate level of protection from wildland fires is provided in rural areas.

**Policy 1:** In the review of subdivisions and building permits in rural areas, provision shall be made for safe all-weather access for fire and other, emergency equipment.

**Policy 2:** In areas designated as having a very high fire hazard severity, the establishment of safe all-weather access for fire and emergency equipment shall be encouraged to serve existing residential uses.

Implementation: A determination shall be made at the building permit or subdivision review stage in “Agricultural” and “Foothill Pasture” designated areas that all-weather access to a public road exists, or can be provided, for emergency equipment. Generally, this involves a minimum 20-foot access right-of-way. The County will assist property owners of existing residences in very high fire hazard zones in identifying appropriate access routes and improvements necessary to meet all-weather requirements.
1. In areas designated as having a very high fire hazard severity, the establishment and maintenance of “clear zones” around new and existing residential structures shall be encouraged.

Implementation: The County Fire Department will assist property owners in identifying appropriate clear areas around residences and how they should be maintained.

Police Protection

The Merced County General Plan does not contain any policies or implementing actions related to law enforcement services, nor does it provide standards for levels of law enforcement service.

School Services

The Merced County General Plan does not extensively discuss school facilities, and defers school planning to local school districts. However, the General Plan does recognize overcrowding as an important issue affecting all County residents.

Gas and Electric Service

No policy with regard to the provision of gas and electric service was identified in the County General Plan.

Telephone Service

No policy with regard to the provision of telephone service was identified in the County General Plan.

Parks and Recreation Services

The following goals, objectives, and policies are outlined in the Merced County General Plan with regard to parks and recreation.

Goal 3: Open space for recreation, aesthetics and protection from hazards.

Objective 3A: Recreational lands are available for local and regional needs.

Policy 1: Encourage the continuation and expansion of existing public recreation land uses, including, but not limited to, public beaches, parks, recreation areas, wild areas and trails.

Policy 2: Ensure that adequate local and regional park facilities are available to serve the growing County population.

Policy 3: Establish and continue to develop a system of local and regional parks, and other recreation areas throughout the County which balance the relative importance of direct site access with management of sensitive wildlife resources.
4. Environmental Analysis

Policy 4: Non-recreational land uses should be buffered from sensitive public recreation lands through site design and other techniques.

Policy 5: Promote the use of energy, communication, transmission and distribution easements as equestrian, bicycle and pedestrian or hiking trails.

Policy 6: Areas identified as proposed for the California Recreational Trails System should be reviewed during project proposals for consideration of easements and integration into County recreational facilities.

Objective 3B: Lands with high aesthetic value are properly managed.

Policy 8: Regional parks should be used to preserve areas of natural scenic beauty.

Objective 3C: Open space lands are used for public protection purpose.

Policy 12: Open space recreational uses should be considered appropriate for areas identified as noise impacted.

4.11.3 Methodology Related to Public Services and Utilities

The proposed project was evaluated for conformity with the goals, objectives and policies of the County of Merced General Plan related to fire, police, schools and other public services. The potential for adverse impacts on service providers was evaluated based on information concerning current service levels and the ability of the service providers to accommodate the increased demand created by the project. Service providers were contacted and correspondence is included in Appendix C of this EIR.

4.11.4 Impacts and Mitigation Measures

This section will analyze the following topics: Increased demand for fire protection services, police protection services, school services, gas and electric service, water service, wastewater service, solid waste services and park and recreational services and facilities.

4.11.4.1 Significance Criteria

The proposed project would have a significant impact on the environment if it would:

- Result in a need for new or altered fire protection services;
- Result in a need for new or altered police protection services;
- Result in a need for new or altered school services;
- Result in a need for new power or natural gas systems or supplies;
- Result in a need for new communications systems;
- Result in a need for new local or regional water treatment or distribution facilities;
- Result in a need for new sewer or septic tanks;
- Result in a need for new solid waste disposal facilities;
- Result in a need for new parks and recreational services and/or facilities;
4. Environmental Analysis

- Conflict with emergency response plans or emergency evacuation plans;
- Breach published national, state or local standards related to solid waste or litter control;
- Substantially degrade or deplete groundwater resources; and
- Use fuel, water or energy in a wasteful manner.

For the purposes of this EIR, an impact of the proposed project would be considered significant if it results in demand for utility or public services facilities or services that substantially exceeds the ability of the service provider to provide service and thereby results in the need for physical expansion of infrastructure.

4.11.4.2 Impact: Increased Demand for Fire Protection Services

- Merced County Regulatory Policy

  The Merced County General Plan contains the following goals, policies, and implementing actions related to fire protection services.

  Safety

  Goal 5: The risk of injury and property damage resulting from wildland and urban fires is minimized.

  Objective 5A: An adequate level of fire safety is provided in urban areas.

  Policy 1: Minimum peak-load water supply standards for developments in urban areas with public water systems should be established.

  Policy 2: In urban areas where a public water system does not exist, ensure adequate water supplies are available for fire suppression prior to occupancy of any structure.

  Policy 3: Sprinkler systems shall be considered in areas where the Fire Department determines alternative fire protection measures are not adequate.

  Implementation: All buildings and structures shall be reviewed during the building permit stage to ensure that they are constructed to fire safety standards prescribed in the Building Code and the County Fire Prevention Ordinance. Where minimum fire flow water pressure is not available to satisfy Fire Department standards, alternate fire protection measures shall be identified and incorporated into the development.

  Objective 5A: An adequate level of protection from wildland fires is provided in rural areas.

  Policy 1: In the review of subdivisions and building permits in rural areas, provision shall be made for safe all-weather access for fire and other, emergency equipment.

  Policy 2: In areas designated as having a very high fire hazard severity, the establishment of safe all-weather access for fire and emergency equipment shall be encouraged to serve existing residential uses.
4. Environmental Analysis

Implementation: A determination shall be made at the building permit or subdivision review stage in “Agricultural” and “Foothill Pasture” designated areas that all-weather access to a public road exists, or can be provided, for emergency equipment. Generally, this involves a minimum 20-foot access right-of-way. The County will assist property owners of existing residences in very high fire hazard zones in identifying appropriate access routes and improvements necessary to meet all-weather requirements.

1. In areas designated as having a very high fire hazard severity, the establishment and maintenance of “clear zones” around new and existing residential structures shall be encouraged.

Implementation: The County Fire Department will assist property owners in identifying appropriate clear areas around residences and how they should be maintained.

• Additional Regulatory Policy

The County Fire Code (Section 10.301(e)) requires developers to provide approved water supplies capable of delivering adequate fire flow for fire protection to all premises upon which buildings or portions of buildings are constructed. Water supply may consist of reservoirs, pressure tanks, elevated tanks, water mains or other fixed systems capable of supplying the required fire flow.

Merced County Fire Department

The California Department of Forestry’s Master Plan for the Merced County Fire Department provides the following relevant Level of Service Goals and Objectives:

Heavy Urban:

Fire Protection Goal: Initiate fire suppression prior to flashover in structure fires.

Fire Protection Objectives:
- Apply extinguishing agent to all fires within seven minutes of dispatch.
- Full first alarm assignment in cooperation within ten minutes.
- Control 90% of all fires with first alarm assignment.

Emergency Medical Response Goal: Provide First Responder Medical services within five minutes of dispatch.

Urban:

Fire Protection Goal: Confine structure fire to the building of origin with first alarm assignment.
Fire Protection Objectives:
- Apply extinguishing agent to all fires within 10 minutes of dispatch.
- Full first alarm assignment in operation within 15 minutes.
- Control 90% of all fires with the first alarm assignment.

Emergency Medical Response Goal: Provide First Responder Medical services within 10 minutes of dispatch.

Rural:

Fire Protection Goal: Confine structure fires to the building of origin with first alarm assignment.

Fire Protection Objectives:
- Apply extinguishing agent to all fires within 14 minutes of dispatch.
- Full first alarm assignment in operation within 20 minutes.
- Control 80% of all fires with first alarm assignment.

Emergency Medical Response Goal: Provide First Responder Medical services within 15 minutes of dispatch.

The Merced County Fire Department currently maintains a fire station proximity of every 1.5 miles in heavy urban areas, three miles in urban areas, and five miles in rural areas in order to maintain the above-mentioned levels of service.45

Prior to formulation of any subsequent Community Specific Plan, coordination with the County of Merced Fire Department would be required as a standard practice. This process would ensure that fire service needs and that fire protection goals would be identified and incorporated into design of any subsequent projects prior to approval of any development plan.

- Additional Impact Evaluation

The Fire Department has indicated that the development of the proposed project would increase the fire hazard on the project site from “low to moderate” to “moderate to high.” The Merced County Fire Department Master Plan sets the level of service by response time and distance, along with equipment demands required for the type of incident.

Due to the assumed size of the proposed project, it would create the need for Fire Department facilities in the project area for the Fire Department to provide an appropriate level of service to the area. Additional personnel and equipment would also be needed to support a new facility. The Fire Department currently has a Fire Facility Impact Fee in place that is used to

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45 Source: County of Merced University Community Plan Draft EIR, August 2001.
offset the cost of adding new fire stations and equipment. The Fire Department has indicated that this fund would not completely cover the additional infrastructure and equipment costs needed to support a development of the size assumed for the proposed project. There is no mechanism in place to fund the ongoing costs of personnel needed to staff new fire facilities.

The Merced County Fire Department requires a minimum fire flow of 1,000 gallons per minute for residential development and 1,500 gallons per minute for commercial development. These flow requirements may be increased for specific projects due to special hazards. The proposed project would be required to comply with all Merced County General Plan policies regarding provision of adequate fire protection and Fire Department requirements for water flow. The project would also be required to comply with other Fire Department safety requirements related to issues such as the installation of smoke detectors, fire sprinklers, emergency access and other safety measures.

Typically, a developer fee is established by the County and paid for by the project applicant to provide for early fire protection staffing and related needs generated as a result of the proposed project. Extended service fees may also be deemed necessary and these can be assessed through property owner assessments.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**
  
  4.11.1 At the time that a Community Specific Plan is approved, the fees necessary to fund additional fire services and facilities required by the proposed project shall be part of an agreement between the County of Merced and the developer.

  4.11.2 A developer fee shall be established by the County and paid for by the project applicant to provide for early fire protection staffing and related needs generated as a result of the proposed project. Extended service fees may also be deemed necessary and these can be assessed through property owner assessments.

- **Level of Significance After Mitigation:** Less than significant

4.11.4.3 **Impact: Increased Demand for Police Protection Services**

- **Merced County Regulatory Policy**

  The Merced County General Plan does not contain any policies or implementing actions related to law enforcement services, nor does it provide standards for levels of law enforcement service.

  Prior to formulation of any subsequent Community Specific Plan, coordination with the County of Merced Sheriff’s Department would be required as a standard practice. This process would ensure that police service needs and that police protection goals would be
4. Environmental Analysis

identified and incorporated into the design of any subsequent projects prior to approval of any development plan.

- **Additional Regulatory Policy**

  None are applicable.

- **Additional Impact Evaluation**

  While the proposed project involves the designation of a new SUDP, and no specific development has been proposed, for the purpose of analysis it is assumed that subsequent development could result in the development of a total of 1,262 housing units. The Sheriff’s Department applies a standard of one officer per 750 new residents or one officer per 250 dwelling units. Applying the dwelling unit standard, future development of the project area would require approximately five new officers. However, the specific needs of the Sheriff’s department would depend on density of development and how much commercial space is developed. The Sheriff’s department has indicated that it is likely the proposed project would require more staff, more patrol cars, and expanded office space to house the new staff. It may also require the establishment of a new sheriff’s satellite station in the project’s commercial space.

  The Sheriff’s Department has also estimated that the project could lead to an increase in the use of Lake Yosemite Park. This would likely include an increase in the use of wave runners, wind surfers, boats, and other day uses. Therefore, the Sheriff’s Department may also need to strengthen personnel deployment at the lake during high usage periods.

  No funds for increasing police protection are pledged as yet for any portion of the proposed project. Normally, County funding for law enforcement is based on taxes. Since the proposed project would require increased staffing and start-up in the early phases of construction, a developer fee should be established to pay for early law enforcement staffing and special needs such as equipment, cars, radios, and training. As buildout of the project site occurs, law enforcement personnel would need to increase on a year-by-year basis based upon real growth. The following mitigation measure would reduce potential project impacts to a less than significant level.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.11.3 At the time that a Community Specific Plan is approved, the fees necessary to fund additional police services and facilities required by the proposed project shall be part of an agreement between the County of Merced and the developer. A developer fee shall be established by the County and paid for by the project applicant to provide for early law enforcement staffing and related needs generated as a result of the proposed project. Extended service fees may
4. Environmental Analysis

also be deemed necessary and these can be assessed through property owner assessments.

- **Level of Significance After Mitigation:** Less than significant

4.11.4.4 Impact: Increased Demand for School Services

- **Merced County Regulatory Policy**

The Merced County General Plan does not extensively discuss school facilities, and defers school planning to local school districts. However, the General Plan does recognize overcrowding as an important issue affecting all County residents.

Prior to formulation of any subsequent Community Specific Plan, coordination with the Merced City Elementary School District and the Merced Union High School District would be required as a standard practice. This process would ensure that school facilities needs would be identified and incorporated into the design of any subsequent projects prior to approval of any development plan.

- **Additional Regulatory Policy**

Proposition 1A/Senate Bill (SB) 50 (Chapter 407, Statutes of 1998) is a school construction measure that was approved by voters on the November 3, 1998 ballot. It authorized the expenditure of State general obligation bonds totaling $9.2 billion through 2002, primarily for the modernization and rehabilitation of older school facilities and the construction of new school facilities related to new growth. Of the $9.2 billion, $2.5 billion is targeted for higher education facilities and the remaining $6.7 billion is targeted for K-12 facilities throughout the State.

Of the $6.7 billion for K-12 schools, $2.9 billion is for new construction, $2.1 billion is for modernization of older schools, $1.0 billion is for districts in hardship situations, and $700 million is for class size reduction. The new construction money is available through a 50/50 State/local match program. The modernization money is available through an 80/20 State/local match program. There are a number of other program reforms that are not summarized here.

Proposition 1A/SB 50 also implements significant fee reform by amending the laws governing developer fees and school mitigation in a number of ways:

- It establishes the base (statutory) amount (indexed for inflation) of allowable developer fees at $1.93 per square foot for residential construction and $0.31 per square foot for commercial construction.
- It prohibits school districts, cities, and counties from imposing school impact mitigation fees or other requirements in excess of or in addition to those provided in the statute.
4. Environmental Analysis

- It also suspends for a period of at least eight years, a series of court decisions allowing cities and counties to deny or condition development approvals on grounds of inadequate school facilities when acting on certain types of entitlements.

The School Facilities Law of 1986 limited the amount of any fee or other requirement imposed on a development project for the mitigation of impacts on school facilities. Although the law appeared to prohibit denial of a project on the basis of inadequacy of school facilities, three subsequent court decisions held that this prohibition applied only to administrative land use approvals (such as tentative maps, use permits, and building permits), not to legislative land use approvals (such as general plan amendments and rezoning). These court decisions became known as the Mira-Hart-Murietta trilogy.

In reliance on these decisions, many cities and counties required payment of school fees in excess of the statutory limits as a condition to granting approval of general plan amendments, specific plans, rezoning, and other legislative approvals.

The new law overturns the Mira-Hart-Murietta cases by expressly prohibiting local agencies from using the inadequacy of school facilities as a basis for denying or conditioning approvals of any “legislative or adjudicative act…involving…the planning, use, or development of real property” (Government Code 65996 (b)). In other words, the new regulations also explicitly prohibit local agencies from imposing school impact fees in excess of those provided by the statute in connection with approval of a project. Additionally, a local agency cannot require participation in a Mello-Roos for school facilities; however, the statutory fee is reduced by the amount of any voluntary participation in a Mello-Roos.

Proposition 1A/SB 50 has resulted in full State preemption of school mitigation. Satisfaction of the statutory requirements by a developer is deemed to be “full and complete mitigation.” The new law does identify certain circumstances under which the statutory fee can be exceeded. These include preparation and adoption of a “needs analysis,” eligibility for State funding, and satisfaction of one of four requirements (prior to January 1, 2000) identified in the law including year-round enrollment, general obligation bond measure on the ballot over the last four years that received 50% plus one of the votes cast, 20% of the classes in portable classrooms, or specified outstanding debt. After January 1, 2000, the district would have to satisfy two of the four requirements.

Assuming a district can meet the test for exceeding the statutory fee, the law establishes ultimate fee caps of 50% of costs where the State makes a 50% match, or 100% of costs where the State match is unavailable. All fees are levied at the time the building permit is issued. District certification of payment of the applicable fee is required before the City or County can issue the building permit. The State’s school construction bond will expire in November 2002, at which time all the monies for school construction will have been distributed. At that time, a new school construction bond will go out for voter approval as well as a second school construction bond in March 2004. Depending upon when a specific development plan is approved will determine how much state funding is available for schools in the proposed project area.
4. Environmental Analysis

The California Department of Education has published a Guide to School Site Analysis and Development in order to establish a valid technique for determining acreage for new school development. Rather than assigning a strict student/acreage ratio, this guide provides flexible formulas that permit each district to accommodate its individual conditions. The Department of Education then recommends that a site utilization study be prepared for the site, based on these formulas (County of Merced University Community Plan DEIR, August 2001).

- Additional Impact Evaluation

In order to estimate the number of students generated by a project that includes residential development, the number of proposed residential units is multiplied by a student generation rate from the local school district. The proposed project is assumed to allow the project site to be developed with a variety of residential uses. It is assumed that the project would involve the development of a maximum of 1,262 new dwelling units. For purposes of analysis only, a ratio of 80% single family and 20% multi-family has been assumed as well. Utilizing this split, the proposed project would have 1,010 single-family dwelling units and 252 multi-family residential units. Generation factors obtained from affected school districts are estimated from current or historical ratios of the number of students per dwelling unit. The number of students that could be generated by the proposed project, is summarized in Table 4.11-1.

<table>
<thead>
<tr>
<th>Category</th>
<th>K-5</th>
<th>6-8</th>
<th>9-12</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Family—1,010 new dwelling units</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Generation Rate</td>
<td>.366</td>
<td>.203</td>
<td>.243</td>
<td>.812</td>
</tr>
<tr>
<td>Students</td>
<td>370</td>
<td>205</td>
<td>245</td>
<td>820</td>
</tr>
<tr>
<td>Multi-Family—252 new dwelling units</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student Yield</td>
<td>.222</td>
<td>.042</td>
<td>.109</td>
<td>.373</td>
</tr>
<tr>
<td>Students</td>
<td>56</td>
<td>11</td>
<td>27</td>
<td>94</td>
</tr>
<tr>
<td>Total Students</td>
<td>426</td>
<td>216</td>
<td>272</td>
<td>914</td>
</tr>
</tbody>
</table>

1 Based on student generation rates provided by Merced City School District, Michael Paoli & Associates 2002.

Based on the student generation factors recommended by the affected school districts, the proposed Yosemite Lake Estates development, at buildout, could result in a net increase of 426 elementary (K-5) students, 216 middle school (6-8) students, and 272 high school (9-12) students. This could translate into an attendance increase at Merced City School District schools of approximately 642 students and an attendance increase at Merced Union High School District schools of approximately 272 students.
Existing schools in the Merced City School District that would serve the project site are either at or near capacity. Peterson Elementary School is approximately 140 students below capacity, while Rivera Middle School is already 55 students beyond capacity. The increase of 426 elementary school students and 216 middle school students that could be generated by this project would exceed the capacity of these existing schools. Two new elementary schools are currently planned to be constructed by the District. No specific information regarding the capacity, location, and timing of construction is presently available. The Merced City School District does, however, plan for these additional schools to be built within the next 10 years.

Existing schools in the Merced Union High School District that would serve the project site are Merced High School, located six miles from the site, and Golden Valley High School, located 10 miles from the site. Merced High School is built for a permanent capacity of 2,018 students with another 220 seats at East Campus Educational Center, but currently has 2,700 students with 21 portable classrooms accommodating 462 students. Golden Valley High School has a permanent capacity of 2004, but currently houses 2,171 students. Based on the Paoli Fee Justification Study of 2002, district-wide high school enrollment is expected to increase from 9,242 students in 2001 to 12,068 in the year 2011, based on Merced County Association of Governments (MCAG) population projections, including the projected build-out of the University Community Plan. This represents approximately a 23% increase in enrollment over the ten-year period. Depending on the extent of growth occurring due to UC Merced and other factors such as overall growth in the area, enrollment will likely increase after 2007 rather than decline (Michael Paoli & Associates 2002). New schools planned for the area include Bellevue Ranch High School at Cardella Road and “M” Street in Merced with a capacity of 2,000 students. According to the Merced Union High School District Facilities Planning Department, it is anticipated that this school will be built after 2010.

Based on established generation rates and current enrollment levels at existing schools, existing local schools have limited capacity to serve the development of the proposed project site. The Merced High School District estimates that it requires approximately 94 square feet of school facilities for each new student. This translates into approximately 45,590 square feet of new facilities. Similar increases in capacity are anticipated to be needed by the Merced City School District. The Merced Union High School District has also estimated that four new buses would be required to transport students to school and that school buses cost approximately $100,000 at 1999 prices.

The current maximum statutory residential developer fee, approved by the State Allocation Board in January 1998, is $1.93 per square foot. A one-third/two thirds fee split of this amount would result in $0.64 per square foot being allocated to the Merced Union High School district and $1.29 being allocated to the elementary school districts. According to a Development Fee Justification Study prepared by the Merced Union High School District (May, 1998), actual costs for school facilities have been determined to be $4.77 for single family development and $2.28 for multiple family units.

47 A one-third/two thirds fee split is a common division of the statutory fee, which is negotiated between the School Districts.
4. Environmental Analysis

Pursuant to Senate Bill 50, affected school districts are authorized to levy a fee equal to 50% of true mitigation costs for the provision of schools for new residential construction when the school district is eligible under the state school building program and state bond funding is available. When a district is eligible for funding, but no state bond funding is available, the district may levy a fee equal to 100% of true mitigation of needed school facilities. Under any circumstances, the district has the authority to enter into a contract with the developer setting a mutually agreed upon mitigation fee to provide school facilities. The negotiation of actual fees and/or location of new school facilities is appropriate with the review of a subsequent Community Specific Plan. The following mitigation measures would reduce potential project impacts to a less than significant level.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.11.4 The state statutory fee of $2.14 per square foot of residential development and $0.34 per square foot for commercial/industrial development shall be levied upon any development project proposed under a subsequent Community Specific Plan.

  4.11.5 If required by the Merced City School District or Merced Union High School District, adequate land needed for new school facilities shall be provided by the land owner in the CSP in exchange for fee credits. School sites shall: Be located with the approval of the school district concerned; be developed on a schedule coordinated with phasing of project build-out in a manner satisfactory to the affected school district, and conform to size guidelines set by the State and school district concerned.

- **Level of Significance After Mitigation:** Less than significant

4.11.4.5 **Impact: Increased Demand for Gas and Electric Service**

- **Merced County Regulatory Policy**

  No policy with regard to the provision of gas and electric service was identified in the County General Plan.

  Prior to formulation of any subsequent Community Specific Plan, coordination with the Pacific Gas and Electric Company would be necessary. This process would ensure that gas and electric facilities have the capacity to serve the project prior to approval of any development plan.

- **Additional Regulatory Policy**

  None are applicable.
4. Environmental Analysis

- **Additional Impact Evaluation**

PG&E has indicated that it would be able to provide service under the provisions of applicable extension rules. However, without detailed data on specific land uses, PG&E has indicated that it is not possible to quantify any improvements that would be required to provide service to the project site. PG&E would study the capacity of the existing conductors and circuit serving the area as well as transformer capacity to determine the needed improvements to electrical distribution systems. Since gas facilities are located some distance away, the project applicant would be required to provide funding for extending a new main from the nearest existing facility based on existing extension rule provisions. No significant impacts are anticipated as a result of project development.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary.
- **Level of Significance After Mitigation:** Less than significant

4.11.4.6 Impact: Increased Demand for Telephone Services

- **Merced County Regulatory Policy**

No policy with regard to the provision of telephone service was identified in the County General Plan.

Prior to formulation of any subsequent Community Specific Plan, coordination with the Pacific Bell would be necessary. This process would ensure that there are facilities with the capacity to serve the project prior to approval of any development plan.

- **Additional Regulatory Policy**

None are applicable.

- **Additional Impact Evaluation**

Telephone service in the vicinity of the project site is provided by Pacific Bell, which provides telephone service to other residential uses in the area. Pacific Bell would expand telephone facilities to the project site. The construction of the proposed project could result in short-term impacts associated with delays in service provision if telephone lines are damaged during construction. However, any potential damage to telephone lines can be avoided through required coordination between the project applicant and Pacific Bell when construction activities occur in the vicinity of telephone lines.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
4. Environmental Analysis

- **Level of Significance After Mitigation:** Less than significant

4.11.4.7 Impact: Increased Demand for Water Service

- **Merced County Regulatory Policy**

  Prior to formulation of any subsequent Community Specific Plan, coordination with the water service providers would be required as a standard practice. This process would ensure that there are sufficient water resources to meet the needs of the project and that these specific water requirements would be identified and committed prior to approval of any development plan.

- **Additional Regulatory Policy**

  See Section 4.7, Hydrology and Water Quality.

- **Additional Impact Evaluation**

  Options available for water supply are groundwater, surface water, or a combination of the two. The project has proposed that groundwater be the primary water supply source for the project due to its availability and quality. In order to supply water for domestic and fire flow requirements, a series of improvements would be required, including: testing for suitable groundwater wells, distribution piping, booster pumping, and emergency power facilities. Design of these facilities would be required to conform to agency standards. Water service for the proposed project would be provided by a community services district or equivalent public entity funded by local users. As an alternative, a private company could provide water service. Mitigation Measures 4.8.2 through 4.8.4 would reduce potential project impacts related to water supply and service to a less than significant level.

- **Level of Significance Before Mitigation:** Less than significant

- **Mitigation Measures:** No mitigation measures are necessary

- **Level of Significance After Mitigation:** Less than significant

4.11.4.8 Impact: Increased Demand For Wastewater Services

- **Merced County Regulatory Policy**

  Prior to formulation of any subsequent Community Specific Plan, coordination with the wastewater service providers would be required as a standard practice. This process would ensure that there are sufficient wastewater facilities to meet the needs of the project and that these specific wastewater requirements would be identified and committed prior to approval of any development plan.
4. Environmental Analysis

- **Additional Regulatory Policy**

  See Section 4.7 *Hydrology and Water Quality*.

- **Additional Impact Evaluation**

  Development of the proposed project would lead to an increase in waste generation and discharge. Due to the size of the assumed development and the limited percolation capability of the soil, on-site septic tanks and leach fields are not considered suitable for the disposal of wastewater. Therefore, the project would require the construction of an on-site treatment system with treated effluent used to supply water for irrigation. The wastewater system would be operated by a public entity, as required by the Regional Water Quality Control Board.

  The proposed wastewater collection system would consist of a collection of sewage at central low points and the installation of pumping stations for the transfer of the wastewater to the treatment plant. The proposed reclamation plant would utilize a “Sequencing Batch Reactor” process or a similar process, as approved by the Regional Water Quality Control Board. This process is an activated sludge process that utilizes a computer to control various operations. Treated effluent would conform to established treatment standards.

  The complete treatment process would include a suitable pretreatment in the form of screening, two process tanks, chemical coagulation, filtration, long-term chlorination, and an effluent pumping station to transport the final effluent to the storage reservoir. Chlorine may be injected into the effluent pipeline, which could be used as a contact chamber, depending on the location of the reservoir. Chlorination would probably be in the form of hypochlorite to eliminate the use of hazardous chlorine gas.

  Storage facilities would be provided for operations during non-irrigation periods. An effluent flow meter would measure the sewage discharged from the treatment facility to the storage facilities. Before discharge of the effluent to the storage reservoir, the final effluent would be sampled to assure compliance with discharge requirements.

  Part of the treated effluent from the wastewater treatment plant would be reused on the golf course of the adjacent Merced Golf and Country Club. This type of reuse can be beneficial, as nutrients supplied with the wastewater are applied continuously in small doses, rather than at periodic heavy application rates, such as occurs when using normal fertilizing procedures. A waste discharge permit from the Regional Board would be required to be secured prior to project construction.

  Another alternative is to discharge directly into Fahrens Creek during off-peak hours. More in-depth studies would be required concerning the hydraulic, water quality and aesthetic impacts along the lower Fahrens and Bear Creeks. Customarily, these additional studies would be conducted concurrently with the preliminary design, waste discharge permit application, and the focused environmental impact report for the treatment plant.
4. Environmental Analysis

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.11.6 The project applicant shall prepare a wastewater treatment plan as part of the Specific Plan prepared for this project. The wastewater treatment plan shall identify requirements for wastewater treatment and storage facilities.

  4.11.7 A wastewater discharge permit shall be secured from the Regional Water Quality Control Board prior to project construction.

- **Level of Significance After Mitigation:** Less than significant

4.11.4.9 **Impact: Increased Demand for Solid Waste Services**

- **Merced County Regulatory Policy**

  The County of Merced and each of its cities published the Source Reduction and Recycling Elements (SRRE) in July 1991. The SRRE was prepared in conjunction with the County of Merced Department of Public Works and addressed the entire county. The solid waste plans for each city integrate the city’s goals with the County plan. Cities must promote in order of priority: source reduction, recycling and composting, and finally, environmentally safe transformation and land disposal. The goals and objectives of the SRRE are to reduce the waste stream to the County landfills through the implementation of various programs aimed at diverting and recycling solid waste, including the establishment of recycling (dropoff/buyback) and composting (for yard waste) facilities.

  Prior to formulation of any subsequent Community Specific Plan, coordination with the County of Merced Solid Waste Division would be required as a standard practice. This process would ensure that sufficient landfill capacity to meet the needs of the project still exists and that any specific solid waste requirements that may arise in the future as a result of changes in the California Waste Management Act of 1990 would be identified and incorporated into the design of any subsequent projects prior to approval of any development plan.

- **Additional Regulatory Policy**

  To minimize the amount of solid waste that must be disposed of in landfills, the State Legislature passed the California Integrated Waste Management Act of 1989 (AB939), effective January 1990. According to AB 939, all cities and counties are required to divert 25% of all solid waste from landfill facilities by January 1, 1995; and must divert 50% by January 1, 2000. The Regional Agency (Merced County and all cities) is currently meeting its AB 939 goals.
4. Environmental Analysis

• Additional Impact Evaluation

Development of the proposed project site would generate additional solid waste that would be sent to the Highway 59 Landfill site. The Highway 59 Landfill has an estimated closure date of 2005, with a thirty-year disposal capacity expansion scheduled to begin operation by 2003. Implementation of the proposed project can be expected to reduce the life expectancy of the County’s existing landfill capacity. Annual per capita waste generation created by the proposed project is estimated to fall in the range of 0.77 to 0.99 tons per capita, based on generation rates in other parts of the County. County landfills are operated as an enterprise fund with tipping fees collected to ensure adequate capacity exists for growth in solid waste disposal generation.

• Level of Significance Before Mitigation: Potentially significant

• Mitigation Measures:

4.11.8 In the periodic update of its Waste Management Program, the County shall incorporate the population projections for the Yosemite Lake Estates General Plan Amendment project in order to plan for sufficient future landfill capacity and shall include the area in its education, recycling and cost recovery efforts.

