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# APPENDIX A

## COMMUNITY SURVEY

CITY OF BENICIA

### GENERAL PLAN UPDATE COMMUNITY SURVEY REPORT

Final Draft, May 1996

*prepared by*

# CDPS

COMMUNITY DESIGN & PLANNING SERVICES: LANDSCAPE ARCHITECTURE PROGRAM  
UNIVERSITY OF CALIFORNIA, DAVIS



**CITY OF BENICIA**  
**GENERAL PLAN UPDATE**  
**COMMUNITY SURVEY REPORT**

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## EXECUTIVE SUMMARY

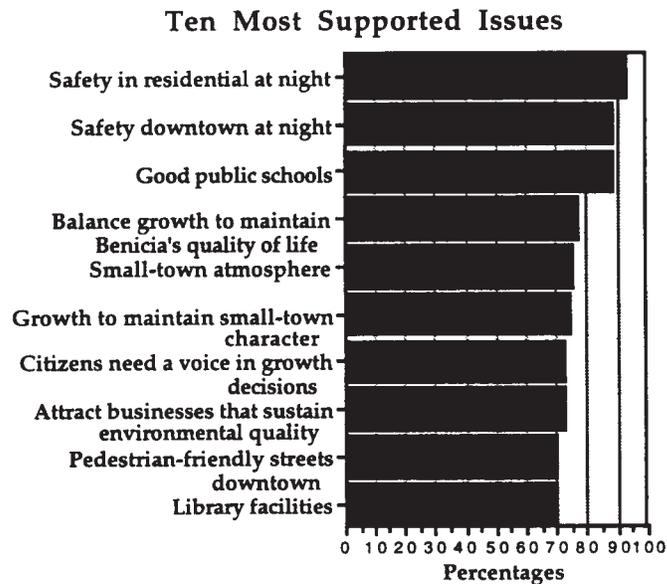
### Introduction

Community Design and Planning Services (CDPS) of UC Davis has been retained by the City of Benicia to conduct the public participation process for the city's general plan update. After a series of public workshops designed to gauge public opinion on a number of issues, CDPS constructed a general opinion survey to measure the opinions of Benicia residents on issues relevant to the general plan and city development.

At the first of January, 1996, approximately 11,000 surveys were mailed to households and businesses throughout Benicia. After about three weeks, 2,970 surveys were returned for analysis. The results of the survey presented in this report represent the opinions of the respondents which, due to the high level of confidence attributed to the survey (95%, +/-2%), can accurately be extended to represent the opinions of the Benicia public at large.

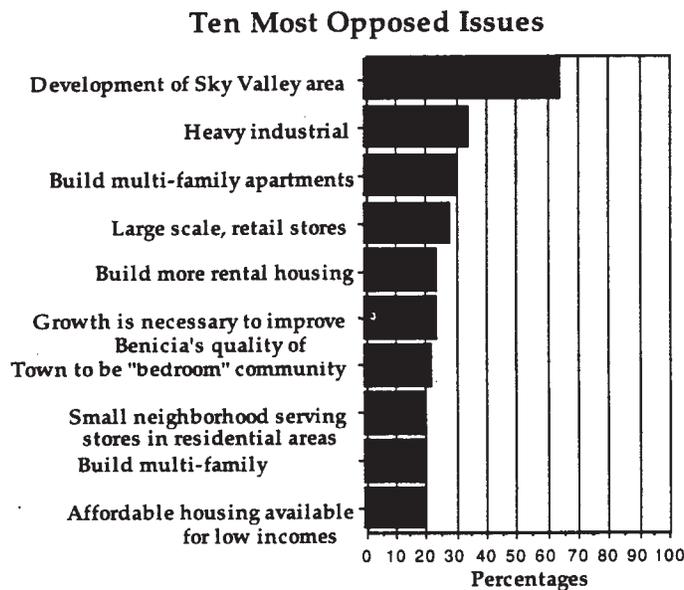
### Brief Summary of Results

The following graph represents the ten issues that received the highest levels of support throughout the entire survey, determined by taking the highest percentages in the "strongly support" and "strongly agree" categories in the far left hand columns of the survey:



The two issues that stand out as the most supported issues in Benicia are feeling safe in residential areas at night (93.1%) and feeling safe in the downtown and other commercial areas at night (89.1%). Following closely is support for good public schools (88.6%). Growth issues and a concern over the community’s environment are also widely agreed upon concerns.

There were also a number of issues on the survey that received high levels of opposition, measured by analyzing the responses in the “strongly oppose” or “strongly disagree” categories in the far right hand column on the survey. The following graph represents the ten most opposed issues measured on the survey:



Clearly, the issue that drew the highest level of opposition was the development of Sky Valley (64.4%). Heavy industrial (34.2%) and large scale retail stores (28.0%) as economic development options also received high opposition ratings, as did the building of more rental housing, in various forms.

Validity and Reliability in Mail Surveys

Nearly all mail surveys can be considered “scientific” in varying degrees. A number of steps can be taken, however, to increase the validity and reliability of the survey results and the applicability of those results to the general population measured. In general, there is a strong correlation between the number of base factors (or steps) included in the survey process and the level of confidence that can be attributed to the findings. The following table illustrates a number of base factors common in increasing the level of validity and reliability of mail surveys, with a comparison of what factors were included in the process of developing and administering the Benicia survey:

**Creating “Scientific” Surveys**

<b>Base Qualities (Factors) in Mail Surveys</b>	<b>Benicia Survey</b>
encourage high response rate	GPOC city-wide promotions of survey; survey design methods (public workshops, community input, prepaid postage on survey, optional drop box)
random sample or wide distribution	wide distribution (11,000 surveys)
sufficient response rate (10-15%)	high response rate (27%)
pretest	pretested with community volunteers
statistical validity tests	performed (level of confidence=95%, +/- 2%)

Using This Report

This report contains two main sections containing analyses of the survey results. The first section is a graphical and textual representation of the set of summary statistics derived from the survey. This summary analysis includes the unadjusted set of responses; that is, it represents how the respondents responded without any deeper analysis. The second section is based on a factor analysis method. In this section the entire survey was broken down into smaller, more general, issues that were then compared against five factors derived from the demographic section of the survey. A more complete explanation of this method can be found in the introduction to this section on page 18.

A complete set of the survey responses is included in the appendix, for further reference.

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## INTRODUCTION AND BACKGROUND

As part of the process of updating the Benicia General Plan, the city investigated various ways to involve the residents of Benicia in planning for the future of their city. At the outset of the process of involving the public, the General Plan Oversight Committee (GPOC) mailed an open-response questionnaire to the community to gauge, in a general way, the opinions of the public concerning issues addressed in the general plan. In response to the ideas brought forth in the questionnaire, GPOC, in conjunction with Community Design and Planning Services (CDPS) of UC Davis, conducted a series of six (6) public workshops in various neighborhoods throughout the city to further engage the public in the general plan update process. In an effort to involve the youth of the city in the process, CDPS sponsored a number of workshops and discussion sessions with each K-12 grade level at all Benicia schools. The results of the public workshops and the youth outreach activities were both submitted in written reports to the city.

The workshops and discussions generated community-based issues that have been further tested in this survey. This survey would measure both the content appropriate for a general plan as well as issues of general interest pertaining to the city's growth and development.

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## SURVEY METHODOLOGY

As an extension of its prior outreach efforts, CDPS began the process of designing a survey that could accurately tap the opinions of the general public on a broad range of issues. A number of steps were taken to produce a draft of the survey, including a literature review of relevant research in survey design methods, soliciting recommendations from the UC Davis statistical laboratory, and submitting ideas to UC Davis faculty with expertise in the field of survey design and administration for review.

A draft of the survey was produced by CDPS and submitted to GPOC for comments and review. From these comments a subsequent draft was prepared which was pretested by a group of approximately twenty community volunteers. These volunteers made valuable comments and suggestions on such things as graphical presentation, question wording and clarity, and survey content and comprehensibility. Their comments, together with the comments of those involved in prior activities, were considered in the creation of the final draft of the survey prepared by CDPS and submitted to the city for mailing.

At the first of January, approximately 11,000 surveys were mailed to homes and businesses throughout the city of Benicia. Respondents were asked to either mail the survey back to the city, or drop it off in a designated drop box at city hall, by January 19.

