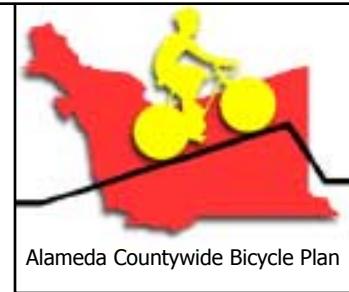


# Chapter 2: Existing Conditions



## EXISTING BICYCLE & PEDESTRIAN & INTERMODAL CONDITIONS

This chapter presents a description of the existing bicycle, pedestrian and intermodal access conditions in Alameda County. Data on existing bicycle and pedestrian use and mode share is presented to show the number of nonmotorized commuter trips and the potential for increase under this plan. The major regional attractors and generators are described along with bicycle and pedestrian policies. Bicycle planning efforts and the resulting infrastructure of bicycle facilities in each of the local jurisdictions including the EBRPD are described. An analysis of bicycle and pedestrian collisions is also presented. This study examines deficiencies in the existing conditions with the goal of improving the network of transportation alternatives to personal automobile use.

## GEOGRAPHIC AND OTHER BARRIERS

The three dominant geographic features of Alameda County are the San Francisco Bay, the Berkeley/Oakland Hills and the Tri-Valley. The Bay contributes to temperate climates for the communities adjacent to the water, which is ideal for bicycling year-round. The County has dry summers with rainy weather primarily occurring during the months of November through April.



The Berkeley/Oakland Hills separate the bayfront communities from eastern Contra Costa County and the Tri-Valley area of Alameda County. The topography near the water is relatively flat but gradually becomes more hilly inland. The hill areas themselves are steep and have roads that are quite challenging for cycling, but never the less are heavily in demand. The Tri-Valley area is relatively flatter than the western county, but hotter in the summer.

When the older communities were developed in the late nineteenth and early twentieth century, many of the once-numerous creeks that drained to the Bay were culverted and paved over. The southern and eastern areas have (relatively) more natural creeks (and arroyos in the Tri-Valley) which provide both opportunities for pathways along the water corridor and constraints in terms of needing bridges over creeks where roadways do not cross.

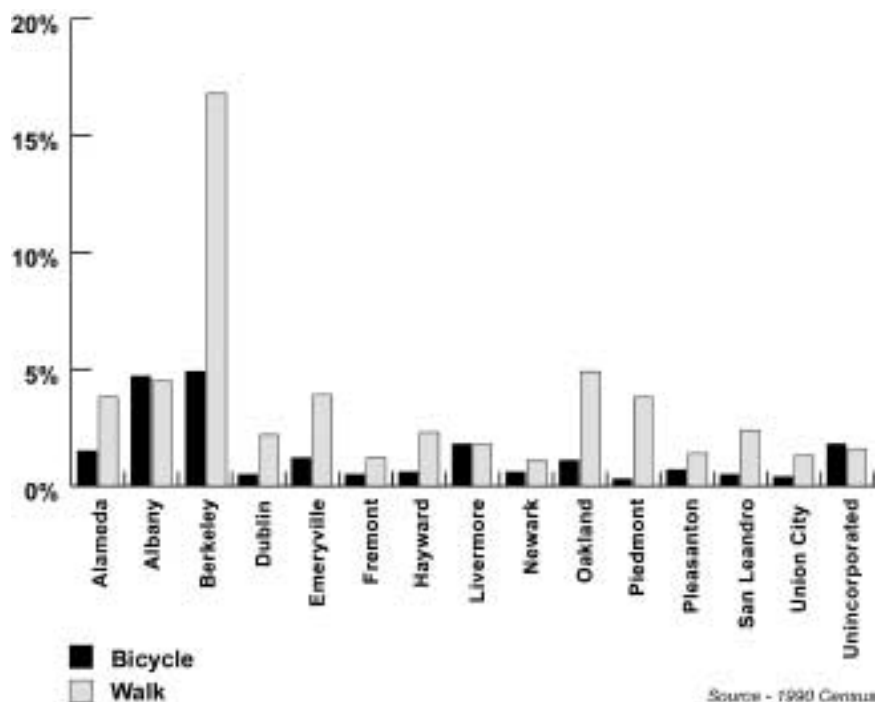
There are numerous other obstacles to bicycling as well, predominantly freeways and railroad tracks. The freeways (I-80, I-580, I-680, I-880, I-980, SR 13, SR 24 and I-238) cause two main problems: barriers across which bicycles cannot travel unless a roadway or bike bridge has been built, and intimidating and dangerous ramps designed for high-speed merges. Railroads are barriers because at-grade crossings are few and far between and grade separations are extremely costly.

## EXISTING BICYCLE AND WALKING COMMUTE SHARE

### Census

Since the results of the 2000 census will not be available for another year or more, this section relies heavily on the 1990 census data. Except for some data from RIDES, this is the most recent data available on Bay Area and Alameda County commute mode splits. Future updates of this plan will include 2000 census data. According to the 1990 census, 1.3 percent of Alameda County residents bicycle to work and 4.1 percent walk to work. The bike and walk mode share of work trips for each city in Alameda County is presented in Figure 2-1. The bicycle and walk mode splits vary significantly from city to city, ranging from five percent in the City of Berkeley to 0.5 percent in the City of Dublin.

**Figure 2-1**  
**EXISTING BICYCLE AND WALK MODE SHARE**



## REGIONAL TRAVEL CHARACTERISTIC SURVEYS

### MTC Travel Survey

The Metropolitan Transportation Commission (MTC) conducted a survey of regional travel characteristics in 1980 and 1990. This survey revealed mode splits for all trip purposes. The survey results for bicycling and walking trips by trip purpose for the nine Bay Area counties is presented in Appendix B-1. In 1990 for Alameda County, bicycle mode splits were fairly consistent, at one percent, for all trip purposes.

Walk mode split ranged depending on trip purpose as follows:

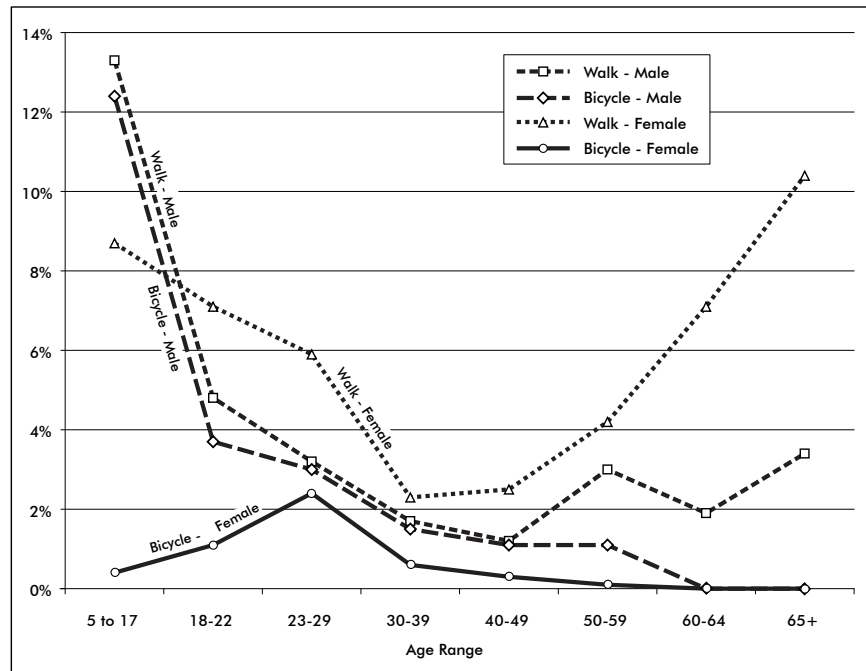
- Non-home-based (12.8 percent )
- School (8.3 percent)
- Shopping (8.2 percent)
- Work (2.4 percent)

<b>Table 2-1</b>		
<b>DURATION (MINUTES) OF BICYCLE AND WALK TRIPS - BAY AREA</b>		
	<b>Bicycle</b>	<b>Walk</b>
0-5 minutes	19.5%	28.9%
5.1-10 minutes	20.1%	21.0%
10.1-15 minutes	28.0%	26.7%
15.1-20 minutes	7.3%	5.6%
20.1-25 minutes	5.8%	3.7%
25.1-30 minutes	12.1%	8.0%
30.1-45 minutes	2.5%	3.1%
45.1-60 minutes	2.5%	2.1%
> 60 minutes	2.3%	1.0%
Source: San Francisco Bay Area 1990, Regional Travel Characteristics, Working Paper #4, 1990 MTC Travel Survey		

Table 2-1 shows the duration of bicycle and walk trips in the nine-county Bay Area from the 1990 survey results . Not surprisingly, over two-thirds of bicycle and walk trips are less than 15 minutes. Almost five percent of trips are 45 minutes or longer.

Age and gender are also significant variables in the use of walk and bike modes. Figure 2-2 below shows the 1990 walk and bicycle mode split by age and gender in the nine-county Bay Area. Young (5-17 years) males are the largest group of walkers and bicyclists and females under 30 also walk for a significant proportion of trips. Walking increases sharply for women over 50 and even more so for women over 60. Bay Area residents between 30 and 50 years old are least likely to bike or walk.

**Figure 2-2  
REGIONAL AGE AND GENDER BY BICYCLE OR WALK MODE**



### Rides Mode Split Surveys

RIDES for Bay Area Commuters has conducted mode split surveys for work trips in the Bay Area periodically since 1992 to update the 1990 census data. The results of these surveys are presented in Appendix B-1 and show that both bicycling and walk modes decreased over the period. Bicycling mode share for commuters dropped from a high of 2.5 percent in 1993 to 1.0 percent in 1999. At the same time, the walk mode for commuters declined from a high of 4.0 percent in 1990 to 1.7 percent in 1999.

### EXISTING BICYCLE COUNTS AND SURVEYS

WSA contacted the local agencies in Alameda County to determine the extent of existing surveys of bicyclists and/or pedestrians and bicycle or pedestrian counts. Three agencies, Alameda, Emeryville and Pleasanton had mode split information for major employers. The results of these surveys are presented in Table 2-2 below.

For work trips by bike, Alameda and Emeryville employees' mode split is two percent; greater than the County's average from the 1990 census of 1.3 percent. Pleasanton at 0.5 percent is less than the County average. For both Alameda and Emeryville, the percentage of employees who commuted by walking is below the County's average of 4.1 percent.

**Table 2-2  
BICYCLE/PEDESTRIAN MODE SHARE FOR MAJOR EMPLOYERS  
SURVEY RESULTS BY CITY**

City	Bicycle	Walk
Alameda	2.0%	2.0%
Emeryville	2.0%	0.9%
Pleasanton	0.5%	Not included
Alameda County (1990 Census)	1.3%	4.1%

Note: Cities differed in their survey methods. The City of Alameda's 1995 transportation results are from all large employers with 50+ employees; The City of Emeryville's 1993 survey results are from all major employers ranging from 23 to 1250 employees; The City of Pleasanton in 1998 surveyed major employers ranging from 60-54,800 employees on commute trips by bicycle only.

Three jurisdictions have recent bicycle counts or surveys of existing bicyclists: the cities of Oakland and Berkeley and the EBRPD. The EBRPD surveyed trail users of two of their popular trails in 1998. This survey revealed that 36 percent of Iron Horse Trail users were using the trail for transportation purposes to destinations including shopping, school, work, friends and transit stops. The City of Berkeley conducted bicycle and pedestrian counts at 11 intersections for the Southside of Campus Circulation Study in 1998 and the City of Oakland conducted bicycle counts in 1999 on Telegraph Avenue, Grand Avenue and El Embarcadero. There is a need for more comprehensive data collection for bicycle and pedestrian demand.

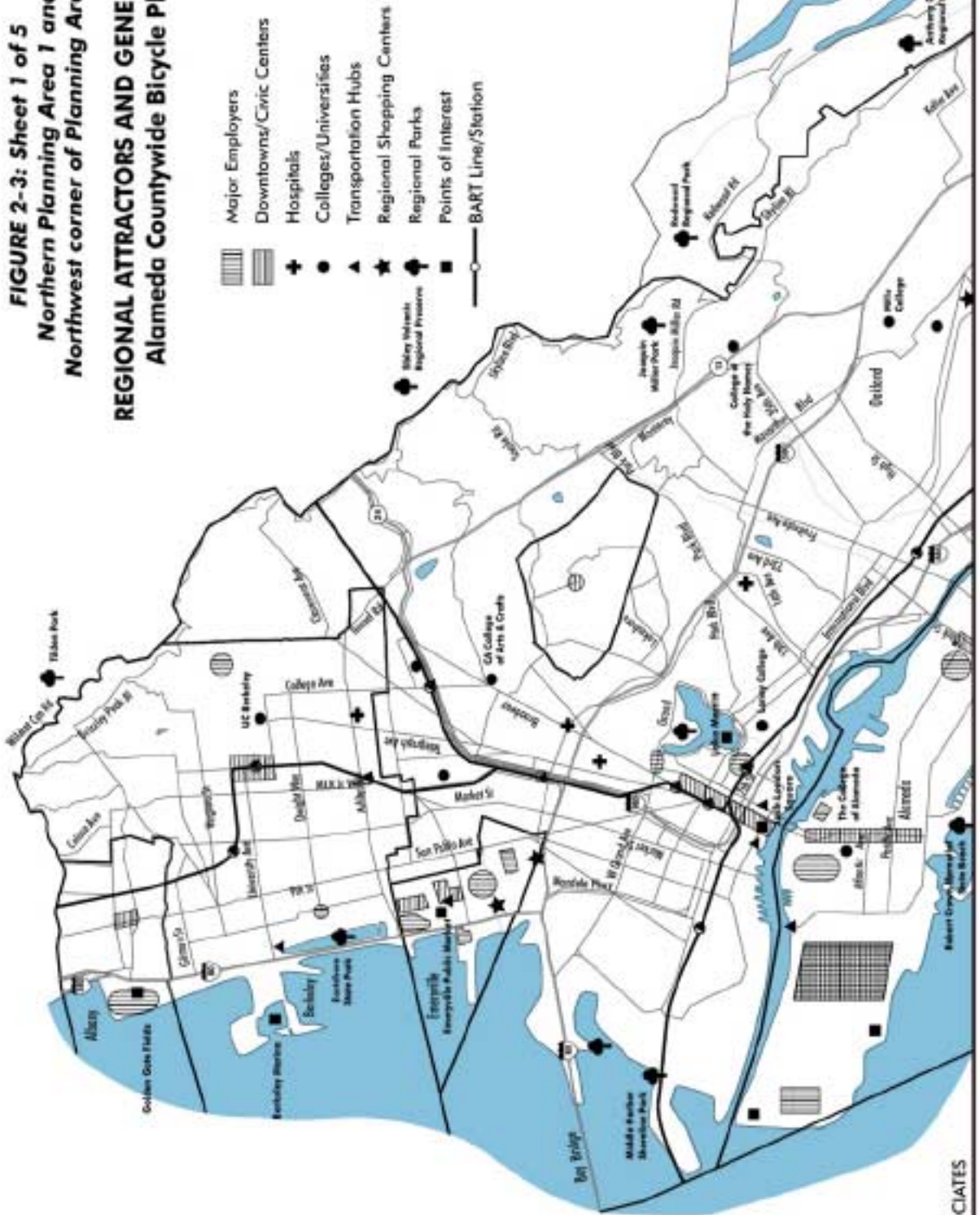
## REGIONAL ATTRACTORS/GENERATORS

The regional attractors and generators in Alameda County were identified through discussions with city staff, by reviewing information in the city bicycle plans, from standard sources such as the Thomas Brothers maps, and from the city websites. The locations of the attractors depicted in Figure 2-3 were considered in determining the alignments of the countywide bicycle routes. They include all junior colleges, colleges and universities, hospitals, regional shopping centers, downtowns/civic centers, employment sites of more than 500 employees, regional parks and BART, AMTRAK stations and other major transit centers and interface areas. In addition, special generators such as the Coliseum Arena attract thousands of people yet have less than 700 employees. The major employers in each city that have 700 or more employees at a single site or a minimum of 3 employers per city greater than 500 employees are listed in Appendix B-2.