• Level of Significance After Mitigation: Less than significant

4.11.4.10 Impact: Increased Demand for Parks and Recreation Services

• Merced County Regulatory Policy

This discussion focuses on Lake Yosemite Regional Park, the closest recreational facility to the proposed project site because it is most likely to experience impacts from the urbanization of the surrounding area. The parkland was purchased by using County General Fund money, State Park Bond revenues, and funds from the U.S. Department of Interior’s Land and Water Conservation Fund program. Of the 260 acres that were purchased, 230 are leased for grazing, and the remaining acres in the developed portion of the Park. The Merced County General Plan recognizes that recreational areas are a vital component of healthy communities and a vital regional resource. The Plan recognizes multiple compatible uses such as agricultural support operations, recreational areas, and public or institutional facilities when necessary. Specific policies that pertain to unique geologic or physical features are contained in the open space/conservation chapter of the Merced County General Plan.

Prior to formulation of any subsequent Community Specific Plan, coordination with Merced County Parks and Recreation would be necessary. This process would ensure that there are recreational facilities with the capacity to serve the additional population brought to the area by the project prior to approval of any development plan.
4. Environmental Analysis

- **Additional Regulatory Policy**

  Under the terms of the state and federal grants, the Yosemite Lake Regional Park may not be converted to any use other than parklands without prior federal or state approval and acquisition of replacement parklands of equal value. Conversion of state funded parklands would require state legislation. Conversion of federally funded parklands would require approval of the Department of the Interior. Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific geotechnical and soils analysis would be required as a standard practice. This process ensures that appropriate development restrictions would be identified prior to approval of any development plan.

- **Additional Impact Evaluation**

  Between April and September, the Yosemite Lake Park serves approximately 300,000 users. On holidays and on hot weekends, park attendance can total eight to ten thousand users per day. At such times, officials must close the Park when no parking remains.48 Park administration could not estimate what impact a directly adjacent residential development would have on the park, but concerns centered on access to the park both from a safety and a revenue standpoint.49 If subsequent development under a Community Specific Plan were approved, it would be difficult for the County to restrict access from the residential areas to the lake so that public safety was ensured and also so the County could capture vehicle parking fees, one of the major sources of revenue for support of the Park.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.11.9 At the time of a Community Specific Plan, the developer and the Merced County Division of Parks and Recreation shall reach a mutual agreement on access to Lake Yosemite Regional Park such that public safety and revenue generation for the Park are maximized.

- **Level of Significance After Mitigation:** Potentially significant

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48 The source for this section is the Merced County University Community Plan Policy Discussion Paper, May 2001.
49 Personal communication with George Rodrigues, Director of the Division of Parks and Recreation, May 23, 2002.
4. Environmental Analysis

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4. Environmental Analysis

4.12 SOCIOECONOMICS

This section of the EIR analyzes the potential socioeconomic impacts associated with development and operation of the proposed project.

4.12.1 Environmental Setting

The proposed project is located in an unincorporated portion of Merced County, approximately 3 miles northeast of the City of Merced. For regional planning and forecasting purposes, the project area has been identified using U.S. Census information. The United States Bureau of the Census provides population, housing, and employment data for this area. The California Department of Finance (DOF) provides additional data used in the analysis. The Merced County Association of Governments also publishes demographic data for the county and cities based on U.S. Census and DOF population estimates. Data presented in this chapter is based on U.S. Census, DOF, and Merced County Association of Governments demographic information.

Population Characteristics

Population Trends and Forecasts

As illustrated in Table 4.12-1, Merced County’s population was 134,558 in 1980, with the City of Merced being the largest city at 36,499 persons (DOF).

<table>
<thead>
<tr>
<th>Area</th>
<th>1980</th>
<th>1990</th>
<th>2000</th>
<th>2025</th>
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<tr>
<td>Unincorporated</td>
<td>58,599</td>
<td>70,003</td>
<td>80,117</td>
<td>121,002</td>
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<tr>
<td>Incorporated</td>
<td>75,959</td>
<td>108,400</td>
<td>138,751</td>
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</tr>
<tr>
<td>Merced County</td>
<td>134,558</td>
<td>178,403</td>
<td>218,868</td>
<td>373,170</td>
</tr>
</tbody>
</table>

Sources: California Department of Finance City/County Population Estimates, May 2002.

In 1990, Merced County population increased to 178,403, with the population of the City of Merced at 56,155 (U.S. Census, 1990) and 63,893 persons in 2000 (U.S. Census, 2000). From 1990 to 1998, the total county population increased from 178,403 to 204,422, which represents a 14.6% increase. The population of Merced County in the year 2000 was 210, 554 (U.S. Census, 2000). The population change for the county between 1990 and 2000 was 18% compared to California’s 13.6%, showing that Merced County grew more rapidly in that period than the State as a whole. By the year 2025, it is estimated by Merced County Association of Governments (2002) that the population will increase to 373,170. The percent change in County population between 1980 and 1990 was 32.6%. This rate of growth slowed in the 1990s to an average of 11.7% from 1990 to 1997(See Table 4.12-1, Population Trends). It is difficult to predict the future rate of growth, but with the establishment of the UC Merced campus and the University Community Plan to the northeast of the City of Merced, it is likely the County will continue to
show high rates of growth. The Department of Finance projects a county population of 460,020 in 2040 (DOF 1998).

The development of the new UC Merced campus and UC community is likely to have direct local and regional economic impacts. According to the University Committee of Merced’s 1997 report “The Impact of the University of California Campus at Merced on the Regional Economy,” the payment of salaries and wages to faculty and staff at the UC Merced campus would initiate a process in which millions of dollars would be cycled through the Merced economy and region. The development of a campus in Merced would be responsible for the migration of faculty and staff to Merced County, given the University of California’s statewide faculty salary schedule and the relatively low cost of living in the Merced County area. The establishment of the university is projected to have a multiplier effect. When university faculty, staff, students, and visitors spend dollars in the surrounding community, local businesses and individuals receiving these dollars will in turn spend a portion of them in the larger region. The recipients of the projected second round of spending will also spend a portion of their dollars in the local region. The process of spin-off economic effects will continue successively. It is anticipated that the campus will be a catalyst for growth in the County of Merced in general.

The proposed project site is located in an unincorporated area of Merced County, northwest of the planned UC Merced Campus site and approximately 3 miles northeast of the City of Merced. In 1980, the population of the unincorporated areas of Merced County was estimated at 58,599 and the population of the incorporated areas was estimated as 75,959. The population of the unincorporated areas of the county in 1990 was estimated at 70,003 and the population of the incorporated areas was estimated at 108,400. Between 1990 and 1998, the population of these areas has increased by 13.9% and 14.9% respectively (See Table 4.12-1, Population Trends). A large increase in population is also expected to occur as a result of the development of UC Merced. Projections for UC Merced and the surrounding community are projected to be 384 persons in 2005, one year after the campus opens; 3,088 in 2010; 8,220 in 2015; 14,066 in 2020; and 21,682 in 2025 (Merced County Association of Governments 2002). The campus is expected to reach an enrollment of 25,000 at full development, sometime after 2027 (UC Merced Long Range Development Plan 2001).

The project area lies in Census Tracts 9.03 and 19.01. In 2000, the U.S. Census reported the populations of Census Tracts 9.03 and 19.01 as 1,126 and 5,198 persons, respectively (see Table 4.12-2, 2000 Census Data for Population and Income). The majority of the people in these census tracts, live in rural areas. The U.S. Census defines rural areas as places with populations of less than 2,500 residents.

**Income**

As shown in Table 4.12-2, 2000 Census Data for Population and Income, census data from 2000 indicates that the median annual household income for Merced County was $29,178, which is below the median income of $39,595 for the State of California as a whole. According to the 2000 Census, 25.4% of the population in Merced County was below the poverty level compared to 16% for California as a whole.
4. Environmental Analysis

<table>
<thead>
<tr>
<th>Area</th>
<th>2000 Population</th>
<th>Median Annual Household Income $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merced County</td>
<td>210,554</td>
<td>29,178</td>
</tr>
<tr>
<td>City of Merced</td>
<td>65,400</td>
<td>24,727</td>
</tr>
<tr>
<td>Census Tract 9.03</td>
<td>1,126</td>
<td>N/A</td>
</tr>
<tr>
<td>Census Tract 19.01</td>
<td>5,198</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Source: 2000 U.S. Census
N/A: Not available.

Housing Characteristics

As shown in Table 4.12-3, the Merced County housing stock in 2000 totaled approximately 68,373 housing units of all types, with a total of 63,815 households. The 2000 Census reports 3.25 persons per household for the County. The City of Merced had a total of 21,532 housing units in 2000.

<table>
<thead>
<tr>
<th>Area</th>
<th># Housing Units</th>
<th># Households</th>
</tr>
</thead>
<tbody>
<tr>
<td>Merced County</td>
<td>68,373</td>
<td>63,815</td>
</tr>
<tr>
<td>City of Merced</td>
<td>21,532</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Source: 2000 U.S. Census
Note: N/A means that the data from Summary Tape File 3 of the U.S. Census, which provides household information is not yet available.

Employment

According to the California Department of Finance (2000) statistics, there are approximately 52,000 non-agricultural jobs and 11,700 agricultural jobs in the County. Although only approximately 18% of the total labor force is employed in the agricultural industry, Merced County ranks sixth nationwide for agricultural production. The majority of the Merced County labor force is in trade, followed by the state and local government, manufacturing, and services sectors. In 2000, the unemployment rate was 14.4% (DOF 2000). While it is difficult to project the employment impact of the build-out of the UC Merced campus and the University Community to the south of the campus, recent studies associated with planning the UC campus and related community suggest that even excluding the campus and the University Community,
job growth will be strong in Merced County in 2015 with 104,963 jobs and in 2025 with 118,994 jobs (County of Merced University Community Plan, August 2001).

4.12.2 Regulatory Setting

There are no regulations for growth or other socioeconomic impacts.

4.12.3 Methodology Related to Socioeconomics

The potential impacts of the proposed project were evaluated relative to the following conditions and characteristics in the area:

- Demographic characteristics including population and housing.
- Socioeconomic characteristics including employment and income.
- The displacement of existing housing, especially affordable housing, was eliminated in the Initial Study as an area requiring analysis in the EIR because the project site is undeveloped.

4.12.4 Impacts and Mitigation Measures

This section will analyze the following topics: cumulative exceedance of official regional or local population projections and induction of substantial growth in an area either directly or indirectly.

4.12.4.1 Significance Criteria

The proposed project would be considered to have a significant impact on the environment related to socioeconomics if it would:

- Cumulatively exceed official regional or local population projections;
- Induce substantial growth in an area either directly or indirectly; or
- Displace existing housing, especially affordable housing.

Further, Section 15131 of the CEQA Guidelines state that:

“Economic or social information may be included in an EIR or may be presented in whatever form the agency desires.

(a) Economic or social effects of a project shall not be treated as significant effects on the environment. An EIR may trace a chain of cause and effect from a proposed decision on a project through anticipated economic or social changes resulting from the project to physical changes caused in turn by the economic or social changes”.

4.12.4.2 Impact: Exceed Established Population Projections

- Merced County Regulatory Policy

None are applicable.
4. Environmental Analysis

- **Additional Regulatory Policy**
  None are applicable.

- **Additional Impact Evaluation**
  Between 1990 and 2000, 70.8% of the Merced County population growth was located in the incorporated areas and 29.2% was located in unincorporated areas. As these areas are built out, the population will continue to increase. The total population of Merced County in the year 2000 is 210,554 (U.S. Census 2000) and is projected to increase to 319,785 by the year 2020 (DOF 1998). The proposed project would generate a maximum of approximately 1,262 dwelling units. With an average household size of 3.25 persons, 4,102 new residents could result, which is only 1.3% of the County’s projected population growth through the year 2020. A population increase of 4,102 persons would not exceed established population projections for the County and its unincorporated areas. The various physical impacts that would be associated with the project are described in other chapters. Population growth associated with development of the proposed project area would be less than significant.

- **Level of Significance Before Mitigation:** Less than significant

- **Mitigation Measures:** No mitigation measures are necessary

- **Level of Significance After Mitigation:** Less than significant

4.12.4.3 **Impact: Induce Substantial Growth of Population in an Area Either Directly or Indirectly**

- **Merced County Regulatory Policy**
  None are applicable.

- **Additional Regulatory Policy**
  None are applicable.

- **Additional Impact Evaluation**
  The project assumes a maximum of 19 acres of commercial development, which would generate a number of new jobs at the project site. No employment opportunities would be eliminated as a result of the proposed project. The actual number of jobs created would vary based on the types of commercial uses subsequently developed at the project site. The employment created by proposed project is likely to accommodate a range of income levels and the labor force is likely to come from both within and outside of the new community. Unemployment in Merced County was 14.4% in 2000. The proposed project would provide new job opportunities for existing unemployed residents of Merced County as well as for future residents. Therefore, employment impacts resulting from development of the proposed project would be a beneficial effect.
4. Environmental Analysis

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant
4.13 SOILS, GEOLOGY AND MINERAL RESOURCES

This section of the EIR provides an overview of the regional and site-specific geologic, soils, and seismic conditions at the Yosemite Lake Estates SUDP area, and discusses the presence of mineral resources in the vicinity of the project area. Merced County is located near the geographic center of California in the San Joaquin Valley and is bordered by two mountain ranges, the Sierra Nevada to the east and the Diablo Range to the west. Small intermittent streams enter the Valley from the semi-arid mountains of the Diablo Range, some of which have been dammed to form reservoirs for irrigation. Perennial rivers flow from the larger drainage areas of the Sierra Nevada and these have also been dammed for irrigation. In the past water spread over these drainage areas depositing sand, silt and clay and built up large alluvial fans along each side of the valley. The larger and more gently sloping fans on the east side are built principally by deposits from granitic rock sources. The coastal range on the western County border reaches elevations of 3,000 feet and dips steeply under the alluvial fans of the valley. The alluvial fans on the west side generally have steeper slopes and have been built up by materials originating in the sedimentary rocks of the coastal range. The Valley floor is made up of alluvial materials from both ranges. The Valley is barely above sea level and so much of the runoff from the two mountain ranges has created rivers and a high water table with extensive wetlands.

4.13.1 Environmental Setting

According to the Merced County General Plan and the California Department of Conservation, Division of Mines and Geology, the nearest earthquake faults of major historical significance are the San Andreas to the west of Merced County, approximately 15 miles from the County line; the Hayward and Calaveras faults to the northwest; the White Wolf, Garlock and Sierra Nevada faults to the south; and the Bear Mountain fault to the east, approximately five miles east of and parallel to the eastern border of Merced County. The only known fault inside Merced County is the Telsa-Ortigalita fault, located in the western quarter of the County, dissecting the Coast Ranges in a northwesterly direction. Figure 4.13-1, Regional Faults, shows known earthquake faults in the general vicinity of Merced County. The Bear Mountain fault is the closest to the proposed project site at a distance of approximately 15 miles. While there is no record of any seismic activity originating in the County (other than tremors on the west side, close to the Ortigalita fault), the County has been shaken by earthquakes originating elsewhere.

According to the Merced County General Plan, future earthquakes in Merced County are likely to vary in intensity from Moderate Severity to High Severity. Moderate severity is defined by the General Plan as “moderate probable damage” and high severity is defined as “major probable damage.” Expected earthquake intensity in the vicinity of the project site is shown in Figure 4.13-2, Maximum Expectable Earthquake Intensity. The proposed project site is located in a portion of the County predicted to experience moderate severity and moderate probable damage in the event of an earthquake.
4. Environmental Analysis

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4. Environmental Analysis

Regional Faults

Source: County of Merced
4. Environmental Analysis

Maximum Expectable Earthquake Intensity

LEGEND:

I MODERATE SEVERITY MODERATE PROBABLE DAMAGE
II HIGH SEVERITY MAJOR PROBABLE DAMAGE

Source: California Division of Mines and Geology
4. Environmental Analysis
4. Environmental Analysis

In the event of an earthquake, ground settlement may occur in unconsolidated valley sediments, many of which are saturated with water. These sediments represent the poorest kind of soil condition for resisting seismic shock waves. The changes that occur, such as liquefaction and loss of strength in fine-grained materials, can result in ground cracking, unequal settlement, subsidence and other surface changes.

A great deal of soil compaction and settlement can result from seismic groundshaking. If the sediments that compact during an earthquake are saturated, water from voids in the soil can be forced to the surface, where it emerges in the form of mud spouts or sand boils. If the soil liquefies in this manner (liquefaction), it loses its supporting capacity with the result that structures may settle into the ground. The extent of damage can range from minor displacement to total collapse. Although no specific liquefaction hazard areas have been identified in the vicinity of the project site, this potential is recognized throughout the San Joaquin Valley where unconsolidated sediments and a high water table occur.

4.13.2 Regulatory Setting

State of California

With regard to seismicity and soils, the State of California provides minimum standards for structural design and site development through the California Building Standards Code (California Code of Regulations (CCR), Title 24). The California Building Code (CBC) is based on the Uniform Building Code (UBC), which is used widely throughout the United States and has been modified for California conditions with numerous more detailed and/or more stringent regulations.\(^50\)

Where no building codes apply, Chapter 18 of the UBC/CBC regulates the excavation of foundations and retaining walls, and Appendix Chapter 33 regulates grading activities, including drainage and erosion control, and construction on expansive soils. The State Earthquake Protection Law (California Health and Safety Code 19100 et. seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the UBC/CBC. The UBC/CBC identifies seismic factors that must be considered in structural design.\(^51\)

Installation of underground utility lines must comply with industry standards specific to the type of utility (e.g., National Clay Pipe Institute for sewers and American Water Works Association for water lines). These standards contain specifications for installation and design to reflect site-specific geologic and soils conditions.\(^52\)

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\(^50\) The source of the discussion of regulatory setting is the Draft EIR for the UC Merced Community Plan, August 2001.

\(^51\) Ibid.

\(^52\) Ibid.
State regulations pertaining to the management of erosion/sedimentation as they relate to water quality are described in Section 4.7, Hydrology and Water Quality. Such regulations include, but are not limited to, the National Pollutant Discharge Elimination System (NPDES) program for management of construction and municipal stormwater runoff, which is part of the federal Clean Water Act and is implemented at the State and local levels through issuance of permits and preparation of site-specific pollution protection plans. Sections 1600 through 1607 of the California Department of Fish and Game Code regulates activities that would alter stream characteristics, including erosion. While the primary purpose of these regulations and standards is the protection of surface water resources from the effects of land development, measures included within such regulations and standards also help to minimize the potential for erosion due to soil loss.53

County Regulatory Setting

The following goals and policies from the Merced County Year 2000 General Plan are applicable to the proposed project:

Safety Chapter

Goal 1: Merced County residents protected from known seismic and geologic hazards.

Objective 1.A: New structures are protected from seismic and geologic hazards.

Policy 2: Special precautions to ensure earthquake resistant design should be considered for proposed critical structures, such as hospitals, fire stations, emergency communication centers, private schools, high occupancy buildings, bridges and freeway overpasses, and dams.

Policy 3: Encourage educational programs to inform the public of earthquake dangers in Merced County.

Goal 3: Merced County residents free from personal injury and property damage resulting from unstable soils.

Objective 3A: Structures within areas of known or suspected unstable soils are appropriately located, designed, and constructed.


Policy 3: All proposed structures, utilities, or public facilities within recognized near-surface subsidence or liquefaction areas should be located and constructed in a manner to minimize or eliminate damage.

53 The source of the discussion of regulatory setting is the Draft EIR for the UC Merced Community Plan, August 2001.
Open Space/Conservation Chapter

The following soils and geological related goal was identified in the Open Space/Conservation Element of the Specific Urban Development Plan EIR Guidance Package for Yosemite Lake Estates, adopted by the County in June 1998, as guiding principles for the planning and establishment process.

Goal 2: Soil, water, air, mineral, energy, and historical resources are properly managed.

Objective 2A: Soil resources are protected from erosion, contamination, and other affects that substantially reduce their value.

No significant soil or mineral resources are located on the project site and no significant impacts to these resources would result from project development. Mitigation has been provided to ensure that water, energy, historical and air resources would be properly managed. No significant impacts are anticipated to result from project development.

Policy 1: The removal of vegetative resources which stabilize slopes, reduce surface water runoff, erosion and sedimentation should be minimized.

Merced County Building Codes and Regulations

Merced County Building Ordinance No. 1539 incorporates the following Uniform Codes into its building requirements to ensure that buildings are designed and sited properly to protect against seismic and unstable soil conditions: Uniform Building Code, Uniform Housing Code, Uniform Building Code for Abatement of Dangerous Buildings, Uniform Mechanical Code, Uniform Plumbing Code, and National Electric Code. In addition to the above mentioned Uniform Codes, Merced County (unincorporated) complies with applicable federal requirements and the following State regulations which regulate building construction and site safety: Title 1 (Government Code); Title 8 (Cal/OSHA Safety Code); Title 17 (Structural Code); Title 19 (Health and Safety Code); Title 24 (State Building Codes); and Title 25 (State Housing and Community Development Code).

Merced County Mineral Resource Zone Policies

In response to the California Surface Mining and Reclamation Act (SMARA) requirements, Merced County has revised its mineral resource policies for inclusion in its General Plan. As stated in the SMARA guidelines, Merced County is required to incorporate into its General Plan mineral resource policies that will: 1) Recognize mineral information classified by the State Geologist and transmitted by the State Mining and Geology Board; 2) Assist in the management of land use which affect areas of statewide and regional importance; 3) Emphasize the conservation and development of identified mineral deposits; and 4) Provide maps of identified

54 The source of the discussion of regulatory setting is the Draft EIR for the UC Merced Community Plan, August 2001.
4. Environmental Analysis

mineral deposits or incorporation by reference of the classification maps provided by the State Mining and Geology Board.\textsuperscript{55}

Soils and Geological related goals were identified in the Open Space/Conservation Element of the Specific Urban Development Plan (SUDP) EIR Guidance Package for Yosemite Lake Estates, adopted by the County in June 1998, as guiding principles for the planning and establishment process. The following goal is relevant to the topics soils, geology and mineral resources:

**Goal 2:** Soil, water, mineral, energy, historical and air resources are properly managed.

### 4.13.3 Methodology Related to Soils and Geology

The analysis of the potential geologic, seismic and soils impacts or constraints that may affect the proposed project was conducted through a review of published reports on the geology in the site vicinity. Applicable seismic and geologic hazard zones and designations provided by the County of Merced and State of California were also reviewed to determine potential project impacts.

### 4.13.4 Impacts and Mitigation Measures

This section will analyze the following topics: Fault induced ground rupture, seismic ground shaking, seismic ground failure, including liquefaction, subsidence, expansive soils, erosion or unstable soil conditions, mineral resources, and unique geologic or physical features. The following topics were eliminated in the Initial Study as needing further analysis: seiche, tsunami, or volcanic hazard, and landslides or mudflows.

#### 4.13.4.1 Significance Criteria

The project will be considered to have a significant impact on the environment related to soils and geology if it:

- Exposes people, structures or property to major geologic hazards such as earthquakes, landslides, mudslides or ground failure.

- Results in unstable earth conditions or changes in geologic substructure.

- Results in disruptions, displacements, compaction or overcovering of soil.

- Destroys, covers or modifies any unique geologic or physical features.

- Increases wind or water erosion of soils, either on or off the project site.

\textsuperscript{55} The source of the discussion of regulatory setting is the Draft EIR for the UC Merced Community Plan, August 2001.
4. Environmental Analysis

- Contains substrate consisting of material that is subject to liquefaction or other secondary seismic hazards in the event of ground shaking.

- Results in the loss of availability of a known mineral resource that would be of future value to the region and the residents of the state.

4.13.4.2 Impact: Fault Induced Ground Rupture

Impact Analysis:

- **Merced County Regulatory Policy**

  According to the Merced County General Plan Safety Element, all habitable structures shall be located and designed in compliance with the Alquist-Priolo Earthquake Fault Zoning Act. Special precautions to ensure earthquake resistant design should be considered for proposed critical structures such as hospitals, fire stations, emergency communication centers, private schools, high occupancy buildings, bridges and freeway overpasses, and dams. If significant earthquake damage should occur anyplace in the County, rebuilding the structure at a geologically safer location shall be considered before rebuilding the damaged building at its previous location. The County Office of Emergency Services is responsible for emergency education programs.

- **Additional Regulatory Policy**

  The California Department of Conservation, Division of Mines and Geology provides seismic hazards mapping for the state. The Alquist-Priolo Special Studies Zone Act (1972), now known as the Alquist-Priolo Earthquake Fault Zoning Act, was created to prohibit the location of most structures for human occupancy across the traces of active faults, thus lessening the hazard of fault rupture. The Act only addresses the hazard of surface fault rupture and is not directed toward other earthquake hazards, such as ground shaking or liquefaction. The law requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones) around the surface traces of active faults and to issue appropriate maps. Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific geotechnical and soils analysis would be required as a standard practice. This process ensures that appropriate development restrictions would be identified prior to approval of any development plan.

- **Additional Impact Evaluation**

  According to the California Department of Conservation, a fault is a fracture in the crust of the earth along which rocks on one side have moved relative to rocks on the other side. An active fault is one that has ruptured in the last 11,000 years. The Alquist-Priolo Earthquake Fault Zoning Act establishes regulatory zones around the traces of active faults so no construction of buildings used for human occupancy are placed on these faults. There are no Alquist-Priolo Fault Zones designated in the vicinity of the proposed project site. As such, the proposed project would not be subject to fault rupture or any special development...
standards associated with the Alquist-Priolo Earthquake Fault Zoning Act requirements. The closest fault to the project site is the Bear Mountain Fault, located approximately 15 miles to the north of the project site. Based on current maps provided by the California Department of Conservation, the proposed project site is not located on or adjacent to an Earthquake Fault Zone. Based on the available data, the hazard of fault induced ground rupture at the project site is considered low. Fault-induced ground rupture is therefore not considered to represent a significant impact the proposed project.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant

### 4.13.4.3 Impact: Seismic Ground Shaking

**Impact Analysis:**

- **Merced County Regulatory Policy**

According to the Merced County General Plan Safety Element, all habitable structures shall be located and designed in compliance with the Alquist-Priolo Earthquake Fault Zoning Act. Special precautions to ensure earthquake resistant design should be considered for proposed critical structures such as hospitals, fire stations, emergency communication centers, private schools, high occupancy buildings, bridges and freeway overpasses, and dams. If significant earthquake damage should occur anywhere in the County, rebuilding the structure at a geologically safer location shall be considered before rebuilding the damaged building at its previous location. The County Office of Emergency Services is responsible for emergency education programs.

- **Additional Regulatory Policy**

Chapter 16 of the Uniform Building Code; California Building Code; Merced County Building Ordinance No. 1539. Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific geotechnical and soils analysis would be required as a standard practice. This process ensures that appropriate development restrictions would be identified prior to approval of any development plan.

- **Additional Impact Evaluation**

In the vicinity of the proposed project site, the geotechnical hazard posed by seismic shaking is considered to be moderate (Merced County General Plan, 1989) due to the distance to known active faults and the nature of the alluvial materials underlying the site. Moderate severity is defined in the General Plan as “moderate probable damage.” The most recent estimates published by the California Department of Conservation, Division of Mines and Geology indicate that the project area has a low potential for strong seismic ground shaking.
At present it is not possible to predict when or where movement will occur on regional faults. It may be assumed, however, that movement along one or more of these faults could result in an earthquake during the anticipated life of the project.

In the event of an earthquake, seismic risk to structures would depend on the distance to the epicenter of the fault, the characteristics of the earthquake, the geologic, groundwater and soil conditions underlying the site.

Adherence to Uniform Building Code standards is generally the best mitigation method currently available to reduce hazards from ground shaking. While application of the UBC does not entirely eliminate the potential for building collapse or structural damage caused by large earthquakes, especially in locations where the peak ground acceleration or duration of an earthquake event exceeds the design assumptions of the Seismic Zone, it substantially reduces the potential effects of ground shaking. In order to further reduce potential project impacts, a detailed geological report should be prepared prior to project development. This report should identify potential geological hazards and recommend appropriate mitigation measures.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.13.1 Prior to approval of a tentative tract map, a qualified soils engineer shall prepare a detailed analysis of specific characteristics and capabilities of underlying soils and shall identify potential geologic hazards. The report shall recommend appropriate measures for the design of proposed structures to reduce any potential safety hazards related to ground shaking, liquefaction, subsidence and unstable or expansive soils to the maximum extent reasonably feasible to ensure earthquake resistant design of structures.

- **Level of Significance After Mitigation:** Less than significant

4.13.4.4 **Impact: Seismic Ground Failure, Including Liquefaction**

**Impact Analysis:**

- **Merced County Regulatory Policy**

  According to the Merced County General Plan, all standards contained in the Uniform Building Code related to construction on unstable soils will be enforced during the building permit review process.

- **Additional Regulatory Policy**

  The Alquist-Priolo Fault Zone Map Act identifies areas of fault rupture and liquefaction. Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific geotechnical and soils analysis would be required as a standard
4. Environmental Analysis

practice. This process ensures that appropriate development restrictions would be identified prior to approval of any development plan.

- **Additional Impact Evaluation**

  No specific liquefaction hazard areas have been identified in the vicinity of the project site. However, potential for liquefaction is recognized throughout the San Joaquin Valley, where unconsolidated sediments and a high water table exist. There is also potential for liquefaction in existing wetland areas. Since portions of the project site contain wetland habitat and the water table beneath the project site may be relatively high in some areas, there is some potential for liquefaction on the project site. Engineering treatment of either the ground or structures or both can often reduce the risk of liquefaction. Additional options for dealing with liquefaction hazards include the development of low occupancy uses or open space resources for high-risk areas. The soils report required by Mitigation Measure 4.13.1 would analyze the liquefaction potential at the project site and provide measures to reduce the risk of liquefaction hazards on-site to a less than significant level. The project would also be required to comply with the latest edition of the Uniform Building Code for this seismic zone. No additional mitigation measures are necessary.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant

4.13.4.5 Impact: Subsidence

**Impact Analysis:**

- **Merced County Regulatory Policy**

  According to the Merced County General Plan, all standards contained in the Uniform Building Code related to construction on unstable soils will be enforced during the building permit review process.

- **Additional Regulatory Policy**

  California Building Code; Merced County Building Ordinance No. 1539. Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific geotechnical and soils analysis would be required as a standard practice. This process ensures that appropriate development restrictions would be identified prior to approval of any development plan.

- **Additional Impact Evaluation**

  Subsidence is the settling or sinking of various parts of the earth’s crust. Causes of subsidence include a seismic event or groundwater extraction. Tectonic subsidence -occurs
suddenly and is the compaction of soils due to groundshaking during earthquakes. Merced County is most affected by subsidence caused by groundwater withdrawal, hydrocompaction and earthquakes.

The west side of the San Joaquin Valley has been recognized as the world’s largest area of subsidence due to groundwater withdrawal. Approximately 423 square miles have settled more than one foot since the 1950s. The proposed project site is not located in an area of recognized subsidence resulting from groundwater withdrawal, according to the Merced County General Plan.

Differential settlement resulting in the compaction of loose, less cohesive soils may also be caused by earthquakes and could occur in many parts of the County. The most likely areas are those in which the groundwater surface is deep, the soils are loose to medium dense, and the soil profile includes strata of loose and uniformly graded sand. The soils study required in Mitigation Measure 4.13.1 would reduce potential impacts associated with subsidence by identifying appropriate design standards for structures that may be subsequently proposed.