In all, 2,970 surveys were returned and collected for analysis. The responses from the survey were then manually transcribed onto scantron forms to prepare the data for computer analysis by the UC Davis statistical laboratory. At the outset, a group of volunteers from the city of Benicia transcribed approximately 700 survey forms. At the request of GPOC, the task of completing the transcribing process was assigned to CDPS in order to expedite the process. Over the period of about a month, groups of UC Davis students met in large sessions to transcribe the rest of the surveys. When all forms were completed, they were organized on a computer spreadsheet to hand over to the UC Davis statistical laboratory. The statistical laboratory performed a series of statistical analyses on the data.

The first type of statistical results that have been reported consist simply of frequency distributions and summary statistics for each of the items on the survey. A simplistic approach such as this can potentially provide misleading results, since the demographic profile of the people who respond to the questionnaire won't match the profile within the entire city exactly, and if some demographic groups are more likely to respond than others, the summary statistics can reflect this non-response bias. To adjust for the possibility of non-response bias, demographic information was obtained for the entire city, and the responses were recalculated so that the responses from a given subgroup were

weighted according to its size in the population. Thus, for example, if  $u_i$  is the mean response in the  $i$ -th subgroup, and  $p_i$  is the proportion of the population represented by these individuals, then the adjusted mean is calculated as:

$$\bar{X}_{adj} = \sum_i p_i \bar{X}_i.$$

Two adjusted sets of summary statistics were calculated, since demographic information was available for the geographic distribution of the households in the city, as well as for the age/income distribution. It wasn't possible to adjust for all of these factors simultaneously, since the demographic information on the neighborhood/age/income distribution wasn't available. For one of the age/income groups, no responses were received. (This was the group for heads of households under 25 years of age with incomes between \$38,251 and \$47,800. Since there were only 11 such households in the city, it's not too surprising that it would go unrepresented.) In calculating the summary statistics that were adjusted for the age/income distribution, this subgroup was excluded. Since that subgroup represents only 0.12% of the city's households, we don't view this as a serious shortcoming of the survey results. We want to stress that since the demographic information was by household, and since the surveys were distributed to households, the summary statistics need to be interpreted as the proportion of heads of households that have a particular opinion, rather than the analogous proportion of Benicia residents.

The fact that there were minimal discrepancies between the raw statistics and the adjusted ones gives us additional confidence that these results are representative of the City of Benicia as a whole and not just of the people who could be "bothered to respond."

In a long questionnaire such as this, it's easy to find it difficult to see the forest for all the trees. To address this problem, we ran a series of Factor Analyses on the response data, in order to identify larger patterns of opinion rather than concentrating on minutiae. The technique that was used was a Principal Components Analysis, followed by a Varimax rotation. This statistical technique develops a series of linear combinations of the responses on individual combinations of the responses on individual questions for which there's substantial observed variation within the sample. The purpose of the Varimax rotation is to choose factors that place substantial weight on comparatively small numbers of survey items, rather than placing substantial weight on all of the survey items. Several factor analyses were run, first involving all of the non-demographic survey items (with the exception of Section G, which was to be answered only by the people who answered "no" to item 81), and then involving one or two sections of questions that dealt with similar issues.

Two subsequent analyses were run on the rotated factors. First, an analysis of variance was run to determine the impact of neighborhood, age, gender, income, and home ownership on the factor in question. These analyses were what are called “Type III” analyses, which means that each factor is assessed to determine whether it provides additional (unique) predictive information, beyond what’s provided by the other factors in the model. Thus for example, the neighborhood effect would be significant only if provided additional information beyond what was provided by age, gender, income and home ownership. The results are summarized in the Results section, Part 2.

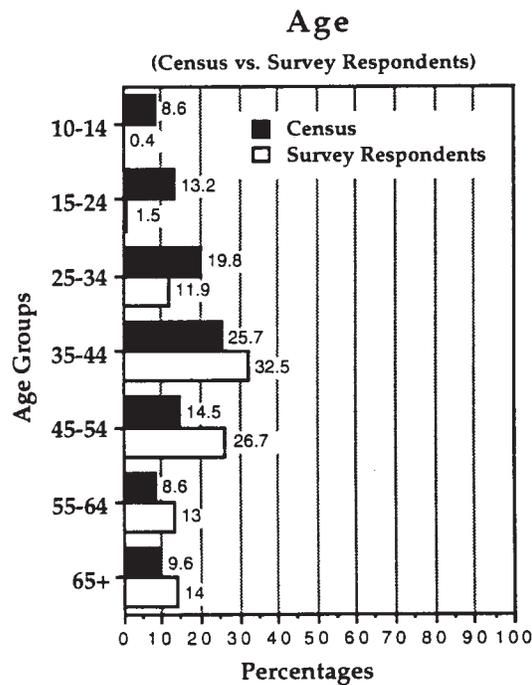
## WHO RESPONDED: A DEMOGRAPHIC ANALYSIS

The following graphs represent a comparison between the demographic profile of the survey respondents and the demographic profile of the actual city population, based on three categories: age, neighborhood residence, and income level. When the results were statistically adjusted for demographic differences between the actual set of respondents and the population profile of the city, it was found that there were no statistically significant differences. For a further explanation of the demographic analysis process, see Survey Methodology section, page 5.

(1990 Census information was used for the actual city profile.)

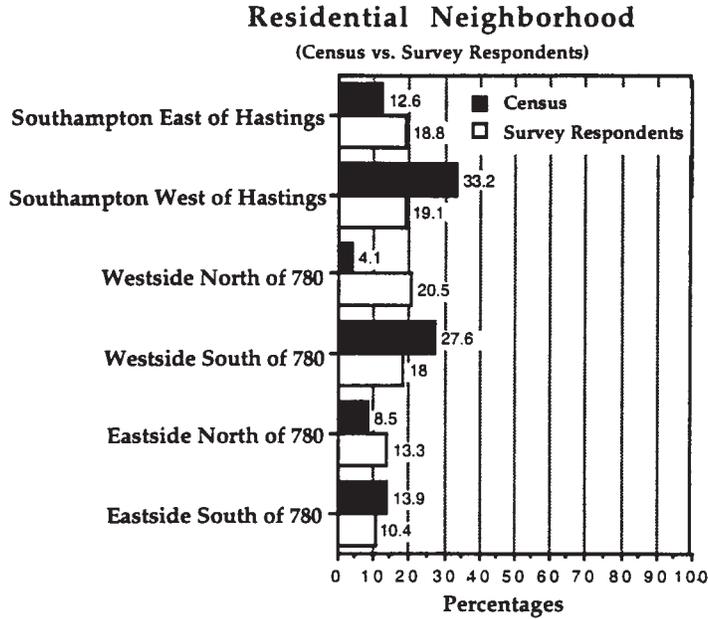
### Age Groups

As might be expected, the highest response came from those between 35 and 55 years of age. Since the survey was likely completed by an adult in the household, younger people (under 25) had a lower response rate than other groups.



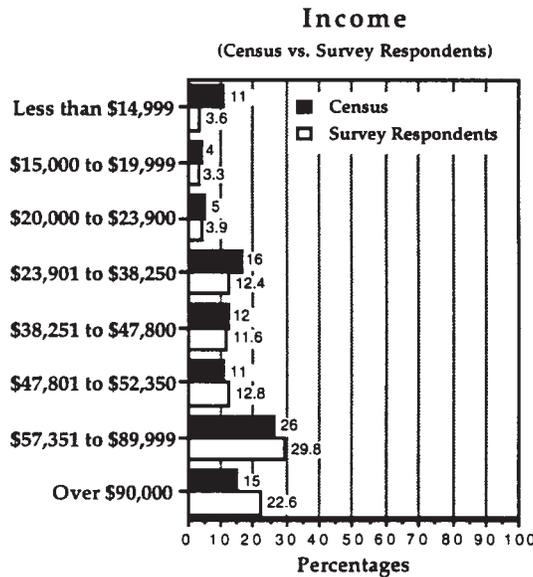
**Residential Neighborhood Groups**

Though the actual city population is not evenly distributed across neighborhoods, the survey response set does show a more even distribution. Eastside, north and south, of 780 had the lowest response, while the westside and Southampton area had a slightly higher representation.