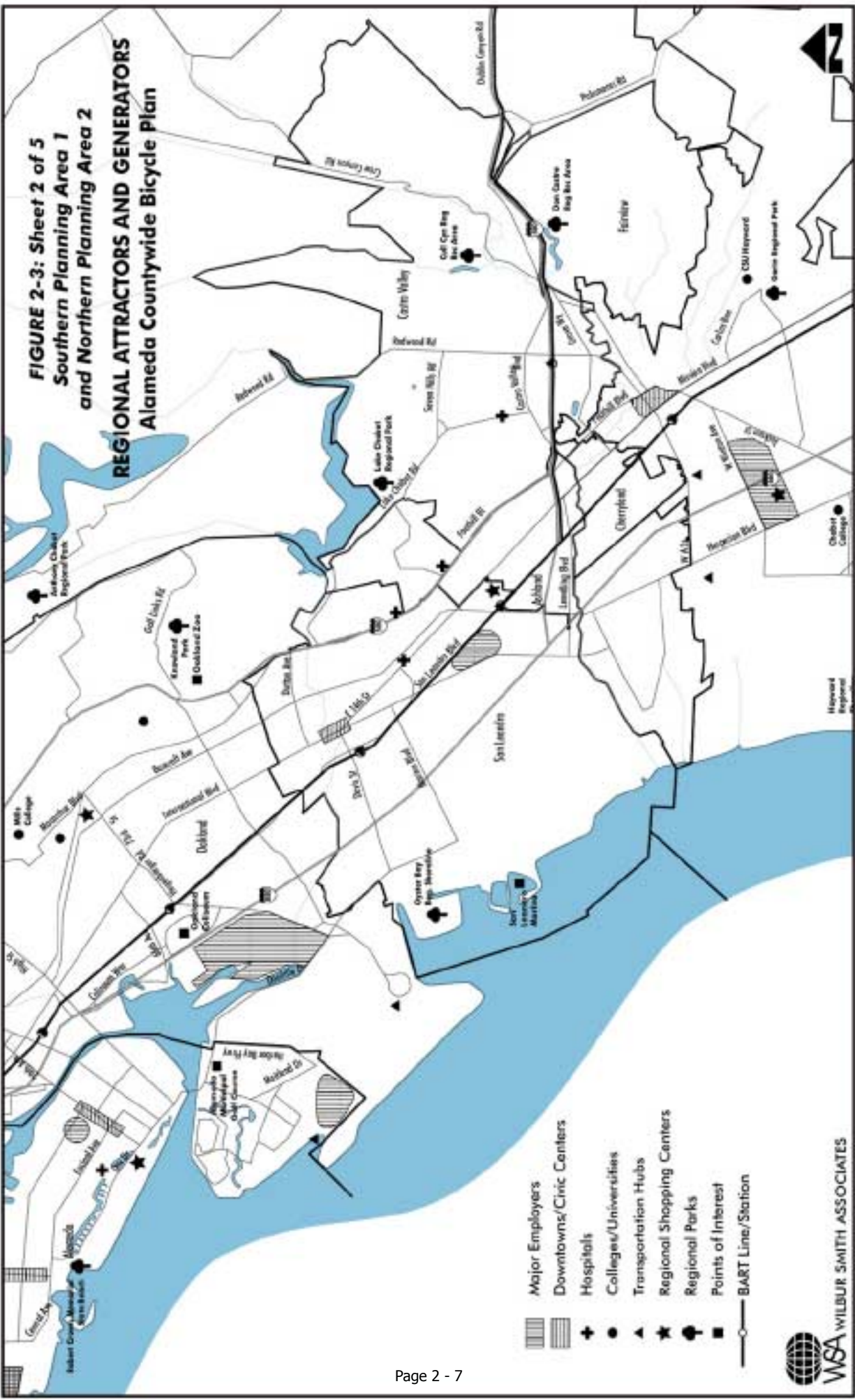
The biggest employers in the County are UC Berkeley, Lawrence Livermore National Laboratory in Livermore, New United Motors Manufacturing in Fremont and PeopleSoft in Dublin.

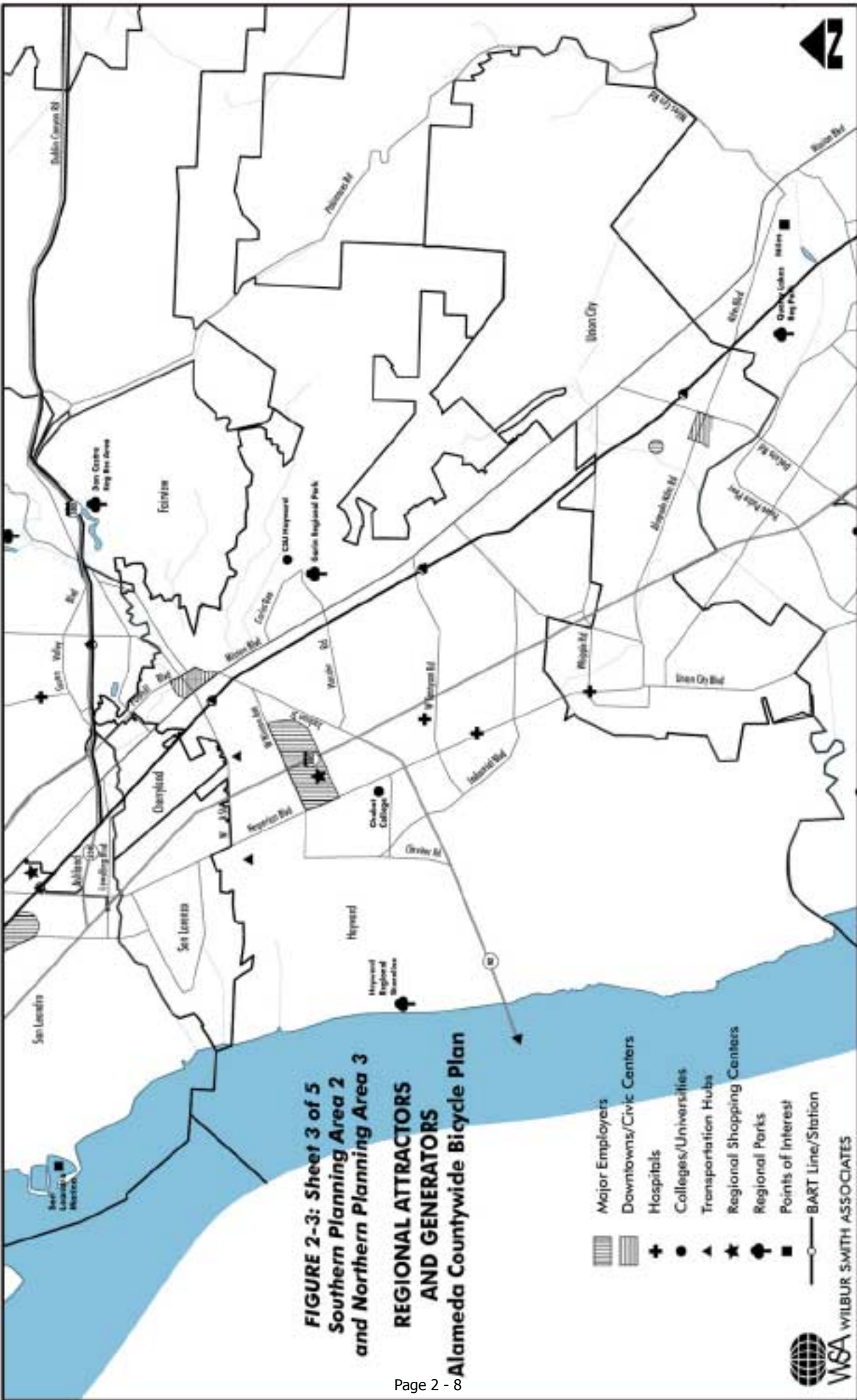


**FIGURE 2-3: Sheet 1 of 5**  
**Northern Planning Area 1 and**  
**Northwest corner of Planning Area 2**  
**REGIONAL ATTRACTORS AND GENERATORS**  
**Alameda Countywide Bicycle Plan**

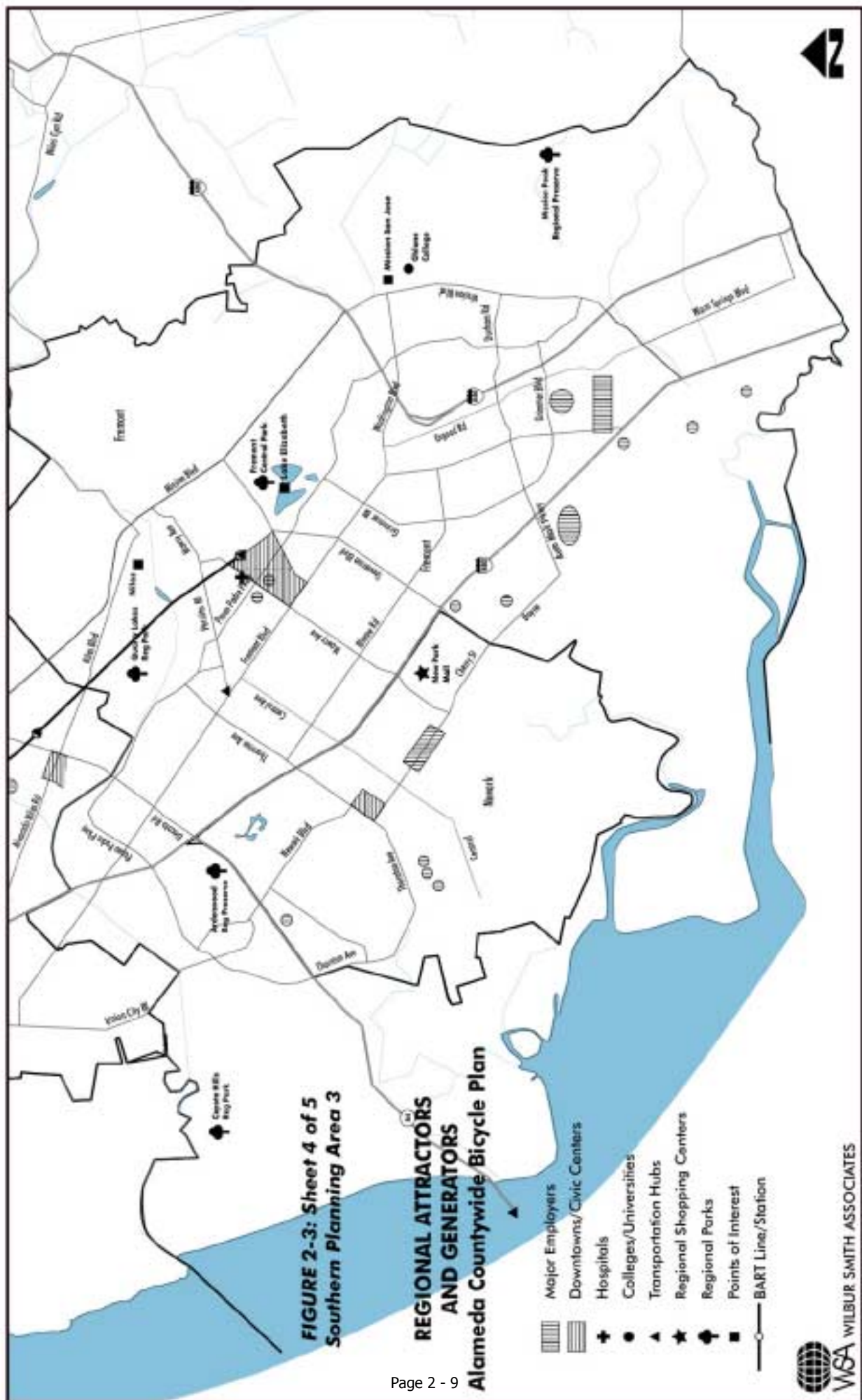


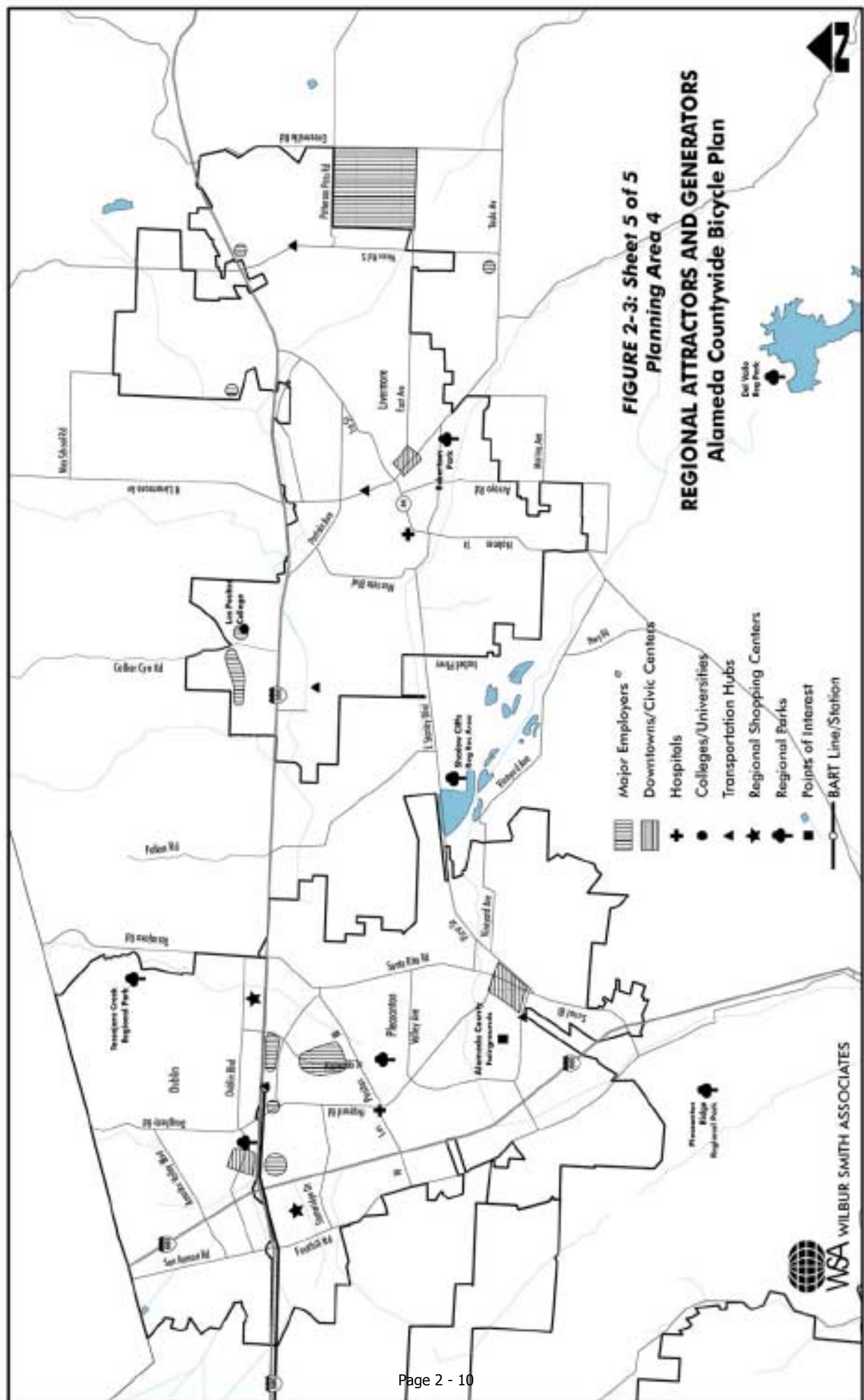












## EXISTING BICYCLE PLANS

The status of each of the Alameda County jurisdiction's bicycle planning efforts is indicated in Table 2-3. The existing and proposed bikeways from these plans were mapped and are depicted in Figure 2-4. In addition, Table 2-3 indicates which of the agencies have a Bicycle Advisory Committee (BAC) or a body with similar responsibilities. (MTC requires that projects being funded by Transportation Development Act funds be approved by the BAC of the local agency, either city or county).

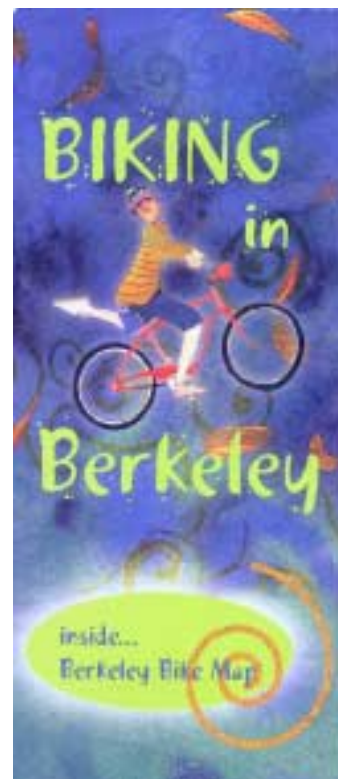
Eight of the 14 cities in Alameda County have adopted bicycle plans. In addition, the County developed a bicycle plan for the western unincorporated areas of the County (San Lorenzo, Castro Valley, Fairview, and Ashland). Other cities have trails master plans and/or address bicycle issues in the Circulation Element of the General Plans.

In addition to these jurisdictions, the EBRPD and the Association of Bay Area Governments (ABAG) have adopted trail plans. The EBRPD currently operates and maintains 150 miles of multiuse trails in Alameda and Contra Costa Counties. There are approximately twenty-five miles of paved trails in Alameda County. The EBRPD also has a map of potential future trail alignments for planning purposes, (for hikers, bikers and equestrians). The EBRPD defines its regional trails system as long distance multi-use trails which connect regional parks or trails to each other or to important destinations such as transit centers, schools, colleges, civic centers, employment centers, large commercial complexes or residential areas. The EBRPD promotes the majority of these trails as nonmotorized transportation corridors in addition to recreational opportunities.

The San Francisco Bay Trail Plan was adopted by the ABAG Executive Board in 1989 identifying the Bay Trail alignment around the entire Bay. All jurisdictions within Alameda County passed resolutions in support of the trail. The Plan continues to guide the planning and development of the Bay Trail.