Landslides are also common to Merced County and represent a hazard to property and residents primarily in the western portion of the County. Factors contributing to landslide potential include steep slopes, unstable terrain and proximity to earthquake faults. The proposed project site consists of gently rolling terrain with slopes from 0 to 10% over the vast majority of the property. The exception is a small area near Fahrens Creek in the northwest portion of the site that contains slopes of 30%. It is anticipated that the potential for landslides in this area could be reduced through appropriate grading and construction techniques, which would be recommended in the soils study required by Mitigation Measure 4.13.1.

Adherence to the latest Uniform Building Code standards and the recommendations provided in the comprehensive soils study required by Mitigation Measure 4.13.1 should reduce potential project impacts to a less than significant level. No significant impacts are anticipated as a result of the proposed project. No additional mitigation measures are necessary.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.13.4.6 Impact: Expansive Soils

Impact Analysis:

- **Merced County Regulatory Policy**
  
  According to the Merced County General Plan, all standards contained in the Uniform Building Code related to construction on unstable soils will be enforced during the building permit review process.

- **Additional Regulatory Policy**
  
  The State of California provides minimum standards for structural design and site development through the California Building Standards Code (California Code of Regulations (CCR), Title 24). The California Building Code (CBC) is based on the Uniform Building Code (UBC), which is used widely throughout the United States (generally adopted on a state-by-state or district-by-district basis) and has been modified for California conditions with numerous more detailed and/or more stringent regulations.

  Where no other building codes apply, Chapter 18 of the UBC/CBC regulates the excavation of foundations and retaining walls, and Appendix Chapter 33 regulates grading activities, including drainage and erosion control, and construction on expansive soils. The State Earthquake Protection Law (California Health and Safety Code 19100 et. seq.) requires that structures be designed to resist stresses produced by lateral forces caused by wind and earthquakes. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the UBC/CBC. The UBC/CBC identifies seismic factors that must be considered in structural design. The structural design and foundation requirements of the UBC and CBC are also incorporated into the Merced County Building Codes and Regulations. Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific geotechnical and soils analysis would be required as a standard practice. This process ensures that appropriate development restrictions would be identified prior to approval of any development plan.

- **Additional Impact Evaluation**
  
  Expansive soil materials underlying a foundation, if left untreated, can cause damage to the structure including cracking, heaving and buckling of the foundation, and differential settlement of the building. The area in the vicinity of the project site consists of a combination of sands, gravels, silts and clays. Fine grained silts and clays have the greatest expansion potential and exist across portions of the project site. Therefore, near surface soils may need to be removed, mixed and recompacted, depending on the shrink-swell capacity of the soil. According to the Soil Survey of the Merced Area (USDA Soil Conservation Service 1991), the project site is comprised of soils of the high terraces (Redding-Pentz-Peters). The site contains at least 20 different soil types including Redding Gravelly Loam with 0% to 8% slopes, Hopeton Clay Loam with 0% to 3% slopes, and Corning Gravelly Loam with 0% to 8% slopes. Redding soils are the most common on the project site. These soils were laid
down in large fans by streams during the Sierra Nevada mountain-building period. These soils are gravelly or cobbly and have an impermeable cemented hardpan. The Redding soils are also strongly acidic, are strongly weathered, and have been leached of much of their fertility. The Corning and Anderson soils, also on site, developed from similar gravelly alluvium but are more recent. The Soil Survey of the Merced Area suggests that the site is not composed of fertile soils most suitable for agriculture and nothing indicates that the soils present on the site would be unsuitable for urbanization. The soils analysis required by Mitigation Measure 4.13.1 would ensure that development of the proposed project takes into account areas of potentially expansive soils and that appropriate mitigation is applied to the development of the proposed project. Prior to the issuance of building permits and occupancy, State regulations require that a geotechnical study be prepared to identify site-specific conditions that could affect site development, including the potential for expansive soils. No additional mitigation measures are necessary.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant

4.13.4.7 Impact: Erosion or Unstable Soil Conditions

**Impact Analysis:**

- **Merced County Regulatory Policy**

  According to the Merced County General Plan, all standards contained in the Uniform Building Code related to construction on unstable soils will be enforced during the building permit review process.

- **Additional Regulatory Policy**

  The National Pollutant Discharge Elimination System (NPDES) is a program for management of construction and municipal stormwater runoff, which is part of the Clean Water Act and is implemented at the State and local level through issuance of permits and preparation of site-specific pollution protection plans. Sections 1600 through 1607 of the California Department of Fish and Game Code regulates activities that would alter stream characteristics, including erosion. While the primary purpose of these regulations and standards is the protection of surface water resources from the effects of land development, measures included within such regulations and standards also help to minimize the potential for erosion due to soil loss.

  Short-term erosion effects during construction of the proposed project would be minimized through the preparation of State and locally required stormwater pollution prevention plans implemented through the NPDES General Construction Activity Stormwater Permit, grading plans, and water quality management plans, as well as implementation of permit-required
structural and non-structural Best Management Practices (BMPs). The BMPs would be required to be consistent with State and local erosion control requirements, which include, at minimum, the excavation and grading requirements contained in Appendix Chapter 33 of the UBC. BMPs such as sediment traps and barriers, soil stabilizers, erosion control geotextiles, and seeding and planting of stabilization vegetation, would reduce erosion. In addition, proper management of cut-and-fill slopes in accordance with UBC/CBC requirements, as well as Merced County building requirements, would reduce the potential for erosion. In summary, Appendix Chapter 33 of the Uniform Building Code, the California Building Code, the Merced County Building Ordinance No. 1539; and the National Pollutant Discharge Elimination System General Construction Activity Stormwater Permit would all apply to the proposed project in order to reduce potential erosion impacts.

Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific geotechnical and soils analysis would be required as a standard practice. This process ensures that appropriate development restrictions would be identified prior to approval of any development plan.

**Additional Impact Evaluation**

Soil erosion is a natural process that can be accelerated by human activities such as construction and agricultural practices. The process often results in the loss of topsoil, the creation of ruts, gullies and sediment filled streams. Key factors affecting erosion and sedimentation are the extent of vegetation, vegetative cover, slope, amount of rainfall and soil porosity.

Construction of the proposed project site would cover large portions of the site with asphalt, concrete and buildings. Construction would also include the design and installation of paved drainage swales to conduct surface water runoff to storm drain facilities. Therefore, erosion potential from ongoing project operation is considered low. During construction activities, the project would be required to prepare and comply with a storm water pollution prevention plan to ensure that significant construction related erosion does not impact local water bodies. Therefore, the proposed project is not anticipated to result in adverse impacts related to erosion.

On-site soils would be analyzed in the soil study required by Mitigation Measure 4.13.1. Any potential impacts resulting from unstable soils would be required to be mitigated prior to construction of on-site buildings. In addition, compliance with the Uniform Building Code would be required to ensure that building foundations would not be impacted by unstable soils.

- **Level of Significance Before Mitigation:** Less than significant
- **Mitigation Measures:** No mitigation measures are necessary
- **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.13.4.8 Impact: Mineral Resources

Impact Analysis:

- Merced County Regulatory Policy

Merced County is revising its mineral resource policies for inclusion in its General Plan, in response to the California Surface Mining and Reclamation Act (SMARA) of 1976 requirements. The Act’s requirements apply to anyone engaged in surface mining operations in California, which disturb more than one acre or remove more than 1,000 cubic yards of material. This includes, but is not limited to: prospecting and exploratory activities, dredging and quarrying, streambed skimming, borrow pitting, and stockpiling of mined materials.

Additional Regulatory Policy.

SMARA provides a mineral lands inventory process, the primary objective of which is to provide local agencies, such as cities and counties, with information on the location, need, and importance of minerals within their respective jurisdictions. It is also the intent of this process, through the adoption of general plan mineral resource management policies, that this information be considered in future local land-use planning decisions (Public Resources Code Section 2762). Under SMARA local land use jurisdictions are the enforcing lead agencies for mineral resource issues, while State agencies guide and regulate city and county enforcement of SMARA. Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific geotechnical and soils analysis would be required as a standard practice. This process ensures that appropriate development restrictions would be identified prior to approval of any development plan.

- Additional Impact Evaluation

The Yosemite Lake Estates area does not contain any state designated mineral resource zones (MRZs) according to maps prepared by the State Mining and Geology Board. Mineral extraction is currently limited in Merced County to sand and gravel operations. Active mining is occurring in concentrated locations on both the east and west sides of the County in the alluvial flood plain deposits of the Los Banos Creek and the off-channel flood plain of the Merced River.

Sand and gravel operations have the greatest potential for commercial utilization in unincorporated areas of Merced County, as these are the most valuable mineral resources in the County. Sand and gravel are created from years of mountain erosion and from seasonal storms that result in rapid stream movement. Approximately one million tons are mined annually, primarily from streambeds and flood plain deposits. Other local mineral resources include gypsum, found west of the San Joaquin River, and Diatomite.

The upstream damming of watercourses in Merced County has significantly reduced the replenishment of sand and gravel. Therefore, once extracted, mineral resources are considered to be non-renewable. The proposed project site is located in an area designated as having potential for sand and gravel resources by the County of Merced. However, the
4. Environmental Analysis

closest active mining sites are located approximately six miles north of the proposed project site.

The development of the proposed project would result in the loss of a potential sand and gravel mining location. However, due to the availability of numerous other potential sand and gravel mining sites throughout the County and the fact that the Yosemite Lake Estates area is not a state designated MRZ, the development of the project site is considered a less than significant impact. There are no known or mapped mineral resource zones identified within or adjacent to the Yosemite Lake Estates area; therefore, the proposed County policies as well as SMARA requirements, would not impact the project site.

- **Level of Significance Before Mitigation:** Less than significant

- **Mitigation Measures:** No mitigation measures are necessary

- **Level of Significance After Mitigation:** Less than significant

4.13.4.9 Impact: Unique Geologic or Physical Features

**Impact Analysis:**

- **Merced County Regulatory Policy**

  The following goals and policies from the Merced County Year 2000 General Plan are applicable to the proposed project:

  **Open Space/Conservation Chapter**

  **Goal 3: Open space for recreation, aesthetics, and protection from hazards.**

  **Objective 3B:** Lands with high aesthetic value are properly managed.

  **Policy 1:** Stream corridors should be maintained in a natural condition and retain the general character of natural slopes and formations. Regional parks should be used to preserve areas of natural and scenic beauty.

  **Policy 2:** Regional parks should be used to preserve areas of natural scenic beauty.

- **Additional Regulatory Policy**

  Under the terms of the state and federal grants, the parklands may not be converted to any use other than parklands without prior federal or state approval and acquisition of replacement parklands of equal value. Conversion of state funded parklands would require state legislation. Conversion of federally funded parklands would require approval of the Department of the Interior. Prior to formulation of any subsequent Community Specific Plan, preparation of a comprehensive site specific geotechnical and soils analysis would be
required as a standard practice. This process ensures that appropriate development restrictions would be identified prior to approval of any development plan.

- **Additional Impact Evaluation**

  The proposed project site consists of gently rolling terrain with slopes from 0% to 10% over the vast majority of the property. The exception is a small area near Fahrens Creek in the northwest portion of the site that contains slopes of 30%. No unique geologic or physical features have been identified at the project site. Yosemite Lake, located to the east of the project site, is part of a 486-acre regional park offering boating, waterskiing, windsailing, swimming, canoeing, and picnicking. The Merced Irrigation District leases the lake and its shoreline to Merced County for recreational use. Lake Yosemite would not be physically altered by the proposed project. No significant impacts would result from the proposed project.

  - **Level of Significance Before Mitigation:** Less than significant
  
  - **Mitigation Measures:** No mitigation measures are necessary
  
  - **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

4.14 TRAFFIC AND CIRCULATION

This section of the EIR analyzes the traffic generation and circulation issues associated with the proposed project, based on the traffic impact analysis prepared by TJKM Transportation Consultants. The analysis presented in this chapter is based on the May 2002 TJKM traffic study, which assumes 2,386 dwelling units, 125 acres of parks, open space and public uses and 19 acres of neighborhood commercial development. The project assumptions upon which other analyses contained in this EIR are based (with the exception of noise), assume that a maximum of 1,262 dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial uses could be developed within the proposed SUDP with approval of a subsequent Community Specific Plan (see Section 4.1, Summary of Project Assumptions). Consequently, the long-term traffic impacts described in this Chapter are overstated and should be interpreted with caution. The subsequent specific plan, which will be based on a specific development project, could further reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, Summary of Project Assumptions.

4.14.1 Environmental Setting

The project site and surrounding study area are illustrated in Figure 4.14-1, Project Site and Surrounding Area.

4.14.1.1 Existing Transportation Network

Important roadways serving the project site are discussed below.

**State Route 99**, a major north-south highway extending from south of Bakersfield to north of Sacramento, provides regional access to the study area. Within the City of Merced, State Route 99 is a six-lane freeway carrying between 36,500 to 48,500 vehicles per day with grade-separated interchanges at Childs Avenue, Yosemite Park Way (State Route 140), G Street, Martin Luther King Jr. Way, R Street, and V Street. The highest traffic volumes occur between the Martin Luther King Jr. Way and R Street interchanges. A Major Investment Study (MIS) addressing the need for improvements on State Route 99 in the Merced/Atwater area was completed in June 1997 by MCAG. Caltrans subsequently conducted an additional detailed study of the required State Route 99 improvements.

**State Route 59**, a north-south highway extending from south of Madera to Snelling, primarily serves local passenger traffic and truck traffic in the study area. Near the project site between West Olive Avenue and Bellevue Road, State Route 59 is a two-lane rural highway carrying 4,900 vehicles per day. State Route 59 joins State Route 99 from the south via Martin Luther King Way, through the City of Merced, and then continues north toward the project site.

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56 2000 Traffic Volumes on California State Highways, Caltrans, June 2001
57 TJKM collected 24-hour volumes in November 1998. The volumes were projected to the currently year using the growth factor of 2.2% per year.
4. Environmental Analysis

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4. Environmental Analysis

Project Site and Surrounding Area

Source: TJKM
4. Environmental Analysis

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4. Environmental Analysis

G Street is a major north-south arterial roadway that extends from south of State Route 99 to north of Old Lake Road near the project site, at which point it separates into Snelling Road and La Paloma Road. Within the City of Merced, G Street is a four-lane roadway. G Street is the only major arterial roadway extending north of the city limit, where it becomes a two-lane roadway.

R Street and M Street, four-lane roadways through the City of Merced, terminate just north of Yosemite Avenue but are planned to extend northward to Bellevue Road. R Street is a major north-south arterial and M Street is a designated transit way (a corridor for centralized public transit).

Olive Avenue and Yosemite Avenue are east-west arterial roadways providing travel between the major north-south roadways. From State Route 59 to G Street, West Olive Avenue is a four to six-lane roadway. East of G Street, Olive Avenue becomes a two-lane roadway. Yosemite Avenue is a two-lane roadway currently extending from R Street to east of the City. A westward extension of Yosemite Avenue to State Route 59 is planned.

Bellevue Road is also an east-west arterial roadway extending between State Route 59 and Lake Road near the project site. Bellevue Road, a designated transit way, currently has two lanes with unpaved shoulders.

Old Lake Road is an east-west roadway extending between G Street and the Lake Yosemite entrance. Old Lake Road currently has two lanes with unpaved shoulders. This roadway would provide direct access to the project site.

4.14.1.2 Transit Service

“The Bus” – Merced County Transit, a consolidated bus system for the City and County of Merced, serves the study area. This system provides fixed-route service and Dial-A-Ride to urban and rural destinations throughout the County. The general hours of operation for both services are between 7:00 a.m. and 6:00 p.m. on a weekday basis. Currently, there are a total of 12 fixed-bus routes through the County, five circulating within the City of Merced. No fixed-bus routes are located along roadways adjacent to the project site. The nearest fixed-bus routes are located along Yosemite Avenue.

The Dial-A-Ride service is primarily for seniors and disabled persons or those with residences located further than one mile from a fixed-bus route. Within the City of Merced, this service is reserved for the exclusive use of seniors and disabled persons.

Amtrak provides passenger rail service through Merced between Oakland, Stockton, and Bakersfield. The Merced Amtrak station is located at 24th and K Streets.

4.14.2 Regulatory Setting

Several local agencies have adopted plans and policies regulating the proposed project. These include the Merced County Association of Governments Regional Transportation Plan, the
Merced County General Plan and the City of Merced Vision 2015 General Plan. The Merced County General Plan Circulation Element includes policies to ensure that adequate access is provided and maintained for all County land uses. Following are the General Plan Circulation Element and Merced Vision 2015 General Plan policies relevant to traffic and circulation.

**General Plan Circulation Element Policies:**

**Goal 1: A road system which provides free movement of vehicles throughout the County.**

**Objective 1A:** All roads are appropriately classified by their existing and future use characteristics to effectively distribute vehicles.

**Policy 1:** Establish a roadway system consisting of local roads, collector roads, arterial roads, and Freeways, adequate to serve existing and future land uses.

**Objective 1B:** Roadways are improved and maintained to provide an adequate level of service for existing and anticipated traffic volumes.

**Policy 2:** The acceptable level-of-service for roadways located within rural areas of the County shall be LOS “C” or better.

**Policy 3:** The acceptable level-of-service for roadways located within urban growth areas such as HICs, SUDPs of unincorporated areas, or RRCs, shall be LOS “D” or better during peak traffic periods.

**Policy 4:** LOS “D” is acceptable for roadways located outside urban growth areas if the roadway services as a connector between urban growth areas.

**Policy 5:** LOS “E” and worse may be allowed on a minor component of the circulation system (such as a left turn movement from a local roadway) if a major component of the circulation system (such as a through movement on a collector or arterial roadway) would be significantly compromised in the process of improving the level-of-service of the minor component.

**Policy 6:** Within the SUDP of an incorporated city, the acceptable level-of-service shall be as stipulated in the adopted Circulation Element of the respective city, or where none is specified, as stipulated in Policies 3 and 5 of the Goal.

**Policy 7:** Right-of-Way dedication and roadway improvements shall be required with the approval of land use entitlements to offset circulation impacts resulting from the typical occupancy of such entitlement.

**Objective 2A:** Rail and air transportation systems which provide safe, efficient and reliable movement of passengers and freight.

**Policy 3:** Encourage coordination of air and rail passenger services with other public transportation.
Objective 2B: An established bikeway system meeting the existing and future needs.

Policy 6: Encourage the construction of Class I, II or III bike routes as designated in the overall Merced County Bikeway Plan and in Community Specific Plans.

Policy 7: The location and construction of bikeways shall be coordinated with incorporated cities and adjacent counties.

Objective 2C: A public transit system adequate to meet existing and future population needs through the year 2000.

Policy 8: Support efforts by the Merced County Association of Governments (MCAG) and other public entities to improve public transportation.

Policy 9: Encourage and develop programs which promote the use of ridesharing, car-pooling and vanpooling.

Merced Vision 2015 General Plan Policies:

- Coordinate circulation and transportation planning with pertinent regional, state and federal agencies.
- Minimize adverse impacts on the environment from existing and proposed road systems.
- Provide for and maintain a major transitway along M Street and possibly Bellevue Road.
- Support a safe and effective public transit system.
- Provide convenient bicycle support facilities to encourage bicycle use.
- Maintain and expand the community’s existing bicycle circulation system.

4.14.3 Methodology Related to Traffic and Circulation

The level of service measurement is a qualitative description of traffic operating conditions for intersections and roadways. Levels of service describe these conditions in terms of such factors as speed, travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience and safety. Levels of service are given letter designations ranging from A to F. Level of Service (LOS) A indicates free-flow conditions with little or no delay and LOS F indicates congested conditions with excessive delays and long backups. The varying levels of service are described below in Table 4.14-1, Level of Service Description. Peak hour intersection conditions are reported as volume to capacity ratios (V/C) with corresponding levels of service.
### TABLE 4.14-1
LEVEL OF SERVICE DESCRIPTION

<table>
<thead>
<tr>
<th>LOS</th>
<th>Volume-to-Capacity Ratio</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>≤ 0.60</td>
<td>Represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.</td>
</tr>
<tr>
<td>B</td>
<td>0.61 – 0.70</td>
<td>Stable flow, but the presence of other users in the traffic stream begins to be noticeable.</td>
</tr>
<tr>
<td>C</td>
<td>0.71 – 0.80</td>
<td>Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.</td>
</tr>
<tr>
<td>D</td>
<td>0.81 – 0.90</td>
<td>Represents high density, but stable flow.</td>
</tr>
<tr>
<td>E</td>
<td>0.91 – 1.00</td>
<td>Represents operating conditions at or near the capacity level.</td>
</tr>
<tr>
<td>F</td>
<td>&gt; 1.00</td>
<td>Represents forced or breakdown flow.</td>
</tr>
</tbody>
</table>


Various methodologies are used to determine levels of service at specific roadway facilities, including signalized and unsignalized intersections, urban arterial roadways and rural highways.

Signalized intersections were evaluated using the operations methodology contained in Chapter 9 of the 1994 Highway Capacity Manual. This methodology reports peak hour operating conditions as the average stopped delay for all vehicles entering the intersection.

Unsignalized intersections were evaluated using the operation methodologies for One-, Two-, and All-Way STOP-controlled intersections contained in Chapter 10 of the 1994 Highway Capacity Manual. These methodologies report peak hour operating conditions as the average delay (length of time a vehicle waits to pass through the intersection from the end of a queue) for all vehicles entering the intersection. For One- and Two-Way STOP-controlled intersections, the average delay is also reported for only those critical movements subject to delay (stopping and yielding movements).

In general, arterial and collector roadways within the City of Merced were analyzed as urban arterial roadways using the planning methodology contained in Chapter 11 of 1994 Highway Capacity Manual. This method reports peak hour operating conditions as the average travel speed on an arterial segment. The average travel speed accounts for factors affecting the capacity of a roadway segment including free-flow speed, number of lanes, number of traffic signals, and the existence of medians and left-turn lanes as well as delay at signalized intersections.

Roadways outside the City were evaluated as rural two-lane highways using the operations methodology contained in Chapter 8 of the 1994 Highway Capacity Manual. This method calculates the effective capacity of a roadway by accounting for the presence of physical factors that will adversely affect the free-flow speeds of vehicles. These capacity-affecting factors include percentages of heavy vehicles, type of terrain, roadway width, directional distribution and passing percentages. The effective capacity is related to levels of service by comparing the
percent of vehicles expected to be delayed. Vehicles are delayed when they cannot travel at their desired speed. The higher the percentage of delayed traffic, the poorer the level of service.

4.14.3.1 Existing Traffic Conditions

Intersection Level of Service Analysis

Turning movement volume counts for all study intersections were conducted by TJKM on the weeks of November 7 and November 14, 1998 during the a.m. and p.m. peak hours of traffic. These turning volumes were projected to Year 2002 using a growth factor of 2.2% per year.58 Figure 4.14-2, Existing Peak Hour Turning Movement Volumes, illustrates the projected existing peak hour turning movements for these intersections. Table 4.14-2, Intersection Levels of Service – Existing Conditions, summarizes the results of the intersection level of service analysis for existing conditions. All of the study intersections currently operate acceptably during both peak hours.

58According to Caltrans’ 2000 Traffic Volumes on California State Highways (June 2001), the average statewide traffic growth rate from Year 1994 to Year 2000 is approximately 2.2%.
4. Environmental Analysis

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### Existing Peak Hour Turning Movement Volumes

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<td>W. Olive/S.R. 59</td>
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</tr>
<tr>
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<td>17 (15)</td>
</tr>
<tr>
<td>9 (6)</td>
<td>12 (11)</td>
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<td>15 (13)</td>
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<td>60 (85)</td>
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<td>244 (395)</td>
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<td>240 (316)</td>
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<td>Old Lake/G St.</td>
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<td>Yosemite/McKee</td>
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Source: TJKM
4. Environmental Analysis

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# 4. Environmental Analysis

## Table 4.14-2
### Intersection Levels of Service - Existing Conditions

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<thead>
<tr>
<th>Intersection</th>
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<th>P.M. Peak Hour</th>
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<td></td>
<td></td>
<td>Delay</td>
<td>LOS</td>
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<tr>
<td>1 State Route 59/ West Olive Avenue</td>
<td>Signal</td>
<td>16.1</td>
<td>C</td>
</tr>
<tr>
<td>2 State Route 59/ Bellevue Road</td>
<td>2-Way STOP</td>
<td>1.7 (4.7)</td>
<td>A (A)</td>
</tr>
<tr>
<td>3 G Street/ West Olive Avenue</td>
<td>Signal</td>
<td>17.4</td>
<td>C</td>
</tr>
<tr>
<td>4 G Street/ Yosemite Avenue</td>
<td>Signal</td>
<td>10.6</td>
<td>B</td>
</tr>
<tr>
<td>5 G Street/ Bellevue Road</td>
<td>4-Way STOP</td>
<td>2.9</td>
<td>A</td>
</tr>
<tr>
<td>6 G Street/ Old Lake Road</td>
<td>1-Way STOP</td>
<td>0.9 (4.2)</td>
<td>A (A)</td>
</tr>
<tr>
<td>7 Golf Road/ Bellevue Road</td>
<td>1-Way STOP</td>
<td>1.6 (3.2)</td>
<td>A (A)</td>
</tr>
<tr>
<td>8 Golf Road/ Old Lake Road</td>
<td>4-Way STOP</td>
<td>1.2</td>
<td>A</td>
</tr>
<tr>
<td>9 Lake Road/ Yosemite Avenue</td>
<td>1-Way STOP</td>
<td>1.1 (3.5)</td>
<td>A (A)</td>
</tr>
<tr>
<td>10 Lake Road/ Bellevue Road</td>
<td>1-Way STOP</td>
<td>2.3 (3.0)</td>
<td>A (A)</td>
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<tr>
<td>11 Gardner-Parsons Avenue/ Yosemite Avenue</td>
<td>2-Way STOP</td>
<td>0.3 (8.6)</td>
<td>A (B)</td>
</tr>
<tr>
<td>12 McKee Road/ Yosemite Avenue</td>
<td>1-Way STOP</td>
<td>2.6 (6.8)</td>
<td>A (B)</td>
</tr>
</tbody>
</table>

**Delay** = Average stopped delay at signalized intersections and average delay for all movements at STOP-controlled intersections. Values in parenthesis indicate average delay for the critical movement at One- and Two-Way STOP-controlled intersections.

**LOS** = Level of Service
4. Environmental Analysis

Roadway Segment Level of Service Analysis

Hourly machine counts on study roadway segments were conducted by TJKM for a 24-hour period during the weeks of November 7 and November 14, 1998. These turning volumes were also projected to Year 2002 using a growth factor of 2.2% per year. Figure 4.14-3, Roadway Segment Two-Way P.M. Peak Traffic Volumes, illustrates the projected existing daily traffic volumes for these locations. Table 4.14-3, P.M. Peak Hour Roadway Segment Levels of Service - Existing Conditions, summarizes the levels of service on these roadway segments. All of the study roadway segments currently operate acceptably during the critical p.m. peak hour.

4.14.3.2 Existing Plus Approved Projects

The Existing plus Approved Projects scenario adds traffic from currently approved but not yet constructed or occupied developments located within the City and County of Merced that will affect the study intersections or roadways. A total of three projects were identified for inclusion in this analysis as described below, based on information provided by the City and County planning departments. Only the level of development expected by the Year 2000 for each approved project was evaluated under this near-term scenario. Note that trips generated by the approved projects are assumed to be in addition to the traffic growth rate of 2.2% per year used to project existing traffic. Remaining development beyond Year 2000 was evaluated under the long-term Year 2010 and 2020 scenarios.

Old Lake Road Single-Family Rural Residential Subdivision – this development, to be located south of Old Lake Road between Hillcrest Road and Golf Road, consists of approximately 20 single-family dwelling units that are not yet constructed or occupied.
4. Environmental Analysis

Roadway Segment Two-way
P.M. Peak Traffic Volumes

LEGEND
- Study Intersection
- Study Roadway Segment
- xxx Existing
- (xxx) Existing + Approved
- [xxx] Existing + Approved + Project
- Existing Roadway
- Planned Roadway

Source: TJKM
4. Environmental Analysis

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### TABLE 4.14-3
P.M. PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE - EXISTING CONDITIONS

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Analysis Methodology</th>
<th>No. of Lanes</th>
<th>Two-Way Volume</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A State Route 59 - Olive Avenue to Bellevue Road</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>485</td>
<td>C</td>
</tr>
<tr>
<td>B G Street - Olive Avenue to Yosemite Avenue</td>
<td>Urban/Suburban Arterial</td>
<td>4</td>
<td>2,348</td>
<td>B</td>
</tr>
<tr>
<td>C G Street - Yosemite Avenue to Bellevue Road</td>
<td>Urban/Suburban Arterial</td>
<td>4</td>
<td>451</td>
<td>B</td>
</tr>
<tr>
<td>D G Street - Bellevue Road to Old Lake Road</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>290</td>
<td>B</td>
</tr>
<tr>
<td>E Golf Road - Bellevue Road to Old Lake Road</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>69</td>
<td>B</td>
</tr>
<tr>
<td>F Old Lake Road – G Street to Golf Road</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>69</td>
<td>B</td>
</tr>
<tr>
<td>G Bellevue Road – State Route 59 to G Street</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>178</td>
<td>B</td>
</tr>
<tr>
<td>H Bellevue Road - G Street to Golf Road</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>84</td>
<td>B</td>
</tr>
<tr>
<td>I Gardner Avenue – Bellevue Road to Yosemite Avenue</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>46</td>
<td>B</td>
</tr>
<tr>
<td>J Lake Road – Cardella Road to Yosemite Avenue</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>109</td>
<td>B</td>
</tr>
<tr>
<td>K Yosemite Avenue – R Street to G Street</td>
<td>Urban/Suburban Arterial</td>
<td>2</td>
<td>1,227</td>
<td>B</td>
</tr>
<tr>
<td>L Yosemite Avenue – G Street to Gardner Avenue</td>
<td>Urban/Suburban Arterial</td>
<td>2</td>
<td>664</td>
<td>B</td>
</tr>
<tr>
<td>M Yosemite Avenue – Gardner Avenue to McKee Road</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>201</td>
<td>C</td>
</tr>
<tr>
<td>N Olive Avenue – State Route 59 to G Street</td>
<td>Urban/Suburban Arterial</td>
<td>6</td>
<td>2,263</td>
<td>C</td>
</tr>
</tbody>
</table>


**Fahrens Park Unit 3 Single-Family Residential Development** – this development, to be located south of the western extension of Yosemite Avenue between State Route 59 and R Street, consists of 590 single-family dwelling units. Based on the expected buildout rate for dwelling
4. Environmental Analysis

units indicated in the Merced Vision 2015 General Plan (City of Merced, Planned April 1997), 25% of the 590 approved units were assumed to be constructed and occupied under this scenario.

**Bellevue Ranch** – this master plan development, primarily bounded by Old Lake Road, G Street, Cardella Road, and R Streets, consists of residential, commercial, office, and industrial land uses. This project is also expected to be completed in phases by the Year 2010. Again, only the expected level of development by the year 2000 is evaluated under this near-term scenario. The complete development is evaluated under the Year 2010 and 2020 scenarios.

The estimates of traffic from each approved project were obtained from previous traffic studies for Fahrens Park (*Draft Revised Traffic Impact Study for Fahrens Park Unit No. 3*, Fehr & Peers Associates, Inc., March 1, 1996) and Bellevue Ranch (*Bellevue Ranch Master Plan Development Draft Environmental Impact Report Technical Appendices II*, Willdan Associates, September 1996), which were provided by City Staff as reference sources.

