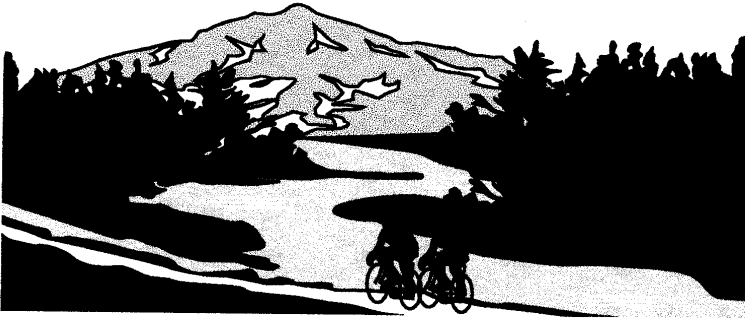


# YUBA-SUTTER BIKEWAY MASTER PLAN

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**Final Report**



**Prepared for**  
FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

**December, 1995**

**fp** **Fehr & Peers Associates, Inc.**  
Transportation Consultants

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## EXECUTIVE SUMMARY

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The Yuba-Sutter Bikeway Master Plan (YSBMP) was prepared by Fehr & Peers Associates, Inc. under contract to the Feather River Air Quality Management District. It provides a blueprint for developing a bikeway system that includes both on-street and off-street facilities throughout the two Counties.

This draft report represents a compilation of previous work products developed for the plan as well as new information about implementation and advancing specific bikeway facilities from the planning stage to construction. Previous work products included Working Papers #1 and #2. Working Paper #1 documents the existing bikeway and bicycling conditions in Yuba and Sutter Counties while Working Paper #2 provides the analytical background and technical support for the proposed system of bikeway facilities.

### Scope and Organization

The Draft Report includes the following components:

- Bikeway Goals and Policies;
- Existing Conditions;
- Analysis of Demand;
- Proposed System;
- Cost and Funding Analysis; and
- Implementation.

The information presented in this document for each of these components is the result of the data collection efforts of various government agencies throughout the two counties and its consultant. In addition, all eleven requirements of the California Bicycle Transportation Act are addressed in this document.

### Relationship to Existing Plans

The YSBMP is intended to supplement existing transportation plans by providing a framework for the implementation of bikeway facilities in both counties and the four incorporated cities. A major component of the plan is the identification of specific bikeway routes and design standards for the construction of these routes. The selected routes and design standards are consistent with existing transportation plans (such as each jurisdiction's circulation element) and roadway design standards.

Since this is a regional, two-county bikeway master plan, it focuses on providing bikeway connections between the incorporated cities, adjacent counties and major regional destinations. The plan also identifies bikeway facilities that are consistent with the planned facilities in each city and in neighboring jurisdictions.

## **Recommended Goals, Objectives and Policies**

This section presents a series of recommended goals, objectives, and policies that will help guide future development of the regional bikeway system, and serve as a resource for local jurisdictions in forming or updating their own policies and standards. These goals, objectives, and policies have been developed to reflect the unique needs of Yuba and Sutter Counties, and the latest efforts from communities around the U.S. In many cases, existing goal or policy statements from local jurisdictions were incorporated into the recommendations.

## **Existing Conditions**

The existing bikeway system as defined by standards of the State of California Department of Transportation (Caltrans) in Yuba and Sutter Counties is limited to less than 20 miles of on-street facilities. This total represents less than two percent of the total centerline miles of roadway in the two counties. Nevertheless, many roadways in both Counties can accommodate on-street bikeway facilities with minor widening. Further, the levee system, which protects urbanized areas from flooding, offers a unique opportunity for developing Class I bike paths.

## **Analysis of Demand**

Population and employment in Yuba and Sutter Counties is expected to more than double over the next 20 years. By 2010, the combined population of these two counties will exceed 300,000 and employment will exceed 100,000 according to projections by the Sacramento Area Council of Governments (SACOG). As the area develops, implementation of a bikeway system that is safe, comprehensive, and convenient will be important in encouraging residents to use a bicycle over other modes of travel.

This study contains projections that show bicycle use could increase from its current level of about one percent to four percent of total trips if the proposed system is implemented. A mode split of four percent represents over 15,000 daily bicycle trips. The difference in daily bicycle trips with and without the BMP represents about 28,700 miles of travel assuming an average trip length of 2.5 miles. Many of these trips would be replacing automobile trips, which could save over 1,000 gallons of gasoline per day.

## **The Proposed System**

Figure 9 displays the Yuba-Sutter Proposed Bikeway System, which delineates existing and proposed bikeway routes. The proposed system includes a total of about 395 miles (635 km) of bikeway facilities. The system not only connects each city in Yuba and Sutter Counties, but it provides regional connections to six other counties including Butte County, Colusa County, Nevada County, Placer County, Sacramento County, and Yolo County. Planning of the system concentrated on connectivity with local and regional bikeway plans to ensure that bikeway facilities were consistent through each city and with regional facilities. As part of the proposed system, connections to multi-modal facilities are also identified along with support facilities and programs.

The majority of the system consists of Class II and III facilities, although almost 17 new miles of Class I bike paths are proposed. In general, Class II bike lanes were designated in urban areas on collectors and arterials, especially where the average daily traffic volumes exceed 5,000. Outside the urban areas, Class III bike routes were the primary designation given that most of these roads have low traffic volumes.

### **Cost and Funding Analysis**

Table 13 shows a total cost for constructing the proposed system of \$2.5 million. It should be noted that this total does not include about \$3.1 million in costs for Class I bike paths that, according to local officials, are already funded by Proposition 116. Unfunded Class I bike paths are only proposed in Marysville for an estimated cost of \$280,000. Therefore, on-street facilities, particularly Class II bike lanes, represent the largest share of the total cost at almost \$2.3 million.

Although future local expenditures and outside funding availability for bikeway facilities are difficult to forecast, it is useful to calculate the total annual expenditure that would be required over 20 years to complete implementation of the proposed system. Dividing the \$2.5 million equally over 20 years equates to \$125,000 annually in constant 1995 dollars.

In order to obtain this level of investment in the bikeway system, the following options should be considered by local jurisdictions for fulfilling the funding commitment necessary to complete the proposed system:

- Prepare joint applications with other local and regional agencies for competitive funding programs at the state and federal levels;
- Use existing funding sources as matching funds for state and federal funding, especially through the Intermodal Surface Transportation Efficiency Act (ISTEA);
- Include bikeway and trail projects in local impact fee programs; and
- Include proposed bikeways and trails as part of roadway projects involving widening, overlays, or other improvements.

Local jurisdictions should also take advantage of private contributions, if appropriate, in developing the proposed system. This could include a variety of resources such as volunteer labor during construction, which is becoming popular for recreational facilities, or monetary donations towards specific improvements.

### **Implementation**

The implementation section contains recommendations for constructing and operating the proposed system. Specifically, it includes a discussion of phasing and priorities for implementing specific routes and also contains discussions about design standards, bikeway system operations, marketing a bikeway system, and the environmental review process that should be followed as the proposed system is developed.

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## **1.0 INTRODUCTION**

The Yuba-Sutter Bikeway Master Plan (YSBMP) was prepared by Fehr & Peers Associates, Inc. under contract to the Feather River Air Quality Management District. It provides a blueprint for developing a bikeway system that includes both on-street and off-street facilities throughout the two Counties.

This draft report represents a compilation of previous work products developed for the plan as well as new information about implementation and advancing specific bikeway facilities from the planning stage to construction. Previous work products included Working Papers #1 and #2. Working Paper #1 documents the existing bikeway and bicycling conditions in Yuba and Sutter Counties while Working Paper #2 provides the analytical background and technical support for the proposed system of bikeway facilities.

### **1.1 Scope and Organization**

The Draft Report includes the following components:

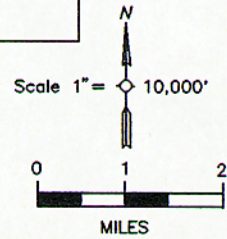
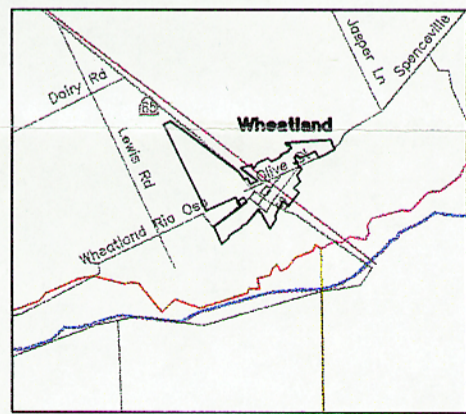
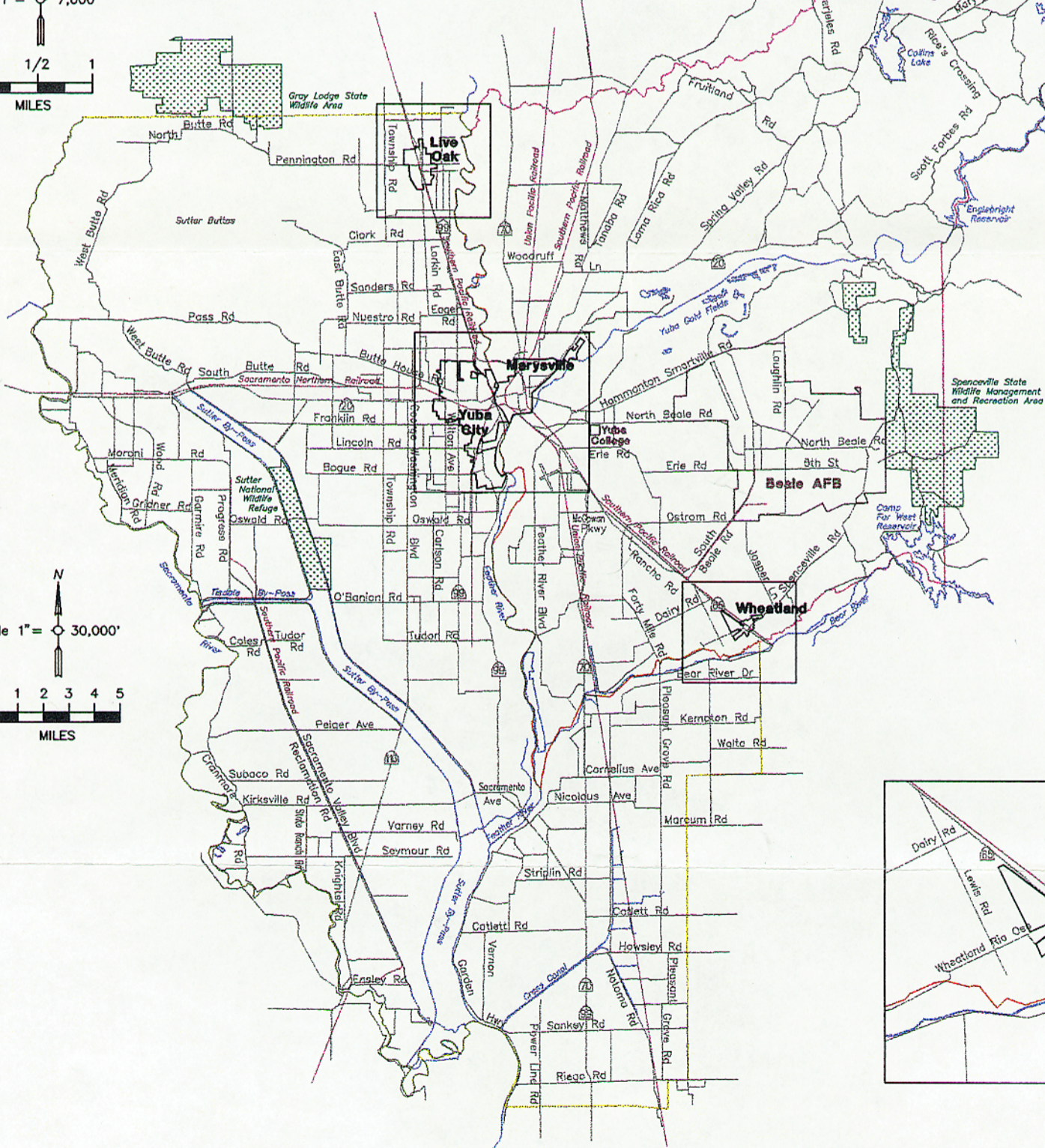
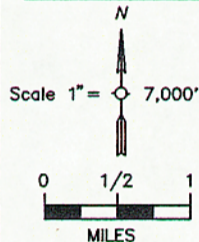
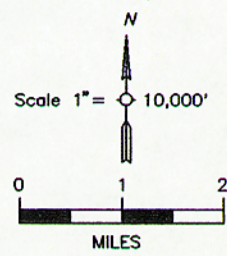
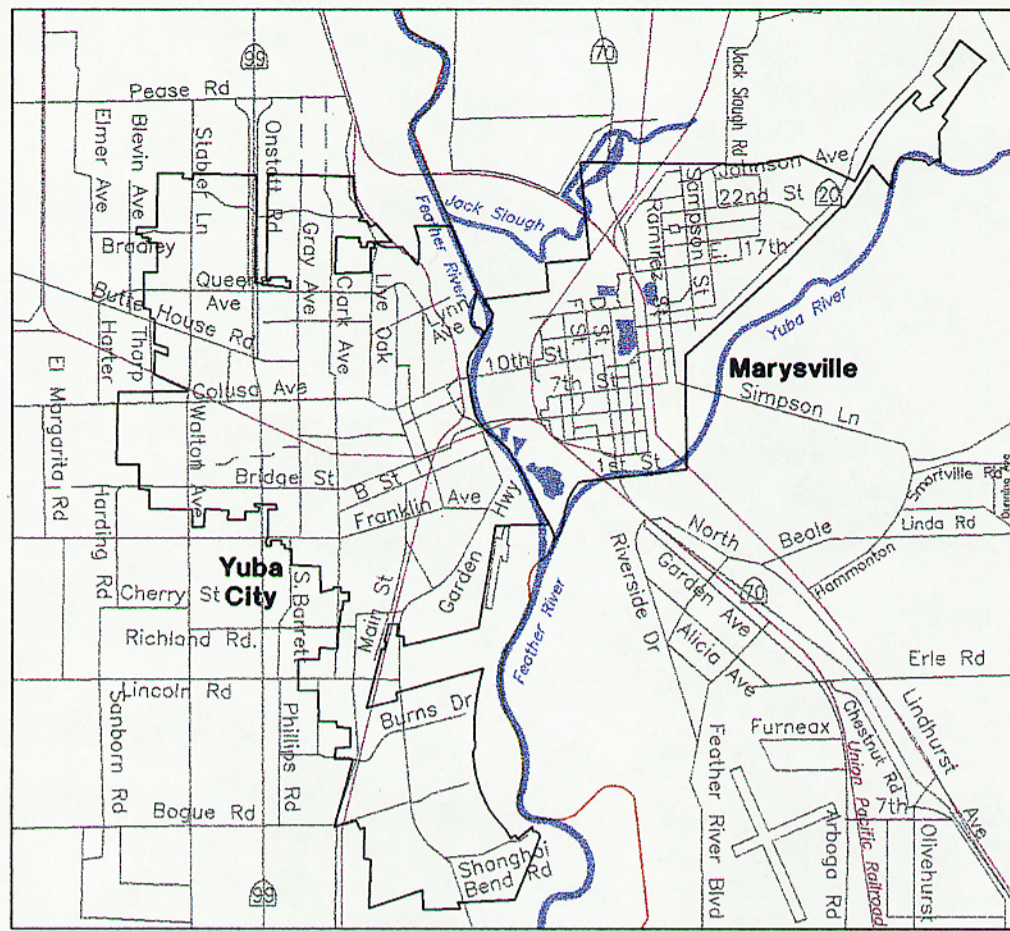
- Bikeway Goals and Policies;
- Existing Conditions;
- Analysis of Demand;
- Proposed System;
- Cost and Funding Analysis; and
- Implementation.

The information presented in this document for each of these components is the result of the data collection efforts of various government agencies throughout the two counties and its consultant. In addition, all eleven requirements of the California Bicycle Transportation Act are addressed in this document.

### **1.2 Study Area**

Figure 1 displays the study area for the YSBMP. The study area includes both counties and the four incorporated cities of Yuba City, Marysville, Wheatland, and Live Oak. All four cities are located within the relatively flat Sacramento Valley surrounded by extensive agricultural land uses. The eastern edge of Yuba County, however, reaches into the foothills of the Sierra Nevada. Rolling grassland foothills and scattered oak trees are predominant features in this area of the County.

Although bicycling within the study area is not seriously constrained by topographical constraints, the Sacramento, Yuba, Feather and Bear Rivers are major barriers to travel in the two Counties. There are a limited number of river crossings and existing bridges do not provide adequate space for vehicles and bicycles to share the roadway. Nevertheless, the levees that protect urban areas from flooding along these rivers are also potential routes for off-street bike paths. In summary, the study area contains a balanced combination of constraints and opportunities that will affect the development of the bikeway master plan.



**YUBA-SUTTER BIKEWAY MASTER PLAN**

**STUDY AREA**

**FIGURE 1**

### **1.3 Relationship to Existing Plans**

The YSBMP is intended to supplement existing transportation plans by providing a framework for the implementation of bikeway facilities in both counties and the four incorporated cities. A major component of the plan is the identification of specific bikeway routes and design standards for the construction of these routes. The selected routes and design standards are consistent with existing transportation plans (such as each jurisdiction's circulation element) and roadway design standards.

Since this is a regional, two-county bikeway master plan, it focuses on providing bikeway connections between the incorporated cities, adjacent counties and major regional destinations. The plan also identifies bikeway facilities that are consistent with the planned facilities in each city and in neighboring jurisdictions.

### **1.4 Definitions**

For this study, it is important to understand the definition or use of the term "bikeway". According to Caltrans, "bikeway" means all facilities that provide primarily for bicycle travel. Therefore, bikeway facilities could include bike paths, bike lanes, bike routes and even support facilities such as bicycle parking racks and lockers.

## 2.0 BIKEWAY GOALS AND POLICIES

Existing bikeway goals, objectives, and policies for Yuba and Sutter Counties are contained in the following documents:

- *Sutter County General Plan*, December 6, 1994.
- *Yuba City Urban Area General Plan 1985-2005*, July 1989.
- *Yuba City Bikeway Report*, 1974.
- *City of Marysville General Plan Circulation and Scenic Highways Element*, 1984.
- *City of Marysville Bikeway Master Plan*, 1975.
- *City of Wheatland General Plan*, 1986
- *General Plan of the City of Live Oak, California*, April, 1994.

The Yuba County General Plan was also reviewed and was found to contain no applicable bikeway policy statements.

### 2.1 Existing Goals, Objectives, and Policies

From the existing policy documents described above a number of goals, objectives, and policies were identified that relate to bikeways. These are summarized below.

#### Sutter County General Plan

The goal of this plan for non-motorized transportation is to provide a comprehensive system of facilities. The main supporting policy states that the County shall work towards developing a bikeway system that will serve both commuter and recreational cyclists. This policy is accompanied by support for reviewing and revising the County's Bikeway Master Plan and identifying funding for the planning, development, and implementation of bikeways.

#### Yuba City Urban Area General Plan

According to this plan, bikeways should be provided to facilitate use of bicycles as alternative modes of transportation. This stated goal is supported by the objective to maintain and expand the bikeway system and the policy to develop and maintain bikeways in the Urban Area. Although, this set of policy statements is relatively simple it does provide support for the development of bikeways.

## Yuba City Bikeway Plan

This bikeway plan contains a number of bikeway goals, which are repeated here for the convenience of the reader.