**Income Groups**

In general, the income of the set of survey respondents follows closely with the actual income group breakdown for the city. Clearly, the groups that had the highest response were those with incomes over \$57,351. Lower income groups had a relatively low rate of response.



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## RESULTS, PART 1: SUMMARY ANALYSIS

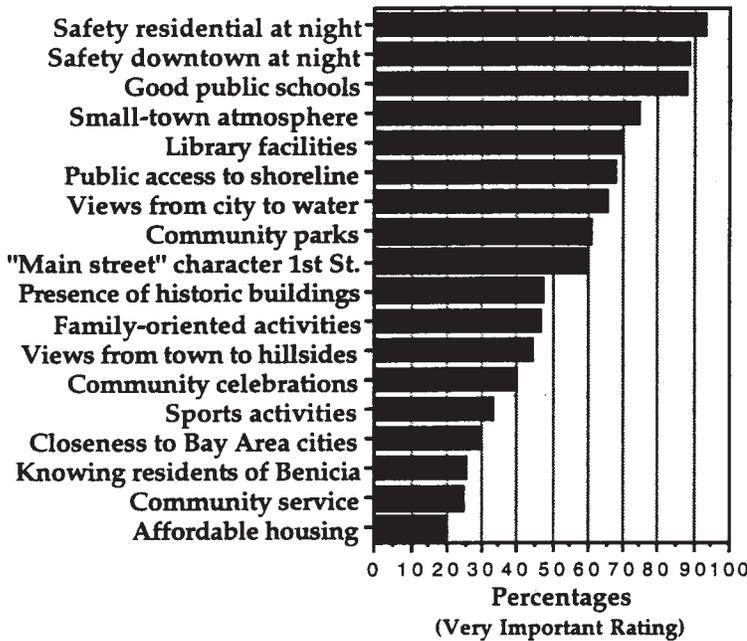
### Graphical Representations

The graphs presented in this section represent the percentages of actual respondents who marked the column on the far left hand side of the survey, indicating either a “very important,” “strongly support,” “strongly agree,” or “very concerned” rating for each option. All graphs in this section consistently use this criteria, making comparisons across sections possible. These graphs are supplemented by highlights from the complete data set (see Appendix) inserted into the written commentary next to each graph. The complete data set should be consulted for further analyses.

### Supplementary Analysis: Adjusting for Demographics

In conjunction with this summary analysis, an analysis was performed to adjust the responses to account for differences among demographic groups, assuring that no demographic group was over- or underrepresented in the response set. The conclusion of this analysis was that any differences between the actual response set and the set adjusted for demographics were statistically insignificant, giving greater weight to the representativeness of the actual response set.

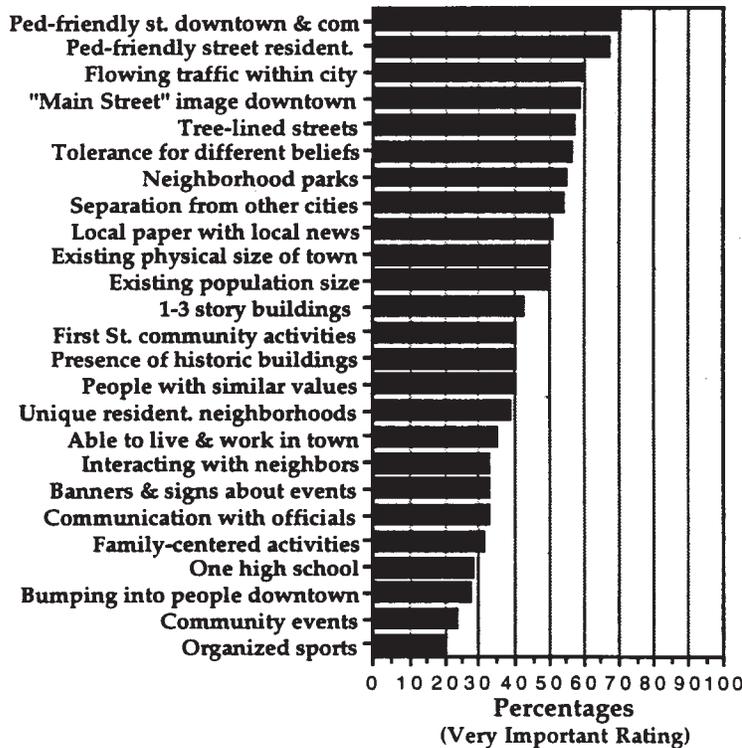
**SECTION A: Factors that Contribute to the Quality of Life in Benicia**



Three issues stand out as very important issues for residents of Benicia: safety in residential areas at night, safety downtown at night, and good public schools.

The quality of life factor that received the highest "not at all important" rating was the availability of affordable housing for low income residents (19.3%).

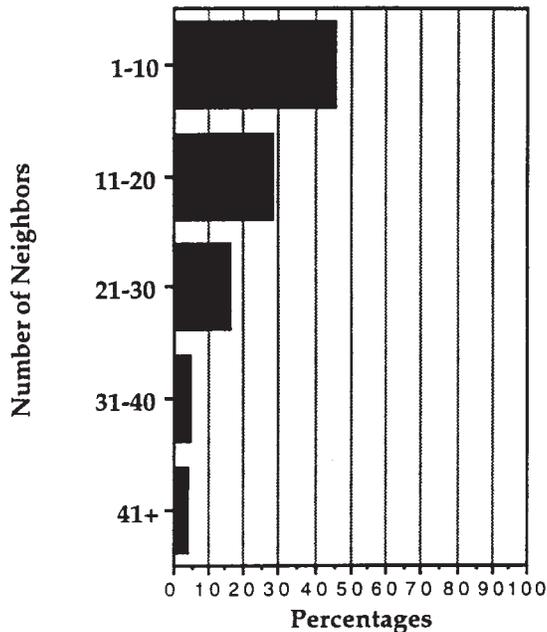
**SECTION B: Factors that Contribute to the Small-Town Feel in Benicia**



The two factors that were rated as the most important factors that contribute to the small-town feel in Benicia were the existence of pedestrian friendly streets in the downtown and other commercial areas, and pedestrian friendly streets in residential neighborhoods.

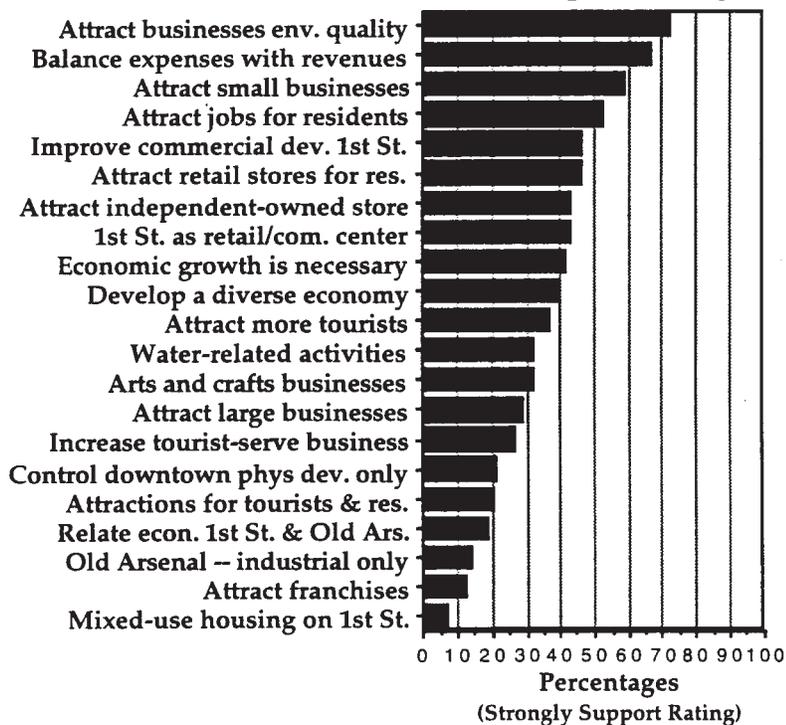
Participating in organized sports activities drew both the lowest "very important" rating and the highest "not at all important" rating.