**Intersection Level of Service Analysis**

Figure 4.14-4, *Existing + Approved Peak Hour Turning Movement Volumes*, illustrates Existing plus Approved Projects turning movement volumes. Table 4.14-4, *Intersection Levels of Service - Existing Plus Approved Projects*, summarizes the intersection levels of service for this scenario. With the addition of the approved project traffic to the existing traffic volumes, all of the study intersections are projected to continue to operate at acceptable levels of service.

**Roadway Segment Level of Service Analysis**

The projected roadway segment p.m. two-way volumes for the Existing plus Approved Projects conditions are illustrated in Figure 4.14-3, *Roadway Segment Two-Way P.M. Peak Traffic Volumes*. Table 4-14-5, *P.M. Peak Hour Roadway Segment Levels of Service - Existing Plus Approved Projects*, summarizes the levels of service on these roadway segments during the critical p.m. peak hour. With the addition of the approved project traffic to the existing traffic volumes, all of the study roadway segments are projected to continue to operate at acceptable levels of service.
4. Environmental Analysis

Existing + Approved Peak Hour
Turning Movement Volumes

Source: TJKM

The Planning Center • Figure 4.14-4
4. Environmental Analysis

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### TABLE 4.14-4
INTERSECTION LEVELS OF SERVICE - EXISTING PLUS APPROVED PROJECTS

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing</th>
<th></th>
<th></th>
<th></th>
<th>Existing + Approved</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A.M. Peak Delay</td>
<td>LOS</td>
<td>P.M. Peak Delay</td>
<td>LOS</td>
<td>A.M. Peak Delay</td>
<td>LOS</td>
<td>P.M. Peak Delay</td>
<td>LOS</td>
</tr>
<tr>
<td>1 State Route 59/ West Olive Avenue (S)</td>
<td>16.1</td>
<td>C</td>
<td>21.8</td>
<td>C</td>
<td>18.3</td>
<td>C</td>
<td>25.8</td>
<td>D</td>
</tr>
<tr>
<td>2 State Route 59/ Bellevue Road (2-S)</td>
<td>1.7</td>
<td>(4.7) A</td>
<td>1.9</td>
<td>(5.2) A</td>
<td>1.6</td>
<td>(5.0) A</td>
<td>1.9</td>
<td>(5.7) B</td>
</tr>
<tr>
<td>3 G Street/ West Olive Avenue (S)</td>
<td>17.4</td>
<td>C</td>
<td>20.0</td>
<td>C</td>
<td>20.8</td>
<td>C</td>
<td>28.6</td>
<td>D</td>
</tr>
<tr>
<td>4 G Street/ Yosemite Avenue (S)</td>
<td>10.6</td>
<td>B</td>
<td>9.8</td>
<td>B</td>
<td>11.6</td>
<td>B</td>
<td>10.8</td>
<td>B</td>
</tr>
<tr>
<td>5 G Street/ Bellevue Road (4-S)</td>
<td>2.9</td>
<td>A</td>
<td>3.9</td>
<td>A</td>
<td>3.2</td>
<td>A</td>
<td>4.3</td>
<td>A</td>
</tr>
<tr>
<td>6 G Street/ Old Lake Road (1-S)</td>
<td>0.9</td>
<td>(4.2) A</td>
<td>0.7</td>
<td>(4.2) A</td>
<td>1.0</td>
<td>(4.4) A</td>
<td>0.8</td>
<td>(4.5) A</td>
</tr>
<tr>
<td>7 Golf Road/ Bellevue Road (1-S)</td>
<td>1.6</td>
<td>(3.2) A</td>
<td>1.7</td>
<td>(3.5) A</td>
<td>1.6</td>
<td>(3.2) A</td>
<td>1.7</td>
<td>(3.5) A</td>
</tr>
<tr>
<td>8 Golf Road/ Old Lake Road (4-S)</td>
<td>1.2</td>
<td>A</td>
<td>1.2</td>
<td>A</td>
<td>1.2</td>
<td>A</td>
<td>1.2</td>
<td>A</td>
</tr>
<tr>
<td>9 Lake Road/ Yosemite Avenue (1-S)</td>
<td>1.1</td>
<td>(3.5) A</td>
<td>1.4</td>
<td>(3.5) A</td>
<td>1.0</td>
<td>(3.6) A</td>
<td>1.3</td>
<td>(3.7) A</td>
</tr>
<tr>
<td>10 Lake Road/ Bellevue Road (1-S)</td>
<td>2.3</td>
<td>(3.0) A</td>
<td>1.7</td>
<td>(2.8) A</td>
<td>2.3</td>
<td>(3.0) A</td>
<td>1.7</td>
<td>(2.8) A</td>
</tr>
<tr>
<td>11 Gardner-Parsons Avenue/ Yosemite Avenue (2-S)</td>
<td>0.3</td>
<td>(8.6) A</td>
<td>0.4</td>
<td>(9.1) A</td>
<td>0.3</td>
<td>(8.9) A</td>
<td>0.4</td>
<td>(9.5) A</td>
</tr>
<tr>
<td>12 McKee Road/ Yosemite Avenue (1-S)</td>
<td>2.6</td>
<td>(6.8) A</td>
<td>2.3</td>
<td>(5.6) A</td>
<td>2.6</td>
<td>(7.1) A</td>
<td>2.3</td>
<td>(5.9) A</td>
</tr>
</tbody>
</table>

Delay = Average stopped delay at signalized intersections (S) and average delay for all movements at All-Way STOP-controlled intersections (4-S) and One- and Two-Way STOP-controlled intersections (1-S and 2-S). Values in parenthesis indicate average delay for the critical movement at One- and Two-Way STOP-controlled intersections.

LOS = Level of Service
### TABLE 4.14-5
**P.M. PEAK HOUR ROADWAY SEGMENT LEVELS OF SERVICE - EXISTING PLUS APPROVED PROJECTS (NEAR TERM)**

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Analysis Methodology</th>
<th>No of Lanes</th>
<th>Existing Two-Way Volume</th>
<th>LOS</th>
<th>Existing+ Approved Two-Way Volume</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A State Route 59 Olive Ave. to Bellevue Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>485</td>
<td>C</td>
<td>525</td>
<td>C</td>
</tr>
<tr>
<td>B G St. Olive Ave. to Yosemite Ave.</td>
<td>Urban/Suburban Arterial</td>
<td>4</td>
<td>2,348</td>
<td>B</td>
<td>2,612</td>
<td>B</td>
</tr>
<tr>
<td>C G St. Yosemite Ave. to Bellevue Rd.</td>
<td>Urban/Suburban Arterial</td>
<td>4</td>
<td>451</td>
<td>B</td>
<td>738</td>
<td>B</td>
</tr>
<tr>
<td>D G St. Bellevue Rd. to Old Lake Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>290</td>
<td>B</td>
<td>329</td>
<td>C</td>
</tr>
<tr>
<td>E Golf Rd. Bellevue Rd. to Old Lake Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>69</td>
<td>B</td>
<td>69</td>
<td>B</td>
</tr>
<tr>
<td>F Old Lake Rd. G St. to Golf Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>69</td>
<td>B</td>
<td>89</td>
<td>B</td>
</tr>
<tr>
<td>G Bellevue Rd. State Route 59 to G St.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>178</td>
<td>B</td>
<td>183</td>
<td>B</td>
</tr>
<tr>
<td>H Bellevue Rd. G St. to Golf Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>84</td>
<td>B</td>
<td>84</td>
<td>B</td>
</tr>
<tr>
<td>I Gardner Ave. Bellevue Rd. to Yosemite Ave.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>46</td>
<td>B</td>
<td>46</td>
<td>B</td>
</tr>
<tr>
<td>J Lake Rd. Cardella Rd. to Yosemite Ave.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>109</td>
<td>B</td>
<td>109</td>
<td>B</td>
</tr>
<tr>
<td>K Yosemite Ave. R St. to G St.</td>
<td>Urban/Suburban Arterial</td>
<td>2</td>
<td>1,227</td>
<td>B</td>
<td>1,253</td>
<td>B</td>
</tr>
<tr>
<td>L Yosemite Ave. G St. to Gardner Ave.</td>
<td>Urban/Suburban Arterial</td>
<td>2</td>
<td>664</td>
<td>B</td>
<td>694</td>
<td>B</td>
</tr>
<tr>
<td>M Yosemite Ave. Gardner Ave. to McKee Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>201</td>
<td>C</td>
<td>228</td>
<td>C</td>
</tr>
<tr>
<td>N Olive Ave. State Route 59 to G St.</td>
<td>Urban/Suburban Arterial</td>
<td>6</td>
<td>2,263</td>
<td>C</td>
<td>2,443</td>
<td>C</td>
</tr>
</tbody>
</table>


LOS = Level of Service
4. Environmental Analysis

4.14.4 Proposed Project Impacts

The proposed Yosemite Lake Estates development would be located on a 655-acre site north of Old Lake Road between G Street and Lake Yosemite in the County of Merced within the sphere of influence of the City of Merced. The originally proposed project consists of 2,386 single-family dwelling units, ranging from very low to medium density, 122,000 square feet of neighborhood commercial development, 5 acres of mixed-use development, and 125 acres of parks, open space, and public facilities, including a school. Access to the project site from the surrounding street system would be via Old Lake Road and a new east-west arterial along the northern boundary of the project site. The revised project land use, as described in Section 4.1, Summary of Project Assumptions, appears to have less intense use than the original proposal. To be conservative, however, the traffic conditions analyzed hereafter assume the originally proposed land use. Under this near-term scenario, the new east-west arterial was assumed not to be built; project access would be from Old Lake Road.

Trip Generation

Trip generation is defined as the number of vehicle trips produced by a particular land use or project site. A trip is defined as a single or one-direction vehicle movement. Therefore, the total number of trips generated by each land use is split into inbound and outbound trips. During an entire day, the number of inbound trips is equal to the number of outbound trips. However, during a specific hour, the number of inbound trips can be greater than the number of outbound trips or vice versa. For example, during the p.m. peak hour of traffic at an office site, the number of vehicles leaving the site is usually greater than the number of vehicles arriving. Conversely, during the same peak hour at a residential subdivision, the number of vehicles coming to the site is usually greater than the number of vehicles departing.

For this study, the project trip generation assumptions were obtained from Trip Generation (Sixth Edition, 1997) published by the Institute of Transportation Engineers (ITE). These assumptions include the daily and peak hour trip generation rate (trips per unit) and the ratio of inbound to outbound trips for each land use. As described above, 125 acres of parks, open space, and public facilities, possibly including a school, is proposed. These land uses are expected to primarily serve residents of the proposed project. It is assumed that trips by residents would primarily be internal to the project site and would not affect any of the study intersections or roadway segments. However, in order to evaluate the worst-case traffic volumes generated by the proposed project, vehicle trips generated by an elementary school were included in the calculation of the project trip generation. (A student enrollment of 600 students, which is the approximate average enrollment evaluated by Trip Generation, was assumed). Based on these assumptions, which were previously approved by the County, the project is estimated to generate a total of 31,297 daily vehicular trips, 2,145 during the a.m. peak hour and 3,133 during the p.m. peak hour. Table 4.14-6 summarizes the estimated trip generation for the proposed project.
4. Environmental Analysis

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4. Environmental Analysis

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Size</th>
<th>Units</th>
<th>Daily Trip Rate</th>
<th>Trip Ends</th>
<th>A.M. Peak Hour</th>
<th>P.M. Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Trip Rate</td>
<td>Trip Ends</td>
</tr>
<tr>
<td>Single-Family</td>
<td>2,386</td>
<td>du</td>
<td>9.57</td>
<td>22,834</td>
<td>0.75</td>
<td>25:75</td>
</tr>
<tr>
<td>Neighbor. Comm.</td>
<td>122.0</td>
<td>ksf</td>
<td>63.49</td>
<td>7,746</td>
<td>1.47</td>
<td>61:39</td>
</tr>
<tr>
<td>Mixed-Use (Marina)</td>
<td>600</td>
<td>stu</td>
<td>1.02</td>
<td>612</td>
<td>0.29</td>
<td>59:41</td>
</tr>
<tr>
<td>Elementary School</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:
- du = dwelling units
- ksf = thousand square feet
- stu = students
4. Environmental Analysis

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4. Environmental Analysis

Trip Distribution and Assignment

Trip distribution is the process of determining in what proportion vehicles will travel between the project site and various destinations within a study area. The MCAG Year 2020 Regional Transportation Model results were utilized to develop the near-term and long-term trip distribution assumptions for the proposed project. The model assumes that the following roadway improvements are completed:

- Extension of R Street north to Bellevue Road;
- Extension of M Street north to Bellevue Road;
- Connection of Cardella Road from G Street to State Route 59;
- Construction of Campus Parkway, roughly half a mile east of Lake Road from the new University of California Campus to State Route 99

Because all of these improvements, with the exception of the construction of Campus Parkway, are part of approved projects, both the near-term and long-term study scenarios assume their completion.

The project trip distribution patterns were derived from the daily traffic volumes near the study intersections. First, project-only daily traffic volumes were obtained by subtracting the Year 2020 No Project volumes from the Year 2020 With Project volumes generated by the model. The project-only volumes were then divided by the daily project trip generation to obtain the percentage of project trips on each study roadway.

For simplicity, the model assumed sole project access from the proposed east-west arterial along the northern boundary of the project site. As a result, the project trip percentages were manually adjusted based on the knowledge of the proposed project access points. For this step, the new east-west arterial was assumed not to be built in the near-term; project access would be from Old Lake Road.

59 Traffic analysis in this document was also based on the assumption that Old Lake Road would be closed and no longer in service. This assumption was derived from historic environmental documents and is no longer valid. However, the current analysis is also based on the assumption that very little traffic related to the proposed project would occur on this roadway segment. Therefore, the projections herein are only minimally affected and the validity of the conclusions of this traffic study is not significantly impacted.
The project trips were assigned to the study intersections and roadway segments using these trip distribution assumptions, which were previously approved by the County. Figure 4.14-5, *Near-Term Project –Only Trip Distribution and Assignment*, illustrates the near-term project-only trip distribution patterns and peak hour turning movement volumes. Project traffic volumes were then added to Existing plus Approved Projects traffic volumes to evaluate traffic conditions with the development of the proposed project.

### 4.14.4.1 Significance Criteria

The minimum acceptable level of service established by the City and County of Merced is LOS D. Therefore, a project that causes a roadway facility (intersection or roadway segment) to fall below this threshold is considered to significantly impact the facility. Mitigation measures must be identified for any impacted facility.

Previous studies have also provided a standard for assessing significant impacts where a roadway facility is operating at unacceptable levels of service (LOS E and LOS F) under existing or baseline conditions. For these cases, a project is considered to significantly impact a facility if a project increases total traffic volumes by 5% or more.

### 4.14.4.2 Impact: Existing plus Approved Projects plus Proposed Project Traffic Conditions (Background plus Project)

**Impact Analysis:** Figure 4.14-6, *Existing + Approved + Project Peak Hour Turning Movement Volumes*, illustrates Existing plus Approved Projects plus Project turning movement volumes. Table 4.14-7, *Near-Term Intersection Lane Configuration*, summarizes the intersection levels of service for this scenario. With the addition of project-generated traffic, eight of the 12 study intersections are projected to continue to operate at acceptable levels of service.

The following four intersections are projected to degrade to unacceptable levels of service (below LOS D) resulting in significant project impacts:

- **State Route 59/Bellevue Road (No. 2)** – This Two-Way STOP-controlled intersection is projected to operate unacceptably at LOS E during the p.m. peak hour and meet the Caltrans Traffic Signal Warrant based on peak hour volumes.

- **G Street/Bellevue Road (No. 5)** – This All-Way STOP-controlled intersection is projected to operate unacceptably at LOS F during both the a.m. and p.m. peak hours and meet the Caltrans Traffic Signal Warrant based on peak hour volumes.

- **G Street/Old Lake Road (No. 6)** – This One-Way STOP-controlled intersection is projected to operate unacceptably at LOS F during both the a.m. and p.m. peak hours and meet the Caltrans Traffic Signal Warrant based on peak hour volumes.
4. Environmental Analysis

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### Existing + Approved + Project Peak Hour Turning Movement Volumes

#### Intersection 1
W. Olive/St. R. 59
- Northbound: 44 (33), 225 (620)
- Southbound: 23 (72), 566 (672), 311 (442)
- Total: 15 (48), 634 (842), 105 (135)

#### Intersection 2
Bellevue/St. R. 59
- Northbound: 23 (104), 177 (240)
- Southbound: 33 (27), 170 (170), 234 (202)
- Total: 12 (111), 100 (226), 8 (4)

#### Intersection 3
W. Olive/G St.
- Northbound: 371 (321), 194 (238)
- Southbound: 66 (66), 560 (421), 244 (150)
- Total: 100 (345), 205 (333), 172 (197)

#### Intersection 4
Yosemite/G St.
- Northbound: 51 (111), 149 (218), 368 (304), 135 (119)
- Southbound: 130 (313), 239 (363), 172 (203), 120 (120)

#### Intersection 5
Bellevue/G St.
- Northbound: 200 (140), 302 (462)
- Southbound: 3 (2), 214 (189), 481 (405)
- Total: 99 (243), 103 (283), 72 (52)

#### Intersection 6
Old Lake/G St.
- Northbound: 81 (70), 149 (126)
- Southbound: 11 (5), 318 (419), 5 (5)
- Total: 92 (75), 228 (301)

#### Intersection 7
Bellevue/Golf
- Northbound: 300 (996), 27 (25)
- Southbound: 3 (10)
- Total: 300 (996), 27 (25)

#### Intersection 8
Old Lake/Golf
- Northbound: 0 (1), 729 (527), 706 (591)
- Southbound: 11 (5), 318 (419), 5 (5)
- Total: 11 (5), 729 (527), 706 (591)

#### Intersection 9
Yosemite/Lake
- Northbound: 1 (124), 18 (149)
- Southbound: 10 (1), 30 (25), 27 (49)
- Total: 10 (1), 30 (25), 27 (49)

#### Intersection 10
Bellevue/Lake
- Northbound: 3 (4), 279 (370)
- Southbound: 174 (163), 78 (40)
- Total: 3 (4), 279 (370), 174 (163), 78 (40)

#### Intersection 11
Yosemite/Gardner
- Northbound: 2 (21), 320 (366)
- Southbound: 7 (7)
- Total: 2 (21), 320 (366), 7 (7)

#### Intersection 12
Yosemite/McKee
- Northbound: 174 (163), 78 (40)
- Southbound: 146 (132)
- Total: 174 (163), 78 (40), 146 (132)

---

**Legend**
- **1** Study Intersection
- **A** Study Roadway Segment
- **XX** AM Peak Hour Volume
- **(XX)** PM Peak Hour Volume
- **Existing Roadway**
- **Planned Roadway**

---

Source: TJKM
4. Environmental Analysis

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### TABLE 4.14-7
INTERSECTION LEVELS OF SERVICE - SUMMARY OF NEAR-TERM SCENARIOS

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing + Approved</th>
<th>Existing + Approved + Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A.M. Peak</td>
<td>P.M. Peak</td>
</tr>
<tr>
<td></td>
<td>Delay</td>
<td>LOS</td>
</tr>
<tr>
<td>1 State Route 59/ West Olive Avenue (S)</td>
<td>18.3</td>
<td>C</td>
</tr>
<tr>
<td>2 State Route 59/ Bellevue Road (2-S)</td>
<td>1.6 (5.0)</td>
<td>A (A)</td>
</tr>
<tr>
<td>3 G Street/ West Olive Avenue (S)</td>
<td>20.8</td>
<td>C</td>
</tr>
<tr>
<td>4 G Street/ Yosemite Avenue (S)</td>
<td>11.6</td>
<td>B</td>
</tr>
<tr>
<td>5 G Street/ Bellevue Road (4-S)</td>
<td>3.2</td>
<td>A</td>
</tr>
<tr>
<td>6 G Street/ Old Lake Road (1-S)</td>
<td>1.0 (4.4)</td>
<td>A (A)</td>
</tr>
<tr>
<td>7 Golf Road/ Bellevue Road (1-S)</td>
<td>1.6 (3.2)</td>
<td>A (A)</td>
</tr>
<tr>
<td>8 Golf Road/ Old Lake Road (4-S)</td>
<td>1.2</td>
<td>A</td>
</tr>
<tr>
<td>9 Lake Road/ Yosemite Avenue (1-S)</td>
<td>1.0 (3.6)</td>
<td>A (A)</td>
</tr>
<tr>
<td>10 Lake Road/ Bellevue Road (1-S)</td>
<td>2.3 (3.0)</td>
<td>A (A)</td>
</tr>
<tr>
<td>11 Gardner-Parsons Avenue/ Yosemite Avenue (2-S)</td>
<td>0.3 (8.9)</td>
<td>A (B)</td>
</tr>
<tr>
<td>12 McKee Road/ Yosemite Avenue (1-S)</td>
<td>2.6 (7.1)</td>
<td>A (B)</td>
</tr>
</tbody>
</table>

Delay = Average stopped delay at signalized intersections (S) and average delay for all movements at All-Way STOP-controlled intersections (4-S) and One- and Two-Way STOP-controlled intersections (1-S and 2-S). Values in parenthesis indicate average delay for the critical movement at One- and Two-Way STOP-controlled intersections. LOS = Level of Service.

- **Golf Road/Old Lake Road (No. 8)** – This All-Way STOP-controlled intersection is projected to operate unacceptably at LOS F during both the a.m. and p.m. peak hours.

The projected roadway segment P.M. two-way volumes for the Existing plus Approved Project plus Proposed Project are illustrated in Figure 4.14-3, *Roadway Segment Two-Way P.M. Peak Traffic Volumes*. Table 4.14-9, *P.M. Peak Hour Roadway Segment Levels of Service Existing*
4. Environmental Analysis

Plus Approved Projects Plus Project, summarizes the levels of service on these roadway segments during the critical p.m. peak hour for this scenario. With the addition of project-generated traffic, ten of the 14 study roadway segments are projected to continue to operate at acceptable levels of service. The segments of G Street and Golf Road from Bellevue Road to Old Lake Road and Old Lake Road and Bellevue Road from G Street to Golf Road are projected to degrade to unacceptable levels of service resulting in significant project impacts as follows:

- **G Street from Bellevue Road to Old Lake Road (Segment D)** – This two-lane rural roadway is projected to operate unacceptably at LOS E.

- **Golf Road from Bellevue Road to Old Lake Road (Segment E)** – This two-lane rural roadway is projected to operate unacceptably at LOS E.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>A.M. Peak</th>
<th></th>
<th>P.M. Peak</th>
<th></th>
</tr>
</thead>
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<tr>
<td></td>
<td>Delay</td>
<td>LOS</td>
<td>Delay</td>
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<td>C</td>
<td>32.5</td>
<td>D</td>
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<td>B</td>
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<td>E</td>
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<td>35.5</td>
<td>D</td>
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<tr>
<td>4 G Street/Yosemite Avenue (S)</td>
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<td>C</td>
<td>24.1</td>
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<td>5 G Street/Bellevue Road (4-S)</td>
<td>120+</td>
<td>F</td>
<td>120+</td>
<td>F</td>
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<tr>
<td>6 G Street/ Old Lake Road (1-S)</td>
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<td>F</td>
<td>120+</td>
<td>F</td>
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<tr>
<td>7 Golf Road/ Bellevue Road (1-S)</td>
<td>5.3</td>
<td>B</td>
<td>8.4</td>
<td>B</td>
</tr>
<tr>
<td>8 Golf Road/Old Lake Road (4-S)</td>
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<td>F</td>
<td>120+</td>
<td>F</td>
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<tr>
<td>10 Lake Road/ Bellevue Road (1-S)</td>
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<td>2.4</td>
<td>A</td>
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<tr>
<td>11 Gardner-Parsons Avenue/ Yosemite Avenue (2-S)</td>
<td>0.3</td>
<td>A</td>
<td>0.3</td>
<td>A</td>
</tr>
<tr>
<td>12 McKee Road/ Yosemite Avenue (1-S)</td>
<td>2.7</td>
<td>A</td>
<td>2.3</td>
<td>A</td>
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</tbody>
</table>
# Near-Term Intersection Lane Configuration

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing</th>
<th>Existing + Approved</th>
<th>Existing + Approved + Project</th>
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</thead>
<tbody>
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<td>Intersection 2</td>
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<td><img src="signal.png" alt="Signal" /></td>
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<tr>
<td>Intersection 3</td>
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<td><img src="signal.png" alt="Signal" /></td>
<td><img src="signal.png" alt="Signal" /></td>
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<tr>
<td>Intersection 4</td>
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<td><img src="signal.png" alt="Signal" /></td>
<td><img src="signal.png" alt="Signal" /></td>
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<tr>
<td>Intersection 5</td>
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<td><img src="stop.png" alt="All-Way Stop" /></td>
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<td>G/Bellevue</td>
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<tr>
<td>Intersection 6</td>
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<td><img src="stop.png" alt="1-Way Stop" /></td>
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<td>G/Old Lake</td>
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<td>Intersection 7</td>
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<td>Golf/Bellevue</td>
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<td>Intersection 8</td>
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<td><img src="signal.png" alt="Signal" /></td>
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</tr>
<tr>
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<td><img src="stop.png" alt="1-Way Stop" /></td>
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<td>Lake/Yosemite</td>
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</tr>
<tr>
<td>Intersection 10</td>
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<td><img src="stop.png" alt="1-Way Stop" /></td>
<td><img src="stop.png" alt="1-Way Stop" /></td>
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<tr>
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</tr>
<tr>
<td>Intersection 11</td>
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<td><img src="stop.png" alt="2-Way Stop" /></td>
<td><img src="stop.png" alt="2-Way Stop" /></td>
</tr>
<tr>
<td>Gardner/Yosemite</td>
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</tr>
<tr>
<td>Intersection 12</td>
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<td><img src="stop.png" alt="1-Way Stop" /></td>
<td><img src="stop.png" alt="1-Way Stop" /></td>
</tr>
<tr>
<td>McKee/Yosemite</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend:**
- Stop Sign
- Existing
- Planned
- Recommended

Source: TJKM
### TABLE 4.14-9
**P.M. PEAK HOUR LEVELS OF SERVICE – EXISTING PLUS APPROVED PROJECTS AND PROJECT**

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Analysis Methodology*</th>
<th>No of Lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Two-Way Volume</td>
</tr>
<tr>
<td>A State Route 59 Olive Ave. to Bellevue Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
</tr>
<tr>
<td>B G St. Olive Ave. to Yosemite Ave.</td>
<td>Urban/Suburban Arterial</td>
<td>4</td>
</tr>
<tr>
<td>C G St. Yosemite Ave. to Bellevue Rd.</td>
<td>Urban/Suburban Arterial</td>
<td>4</td>
</tr>
<tr>
<td>D G St. Bellevue Rd. to Old Lake Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
</tr>
<tr>
<td>E Golf Rd. Bellevue Rd. to Old Lake Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
</tr>
<tr>
<td>F Old Lake Rd. G St. to Golf Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
</tr>
<tr>
<td>G Bellevue Rd. State Route 59 to G St.</td>
<td>Two-Lane Highway</td>
<td>2</td>
</tr>
<tr>
<td>H Bellevue Rd. G St. to Golf Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
</tr>
<tr>
<td>I Gardner Ave. Bellevue Rd. to Yosemite Ave.</td>
<td>Two-Lane Highway</td>
<td>2</td>
</tr>
<tr>
<td>J Lake Rd. Cardella Rd. to Yosemite Ave.</td>
<td>Two-Lane Highway</td>
<td>2</td>
</tr>
<tr>
<td>K Yosemite Ave. R St. to G St.</td>
<td>Urban/Suburban Arterial</td>
<td>2</td>
</tr>
<tr>
<td>L Yosemite Ave. G St. to Gardner Ave.</td>
<td>Urban/Suburban Arterial</td>
<td>2</td>
</tr>
<tr>
<td>M Yosemite Ave. Gardner Ave. to McKee Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
</tr>
<tr>
<td>N Olive Ave. State Route 59 to G St.</td>
<td>Urban/Suburban Arterial</td>
<td>6</td>
</tr>
</tbody>
</table>


LOS = Level of Service
• **Old Lake Road from G Street to Golf Road (Segment F)** – This two-lane rural roadway is projected to operate unacceptably at LOS E.

• **Bellevue Road from G Street to Golf Road (Segment H)** – This two-lane rural roadway is projected to operate unacceptably at LOS E.

• **Merced County Regulatory Policy**
  
  None are applicable.

• **Additional Regulatory Policy**
  
  None are applicable.

• **Additional Impact Evaluation**
  
  None are applicable.

• **Level of Significance Before Mitigation:** Potentially significant

• **Mitigation Measures:**

  4.14-1 When a final proposal for the proposed project is put forward, a full traffic analysis will be required. As part of the required Community Specific Plan, the project applicant shall complete a traffic analysis that includes mitigation measures designed to minimize adverse impacts on adjacent streets and roadways.

  4.14-2 Principles and guidelines contained in the *City of Merced Vision 2015 General Plan – Transportation and Circulation Element* shall be utilized, to the greatest extent feasible, in the formulation of the required subsequent Community Specific Plan for Yosemite Lake Estates.

• **Level of Significance After Mitigation:** Less than significant
### 4. Environmental Analysis

#### TABLE 4.14-10

<table>
<thead>
<tr>
<th>Roadway Segment</th>
<th>Analysis Methodology</th>
<th>No of Lanes</th>
<th>Unmitigated Two-Way Volume</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A State Route 59 Olive Ave. to Bellevue Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>807</td>
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</tr>
<tr>
<td>B G St. Olive Ave. to Yosemite Ave.</td>
<td>Urban/Suburban Arterial</td>
<td>4</td>
<td>3,168</td>
<td>C</td>
</tr>
<tr>
<td>C G St. Yosemite Ave. to Bellevue Rd.</td>
<td>Urban/Suburban Arterial</td>
<td>4</td>
<td>1,930</td>
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<tr>
<td>D G St. Bellevue Rd. to Old Lake Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>1,511</td>
<td>E</td>
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<tr>
<td>E Golf Rd. Bellevue Rd. to Old Lake Rd.</td>
<td>Two-Lane Highway</td>
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<td>1,551</td>
<td>E</td>
</tr>
<tr>
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<td>Two-Lane Highway</td>
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<td>1,584</td>
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</tr>
<tr>
<td>G Bellevue Rd. State Route 59 to G St.</td>
<td>Two-Lane Highway</td>
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<td>966</td>
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<td>Two-Lane Highway</td>
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<td>1,503</td>
<td>E</td>
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<td>I Gardner Ave. Bellevue Rd. to Yosemite Ave.</td>
<td>Two-Lane Highway</td>
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<td>46</td>
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<td>J Lake Rd. Cardella Rd. to Yosemite Ave.</td>
<td>Two-Lane Highway</td>
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<td>109</td>
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<tr>
<td>K Yosemite Ave. R St. to G St.</td>
<td>Urban/Suburban Arterial</td>
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<td>1,704</td>
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<tr>
<td>L Yosemite Ave. G St. to Gardner Ave.</td>
<td>Urban/Suburban Arterial</td>
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<td>814</td>
<td>B</td>
</tr>
<tr>
<td>M Yosemite Ave. Gardner Ave. to McKee Rd.</td>
<td>Two-Lane Highway</td>
<td>2</td>
<td>354</td>
<td>C</td>
</tr>
<tr>
<td>N Olive Ave. State Route 59 to G St.</td>
<td>Urban/Suburban Arterial</td>
<td>6</td>
<td>2,443</td>
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</tr>
</tbody>
</table>


#### 4.14.4.3 Impact: Cumulative Year 2010 Traffic Conditions (Background plus Project)

**Impact Analysis:** This section describes traffic conditions associated with the long-term future growth expected by the Year 2010 in the City and County of Merced. Future traffic volume...
projections were obtained from the MCAG Regional Transportation Model. This long-term scenario, with and without the development of the proposed project, was evaluated to obtain a better understanding of the need for and timing of planned improvements and potential mitigation measures.