## OTHER BICYCLE ROUTE MAPS

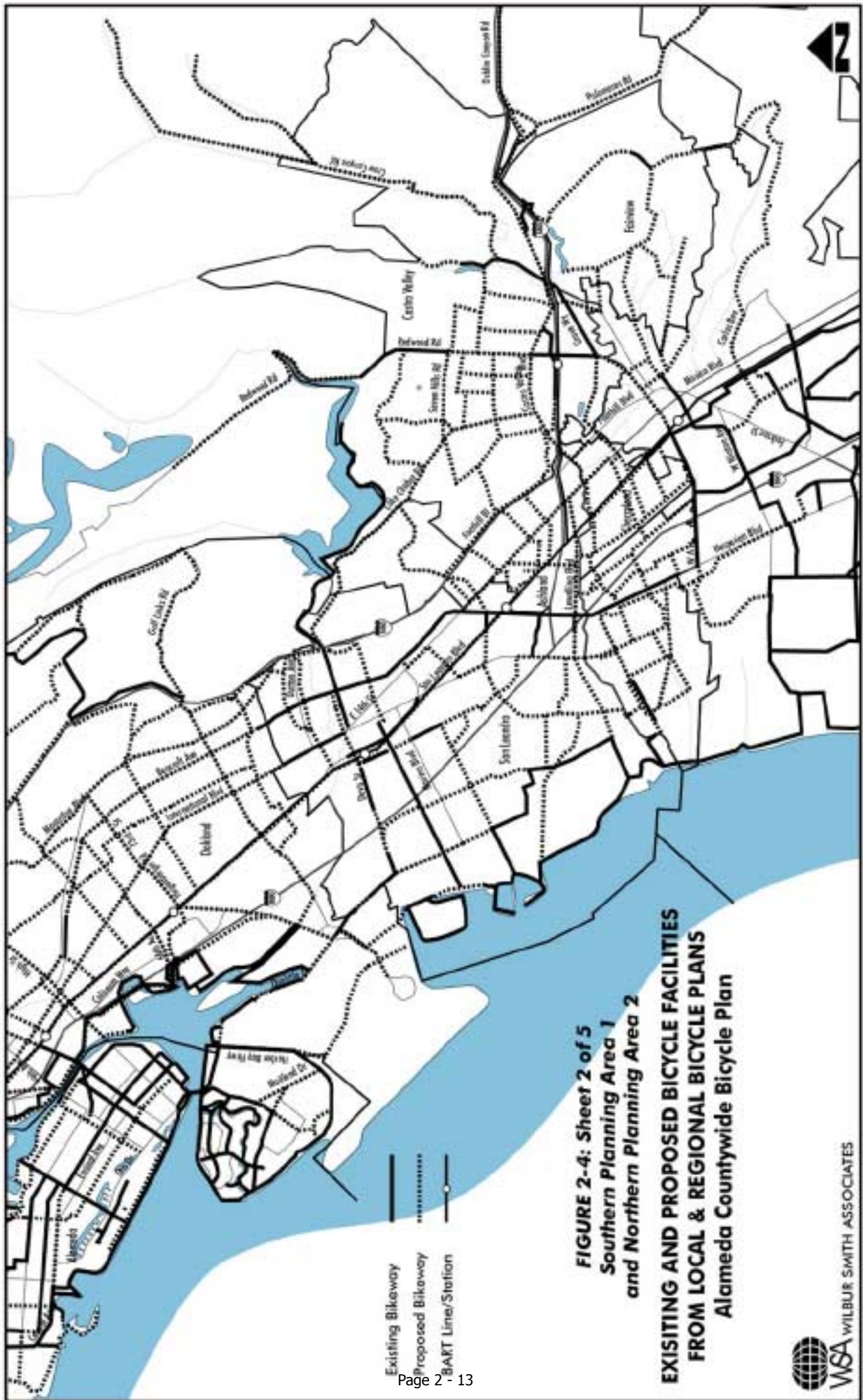
In addition to the local agency bicycle plans and EBRPD, three maps (two published by the East Bay Bicycle Coalition and one by Krebs Cycle Products) cover Alameda County. The suggested roadways on these maps are based on existing conditions, and are very useful for cyclists planning their travel routes under current roadway conditions.



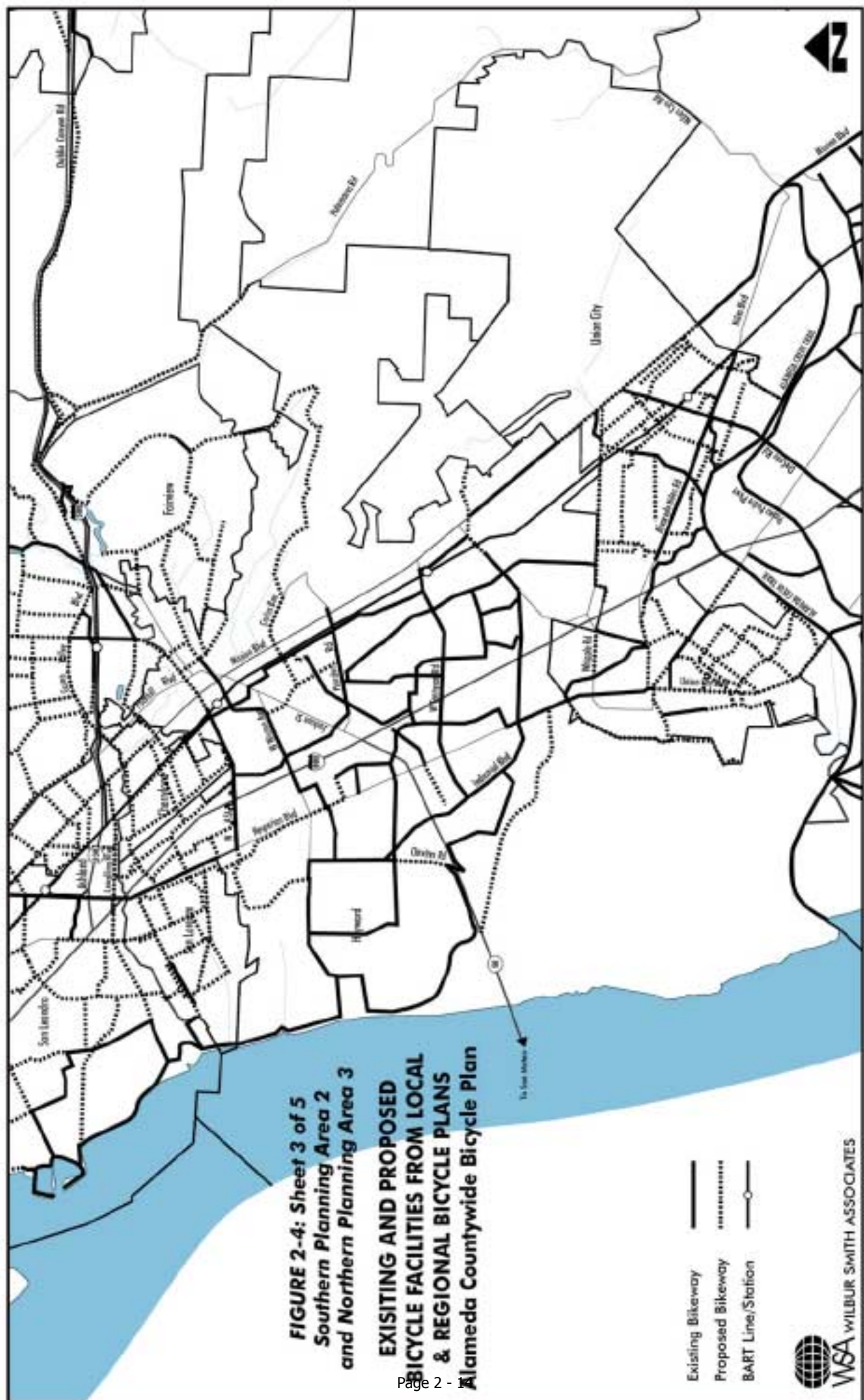


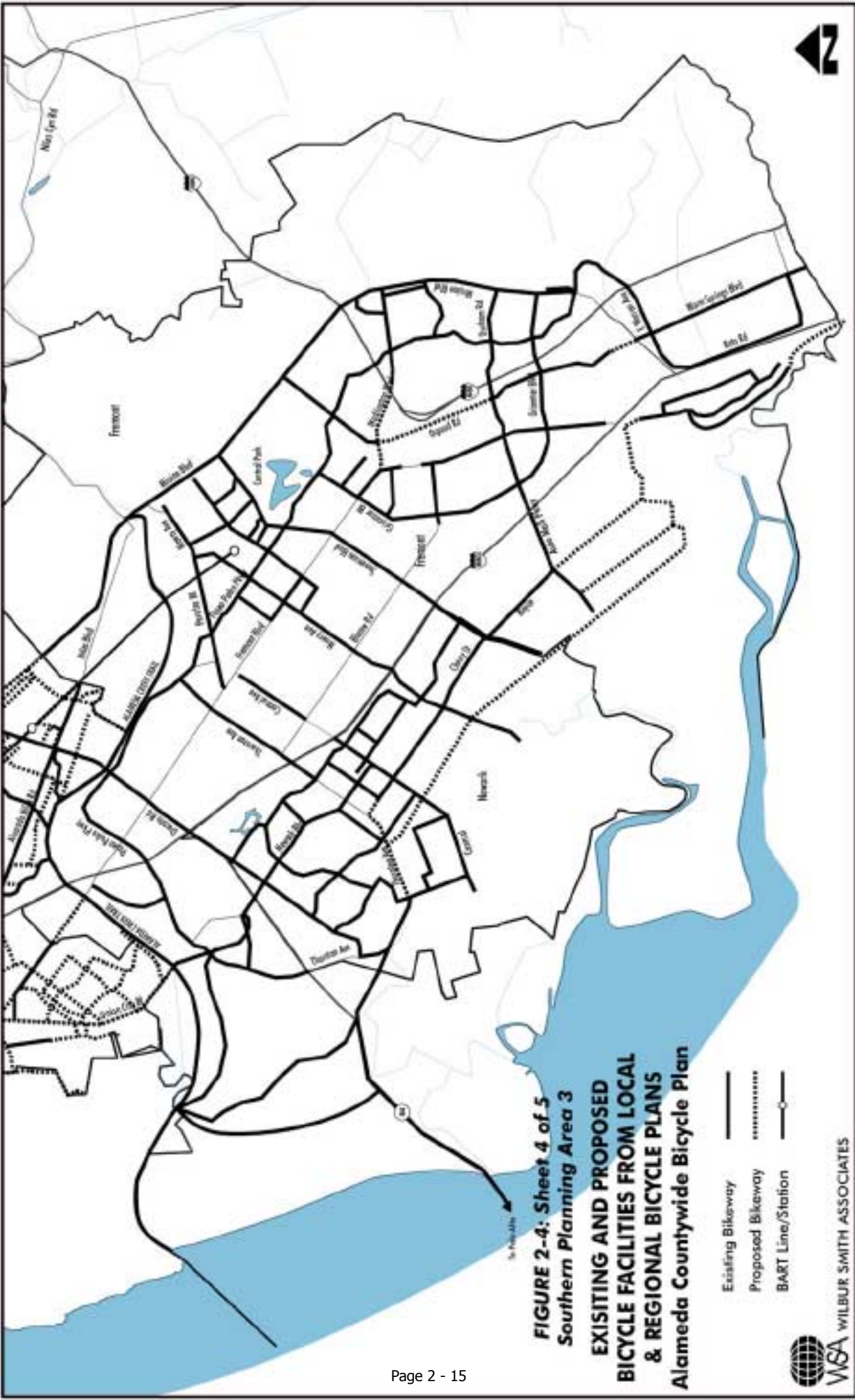
**FIGURE 2-4: Sheet 1 of 5**  
**Northern Planning Area 1 and**  
**Northwest corner of Planning Area 2**  
**EXISTING AND PROPOSED BICYCLE FACILITIES**  
**FROM LOCAL & REGIONAL BICYCLE PLANS**  
**Alameda Countywide Bicycle Plan**







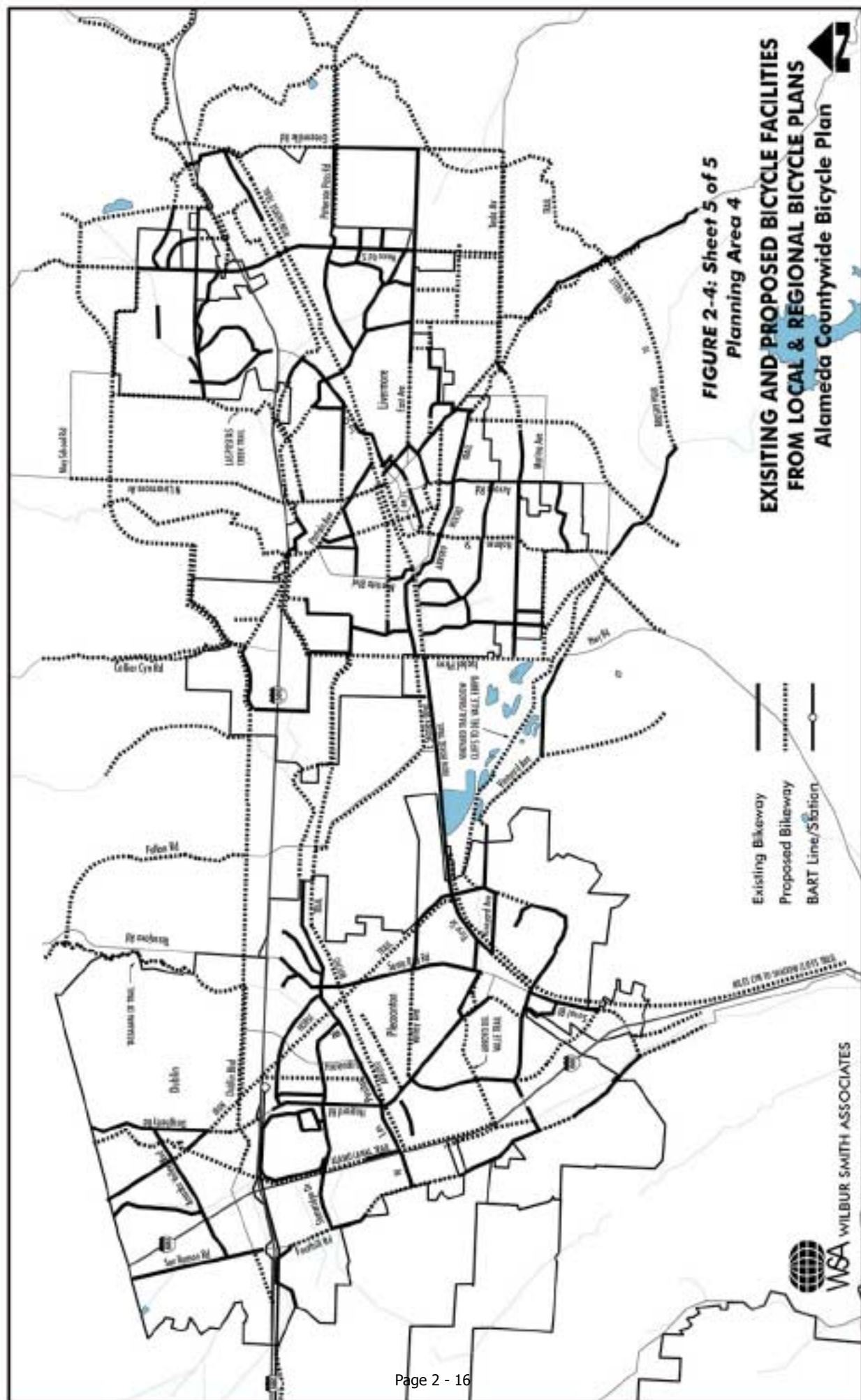




**FIGURE 2-4: Sheet 4 of 5**  
**Southern Planning Area 3**  
**EXISTING AND PROPOSED**  
**BICYCLE FACILITIES FROM LOCAL**  
**& REGIONAL BICYCLE PLANS**  
**Alameda Countywide Bicycle Plan**

- Existing Bikeway
- Proposed Bikeway
- BART Line/Station





**Table 2-3  
STATUS OF CITY/COUNTY BICYCLE PLANS**

<b>Jurisdiction</b>	<b>Bikeway Map</b>	<b>Bike Plan (date adopted)</b>	<b>If not, where are bicycle issues included?</b>
County - Western unincorporated areas	Yes - 1999	Yes - 1999	NA
County - entire county	Yes - June 1993	No	NA
East Bay Regional Park District	Yes	Trail Master Plan Yes - 1997	NA
Alameda	Yes	Yes - 1999	NA
Albany	Yes	Yes (completed in 1997 but will be adopted in 2000)	NA
Berkeley	Yes	Yes - 1998	NA
Dublin	Yes-1998 East Dublin, 1992 West Dublin	No	see 1992 General Plan
Emeryville	Yes	Yes - January 1998	
Fremont	Yes	No	see 1991 General Plan
Hayward	Yes	Yes - 1996	NA
Livermore	Yes -1996	Yes - 1996	NA
Newark	Yes	No	NA
Oakland	Yes	Yes - 1999	NA
Piedmont	No	No	See General Plan
Pleasanton	Yes	No	Community Trails Master Plan
San Leandro	Yes	Yes - February 1997	NA
Union City	Yes - in Parks & Recreation plan	No	1999 - Parks & Recreation plan

## **EXISTING PEDESTRIAN POLICIES, PRACTICES AND PROCEDURES**

The feasibility of walking as a transportation mode depends greatly on the type and density of land uses, as well as on design features. Environments that are conducive to walking include downtowns, schools, areas with high-density land use, pedestrian malls and auto-free zones, transit stations/malls, parks and recreational areas. Even if the mode of access to these areas was not by walking, once there, the primary circulation mode is on foot. Therefore these sites should not only accommodate but should encourage pedestrian access and circulation.