### SECTION C: How Many Neighbors Do You Know By Their First Name?



When asked how many neighbors they knew by first name, nearly half (45.9%) only knew 1-10. On the other hand, over 9% know the names of over 30 of their neighbors, with 4.4% claiming to know over 40 neighbors by first name.

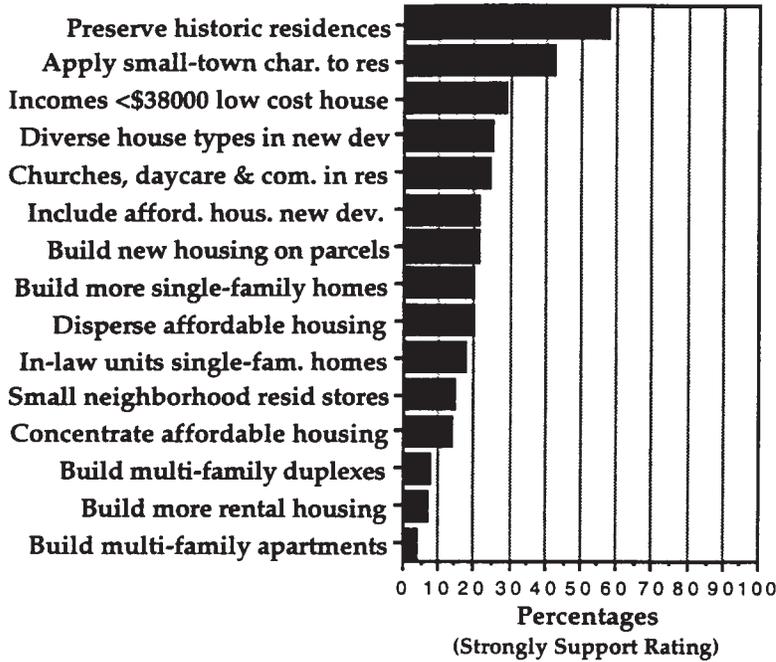
### SECTION D: Economic Development Options



The economic development option that drew the highest level of support was attracting businesses that sustain environmental quality. Balancing city expenses with revenues, attracting small businesses, and attracting businesses that provide jobs for residents were also strongly supported.

Three options drew high "strongly opposed" ratings: building mixed use housing in the First Street area (19.0%), having the Old Arsenal as an industrial area only (15.6%), and attracting franchises (12.8%).

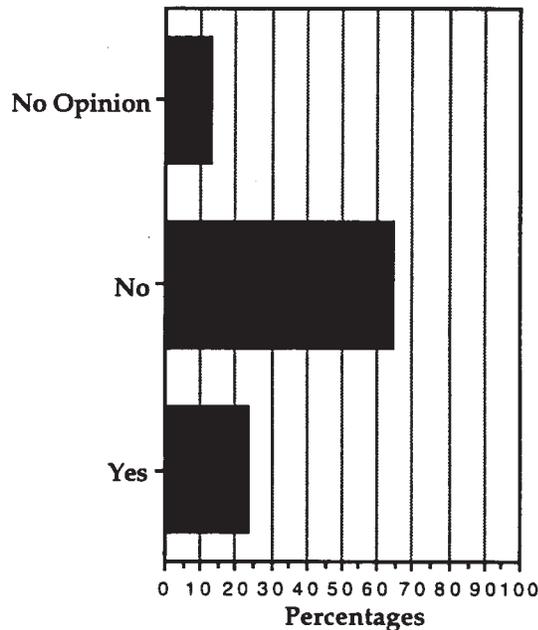
**SECTION E: Residential Development Options**



The residential development option that received the highest level of support was preserving historic residences. Applying small-town character factors to new residential areas was also strongly supported.

A number of options, however, drew high levels of opposition: building more multi-family housing such as apartments (30.5%), rental housing (23.9%), allowing small neighborhood stores in residential neighborhoods (19.7%), and building duplexes (19.5%).

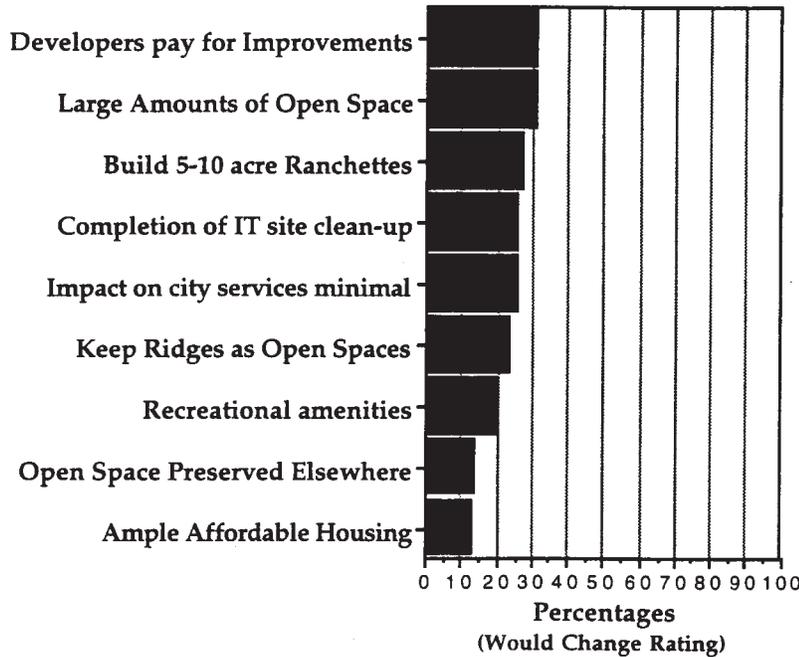
**SECTION F: Do You Support Residential Development in the Sky Valley Area?**



When asked if they support residential development in the SkyValley area, 64.4% responded "no," 23.0% responded "yes," and 12.5% had no opinion.

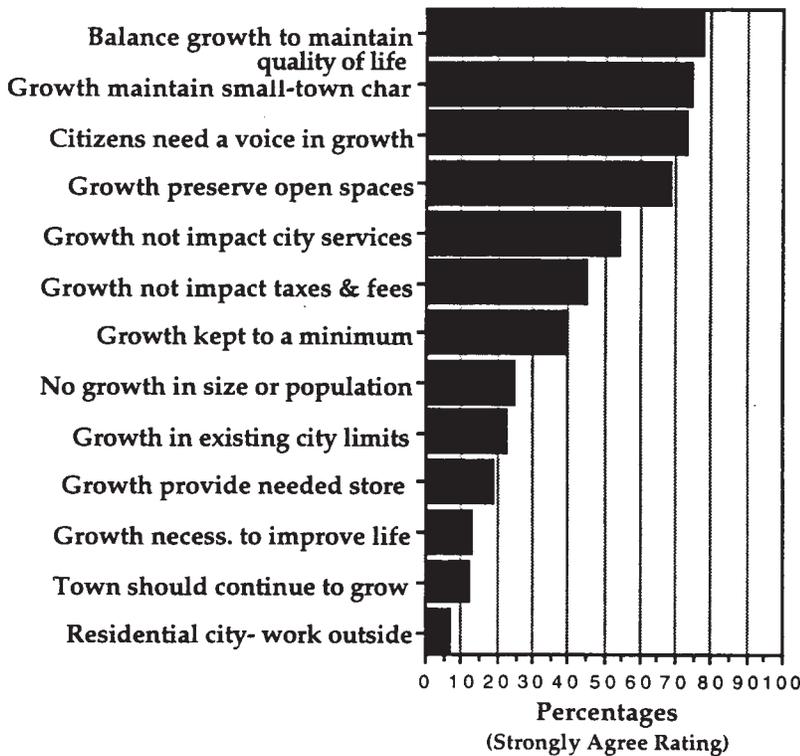
Section G of the survey is a follow-up question to Section F.

**SECTION G: Would you support Sky Valley if one or more conditions were met?**



Those who answered “no” to question F were asked if they would support Sky Valley development if certain conditions were met. Clearly, the majority of those respondents would not change their position with any conditions. The conditions that drew the highest level of support, however, were to have developers pay for improvements and to preserve large amounts of open space.