**MCAG Regional Transportation Model**

The MCAG Regional transportation model was completed as part of the State Route 99 Merced/Atwater Corridor Major Investment Study. The model contains land use (number of housing units and employment) and roadway network assumptions in accordance with the City’s Merced Vision 2015 General Plan as well as the County General Plan. The model forecasts daily volumes, and not peak hour volumes, based on these assumptions using a gravity-based distribution procedure. As a result, to estimate p.m. peak hour intersection turning movement volumes, the model forecast.

Figure 4.14-8, *Long-Term Project –Only Trip Distribution and Assignment*, illustrates the long-term project-only trip distribution patterns and peak hour turning movement volumes. These distribution patterns will be used to analyze the project impact for both the Year 2010 and Year 2020 scenarios.

**Year 2010 Without Project Scenario**

*Roadway Improvement Assumptions*

Several planned roadway improvements are assumed to be completed by the Year 2010. These improvements are consistent with the mitigation measures identified in the Bellevue Ranch EIR and adopted by the City of Merced. The major improvements are as follows:

- Extension of R Street north to Bellevue Road;
- Extension of M Street north to Bellevue Road;
- Connection of Cardella Road from G Street to State Route 59;
- Construction of Campus Parkway, roughly half a mile east of Lake Road from the new University of California Campus to State Route 99.

*Intersection Level of Service Analysis*

Forecasted turning movement volumes for the Year 2010 No Project scenario are illustrated in Figure 4.14-9, *Year 2010 P.M. Peak Hour Turning Movement Volumes*. Table 4.14-11, *P.M. Peak Hour intersection Level of Service – Year 2010*, summarizes the intersection levels of service for this scenario. With assumed improvements, eight of the 12 study intersections are projected to operate at acceptable levels of service.
4. Environmental Analysis

Long-Term Project-Only Distribution and Assignment

[Diagram showing traffic flow and project site with annotations]

Source: TJKM

The Planning Center • Figure 4.14-8
4. Environmental Analysis

Year 2010 P.M. Peak Hour
Turning Movement Volumes

Source: TJKM
4. Environmental Analysis

As shown in Table 4.14-11, *P.M. Peak Hour intersection Level of Service – Year 2010*, the operations of the following four intersections would degrade to unacceptable levels of service with the traffic growth estimated by the Year 2010:

- **State Route 59/West Olive Avenue (No. 1)** – This signalized intersection is projected to operate unacceptably at LOS F. The addition of a free right-turn lane on the southbound approach, a mitigation measure previously identified by the Bellevue Ranch EIR and planned by the City of Merced, would not be sufficient to mitigate the intersection to an acceptable level of service.

- **State Route 59/Bellevue Road (No. 2)** – This Two-Way STOP-controlled intersection is projected to operate unacceptably at LOS F and meet the Caltrans Traffic Signal Warrant based on peak hour volumes.

### TABLE 4.14-11
P.M. PEAK HOUR INTERSECTION LEVELS OF SERVICE - YEAR 2010 SCENARIOS

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Year 2010 No Project</th>
<th>Year 2010 With Project</th>
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<tbody>
<tr>
<td></td>
<td>Existing Lane Configuration</td>
<td>With Planned Improvements</td>
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<tr>
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<td>Delay</td>
<td>LOS</td>
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<tr>
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<td>State Route 59/ West Olive Avenue (S)</td>
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</tr>
<tr>
<td>2</td>
<td>State Route 59/ Bellevue Road (2-S)</td>
<td>-- (-)</td>
</tr>
<tr>
<td>3</td>
<td>G Street/ West Olive Avenue (S)</td>
<td>55.7</td>
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<td>4</td>
<td>G Street/ Yosemite Avenue (S)</td>
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<td>G Street/ Bellevue Road (4-S)</td>
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<td>6</td>
<td>G Street/ Old Lake Road (1-S)</td>
<td>0.9 (4.3)</td>
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<tr>
<td>7</td>
<td>Golf Road/ Bellevue Road (1-S)</td>
<td>0.9 (10.1)</td>
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<tr>
<td>8</td>
<td>Golf Road/ Old Lake Road (4-S)</td>
<td>1.3</td>
</tr>
<tr>
<td>9</td>
<td>Lake Road/ Yosemite Avenue (1-S)</td>
<td>0.8 (7.8)</td>
</tr>
<tr>
<td>10</td>
<td>Lake Road/ Bellevue Road (1-S)</td>
<td>6.4 (7.4)</td>
</tr>
</tbody>
</table>
### Table 4.14-11

P.M. Peak Hour Intersection Levels of Service - Year 2010 Scenarios

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Year 2010 No Project</th>
<th>Year 2010 With Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing Lane</td>
<td>With Planned</td>
</tr>
<tr>
<td></td>
<td>Configuration</td>
<td>Improvements</td>
</tr>
<tr>
<td></td>
<td>Delay</td>
<td>LOS</td>
</tr>
<tr>
<td>11 Gardner-Parsons Avenue/Yosemite Avenue (2-S)</td>
<td>2.2 (26.1) A</td>
<td>2.2 (26.1) A</td>
</tr>
<tr>
<td>12 McKee Road/Yosemite Avenue (1-S)</td>
<td>3.8 (23.2) A</td>
<td>3.8 (23.2) A</td>
</tr>
</tbody>
</table>

Delay = Average stopped delay at signalized intersections (S) and average delay for all movements at All-Way STOP-controlled B (E)intersections (4-S) and One- and Two-Way STOP-controlled intersections (1-S and 2-S). Values in parenthesis indicate average delay for the critical movement at One- and Two-Way STOP-controlled intersections.

LOS = Level of Service
-- = Delay is excessive and cannot be accurately estimated.
With Planned Improvements = Conditions with the implementation of improvements previously planned by the City of Merced.

- **G Street/West Olive Avenue (No. 3)** – This signalized intersection is projected to operate unacceptably at LOS E. The addition of a second left-turn lane on all approaches, a mitigation measure previously identified by the Bellevue Ranch EIR and planned by the City of Merced, would be sufficient to mitigate the intersection to an acceptable LOS C.

- **G Street/Bellevue Road (No. 5)** – This All-Way STOP-controlled intersection is projected to operate unacceptably at LOS F and meet the Caltrans Traffic Signal Warrant based on peak hour volumes. The installation of a traffic signal, the addition of a left-turn lane and a second through lane on all approaches and the addition of an exclusive right-turn lane on the southbound approach, mitigation measures previously identified by the Bellevue Ranch EIR and planned by the City of Merced, would be sufficient to mitigate the intersection to an acceptable LOS B. Figure 4.14-10, *Year 2010 Intersection Lane Configuration*, illustrates the potential mitigation measures.
### Year 2010

#### Intersection Lane Configuration

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing</th>
<th>2010 No Project Planned</th>
<th>2010 + Project Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection 1</td>
<td><img src="Sig.png" alt="Signal" /></td>
<td><img src="Sig.png" alt="Signal" /></td>
<td><img src="Sig.png" alt="Signal" /></td>
</tr>
<tr>
<td>SR 59/Olive</td>
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</tr>
<tr>
<td>Intersection 2</td>
<td><img src="2WayStop.png" alt="2-Way Stop" /></td>
<td><img src="2WayStop.png" alt="2-Way Stop" /></td>
<td><img src="2WayStop.png" alt="2-Way Stop" /></td>
</tr>
<tr>
<td>SR 59/Bellevue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 3</td>
<td><img src="Sig.png" alt="Signal" /></td>
<td><img src="Sig.png" alt="Signal" /></td>
<td><img src="Sig.png" alt="Signal" /></td>
</tr>
<tr>
<td>G/Olive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 4</td>
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<td><img src="Sig.png" alt="Signal" /></td>
<td><img src="Sig.png" alt="Signal" /></td>
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<tr>
<td>G/Yosemite</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 5</td>
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<td><img src="Sig.png" alt="Signal" /></td>
<td><img src="Sig.png" alt="Signal" /></td>
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<td>G/Bellevue</td>
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<td></td>
<td></td>
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<tr>
<td>Intersection 6</td>
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<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
</tr>
<tr>
<td>G/Old Lake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 7</td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
</tr>
<tr>
<td>Golf/Bellevue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 8</td>
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<td><img src="AllWayStop.png" alt="All-Way Stop" /></td>
<td><img src="AllWayStop.png" alt="All-Way Stop" /></td>
</tr>
<tr>
<td>Golf/Old Lake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 9</td>
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<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
</tr>
<tr>
<td>Lake/Yosemite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 10</td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
</tr>
<tr>
<td>Lake/Bellevue</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 11</td>
<td><img src="2WayStop.png" alt="2-Way Stop" /></td>
<td><img src="2WayStop.png" alt="2-Way Stop" /></td>
<td><img src="2WayStop.png" alt="2-Way Stop" /></td>
</tr>
<tr>
<td>Gardner/Yosemite</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 12</td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
<td><img src="1WayStop.png" alt="1-Way Stop" /></td>
</tr>
<tr>
<td>McKee/Yosemite</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Legend**
- Stop Sign
- Existing
- Planned
- Recommended

*Source: TJKM*
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4. Environmental Analysis

Table 4.14-12, *P.M. Peak Hour Roadway Segment Levels of Service - Year 2010 Scenarios*, summarizes the roadway levels of service for this scenario. Under the Year 2010 No Project scenario with the existing roadway configurations, 12 of the 14 study roadway segments are projected to operate at acceptable levels of service. The following two roadway segments would degrade to unacceptable levels of service with the traffic growth estimated by the Year 2010:

- **State Route 59 from West Olive Avenue to Bellevue Road (Segment A)** – This two-lane rural roadway is projected to operate unacceptably at LOS E. Widening and improving this roadway segment to a four-lane arterial roadway with 12-foot through lanes, exclusive 12-foot left-turn lanes at intersections and driveways, and 4-foot shoulders would be sufficient to mitigate the roadway segment to an acceptable LOS B. This mitigation measure was previously identified by the Bellevue Ranch EIR and planned by the City of Merced.

- **Yosemite Avenue from R Street to G Street (Segment K)** – This two-lane arterial roadway is projected to operate unacceptably at LOS F. Widening and improving this roadway segment to a four-lane divided arterial roadway with 12-foot through lanes, exclusive 12-foot left-turn lanes at intersections and driveways, a continuous median, and 4-foot shoulders would be sufficient to mitigate the roadway segment to an acceptable LOS C. This mitigation measure was previously identified by the Bellevue Ranch EIR and planned by the City of Merced.

<table>
<thead>
<tr>
<th>Road Segment</th>
<th>Year 2010 No Project</th>
<th>Year 2010 With Project</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Existing Lane Configuration</td>
<td>With Planned Improvements</td>
</tr>
<tr>
<td></td>
<td>Two-way Volume</td>
<td>LOS</td>
</tr>
<tr>
<td>A</td>
<td>State Route 59 Olive to Bellevue</td>
<td>1,910</td>
</tr>
<tr>
<td>B</td>
<td>Olive to Yosemite</td>
<td>2,542</td>
</tr>
<tr>
<td>C</td>
<td>Yosemite to Bellevue</td>
<td>767</td>
</tr>
<tr>
<td>D</td>
<td>Bellevue to Old Lake</td>
<td>380</td>
</tr>
<tr>
<td>E</td>
<td>Golf Bellevue to Old Lake</td>
<td>160</td>
</tr>
<tr>
<td>F</td>
<td>Old Lake G to Golf</td>
<td>110</td>
</tr>
<tr>
<td>G</td>
<td>Bellevue State Route 59 to G</td>
<td>740</td>
</tr>
<tr>
<td>H</td>
<td>Bellevue G to Golf</td>
<td>890</td>
</tr>
</tbody>
</table>
4. Environmental Analysis

<table>
<thead>
<tr>
<th>Road Segment</th>
<th>Year 2010 No Project</th>
<th>Year 2010 With Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing Lane Configuration</td>
<td>With Planned Improvements</td>
</tr>
<tr>
<td></td>
<td>Two-way Volume</td>
<td>LOS</td>
</tr>
<tr>
<td>J Lake Cardella to Yosemite</td>
<td>130</td>
<td>A</td>
</tr>
<tr>
<td>K Yosemite R to G</td>
<td>1,842</td>
<td>F</td>
</tr>
<tr>
<td>L Yosemite G to Gardner</td>
<td>1,215</td>
<td>B</td>
</tr>
<tr>
<td>M Yosemite Gardner to McKee</td>
<td>860</td>
<td>D</td>
</tr>
<tr>
<td>N Olive State Route 59 to G</td>
<td>2,814</td>
<td>C</td>
</tr>
</tbody>
</table>

LOS = Level of Service based on the Planning Application of the 1994 Highway Capacity Manual, Chapter 11, Urban and Suburban Arterials and Operational Application of the 1994 Highway Capacity Manual, Chapter 8, Two-Lane Highways. With Planned Improvements = Conditions with the implementation of improvements previously planned by the City of Merced.

Year 2010 With Project Scenario

Roadway Improvement Assumptions

The roadway improvement assumptions under this scenario are identical to those of the previous Year 2010 No Project scenario. These improvements are consistent with the mitigation measures identified in the Bellevue Ranch EIR and adopted by the City of Merced.

Intersection Level of Service Analysis

Forecasted turning movement volumes for Year 2010 With Project scenario are illustrated in Figure 4.14-9, Year 2010 P.M. Peak Hour Turning Movement Volumes. Table 4.14-11, P.M. Peak Hour intersection Level of Service – Year 2010, summarizes the intersection levels of service for this scenario. Under this scenario with existing lane configurations, four of the 12 study intersections are projected to continue to operate at acceptable levels of service. The following eight intersections are projected to operate unacceptably:

- **State Route 59/West Olive Avenue (No. 1)** – This signalized intersection is projected to operate unacceptably at LOS F with or without the proposed project. The project would increase total intersection volumes by 4.1%, which is less than the 5-percent significance criterion. Therefore, the project is not considered to significantly impact this intersection.
4. Environmental Analysis

- **State Route 59/Bellevue Road (No. 2)** – This Two-Way STOP-controlled intersection is projected to operate unacceptably at LOS F with or without the project. However, the project would increase total intersection volumes by 38.2%, resulting in a significant project impact.

- **G Street/West Olive Avenue (No. 3)** – This signalized intersection is projected to operate unacceptably with or without the proposed project. However, the project would increase total intersection volumes by 11.1%, degrading operating conditions from LOS E to LOS F and resulting in a significant project impact.

- **G Street/Yosemite Avenue (No. 4)** – This signalized intersection is projected to degrade from LOS C to an unacceptable LOS E with the project, resulting in a significant project impact.

- **G Street/Bellevue Road (No. 5)** – This All-Way STOP-controlled intersection is projected to operate unacceptably at LOS F with or without the project. However, the project would increase total intersection volumes by 172.5%, resulting in a significant project impact.

- **G Street/Old Lake Road (No. 6)** – This One-Way STOP-controlled intersection is projected to degrade from LOS A to an unacceptable LOS F with the project, resulting in a significant project impact.

- **Gardner Avenue/Yosemite Avenue (No. 11)** – The northbound left-turn movement at this Two-Way STOP-controlled intersection is projected to degrade from LOS D to LOS E with the project, resulting in a significant project impact. The overall intersection is projected to continue to operate acceptably at LOS A.

- **McKee Road/Yosemite Avenue (No. 12)** – The northbound left-turn movement at this One-Way STOP-controlled intersection is projected to degrade from LOS D to LOS E with the project, resulting in a significant project impact. The overall intersection is projected to continue to operate acceptably at LOS B.

Roadway Level of Service Analysis

Table 4.14-12, *P.M. Peak Hour Roadway Segment Levels of Service - Year 2010 Scenarios*, summarizes the roadway levels of service for the Year 2010 plus Project scenarios without mitigation measures. With the addition of project-generated traffic, eight of the 14 study roadways are projected to continue to operate at acceptable levels of service.

As shown in Table 4.14-12, *P.M. Peak Hour Roadway Segment Levels of Service - Year 2010 Scenarios*, the following six roadway segments would operate unacceptably:

- **State Route 59 from West Olive Avenue to Bellevue Road (Segment A)** – This two-lane rural roadway is projected to operate unacceptably with or without the proposed project. However, the project would increase segment volumes by 14.8%, degrading operating conditions from LOS E to LOS F and resulting in a significant project impact. This segment
could be mitigated to an acceptable LOS C with the implementation of the mitigation measures described under the Year 2010 No Project scenario.

- **G Street from West Olive Avenue to Yosemite Avenue (Segment B)** – This four-lane arterial roadway is projected to degrade from LOS C to an unacceptable LOS F with the project, resulting in a significant project impact.

- **G Street from Bellevue Road to Old Lake Road (Segment D)** – This two-lane rural roadway is projected to degrade from LOS B to an unacceptable LOS F with the project, resulting in a significant project impact.

- **Bellevue Road from State Route 59 to G Street (Segment G)** – This two-lane rural roadway is projected to degrade from LOS D to an unacceptable LOS E with the project, resulting in a significant project impact.

- **Bellevue Road from G Street to Golf Road (Segment H)** – This two-lane rural roadway is projected to degrade from LOS D to an unacceptable LOS E with the project, resulting in a significant project impact.

- **Yosemite Avenue from R Street to G Street (Segment K)** – This two-lane arterial roadway is projected to operate unacceptably at LOS F with or without the proposed project. However, the project would increase segment volumes by 23.7%, resulting in a significant project impact. This segment could be mitigated to an acceptable LOS C with the implementation of the mitigation measures described under the Year 2010 No Project scenario.

**Improvements Planned by the City of Merced:**

Under the Year 2010 No Project scenario, traffic growth was found to be directly responsible for mitigation measures at four study intersections and two roadway segments. The improvements planned by the City of Merced for these intersections and roadway segments are described below.

- **State Route 59/West Olive Avenue (No. 1)** – Install a free right-turn lane on the southbound approach.

- **G Street/West Olive Avenue (No. 3)** – Construct a second left-turn lane on all approaches.

- **G Street/Bellevue Road (No. 5)** – Install a traffic signal, a left-turn lane and a second through lane on all approaches and an exclusive right-turn lane on the southbound approach.

- **State Route 59 from West Olive Avenue to Bellevue Road (Segment A)** – Widen and improve to a four-lane arterial roadway.

- **Yosemite Avenue from R Street to G Street (Segment K)** – Widen and improve to a four-lane divided arterial roadway.
4. Environmental Analysis

Under the 2010 With Project Scenario, the improvements planned by the City of Merced would not be sufficient to mitigate the proposed project’s impacts on the above described key intersections and roadway segments to an acceptable level of service.

- **Merced County Regulatory Policy**
  
  None are applicable.

- **Additional Regulatory Policy**
  
  None are applicable.

- **Additional Impact Evaluation**
  
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially Significant

- **Mitigation Measures:**

  4.14.3 When a final proposal for the proposed project is put forward, a full traffic analysis will be required. As part of the required Community Specific Plan, the project applicant shall complete a traffic analysis that includes mitigation measures designed to minimize adverse impacts on adjacent streets and roadways.

  4.14.4 Principles and guidelines contained in the City of Merced Vision 2015 General Plan – Transportation and Circulation Element shall be utilized, to the greatest extent feasible, in the formulation of the required subsequent Community Specific Plan for Yosemite Lake Estates.

- **Level of Significance After Mitigation:** Less than significant

4.14.4.4 **Impact: Cumulative Year 2020 Traffic Conditions (Background plus Project)**

**Impact Analysis:** This section describes traffic conditions associated with the long-term future growth expected by the Year 2020 in the City and County of Merced. Future traffic volume projections were obtained from the MCAG Regional Transportation Model. This long-term scenario, with and without the development of the proposed project, was evaluated to obtain a better understanding of the need for and timing of planned improvements and potential mitigation measures.
4. Environmental Analysis

Year 2020 No Project Scenario

Roadway Improvement Assumptions

The roadway improvement assumptions under this scenario are identical to those of the previous Year 2010 No Project scenario. These improvements are consistent with the mitigation measures identified in the Bellevue Ranch EIR and adopted by the City of Merced.

Intersection Level of Service Analysis

Figure 4.14-11, Year 2020 P.M. Peak Hour Turning Movement Volumes, illustrates the Year 2020 No Project turning movement volumes. Table 4.14-13, P.M. Peak Hour Intersection Levels of Service - Year 2020 Scenarios, summarizes the intersection levels of service for this scenario. With the existing intersection lane configurations, three of the 12 study intersections are projected to continue to operate at acceptable levels of service.

The following nine intersections would degrade to unacceptable levels of service with the traffic growth estimated by the Year 2020:

- **State Route 59/West Olive Avenue (No. 1)** – This signalized intersection is projected to operate unacceptably at LOS F. The mitigation measures described under the Year 2010 No Project scenario would not be sufficient to mitigate the intersection to an acceptable level of service.
4. Environmental Analysis

Year 2010

P.M. Peak Hour Turning Movement Volumes

Source: TJKM
4. Environmental Analysis

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4. Environmental Analysis

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Year 2020 No Project</th>
<th>Year 2020 With Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Existing Lane</td>
<td>With Planned</td>
</tr>
<tr>
<td></td>
<td>Configuration Delay</td>
<td>Improvements Delay</td>
</tr>
<tr>
<td></td>
<td>LOS</td>
<td>LOS</td>
</tr>
<tr>
<td>1</td>
<td>State Route 59/</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>West Olive Avenue</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>(S)</td>
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</tr>
<tr>
<td>2</td>
<td>State Route 59/</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Bellevue Road (2-S)</td>
<td>F</td>
</tr>
<tr>
<td>3</td>
<td>G Street/</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>West Olive Avenue</td>
<td>F</td>
</tr>
<tr>
<td></td>
<td>(S)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>G Street/</td>
<td>74.2</td>
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<td></td>
<td>Yosemite Avenue</td>
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<tr>
<td></td>
<td>(S)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>G Street/</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Bellevue Road (4-S)</td>
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<tr>
<td>6</td>
<td>G Street/</td>
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<td>Old Lake Road (1-S)</td>
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<tr>
<td>7</td>
<td>Golf Road/</td>
<td>4.8</td>
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<td></td>
<td>Bellevue Road (1-S)</td>
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<tr>
<td>8</td>
<td>Golf Road/</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Old Lake Road (4-S)</td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Lake Road/</td>
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</tr>
<tr>
<td></td>
<td>Yosemite Avenue (1-S)</td>
<td>(22.1)</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>10</td>
<td>Lake Road/</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>Bellevue Road (1-S)</td>
<td>F</td>
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<td></td>
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<tr>
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</tr>
<tr>
<td></td>
<td>Yosemite Avenue (2-S)</td>
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</tr>
<tr>
<td>12</td>
<td>McKee Road/</td>
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<tr>
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<td>Yosemite Avenue (1-S)</td>
<td>(29.0)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Delay = Average stopped delay at signalized intersections (S) and average delay for all movements at All-Way STOP-controlled intersections (4-S) and One- and Two-Way STOP-controlled intersections (1-S and 2-S). Values in parenthesis indicate average delay for the critical movement at One- and Two-Way STOP-controlled intersections.

LOS = Level of Service

-- = Delay is excessive and cannot be accurately estimated.

With Planned Improvements = Conditions with the implementation of improvements previously planned by the City of Merced.

- **State Route 59/Bellevue Road (No. 2)** – This Two-Way STOP-controlled intersection is projected to operate unacceptably at LOS F. Implementation of the mitigation measures described under the Year 2010 No Project scenario would not be sufficient to mitigate the intersection to an acceptable level of service.

- **G Street/West Olive Avenue (No. 3)** – This signalized intersection is projected to operate unacceptably at LOS F. Implementation of the mitigation measures described under the Year 2010 No Project scenario would not be sufficient to mitigate the intersection to an acceptable level of service.
4. Environmental Analysis

- **G Street/Yosemite Avenue (No. 4)** – This unsignalized intersection is projected to operate unacceptably at LOS F. The addition of a second left-turn lane and a second through lane on the eastbound approach, a second through lane on the westbound approach, and a third through lane on the northbound approach, mitigation measures previously identified by the Bellevue Ranch EIR and planned by the City of Merced, would be sufficient to mitigate the intersection to an acceptable LOS D.

- **G Street/Bellevue Road (No. 5)** – This All-Way STOP-controlled intersection is projected to operate unacceptably at LOS F. The mitigation measures described under the Year 2010 No Project scenario would be sufficient to mitigate the intersection to an acceptable LOS C.

- **G Street/Old Lake Road (No. 6)** – This One-Way STOP-controlled intersection is projected to degrade from LOS A to an unacceptable LOS with the project.

- **Gold Road/Bellevue Road (No. 7)** – The critical southbound movement at this One-Way STOP-controlled intersection is projected to operate unacceptably at LOS F. The overall intersection is projected to continue to operate acceptably at LOS A.

- **Lake Road/Bellevue Road (No. 10)** – This STOP-controlled intersection is projected to operate unacceptably at LOS F. This is because Bellevue Road, unlike existing conditions, will be the major street at this intersection.

- **Gardner Avenue/Yosemite Avenue (No. 11)** – This Two-Way STOP-controlled intersection is projected to operate unacceptably at LOS F.

- **McKee Road/Yosemite Avenue (No. 12)** – This One-Way STOP-controlled intersection is projected to operate unacceptably at LOS F.

Figure 4-14-12, *Year 2020 Intersection Lane Configuration*, illustrates the improvements planned by the City of Merced.

*Roadway Level of Service Analysis*

Table 4.14-14, *P.M. Peak Hour Roadway Segment Levels of Service - Year 2020 Scenarios*, summarizes the roadway levels of service for this scenario with and without the improvements planned by the City of Merced. Under the Year 2020 No Project scenario with the existing roadway configurations, eight of the 14 study roadway segments are projected to operate at acceptable levels of service. The following six roadway segments would degrade with traffic growth expected by the Year 2020:
### Year 2020

#### Intersection Lane Configuration

<table>
<thead>
<tr>
<th>Intersection</th>
<th>Existing</th>
<th>2020 No Project Planned</th>
<th>2020 + Project Planned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intersection 1</td>
<td>Signal</td>
<td>FREE</td>
<td>FREE</td>
</tr>
<tr>
<td>SR 59/Olive</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 2</td>
<td>2-Way Stop</td>
<td>2-Way Stop</td>
<td>2-Way Stop</td>
</tr>
<tr>
<td>SR 59/Bellevue</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 3</td>
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<td></td>
</tr>
<tr>
<td>G/Olive</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 4</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>G/Yosemite</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 5</td>
<td>All-Way Stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G/Bellevue</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 6</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
</tr>
<tr>
<td>G/Old Lake</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 7</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
</tr>
<tr>
<td>Golf/Bellevue</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 8</td>
<td>All-Way Stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Golf/Old Lake</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 9</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
</tr>
<tr>
<td>Lake/Yosemite</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 10</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
</tr>
<tr>
<td>Lake/Bellevue</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 11</td>
<td>2-Way Stop</td>
<td>2-Way Stop</td>
<td>2-Way Stop</td>
</tr>
<tr>
<td>Gardner/ Yosemite</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intersection 12</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
<td>1-Way Stop</td>
</tr>
<tr>
<td>McKee/Yosemite</td>
<td>Signal</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**LEGEND**
- Stop Sign
- Existing
- Planned
- Recommended

Source: TJKM
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4. Environmental Analysis

<table>
<thead>
<tr>
<th>Road Segment</th>
<th>Year 2020 No Project</th>
<th>Year 2020 With Project</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Two-way Volume</td>
<td>LOS</td>
</tr>
<tr>
<td>A State Route 59 Olive to Bellevue</td>
<td>3,430</td>
<td>F</td>
</tr>
<tr>
<td>B Olive to Yosemite</td>
<td>3,398</td>
<td>F</td>
</tr>
<tr>
<td>C Yosemite to Bellevue</td>
<td>1,165</td>
<td>A</td>
</tr>
<tr>
<td>D Bellevue to Old Lake</td>
<td>480</td>
<td>C</td>
</tr>
<tr>
<td>E Golf Bellevue to Old Lake</td>
<td>170</td>
<td>B</td>
</tr>
<tr>
<td>F Old Lake G to Golf</td>
<td>150</td>
<td>B</td>
</tr>
<tr>
<td>G Bellevue State Route 59 to G</td>
<td>1,320</td>
<td>E</td>
</tr>
<tr>
<td>H Bellevue G to Golf</td>
<td>1,680</td>
<td>E</td>
</tr>
<tr>
<td>I Gardner Bellevue to Yosemite</td>
<td>360</td>
<td>C</td>
</tr>
<tr>
<td>J Lake Cardella to Yosemite</td>
<td>130</td>
<td>A</td>
</tr>
<tr>
<td>K Yosemite R to G</td>
<td>2,642</td>
<td>F</td>
</tr>
<tr>
<td>L Yosemite G to Gardner</td>
<td>1,813</td>
<td>C</td>
</tr>
<tr>
<td>M Yosemite Gardner to McKee</td>
<td>1,510</td>
<td>E</td>
</tr>
<tr>
<td>N Olive State Route 59 to G</td>
<td>3,764</td>
<td>C</td>
</tr>
</tbody>
</table>

LOS = Level of Service based on the Planning Application of the 1994 Highway Capacity Manual, Chapter 11, Urban and Suburban Arterials and Operational Application of the 1994 Highway Capacity Manual, Chapter 8, Two-Lane Highways. With Planned Improvements = Conditions with the implementation of improvements previously planned by the City of Merced.

- **State Route 59 from West Olive Avenue to Bellevue Road (Segment A)** – This two-lane rural roadway is projected to operate unacceptably at LOS F. Widening and improving this roadway segment to a six-lane divided arterial roadway with 12-foot through lanes, exclusive 12-foot left-turn lanes at intersections and driveways, a continuous median, and 4-foot shoulders would be sufficient to mitigate the roadway segment to an acceptable LOS C. This improvement was previously identified by the Bellevue Ranch EIR and planned by the City of Merced.
4. Environmental Analysis

- **G Street from West Olive Avenue to Yosemite (Segment B)** – This four-lane arterial roadway is projected to operate unacceptably at LOS F. Widening and improving this roadway segment to a six-lane divided arterial roadway with 12-foot through lanes, exclusive 12-foot left-turn lanes at intersections and driveways, a continuous median, and 4-foot shoulders would be sufficient to mitigate the roadway segment to an acceptable LOS C. This improvement was previously identified by the Bellevue Ranch EIR and planned by the City of Merced.

- **Bellevue Road from State Route 59 to G Street (Segment G)** – This two-lane rural roadway is projected to operate unacceptably at LOS E.

- **Bellevue Road from G Street to Golf Road (Segment H)** – This two-lane rural roadway is projected to operate unacceptably at LOS E.

- **Yosemite Avenue from R Street to G Street (Segment K)** – This two-lane arterial roadway is projected to operate unacceptably at LOS F. Widening and improving this roadway segment to a four-lane divided arterial roadway, as described under the Year 2010 No Project scenario, would be sufficient to mitigate the roadway segment to an acceptable LOS C.

- **Yosemite Avenue from Gardner Avenue to McKee Road (Segment M)** – This two-lane rural roadway is projected to operate unacceptably at LOS E.

**Year 2020 With Project Scenario**

*Roadway Improvement Assumptions*

The roadway improvement assumptions under this scenario are identical to those of the previous Year 2010 No Project scenario. These improvements are consistent with the mitigation measures identified in the Bellevue Ranch EIR and adopted by the City of Merced.