Pedestrian conditions vary widely within Alameda County. The northwestern and urbanized portions of the county are fairly pedestrian-oriented, including dense downtown areas and medium to high density residential areas with sidewalks and crosswalks, relatively compact development, and grid street patterns. While these areas were built with pedestrian infra-

structure such as sidewalks and stairs, their age combined with deferred maintenance has resulted in many sidewalks and stairs needing repair. The suburban south and eastern portions of the county have longer distances between destinations, lack of sidewalks in some developments, both commercial and residential, and inhospitable pedestrian conditions (such as major arterials with fast-moving traffic and large parking lots separating destinations from sidewalks). Current land use patterns that separate residential areas from employment centers result in conditions where very few can walk to jobs or shopping.

Thirteen of the fourteen cities in Alameda County have policies acknowledging and planning for pedestrian needs. Some of the specific plans prepared for unincorporated communities also have pedestrian policies. Most general plans include goals encouraging the use of non-motorized transportation; many include policies about crosswalks and sidewalks as well as off-road trails. Some cities address specific pedestrian needs, such as school crossing guards and curb cuts for wheelchairs. Appendix B-3 shows current and planned pedestrian goals, policies, and implementation programs in Alameda County cities, as contained in their respective general plans.

## CONNECTIONS TO ADJACENT COUNTIES

This section gives an overview of existing on-street bicycle lanes and off-street trails that provide a regional connection between Alameda County and adjacent counties. To date, the most extensive network of existing regional connections are components of the EBRPD multiuse trail system. Most of them are located in the eastern part of the County. Connections to adjacent counties are also possible via other on-street routes and pathways. Some counties adjacent to Alameda County have plans for bike-ways that could connect into Alameda County, while in other counties, no planning efforts have been made to date. The status of inter-county bike-way connections is summarized below.

### San Francisco Bay Trail



The San Francisco Bay Trail is planned to extend along the waterfront of Alameda County, continuing north into Contra Costa County and south into Santa Clara County, for a total of 400 miles of trail and on-street bike-ways which will circle the entire San Francisco Bay. The Bay Trail also consists of spur trails. An existing segment of this trail currently stretches across the Alameda-Contra Costa border, linking Albany with El Cerrito and Richmond. When completed, the Bay Trail will link Alameda County to the adjacent counties of Santa Clara County, San Francisco County and San Mateo County.



## **San Mateo County**

Access to all Bay Area bridges is part of the Bay Trail alignment. The San Mateo-Hayward Bridge and the Dumbarton Bridge provide the only roadway connections to San Mateo County from Alameda County. The Dumbarton Bridge has an eight foot bicycle path on the south side which is connected to the local roadways via bike paths. The existing signage to the Dumbarton bridge is poor from the major arterials and from the nearest BART stations.

The San Mateo-Hayward bridge currently does not have bicycle access. The highrise portion of the bridge has three lanes in each direction with no room for wide shoulders or bike lanes. The proposed widening of the approach does not include access to the highrise section, thus a gap remains in inter-county bicycle commuting between Alameda County and San Mateo County.

## **San Francisco County**

The San Francisco Bay Bridge is the only roadway connection between Alameda and San Francisco Counties. Access is possible via various transit providers. The Bay Bridge currently has five eleven-foot travel lanes on both the upper and the lower decks. There are no shoulders, sidewalks or pathways. If the eastern span is rebuilt, current plans include eight-foot shoulders on both sides of each direction of travel. Bicycle access would be provided via a separate path for both bikes and pedestrians. This would provide access between Alameda County and Treasure Island and Yerba Buena Island. Access to San Francisco would be contingent on the retrofit of the western span to include bicycle access.

## **Santa Clara County**

### **On-Street**

There are no existing bike routes between Fremont and Milpitas. The City of Milpitas recently adopted a Bikeway Master Plan (1999), and has an extensive proposed bicycle route system. Connections to Alameda County (Fremont) would be possible via Class II bicycle lanes which currently exist on North Milpitas Boulevard and North Park Victoria Drive.

## **Contra Costa County to the Tri-Valley**

### **Off-Street**

The Iron Horse Trail is an existing 23-mile north-south trail that generally follows I-680 extending from Concord in Contra Costa County to Dublin in Alameda County, immediately south of the Alameda-Contra Costa County border. The trail is planned to extend north to Solano County and south to Pleasanton with an eastward future connection to San Joaquin



County. A one-mile segment of Tassajara Creek Trail is located along Tassajara Creek, near to Tassajara Road in Eastern Dublin south of the County line. A proposed extension northward would connect to Mt Diablo State Park. The southern end will connect with the Iron Horse Trail via a 12' wide bicycle/pedestrian path along Dublin Boulevard. The City of Dublin also constructed a 20' wide traffic lane along Dublin Boulevard (westbound and eastbound) between the creek and Iron Horse Trail wide enough to accommodate both vehicles and bicyclists. However, no bike lanes were provided.

#### **On-Street**

The City of San Ramon has several bikeways. An existing Class II bicycle lane on Norris Canyon Road ends east of the Alameda-Contra Costa County border. Norris Canyon Road extends west from Bollinger Canyon Road (and connects to the existing on-street network). Existing connections extending south of San Ramon include (west to east): a Class II bicycle lane on San Ramon Valley Boulevard, a Class III bicycle route on Davona Drive, a Class III bicycle route on Alcosta Boulevard, and a Class II bicycle lane on Village Parkway. Proposed connections include Class II bicycle lanes on Westside Drive, Stagecoach Road and Dougherty Road.

### **Contra Costa County to North Alameda County/Berkeley and Albany**

#### **Off-Street**

The Ohlone Greenway provides an existing Class I bikeway connection from Central Berkeley, through Albany northward to the El Cerrito/Richmond border at Conlan Avenue, immediately north of the El Cerrito del Norte BART station. The greenway runs underneath the existing elevated BART track and was recently improved to include directional signage for cyclists.



### **Contra Costa County to Oakland**

#### **On-Street**

A bicycle route currently extends through Orinda via bike lanes on Moraga Way to Camino Pablo Boulevard, continuing northbound. This route connects with Wildcat Canyon Road, a well-utilized roadway leading west to Grizzly Peak Boulevard in Alameda County. Fish Ranch Road is also used to access Orinda from Grizzly Peak Boulevard, via State Route 24.

## **San Joaquin County**

### **On-Street**

Several communities within San Joaquin County have limited bicycle networks in place, including the cities of Tracy, Stockton, Manteca and Escalon. Existing and proposed local and regional routes are cited in the San Joaquin County Regional Bicycle Master Plan, completed in 1994. However, few regional bicycle routes currently exist to link communities within San Joaquin County, or to provide a connection to Alameda County. The 1994 San Joaquin County Regional Bicycle Master Plan recommends an extension of the existing bicycle lane on Grant Line Road in the City of Tracy, to provide a regional rural connection to Alameda County. The Grant Line Road route currently ends immediately west of Corral Hollow Road. In the Master Plan, the proposed extension would stretch 4.5 miles (from the Tracy City limits to the Alameda County border), at an estimated cost of \$160,000.

### **Off-Street**

The California Aqueduct Trail is a Class I, multiuse trail that extends from the Bethany Reservoir in Alameda County through San Joaquin County to its border with Stanislaus County (and beyond), following Interstate 580. From the Bethany Reservoir, this existing trail could potentially link to the Brushy Creek to Bethany Reservoir and DeAnza National Historic Trails proposed by the EBRPD, providing access to the network of planned and existing EBRPD trails throughout Alameda (and Contra Costa) County. The Iron Horse Trail would also connect to San Joaquin County.

## **BICYCLE OR PEDESTRIAN COLLISIONS WITH MOTOR VEHICLES**

The collision data on reported collisions between motor vehicles and either bicycles or pedestrians was obtained from the California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS) for 1996 through 1998. SWITRS data includes reported collisions resulting in injury and most reported collisions involving property damage above \$500. (Local agencies are only required to submit fatal and injury collisions to the CHP). SWITRS does not include any collisions on private property such as parking lots or any collisions that were not investigated by a police officer. There were 2,346 bicycle collisions in Alameda County in the three year period. Berkeley and Oakland each had 600 collisions. More detail on collision locations is presented below for the three-year period 1996 to 1998 and collision rates are discussed on Page 2-26.

### High Collision Locations

The collision data were analyzed to determine the high collision locations, party at fault, and age of injured parties. This data is summarized below. The motor vehicle/bicycle collision locations are depicted in Figure 2-5 and the motor vehicle-pedestrian collision locations are presented in Figure 2-6.

#### **MOTOR VEHICLE COLLISIONS WITH BICYCLES AND/OR PEDESTRIANS BY PRIMARY ROAD** (three or more collisions, 1996-1998):

A list of roadways by city with three or more collisions is presented in Table 1 of Appendix B-4.

The three roads with the most bicycle and/or pedestrian/ motor vehicle collisions:

- Oakland's International Boulevard (total of 134 collisions)
- Berkeley's Shattuck Avenue (total of 91 collisions)
- Fremont's Fremont Boulevard (total of 84 collisions)

The three roads with the highest number of motor vehicle/ bicycle collisions:

- Berkeley's Shattuck Avenue (55 collisions)
- Fremont's Fremont Boulevard (40 collisions)
- Oakland's International Boulevard (31 collisions)

The three roads with the highest number of motor vehicle/ pedestrian collisions (all in Oakland):

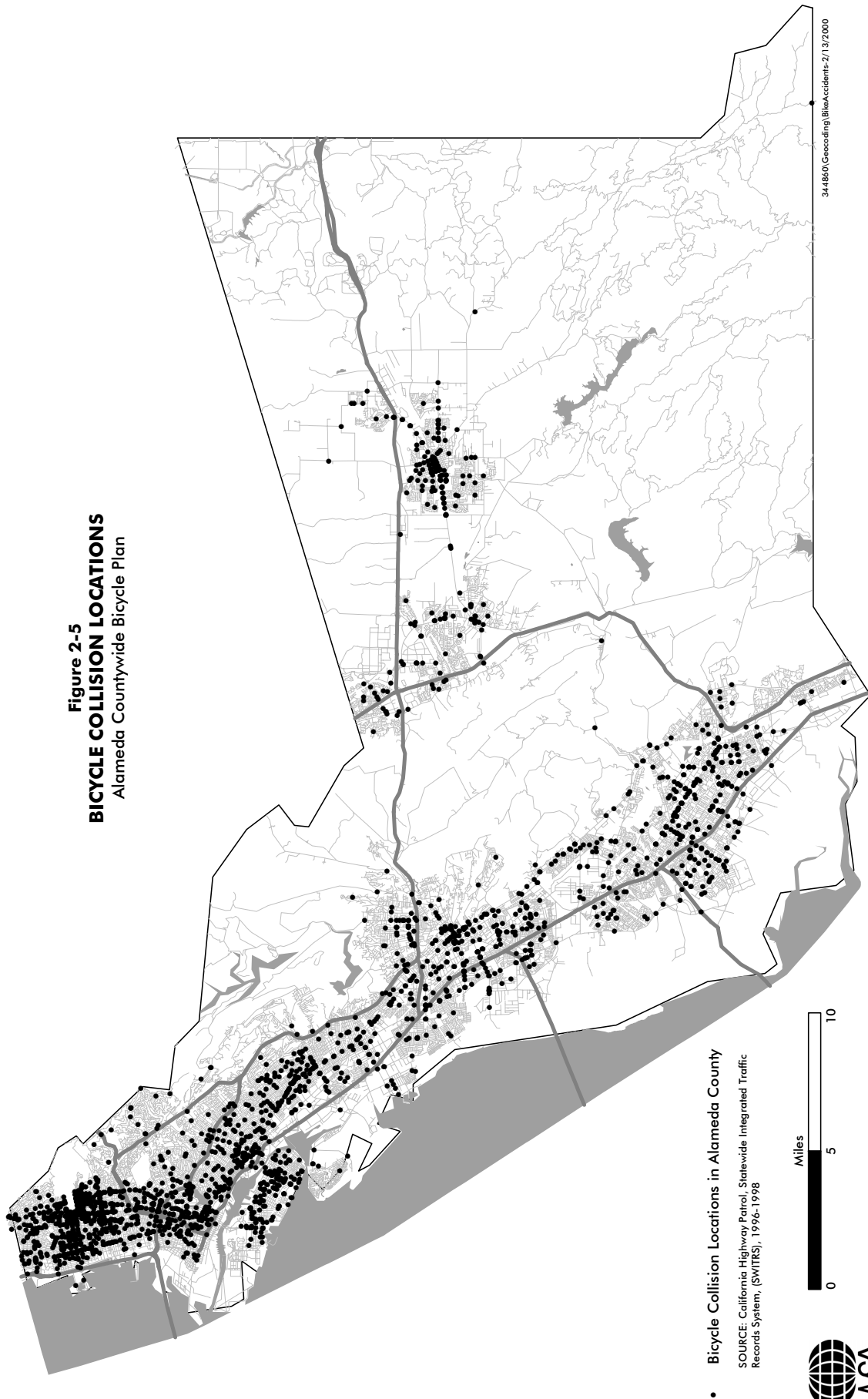
- International Boulevard (103 collisions)
- Foothill Boulevard (60 collisions)
- MacArthur Boulevard (50 collisions)

#### **MOTOR VEHICLE COLLISIONS WITH BICYCLES AND/OR PEDESTRIANS BY INTERSECTION** (three or more collisions, 1996-1998):

A list of intersections by city with three or more collisions is presented in Table 2 of Appendix B-4.

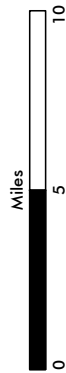
The intersections with the highest number of motor vehicle-bicycle collisions were:

**Figure 2-5**  
**BICYCLE COLLISION LOCATIONS**  
 Alameda Countywide Bicycle Plan



• Bicycle Collision Locations in Alameda County

SOURCE: California Highway Patrol, Statewide Integrated Traffic Records System, (SWITRS), 1996-1998

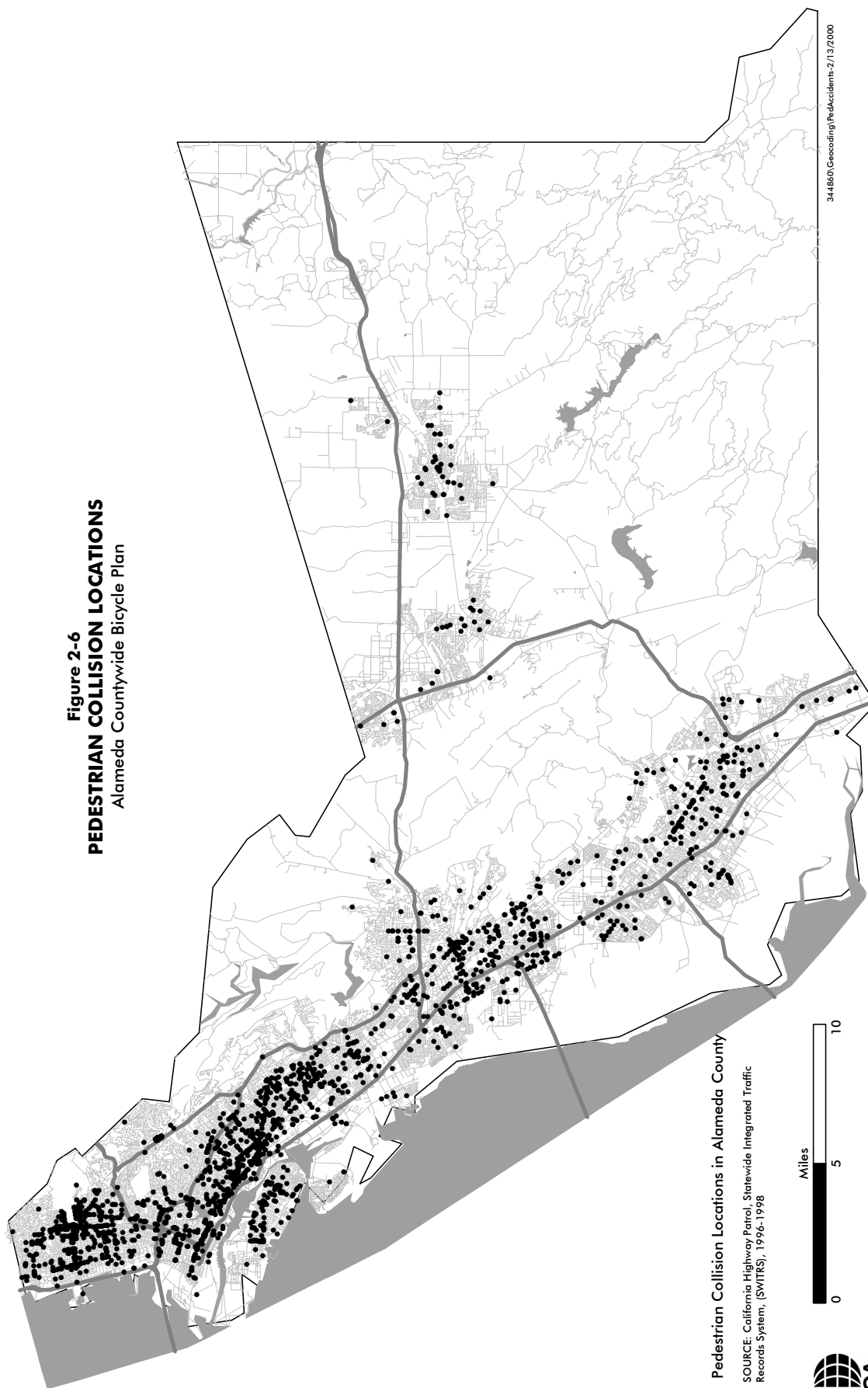


WSA WILBUR SMITH ASSOCIATES

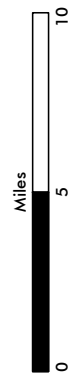
344860 Geocoding BikeAccidents-2/13/2006



**Figure 2-6**  
**PEDESTRIAN COLLISION LOCATIONS**  
 Alameda Countywide Bicycle Plan



• Pedestrian Collision Locations in Alameda County  
 SOURCE: California Highway Patrol, Statewide Integrated Traffic  
 Records System, (SWITRS), 1996-1998



344860 Geocoding PedAccidents-2/13/2000



- Fremont - Stevenson Boulevard/Blacow Road (7)
- Berkeley - Bancroft Way/Fulton Avenue (7)
- Berkeley - Telegraph Avenue/Ashby Avenue (7)

The intersections with the highest number of pedestrian collisions were:

- Berkeley- University/Shattuck Avenue (12).
- Oakland -Fruitvale Avenue/Foothill Boulevard (8),
- Berkeley's Durant/Telegraph Avenue (8)

The intersections with the highest number of motor vehicle/bicycle and/or pedestrian collisions were:

- Berkeley- University/Shattuck (17);
- Fremont- Fremont Boulevard/Mowry Avenue (11);
- Emeryville - San Pablo Avenue/40th Street (10).