<p><i>Goal 1 Safety</i></p> <ul style="list-style-type: none"><li>A. Develop visually prominent bikeway system and clearly defined boundaries between bicycle and motorist rights-of-way.</li><li>B. Provide restrictions to on-street parking only after a careful investigation by the public, city staff and city council.</li><li>C. Develop a strict and consistent program of enforcement and education of bicycle safety laws.</li><li>D. Develop a maintenance program to insure bikeway demarcations are clearly visible and pavement surfaces are free of hazards such as loose gravel, glass, dirt or potholes.</li><li>E. Explore means of reducing the bicycle theft problem.</li><li>F. Provide for evaluation of bikeway system and determine their effect on safety.</li></ul> <p><i>Goal 2 Transportation</i></p> <ul style="list-style-type: none"><li>A. Provide bikeways linking major residential areas with schools, public facilities, commercial areas, and other bicyclist destinations.</li><li>B. Provide bikeways that are direct, convenient and easy to use.</li><li>C. Develop transitional elements such as levee on-ramps, bridge access and underpasses to encourage area wide bicycle use.</li><li>D. Provide supportive facilities and services such as bicycle rest stops with public rooms or drinking fountains, and parking racks at community activity centers.</li></ul> <p><i>Goal 3 Recreation</i></p> <ul style="list-style-type: none"><li>A. Provide bikeways which have scenic quality and which reveal the city's most significant cultural or historical areas.</li><li>B. Provide access to community parks and to other public recreational facilities.</li><li>C. Provide urban bikeways which will allow convenient access to recreational resources outside city limits.</li></ul>
---

Although the *Yuba City Bikeway Plan* refers to the above statements as goals, they are more appropriately referred to as policies because they identify an action that the City should implement. Goals should be more broad and generally describe what a jurisdiction is striving to achieve through the implementation of its policies. Interestingly, many of the stated goals above are still applicable as policy statements today, even though the plan was developed in the mid-1970s.

City of Marysville General Plan Circulation and Scenic Highways Element

Only one policy related to bikeways was identified in the General Plan for Marysville. Policy 8 of the *Circulation and Scenic Highways Element* states that the City should provide a bikeway system as a safe and ecologically beneficial transportation mode alternative. This element also stated that bikeway improvements identified in the 1975 *City of Marysville Bikeway Master Plan* had not been constructed due to funding shortages. Nevertheless, Policy 8 demonstrates support for developing a bikeway system.

City of Marysville Bikeway Master Plan

According to the City of Marysville Planning Department, there were no stated goals, objectives, or policies from this plan that would be applicable for this bikeway master plan.

City of Wheatland General Plan

The *City of Wheatland General Plan Transportation and Circulation Element* contains a general goal to provide a circulation system that utilizes a broad range of transportation modes. The associated policy states that alternate modes of transportation, including bus, bicycle and walking, should be encouraged where feasible to reduce demands upon the street system.

General Plan of the City of Live Oak, California

The first circulation goal in this plan implies that the City should provide appropriate circulation systems for pedestrians, bicycles, and motor vehicles. A supporting policy and objective state that bicycle paths shall be provided and designated in accord with state standards along appropriate streets in the City. In addition, implementation programs are identified to determine the need for bicycle paths and the availability of funding.

**2.2 Recommended Goals, Objectives and Policies**

This section presents a series of recommended goals, objectives, and policies that will help guide future development of the regional bikeway system, and serve as a resource for local jurisdictions in forming or updating their own policies and standards. These goals, objectives, and policies have been developed to reflect the unique needs of Yuba and Sutter Counties, and the latest efforts from communities around the U.S. In many cases, existing goal or policy statements from above were incorporated into the recommendations.

<b>Goal 1.0</b>	Develop a comprehensive regional bikeway system as a viable alternative to the automobile for all trip purposes.
<b>Objective</b>	Improve on-street and off-street bicycling conditions through the construction and maintenance of bikeway facilities.

Policies

- 1.1 Prepare and maintain a Regional Bikeway Master Plan that identifies existing and future needs, and provides specific recommendations for facilities and programs to be phased in over the next 20 years.
- 1.2 Encourage the use of existing natural and manmade corridors such as creeks and railroad right of ways for future bike path alignments.
- 1.3 Develop a commuter bikeway system that provides direct routes between residential neighborhoods and regional employment areas, schools, and universities.
- 1.4 Develop a recreational bikeway system that uses lower volume streets, off-street bike paths, and serves regional historic and natural destinations.
- 1.5 Develop a series of incentives to encourage employees to use bicycles to reach work. Quantify the estimated future benefits of bicycling in terms of air quality, congestion, and health.
- 1.6 Develop a bikeway network that balances the need for directness with concerns for safety and user convenience. Where needed, develop a dual system which serves both the experienced and inexperienced bicyclist.
- 1.7 Emphasize Class I (bike paths) and Class II (bike lanes) over Class III (bike routes) wherever feasible.
- 1.8 Develop a network of off-road mountain bicycling facilities that offer a variety of experiences for the bicyclist while minimizing conflicts with hikers and equestrians, and environmental impacts.

<b>Goal 2.0</b>	Maximize the amount of state and federal funding for bikeway improvements that can be received by Yuba and Sutter Counties.
<b>Objective</b>	Obtain sufficient funding to construct the regional bikeway system within the next 20 years.

Policies

- 2.1 Identify current regional, state, and federal funding programs, along with specific funding requirements and deadlines.
- 2.2 Encourage multi-jurisdictional funding applications for regional bikeways.

- 2.3 Develop a prioritized list of regional improvements along with detailed cost estimates, and identify appropriate funding sources for each proposal.
- 2.4 Encourage the formation of reliable local, regional, and state funding sources which can be used to leverage federal funds.
- 2.5 Encourage the local jurisdictions to include bikeway improvements in their Capital Improvement Plans.
- 2.6 Seek funding for Class I (bike paths) and Class II (bike lanes) over Class III (Bike routes)
- 2.7 Funding applications should state that bikeway facilities will not revert to non-bicycle uses within the next ten (10) years.

<b>Goal 3.0</b>	Maximize Multi-Modal Connections to the Bikeway System.
<b>Objective</b>	Increase bicycle use by making transfers to other modes convenient, safe, and efficient.

Policies

- 3.1 Ensure that the regional bikeway system serves all major multi-modal transfer locations in Yuba and Sutter Counties.
- 3.2 Work with local and regional transit agencies to install bike lockers at major terminals, and bike racks on all buses.

<b>Goal 4.0</b>	Improve bicycle safety conditions in Yuba and Sutter Counties.
<b>Objective</b>	Reduce bicycle accidents through preventive measures including bicycle education programs and the provision of properly designed and maintained bikeway facilities.

Policies

- 4.1 Develop a visually prominent bikeway system that clearly defines the boundaries between bicycle and motorist rights-of-way.



- 4.2 Provide restrictions to on-street parking only after a careful investigation by the public, planning and public works department staff, and elected officials.
- 4.3 Monitor bicycle-related accident levels annually, and target a 10 percent reduction on a per capita basis over the next twenty (20) years.
- 4.4 Develop a comprehensive bicycle education program that is taught to all school children in Yuba and Sutter Counties.
- 4.5 Develop a system for reporting and responding to maintenance problems on the existing bikeway system.
- 4.6 Incorporate bicycle safety curriculum into existing motorist education and training.
- 4.7 Consider including lighting and emergency call boxes along heavily-used Class I bike paths.

<b>Goal 5.0</b>	Ensure adequate bikeway facilities are available when needed.
<b>Objective</b>	Close existing gaps in the bikeway system prior to completing new extensions.

Policies

- 5.1 Identify the top 10-15 bikeway segments to be completed within five to ten years (Phase 1) based on both objective and subjective criteria that considers safety, use, funding, and public support.
- 5.2 Develop detailed implementation information on each recommended segment, including length, classification, adjacent traffic volumes and speeds, activity centers served, cost, and overall feasibility.
- 5.3 Develop prototype cross sections and plans for the design of bike paths and lanes that meet state (Caltrans) standards. Develop prototype street cross sections that show how bike lanes may be placed on streets.
- 5.4 Develop education and maintenance programs which may be adopted by local jurisdictions.

<b>Goal 6.0</b>	Maximize public participation in the planning and implementation of bikeway projects.
<b>Objective</b>	Provide opportunities for public input for all bikeway projects prior to implementation

Policies

- 6.1 Create an on-going Bicycle Advisory Committee (BAC) made up of a balance between citizens (preferably bicyclists) and department staff from planning, parks and recreation, public works, and others. The BAC should be involved in monitoring implementation, funding, and other matters.
- 6.2 Identify a Bicycle Coordinator in each jurisdiction who is a staff member whose responsibility is to (a) provide support to the BAC, (b) act as a liaison to decision makers and the general public, (c) complete funding applications, and (d) provide inter-departmental coordination.

<b>Goal 7.0</b>	Maximize public use of the bikeway system.
<b>Objective</b>	Develop a coordinated marketing strategy to encourage bicycling in Yuba and Sutter Counties.

Policies

- 7.1 Develop and update a bikeway map for public distribution that shows existing bicycle facilities.
- 7.2 Sponsor annual bicycle events such as Bike to Work Week and adult safety courses in conjunction with other congestion management efforts.

The recommended goals, objectives, and policies above have been specifically developed for Yuba and Sutter Counties. To a large degree similar concepts have been applied successfully in other jurisdictions.

### 3.0 EXISTING CONDITIONS

This chapter presents the results of the existing conditions evaluation. To complete this evaluation, published data was reviewed and extensive field work was conducted. The field work consisted of a combination of driving, bicycling, and walking existing roadways and trails to identify the extent of existing bikeways and potential routes that could be used for future bikeways. Important features that could affect the location and extent of potential bikeways were also identified. In general, these features included physical constraints, opportunities to connect with other travel modes, and opportunities to connect with regional bikeway facilities.