*Intersection Level of Service Analysis*

Figure 4.14-11, *Year 2020 P.M. Peak Hour Turning Movement Volumes*, illustrates Year 2020 With Project turning movement volumes. Table 4.14-13, *P.M. Peak Hour Intersection Levels of Service - Year 2020 Scenarios*, summarizes the intersection levels of service for the Year 2020 plus Project scenarios. With the addition of project-generated traffic to the Year 2020 No Project volumes, two of the 12 study intersections are projected to continue to operate at acceptable levels of service.

As shown in Table 4.14-12, *P.M. Peak Hour Roadway Segment Levels of Service - Year 2010 Scenarios*, the following 10 intersections are projected to operate unacceptably:

- **State Route 59/West Olive Avenue (No. 1)** – This signalized intersection is projected to operate unacceptably at LOS F with or without the project. The project would increase total intersection volumes by 2.7%, which is less than the 5% significance criterion. Therefore, the project is not considered to significantly impact this intersection.
4. Environmental Analysis

- **State Route 59/Bellevue Road (No. 2)** – This signalized intersection is projected to operate unacceptably at LOS F with or without the project. However, the project would increase total intersection volumes by 21.1%, resulting in a significant project impact.

- **G Street/West Olive Avenue (No. 3)** – This signalized intersection is projected to operate unacceptably at LOS F with or without the project. However, the project would increase total intersection volumes by 8.3%, resulting in a significant project impact. The implementation of the mitigation measures planned by the City of Merced and described under the Year 2020 Project and No Project scenarios would not be sufficient to bring this intersection to an acceptable level of service.

- **G Street/Yosemite Avenue (No. 4)** – This unsignalized intersection is projected to operate unacceptably at LOS F with or without the project. However, the project would increase total intersection volumes by 28.9%, resulting in a significant project impact. Implementation of the mitigation measures planned by the City of Merced and described under the Year 2020 Project and No Project scenarios would be sufficient to bring this intersection to LOS D in Year 2020.

- **G Street/Bellevue Road (No. 5)** – This signalized intersection is projected to operate unacceptably with or without the project. However, the project would increase total intersection volumes by 101.6%, resulting in a significant project impact. Implementation of the mitigation measures planned by the City of Merced and described under the Year 2020 Project and No Project scenarios would be sufficient to bring this intersection to LOS D in Year 2020.

- **G Street/Old Lake Road (No. 6)** – This One-Way STOP-controlled intersection is projected to degrade from LOS A to an unacceptable LOS F with the project, resulting in a significant project impact.

- **Golf Road/Bellevue Road (No. 7)** – This signalized intersection is projected to operate unacceptably with or without the project. However, the project would increase total intersection volumes by 27.4%, resulting in a significant project impact.

- **Lake Road/Bellevue Road (No. 10)** – This STOP-controlled intersection is projected to operate unacceptably at LOS F with or without the project. The project would increase total intersection volumes by 3.7%, which is less than the 5% significance criterion. Therefore, the project is not considered to significantly impact this intersection.

- **Gardner Avenue/Yosemite Avenue (No. 11)** – This Two-Way STOP-controlled intersection is projected to operate unacceptably at LOS F with or without the project. However, the project would increase total intersection volumes by 6.3%, resulting in a significant project impact.

- **McKee Road/Yosemite Avenue (No. 12)** – This One-Way STOP-controlled intersection is projected to operate unacceptably at LOS F with or without the project. However, the project would increase total intersection volumes by 6.7%, resulting in a significant project impact.
4. Environmental Analysis

Roadway Level of Service Analysis

Table 4.14-14, *P.M. Peak Hour Roadway Segment Levels of Service - Year 2020 Scenarios*, summarizes the roadway levels of service for the Year 2020 scenarios with and without the potential mitigation measures. With the addition of project-generated traffic, seven of the 14 study roadways are projected to continue to operate at acceptable levels of service.

The following seven roadway segments would operate unacceptably:

- **State Route 59 from West Olive Avenue to Bellevue Road (Segment A)** – This two-lane rural roadway is projected to operate unacceptably at LOS F with or without the proposed project. However, the project would increase segment volumes by 8.2%, resulting in a significant project impact.

- **G Street from West Olive Avenue to Yosemite Avenue (Segment B)** – This four-lane arterial roadway is projected to operate unacceptably at LOS F with or without the proposed project. However, the project would increase segment volumes by 16.8%, resulting in a significant project impact.

- **G Street from Bellevue Road to Old Lake Road (Segment D)** – This two-lane rural roadway is projected to degrade from LOS C to an unacceptable LOS F with the project, resulting in a significant project impact.

- **Bellevue Road from State Route 59 to G Street (Segment G)** – This two-lane rural roadway is projected to operate unacceptably at LOS E with or without the proposed project. However, the project would increase segment volumes by 59.3%, resulting in a significant project impact.

- **Bellevue Road from G Street to Golf Road (Segment H)** – This two-lane rural roadway is projected to operate unacceptably at LOS E with or without the proposed project. However, the project would increase segment volumes by 24.8%, resulting in a significant project impact.

- **Yosemite Avenue from R Street to G Street (Segment K)** – This two-lane arterial roadway is projected to operate unacceptably at LOS F with or without the proposed project. However, the project would increase segment volumes by 16.7%, resulting in a significant project impact.

- **Yosemite Avenue from Gardner Avenue to McKee Road (Segment M)** – This two-lane rural roadway is projected to operate unacceptably at LOS E with or without the proposed project. However, the project would increase segment volumes by 8.3%, resulting in a significant project impact.

- **Merced County Regulatory Policy**

  None are applicable.
4. Environmental Analysis

- **Additional Regulatory Policy**
  None are applicable.

- **Additional Impact Evaluation**
  None are applicable.

- **Level of Significance Before Mitigation:** Potentially significant

- **Mitigation Measures:**

  4.14.5 When a final proposal for the proposed project is put forward, a full traffic analysis will be required. As part of the required Community Specific Plan, the project applicant shall complete a traffic analysis that includes mitigation measures designed to minimize adverse impacts on adjacent streets and roadways.

  4.14.6 Principles and guidelines contained in the *City of Merced Vision 2015 General Plan – Transportation and Circulation Element* shall be utilized, to the greatest extent feasible, in the formulation of the required subsequent Community Specific Plan for Yosemite Lake Estates.

- **Level of Significance After Mitigation:** Less than significant
4. Environmental Analysis

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5. Impacts Found not to be Significant

5.1 ASSESSMENT IN THE INITIAL STUDY

The Initial Study, prepared for the proposed project in 1999, determined that the impacts listed below would be less than significant. Consequently, they have not been further analyzed in the EIR. Impact categories and questions below are summarized directly from the CEQA Environmental Checklist, as contained in the Initial Study.

5.2 ASSESSMENT IN THE EIR

The following potential project impacts of the proposed Yosemite Lake Estates project related to the following environmental parameters are either not significant prior to mitigation or can be mitigated to below a level of significance:

Aesthetics:

Less than significant:
- Substantially affect a scenic vista or scenic highway

Air Quality:

Less than significant with mitigation:
- Temporary construction emissions
- Temporary construction fugitive dust emissions

Biological Resources:

Less than significant with mitigation:
- Degradation or loss of vernal pool/swale/grassland habitat
- Loss of habitat for special-status plant species
- Loss of habitat for special-status animal species
- Degradation of loss of other wetland habitats
- Interference with movement patterns of wildlife
- Loss of heron/egret rookery
- Introduction of invasive exotic species
- Compliance with County of Merced biological resource guidelines

Less than significant:
- Loss of agricultural pastureland
5. Impacts Found not to be Significant

Cultural Resources:

Less than significant with mitigation:

- Potential loss or disruption of important cultural and historic resources
- Potential loss or disruption of undiscovered or unknown important cultural and historic resources

Hydrology and Water Quality:

Less than significant:

- Degradation of ground and surface water quality
- Increased stormwater discharge
- Groundwater Overdraft
- Flood hazards

Land Use and Relevant Planning:

Less than significant with mitigation:

- Conflict with any applicable land use plans, policy or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect

Less than significant:

- Physical division of an existing community
- Conflict with any applicable habitat conservation plan or natural community conservation plan

Noise:

Less than significant with mitigation:

- Temporary increase in noise levels due to construction
- Potential noise-related impacts to on-site receptors due to long-term traffic generation

Public Health and Safety:

Less than significant with mitigation:

- Potential impacts from previous uses and unknown buried hazardous materials on-site

Less than significant:

- Potential impacts from hazardous material releases in the project vicinity
5. **Impacts Found not to be Significant**

- Potential impacts from San Joaquin Valley Fever
- Conflict with emergency evacuation routes

**Public Services and Utilities:**

Less than significant with mitigation:
- Increased demand for fire protection services
- Increased demand for police protection services
- Increased demand for school services
- Increased demand for wastewater service
- Increase demand for solid waste services

Less than significant:
- Increased demand for gas and electric service
- Increased demand for telephone services
- Increased demand for water service

**Socioeconomics:**

Less than significant with mitigation:
- Induce substantial growth of population in an area either directly or indirectly

Less than significant:
- Exceed established population projections

**Soils, Geology and Mineral Resources:**

Less than significant with mitigation:
- Seismic ground shaking

Less than significant:
- Fault-induced ground rupture
- Seismic ground failure, including liquefaction
- Subsidence
- Expansive soils
- Erosion or unstable soil conditions
5. **Impacts Found not to be Significant**

- Mineral resources
- Unique geologic or physical features

**Traffic and Circulation:**

Less than significant with mitigation:
- Existing plus approve projects traffic conditions (background plus project)
- Cumulative year 2010 traffic conditions (background plus project)
- Cumulative year 2020 traffic conditions (background plus project)

Less than significant:
- Compliance with County of Merced transportation guidelines
Implementation of the Yosemite Lake Estates project would result in the irreversible and irretrievable commitment of the following resources:

- Construction of the proposed project would require the commitment of various building materials such as lumber and wood products, concrete, steel, glass, asphalt and other materials used for the construction of commercial buildings, parking areas, and streets. These types of building materials are considered to be readily available and in sufficient quantity in the region. Consequently, these impacts are considered less than significant.

- Construction and operation of the proposed project would require the commitment of energy resources including gasoline, diesel fuel, natural gas and electricity. These types of energy resources are considered to be readily available and in sufficient quantity in the region. Consequently, these impacts are considered less than significant.

- Construction of the proposed project would result in the elimination of ranching onsite. However, the site is not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the State Department of Conservation. Existing operations are limited in scope and intensity. Consequently, impacts to Agricultural Resources have been determined to be less than significant.

- Construction of the proposed project would require grading and alteration of the existing topography of the project site. This would result in a permanent change in on and off-site views in the area around the project site. The aesthetic impacts of the proposed project have been analyzed in Section 4.1, Summary of Project Assumptions, of this EIR. Since the project site does not contain any unique topographic features, this would not be a significant adverse impact.

- Construction of the proposed project would require the commitment of significant amounts of groundwater, which is considered to be a finite (i.e. not readily replenished) resource. This could result in a decline in the water table and possible land subsidence in the project area or in the region underlain by the water table. According to initial hydrology reports described in this document, however, groundwater overdraft is not considered to be a significant concern.

- Construction of the proposed project would require the commitment or disturbance of considerable amounts of biological resources and habitat for sensitive species. Mitigation measures have been included in Section 4.5 Biological Resources, of this EIR to address any potentially significant impacts relative to site alteration. All biological impacts are reduced to less than significant levels after mitigation.

- Construction of the proposed project would require the commitment of human resources for public service provision. This commitment, however, has the potential to generate employment opportunities in the region.
6. Irreversible and Irretrievable Commitment of Resources

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7. Growth-Inducing Impacts of the Project

7.1 INTRODUCTION

Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires that an Environmental Impact Report (EIR) discuss the ways in which a proposed project could directly or indirectly foster economic or population growth, or the construction of additional housing. Direct growth inducing impacts are generally associated with the provision of urban services and the extension of infrastructure to an undeveloped area. The extension of services and facilities to an individual site can reduce development constraints for other nearby areas and can serve to induce further development in the vicinity. Indirect or secondary growth inducing impacts consist of growth induced in the region by the additional demands for housing, employment, and goods and services associated with population increase caused by, or attracted to, new development.

The proposed project would involve the extension of new roads into undeveloped areas. However, all primary access roads required by the project are already in place. New water and wastewater systems would be necessary.

Development of the proposed project would bring new electric, natural gas, and telephone lines into a previously undeveloped area. These utilities have potential to be more easily extended into outlying areas as a result of the proposed project. However, the provision of these utilities is not typically an obstacle to growth. Therefore, growth-inducing impacts are not anticipated as a result of the public services or utilities that would be developed to service the project site.

The planning and development of the UC Merced Campus, which would be located to the southeast of the project site, has itself had growth inducing impacts and is in large part responsible for the proposal to develop the Yosemite Lake Estates project site. The impact of the UC Merced development will no doubt have growth inducing impacts on other adjacent properties in the future. Future development in the vicinity of the UC campus will depend on market conditions as well as local and regional planning decisions made at the City and County level.

Direct growth inducing impacts are generally associated with the provision of urban services and the extension of infrastructure to an undeveloped area. However, by the time the Yosemite Lake Estates SUDP area is developed, there will be development to the south (Fahrens Creek) and southeast (UC Merced & UCP). Because the eventual development of Yosemite Lake Estates is predominantly residential in nature, it is likely to be growth accommodating rather than growth stimulating, providing housing opportunities for those employed in the City of Merced and at the UC Merced campus.

Indirect or secondary growth-inducing impacts consist of growth induced in the region by the additional demands for housing, employment, and goods and services associated with the population increase caused by, or attracted to, new development. The proposed project would be primarily residential in character. However, the project would also provide approximately 14 acres of commercial uses and 5 acres of mixed uses. These commercial and mixed-use areas would help to provide goods and services for Yosemite Lake Estates residents as well as some employment opportunities.
Nevertheless, with a development of this scale, there would be increased opportunities to provide goods and services to the project site and increased pressure for development in the area. The parcels surrounding the project site are largely developed with residential uses to the south, a golf course to the west, and Yosemite Lake to the east. The only undeveloped land in the project area is the land to the north of the project site, which is associated with the UC Merced campus. Any additional development in the surrounding area would occur over many years as dictated by market conditions and would be governed by County and/or City General Plans and zoning ordinances. As discussed above, the inducement of growth within adjoining areas would be indirect and subject to the approvals of applicable government agencies. The indirect growth inducement impact of this project is an issue of concern that should be carefully monitored by the City and the County as pressures for growth and expansion intensify in the area.
8. Cumulative Impacts

8.1 OVERVIEW

Section 15355 of the California Environmental Quality Act (CEQA) Guidelines defines cumulative impacts as:

"...two or more individual effects which when considered together, are considerable or which compound or increase other environmental impacts."

Section 15355 further describes potential cumulative impacts as follows:

"(a) The individual effects may be changes resulting from a single project or a number of separate projects.

(b) The cumulative impacts from several projects are the change in the environment, which results from the incremental impact of the project when added to other closely related past, present and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time."

This section describes other approved and proposed projects in the vicinity of the proposed project site and the potentially significant adverse combined impacts of those projects. Then the potential cumulative impacts of those projects and the proposed project are discussed.

8.2 OTHER PROJECTS CONSIDERED IN THE CUMULATIVE IMPACTS ANALYSIS

Other projects considered in the cumulative impacts analysis include the Bellevue Ranch project southwest of the proposed project site, the Fahrens Park and Fahrens Creek projects to the southwest of the proposed project site, and the UC Merced campus and associated University Community Plan area southeast of the proposed project site.

8.3 CUMULATIVE IMPACTS RELATED TO AESTHETICS

Aesthetic impacts resulting from the development of the proposed project include changes to the overall visual character of the site, from agricultural and open space uses to intense urban land uses. Development of the proposed project would impact views from adjacent land uses and result in a degradation of the site’s visual resources. Aesthetic impacts could be minimized through the development of a landscape plan and adherence to Merced County development guidelines. Nevertheless, the development of the proposed project would substantially change the visual character of the project site and is considered a significant project specific impact.

While aesthetic impacts are generally site specific by nature, future development in the vicinity of the project site has the potential to further alter the character of the area. The proposed project would contribute to the cumulative development of the area and the change in its visual character. Much of the growth that is expected to occur in the future would be more heavily influenced by the development of Bellevue Ranch, Fahrens Park and Fahrens Creek, UC Merced
and the University Community Plan area. In addition, as the region is developed in the future, the character of the area will gradually change over time and the aesthetic impacts of future development will be less severe than the impacts of the initial development projects in this relatively undeveloped area. Since the project vicinity does not contain scenic highways or other significant scenic resources, the cumulative aesthetic impacts of future development in the project area would be considered less than significant with assumed mitigation.

**Level of Significance Before Mitigation:** Potentially significant.

**Mitigation Measures:** Mitigation measures to address the project’s contribution to cumulative aesthetic impacts to the extent possible are incorporated in Section 4.3, *Aesthetics*, of the EIR.

**Level of Significance After Mitigation:** Potentially significant.

### 8.4 CUMULATIVE IMPACTS RELATED TO AIR QUALITY

Ozone precursor emissions (ROG and NOx) that exceed 10 tons per year are considered to have significant air quality impacts. Estimated CO concentrations exceeding the CAAQS of 9 ppm averaged over 8 hours and 20 ppm for 1 hour will be considered a significant impact. The SJVAPCD has not established criteria for PM\(_{10}\) emissions and if the rules included in Regulation VIII are followed, the District considers these emissions to be less than significant. However, because the area is nonattainment for the particulate standard, the criterion set forth in Rule 2201 (New and Modified Stationary Source Review Rule) is used to determine significance. This value is 15 tons per year for PM\(_{10}\). This methodology is also in compliance with ARB methodology, which states that if there is no established CEQA threshold, the analysis shall be based on the limitations set forth in the New Source Review limitations (CEQA Review Handbook for Local Air Pollution Control Agencies, ARB, March 1990).

Long-term air pollution emissions are those associated which would be associated with the change in permanent use of the project area. Two types of air pollutant sources must be considered with respect to the proposed project: stationary sources and mobile sources. These emissions occur regionally based on the assumed trip-generating characteristics of the project and can build-up locally at intersections in the project area.

**Regional Emissions**

Stationary source emissions would be generated from on-site activities and natural gas combustion for heating requirements and cooking, as well as emissions at the power plant associated with the electrical requirements of the project. Mobile source emissions result from vehicle trips including: commuting employees, residents and visitors accessing the project, deliveries, and maintenance activities. Mobile sources represent the vast majority of emissions associated with new development, generally up to 98%.

Projections can be made for the mobile emissions generated by the assumed land uses in the build-out year (2020) by utilizing the California Air Resource Board URBEMIS7G Model. The model generates motor vehicle emissions as a function of the number of trips associated with a given land use and the vehicle miles traveled for each particular type of trip taken.
The emissions associated with the assumed project are anticipated to be 1,626 pounds of carbon monoxide, 160 pounds of reactive organic gases, 501 pounds of NOx, and 21 pounds of PM\textsubscript{10} on a daily basis as shown in Table 8.4-1, \textit{Projected-Related Emissions Inventory (lbs./day)}. Regional emissions and therefore project impacts are considered a significant impact of the project. The emission inventory assumptions are provided in Appendix D to this EIR.

<table>
<thead>
<tr>
<th>Unit Type</th>
<th>ROG</th>
<th>CO</th>
<th>NOx</th>
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</tr>
<tr>
<td>Neighborhood Commercial</td>
<td>28</td>
<td>306</td>
<td>102</td>
<td>4</td>
</tr>
<tr>
<td>Mixed Use (Marina)</td>
<td>&lt;1</td>
<td>5</td>
<td>2</td>
<td>&lt;1</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>160</td>
<td>1,626</td>
<td>501</td>
<td>21</td>
</tr>
</tbody>
</table>


\textbf{Microscale Projections}

An assessment of the project-related impact on localized air quality requires that future ambient levels be projected. Carbon monoxide concentrations can be estimated adjacent to nearby intersections that would be assumed to carry substantial volumes of project-related traffic using the California Department of Transportation Line Source Dispersion Model (CALINE4). Carbon monoxide levels in the project vicinity during peak hour traffic were assessed with the CALINE4 computer model. A complete discussion of the CALINE4 model and modeling assumptions are provided in Appendix D to this EIR.

Existing ambient carbon monoxide concentrations are 4.7 ppm over a one-hour averaging period and 2.3 ppm over the 8-hour averaging period. Background concentrations were determined by modeling Interstate 5 at State Route 152. The freeway concentration at 200 feet from the centerline was added to 2 ppm.

Ambient plus project traffic volumes were analyzed for year 2020 conditions. As shown in Table 8.4-2, \textit{Intersection Carbon Monoxide Concentrations (Year 2020)}, carbon monoxide concentrations adjacent to the intersections most affected by the project would not exceed the current state and federal one-hour and eight-hour standards with or without the subsequent development assumed on-site.

Over a one-hour and an eight-hour averaging period, "worst-case" project-related traffic at the intersections analyzed would contribute 4.0 ppm and 2.8 ppm or less to the carbon monoxide concentration at 50 feet from the corner of the intersection. The maximum intersection carbon monoxide concentration expected in the project area would be 8.7 ppm over the one-hour averaging period and 5.1 ppm over the 8-hour averaging period at 50 feet from the intersection of State Route 59 and Bellevue Road.
The carbon monoxide levels projected in the project area reflect cumulative conditions with the project in the year 2020. The microscale analysis indicates that project-related increases in carbon monoxide levels are insignificant under cumulative conditions, since the 1-hour and 8-hour standards would not be exceeded with the project. As a result, assumed project implementation would not cause an exceedance or contribute to an existing exceedance of the carbon monoxide standards.

**TABLE 8.4-2**

**INTERSECTION CARBON MONOXIDE CONCENTRATIONS (YEAR 2020)**

<table>
<thead>
<tr>
<th>Intersection</th>
<th>LOS W/Out Mitigation</th>
<th>1-Hour CO @ 50 Feet&lt;sup&gt;1&lt;/sup&gt;</th>
<th>8-Hour CO @ 50 Feet&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>BELLEVUE ROAD @</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- State Route 59</td>
<td>E</td>
<td>8.7</td>
<td>5.1</td>
</tr>
<tr>
<td>- G Street</td>
<td>F</td>
<td>8.3</td>
<td>4.8</td>
</tr>
<tr>
<td>- Golf Road</td>
<td>F</td>
<td>6.8</td>
<td>3.8</td>
</tr>
<tr>
<td>- Old Lake Road</td>
<td>F</td>
<td>6.9</td>
<td>3.8</td>
</tr>
<tr>
<td>WEST OLIVE AVENUE @</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- G Street</td>
<td>D</td>
<td>6.8</td>
<td>3.8</td>
</tr>
<tr>
<td>- State Route 59</td>
<td>F</td>
<td>8.3</td>
<td>4.8</td>
</tr>
<tr>
<td>OLD LAKE ROAD @</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Golf Road</td>
<td>C</td>
<td>6.6</td>
<td>3.6</td>
</tr>
<tr>
<td>- Yosemite Avenue</td>
<td>F</td>
<td>7.7</td>
<td>4.4</td>
</tr>
<tr>
<td>State Standard</td>
<td></td>
<td>20.0</td>
<td>9.0</td>
</tr>
<tr>
<td>Federal Standard</td>
<td></td>
<td>35.0</td>
<td>35.0</td>
</tr>
</tbody>
</table>

<sup>1</sup> As measured at a distance of 50 feet from the corner of the intersection predicting the highest value. Includes background concentrations of 4.7 and 2.3 ppm for 1- and 8-hour concentrations, respectively. Eight-hour concentrations based on a persistence of 0.7 of the 1-hour concentration.


This analysis of long term operational air quality impacts is based on the May 2002 TJKM traffic study, which assumes 2,386 dwelling units, 125 acres of parks, open space and public uses and 19 acres of neighborhood commercial development. The project assumptions upon which other analyses contained in this EIR are based (with the exception of noise), assume that a maximum of 1,262 dwelling units, 291 acres of parks, open space and public uses, and 19 acres of hotel/commercial uses could be developed within the proposed SUDP with approval of a subsequent Community Specific Plan (see Section 4.1, Summary of Project Assumptions). Consequently, long-term impacts to air quality described in this section are overstated and should be interpreted with caution. The subsequent specific plan, which will be based on a specific development project, could further reduce build-out and related impacts, but could not exceed the maximum development assumptions presented in Section 4.1, Summary of Project Assumptions.

**Level of Significance Before Mitigation:** Significant impact to regional emissions. Less than significant impact associated with microscale CO emissions.
8. Cumulative Impacts

Mitigation Measures: No mitigation measures are feasible

Level of Significance After Mitigation: Significant

8.5 CUMULATIVE IMPACTS RELATED TO BIOLOGICAL RESOURCES

Development of the proposed project would result in the loss of on-site wetland resources as well as sensitive plant and animal species. The project is located on the edge of what has been identified as one of the largest contiguous vernal pool habitat areas remaining in the state. Vernal pools, swale, and associated grassland habitats are a significant and valuable resource. Holland (1998) estimated a 10.7% loss of the vernal pool habitat within Merced County between 1987 and 1997 for an average rate of 1.1% per year. The project will contribute to this potentially significant cumulative regional loss of vernal pool habitats in the region resulting from smaller scale ongoing regional development and larger scale projects such as the proposed UC Merced campus and associated community.

The mitigation measures proposed for the loss of vernal pool and associated habitats are based on techniques traditionally employed by the USFWS and other agencies to mitigate for the loss of vernal pool habitats. These measures include a combination of avoidance of high value areas on site combined with off-site preservation of existing habitats and the construction/restoration of replacement habitats. These latter measures address the need for protection of existing habitats and replacement of habitats to meet no net loss wetland acreage policies. With the implementation of the recommended mitigation measures, cumulative impacts would be minimized. The County is also developing a Habitat Conservation Plan to address balancing long-term vernal pool and associated species and other habitat protection in relation to long term growth. Development and adoption of this Plan would further minimize long-term cumulative effects.

Level of Significance Before Mitigation: Significant impact to vernal pools on site.

Mitigation Measures: Mitigation measures that will alleviate some of the impacts to vernal pools are outlined in Section 4.5, Biological Resources, of this EIR. However, a potentially significant regional impact to biological resources remains.

Level of Significance After Mitigation: Significant

8.6 CUMULATIVE IMPACTS RELATED TO CULTURAL RESOURCES

Archaeological and paleontological resources may exist on-site that were not discovered during the cultural evaluation of the site. These resources could either be buried or hidden beneath vegetation. However, there are no significant impacts to cultural resources on site as a result of the proposed general plan amendment from agricultural to an SUDP area. Project related impacts to cultural resources might become significant at the time that a specific community plan is proposed and actual construction begins.

Level of Significance Before Mitigation: Less than significant

Mitigation Measures: No mitigation measures are necessary
8. **Cumulative Impacts**

**Level of Significance After Mitigation:** Less than significant

### 8.7 CUMULATIVE IMPACTS RELATED TO HYDROLOGY AND WATER QUALITY

The development of the proposed project would result in an increase in impermeable surfaces within the project area and outside the project area. Impermeable surfaces include streets, sidewalks, structures, and related facilities. It is proposed that all streets and graded lots would drain into a public storm drain system. Mitigation would be provided by the use of detention ponds to capture and hold storm water runoff for a period of time. When a Community Specific Plan is proposed, any development would be required to comply with water quality standards as set forth by the State Water Resources Board and the Regional Water Quality Control Board. An additional objective of the detention basin design is to store storm runoff until the water can be safely discharged, thereby avoiding downstream flooding. No flooding impacts are anticipated as a result of project development and the project would not expose people to flood hazards. Cumulative storm water and flooding impacts would be less than significant.

The project site is not considered a significant source of groundwater recharge. Any on-site wells would be required to comply with applicable design standards. Any water usage would have to comply with the current regulations therefore there would be no significant cumulative effect. Further examination and evaluation of the aquifers underlying the project site and the water usage will be needed once a Community Specific Plan is prepared for the site.

The project will contribute to the potentially significant cumulative loss of ground water in the region resulting from smaller scale on going regional development and larger scale projects such as the proposed UC Merced campus and associated community. However, compliance with the Merced County Water Supply Plan and Senate Bill 610 will ensure that all water supply impacts remain less than significant.

**Level of Significance Before Mitigation:** Potentially significant

**Mitigation Measures:** Mitigation measures that will alleviate hydrological impacts are outlined in Section 4.7 Hydrology, Water Supply and Water Quality, of this EIR.

**Level of Significance After Mitigation:** Less than significant

### 8.8 CUMULATIVE IMPACTS RELATED TO LAND USE

Significant impacts with regard to land use generally result from inconsistencies with adopted land use plans of jurisdictional agencies and incompatibilities with adjacent uses. Implementation of the proposed General Plan Amendment would ensure that the development of the proposed project is consistent with the County’s General Plan. Surrounding land uses are primarily agricultural lands that have been used for grazing purposes, with some residential development to the south and west of the project site and a golf course also located to the west. The major development planned in the area includes Fahrens Park, Fahrens Creek, and the UC Merced Campus and associated community, which would consist of a variety of educational,
8. **Cumulative Impacts**

residential and commercial uses. These land uses would be compatible with the development of the proposed project. Additional agricultural land in the vicinity of the project site is not currently planned for development and would essentially remain the same as it is today. Development of the proposed project would contribute to the cumulative conversion of vacant/agricultural areas to urban uses. However, since the project site consists primarily of grazing land and does not contain significant agricultural resources, the conversion of the project site is considered preferable to the conversion of other farmland in the County. Therefore, the development of the project site is not considered a significant cumulative impact to land use or agricultural resources.

**Level of Significance Before Mitigation:** Less than significant

**Mitigation Measures:** No mitigation measures are necessary

**Level of Significance After Mitigation:** Less than significant

8.9 CUMULATIVE IMPACTS RELATED TO NOISE

The cumulative projects within the project area are located sufficiently far such that neither construction noise nor on-site noise from site occupancy would be additive with that from other local projects. However, the traffic from the cumulative projects, would be forced onto the same roadways and would be additive with project-generated off-site mobile noise sources. Those roadways subject to significant impact would then also be cumulatively significant. However, as noted, it may not be possible to mitigate exterior noise levels for residences located along G Street, Old Lake Road and Golf Road, and thus, the impact remains potentially significant.

**Level of Significance Before Mitigation:** Potentially significant impact.

**Mitigation Measures:** Mitigation measures that will alleviate some of the impacts to local sensitive receptors are outlined in Section 4.9, *Noise*, of this EIR. However, a potentially significant long-term cumulative noise impact remains.

**Level of Significance After Mitigation:** Potentially significant.

8.10 CUMULATIVE IMPACTS RELATED TO PUBLIC HEALTH AND SAFETY

There are no potentially significant cumulative impacts related to public health and safety as a result of the proposed project. Mitigation measures related to public health and safety are outlined in Section 4.10, *Public Health and Safety*, of this EIR.

**Level of Significance Before Mitigation:** Less than significant

**Mitigation Measures:** No mitigation measures are necessary

**Level of Significance After Mitigation:** Less than significant
8. Cumulative Impacts

8.11 CUMULATIVE IMPACTS RELATED TO PUBLIC SERVICES AND UTILITIES

The only potentially significant cumulative impact related to public services is the increased demand for parks and recreational services as a result of the proposed project. Lake Yosemite Regional Park is the closest recreational facility to the proposed project and is likely to experience impacts from the urbanization of the surrounding area.