These and other intersections with the highest number motor vehicle/pedestrian and/or bicycle collisions are shown in Table 2-4.

Most of these collision locations occur at three basic type of settings:

- Dense downtown or urban streets
- Urban arterials
- Suburban arterials

<b>Table 2-4</b> <b>HIGH MOTOR VEHICLE/BICYCLE AND/OR PEDESTRIAN COLLISION</b> <b>INTERSECTIONS</b>			
<b>City</b>	<b>Intersection</b>	<b>Number</b>	<b>Type</b>
Berkeley	University/Shattuck	17	bike or ped
Fremont	Fremont Blvd/Mowry Ave	11	bike or ped
Emeryville	San Pablo Ave/40 <sup>th</sup> St	10	bike or ped
Berkeley	College/Bancroft	9	bike or ped
Berkeley	Ashby/MLK Jr. Way	9	bike or ped
Berkeley	Shattuck/Allston	9	bike or ped
Berkeley	Shattuck/Addison	9	bike or ped
Livermore	Murrieta/Fenton	9	bike or ped
Oakland	Fruitvale Ave/Foothill Blvd	8	pedestrian
Oakland	International Blvd/64 <sup>th</sup> Ave	7	pedestrian
Source: SWITRS 1996-1998.			

### BICYCLE AND PEDESTRIAN COLLISION RATES

Table 2-5 shows the total number of bicycle collisions and the collision rates for each city in Alameda County. As indicated in the table, the County's average collision rate per 1000 population is higher than the state's and the nation's averages. Since the collision rates per capita do not reflect the level of bicycle use in each city, the collision rate per bicycle-mile-traveled (BMT) and per bicycle trip (BT) were calculated to determine if a city's collision rates are out of proportion with its bicycle usage. Comparisons to the national and statewide average by million BMT and million BT are not possible since this data is not available at the state or national level. The methodology to determine the collision rates per BMT and per bike trip is described in Appendix B-5.

The Alameda countywide average is 13 bicycle collisions per million bicycle miles traveled (BMT) and 35 collisions per million bicycle trips (BT). As indicated in Figures 2-7a and 2-7b, the cities of Alameda, Berkeley, Hayward and San Leandro all have higher collision rates than the countywide average for both BMT and BT. Berkeley's collision rate is the highest, at 25 bicycle collisions per million BMT and 45 per million BT. Alameda and Hayward also have high collision rates per million bicycle trips at 41 and 42, respectively.

Table 2-6 shows both the total number of pedestrian collisions and the pedestrian collision rates for each city in Alameda County. As indicated in the table, the countywide average collision rate per million pedestrian miles of travel (PMT) is 6, and per million pedestrian trips (PT) is 5. The

**Table 2-5  
BICYCLE COLLISION RATES BY CITY - ALAMEDA COUNTY**

City	Total Bike Collisions 1996- 1998	Total Bike Collisions 1998	Daily Bicycle Miles of Travel (BMT)	Collisions per Million BMT	Daily Bicycle Trips	Collisions per Million Bicycle Trips	Population 1998 (1000)	Collisions per year per 1000 pop.
Alameda	135	36	6,429	15	2,382	41	72.8	0.49
Albany	31	7	3,138	6	1,267	15	17.7	0.40
Berkeley	602	179	19,833	25	10,865	45	108.1	1.66
Dublin	18	7	2,480	8	1,037	18	27.85	0.25
Emeryville	18	4	2,868	4	839	13	7	0.57
Fremont	238	79	19,395	11	5,679	38	199.5	0.40
Hayward	193	60	9,809	17	3,894	42	126.9	0.47
Livermore	145	31	4,960	17	2,573	33	71.1	0.44
Newark	52	15	3,622	11	1,214	34	41.4	0.36
Oakland	606	135	38,649	10	13,615	27	397.8	0.34
Piedmont	9	0	1,016	0	341	0	11.5	0.00
Pleasanton	58	19	4,241	12	1,900	27	62.8	0.30
San Leandro	67	29	5,159	15	2,013	39	74.6	0.39
Union City	53	11	5,458	6	1,371	22	62.7	0.18
Unincorporated	121	41	6,843	16	2,534	44	131.4	0.31
COUNTY AVERAGE	2,346	653	133,900	13	51,524	35	1413.15	0.55
STATE AVERAGE	37,730	-	na	-	na	-	32,268	0.39
US AVERAGE	174,000	-	na	-	na	-	267,636	0.22
Sources: California Highway Patrol, Statewide Integrated Traffic Records System, (SWITRS) 1998, Table 8a. National Highway Traffic Safety Administration (NHTSA) 1998 MTC Travel Forecasting Model, See Appendix B-5.								
Notes:								
1. SWITRS data includes only reported accidents that involve property damage or injury. (It is required to report only accidents resulting in injury or property damage above \$500.) SWITRS does not include counter reports or collisions on private property such as parking lots.								
2. Population for state and U.S. is for 1997.								
3. Collision rates are based on the 1998 collision totals since the population and the bicycle trip data are also from 1998.								

City of Hayward exceeds both these rates, while the City of San Leandro exceeds the rate per million PMT and the Cities of Albany, Emeryville, Oakland and San Leandro exceed the rate per million PT.

## Other Collision Data Analysis

### Bicyclist Collisions by Party at Fault

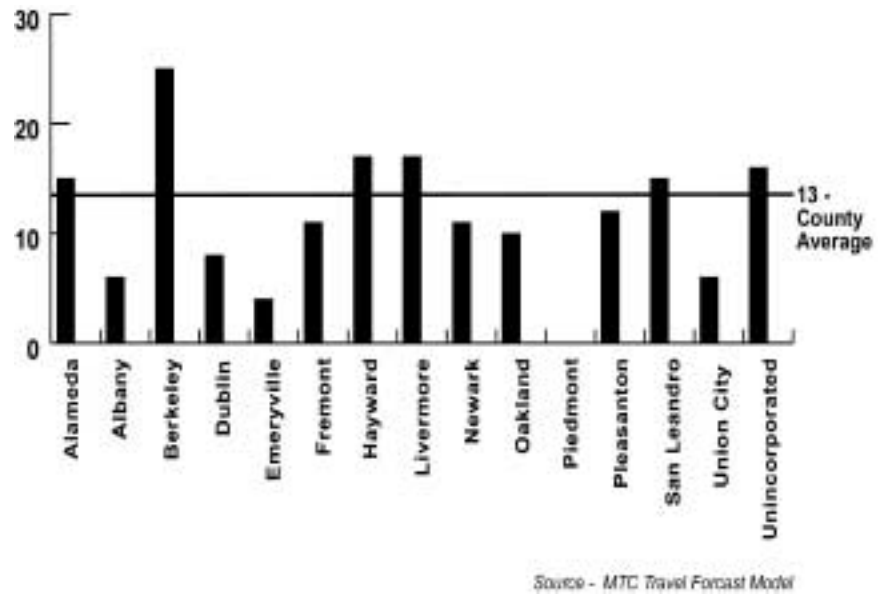
Since motorists are all at least 16 years of age, the bicyclists were divided into two age groups for this analysis: under 16 and 16 and older. This separation of bicyclists by age enables a comparison of similar groups of responsible parties and is useful in developing targeted safety and education strategies, since the types of errors resulting in collisions committed by the two age groups tend to differ.

Countywide, of all bicycle/motor vehicle collisions:

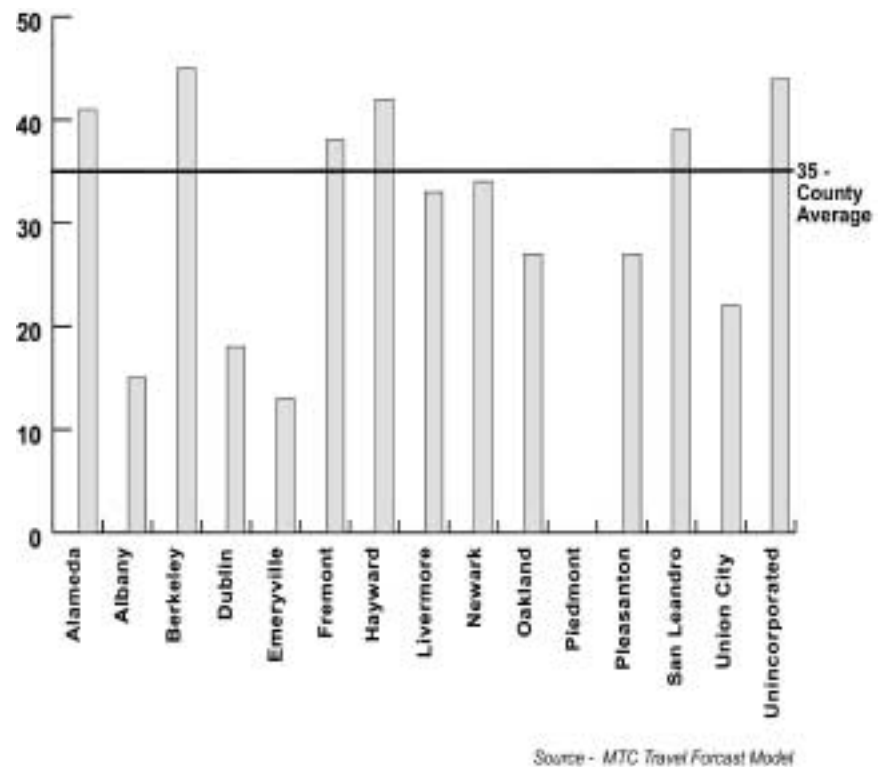
- bicyclists 16 and older were deemed at fault in 40%,
- bicyclists under the age of 16 were at fault in 30%, and
- drivers were at fault in 28%.

The data for each City is presented in Table 3 of Appendix B-4.

**Figure 2-7a**  
**Bicycle Collisions per Million Bicycle Miles of Travel**



**Figure 2-7b**  
**Bicycle Collisions per Million Bicycle Trips**





**Table 2-6  
PEDESTRIAN COLLISION RATES BY CITY - ALAMEDA COUNTY**

City	Total Pedestrian Collisions 1996-1998	Total Pedestrian Collisions 1998	Pedestrian Miles of Travel (PMT)	Accidents per Million PMT	Daily Pedestrian Trips	Accidents per Million Pedestrian Trips	Population-1998 (1000)	Collisions per Year per 1000 Pop.
Alameda	123	33	20,448	4	21,560	4	72.8	0.45
Albany	31	10	5,169	5	4,222	6	17.7	0.56
Berkeley	429	130	64,791	5	67,238	5	108.1	1.20
Dublin	5	1	4,668	1	8,357	0	27.85	0.04
Emeryville	34	7	3,475	6	3,233	6	7	1.00
Fremont	188	67	38,678	5	42,211	4	199.5	0.34
Hayward	225	73	27,608	7	30,388	7	126.9	0.58
Livermore	54	14	9,057	4	17,847	2	71.1	0.20
Newark	32	10	8,059	3	11,685	2	41.4	0.24
Oakland	1198	327	137,875	6	121,181	7	397.8	0.82
Piedmont	7	1	2,938	1	2,316	1	11.5	0.09
Pleasanton	30	10	8,806	3	14,421	2	62.8	0.16
San Leandro	91	38	15,736	7	18,064	6	74.6	0.51
Union City	48	7	7,439	3	8,344	2	62.7	0.11
Unincorporated	138	39	20,937	5	22,217	5	131.4	0.30
COUNTY TOTAL	2633	767	375,683	6	393,284	5	1413.15	0.62
STATE	43,033	-	na	-	na	-	32,268	0.44
US	234,000	-	na	-	na	-	267,636	0.29

Sources: California Highway Patrol, Statewide Integrated Traffic Records System, (SWITRS) 1998, Table 8a.  
National Highway Traffic Safety Administration (NHTSA) 1998  
MTC Travel Forecasting Model, See Appendix B-5.

Notes:

1. SWITRS data includes only reported accidents that involve property damage or injury. (It is required to report only accidents resulting in injury or property damage above \$500.) SWITRS does not include counter reports or collisions on private property such as parking lots.
2. Population for state and U.S. is for 1997.
3. Collision rates are based on the 1998 collision totals since the population and the bicycle trip data are also from 1998.

### Pedestrian Collisions by Party at Fault

The analysis of pedestrian collisions, as shown in Table 2-7, revealed that drivers were at fault for more than 50% of the collisions in all cities except Hayward and Union City (48% and 39%). In every city, drivers were more at fault than any other party. As the table below indicates, the Cities of Dublin and San Leandro had the highest percentages of drivers-at-fault (75% and 72%). The Cities of Alameda, Piedmont, and Berkeley all followed at 71% for each city.

On average, pedestrians under 16 years old were the party at fault for 21% and pedestrians 16 years old or older were the party at fault on average for 17%.

- In Union City, pedestrians under the age of 16 were at fault in 34% of collisions,
- In Piedmont, Pleasanton and Hayward, pedestrians under the age of 16 were at fault in almost 30% of collisions,.
- For collisions with older pedestrians at-fault, the unincorporated areas of the County, Dublin, and Fremont were the top three cities (28%, 25%, and 24%).

### Bicycle Collisions by Primary Cause

The top ten primary causes of bicycle/motor vehicle collisions were determined by the section of the California Vehicle Code (CVC) that was violated. The top three violations for bicyclists were:

- bicyclist not cycling in the same direction as traffic (275 collisions),
- failure to use right edge of the roadway (172 collisions),
- failing to yield the right-of-way when crossing a street (137 collisions).

It should be noted that the City of Oakland's statistics skew the results for failure to use right edge of the roadway as 120 of the 172 collisions were in Oakland. The data for each city is presented in Table 4 of Appendix B-4.

The top three citations for drivers of motor vehicles were:

- opening the door on the traffic side when it's unsafe (137),
- unsafe turning (101), and
- left-turning driver failing to yield (99).

<b>Table 2-7</b> <b>RATES OF DRIVERS AT FAULT IN</b> <b>PEDESTRIAN/MOTOR VEHICLE COLLISIONS</b>		
<b>Location</b>	<b>Number of Pedestrian-MV Injury Collisions</b>	<b>Drivers at fault in Pedestrian-MV Collisions</b>
<b>Highest five cities</b>		
Dublin	5	75%
San Leandro	91	72%
Alameda	123	71%
Berkeley	429	71%
Piedmont	7	71%
<b>Lowest two cities</b>		
Hayward	225	48%
Union City	48	39%
Alameda County Total	2633	62%
Source: SWITRS 1997-1998		

### **Bicycle and Pedestrian Fatalities as the Percent of the Total Number of Traffic Fatalities by City**

The most recent SWITRS data, 1998, was analyzed to determine the proportion of bicycle and pedestrian traffic fatalities and injuries compared to total traffic fatalities and injuries. In 1998, only San Leandro, Hayward and Fremont had bicycle fatalities. The proportion of total traffic fatalities that were bicyclists in these three cities were 17 percent, 14 percent and 10 percent, respectively. The countywide average percentage of bicyclists killed was three percent, as was the state's and the nation's.