#### 3.1 Methodology

The main purpose of this study is to develop a complete bikeway system for Yuba County and Sutter County residents that provides connections between major origins and destinations in the two counties and in surrounding counties. The first step in the process was to identify the location of existing bikeways and the potential routes for future bikeways.

The Yuba-Sutter Bikeway Master Plan Technical Advisory Committee identified existing bikeways and then selected potential bikeway routes to be surveyed. Once the routes were selected, a rating system was developed to identify the location and extent of existing bike lanes, existing multi-use paths, and roadways or corridors that could be used as bikeways. A summary of the rating system is shown below:

- Existing Class I Bike Path  
Off-street facilities that meet the Class I standards as shown in Figure 10.
- Existing Class II Bike Lane  
On-street facilities that meet the Class II standards as shown in Figure 10.
- Existing Class III Bike Route  
On-street facilities that meet the Class III standards as shown in Figure 10.
- Type A  
Roadways with sufficient width to accommodate a Class II bike lane but that require striping and signing.
- Type B  
Roadways that require minor widening to accommodate a Class II bike lane.

- Type C

Roadways that require major widening and possibly drainage work to accommodate a Class II bike lane.

- Type D

Corridors that could accommodate Class I paths.

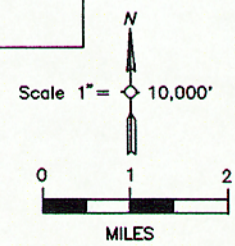
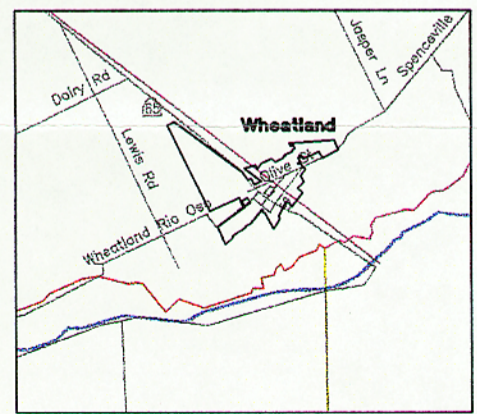
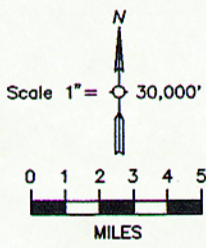
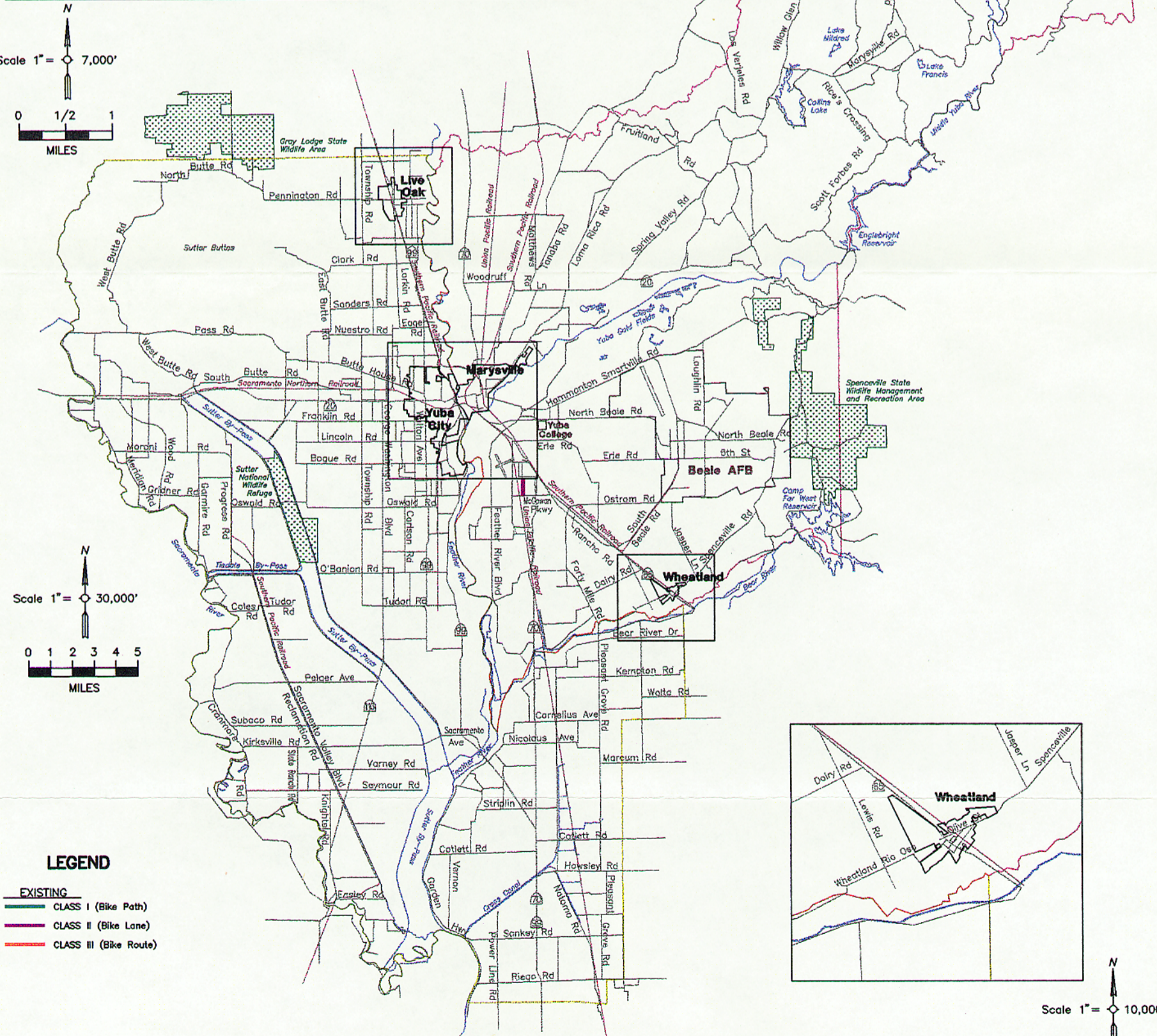
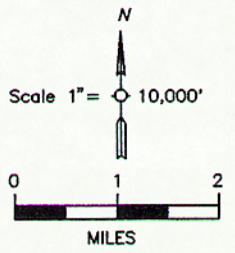
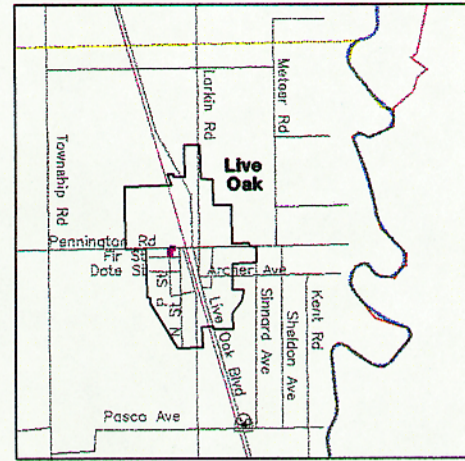
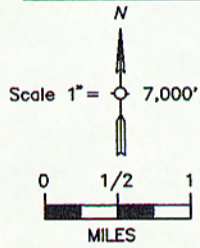
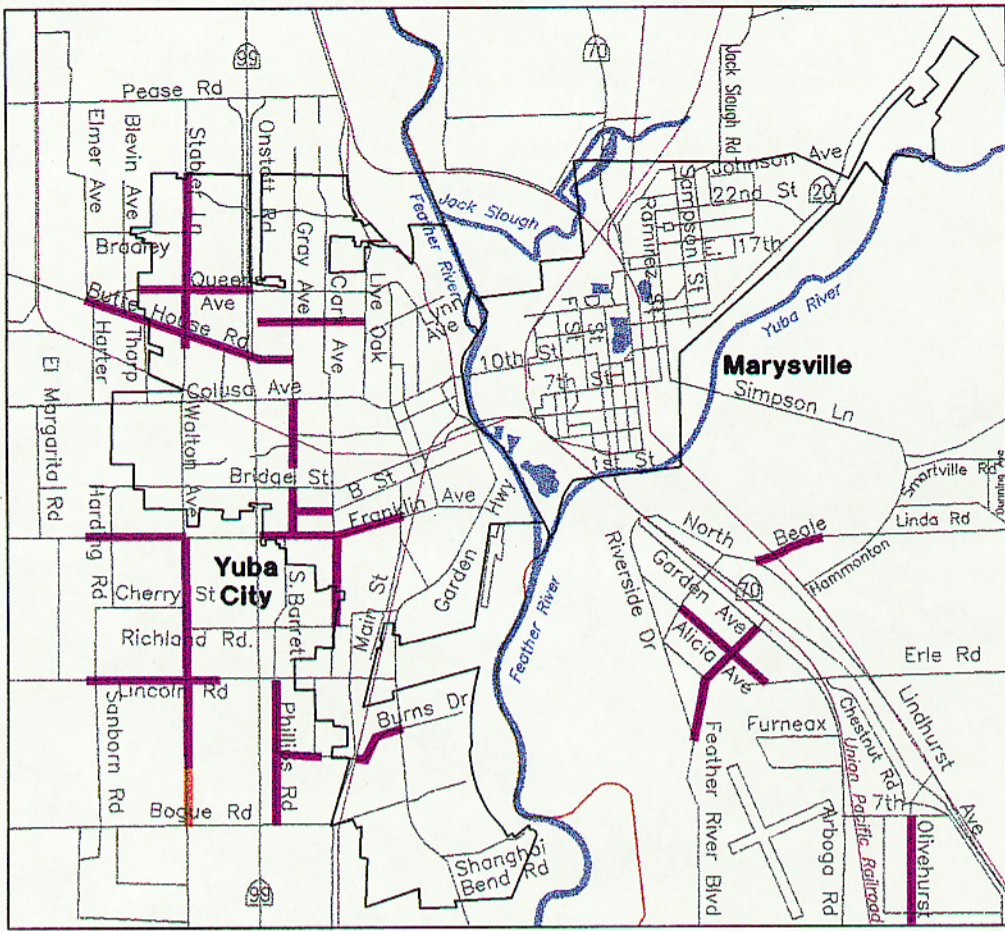
In addition to rating the selected roadways and off-street facilities, the field survey personnel gathered data regarding roadway surface condition, striping, visibility, travel speeds, and drainage hazards. This information will be used later in the study to develop the new bikeway system.