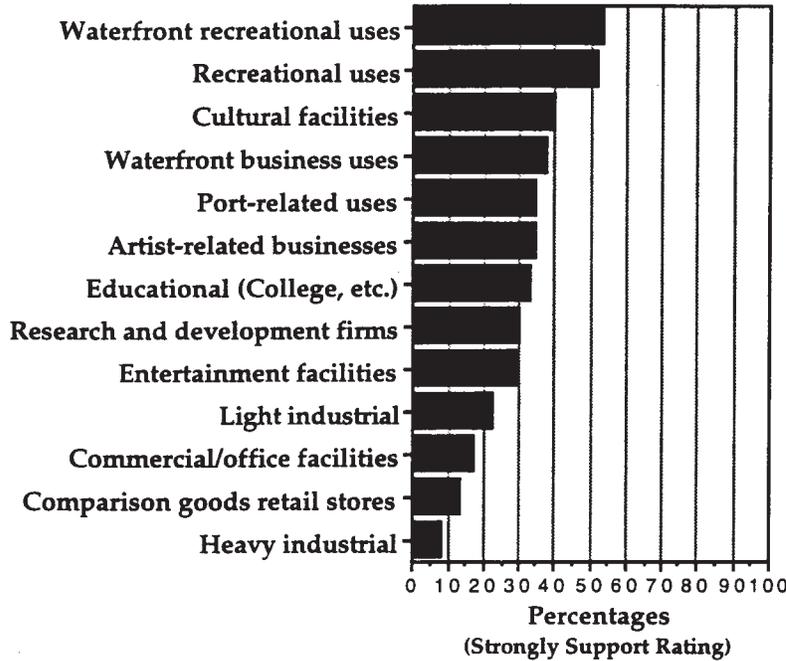
**SECTION H: Growth Options**



When asked to rate their level of agreement for various growth options in Benicia, four options received high “strongly agree” ratings: balancing growth to maintain quality of life, maintaining the small town character of the town, giving citizens a voice in growth decisions, and preserving open spaces.

High levels of disagreement (“strongly disagree”) were noted for these statements: growth is necessary to improve Benicia’s quality of life (23.4%), Benicia should be a “bedroom” community (22.3%), and the town should continue to grow (17.5%).

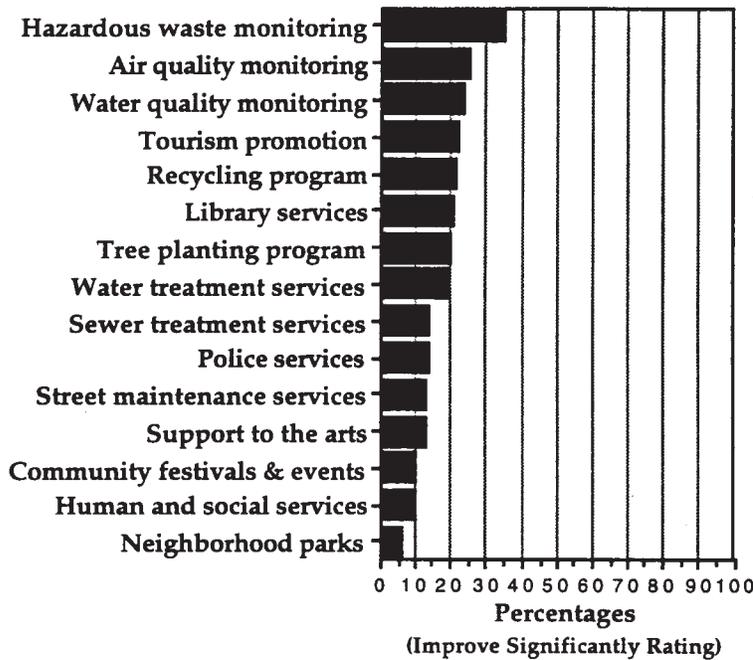
**SECTION I: Facility Types**



Respondents were asked to rate their level of support for types of facilities that could develop in the next 10 to 20 years. Three out of the five that received the most support were water-related facilities, with recreational and cultural facilities rounding out the five.

Two facility types received the lowest "strongly support" ratings and the highest "strongly oppose" ratings: heavy industrial and comparison goods retail stores.

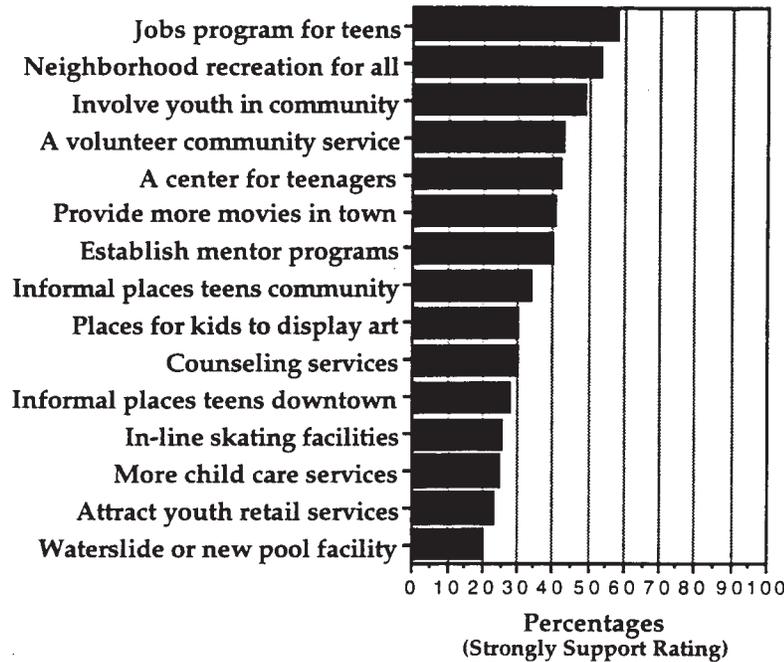
**SECTION J: Services**



When asked to rate which community services needed to be improved, most respondents either had no opinion or felt that the services were adequate as is. The services that need the most improvement are all environmentally concerned: hazardous waste monitoring, air quality monitoring, and water quality monitoring.

None of the services received high marks for "reduce significantly."

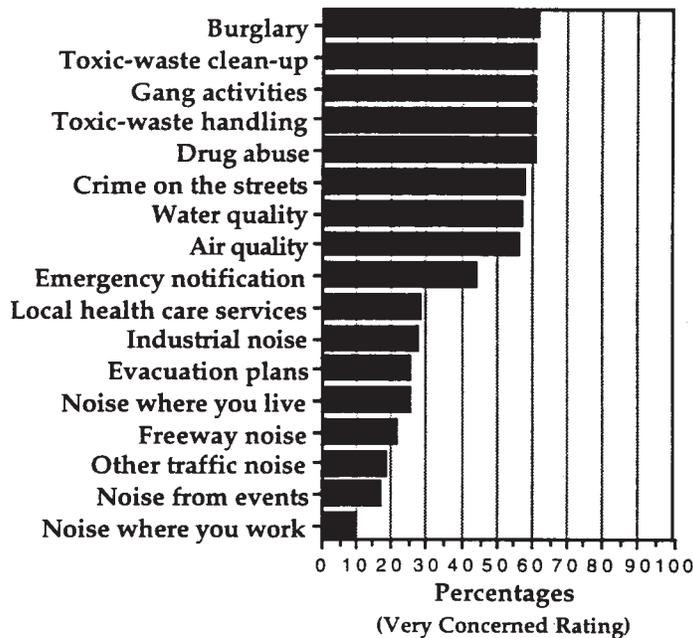
**SECTION K: Services/Activities**



Respondents were asked to rate their level of support for activities or services needed for Benicia’s young people. Job programs for teens, neighborhood recreation programs for all ages, and involving the youth in the community, all received high “strongly support” ratings.

The option that garnered the highest “strongly oppose” rating was adding a waterslide to the city pool or developing a new facility (12.0%).