The number of pedestrians killed in 1998 as a proportion of the total number of traffic fatalities is significantly higher than for bicyclists for all cities that experienced pedestrian fatalities (8 of the 15 jurisdictions). In Berkeley, 75 percent of all persons killed in fatal traffic collisions (three out of the four) are pedestrians, the highest rate in the County. San Leandro's pedestrian fatalities comprise 50 percent of the total traffic fatalities (three of the six) and Oakland's pedestrian fatalities comprise 39 percent of the total (12 of the 31). These figures are noticeably higher than the countywide average (30 percent or 26 out of 88), the state's average (20 percent), and the nation's average (13 percent). Data for all cities in Alameda County is presented in Table 5 of Appendix B-4.

Similar data for bicyclists and pedestrians injured is presented as a percent of total traffic injuries in Table 6 of Appendix B-4.

### **CONFLICTS BETWEEN BICYCLISTS AND PEDESTRIANS**

This section focuses on the conflicts between pedestrians and bicyclists along the street network where pedestrians and bicyclists interact. Such conflicts are most common:

- in downtown areas, such as Berkeley and Oakland with heavy pedestrian volumes,
- near college campuses or other areas with heavy bicycle volumes.
- areas where the two modes converge, e.g. entrances to BART and other transit stations, and schools with significant numbers of students using these modes.

Chapter 6 discusses some of these basic operational differences between the two modes that explain why the two modes can be incompatible.

There were twenty reported collisions between pedestrians and bicyclists in Alameda County in the three year period for which collision data was analyzed. However, it is highly likely that the actual number of such collisions is much higher than this number, since many pedestrian and bicycle collisions go unreported. The SWITRS collision database on bike-pedestrian conflicts is insufficient to analyze all such conflicts, since if a collision occurs on transit property or college/school campuses, it is most likely not reported to the CHP.

Of the reported collisions:

- most pedestrian/bicycle collisions occurred in the denser urban settings of Berkeley and Oakland, with ten and six, respectively,
- one collision each also occurred in the outlying suburbs of Livermore, Pleasanton, Fremont and Newark.

Most Berkeley collisions occurred on Shattuck Avenue. Other than the urban setting, there was no overriding common factor in these collisions. They occurred both at intersections and midblock, they involved children, young adults and older adults and occurred in the daytime and in darkness. The violations varied greatly and ranged from sidewalk riding, to riding the wrong way on a one-way street to jaywalking. The detailed police report would need to be analyzed to determine the exact cause of the collision. Chapter 3 contains recommendations that would help to alleviate future conflicts.

## **BICYCLE PARKING AND SUPPORT FACILITIES**

This section describes existing bicycle parking, showers and locker facilities in Alameda County. Referred to as “support facilities,” these are essential components of bicycle travel. Bicycle access to transit also is a crucial element of supporting bicycle transportation and is discussed following this section. Bicycle parking, showers and clothes storage and changing facilities encourage bicycling and in some cases, they may make the difference of the bike trip being made at all.



The following paragraphs describe how the demand for bicycle parking varies by time duration and how this affects the types of parking facilities that meet the demand.

### **Bicycle Parking Duration**

Bicycle parking demand falls into three general duration categories:

- Short-term - 2 hours or less. Typical application is the shopping trip.
- Long-term - 3 hours to full day. Typical application is the work trip.
- Overnight - one night to two weeks or more. Typical application is the weekend or vacation trip, but also used by commuters who do not ride home the same day they rode to work.

## Classes of Bicycle Parking

Bicycle parking facilities fall into three general categories. The following discussion describes the three classes of parking and which class meets the various parking demand categories:

**Class I** - This is defined as protecting the entire bicycle and its components from theft, vandalism, or inclement weather. It is appropriate for long-term bicycle parking such as at employment centers or transit stations. Examples are bike lockers, rooms with key access for regular bike commuters, guarded parking areas, and valet or check-in parking such as the Bike Station at the downtown Berkeley BART station. A common variation of guarded bike parking is at schools where racks are placed within a fenced compound to provide more security to discourage theft. The compound is either locked during the day or unofficially guarded by the activity within the school.

**Class II** - This is defined as a rack to which the frame and at least one wheel can be secured with a user-provided U-lock or padlock and cable. This type of parking is appropriate for short-term parking such as at shopping areas, libraries, and other places where the typical parking duration is about two hours. Examples of racks popular with bicyclists are the wave or ribbon racks and the inverted U-rack, or horse rail rack. Increasingly popular are higher security Class II racks.

**Class III** - These racks secure only one wheel to the rack and were quite popular in school yards. They are never recommended except in guarded areas or locked rooms, where they are used in Class I situations.



## Existing Bicycle Parking Supply at Regional Attractors

Appendix B-6 presents an inventory of existing bicycle parking facilities at major attractions in Alameda County. The higher-educational facilities (universities, colleges and libraries) have the most bicycle parking accommodations both in quantity and diversity. The inventory revealed an overall need to increase the amount of bicycle parking and to improve existing parking facilities, particularly at commercial centers, parks, civic locations and elementary and high schools, as shown in Appendix B-6 and B-7. Included in Appendix B-6 are recommendations for improving bicycle parking in the County. Appendix B-7 offers a summary by local jurisdiction of the existing bicycle parking conditions. The existing parking supply for the major attractors is presented in Figure 2-8.

### **Bicycle Parking Policies and Ordinances**

The status of each jurisdiction's bicycle parking programs is summarized in Table 2-8. Two cities have bicycle parking ordinances for new construction - Berkeley and Dublin. The ideal ordinance would specify the types (e.g. Class I lockers or attended parking and Class II bike racks) and amounts of bicycle parking by land use as well as including showers and clothes lockers. Some ordinances tie the amount of bike parking to the amount of vehicle parking required. However, the amount of bike parking should be proportionate to the square footage rather than the number of vehicle spaces.

Recommendations for bike parking supply that could be used as a basis for a zoning ordinance are presented in Chapter 6.

### **Shower and Locker Facilities and Programs**

Showers and storage for clothing encourage bicycle commuting, and may make the difference as to whether biking to work is practical. Showers and lockers also provide benefits to all employees as they can be used by those who run, walk, or cycle during lunch breaks. Clothes storage facilities can be individual lockers or a closet shared by all employees.

Ordinances requiring or encouraging shower and locker facilities are typically less common than bike parking ordinances and none of the jurisdictions currently require showers as a component of new office and retail construction or renovations.

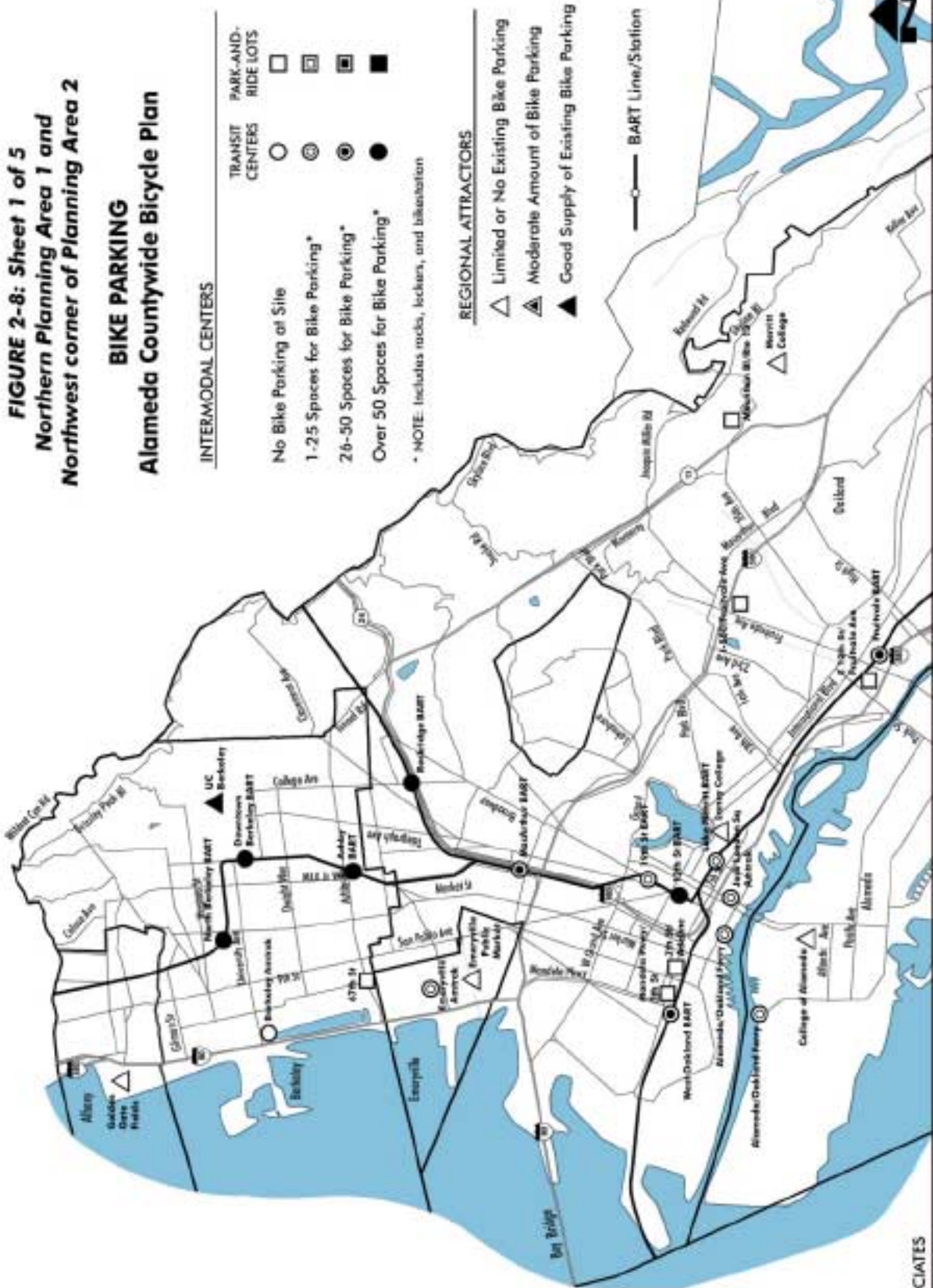
### **BICYCLE ACCESS AND TRANSIT**

Many commuters live too far from transit to walk, and feeder buses may not be available, or may be inconvenient. Using bicycles to access transit stops can quadruple the 5-minute catchment area. In 5 minutes, a person can walk about one-quarter mile or ride a bike over one mile. Bringing bicycles on board transit vehicles is another way to combine bicycles and transit to extend the feasible length of the commute trip. This section discusses bicycle access to transit services and parking at transit stations. It includes policies governing on-board bicycle access to trains, ferries, buses and paratransit, as well as bike storage facilities, including racks and lockers at train stations and ferry terminals. Where available, access mode split data show the percentage of transit patrons who use these facilities. Figure 2-8 shows the locations of the rail transit stations and ferry terminals discussed below, as well as the amount of existing bike parking.

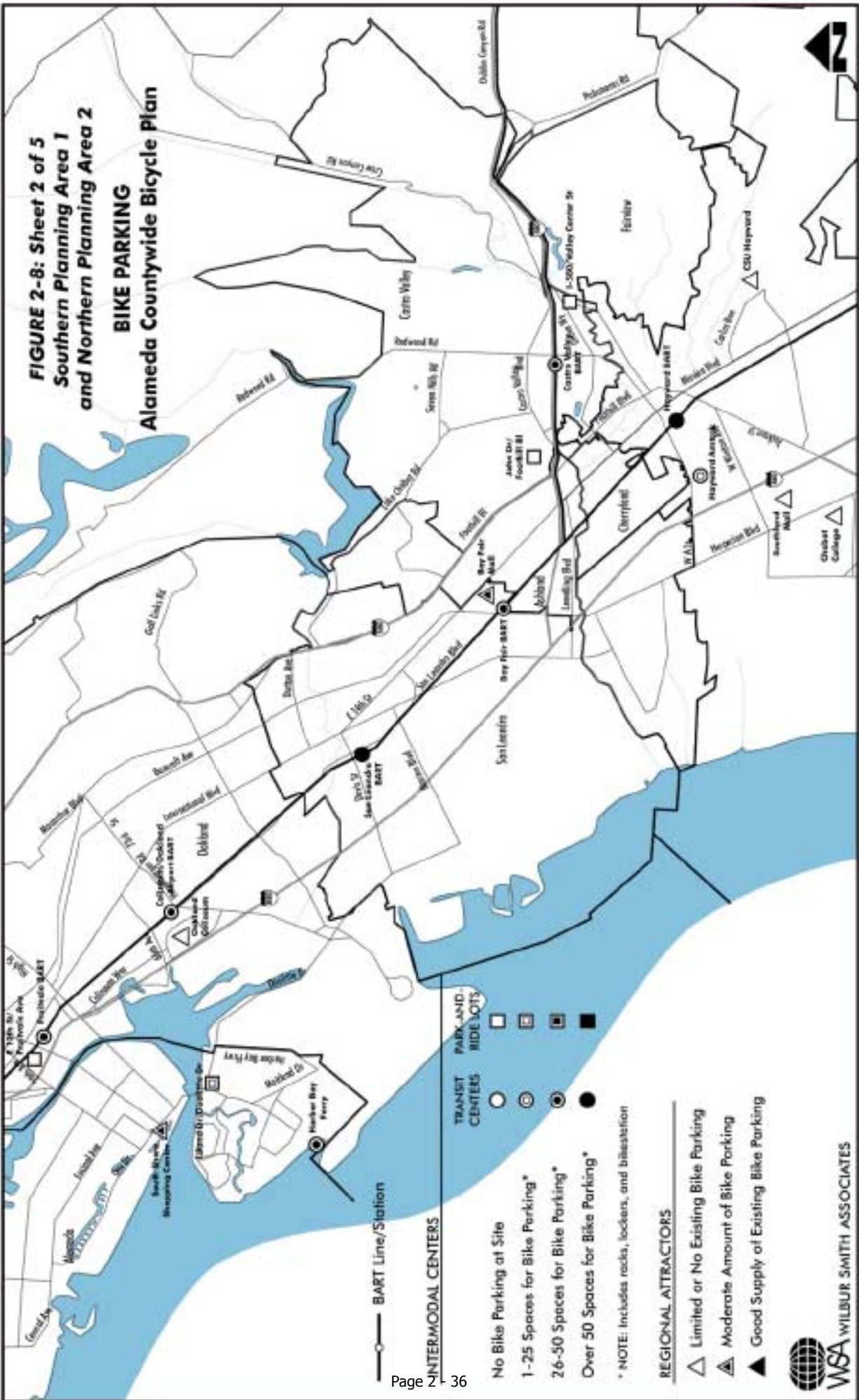


**FIGURE 2-8: Sheet 1 of 5**  
**Northern Planning Area 1 and**  
**Northwest corner of Planning Area 2**

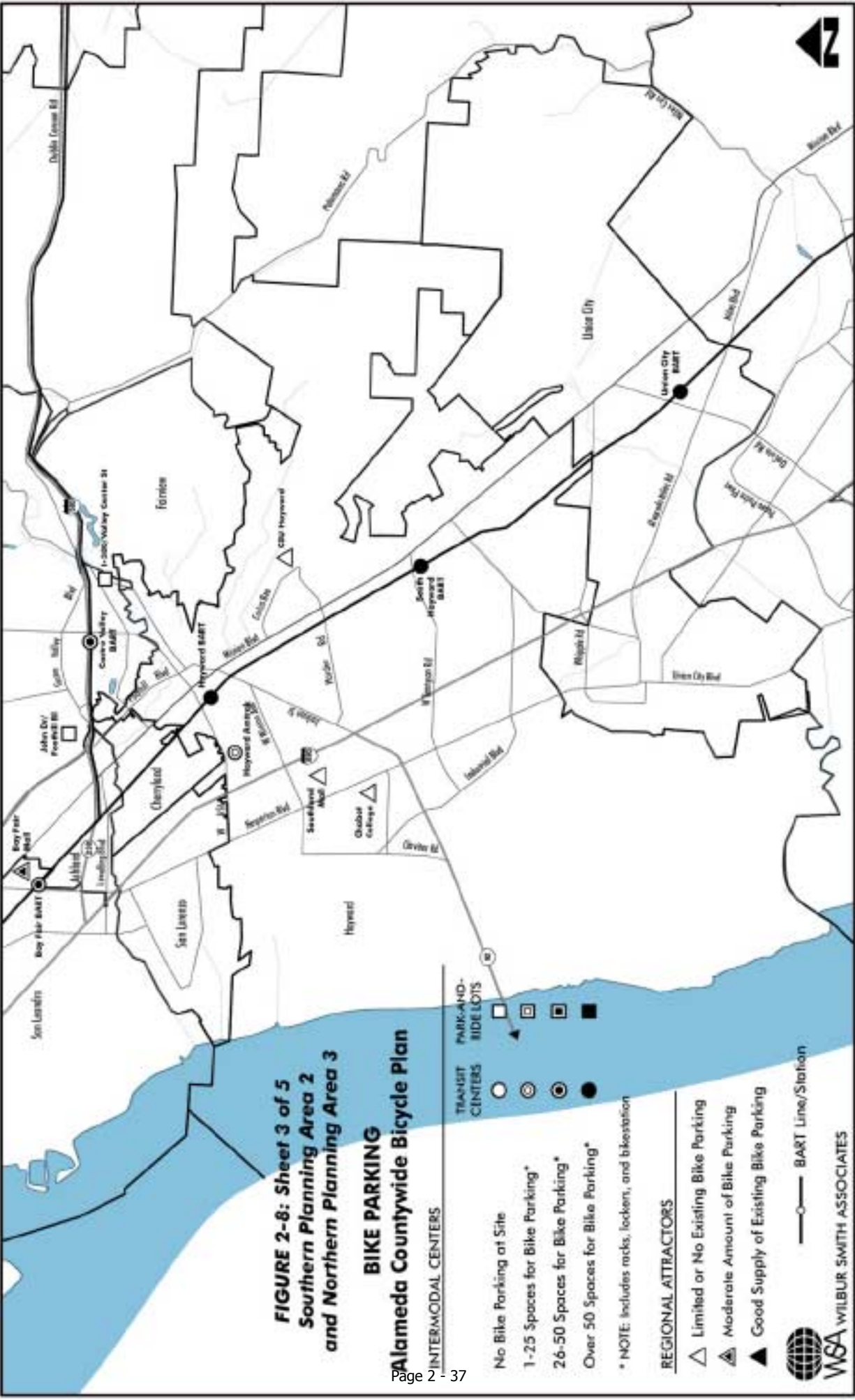
**BIKE PARKING**  
**Alameda Countywide Bicycle Plan**