### 3.2 Existing Bikeways

Although Yuba City and Marysville have some existing bike lanes and multi-use paths, the unincorporated parts of the two Counties do not have identified bikeways connecting the cities. Further, bicyclists are forced to share the narrow 5th and 10th Street bridges between Yuba City and Marysville with vehicles. This is graphically shown on Figure 2, which displays the existing bikeways inventory.

Table 1 summarizes the total length of the existing bikeway system for each incorporated city and the unincorporated portions of both counties.

Jurisdiction	Class I		Class II		Class III	
	Miles	Kilometers	Miles	Kilometers	Miles	Kilometers
Sutter County (unincorporated)	0.0	0.0	8.3	13.4	0.4	0.7
Yuba County (unincorporated)	0.0	0.0	3.8	6.1	0.0	0.0
Yuba City	0.0	0.0	6.7	10.8	0.0	0.0
Marysville	0.0	0.0	0.0	0.0	0.0	0.0
Live Oak	0.0	0.0	0.1	0.2	0.0	0.0
Wheatland	0.0	0.0	0.0	0.0	0.0	0.0
<b>System Total</b>	<b>0.0</b>	<b>0.0</b>	<b>18.9</b>	<b>30.5</b>	<b>0.4</b>	<b>0.7</b>



**LEGEND**

- EXISTING**
- CLASS I (Bike Path)
  - CLASS II (Bike Lane)
  - CLASS III (Bike Route)

**YUBA-SUTTER BIKEWAY MASTER PLAN  
EXISTING BIKEWAY SYSTEM**

As illustrated in Figure 2 and shown in Table 1, there are no existing Class I bike paths and only limited on-street bikeways throughout the two-county area. Class II on-street bike lanes are the most common type of facility with most of the existing system concentrated in the Yuba City area and in portions of unincorporated Sutter County. Table 2 describes the extent of each individual existing bikeway.

Segment	Jurisdiction	Class	From	To	Length (feet)
P Street	Live Oak	II	Pennington Road	Fir Street	528
Phillips Road	Sutter Co.	II	Lincoln Road	Bogue Road	5,244
Franklin Road	Sutter Co.	II	Township Road	Walton Avenue	12,875
Teesdale Road	Sutter Co.	II	Phillips Road	1,700' e/o Phillips Rd.	1,696
Butte House Rd.	Sutter Co.	II	2,000' e/o Township Rd.	Tharp Road	10,024
Walton Avenue	Sutter Co.	II	Franklin Road	2,150' n/o Bogue Road	8,394
Lincoln Road	Sutter Co.	II	Sanborn Road	1,200' e/o Walton Ave.	4,815
Butte House Rd.	Yuba City	II	Tharp Road	Gray Avenue	5,580
Stabler Lane	Yuba City	II	City Limits	500' s/o Butte House Rd.	6,334
Gray Avenue	Yuba City	II	Colusa Avenue	725' n/o Bridge St.	2,504
Gray Avenue	Yuba City	II	Bridge Street	Franklin Road	1,679
Washington Ave.	Yuba City	II	Onstatt Road	Live Oak Road	3,866
Queens Avenue	Yuba City	II	City Limits	Onstatt Road	4,069
Olivehurst Ave.	Yuba Co.	II	7th Avenue	McGowan Pkwy.	8,311
Feather River Blvd.	Yuba Co.	II	Riverside Drive	Garden Avenue	4,936
Teesdale Road	Yuba City	II	Railroad Avenue	Garden Highway	2,244
North Beale Rd.	Yuba Co.	II	Lindhurst Avenue	2,600' e/o Lindhurst Ave.	2,592
Alicia Avenue	Yuba Co.	II	Feather River Blvd.	Pasado Road	4,156
Clark Avenue	Yuba City	II	Franklin Road	Richland Road	3,284
B Street	Yuba City	II	Gray Avenue	Clark Avenue	1,485
Franklin Road	Yuba City	II	State Route 99	Percy Avenue	5,259
<b>Total Feet of Class II</b>					<b>99,875</b>
Walton Avenue	Sutter Co.	III	Bogue Road	2,150' n/o Bogue Road	2,151

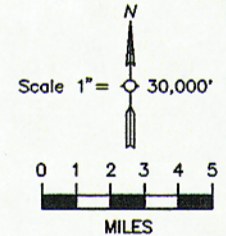
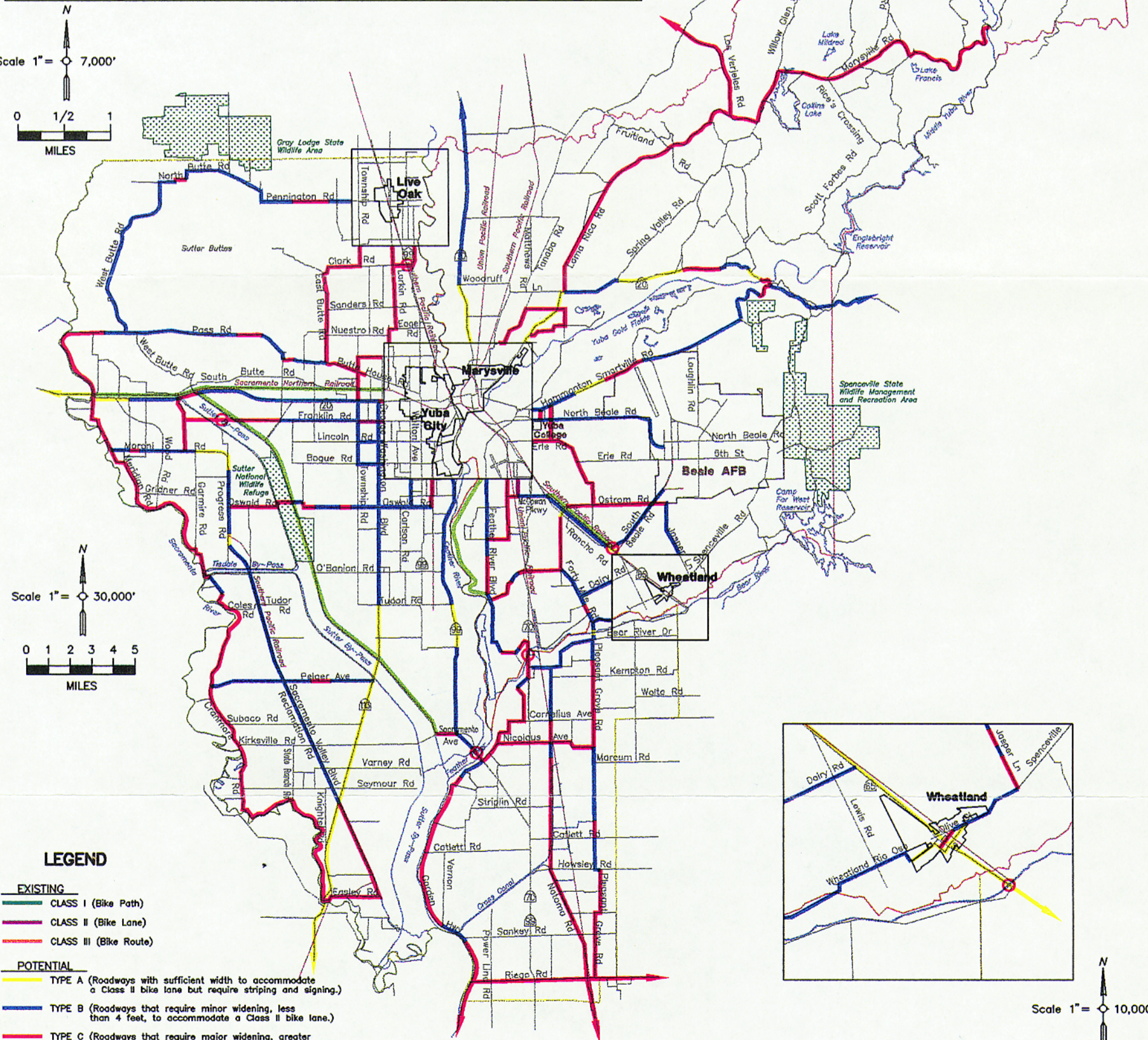
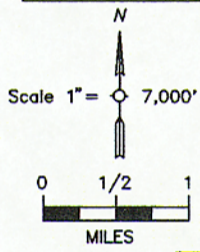
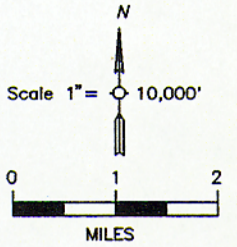
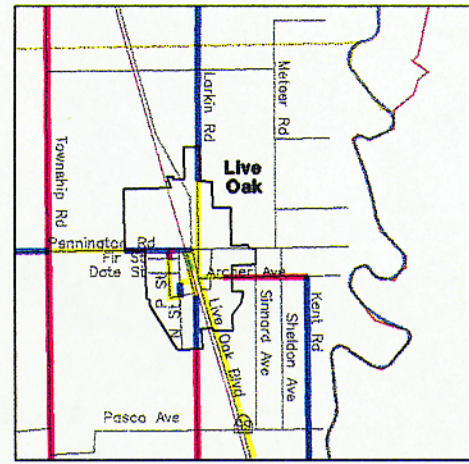
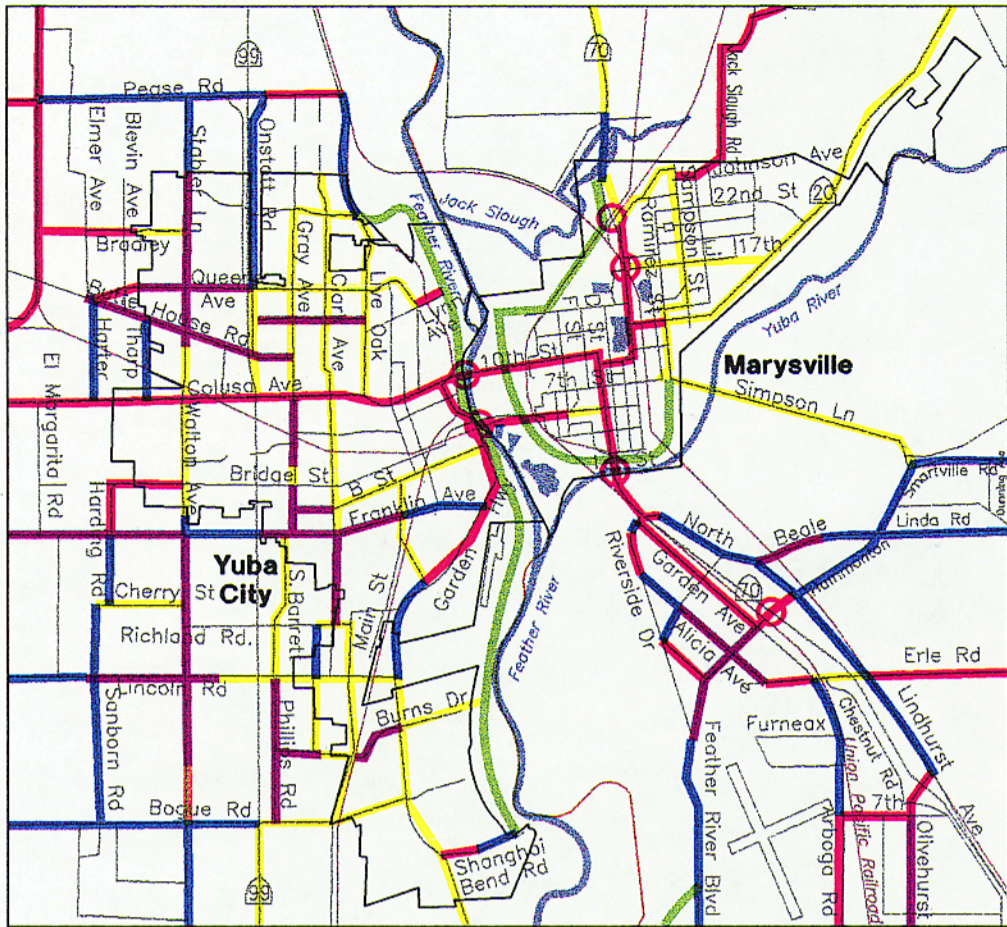
Most of the Class II bike lanes identified in Table 2 are located in Yuba City or the unincorporated portion of Sutter County around Yuba City. In general, these existing bike lanes can be described as disconnected although in many cases only short extensions are required to provide a more continuous route. A number of various alternative routes were evaluated for providing these "gap closures" as well as improving connections throughout both counties. This evaluation is described in detail in Section 3.3.