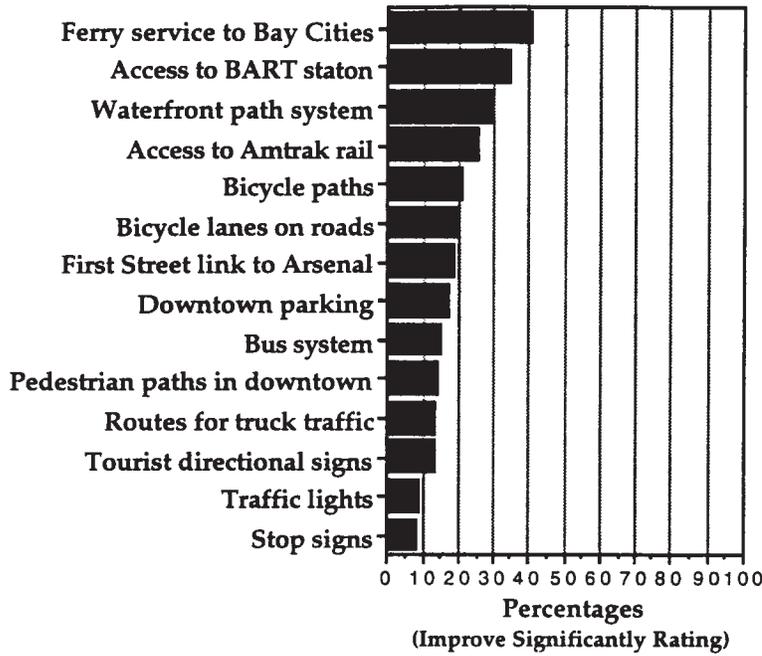
**SECTION N: Health and Safety Issues**



Crime and environmental issues stand out as the health and safety issues that the respondents of the survey are most concerned about. Burglary, gang activities, drug abuse, and crime on the streets, coupled with toxic waste clean-up and handling, and water and air quality, are clear concerns.

The five issues that received the lowest “very concerned” rating are all noise-related issues.

**SECTION O: Transportation Facilities/Systems**



Like other community services, most survey respondents either have no opinion about transportation systems and facilities, or feel that the services are adequate as is. The services that were noted as needing the most improvement are: ferry service to Bay cities, access to a BART station, a waterfront path system, and access to Amtrak rail passenger service.

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## RESULTS, PART 2: FACTOR ANALYSIS

The results illustrated in this section are a reflection of a set of statistical tests, generally known as factor analyses. The responses to each question on the survey were categorized into a number of general factors, which could then be used to compare how various groups of people responded to different issues addressed in the survey. For the purposes of this analysis, five factors (neighborhood, income group, age group, gender, and home ownership) were compared within twenty broad issues in the survey. Thus, for example, it is possible to see if neighborhood residence makes a difference in respondents' opinions about youth services, beyond what is explained by income, age, gender, and home ownership.

### Using the Table

The following table displays the five general **factors** compared within twenty broad issues in the survey. **Comments** were written for those factors that represented a significant relationship (where **p-value** <.1000). In general, the smaller the p-value, the stronger the relationship.

In the table headings, **scale** refers to the general grouping of question areas to simplify, or generalize, the 181 survey questions into a smaller set of approximately twenty (20) questions. For example, the first four scales on the table represent how the entire survey was broken down into four main areas. The scales that follow (AB1, AB2, DE1, etc.) represent how sections on the survey were grouped together for analysis. Thus, AB1 refers to the first analysis that combined sections A and B to analyze the questions that address the concept of "small town feel." **Interpretation** simply refers to the general title given to the questions that were grouped together under one heading.

Scale	Interpretation	Factor	p-value	Comments
main 1	quality of life	neighborhood	.3590	concern generally <i>increases</i> with income concern highest among young adults (25-54) concern higher among women
		income group	.0215	
		age group	.0006	
		gender ownership	.0001 .3838	
main 2	cultural diversity/ tolerance issues	neighborhood	.0004	concern highest in south-side neighborhoods, lowest in Southampton concern greatest among low-income groups concern greatest in youngest group (<25) concern higher among women concern greater among renters
		income group	.0892	
		age group	.0078	
		gender ownership	.0001 .0001	
main 3	services demand	neighborhood	.0100	concern greatest in Eastside-north concern decreases with income level concern greatest for 45-64 groups
		income group	.0002	
		age group	.0307	
		gender ownership	.3011 .6032	
main 4	pro economic growth	neighborhood	.6277	women are less supportive of growth
		income group	.6054	
		age group	.2437	
		gender ownership	.0017 .2265	
AB1	small town feel	neighborhood	.3966	concern is greatest among 35-64 group, lowest in <25 group concern greater among women than men
		income group	.3038	
		age group	.0007	
		gender ownership	.0001 .6666	
AB2	activities	neighborhood	.2617	concern greatest among young adults (25-44), lowest among older groups (>54) concern greater among women
		income group	.4770	
		age group	.0001	
		gender ownership	.0001 .1815	
DE1	low cost housing	neighborhood	.0001	concern is lowest in Southampton concern decreases with income concern (generally) increases with age concern greater among women concern greater among renters
		income group	.0001	
		age group	.0270	
		gender ownership	.0001 .0001	
DE2	pro small business	neighborhood	.0024	support greatest south of I-780 support increases with income support lowest among young (<25) and old (>64) support greater among women
		income group	.0149	
		age group	.0117	
		gender ownership	.0001 .1279	

Scale	Interpretation	Factor	p-value	Comments
DE3	pro business (general)	neighborhood income group age group gender ownership	.1541 .6007 .0001 .0001 .0207	support increases with age support greater among men support greater among home owners
H1	growth	neighborhood income group age group gender ownership	.3119 .3893 .5425 .0161 .0029	men more supportive of growth renters more supportive of growth
H2	controlled growth	neighborhood income group age group  gender  ownership	.3485 .4941 .0759  .0001  .7786	youngest group (<25) has fewest concerns about growth being controlled men have fewer concerns about controlled growth
I1	industrial facilities	neighborhood income group age group  gender ownership	.7975 .7769 .0002  .0001 .0156	support highest in young/old (<25,>54); lowest in 25-34 group support greater among men support greater among home owners
I2	cultural/recreational	neighborhood  income group age group  gender ownership	.0284  .1098 .0009  .0001 .0167	support greatest on west side of town (esp. south of I-780)  support lowest among older residents (>54) support greater among women support greater among renters
JK1	youth services	neighborhood income group age group  gender ownership	.5243 .4832 .0001  .0001 .0002	support greatest among younger groups (<35) support greater among women support greater among renters
JK2	city services	neighborhood  income group age group gender ownership	.0287  .3957 .0933 .0016 .4045	concern greatest Eastside-south; lowest in Southampton  concern greatest in oldest (>64) group concern greater among women
N1	noise	neighborhood income group age group gender ownership	.1998 .1330 .0043 .9630 .5499	concern greatest in 35-44 group

Scale	Interpretation	Factor	p-value	Comments
N2	environmental	neighborhood	.4381	concern greatest in lower income groups (<\$48,001)  concern greater among women
		income group	.0004	
		age group	.5546	
		gender	.0001	
N3	crime	ownership	.3421	concern lowest south of I-780; greatest in Eastside north, Southampton east  concern decreases with income  (somewhat greater among home owners)
		neighborhood	.0293	
		income group	.3345	
		age group	.0135	
		gender	.9871	
O1	automotive concerns	ownership	.1036	concerns decrease with income concerns greatest among older (>54) concerns greater among men
		neighborhood	.9937	
		income group	.0843	
		age group	.0001	
		gender	.0110	
O2	bicycle/pedestrian	ownership	.9017	concerns lowest in Southampton  concern greatest for intermediate ages (35-54)  concern greater among renters
		neighborhood	.0636	
		income group	.6039	
		age group	.0030	
		gender	.1482	
		ownership	.0037	

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## APPENDIX

Appendix: Complete Survey Results (raw percents)

**Appendix**  
**Community Issues, Goals & Policies Questionnaire**  
***Benicia General Plan Update***

A. General plans can help ensure that the amenities and qualities you value remain over time. Please rate the importance of how the following factors contribute to the quality of life you enjoy in Benicia.