**FIGURE 2-8: Sheet 2 of 5**  
**Southern Planning Area 1**  
**and Northern Planning Area 2**  
**BIKE PARKING**  
**Alameda Countywide Bicycle Plan**



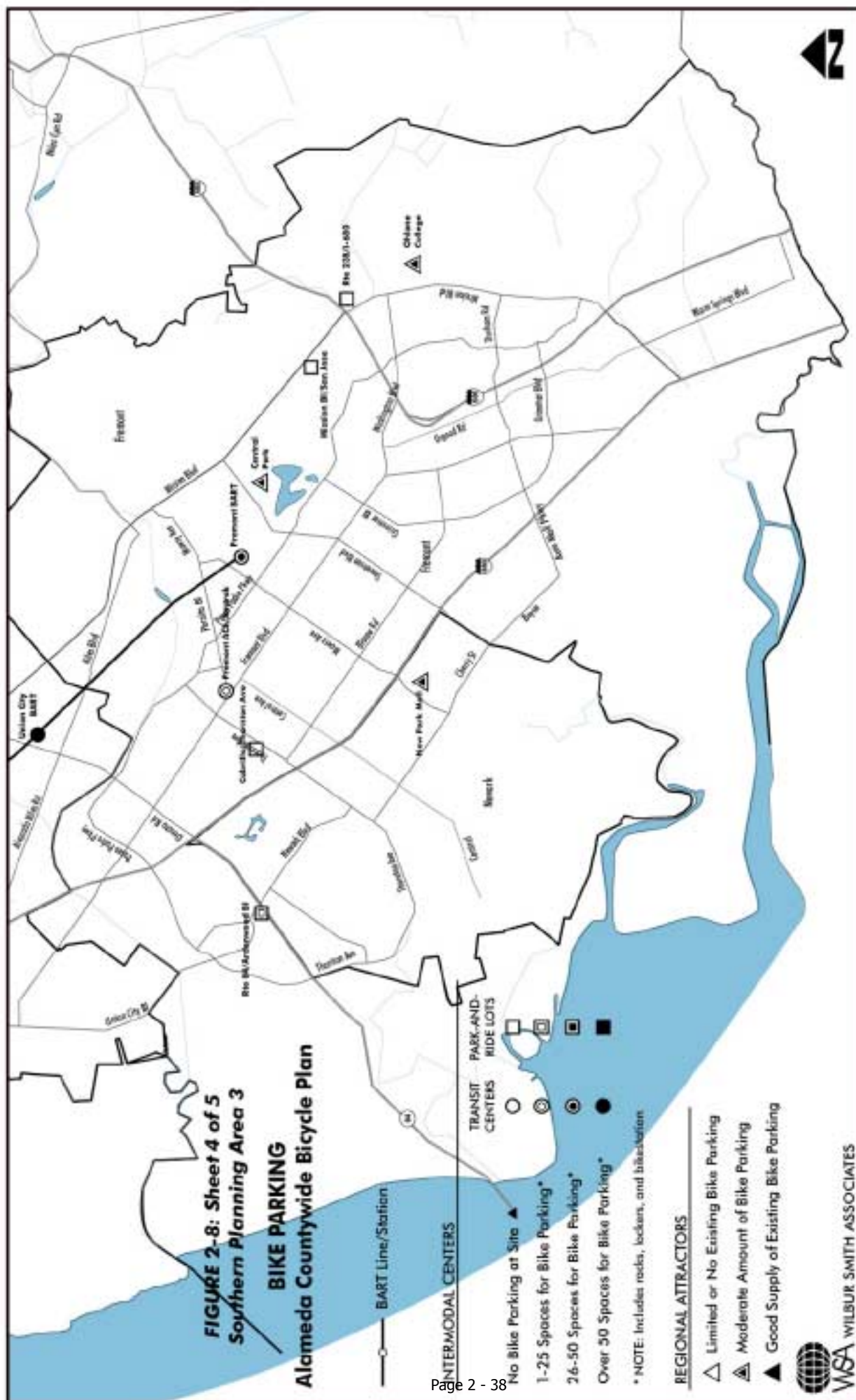


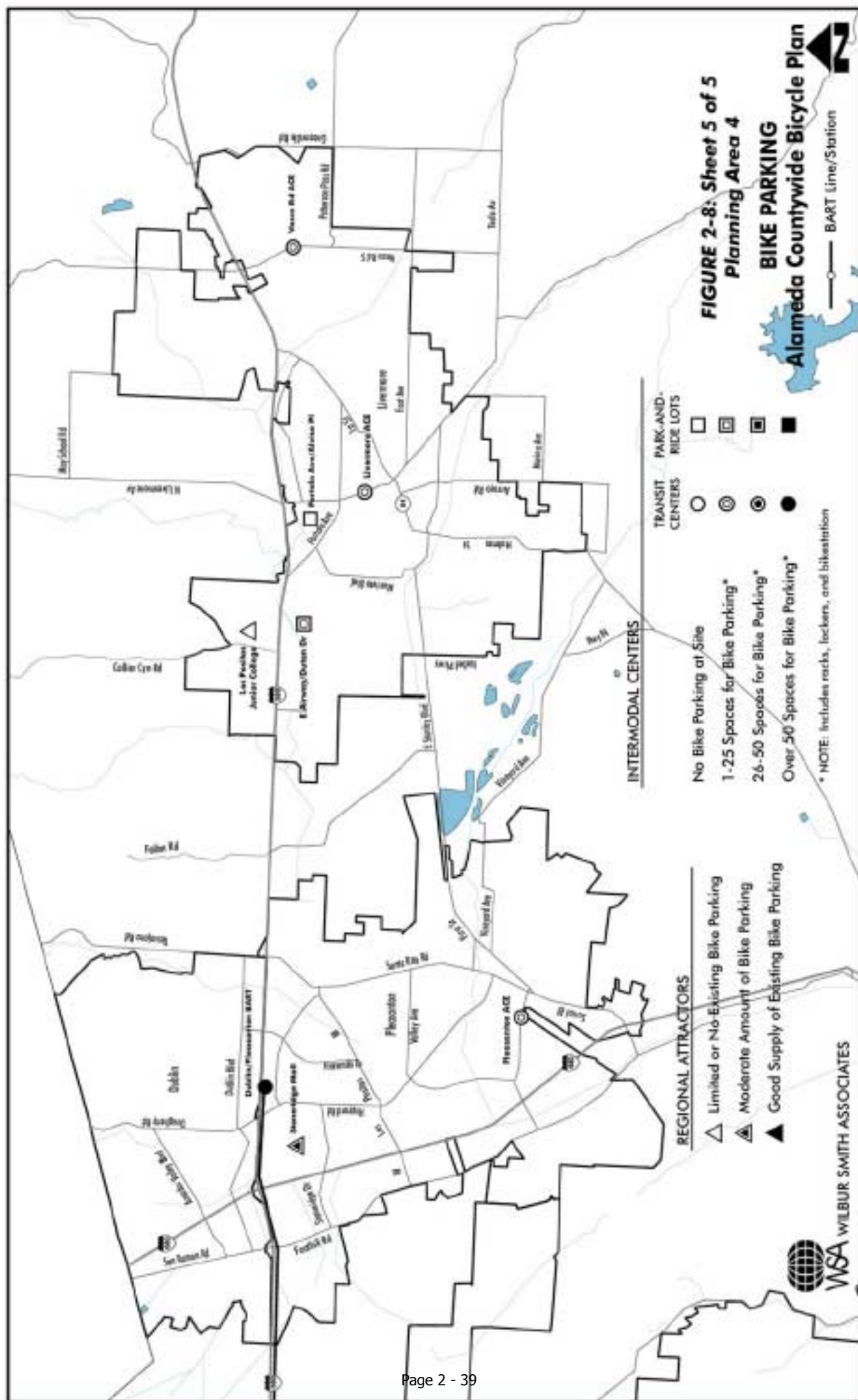


**FIGURE 2-8: Sheet 3 of 5**  
**Southern Planning Area 2**  
**and Northern Planning Area 3**

**BIKE PARKING**  
**Alameda Countywide Bicycle Plan**

- INTERMODAL CENTERS**
- No Bike Parking at Site
  - 1-25 Spaces for Bike Parking\*
  - 26-50 Spaces for Bike Parking\*
  - Over 50 Spaces for Bike Parking\*
- \* NOTE: Includes racks, lockers, and bike station
- REGIONAL ATTRACTORS**
- △ Limited or No Existing Bike Parking
  - ▲ Moderate Amount of Bike Parking
  - ▲ Good Supply of Existing Bike Parking
- BART Line/Station







<b>Table 2-8 SUMMARY OF EXISTING BICYCLE PARKING PROGRAMS AND ORDINANCES</b>		
<b>Jurisdiction</b>	<b>Parking Ordinance</b>	<b>Current Bike Rack Installation Program</b>
County – Western unincorporated areas	Recommended in 1996 Bike Plan	No
Alameda	1 per 10 vehicle spaces	Bike parking recommended in the 1999 bike plan
Albany	Recommended in the 1997 bike plan	No current plan
Berkeley	1 per 2000 sq. ft. of new construction	Current citywide bike rack program
Dublin	1 per 20 vehicle spaces	No
Emeryville	Credit up to 1/40 <sup>th</sup> of vehicle parking	No
Fremont	No	No
Hayward	No	No
Livermore	Yes	No
Newark	No	No
Oakland	None but an ordinance is under development	Current citywide bike rack program
Piedmont	No	No
Pleasanton	No	No
San Leandro	No	No
Union City	No	No



## RAIL TRANSIT PROVIDERS

Alameda County has three providers of rail transit: the Altamont Commuter Express (ACE) Train, Amtrak California/Capitol Corridor, and Bay Area Rapid Transit (BART). The ACE Train brings residents of San Joaquin County and the Tri-Valley area of Alameda County to the job centers in southern Alameda County and Santa Clara County. BART connects both Alameda and Contra Costa Counties to San Francisco. Amtrak provides national and inter-regional rail service, traveling along the western edge of Alameda County north towards Sacramento and south towards San Jose.

### Altamont Commuter Express (ACE) Train

The Altamont Commuter Express (ACE) is a commuter train service that started in October, 1998. It provides two morning and two afternoon trains between Stockton and San Jose, with additional stops in Lathrop/Manteca, Tracy, Vasco Street (in Livermore), Livermore, Pleasanton, Fremont and Santa Clara.

**Bicycle Access** - The first morning train (#01) and the second evening train (#04) have eight spaces available for bicycles; the second morning train (#02) and the first evening train (#03) have 24 bicycle spaces. Spaces are available on a first-come, first-served basis. When demand exceeds capacity of bicycle spaces on the trains, bicyclists are encouraged to use the lockers at the stations.

**Bicycle Storage** - Bicycle lockers are provided at three of the four ACE stations in Alameda County, while bicycle racks are available at two. Lockers are available on a first-come, first-served basis to ACE riders. When assigning lockers, preference is given to Monthly Pass holders. As shown in Table 2-9, the Vasco, Livermore and Pleasanton stations each have six lockers, most of which are rented out. Passengers must register and pay a \$30 key deposit to use the lockers.

**Mode Split** - According to ACE staff, roughly ten patrons per day board with bicycles. If another approximately 12 patrons park their bicycles at the stations, as indicated by Table 2-9, this implies a bicycle access mode split of roughly two percent (given approximately 1,200 daily boardings).

Table 2-9 BICYCLE STORAGE AT ACE STATIONS IN ALAMEDA COUNTY									
Station	Lockers				Racks				
	#	Filled	Avail-ability	Waiting List	#	Type	Covered	Proximity	Occu-pancy
Vasco	6	2	4	N/A	0	-	-	-	-
Livermore	6	4	2	N/A	12	A	Yes	Near	0
Pleasanton	6	5	1	N/A	0	-	-	-	-
Fremont	0	-	-	-	6	A	No	Near	2
Total	18	13	5		18				2
<b>Type:</b> A = wave, B = inverted U, C = "Coat Hanger" style, D = BART-style racks with heavy chains, E = Bike-Root, F = Bike Hitch, G = Post and Chain, H = "Schoolyard" <b>Covered:</b> Yes or No <b>Proximity:</b> Near (within 50 feet of station entrance) or Far <b>Occupancy:</b> the number of bikes parked during a weekday site visit; because of data collection limitations, this information is not available for all stations. Source: Altamont Commuter Express, Pittman & Hames Associates									

### Amtrak California/Capitol Corridor

Amtrak provides intercity passenger rail throughout the country. Amtrak California, a partnership between Amtrak and Caltrans (California Department of Transportation), provides additional intercity rail and bus service within California. The Capitol Corridor service runs four round trip trains



daily between San Jose and Sacramento, with stops in Santa Clara, Fremont, Hayward, Oakland, Emeryville, Berkeley, Richmond, Martinez, Suisun/Fairfield, Davis, Sacramento and Roseville. Connecting buses travel between San Jose and Santa Cruz, between San Jose and Morgan Hill, Gilroy, Salinas and Monterey, and between Emeryville and San Francisco.

**Bicycle Access** - All Capitol Corridor trains and many of their connecting trains are equipped with bike racks. Boxed bicycles are permitted on trains without bike racks.

**Bicycle Storage** - As shown in Table 2-10, most Amtrak stations in Alameda County do not have bike lockers. However, except in Berkeley, they all have racks. Use of these racks appears to be minimal, which may be due to Amtrak's mostly non-commuter passengers. In addition, all staffed Amtrak stations offer overnight storage for bicycles at \$1.50/day.

**Mode Split** - The percentage of Amtrak passengers who access the stations by bicycle is increasing. According to on-board surveys conducted by Amtrak in 1999, six percent of all riders on the Capitol Corridor arrived at the station using "other" modes. Amtrak staff confirmed that most of this six percent is probably bicycle ridership. Six percent represents a large increase from surveys conducted in 1997 and 1998, when only three percent of all riders accessed the station by "other" modes. Amtrak does not have data available by station, only by corridor, so these figures include non-Alameda County stops along the Capitol Corridor.

<b>Table 2-10</b> <b>BICYCLE STORAGE AT AMTRAK STATIONS IN ALAMEDA COUNTY</b>									
Station	Lockers				Racks				
	#	Filled	Availability	Waiting List	#	Type	Covered	Proximity	Occupancy
Berkeley	0	-	-	-	0	-	-	-	-
Emeryville	12	6	6	0	8	C	Yes	Near	0
Oakland	0	-	-	-	5	B	No	Near	2
Hayward	0	-	-	-	6	F	No	Near	0
Fremont	0	-	-	-	6	A	No	Near	2
Total	0		-	-	25				4
<b>Type:</b> A = wave, B = inverted U, C = "Coat Hanger" style, D = BART-style racks with heavy chains, E = Bike-Root, F = Bike Hitch, G = Post and Chain, H = "Schoolyard" <b>Covered:</b> Yes or No <b>Proximity:</b> Near (within 50 feet of station entrance) or Far <b>Occupancy:</b> The number of bikes parked during a weekday site visit; because of data collection limitations, this information is not available for all stations. Source: Amtrak, Pittman & Hames Associates									

## BART

BART provides rail service in the San Francisco Bay Area including the East Bay. All lines run through Alameda County. The San Francisco to Fremont and Dublin/Pleasanton lines serve southern Alameda County to Oakland, the San Francisco - Pittsburg/Bay Point line serves downtown and north Oakland; and the Richmond- Fremont line serves the western County from Berkeley to Fremont.