### 3.3 Potential Bikeways

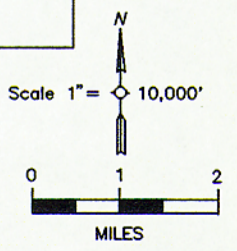
Existing and potential bikeways are both shown on Figure 3. In general, the routes illustrate a number of possible off-street and on-street connections in and between the cities as well as to neighboring counties. The potential routes shown constitute over 570 miles (916 kilometers) of existing roadway, abandoned railroad right-of-way, and river levees. Table 3 summarizes the total length of the potential routes within each incorporated city and the unincorporated portions of both counties.

Jurisdiction	Type A		Type B		Type C		Type D	
	Mi.	Km.	Mi.	Km.	Mi.	Km.	Mi.	Km.
Sutter County (uninc.)	27.7	44.6	131.9	212.2	152.9	246.1	36.1	58.2
Yuba County (uninc.)	20.3	32.6	66.8	107.6	77.2	124.2	11.1	17.9
Yuba City	15.6	25.0	2.0	3.2	4.9	7.9	2.2	3.6
Marysville	5.3	8.6	0.2	0.3	4.3	6.9	3.7	5.9
Live Oak	2.9	4.7	1.6	2.6	0.1	0.1	0.2	0.3
Wheatland	1.6	2.5	0.2	0.3	0.4	0.6	0.0	0.0
<b>System Total</b>	<b>73.4</b>	<b>118.0</b>	<b>202.7</b>	<b>326.2</b>	<b>239.8</b>	<b>385.8</b>	<b>53.3</b>	<b>85.9</b>
Notes: Mi. = Miles, Km. = Kilometers								

As shown in Figure 3, a number of potential options exist for developing off-street and on-street bikeways throughout both counties. The ultimate selection of the potential routes as part of the bikeway system will depend to a large degree on how well they serve bicyclists needs and how much they cost. As input to the cost component, the field survey rated each potential route according to the relative improvement cost (Type A-D as defined above). The following discussion provides additional information, which may affect cost, that is related to the general opportunities and constraints associated with developing on-street and off-street bikeway facilities in different areas of both counties.



- LEGEND**
- EXISTING**
- CLASS I (Bike Path)
  - CLASS II (Bike Lane)
  - CLASS III (Bike Route)
- POTENTIAL**
- TYPE A (Roadways with sufficient width to accommodate a Class II bike lane but require striping and signing.)
  - TYPE B (Roadways that require minor widening, less than 4 feet, to accommodate a Class II bike lane.)
  - TYPE C (Roadways that require major widening, greater than 4 feet, and possibly drainage work to accommodate a Class II bike lane.)
  - TYPE D (Corridors that could accommodate Class I paths)
- CONSTRAINT LOCATIONS



**YUBA-SUTTER BIKEWAY MASTER PLAN**  
**EXISTING & POTENTIAL BIKEWAYS**



### Off-Street Facilities

Although Class I bike paths do not currently exist in the study area, some off-street bicycle travel occurs along the tops of the river levee system in the Yuba City and Marysville area. In most cases, the levee tops are compacted earth but some sections are paved. Other opportunities for Class I paths following existing, inactive, or abandoned railroad rights-of-way. Examples, include the Southern Pacific railroad line between Wheatland and Marysville and the Sacramento Northern railroad line that parallels State Route 20 west of Yuba City. A benefit of using these corridors is that right-of-way costs are often times lower than purchasing land from multiple private owners along a corridor.

Some of the constraints facing the development of the potential Class I bike paths is opposition from neighbors with homes or businesses the are adjacent to the route. According to public comment at the first public workshop for the Yuba-Sutter Bikeway Master Plan held on April 6, 1995, a number of those in attendance described the opposition to bike paths on the levees where homes back up to the base of the levee. Residents in these areas are said to be concerned about the potential for crime and the loss of privacy afforded by the location of the bike paths on top of the levees.

It should be noted that the Class I bike path along the river levees in Yuba City and Marysville have already been approved and funded through Proposition 116 funds. These paths will be placed on top of the levees in most places as a requirement of project funding that the paths be open all year. Placing the paths on the river side of the levees could not guarantee they would not be covered by water during part of the year.<sup>1</sup>

### On-Street Facilities

Figure 3 shows that a large number of road links have narrow travel lanes that could not accommodate Class II bike lanes without widening. On routes that carry heavy volumes, the lack of a dedicated bike lane creates problems for drivers and bicyclists alike. Drivers can experience delay as a result of waiting for an opportunity to pass a slower moving bicyclist. Bicyclists, on the other hand, can be distracted by the presence of an automobile waiting to pass them. Examples of major travel routes with insufficient pavement width and high traffic volumes include the following:

- Colusa Avenue;
- 5th Street/Bridge Street;
- 10th Street;
- State Route 70 through Marysville;
- State Route 70 across the Bear River; and
- State Route 99 across the Feather River.

In some cases such as Colusa Avenue, alternative parallel routes are available. In other cases such as river crossings the only solution for providing safe bicycle access is to widen existing

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<sup>1</sup> Jerry Orr, Yuba City Public Works Department. Phone Conversation. April 11, 1995.

facilities or construct new facilities. For example, the Twin Cities Memorial Bridge (5th Street/Bridge Street) between Marysville and Yuba City will be widened by 1996 to accommodate a new Class I bike path. Similar treatments may be necessary for other on-street routes that may be selected as part of the bikeway master plan.

The examples above do not list a number of locations that would require major widening to accommodate a dedicated bike lane. These roadways were excluded because the average daily traffic (ADT) volumes are low enough that bicycles and automobiles can share the roadway. For on-street facilities, if average daily traffic (ADT) volumes are low (less than 2,000) as they are on many Yuba and Sutter County roads, the lack of Class II standards is generally not a major concern because the low volume of opposing traffic presents more opportunities for vehicles to pass slower moving bicyclists. For these facilities, Class III designations may be more appropriate until traffic volumes increase. Examples of these locations include:

- Larkin Road (ADT = 1,430-1,750);
- Reclamation Road (ADT = 400); and
- Oswald Road (ADT = 540-960).

The discussion of existing and potential bikeways is intended to give the reader a general sense of the key issues for developing a regional bikeway plan for Yuba and Sutter Counties. In some cases, the plan will have to address constraints, but in other cases it will be able to take advantage of opportunities such as low volume roadways and river levees.