Level of Significance Before Mitigation: Potentially significant

Mitigation Measures: No feasible mitigation measures exist for this impact at this time. At the time that a Community Specific Plan is proposed, the developer and the Merced County Division of Parks and Recreation shall reach a mutual agreement on access to Lake Yosemite Regional Park.

Level of Significance After Mitigation: Potentially significant

8.12 CUMULATIVE IMPACTS RELATED TO SOCIOECONOMICS

At the current time, the development of the proposed project is not expected to exceed official or regional established population projections for the County of Merced. However, the project would provide additional employment and housing opportunities, which could further stimulate growth in the county and the region. As a result, the project could have significant cumulative growth impacts. It is likely that Yosemite Lake Estates would capture some of the growth from the UC Merced campus, but the project itself may also stimulate growth as people move in to the area for jobs created by UC Merced and the associated University Community area as well as jobs created by the project itself.

Level of Significance Before Mitigation: Potentially significant

Mitigation Measures: No feasible mitigation measures exist for this impact

Level of Significance After Mitigation: Potentially significant

8.13 CUMULATIVE IMPACTS RELATED TO SOILS AND GEOLOGY

The proposed project is located in an area of moderate seismic activity, with no active faults located in the immediate vicinity of the project site. Geologic impacts of the project would be mitigated through requirements for detailed soils reports prior to development and adherence to the Uniform Building Code. Due to the site-specific and project-specific nature of geologic impacts, and the mitigation of these impacts, no significant cumulative geologic impacts are anticipated. As described in Section 4.8, Land Use and Planning, the project site is not designated as an area of prime farmland, farmland of statewide importance, or unique farmland. The project site has been used for cattle grazing.

Level of Significance Before Mitigation: Less than significant
8. **Cumulative Impacts**

**Mitigation Measures:** No mitigation measures are necessary

**Level of Significance After Mitigation:** Less than significant

### 8.14 CUMULATIVE IMPACTS RELATED TO TRAFFIC AND CIRCULATION

Many of the roadways surrounding the project site are anticipated to operate at unacceptable levels of service, both with and without the project, through 2010 and 2020. More roadways are anticipated to operate at unacceptable levels of service with the project through 2010 and 2020 than without the project. Four intersections and four roadway segments are projected to degrade to unacceptable levels of service (below LOS D) in peak p.m. hours in the near term if the proposed project is implemented. With improvements planned by the City of Merced, five intersections and four roadway segments are projected to degrade to unacceptable levels of service (below LOS D) in peak p.m. hours by Year 2010 if the proposed project is implemented. With improvements planned by the City of Merced, eight intersections and four roadway segments are projected to operate unacceptably (below LOS D) in peak p.m. traffic hours if the proposed project is implemented. Please refer to Section 4.14, *Traffic and Circulation*, for more detail on roadway segments that are anticipated to operate at unacceptable levels of service.

**Level of Significance Before Mitigation:** Potentially significant.

**Mitigation Measures:** Mitigation measures that will alleviate the impacts to local roadways shall be developed at the time a Community Specific Plan is proposed.

**Level of Significance After Mitigation:** Less than significant.
9. **Alternatives**

### 9.1  INTRODUCTION

The California Environmental Quality Act (CEQA) requires that Environmental Impact Reports “...describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives” (Guidelines Section 15126(d)). The CEQA Guidelines directs that the selection of alternatives be governed by “a rule of reason.” The alternatives selected for detailed review in the EIR may be limited to those that “would avoid or substantially lessen any of the significant effects of the project” and would “feasibly attain most of the basic objectives of the project.” The selection of alternatives and their discussion must “foster meaningful public participation and informed decision making” (Guidelines Section 15126(d)(5)).

One alternative required by CEQA is the No Project Alternative. CEQA Guidelines require review of two “no project” scenarios: 1) existing conditions and 2) future conditions based on current plans and available infrastructure and community services.

As explained above, EIRs must identify alternatives to the project or to the location of the project. Alternative sites may be appropriate when changing a project's location would avoid or substantially lessen any of the project's significant impacts. In this instance, a number of potential alternative sites were reviewed initially, then, based on a screening of the potential sites, one alternative site (Fahrens Creek) was selected for detailed review in this EIR.

An EIR must identify an “environmentally superior” alternative and, where the No Project Alternative is identified as environmentally superior, the EIR is then required to identify as environmentally superior an alternative from among the others evaluated. Each alternative's environmental impacts are compared to the proposed project and determined to be environmentally superior, neutral or inferior. However, only those impacts found significant and unavoidable are used in making the final determination of whether an alternative is environmentally superior or inferior to the proposed project. Only the impacts involving local air quality; ambient noise levels along Old Lake Road and Golf Road (access roads to site); substantial degradation of the existing visual character or quality of the site and its surroundings; light and glare; and increased demand for parks and recreation services were found to be significant and unavoidable. Section 9.7, Environmentally Superior Alternative, identifies the environmentally superior alternative.

### 9.2  NO PROJECT/EXISTING PHYSICAL CONDITIONS ALTERNATIVE

Under this alternative, the agricultural General Plan and zoning designations would not be altered and the project site would not be developed. Existing grazing uses would continue to occur on the project site and no improvements would be made to the property.

#### 9.2.1  Aesthetics

Under this alternative, the project site would not be converted from vacant land into a residential and commercial development and existing views would remain unchanged. Therefore, this
9. Alternatives

9.2.2 Air Quality

Under this alternative, no new air pollutant emissions would be generated. There are minimal existing emissions associated with the current onsite use, which is vacant undeveloped land. Air pollutant emissions associated with current use would be less than those associated with the proposed project. Therefore, this alternative is considered environmentally superior to the proposed project in terms of air quality.

9.2.3 Biological Resources

Under this alternative, no large-scale disturbances would occur to existing biological habitat. Under the proposed project, degradation or loss of vernal pool, swale, grassland and wetland habitats would occur. Special-status plant and animal species would suffer loss of habitat; a heron and egret rookery would be lost; movement patterns of wildlife would be disturbed and invasive exotic species would be introduced. These impacts would all be considered less than significant after on-site and off-site mitigation measures; however, the project would still result in habitat and species impacts on-site. The No Project Alternative is therefore considered environmentally superior to the proposed project in terms of biological resources.

9.2.4 Cultural Resources

Under this alternative, no large-scale disturbances would occur to the project site. Development of the project site would be likely to involve some alterations to existing resources and some potential for damage to previously undiscovered resources. Therefore, the No Project Alternative is considered slightly environmentally superior to the proposed project alternative in terms of cultural resources.

9.2.5 Hydrology and Water Quality

Under this alternative, no on-site storm drain or wastewater system improvements would occur. Because no new construction would occur, the potential for discharging pollution into surface water or groundwater in the project area would be lessened under the no project alternative. However, soil erosion due to wind and rain would continue on the site. The drainage pattern and absorption rate would remain the same as they are today. Impacts to groundwater depletion and recharge would also be lower under existing conditions. This alternative is considered environmentally superior to the proposed project.

9.2.6 Land Use and Relevant Planning

Under this alternative, existing land use on the project site, i.e., vacant undeveloped land, would remain at the project site. Existing on-site conditions are consistent with the land uses or planned land uses surrounding the project site. There would be no significant impact on land use and relevant planning under this alternative. Since the proposed project would involve a General
Plan Amendment, the No Project alternative is considered environmentally superior to the proposed project.

9.2.7 Noise

Under this alternative, no new noise sources would be introduced to the project site. Existing vacant undeveloped land would remain. Under the proposed project, increases in vehicle trips along area roadways would increase noise levels in the vicinity of the project site. Therefore, this alternative is considered environmentally superior to the proposed project in terms of noise.

9.2.8 Public Health and Safety

Under this alternative, no new exposure to public health and safety issue would be generated at the project site. There would be no potential exposure to any on-site pesticide residue, San Joaquin Valley fever, or to hazardous releases in the vicinity of the project site. Although these potential project impacts are considered less than significant, this alternative is still marginally superior to the proposed project.

9.2.9 Public Services and Utilities

Under this alternative, no new public services would be required. Also, no storm drain improvements or installation of utilities would occur. This alternative would require fewer public service and utility resources than the proposed project. Therefore, this alternative is considered environmentally superior to the proposed project.

9.2.10 Socioeconomics

Under this alternative, there would be no increases in employment, population or housing. Since the proposed project would have some benefits in terms of employment and the provision of low income housing, the no project alternative is considered environmentally inferior to the proposed project in terms of socioeconomics.

9.2.11 Soils and Geology

Under this alternative, no new structures would be constructed on the project site. Although the project site is not located in the area of a significant geological hazard and on-site buildings would be constructed to meet the latest building code requirements, there is still some risk to proposed structures and residents under a moderate to strong earthquake. Therefore, in terms of soils and geology, this alternative, which does not involve any residents or employees under new structures, is considered environmentally superior to the proposed project.

9.2.12 Traffic and Circulation

Under this alternative, there would be no new traffic trips to and from the project site. The new trips associated with the proposed project have the potential to result in more congested roadways and intersections in the project vicinity than would occur under the No Project
9. **Alternatives**

Alternative. Therefore, this alternative is environmentally superior to the proposed project in terms of traffic and circulation.

### 9.2.13 Conclusion

The No Project Alternative would have the following issues that are considered environmentally superior to the proposed project: land use, traffic and circulation, noise, air quality, soils and geology, hydrology and water quality, biological resources, cultural resources, public health and safety, public services and utilities, and aesthetics. The No Project alternative is considered environmentally superior to the proposed project due to the reduction in the project's significant unavoidable impacts (air quality emissions and visual impacts); however, the No Project Alternative would achieve none of the project objectives. The No Project Alternative would be inferior to the proposed project in terms of promoting socioeconomic growth, predominantly in the provision of employment opportunities and the availability of low-income housing. There would be no impacts that would be neutral in terms of this alternative and the proposed project.

### 9.3 NO PROJECT/BUILD-OUT PURSUANT TO EXISTING LAND USE DESIGNATIONS ALTERNATIVE

Under build-out pursuant to existing land use designations alternative, the agricultural General Plan and zoning designations would not be altered and would primarily remain A-2 (Exclusive Agriculture, with a 160 acre minimum parcel size). Approximately 200 acres (31%) of the site are to be maintained as open space to protect sensitive biological resources identified on the site. Given that open space requirements could be satisfied through the establishment of easements, the 655 acres of the project site could be developed with a maximum of 4 residential structures on 160-acre size parcels (a total of 640 acres).

#### 9.3.1 Aesthetics

Under this alternative, the project site would be converted from vacant land into a very low-density residential development. Existing views for adjacent sensitive receptors would be altered only slightly across the vast majority of the project site, and these alterations would be minimal in comparison to the proposed project alternative. Therefore, the build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project in terms of aesthetic impacts.

#### 9.3.2 Air Quality

Under this alternative, very little new air pollutant emissions would be generated, and these emissions would be far less than those associated with the proposed project alternative. Therefore, the build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project in terms of air quality.
9.3.3 Biological Resources

Under this alternative, large-scale disturbances to existing biological habitat may be expected to occur primarily, if at all, in that portion of the project where parcel sizes may be as small as 20 acres in size. Under this type of development, impacts to vernal pools and other sensitive habitat areas and species on the site would be greatly diminished or avoided completely in most, if not all, cases. Although the proposed project would mitigate project impacts through the establishment of on-site and off-site mitigations, the proposed project would still result in more extensive habitat and species impacts on-site than the build-out pursuant to existing land use designations alternative. Therefore, the build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project in terms of biological resources.

9.3.4 Cultural Resources

Under this alternative, far fewer large-scale disturbances would occur to the project site. While development of the project site under the build-out pursuant to existing land use designations alternative would be likely to involve some impacts to existing resources and some potential for damage to previously undiscovered resources, this potential would not be nearly as great as it would be under the proposed project alternative. Therefore, the build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project in terms of potential impacts to cultural resources.

9.3.5 Hydrology and Water Quality

Under this alternative, the construction of on-site storm drain or wastewater system improvements would be far more limited than they would be under the proposed project, if they are constructed at all. Under the build-out pursuant to existing land use designations alternative, wastewater systems would be likely to consist of septic tanks rather than connections to sanitary sewers. Because construction activities associated with the construction of on-site storm drain or wastewater systems would be more limited, there would be a reduced potential for discharging pollution into surface or groundwater during construction activities. In addition, because less new construction activity of any kind would occur under the build-out pursuant to existing land use designations alternative, the potential for discharging pollution into surface water or groundwater in the project area during other types of construction activities would be lower under the build-out pursuant to existing land use designations alternative than under the proposed project. Finally, since the build-out pursuant to existing land use designations would result in the construction of a vastly reduced number of residential and/or commercial units, surface and groundwater pollution resulting from urban runoff from human activities and impervious surfaces would also be greatly reduced. Therefore, the build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project in terms of surface or groundwater pollution resulting from construction activities.

Under the build-out pursuant to existing land use designations alternative, the drainage pattern and absorption rate on the vast majority of the site may be expected to remain essentially the same as they are today. If structures were built on 20-acre size parcels on a small portion of the
site, the drainage pattern and absorption rate would still be altered to a lesser degree than they would be under the proposed project. Therefore, build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project alternative in terms of drainage patterns and absorption rates.

Moreover, impacts to groundwater depletion and recharge would be far less significant under the build-out pursuant to existing land use designations alternative than they would be under the proposed project alternative; therefore, build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project.

Under the build-out pursuant to existing land use designations alternative, however, there is a potential for the area’s groundwater quality to be compromised due to an increased use of septic systems for future rural residential development, but the small number of septic systems that might be necessary would not represent a significant risk of groundwater contamination. However, the build-out pursuant to existing land use designations alternative would still be considered environmentally inferior to the proposed project in terms of potential septic tank induced groundwater contamination.

9.3.6 Land Use and Relevant Planning

Under this alternative, existing land use on the project site, that is, vacant undeveloped land, would be slightly changed; however, on-site conditions would remain consistent with the land uses or planned land uses surrounding the project site. There would obviously be a relatively insignificant impact on land use and relevant planning under the build-out pursuant to existing land use designations alternative. Since the proposed project would involve a General Plan Amendment, the build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project alternative.

9.3.7 Noise

Under this alternative, new noise sources would be introduced to the project site. However, under the proposed project, increases in vehicle trips along area roadways would increase noise levels in the vicinity far more than under the build-out pursuant to existing land use designations alternative. Therefore, the build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project in terms of noise.

9.3.8 Public Health and Safety

Under this alternative, fewer new exposures to public health and safety issues would be generated at the project site. Provided agricultural uses were not permitted onsite, there would be far fewer potential exposures to any on-site pesticide residue, San Joaquin Valley fever, or to hazardous releases in the vicinity of the project site. However, if agricultural uses were permitted, the small-scale farming that might result on 160-acre parcels could lead to additional exposures. Although these potential project impacts are considered less than significant, even under the proposed project, the build-out pursuant to existing land use designations alternative is still environmentally superior to the proposed project in terms of public health and safety.
9. **Alternatives**

9.3.9 **Public Services and Utilities**

Under this alternative, far fewer new public services would be required than would be required under the proposed project. Also, fewer storm drain improvements or installation of new utilities would occur than would occur under the proposed project alternative. Therefore, build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project alternative.

9.3.10 **Socioeconomics**

Under the build-out pursuant to existing land use designations alternative, there would be increases in employment, population or housing, but they would not be as large as they would be under the proposed project. The proposed project, therefore, would have greater benefits in terms of employment and the provision of low-income housing. The build-out pursuant to existing land use designations alternative is considered environmentally inferior to the proposed project in terms of socioeconomic benefits.

9.3.11 **Soils and Geology**

Under this alternative, several new structures would be constructed on the project site. Although the project site is not located in the area of a significant geological hazard and on-site buildings would be constructed to meet the latest building code requirements, there is still some risk to proposed structures and residents under a moderate to strong earthquake. The build-out pursuant to existing land use designations alternative establishes a far smaller number of residents or employees under new structures. Similarly, the risk of hazard due to ground-shaking, liquefaction and land subsidence in seismic events would be vastly diminished under the build-out pursuant to existing land use designations alternative. Because these risks are associated with soil characteristics, proximity of the groundwater table and presence of wet or marshy areas, the potential for geologic hazards could be reduced even further through a detailed geology and soils analysis prior to choosing the construction site on each individual parcel. Therefore, build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project in terms of geologic hazards.

9.3.12 **Traffic and Circulation**

Under this alternative, there would be an insignificant increase in new traffic trips to and from the project site when compared to the proposed project. The new trips associated with the build-out pursuant to existing land use designations alternative would have very little potential to result in more congested roadways and intersections in the project vicinity, and any impacts under this alternative would be significantly less than they would be under the proposed project alternative. Therefore, the build-out pursuant to existing land use designations alternative is considered to be environmentally superior to the proposed project alternative in terms of traffic and circulation.
9.3.13 Conclusion

The build-out pursuant to existing land use designations alternative would have the following issues that are considered environmentally superior to the proposed project: aesthetics, air quality, biological resources, cultural resources, hydrology and water quality (overall), land use and planning, noise, public health and safety, public services and utilities, soils and geology and traffic and circulation. The build-out pursuant to existing land use designations alternative would be inferior to the proposed project in terms of promoting socioeconomic growth. The build-out pursuant to existing land use designations alternative may also be considered inferior to the proposed project in terms of potential pollution of groundwater resources from septic tank seepage on developed parcels; this represents the sole categorical area of hydrology and water quality in which the build-out pursuant to existing land use designations could be considered to have greater environmental impacts than proposed project alternative. There would be no impacts that would be neutral in terms of this alternative and the proposed project.

The build-out pursuant to existing land use designations alternative is considered environmentally superior to the proposed project due to the reduction in the project's significant unavoidable impacts (air quality emissions and visual impacts); however, the build-out pursuant to existing land use designations alternative would achieve very few of the project objectives.

9.4 LIMITED DEVELOPMENT AREA (WEST OF CANAL ONLY) ALTERNATIVE

Under this scenario, only that portion of the proposed project site would be developed that is located west of the Crocker-Huffman Canal, which traverses the site in a NW-SE direction and connects to Yosemite Lake, southeast of the proposed project site.

9.4.1 Aesthetics

Under the limited development alternative, the larger portion of the site would remain undeveloped and views across this section of the property would remain unchanged. Moreover, under both the proposed project and the limited development area alternative, land uses and densities would remain proportionately the same, and views within and across the site would experience similar impacts.

Within the limited development area, the impacts of light and glare would be similar in intensity to the proposed project. However, the impacts of light and glare created by human activities and traffic would also be restricted to the west side of the canal, reducing these impacts on sensitive biological receptors on the larger portion of the site. For these reasons, the limited development alternative is considered environmentally superior to the proposed project.

9.4.2 Air Quality

Under the limited development alternative and the proposed project, significantly fewer dwelling units and commercial structures would be constructed. It is reasonable to conclude that population increases and the air quality impacts that are associated with urban development
would also be lessened. Therefore, negative impacts on air quality would be less significant under the limited development alternative than they would be under the proposed project, and the limited development alternative is considered to be environmentally superior to the proposed project in terms of air quality.

9.4.3 Biological Resources

The limited project alternative would limit environmental impacts on biological resources to the western portion of the site, leaving the vernal pools and other sensitive biological resources on the larger portion of the site untouched. Although the proposed project would mitigate project impacts through the establishment of on-site and off-site mitigations, the proposed project would still result in more extensive habitat and species impacts on-site than the limited development alternative. Therefore, the limited development alternative is considered environmentally superior to the proposed project in terms of biological resources.

9.4.4 Cultural Resources

Under the limited development area alternative, far fewer large-scale disturbances would occur to the project site. While development of the project site under the limited development alternative would be likely to involve some impacts to existing resources and some potential for damage to previously undiscovered resources, this potential would not be nearly as great as it would be under the proposed project. Therefore, the limited development area alternative is considered environmentally superior to the proposed project in terms of potential impacts to cultural resources.

9.4.5 Hydrology and Water Quality

Under the limited development alternative, on-site storm drain or wastewater system improvements would occur only on the western portion of the site. Because no new construction would occur on the larger portion of the site to the northeast of the Crocker-Huffman Canal, the potential for discharging pollution into surface water or groundwater in the project area would be less under the limited development alternative than it would be under the proposed project.

Under the limited development alternative, the drainage pattern and absorption rate on the larger portion of the site may be expected to remain essentially the same as they are today. Impacts to groundwater depletion and recharge would also be lower under the limited development alternative. While soil erosion due to wind and rain would continue on the larger portion of the site, the limited development alternative is considered environmentally superior to the proposed project in terms of surface and groundwater pollution, drainage patterns and absorption rates and groundwater depletion and recharge.

9.4.6 Land Use and Relevant Planning

The project assumes a maximum of 1,262 dwelling units, 291 acres of parks open space and public uses, and 19 acres of hotel/commercial uses would be developed on the site. This suggests that the 1,262 dwelling units would be constructed on approximately 345 acres of land (655 total
9. **Alternatives**

acres minus 310 acres devoted to open space/hotel/commercial uses). This represents an average density of 3.66 dwelling units per acre of land.

Under the limited development area alternative, development would be restricted to that portion of the proposed project site that lies to the west of the canal transecting the property. This portion of the property is approximately 252 acres in size. Based on the assumption that the acreage devoted to parks, open space, public uses and hotel/commercial development would remain proportional under the limited development area alternative, approximately 111 acres would be devoted to parks and open space and approximately 7.3 acres would be devoted to commercial uses. Under this scenario, approximately 134 acres would remain open to residential development after open space and commercial uses are satisfied. Given the average 3.66-dwelling-unit-per-acre density established above, approximately 490 dwelling units would be constructed on the 134-acre portion of the property.

Land use impacts for the limited development are alternative would generally be the same as for the proposed project. Both the proposed project and the limited development area alternative would result in changes to land use patterns from rural to urban, and average densities would be essentially the same. Therefore, the limited development area alternative is considered environmentally neutral to the proposed project in terms of land use and planning.

9.4.7 **Noise**

If traffic patterns are altered due to a restriction in access routes, traffic-related noise pollution may be expected to decrease in certain areas and increase in other areas surrounding the project site. However, due to the overall reduction in volume of project-related traffic under the limited development area alternative, noise-related impacts on sensitive receptors would be less significant along impacted roadway segments and intersections than they would be under the proposed project. For this reason, the limited development alternative is considered environmentally superior to the proposed project.

On the developed portion of the site, noise related impacts would be expected to be similar under the proposed project and the limited development area alternative. However, noise related impacts on sensitive biological receptors on the undeveloped portion of the site would be far less significant under the limited development area alternative than they would be under the proposed project. For this reason, the limited development alternative is considered environmentally superior to the proposed project.

9.4.8 **Public Health and Safety**

Under this alternative, additional exposures to public health and safety issues would be generated at the project site. However, potential exposures to any on-site pesticide residue, San Joaquin Valley fever, or to hazardous releases in the vicinity of the project site would be fewer under the limited development area alternative than they would be under the proposed project. Therefore, the limited development alternative is considered environmentally superior to the proposed project in terms of public health and safety.
9. **Alternatives**

9.4.9 **Public Services and Utilities**

Under the limited development area alternative, fewer new public services would be required than would be required under the proposed project. Moreover, these services would need to be provided to a significantly smaller land area, reducing the costs of constructing and providing these services. Therefore, limited development area alternative is considered environmentally superior to the proposed project.

9.4.10 **Socioeconomics**

Lot and dwelling unit sizes, and the amount of land devoted to commercial development and open space amenities would be similar under both the proposed project and the limited development area alternative. Under the limited development alternative, increases in employment, population or housing numbers would be less than they would be under the proposed project, and City or County tax bases would not be increased as significantly as they would be under the proposed project. In terms of socioeconomic growth, therefore, the limited development area alternative is considered environmentally inferior to the proposed project.

9.4.11 **Soils and Geology**

Restricting development to the west side of the site, away from the marshy areas, may reduce the impacts of seismic-related ground shaking, liquefaction and land subsidence. Therefore, limited development alternative is considered environmentally superior to the proposed project in terms of geologic hazards.

9.4.12 **Traffic and Circulation**

Currently, all of the roadway segments and intersections in the study area operate acceptably, even during the critical peak a.m. and p.m. traffic hours. Traffic analysis of the study area indicates that, under existing lane and intersection configurations, 2 out of 14 roadway segments in the study area would operate at unacceptable levels of service in the year 2010, and 6 out of 14 roadway segments would operate at unacceptably in year 2020 if the project is not built and no mitigation measures were implemented. If the proposed project is built as planned, 6 of those 14 roadway segments would operate at unacceptable levels of service in 2010 and 7 of those 14 would operate at unacceptably in year 2020 if no mitigation measures were implemented.

Analysis of critical intersections in the study area indicates that 4 out of 12 critical intersections would operate at unacceptably in year 2010 and 8 out of 12 critical intersections would operate at unacceptably in year 2020 if the project is not built and no mitigation measures are implemented. If the proposed project is built as planned, 8 out of 12 critical intersections would operate at unacceptably in year 2010 and 10 out of 12 critical intersections would operate at unacceptably in year 2020 if no mitigation measures are implemented.

Under the limited development area alternative, it is possible that vehicles entering the site may be restricted to fewer points of direct access to the site than they would be under the proposed project. This would decrease the traffic burden (over existing levels) on certain critical roadway

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*The Planning Center ● Page 9-11*
segments and intersections and increase the burden (over existing levels) on others. However, based on the reduced number of residential dwellings and commercial enterprises that would be constructed, the volume of traffic that would result under the limited development area alternative would be significantly less than it would be under the proposed project alternative. Under the limited development area alternative, therefore, impacts on traffic congestion may be less significant than they would be under the proposed project, especially during peak traffic hours. This would mean that fewer mitigation measures would be required to mitigate the increased traffic congestion that would result from residential and commercial development of the site. Therefore, the limited development alternative is environmentally superior to the proposed project in terms of traffic circulation.

9.4.13 Conclusion

The limited development alternative would have the following issues that are environmentally superior to the proposed project: Traffic, air quality, noise, aesthetics, biological, soils and geology, hydrology and water quality, public services and utilities, cultural and public health and safety. The limited development alternative would be environmentally inferior to the proposed project in terms of socioeconomic opportunities. The limited development alternative would be environmentally neutral to the proposed project in terms of land use and planning.

9.5 EXPANSION OF THE UC MERCED SUDP TO ENCOMPASS THE PROJECT SITE ALTERNATIVE

Under this alternative, the UC Merced Specific Urban Development Plan (SUDP) would expand to encompass the proposed project site, and on-site development would remain essentially the same.

9.5.1 Aesthetics

The expansion of the UC Merced SUDP alternative is considered environmentally neutral to the proposed project in terms of aesthetics because current development plans for the project would remain essentially the same.

9.5.2 Air Quality

Unless additional access routes to the project site through the UC Merced Land Trust are constructed under this alternative, thereby alleviating traffic congestion and its associated air quality impacts in the surrounding area, the expansion of the UC Merced SUDP alternative is considered to be environmentally neutral to the proposed project in terms of air quality.

9.5.3 Biological Resources

The expansion of the UC Merced SUDP alternative is considered environmentally neutral to the proposed project in terms of biological resources because current development plans for the project would contain essentially the same mix of land uses.
9. **Alternatives**

9.5.4 **Cultural Resources**

The expansion of the UC Merced SUDP alternative is considered environmentally neutral to the proposed project in terms of cultural resources because current development plans for the project would contain essentially the same mix of land uses.

9.5.5 **Hydrology and Water Quality**

The expansion of the UC Merced SUDP alternative is considered environmentally neutral to the proposed project in terms of hydrology and water quality because current development plans for the project would contain essentially the same mix of land uses.

9.5.6 **Land Use and Relevant Planning**

The SUDP is the broadest General Plan boundary designation, which is intended to accommodate all classifications of urban land use. An SUDP boundary is recognized as the ultimate growth boundary of a community over the life of the General Plan. Whenever land is added to an SUDP, the decision is made that the land will ultimately be converted to urban use. New SUDPs (or expanded SUDPs) must be accompanied by adoption of a Community Specific Plan that identifies the purpose and function of the community and details the mixture of land uses or employment-generating land uses.

Under the Merced County General Plan, SUDP expansion is allowed after consideration of several factors: the agricultural value of the land involved and impacts on adjacent agricultural and open space lands; urban service availability; the amount of vacant available land already within the community or adjacent communities; and consistency of the expansion with local planning goals outlined through the community specific plan or the General Plans of adjacent communities.

On a preliminary level, the County of Merced’s acceptance and approval of a Guidance Package for the formation of the proposed Yosemite Lake Estates SUDP and its acceptance of an application for the Yosemite Lake Estates GPA and SUDP for processing may be taken as an indication that the proposed project meets the criteria that have been developed for the creation or expansion of an SUDP. Therefore, the criteria for potential inclusion of the project site under the UC Merced SUDP would seem to have been met. However, expanding the UC Merced SUDP to encompass the project site would still require an amendment to the City of Merced and County General Plans. For this reason, the expansion of the UC Merced SUDP alternative is considered to be neutral to the proposed project in terms of land use and relevant planning.

9.5.7 **Noise**

Unless additional access routes to the project site through the UC Merced Land Trust are constructed under this alternative, thereby alleviating traffic congestion and its associated noise impacts, the expansion of the UC Merced SUDP alternative is considered to be environmentally neutral to the proposed project in terms of noise.
9. **Alternatives**

9.5.8 **Public Health and Safety**

The expansion of the UC Merced SUDP alternative is considered to be environmentally neutral to the proposed project in terms of public health and safety because current development plans for the project would contain essentially the same mix of land uses.

9.5.9 **Public Services and Utilities**

The expansion of the UC Merced SUDP alternative may offer some economies of scale and provide greater efficiency in terms of the provision of public services and utilities to the proposed project site; however, even if the UC Merced SUDP did not expand to encompass the proposed project site, infrastructure for both the UC Merced project and the proposed project could still be connected and integrated. Because infrastructure requirements and designs could be identical under both scenarios, the expansion of the UC Merced alternative is considered to be environmentally neutral to the proposed project.

9.5.10 **Socioeconomic**

The expansion of the UC Merced SUDP alternative is considered to be environmentally neutral to the proposed project in terms of socioeconomics because current development plans for the project would contain essentially the same mix of land uses.

9.5.11 **Soils and Geology**

The expansion of the UC Merced SUDP alternative is considered to be environmentally neutral to the proposed project in terms of soils and geology because current development plans for the project would contain essentially the same mix of land uses.

9.5.12 **Traffic and Circulation**

It is theoretically possible that additional access routes to the proposed project site could be developed in the future along the eastern side of Yosemite Lake across the lands now held by the UC Merced Land Trust, thereby alleviating the traffic burden on existing access roadway segments and intersections. However, this eventuality is only a supposition at this time. Therefore, the expansion of the UC Merced SUDP alternative is considered to be environmentally neutral to the proposed project in terms of traffic and circulation.

9.5.13 **Conclusion**

The expansion of the UC Merced SUDP alternative would be environmentally neutral to the proposed project in terms of: The expansion of the UC Merced SUDP alternative would be environmentally neutral to the proposed project in terms of aesthetics, air quality, biological resources, cultural resources, hydrology and water quality, land use and relevant planning, noise, soils and geology, public health and safety, the provision of public services and utilities, socioeconomics and traffic and circulation.
9.6 DEVELOPMENT ON A SPECIFIC SITE WITHIN THE CITY OF MERCED (FAHRENS CREEK PROJECT)

The Fahrens Creek project is located within the City of Merced Specific Urban Development Plan (SUDP), which encompasses the City of Merced (approximately 13,402 acres) and about 7,138 acres of adjacent land located within Merced County. The SUDP is located within the City’s 35,000-acre Sphere of Influence, which also includes the planning area for the future 10th campus of the University of California near Lake Yosemite.