<b><u>FACTORS</u></b>	<b>VERY IMPORTANT</b>	<b>MILDLY IMPORTANT</b>	<b>NO OPINION</b>	<b>OF LITTLE IMPORTANCE</b>	<b>NOT AT ALL IMPORTANT</b>
1. Views from the city to the water	[65%]	[25%]	[5%]	[4%]	[1%]
2. Public access to the water's edge	[68%]	[24%]	[4%]	[3%]	[1%]
3. Good public schools	[89%]	[6%]	[4%]	[0.5%]	[0.5%]
4. Presence of historic buildings	[47%]	[39%]	[7%]	[6%]	[1%]
5. Closeness to other Bay Area cities	[29%]	[42%]	[13%]	[10%]	[6%]
6. Availability of affordable housing for incomes less than \$38,000	[20%]	[25%]	[17%]	[19%]	[19%]
7. Many family-oriented activities	[47%]	[36%]	[9%]	[6%]	[2%]
8. Small town atmosphere	[75%]	[19%]	[3%]	[2%]	[1%]
9. Feeling safe downtown at night	[89%]	[8%]	[2.5%]	[0.5%]	[0%]
10. Feeling safe in residential areas at night	[93%]	[5%]	[2%]	[0%]	[0%]
11. Opportunities for involvement in community service activities	[25%]	[50%]	[17%]	[6%]	[2%]
12. Views from the town to open hillsides	[44%]	[35%]	[11%]	[7%]	[3%]
13. Knowing many people who live in Benicia	[25%]	[47%]	[15%]	[10%]	[3%]
14. The traditional 'main street' character of First Street	[59%]	[29%]	[7%]	[3%]	[2%]
15. Opportunities for sports activities	[33%]	[36%]	[15%]	[11%]	[5%]
16. Library facilities	[69%]	[25%]	[4%]	[2%]	[0%]
17. Community parks	[61%]	[30%]	[4%]	[4%]	[1%]
18. Community celebrations	[39%]	[44%]	[9%]	[6%]	[2%]

B. In the recent public workshops many participants talked about Benicia's small town character. Assuming Benicia's small town qualities are important to you, please rate the degree of importance that the following factors contribute to the small town feel in Benicia.

<b><u>FACTORS</u></b>	<b>VERY IMPORTANT</b>	<b>MILDLY IMPORTANT</b>	<b>NO OPINION</b>	<b>OF LITTLE IMPORTANCE</b>	<b>NOT AT ALL IMPORTANT</b>
19. Meeting people you know while doing day to day activities around town	[27%]	[42%]	[20%]	[8%]	[3%]
20. Interacting with people who live in your neighborhood	[33%]	[51%]	[8%]	[7%]	[1%]
21. Participating in community events	[24%]	[52%]	[13%]	[9%]	[2%]
22. Communication with local officials	[32%]	[44%]	[15%]	[7%]	[2%]

	VERY IMPORTANT	MILDLY IMPORTANT	NO OPINION	OF LITTLE IMPORTANCE	NOT AT ALL IMPORTANT
23. Participating in organized sports	[20%]	[31%]	[22%]	[17%]	[10%]
24. Participation in family centered activities	[31%]	[38%]	[16%]	[10%]	[5%]
25. Tolerance for different beliefs	[57%]	[25%]	[12%]	[4%]	[2%]
26. Presence of banners & signs that announce community events	[33%]	[44%]	[12%]	[8%]	[3%]
27. Having a local paper that features local news	[51%]	[34%]	[8%]	[5%]	[2%]
28. Living in a community with people of similar values	[40%]	[36%]	[13%]	[7%]	[4%]
29. One high school	[27%]	[24%]	[32%]	[10%]	[7%]
30. Opportunity to live and work in town	[34%]	[30%]	[18%]	[11%]	[7%]
31. Neighborhood parks	[55%]	[34%]	[6%]	[4%]	[1%]
32. First Street community activities	[40%]	[41%]	[11%]	[6%]	[2%]
33. Easy flowing traffic within the city	[59%]	[33%]	[6%]	[2%]	[0%]
34. Presence of many historic buildings	[40%]	[39%]	[10%]	[8%]	[3%]
35. The old fashioned, main street character of downtown	[59%]	[28%]	[6%]	[4%]	[3%]
36. The physical separation from other cities	[54%]	[28%]	[10%]	[5%]	[3%]
37. Living in a community with 1-3 story buildings	[42%]	[30%]	[15%]	[8%]	[4%]
38. The existing population size of the town	[50%]	[29%]	[11%]	[7%]	[3%]
39. The existing physical size of the town	[50%]	[29%]	[11%]	[7%]	[3%]
40. Tree-lined streets	[57%]	[32%]	[6%]	[4%]	[1%]
41. Residential neighborhoods that have their own special character	[39%]	[36%]	[15%]	[7%]	[3%]
42. Pedestrian friendly streets in residential neighborhoods	[67%]	[26%]	[4%]	[2%]	[1%]
43. Pedestrian friendly streets in the downtown and other commercial areas	[70%]	[24%]	[4%]	[1%]	[1%]
C. 44. In the immediate neighborhood in which you live, how many neighbors (adults and children) do you know by their first name?					
1-10	[46%]				
11-20	[29%]				
21-30	[16%]				
31-40	[5%]				
41 +	[4%]				

D. Economic development issues were frequently discussed in the public workshops. Please indicate the level of your support for each of the following economic development options.

<u>ECONOMIC DEVELOPMENT OPTIONS</u>	STRONGLY SUPPORT	MILDLY SUPPORT	NEITHER SUPPORT NOR OPPOSE	MILDLY OPPOSE	STRONGLY OPPOSE
45. Benicia should attract more tourists to the city	[37%]	[39%]	[17%]	[5%]	[2%]
46. Benicia should attract small businesses	[59%]	[32%]	[8%]	[1%]	[0%]
47. Benicia should attract large businesses	[29%]	[33%]	[16%]	[13%]	[9%]
48. The Old Arsenal should be an industrial area only	[14%]	[15%]	[37%]	[18%]	[16%]
49. Benicia should develop a diverse economy	[40%]	[33%]	[22%]	[3%]	[2%]
50. Benicia should attract businesses that provide jobs for Benicia residents	[53%]	[32%]	[12%]	[2%]	[1%]
51. The community should balance expenses with existing revenues	[67%]	[22%]	[10%]	[1%]	[0%]
52. Economic growth is necessary for Benicia	[41%]	[35%]	[16%]	[6%]	[2%]
53. Benicia should attract businesses that sustain environmental quality	[72%]	[18%]	[8%]	[1%]	[1%]
54. Benicia should develop arts and crafts related businesses	[32%]	[31%]	[29%]	[5%]	[3%]
55. Benicia should improve commercial development of First St.	[47%]	[32%]	[15%]	[4%]	[2%]
56. Benicia should develop First St. as the retail/commercial center	[43%]	[29%]	[20%]	[5%]	[3%]
57. Benicia should attract independently owned stores	[43%]	[33%]	[21%]	[2%]	[1%]
58. Benicia should attract franchises	[13%]	[24%]	[32%]	[18%]	[13%]
59. Benicia should increase tourist serving businesses	[27%]	[37%]	[26%]	[7%]	[3%]
60. Benicia should build attractions, such as museums, for tourists and Benicians	[20%]	[31%]	[31%]	[12%]	[6%]
61. Benicia should develop more water related activities	[32%]	[35%]	[25%]	[5%]	[3%]
62. Benicia should attract retail stores that serve residents	[47%]	[34%]	[14%]	[3%]	[2%]
63. Benicia should relate the economic activity between First Street and the Old Arsenal	[18%]	[28%]	[47%]	[4%]	[3%]
64. Benicia should build mixed use housing in the First Street area	[7%]	[17%]	[38%]	[19%]	[19%]
65. Benicia should control the downtown's physical development and allow the private sector to influence its business type	[21%]	[33%]	[32%]	[8%]	[6%]

Appendix A. Community Survey

E. Please rate your support of the following residential development options and issues. "Affordable housing" means that a household earning \$57,000 or less would spend less than 30% of their income to buy or rent.