### **3.4 Multi-Modal Connections**

Existing multi-modal connections in Yuba and Sutter Counties are especially important in light of the many barriers to continuous bicycle travel through the two Counties. The current bikeway system between urban areas in the County is not complete, which may force some people to use other modes such as the automobile. The Yuba-Sutter Transit Authority, however, has added bike racks to its buses on most routes to improve the convenience of bus use for bicyclists. The extensive fixed-route service through Yuba City and Marysville provides multiple transfer locations for bicyclists, and it also provides a safe option for crossing the Feather River between Yuba City and Marysville (please refer to the Yuba-Sutter Transit Rider's Guide for a map of bus stops). Further, the Amtrak Depot in Marysville at 7th Street between Chestnut Street and Walnut Street is accessible directly by bicycle or via the bus stop near 7th and B Street.

Other potential multi-modal transfer points typically include park-and-ride lots. Yuba and Sutter Counties currently do not have any Caltrans operated park-and-ride lots. Nevertheless, approximately 17 percent of Yuba and Sutter County residents carpool or vanpool to work according to a 1991 Household Travel Survey conducted by the Sacramento Area Council of Governments. These ridesharing participants may be using more informal parking areas such as those provided at local shopping centers.

### 3.5 Support Facilities

The previous section focused on the identification and evaluation of existing on-street and off-street bikeway facilities, but it did not address ancillary facilities such as bicycle parking or shower facilities. Bikeway support facilities include physical infrastructure designed to accommodate or promote the use of bicycles. Examples include: bicycle racks, bicycle lockers, restrooms, and shower facilities. Figure 4 shows existing bikeway support facilities in Yuba and Sutter Counties.

In general, bike racks are located in at most major shopping areas, schools and parks. These are important support facilities because potential riders can be discouraged from riding if they think that their bicycle may be stolen or vandalized. There was no evidence of other support facilities such as bicycle lockers, restrooms, or shower facilities dedicated for bicyclists. Some parks, however, did have public restrooms.

In many cities and counties, the installation of secure bicycle parking is required as part of local transportation system management plans or the zoning code to encourage the use of bicycles as an alternative to automobile use. Yuba City, for example, requires the provision of bicycle racks in their zoning code at a rate of 3 percent of the automobile parking requirement for commercial and industrial uses, 100 percent for schools, and 10 percent for most other uses. Based on available information, similar standards are not required in other Yuba and Sutter County jurisdictions.

### 3.6 Evaluation of Bicycle Safety

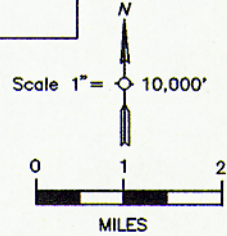
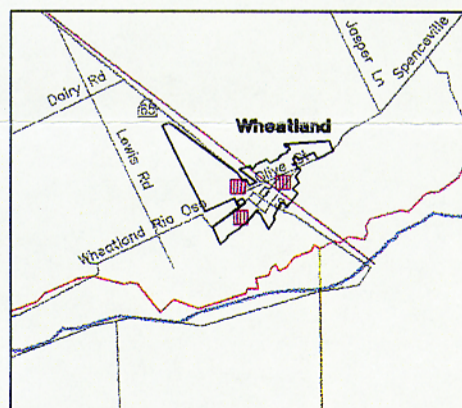
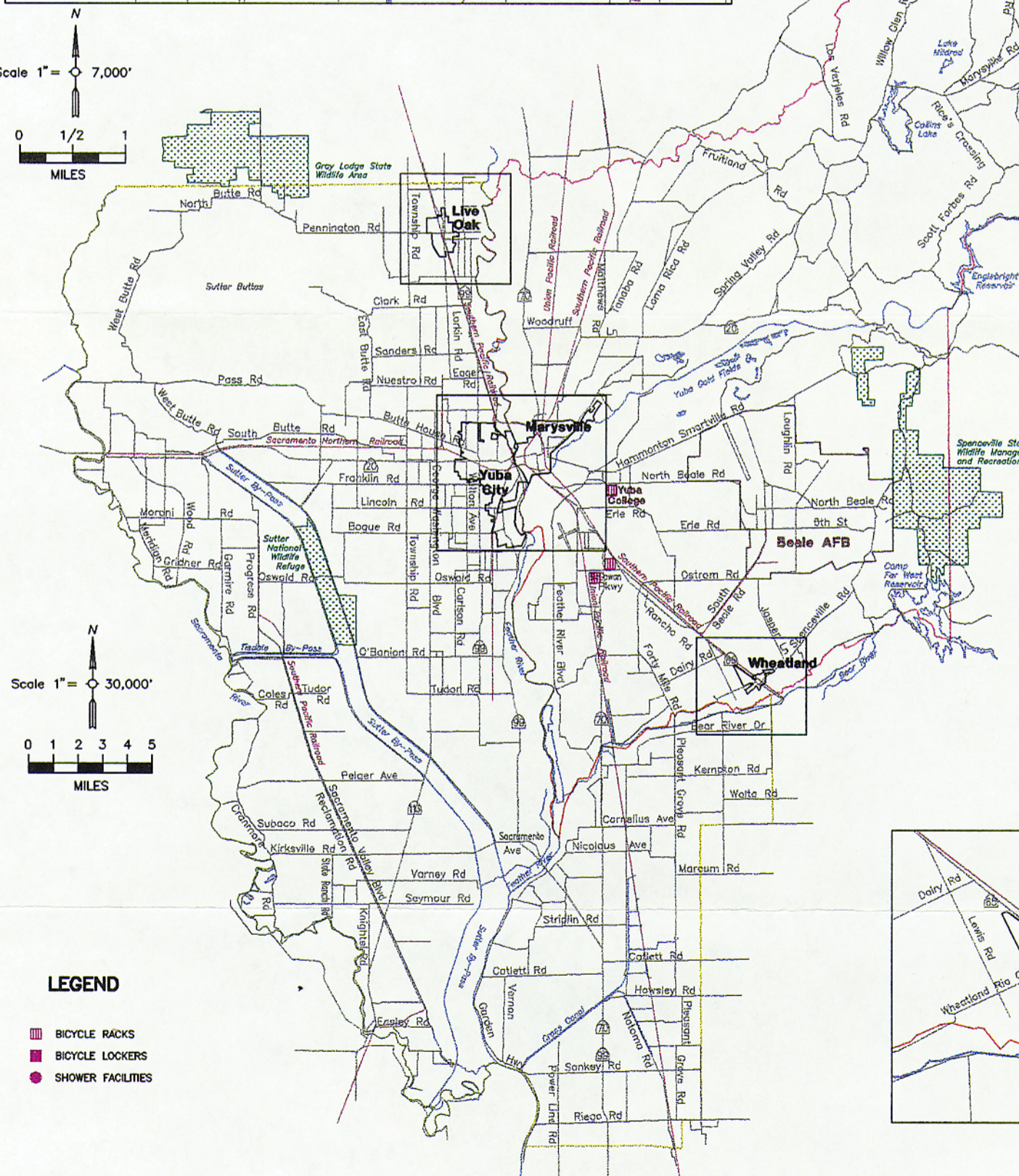
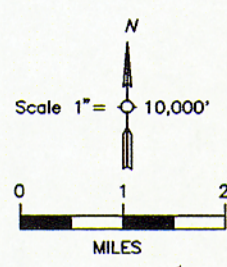
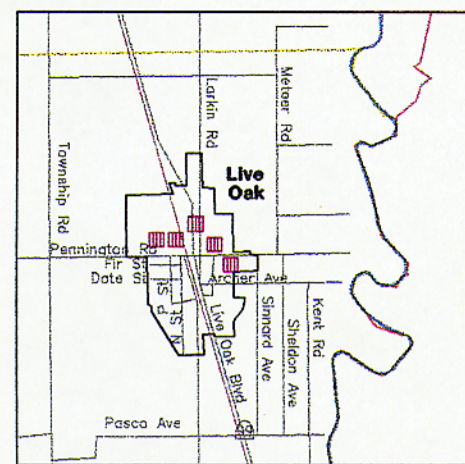
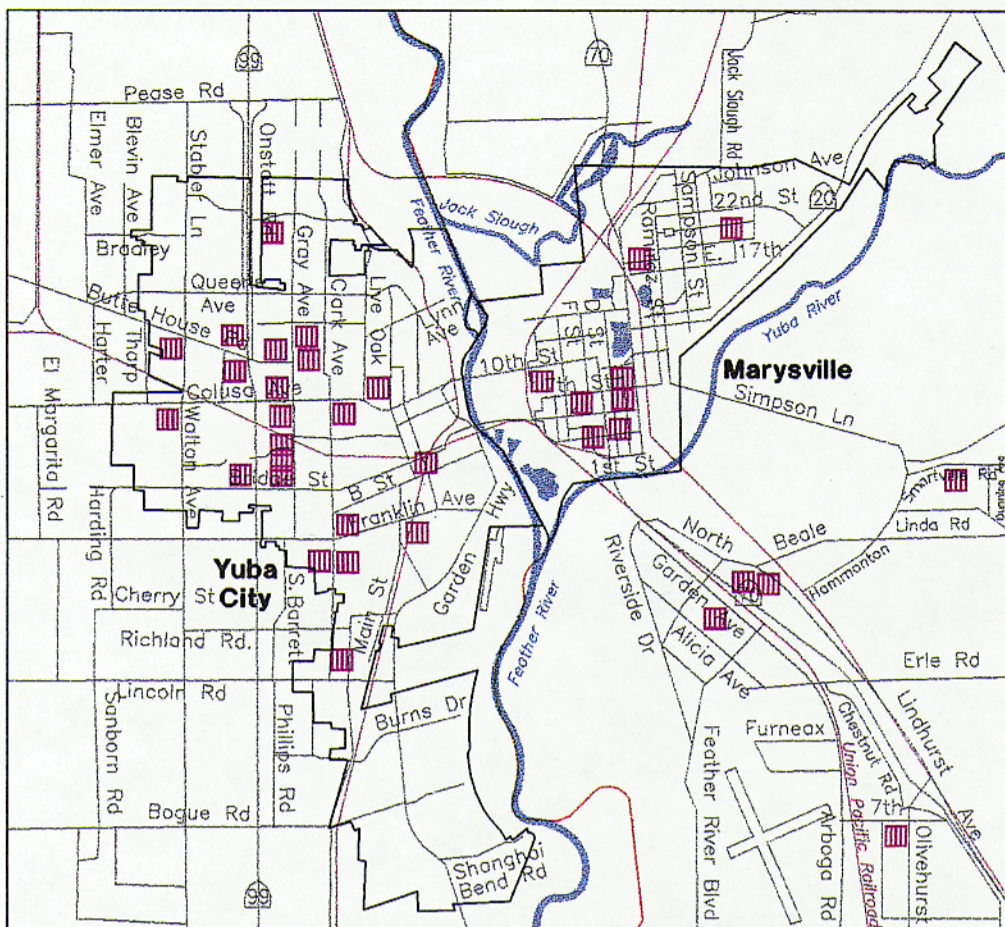
Safety is a major concern of both existing and potential bicyclists. For those who ride, it is typically an on-going concern or even distraction. For those who don't ride, it is one of the most compelling reasons not to ride. In discussing bicycle safety, it is important to separate out perceived dangers versus actual safety hazards.