The Fahrens Creek project alternative consists of the development of seven parcels that cover approximately 273.6 acres in the northwest portion of the City of Merced. The Project is located immediately north and west of the current City limits along Yosemite Avenue (extended) and “R” Street (extended), respectively. The Fahrens Creek project is conceptually divided into four development areas as follows:

AREA A (“Village”) consists of four pieces of land, containing 218-plus acres and located northwest of the intersection of “R” Street (extended) and Yosemite Avenue (extended).\(^{60}\) Together, these four parcels have been designed as the southern half of an integrated, multi-use Village, as called for in the City’s General Plan and as shown on the General Plan map.

AREA B (“Business Park”) contains the remaining three parcels contained in the annexation request and totals approximately 55.2 acres in size.\(^{61}\) These parcels, outside the integrated “Village” area within the Fahrens Creek Specific Plan area, are described as “Business Park” on the General Plan and the intent is to review them consistent with that designation.

AREA C (“Enclaves”) contains a total of approximately 38.5 acres.\(^{62}\) The parcels included in Area C are potential candidates for inclusion in the annexation by LAFCO if the original annexation application is approved. As such, this area will also be included in this expanded initial study. These parcels are all designated “Business Park” on the current City General Plan.

AREA D (“Conceptual Village”) contains the northern half of the integrated, multi-use Village called for in the City’s General Plan and as shown on the General Plan map. The properties in this area are not part of the current process. However, at the request of the City, the applicants included this area in their integrated design for the overall multi-use Village. It is the City’s intent to consider and conceptually adopt a design for this portion of the overall Village. Because development plans for Area D have not been finalized, this conceptual portion of the Fahrens Creek project will not be included in the assessment of alternatives herein.

All of the properties designated above as ‘multi-use Village’ are currently zoned “General Agriculture” (A-1) in the County. The requested ‘Mini-Storage’ site is zoned County M-1 (Light Industrial). The adjacent 0.4-plus acre parcel (presently a home-site) is zoned M-1, while the 44-acre parcel is a combination of County A-1 and M-1. At the present time there is limited

\(^{60}\) Assessor Parcel Numbers 57-160-30, 57-160-31 (Abandoned Yosemite Valley Railroad right-of-way), 57-160-82, and 57-160-84.

\(^{61}\) Assessor Parcel Numbers 57-160-81, 57-160-83, and 57-190-01.

\(^{62}\) Assessor Parcel Numbers 57-190-02 and –03, 57-190-06 through –08, 57-190-13, and 57-190-16.
9. Alternatives

agricultural activity taking place in Area A, consisting generally of dry farming involving a forage mix of oat hay intended for cattle feed. Portions of Area B are currently being used for grazing. Area C currently has a combination of storage, commercial and building materials uses. A few trees exist on-site, primarily near Fahrens Creek.

As with most of the Merced region, the topography of the Project site is generally flat. Within the northeastern quarter of this square mile there is some low mounding. These rise up to 5-10 feet above the grade to the east, at the future Cardella/”R” intersection. The Yosemite Valley Railroad right-of-way (ROW) contains the old roadbed that appears to be approximately 6-8 feet wide and perhaps 4-5 feet above the surrounding land outside the ROW. There are no distinctive visual, geologic or physical features located on the project site and no portion of the site is a designated scenic resource in the City of Merced General Plan.

The “Fahrens Creek Annexation to the City of Merced” has been designed to implement the development goals of the Merced Vision 2015 General Plan. All of the parcels proposed for annexation in Area A have been designated in the Merced Vision 2015 General Plan for a combination of residential and/or commercial land uses as part of the City’s “Village Concept.” Accordingly, this area will be zoned Planned Development (P-D) and designated a “Village” land use when annexed to the City. The parcels outside the “Village” (in Area B) are designated “Business Park” on the General Plan and would be so designated within the proposed Planned Development (P-D) zoning. Table 9.6-1 illustrates the prospective land uses proposed for the Fahrens Creek project alternative.63

63 Table 9.1, along with all Fahrens Creek II Project-related data, has been taken from: Expanded Initial Study #00-31 for Fahrens Creek II Annexation to the City of Merced, provided to The Planning Center by the City of Merced.
9. Alternatives

<table>
<thead>
<tr>
<th>Zone</th>
<th>Permitted Uses</th>
<th>Conditional Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Density Residential</td>
<td>Single Family Residential, Agricultural uses (no hog raising)</td>
<td>Included are public and quasi-public uses and duplexes or two units on enlarged corner lots</td>
</tr>
<tr>
<td>Low Medium Density Residential</td>
<td>Single Family &amp; Duplex dwellings; dwelling groups (not including multi-family); and Agricultural uses (no hog raising)</td>
<td>Included are public and quasi-public uses; five unit or larger multi-family residential on large lots; and non-profit social halls, lodges, fraternal organizations &amp; clubs</td>
</tr>
<tr>
<td>High Medium Density Residential</td>
<td>Single Family, Duplex and Multi- Family Residential; and Agricultural uses (no hog raising)</td>
<td>Public and Quasi-public uses; licensed nursing and convalescent homes; and non-profit social halls, lodges, fraternal organizations &amp; clubs</td>
</tr>
<tr>
<td>Village Residential</td>
<td>Mixed-use, medium density urban ‘village’ centers containing 7 to 30 dwelling units/acre but with a minimum of 10 dwelling units/acre</td>
<td>(Currently implemented through planned development {P-D} zoning which would allow other activities deemed of a similar nature)</td>
</tr>
<tr>
<td>Office Commercial</td>
<td>Medical/Dental offices; administrative, executive &amp; editorial offices; professional offices; financial offices (banks, real estate and general business); medical &amp; dental labs; schools/ studios for arts &amp; crafts, photography, music &amp; dance; therapeutic/ rehabilitation offices; and any other uses determined to be of the same general character</td>
<td>Public &amp; Quasi-public uses; Mortuaries &amp; crematories; High &amp; lower density residential uses; and certain services (bail bonds, beauty &amp; barber shops, tanning &amp; nail salons)</td>
</tr>
<tr>
<td>Neighborhood Commercial</td>
<td>Any retail business or service establishment supplying services for residents of the neighborhood, such as but not limited to, grocery store, bake shop, drug store, barber/beauty shop, clothes cleaning &amp; laundry pick-up station, business/ professional offices; and financial institutions; restaurants, cafes and soda fountains (with certain restrictions); massage, tanning and nail salon establishments; and other activities determined to be of the same general character.</td>
<td>Activities such as Public and Quasi - public uses deemed appropriate for the zone; auto service stations; drive-in restaurants; theaters; car-washes; super grocery stores; and shopping centers.</td>
</tr>
<tr>
<td>Business Park</td>
<td>A wide variety of light manufacturing, warehousing, office and service business activities.</td>
<td>(Currently implemented through planned development {P-D} zoning which would allow other activities deemed of a similar nature)</td>
</tr>
</tbody>
</table>

### 9.6.1 Aesthetics

**Substantial degradation of the visual character of the site:** The Fahrens Creek project alternative proposes the construction of an estimated 565 dwelling units in Area A and an estimated 355 dwelling units in Area B, for a combined total of 920 dwelling units. It also proposes the development of commercial centers in Area C. The proposed project proposes the construction of 1,262 dwelling units, in addition to the development of commercial centers on
9. Alternatives

portions of the site. The introduction of urban uses to the Fahrens Creek project site would encroach upon the views from adjoining properties across the site. However, none of these views are of unique or significant scenic value and the project is expected to have less-than-significant impacts on scenic views and viewsheds. Urbanization of the proposed project site, on the other hand, could potentially result in significant visual impacts for adjacent sensitive viewers. The overall change in the visual character of the site would be tempered by adherence to design criteria to be set forth in the subsequent Community Specific Plan in compliance with policies of both Merced County and the City of Merced. While these measures would diminish negative effects, they would not reduce the level of impact to a less than significant level due to the cumulative alteration of the foreground and middle ground visual character of the site.

Given the current relatively undeveloped nature of the Fahrens Creek alternative site, the proposed project’s introduction of new sources of light and glare represents a significant impact in a site adjacent to developed areas within the City of Merced. However, this impact is anticipated to be less than significant with mitigation. Urbanization of the proposed project site, on the other hand, would create substantial new sources of nighttime light and glare. There is currently little night lighting in the project vicinity, which is associated primarily with adjacent rural residential areas and with Yosemite Lake Regional Park. The addition of new sources of light and glare would alter the character of nighttime views across the project area. While adverse impacts would be minimized through mitigation measures, the amount of artificial light in the area would substantially increase and would substantially alter the nature of nighttime views on a permanent basis. These impacts are significant and unavoidable.

The Fahrens Creek alternative is therefore considered superior to the proposed project in terms of aesthetics.

9.6.2 Air Quality

The Fahrens Creek project alternative proposes the construction of an estimated 565 dwelling units in Area A and an estimated 355 dwelling units in Area B, for a combined total of 920 dwelling units, in addition to the development of commercial centers. The proposed project proposes the construction of 1,262 dwelling units, in addition to the development of commercial centers. Population increases would obviously be greater under the proposed project than they would be under the Fahrens Creek project alternative. It is reasonable to conclude; therefore, that air quality impacts associated with increased human activities, and with an increase in vehicle numbers and traffic congestion, would be greater under the proposed project than they would be under the Fahrens Creek project. For this reason, the Fahrens Creek alternative is considered environmentally superior to the proposed project in terms of air quality.

9.6.3 Biological Resources

The Fahrens Creek alternative site does not contain any lakes or estuaries of any water body. Fahrens Creek runs along the east edge of the project site for approximately ¼ mile, and then across the southeastern edge of the project site for approximately another ¼ mile. The Creek has low, and sometimes only intermittent, flow during certain times of the year. The proposed project would be required to dedicate a minimum of 25 feet from the crown of the creek, or 50
9. Alternatives

feet from the centerline of the Creek, whichever is greater, for the City’s existing creek side open space/path system, on the north/west side of the Creek. In addition, Fahrens Creek project plans show additional areas on both side of the Creek as part of the park or open space system. As proposed, public ownership of lands on both sides of the Creek would buffer the Creek from erosion and other environmental impacts much more substantially than the existing situation, where agricultural activities approach as close or closer to portions of the Creek. As such, it is anticipated that no water features will be adversely affected by the Fahrens Creek project.

Impacts to native vegetation or habitat on the Fahrens Creek alternative site would be less than significant. On nearly all of the land in this area, native grass, shrub, and tree species have been replaced or significantly reduced by agricultural plant varieties and introduced weeds and little undisturbed natural habitat remains. There is a limited portion of AREA A that forms a green, tree-lined corridor that has some potential for sensitive wildlife habitat along the portion of Fahrens Creek that is located in the southeast corner of AREA A. According to the California Department of Fish and Game Natural Diversity Data Base (NDDB), March 1, 2001, no plant and/or animal species listed as threatened or endangered by the State of California or the Federal Government have been reported on site. Further, the biological resources evaluation, prepared as part of the Merced Vision 2015 General Plan Program Environmental Impact Report (EIR), does not identify the project area (AREAS A through C) as containing any seasonal or non-seasonal wetland or vernal pool areas.

The proposed project site, which is characterized by open grasslands used for cattle grazing, is located along the western edge of the alluvial terrace landscape that formed along the western base of the Sierra Nevada. This alluvial terrace landscape contains what is considered to be one of the largest contiguous vernal pool landscapes remaining in California. The proposed project site contains approximately 790 vernal pools, seeps and swales (totaling 17 acres, including 12.62 acres of vernal pools). These biological resources, which are scattered throughout the project site and are not contained in certain sections of the site, provide essential habitat for avifaunal diversity in the project area. The project site also contains 190 acres of irrigated pastures, 40 acres of canal and lagoon marshes and 23 acres of riparian shrublands associated with Fahrens Creek.

Studies conducted on sites in close geographical proximity to the proposed Yosemite Lake Estates project site indicate that approximately 14 sensitive plants and an equal number of sensitive animal species are likely to be present on the project site. Impacts associated with the proposed project would include: degradation or loss of vernal pool/swale/grassland habitat; loss of habitat for special-status plant species; loss of habitat for special-status animal species; degradation or loss of other wetland habitats; interference with movement patterns of wildlife; loss of heron/egret rookery; introduction of invasive exotic species and loss of agricultural pasture land. After mitigation on-site and off-site, these losses are all expected to be less than significant. However, due to the density of these resources on the proposed project site, losses would still be far more significant than they would be on the Fahrens Creek alternative, which does not contain these resources. For this reason, the Fahrens Creek alternative is considered to be environmentally superior to the proposed project in terms of biological resources.
9. Alternatives

9.6.4 Cultural Resources

Paleontological sites are those that show evidence of pre-human existence. Quite frequently, they are small outcroppings visible on the earth’s surface. While the surface outcroppings are important indications of paleontological resources, it is the geologic formations that are the most important. There are no known sectors within the Fahrens Creek project area known to contain sites of paleontological significance. Therefore, the Fahrens Creek project is not anticipated to cause any significant impact to these resources. This is also the case with the proposed project. Therefore, the Fahrens Creek project alternative is considered environmentally neutral to the proposed project in terms of impacts on prehistoric resources.

Very little archaeological survey work has been conducted within the City of Merced or its surrounding areas. Creeks, drainage and sloughs exist in the northern expansion area of the City, and archaeological sites in the Central Valley are commonly located adjacent to waterways. These represent potentially significant archaeological resources. The Fahrens Creek project site has been used predominately for agricultural purposes for many years. Although no evidence of historic or prehistoric sites exists, there is always a potential for the discovery of buried deposits or features of Merced’s archaeological and historical past. The Fahrens Creek project would also have an impact on the segment of the abandoned Yosemite Valley Railroad bed, which crosses the eastern portion of the project area, but this is not considered to be a significant impact on cultural resources.

In 1985, a survey of historic buildings was undertaken in the City. The survey focused on pre-1941 districts, buildings, structures, and objects of historical, architectural, and cultural significance. The survey area included a roughly four square-mile area of the central portion of the City. The National Register of Historic Places, the California Historical Landmarks List and the California Inventory of Historic Resources identify several sites within the City of Merced. These sites are listed on the Merced Historical Site Survey and maintained by the Merced Historical Society. There are no listed historical sites on the Fahrens Creek project site.

The proposed project would impact 12 potentially significant cultural features: a small artifact scatter predating 1925 (YL-1); a bridge and spillways near the Main Canal terminus at Yosemite Lake (YL-2); a side hill ditch (YL-3); rock-and-concrete features, a water impoundment and an artifact scatter, all of unknown function (YL-4); the Crocker-Huffman Canal, a major irrigation development, ca 1888 (YL-5); two lateral irrigation ditches, ca. 1890, Lateral 103 (YL-6) and Lateral 101 (YL-7); a water impoundment and the Upper Pond (YL-8); a water impoundment at the Lower Pond (YL-9); a concrete irrigation field ditch of unknown age (YL-10); and two pre-1913 lateral irrigation ditches, Lateral 115 (YL-11) and Lateral 117 (YL-12).

One of these resources, the Crocker-Huffman Canal, is eligible for listing on the National Register of Historic Places and is automatically listed on the California Register of Historical Resources. The remaining 11 resources have not been evaluated, and no determination has been made as to whether these are historical resources pursuant to Public Resources Code 15064.5. Further research would be needed to determine the significance of impacts to the historical resources on the proposed project site. For this reason, the Fahrens Creek Project is considered
9. Alternatives

environmentally superior to the proposed project in terms of potential impacts to cultural resources.

9.6.5 Hydrology and Water Quality

On both the Fahrens Creek alternative and the proposed project, the absorption capability of the acres proposed for development will be diminished as the properties are modified from their current, generally agricultural, states to accommodate urban-type land uses. In addition to anticipated changes in absorption potential, the additional paving of roads and parking areas, together with new building structures, will increase the amount of surface water runoff on both projects. Both projects will also result in changes in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations. Finally, increased siltation and sedimentation could result from erosion and storm runoff during the construction phases of both projects, and an increase in roadway contaminants and subsequent degradation of water quality would result in both cases.

However, the Fahrens Creek project alternative proposes the construction of an estimated total 920 dwelling units. The proposed project proposes the construction of 1,262 dwelling units. Population increases and associated traffic-related water contamination would obviously be significantly greater under the proposed project than they would be under the Fahrens Creek project. It is reasonable to conclude; therefore, that hydrology and water quality impacts associated with increased human activities would be greater for the proposed project than they would be under the Fahrens Creek project alternative.

The proposed project is larger in terms of acreage proposed for development and will create more impermeable surfaces than the Fahrens Creek alternative. It will also result in more traffic and other human activity-related water pollutants. However, under the Fahrens Creek alternative surface water and urban runoff will be deposited in Fahrens Creek. Storm drainage facilities will collect surface run-off and flow into the Creek from these basins, which will be metered to avoid major changes in the amount of storm water runoff and water flow. While all storm water improvements will be required to comply with the Merced County Critical Area Flooding and Drainage Plan, at the time this document was written, there are no plans for runoff water entering the creek from the detention basins to be treated to remove contaminants.

Under the proposed project, NPDES permits would be obtained prior to site occupancy. These permits would include site-specific controls that would ensure that any water leaving the site does so in a manner consistent with applicable California water quality requirements. As a result, design features to drain surface waters to appropriate facilities, such as detention ponds, retention ponds, bio-filtration channels for water quality treatment, oil water separators, wet ponds within the detention facilities, erosion control features during construction and other best management practices, would be incorporated into the design of the proposed project. These facilities will control the runoff rate and improve the quality of storm water discharged to the existing natural drainage conveyance features. The retention pond design will result in seepage of runoff water into the ground within the area located east of the MID canal. Therefore, the Fahrens Creek project is considered to be environmentally inferior to the proposed project in terms of surface drainage and water quality impacts.
Almost the entire City of Merced is currently designated as lying within the 100-year floodplain as defined by the Federal Emergency Management Agency’s (FEMA) Flood Insurance Rate Map (FIRM), and a portion of the Fahrens Creek project is located within a 100-year flood plain. Moreover, development of the Fahrens Creek project as proposed would include elimination of the existing elevated railway roadbed, which appears to serve as a flood barrier during 100-year or greater floods. Removal of the raised roadbed may allow floodwaters to flow westward onto lands that have historically been protected by the roadbed during major storm events. Therefore, the potential for flooding is greater on the Fahrens Creek project site than it would be on the proposed project site, which does not lie not within the 100-year flood plain as defined by the FEMA Flood Insurance Rate Map. Eventual urban development on this project site would not expose human occupants to flood hazards. Therefore, the Fahrens Creek alternative is considered to be environmentally inferior to the proposed project in terms of flood hazards.

In sum, the Fahrens Creek project alternative is considered environmentally inferior to the proposed project in terms of hydrology and water quality.

9.6.6 Land Use and Relevant Planning

Non-prime agricultural soils cover nearly all of the land on the Fahrens Creek project alternative site. The only ‘prime’ area on the site is an estimated 30–35 acres at the southeast corner of the Project, on both sides of Fahrens Creek in the vicinity of the Yosemite/R Street intersection. According to the 1996 Merced County Important Farmlands Map, Areas A and C of the Fahrens Creek project are classified as “Grazing Land.” The southern portion of Area B is also shown as “Grazing Land,” while the northern portion as “Farmland of Local Importance.” Therefore, the Fahrens Creek project would result in the conversion of Farmland of Local Importance and Prime Farmland in Merced County. While development of the Fahrens Creek project would not modify the Merced Vision 2015 General Plan land use designation for the site, it would result in a substantial alteration of the present use of the site by converting existing agricultural/pasture use to mixed commercial/residential Village development and adjacent Business Park (along the east side of Highway 59). This would result in an impact to semi-rural uses.

The Project would result in the implementation of mixed land uses already recognized by the General Plan and its EIR as being necessary to achieve urban-level growth within closely defined urban boundaries (to avoid undesirable urban sprawl into adjacent high quality prime agricultural areas); and important economic development goals to accommodate new and/or expanding commerce and industry to the City of Merced. In this regard, the Project has a beneficial impact in terms of implementing land use objectives of the City of Merced, by making service and job centers easily accessible to nearby Villages as well as to the adjacent State route (Highway 59), which is designated a future Expressway.

Land within the proposed project site located east of the Main Canal is classified as Grazing Land on the Important Farmland Map for Merced County. A portion of the area west of the Main Canal is designated as Farmland of Local Importance. However, no portion of the project area is designated as “Unique Farmland,” “Farmland of Statewide Importance” or “Prime Farmland.” Therefore, the Fahrens Creek Project is considered environmentally inferior to the proposed project in terms of significant impacts on agricultural resources.
Both projects would require annexation approval from the Local Agency Formation Commission (LAFCO). Under both projects, the City of Merced would need to rezone (i.e., prezone) the property and approve the Specific Plan, and the City would also require a General Plan Amendment. However, the Fahrens Creek Project, unlike the proposed project, is located in the primary growth area envisioned under Scenario IV (the “Northern City”). The Fahrens Creek Project site lies within the City’s Specific Urban Development Plan (SUDP) Boundary, and it is anticipated that the project would be annexed to the City of Merced. In addition, both the County and City have designated these lands as an area for future urban expansion; therefore, conversion of these lands is anticipated. Additionally, the Fahrens Creek Project conforms with the City General Plan by directing growth away from agriculturally significant lands to the east and west of the City and promoting growth north and south of the City; therefore, there are no significant land use impacts with local general plans, community plans or zoning. For this reason, the Fahrens Creek Project is considered environmentally superior to the proposed project in terms of conflict land use and planning.

### 9.6.7 Noise

The Fahrens Creek project alternative proposes the construction of an estimated total of 920 dwelling units, in addition to the development of commercial centers, in an area adjacent to the City of Merced. The proposed project proposes the construction of 1,262 dwelling units, in addition to the development of commercial centers, in an area that is currently undeveloped. Population increases would be considerably greater under the proposed project than they would be under the Fahrens Creek alternative. It is reasonable to conclude; therefore, that noise impacts associated with increased human activities and an increase in vehicle numbers and traffic congestion would be both greater and more environmentally adverse under the proposed project than they would be under the Fahrens Creek project alternative. For this reason, the Fahrens Creek alternative is considered environmentally superior to the proposed project in terms of noise.

### 9.6.8 Public Health and Safety

The Fahrens Creek project alternative proposes the construction of an estimated total of 920 dwelling units. The proposed project proposes the construction of 1,262 dwelling units. Population increases would be considerably greater under the proposed project than they would be under the Fahrens Creek alternative. It is reasonable to conclude; therefore, that exposures to any on-site pesticide residue, San Joaquin Valley fever, or to hazardous releases in the vicinity of the project sites would be greater under the proposed project than they would be under the Fahrens Park alternative. Although these potential project impacts are considered less than significant, the Fahrens Park Project alternative is still considered superior to the proposed project in terms of public health and safety.

### 9.6.9 Public Services and Utilities

The Fahrens Creek project alternative proposes the construction of 920 dwelling units on a site that adjacent to the northern environs of the existing City of Merced. The proposed project proposes the construction of 1,262 dwelling units on a 655-acre parcel to the northeast of the...
City, but not immediately adjacent to the City proper. Both projects would require water service by way of existing City water supply systems. In the case of the Fahrens Creek alternative, these systems lie adjacent to the site, located within Yosemite Avenue (16-inch service line) and “R” Street (16-inch). While additional water mains would need to be installed for both projects, either immediately or in the future, the installation of these systems would be far less costly in the case of the Fahrens Creek project due to its proximal location to the City of Merced. The closer location of infrastructure to the Fahrens Creek project would also allow for less costly provision of other public services to the Fahrens Creek site. For this reason, the Fahrens Creek project alternative is considered environmentally superior to the proposed project in terms of public service and utilities.

9.6.10 Socioeconomics

The Fahrens Park project alternative proposes the construction of 920 dwelling units. The proposed project proposes the construction of 1,262 dwelling units. Both the Fahrens Park project and the proposed project would aim to provide a desirable mix of housing and employment opportunities and place housing in close proximity to employment opportunities. However, the Fahrens Creek alternative would also aim to place housing closer to existing employment opportunities within the City of Merced. It is reasonable to conclude; therefore, that the Fahrens Creek alternative is environmentally superior to the proposed project in terms of socioeconomics.

9.6.11 Soils and Geology

The City of Merced and its immediate surroundings lie within an area of historically low seismic activity, but the area is vulnerable to shaking from a number of faults that run through the mountains to the east and west. Earthquake shockwaves are “carried” by the relatively loose, wet soils that exist between Los Banos and Merced. For this reason, Merced is more likely to experience heavy shaking from surrounding parts of the state than some of its neighbors. Areas of Merced with high water tables and loose soils are likely to experience more damage than their counterparts in other areas of the City. Neither project site is located within a designated Alquist-Priolo Special Study zone and no known faults traverse either of the sites. Therefore, neither site would be subject to fault-induced ground rupture or to any special development standards associated with the Alquist-Priolo Earthquake Fault Zoning Act requirements. However, a detailed analysis of specific characteristics and capabilities of underlying soils and an identification of potential geologic hazards has not been prepared for the proposed project.

Seismic ground shaking of moderate severity may be expected to be experienced on either project site during a large seismic event; however, mitigation measures on both sites are expected to be limited due to adherence to Uniform Building Code standards. For this reason, the Fahrens Creek project alternative is assumed to be environmentally neutral to the proposed project.

While no liquefaction hazard areas have been identified to date in the Merced area, the future potential of liquefaction is possible because unconsolidated sediments and a high water table do coincide in many areas. The presence of surface water on both project sites indicates that the
water table does not lie far below the soil surface on either site. For this reason, the Fahrens Creek alternative is considered to be environmentally neutral to the proposed project.

Due to soils characteristics on the Fahrens Creek site, seismic compaction due to ground shaking is expected to be less than significant. However, a soils study would have to be completed in order to completely characterize the nature of the soils on the proposed project site. Because the nature of the soils is unknown and because differential settlement resulting in the compaction of loose, less cohesive soils could occur in many part of Merced County, it is impossible to determine the comparative impacts of seismic compaction on these two sites at this time. For this reason, the Fahrens Creek project must be assumed to be environmentally neutral to the proposed project.

Landslides generally occur on slopes of 15% or greater. The Fahrens Creek Project site is comparatively level with no unstable slopes, and the topography of the site is considered insufficient to produce hazards other than sliding during seismic activity. The proposed project consists of gently rolling terrain with slopes from 0 to 10% over the vast majority of the property. The exception is a small area near Fahrens Creek, in the northwest portion of the site, which contains slopes of 30%. Appropriate grading and construction techniques, which would be recommended in the soils study, would reduce the potential for landslides to occur in this portion of the site; however, the Fahrens Creek Project would still be considered slightly environmentally superior to the proposed project.

Based on the available data for seismic ground-shaking, liquefaction, seismic compaction and landslides/unstable slopes, the Fahrens Creek Project is considered to be slightly environmentally superior to the proposed project.

If the Lake Yosemite Dam were to fail, the Fahrens Creek Project site may be inundated. No potential for flooding due to dam failure exists on the proposed project site. While the California Division of Safety of Dams inspects the dam regularly and has judged the dam to be safe, the Fahrens Creek Project is considered to be environmentally inferior to the proposed project in terms of dam failure induced flooding. While this potential would be reduced to less than significant with mitigation, the Fahrens Creek alternative is considered to be environmentally inferior to the proposed project in terms of flood hazards.

No significant mineral resources are known to exist within the Fahrens Creek Project boundaries, and development of the site would not result in a loss of known mineral resources. The proposed project site does not contain any state designated mineral resource zones, according to maps prepared by the State Mining and Geology Board. Development of the project site would result in the loss of a potential sand and gravel mining location; however, numerous other potential sand and gravel mining sites are available throughout the County. Therefore, the Fahrens Creek Project is considered to be environmentally neutral to the proposed project.

Development on both project sites could be impacted because of the possibility for structural distress induced by sub-grade swelling and shrinkage due to expansive soils. The implementation of required mitigation measures is anticipated to reduce these impacts to a less-than-significant
level for both the Fahrens Creek alternative and the proposed project, and the Fahrens Park Project is considered to be environmentally neutral to the proposed project in this category.

Wind and water erosion of disturbed soils could potentially result during construction activities on both sites. Also, development of both projects will result in the construction of impermeable surfaces, including building structures and roadways. This increase in impermeable surfaces will generate increased urban runoff that may result in a greater potential for soil erosion on the surrounding lands or within the City’s storm water drainage system. While implementation of General Plan policies and actions and required mitigation measures would reduce potential impacts from these outcomes to a less than significant level, the more extensive acreage planned for development under the proposed project would create greater erosion and runoff impacts. The Fahrens Creek alternative is therefore considered to be environmentally superior to the proposed project in terms of erosion and runoff.

With the exception of flood hazards, the Fahrens Park Project is considered to be marginally environmentally superior to the proposed project. In terms of flooding, Fahrens Creek project is considered to be environmentally inferior to the proposed project. Overall, the Fahrens Creek alternative is considered to be environmentally neutral to the proposed project in terms of soils and geology.

9.6.12 Traffic and Circulation

The Fahrens Creek project alternative proposes the construction of an estimated total of 920 dwelling units, in addition to the development of commercial centers, in an area adjacent to the City of Merced. The proposed project proposes the construction of 1,262 dwelling units, in addition to the development of commercial centers, in an area that is currently undeveloped. Population increases would be far greater under the proposed project than they would be under the Fahrens Creek alternative. It is reasonable to conclude; therefore, that traffic and circulation impacts associated with increasing population would be more significant under the proposed project than under the Fahrens Creek alternative. For this reason, the Fahrens Creek project alternative is considered environmentally superior to the proposed project.

9.6.13 Conclusion

The Fahrens Creek alternative would be environmentally superior to the proposed project in terms of aesthetics, air quality, biological resources, cultural resources, land use and relevant planning, noise, public health and safety, public services and utilities, socioeconomics and traffic and circulation. The Fahrens Creek alternative would be environmentally inferior to the proposed project in terms of hydrology and water quality. The Fahrens Creek alternative would be neutral to the proposed project in terms of soils and geology.

9.7 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

The following proposed project impacts were judged to be significant and unavoidable: Local air quality; Ambient noise levels along Old Lake Road and Golf Road (access roads to site);
Degradation of the existing visual character or quality of the site and its surroundings; Light and glare impacts; Increased demand for parks and recreation services.

Based on the above analysis, the No Project alternative is the least environmentally damaging alternative. However, the No Project Alternative would fail to meet any of the proposed project’s objectives.

Pursuant to Section 15126.6 of CEQA, a second alternative must be identified as the Environmentally Superior Alternative. In this case, the Limited Development Area (West of Canal Only) alternative is the environmentally superior alternative.
9. Alternatives

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10. Organizations and Individuals Contacted

Organizations and Individuals Contacted:

**Merced Union High School District**
  Michael Belluomini

**Pacific Gas and Electric**
  Paul Bhasin

**Merced County Sheriff’s Department**
  Bill Blake

**County of Merced Planning Department**
  Bob King

**County of Merced Solid Waste Division**
  Jerry Lawrie

**County of Merced Department of Parks and Recreation**
  George Rodrigues

**Merced County Fire Department**
  Tom Wells

**City of Merced Planning Department**
  Jack Lesch
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11. *Report Preparation Personnel*

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