**Bicycle Access** - Bicycles are generally allowed on BART trains, with some exceptions. They are not allowed on the first car of the train, or on any crowded cars. Passengers with bicycles must use the elevator or stairs (not escalators), and are required to always walk bikes. Bicyclists must yield priority seating to seniors and people with disabilities. They must also yield to other passengers and hold bikes while on the trains.

During commute hours, bikes have limited access to BART in the peak direction. Bikes are allowed in the Embarcadero Station in San Francisco only for trips to the East Bay. During evening commute hours, bicyclists traveling from the East Bay towards San Francisco must exit at the Embarcadero Station. During both morning (7:05 a.m. to 8:50 a.m.) and evening commute hours (4:25 p.m. to 6:45 p.m.), bikes are not allowed in the 12th and 19th Street Oakland Stations. Bicycle access to trains is especially limited going towards San Francisco. For example, trains from Dublin to San Francisco do not permit bicycles from 6:30 a.m. to 9 a.m.; on the return trip, trains from San Francisco towards Dublin do not permit bicycles from 4 p.m. to nearly 7 p.m. Other lines have similar rules. Reverse commuting (i.e., commuting by San Francisco residents who work in the East Bay) is not similarly restricted.

Folded bikes are allowed on the trains at all times. During commute times, bikes must be folded before entering the paid area at the Embarcadero, Montgomery, Powell, and Civic Center San Francisco Stations, and the 12th and 19th Street Oakland Stations. At all other stations, they may be folded on the platform, but must be folded before boarding a train.

**Bicycle Storage** - All BART stations in Alameda County have bicycle storage facilities but they vary by style and capacity. Bike lockers appear to be quite popular, based on the number of rentals. In most cases, all available bike lockers are rented and waiting lists are short. However, South Hayward has more than ten lockers available for rental, while the Fruitvale station has 29 people on the waiting list for bike lockers. The use of bike racks varies considerably. Despite the long waiting list at Fruitvale, not all bike racks at Fruitvale were occupied on a weekday site visit. At the Coliseum station, 40 rack spaces are provided, but no bikes were parked there. At the other extreme, any stations such as North Berkeley and MacArthur have inadequate bike racks for the demand and bikes were



**Table 2-11**  
**BICYCLE STORAGE AT BART STATIONS IN ALAMEDA COUNTY**

Station	Lockers				Racks					Bikestation (Capacity)
	#	Filled	Avail- ability	Waiting List	#	Type	Covered	Proximity	Occupan- cy	
North Berkeley	58	58	0	3	53	A 24, B 24, E 5	Yes (48)	Near	80	No
Berkeley	0	-	-	-	20 <sup>1</sup>	A	No	Near	20	(75)
Ashby	32	27	5	0	20	A	Yes	Near	20	No
Rockridge	56	56	0	2	26	D	No	Near	2	No
MacArthur	18	18	0	13	8	A	No	Near	25	No
19 <sup>th</sup> Street	0	-	-	-	9 <sup>2</sup>	A	No	Near	3	No
12 <sup>th</sup> Street	0	-	-	-	12 <sup>3</sup>	A	No	Near	N/A	No
West Oakland	8	8	0	4	28	D	No	Near	3	No
Lake Merritt	20	20	0	12	0				15	No
Fruitvale	14	14	0	29	32	D	No	Near	25	Planned (200)
Coliseum	2	2	0	2	40	D	No	Far	0	No
San Leandro	28	23	5	0	48	D	No	Near	10	No
Bayfair	16	8	8	0	32	D	Yes	Near	10	No
Castro Valley	20	17	3	0	20	B	No	Near	3	No
Dublin/ Pleasanton	24	23	1	0	66	B	20Y, 44N	54N, 12F	21	No
Hayward	20	14	6	0	41	21 D, 20 G	Yes	Near	N/A	No
South Hayward	30	12	18	0	50	D	No	Near	N/A	No
Union City	20	18	2	0	66	48 D, 18 G	No	Near	N/A	No
Fremont	34	33	1	0	0				N/A	No
<b>Totals</b>	<b>400</b>	<b>192</b>	<b>49</b>	<b>65</b>		<b>671</b>				

**Type:** A = wave, B = inverted U, C = "Coat Hanger" style, D = BART-style racks with heavy chains, E = Bike-Root, F = Bike Hitch, G = Post and Chain, H = "Schoolyard"

**Covered:** Yes or No

**Proximity:** Near (within 50 feet of station entrance) or Far

**Occupancy:** The number of bikes parked during a weekday site visit; because of data collection limitations, this information is not available for all stations.

<sup>1</sup> These racks appear to be part of the City of Berkeley's bicycle program, not BART's. However, they are immediately adjacent to the BART station's main exit. There are numerous bike racks of the same kind all over downtown Berkeley.

<sup>2</sup> See footnote 1; these racks may be provided by the City of Oakland.

<sup>3</sup> There is generous bike parking in downtown Oakland. A rack with a capacity of twelve bikes is located at the 14<sup>th</sup> and Broadway entrance to Bart.

Source: BART, Pittman & Hames Associates

locked to any available supports at the North Berkeley BART station, with the number of bicycles far exceeding the 53 racks provided. These stations and the 12th and 19th stations in downtown Oakland would be good candidates for bike stations. See Table 2-11 for details.

The Bikestation in Berkeley holds up to 75 bicycles and functions at full capacity. Bikes can be dropped off or picked up between 6 a.m. and 9:30 p.m. Monday through Friday, and 9 a.m. to 6 p.m. Saturdays and holidays. Passengers leaving their bicycles at the Bikestation must provide a photo



identification and keep a claim check for their bike. New Bikestations are planned for Fruitvale and Embarcadero BART stations.

**Mode Split** - According to a 1998 Station Profile Survey, the percentage of morning peak riders who use bicycles to access BART stations in Alameda County varies between one and eight percent depending on the station. The stations with the highest percentage of bicycle access are Ashby (eight percent) and North Berkeley (seven percent). Stations where only one percent of passengers arrive on bicycle include 12th Street Oakland, Coliseum, South Hayward, Fremont, West Oakland, and Castro Valley. These figures reflect morning peak ridership only; since bicycle access onboard is restricted during peak periods, the overall (daily average) percentages of bicycle access may be slightly higher.



## BICYCLE ACCESS AND FERRY TRANSIT

Alameda County is served by two ferry providers. The Alameda/Oakland ferry connects the cities of Alameda and Oakland with San Francisco. The Harbor Bay Ferry connects the southern portion of the City of Alameda with San Francisco.

### Alameda/Oakland Ferry

The Alameda/Oakland Ferry provides service between Main Street in Alameda, Jack London Square in Oakland and San Francisco.

**Bicycle Access** - The ferry allows bicycles; they must be stored on the first deck fantail. Passengers with bicycles must allow the other passengers to disembark first.

**Bicycle Storage** - As shown in Table 2-12, both Alameda/Oakland Ferry terminals have bike lockers and racks.



Table 2-12 BICYCLE STORAGE AT ALAMEDA/OAKLAND FERRY TERMINALS IN ALAMEDA COUNTY									
Station	Lockers				Racks				
	#	Filled	Availability	Waiting List	#	Type	Covered	Proximity	Occupancy
Jack London Sq.	8	7	1	0	4	B	N	N	0
Alameda Main St	8	8	0	N/A	16	H	Y	N	1
<b>Type:</b> A = wave, B = inverted U, C = "Coat Hanger" style, D = BART-style racks with heavy chains, E = Bike-Root, F = Bike Hitch, G = Post and Chain, H = "Schoolyard" <b>Covered:</b> Yes or No <b>Proximity:</b> Near (within 50 feet of station entrance) or Far <b>Occupancy:</b> The number of bikes parked during a weekday site visit; because of data collection limitations, this information is not available for all stations.  N/A: Not available.  Source: Alameda/Oakland Ferry, Pittman & Hames Associates									



**Mode Split** - There is no recent survey data regarding passenger access to the Alameda/Oakland Ferry. However, according to Alameda/Oakland Ferry staff, probably 85 to 90 percent of passengers access the ferry by automobile, with the remaining 10 to 15 percent split between walking, bicycle, transit, and drop-off by other drivers. It was also noted that the number of on-board bicycle commuters appears to be growing, with 10 to 15 bicyclists daily boarding during the morning peak.

### Harbor Bay Ferry

The Harbor Bay Ferry provides ferry service from the San Francisco Ferry Building to Bay Farm Island (part of the City of Alameda) in the East Bay.

**Bicycle Access** - Bicycles are allowed on the ferries.

**Bicycle Storage** - There are no bike lockers at Harbor Bay on Bay Farm Island, but there are 32 bike racks. See Table 2-13 below.

**Mode Split** - According to ferry staff, the majority of riders access the ferry terminal by automobile.

### BICYCLE ACCESS AND BUS TRANSIT

Six agencies provide bus service to Alameda County: AC Transit, County Connection, Dumbarton Express, Santa Clara Valley Transportation Authority (VTA), Union City Transit, and WHEELS (LAVTA). In general, buses provide shorter distance trips and stop more frequently than

Table 2-13 BICYCLE STORAGE AT HARBOR BAY FERRY TERMINAL IN ALAMEDA COUNTY					
Station	Racks				
	#	Type	Covered	Proximity	Occupancy
Harbor Bay	32	C	N	N	N/A
<p><b>Note:</b> No lockers were at this location.</p> <p><b>Type:</b> A = wave, B = inverted U, C = "Coat Hanger" style, D = BART-style racks with heavy chains, E = Bike-Root, F = Bike Hitch, G = Post and Chain, H = "Schoolyard"</p> <p><b>Covered:</b> Yes or No</p> <p><b>Proximity:</b> Near or Far</p> <p><b>Occupancy:</b> The number of bikes there when we surveyed midday on a weekday; this information is only available for some locations.</p> <p>Source: Pittman &amp; Hames Associates</p>					

trains and ferries. AC Transit provides comprehensive service within the urban, western East Bay and TransBay service to San Francisco; the other five serve limited areas of Alameda County.

### **AC Transit**

The Alameda-Contra Costa Transit District (AC Transit) serves western Alameda and Contra Costa Counties from Richmond and El Sobrante to Milpitas and Warm Springs. It provides service throughout Alameda County with the exception of the Tri-Valley and Union City. In addition, AC Transit provides transbay service to San Francisco.



**Bicycle Access** - Most AC Transit buses are equipped with front-mounted bike racks that hold two bicycles at a time. Passengers must load and unload their own bicycles without assistance from the bus driver. Bikes are not allowed on buses without bike racks.

The entire AC Transit Bus Fleet will be equipped with bike racks by Summer 2001. In addition, the District has begun a program to repair and replace damaged bicycle racks.

**Mode Split** - Data on bikes onboard AC Transit is being compiled and will be included, if available, in the Final report.

### **Dumbarton Express**

The Dumbarton Express provides weekday express bus service across the Dumbarton Bridge, connecting Union City (BART), Fremont, Newark, Menlo Park and Palo Alto. Dumbarton Express buses have a rack to hold two bikes; bikes are not allowed on the buses when the racks are full.

### **Santa Clara Valley Transportation Authority (VTA)**

Santa Clara Valley Transportation Authority (VTA) provides bus and light rail service in Santa Clara County and Fremont. All VTA buses are equipped with exterior bike racks. Except for the Dumbarton and Highway 17 Express, when the racks are full, passengers are permitted to bring their bikes on to the bus.



### **Union City Transit**

Union City Transit operates within the city limits. Routes are coordinated with BART trains, AC Transit and the Dumbarton Express. All Union City Transit buses have bike racks.

### **WHEELS (LAVTA)**

WHEELS is a service of the Livermore Amador Valley Transit Authority (LAVTA) and serves the communities of Dublin, Livermore, and Pleasanton. WHEELS service is centered on the Dublin/Pleasanton BART station and Valley Memorial Hospital in Livermore. All WHEELS buses have bike racks that carry up to two bicycles.

## **PARK AND RIDE LOTS**

Alameda County has 13 public park and ride lots. Individuals use these lots to access transit or ridesharing opportunities. Three of them include bicycle lockers. These three are located in the City of Alameda at Golf Course Island Drive and Doolittle Drive, in Fremont at Route 84 and Ardenwood Boulevard, and in Livermore at East Airway and Rutan Drive. Caltrans has received a grant to add or replace bicycle lockers at locations throughout the Bay Area. Plans call for four new lockers at both the Ardenwood Boulevard lot and a lot at I-580 at Center Drive in Castro Valley.

## **BICYCLE EDUCATION & PROMOTION PROGRAMS**

This section describes existing bicycle safety education and promotion in Alameda County. A summary of existing bicycle safety education programs is presented in Table 2-14 and more detail about each of these programs is presented in Appendix B-8. A general overview of bicycle education is located in Appendix D-1 and D-2 describing the target audiences and the knowledge needed by each group along with numerous options for delivering this information.

## **SUMMARY OF EXISTING CONDITIONS**

- According to the 1990 Census, 1.3 percent of Alameda County residents commute to work on bicycle and 4.1 percent walk to work.
- Over two-thirds of existing bicycle or walk trips take less than 15 minutes.
- Young males between 5-17 years are the most likely walkers and bicyclists. Both genders between the ages of 30-50 are least likely to bike or walk. The walking share of transportation trips increases significantly for women over age 50.
- A lack of systematic data collection on bicycle and pedestrian trips and discontinuous routes in Alameda County point to the need for more cooperation between planning entities.
- Most general plans for the jurisdictions in Alameda County encourage the use of nonmotorized transit.
- Eight of 15 jurisdictions in Alameda County have adopted bicycle plans and the EBRPD has an adopted plan.
- Intercounty connections exist in the eastern part of the County through the EBRPD multiuse trail network and existing roadways, in Northern Alameda County via the Ohlone and Bay Trails and existing roadways and in Southern Alameda County via the bike path on the Dumbarton bridge.
- Oakland's International Boulevard, Berkeley's Shattuck Avenue and Fremont's Fremont Boulevard have the highest number of bicycle

<b>Table 2-14</b> <b>SUMMARY OF BICYCLE AND PEDESTRIAN SAFETY EDUCATION</b> <b>IN ALAMEDA COUNTY</b>		
<b>Program Type</b>	<b>Audience</b>	<b>City / Agency</b>
In-school bike safety presentations	C	Alameda PD, Albany PD, Castro Valley (County Sheriff), Dublin PD, Fremont PD (pedestrian safety), Livermore USD, Oakland PD, Pleasanton PD, San Leandro (Safe Moves), Union City (PD)
Presentations to other groups (neighborhood, scouts, day care, seniors)	A, C, M	Fremont PD, Oakland PD, San Leandro (Safe Moves)
Bike Rodeos or Derbies	C	Alameda PD, Albany PD, Berkeley HHS, Dublin PD, Hayward PD, Livermore PD, Pleasanton PD, San Lorenzo (CHP), Union City PD
"Safety Town" simulation	C	Alameda USD, San Leandro Safe Moves
Education alternatives to citation, including "Bicycle Traffic Schools"	C	Berkeley PD, Dublin PD, Livermore PD, Pleasanton PD
Police bike patrol	A, C, M	Alameda PD, Albany PD, Berkeley PD, Dublin PD, Emeryville PD, Livermore PD, Hayward PD, San Leandro PD, Union City PD, Pleasanton PD, Oakland PD, and EBRPD Public Safety
Bike equipment trailer (agency-provided bicycles and helmets for events)	C	Dublin PD
Helmet sales to parents and children	A, C	Union City (New Haven USD)
Helmet promotion and fitting for low-income residents	A, C	Berkeley
Helmet-use reward coupon	C	Livermore PD
After-school supervised rides	C	Berkeley HHS, Youth Bike Adventures (countywide), Cycles of Change (Oakland Parks and Recreation)
Multi-lesson Traffic Safety curriculum	C	Berkeley (6 <sup>th</sup> grade)
Banners in high-collision areas	M	City of Berkeley
Youth "Earn A Bike" program	C	Cycles of Change (Oakland Parks and Recreation)
Effective Cycling	A, C	Effective Cycling Instructors available through the League of American Bicyclists ( <a href="http://www.bikeleague.org">www.bikeleague.org</a> )
<b>Key:</b> HHS: Health and Human Services PD: Police Department Safe Moves: Contract provider of safety education programs and events USD: Unified School District  Audience: A = Adult cyclists, C = Child cyclists, M = Motorists, L = Law Enforcement		



and pedestrian and the highest number of bicycle-only collisions with motor vehicles in the county.

- The top three causes for bicycle/motor vehicle collisions were:
  - Bicyclist not cycling in same direction as traffic
  - Bicyclist failing to use right edge of roadway
  - Both bicyclist and driver failing to yield right-of-way
- Bicycle parking and facilities such as showers and lockers are essential components of bike transportation, though few ordinances exist to encourage these “support facilities.”
- Bicycle and pedestrian facilities and access enhance air quality and congestion mitigation benefits of transit.
- Most transit providers in the county offer bicycle parking facilities, though supply is often at or near capacity.
- During peak commute hours, bicycles have limited access to BART and are especially limited on runs going to San Francisco.
- The first BikeStation in Alameda County was installed at the Downtown Berkeley BART Station in 1999. New BikeStations are planned for Fruitvale BART Station in Oakland and Embarcadero BART Station in San Francisco.