#### Bicycle Accidents

Bicycle riding on-street is commonly perceived as unsafe because of the exposure of a lightweight, two-wheeled vehicle to heavier and faster moving automobiles, trucks, and buses. Actual accident statistics, however, show that bicyclists face only a marginally higher degree of sustaining an injury than a motorist based on numbers of users and miles travelled.<sup>2</sup> Death rates are essentially the same with bicyclists as with motorists. Bicycle-vehicle accidents are much less likely to happen than bicycle-bicycle, bicycle-pedestrian, or accidents caused by physical conditions. And, the majority of reported bicycle accidents show the bicyclist to be at fault; generally, this involves younger bicyclists riding on the wrong side of the road or being hit broadside by a vehicle at an intersection or driveway.

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<sup>2</sup> Source: Bicycle Federation of America.



- LEGEND**
- BICYCLE RACKS
  - BICYCLE LOCKERS
  - SHOWER FACILITIES

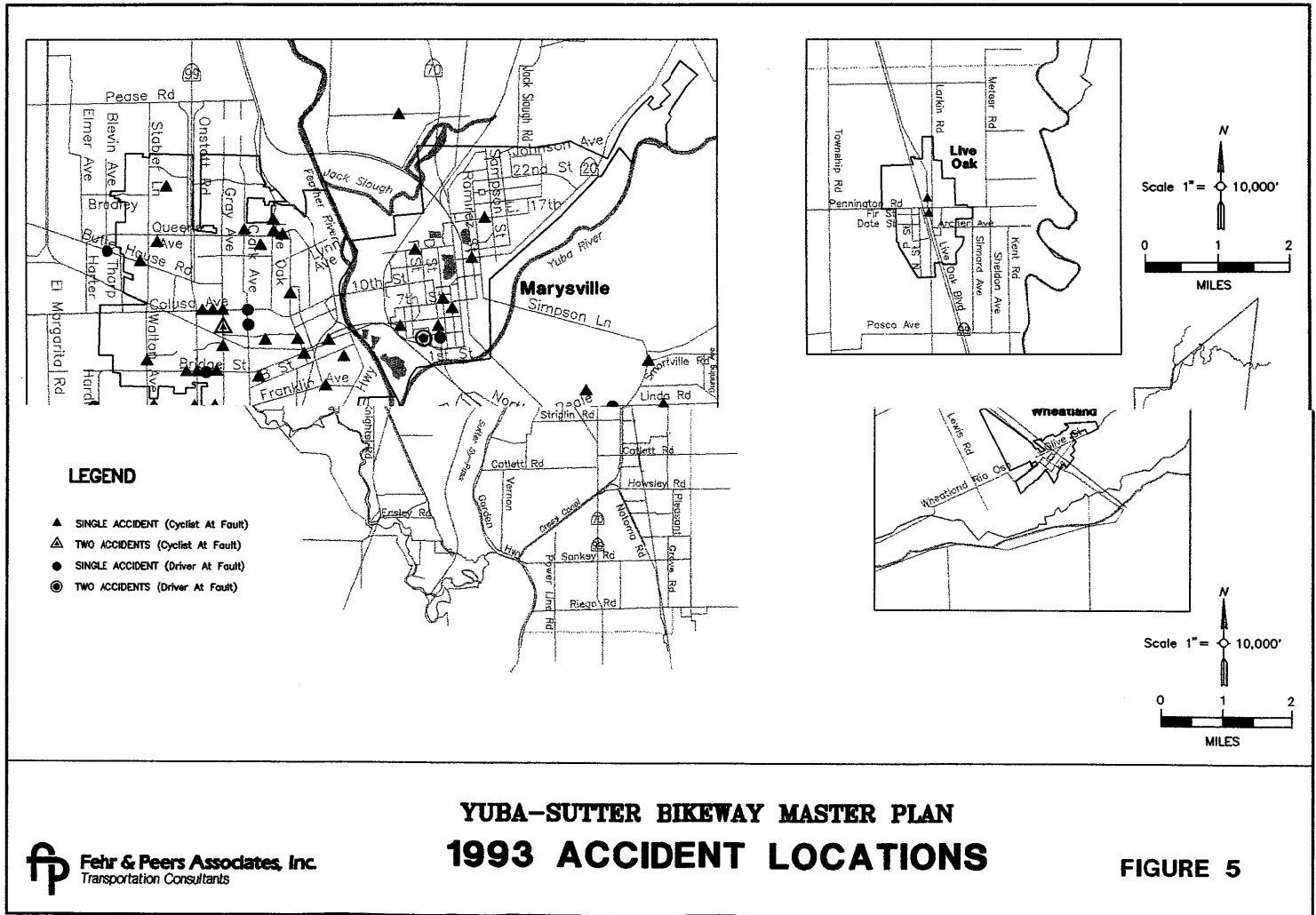
**YUBA-SUTTER BIKEWAY MASTER PLAN  
EXISTING SUPPORT FACILITIES**

In 1993, 68 accidents involving bicycles were recorded along local roads in Yuba and Sutter Counties (including incorporated areas). In the previous year (1992), 79 accidents were recorded. A slightly lower number of 66 was recorded in 1991. The actual accident locations for 1993 are shown on Figure 5.

In comparison to other similar communities, the bicycle accident rates shown in Table 4 are similar for the incorporated cities of Live Oak, Wheatland, and Marysville and the unincorporated parts of Yuba and Sutter Counties. In Yuba City, however, accidents rates are higher than for other urban areas.

<b>Table 4 BICYCLE ACCIDENTS PER 1,000 PERSONS, COMPARISON OF VARIOUS COMMUNITIES</b>			
Community	Population	Accidents per Year	Accidents per 1,000 Persons
<b>Sutter County (uninc.)</b>	<b>34,830</b>	<b>7<sup>b</sup></b>	<b>0.20</b>
<b>Yuba County (uninc.)</b>	<b>48,020</b>	<b>11<sup>b</sup></b>	<b>0.23</b>
<b>Yuba City</b>	<b>31,450</b>	<b>38</b>	<b>1.21</b>
<b>Marysville</b>	<b>12,700</b>	<b>10</b>	<b>0.79</b>
<b>Wheatland</b>	<b>1,880</b>	<b>0</b>	<b>0.00</b>
<b>Live Oak</b>	<b>4,820</b>	<b>2</b>	<b>0.41</b>
Visalia	70,000	78 <sup>a</sup>	1.10
Escondido	105,000	88 <sup>a</sup>	0.80
Roseville	35,000	32 <sup>a</sup>	0.90
Santa Rosa	115,000	90 <sup>a</sup>	0.80
Solano County (unincorporated)	21,690	5 <sup>b</sup>	0.20
Notes: <sup>a</sup> Reported accidents in latest year (1990-2) <sup>b</sup> Reported accidents in latest year (1992-3)			
Sources:  Yuba County Industrial Development Department, Standard Industrial Survey Report, April 1994. California Statewide Integrated Traffic Records System (SWITRS) Reports for County of Yuba and the County of Sutter (Run 1/24/95).			

It is important to note that these accident figures reflect reported accidents only; they do not include unreported accidents and under-counted non-automobile-related accidents. Other studies have shown that the most common bicycle accident is a bicycle-bicycle or bicycle-pedestrian accident. These conflicts tend to be less severe and therefore under-reported.



## Bicycle Safety Programs

Bicycle safety programs are often conducted by local law enforcement agencies to raise awareness about bicycle operating laws and their enforcement. For the purpose of this working paper, law enforcement agencies in Yuba and Sutter Counties were contacted and asked to describe their current bicycle safety programs. Their responses are summarized below.

- California Highway Patrol (CHP)

The Yuba-Sutter CHP is active in informing elementary students about bicycle safety. Current programs include a bicycle helmet and safety program presented at local elementary schools twice a month, promoting the statewide bicycle helmet poster contest, and planning bicycle rodeos during the summer and fall.

- Yuba County Sheriff

No program in place, but bicycle helmet law is enforced.

- Sutter County Sheriff

No program in place, but bicycle helmet law is enforced.

- Wheatland Police Department

No program in place, but bicycle helmet law is enforced.

- Marysville Police Department

The Police Department has one full-time traffic officer funded by a grant from the State of California Office of Traffic Safety. This officer is responsible for bicycle education through classroom presentations and other events such as bicycle rodeos. In addition, all officers are responsible for enforcing the bicycle helmet law.

- Yuba City Police Department

No program in place, but will respond to requests from schools for classroom presentations. They also enforce the bicycle helmet law.

In Yuba and Sutter Counties, law enforcement agencies actively enforce the new California bicycle helmet law for riders under the age of 18. However, only the California Highway Patrol and the Marysville Police Departments have made efforts to visit local schools or promote bicycle safety through bicycle rodeos or other events. The Marysville Police Department's traffic officer recently visited two elementary schools to educate students about the new bicycle helmet law.