<b>RESIDENTIAL DEVELOPMENT OPTIONS</b>	<b>STRONGLY SUPPORT</b>	<b>MILDLY SUPPORT</b>	<b>NEITHER SUPPORT NOR OPPOSE</b>	<b>MILDLY OPPOSE</b>	<b>STRONGLY OPPOSE</b>
66. Ensure that young households, the elderly and others with incomes below \$38,000 have access to low cost housing	[29%]	[27%]	[20%]	[13%]	[11%]
67. Concentrate housing for incomes of \$57,000 or less in a few areas	[14%]	[25%]	[26%]	[17%]	[18%]
68. Where possible, disperse housing for incomes of \$57,000 or less in existing neighborhoods	[20%]	[26%]	[23%]	[14%]	[17%]
69. Include housing for incomes of \$57,000 or less mixed in with new housing developments	[21%]	[27%]	[20%]	[14%]	[18%]
70. Build a diversity of housing types, both single family and multi family, in new developments	[25%]	[30%]	[18%]	[13%]	[14%]
71. Preserve historic residences	[57%]	[28%]	[12%]	[2%]	[1%]
72. Encourage second rental units (in-law units) in single family homes	[18%]	[26%]	[29%]	[14%]	[13%]
73. Provide new housing by building on parcels of land within the existing city limits	[21%]	[33%]	[27%]	[9%]	[10%]
74. Allow churches, day care centers, community centers in residential neighborhoods	[24%]	[35%]	[18%]	[12%]	[11%]
75. Build more rental housing	[7%]	[16%]	[29%]	[24%]	[24%]
76. Build more single family detached houses	[20%]	[35%]	[28%]	[10%]	[7%]
77. Allow small neighborhood serving stores in residential neighborhoods	[14%]	[27%]	[20%]	[19%]	[20%]
78. Build more multi-family housing such as apartments	[4%]	[13%]	[25%]	[27%]	[31%]
79. Build more multi-family housing such as duplexes	[8%]	[26%]	[27%]	[20%]	[19%]
80. Design new residential areas to incorporate small town character factors identified as important by Benicians	[42%]	[33%]	[16%]	[4%]	[5%]

F. 81. Do you support residential development in the Sky Valley area? (Sky Valley is the mostly undeveloped area north of Southampton in and around Lake Herman Road.)

Yes	[23%]
No	[64%]
No Opinion	[13%]

G. If you answered "no" to question F, would you support residential development in the Sky Valley area if one or more of the following conditions are met? Please indicate if your position would change if one or more conditions were provided.

<b>CONDITIONS</b>	<b>WOULD CHANGE</b>	<b>NO OPINION</b>	<b>WOULD NOT CHANGE</b>
82. Keep ridges as open spaces	[23%]	[7%]	[70%]
83. Large amounts of open space preserved	[30%]	[6%]	[64%]
84. Impact on City services minimized	[25%]	[10%]	[65%]

	WOULD CHANGE	NO OPINION	WOULD NOT CHANGE
85. Recreational amenities such as a golf course are provided	[19%]	[12%]	[69%]
86. All sewer, water, and other improvements are paid for by the development	[30%]	[8%]	[62%]
87. Comparable open space is preserved elsewhere	[14%]	[10%]	[76%]
88. Build mostly 5 or 10 acre ranchettes	[28%]	[14%]	[58%]
89. Completion of IT site clean-up	[25%]	[12%]	[63%]
90. Ample affordable housing is included	[13%]	[10%]	[77%]

H. Please rate your agreement with the following statements that refer to growth options for Benicia.

**GROWTH OPTIONS**

	STRONGLY AGREE	MILDLY AGREE	NEITHER AGREE NOR DISAGREE	MILDLY DISAGREE	STRONGLY DISAGREE
91. Growth should be balanced to ensure maintaining Benicia's quality of life	[77%]	[14%]	[7%]	[1%]	[1%]
92. Growth should maintain small town character	[74%]	[16%]	[7%]	[2%]	[1%]
93. The town should not grow in size or population	[25%]	[25%]	[21%]	[19%]	[10%]
94. Growth should be kept to a minimum	[39%]	[29%]	[15%]	[11%]	[6%]
95. The town should continue to grow	[11%]	[34%]	[18%]	[19%]	[18%]
96. Growth should occur within existing city limits	[22%]	[28%]	[28%]	[12%]	[10%]
97. Growth is necessary to improve Benicia's quality of life	[13%]	[23%]	[22%]	[19%]	[23%]
98. Growth should have no impact on the amount of taxes and fees paid by Benicia residents	[45%]	[20%]	[21%]	[9%]	[5%]
99. Growth should not impact City services or schools	[54%]	[18%]	[14%]	[8%]	[6%]
100. Growth will give the city more needed stores & services	[19%]	[29%]	[24%]	[14%]	[14%]
101. Citizens need a voice in growth decisions	[73%]	[20%]	[5%]	[1%]	[1%]
102. The town should become a residential community where people live in the city but work outside the city	[7%]	[13%]	[31%]	[27%]	[22%]
103. Growth should preserve nearby open spaces	[68%]	[18%]	[9%]	[3%]	[2%]

I. While the previous question discussed approaches to growth, this question asks about the types of facilities that you would like to see in Benicia. Please rate your support of the following types of facilities that could develop in the next 10 to 20 years.

**FACILITY TYPES**

	STRONGLY SUPPORT	MILDLY SUPPORT	NEITHER SUPPORT NOR OPPOSE	MILDLY OPPOSE	STRONGLY OPPOSE
104. Large scale, comparison goods retail stores (stores where shoppers check several stores for best price)	[14%]	[20%]	[19%]	[19%]	[28%]

	STRONGLY SUPPORT	MILDLY SUPPORT	NEITHER SUPPORT NOR OPPOSE	MILDLY OPPOSE	STRONGLY OPPOSE
105. Entertainment facilities	[30%]	[41%]	[14%]	[8%]	[7%]
106. Cultural facilities	[40%]	[38%]	[16%]	[3%]	[3%]
107. Artist related businesses	[34%]	[34%]	[23%]	[5%]	[4%]
108. Educational (college, etc.)	[33%]	[31%]	[22%]	[8%]	[6%]
109. Commercial/Office facilities	[17%]	[42%]	[25%]	[10%]	[6%]
110. Light industrial (assembly, warehouse, etc.)	[23%]	[42%]	[22%]	[8%]	[5%]
111. Heavy industrial (manufacturing, use of raw materials, etc.)	[8%]	[18%]	[19%]	[21%]	[34%]
112. Research & development firms	[30%]	[37%]	[21%]	[7%]	[5%]
113. Waterfront business uses	[38%]	[36%]	[14%]	[6%]	[6%]
114. Port related uses	[34%]	[36%]	[19%]	[6%]	[5%]
115. Waterfront recreational uses	[53.5]	[32%]	[10.5%]	[2%]	[2%]
116. Recreational uses	[52%]	[33%]	[12%]	[2%]	[1%]

J. Please evaluate community services, and rate which services need to be improved, are adequate as is, or can be reduced.

	IMPROVE SIGNIFICANTLY	IMPROVE SOMEWHAT	ADEQUATE AS IS/NO OPINION	REDUCE SOMEWHAT	REDUCE SIGNIFICANTLY
<b>SERVICES</b>					
117. Library services (extended hours, book volume, etc.)	[20%]	[36%]	[43%]	[1%]	[0%]
118. Street maintenance services	[13%]	[35%]	[51%]	[1%]	[0%]
119. Water treatment services	[19%]	[26%]	[54%]	[1%]	[0%]
120. Sewer treatment services	[14%]	[21%]	[64%]	[1%]	[0%]
121. Neighborhood parks	[6%]	[24%]	[65%]	[3%]	[2%]
122. Police services	[14%]	[28%]	[57%]	[1%]	[0%]
123. Air quality monitoring	[25%]	[25%]	[47%]	[2%]	[1%]
124. Human and social services	[10%]	[24%]	[60%]	[4%]	[2%]
125. Water quality monitoring	[24%]	[27%]	[48%]	[1%]	[0%]
126. Hazardous waste monitoring	[34%]	[24%]	[39%]	[2%]	[1%]
127. Recycling program	[21%]	[29%]	[49%]	[1%]	[0%]

	IMPROVE SIGNIFICANTLY	IMPROVE SOMEWHAT	ADEQUATE AS IS/ NO OPINION	REDUCE SOMEWHAT	REDUCE SIGNIFICANTLY
128. Community festivals & events	[10%]	[28%]	[59%]	[2%]	[1%]
129. Support to the arts	[13%]	[26%]	[53%]	[4%]	[4%]
130. Tree planting program	[20%]	[32%]	[45%]	[2%]	[1%]
131. Tourism promotion	[22%]	[33%]	[38%]	[4%]	[3%]

K. Because the General Plan does not address schools, what activities or services do you feel are needed for Benicia's young people? Please rate your support of the following:

**SERVICES/ACTIVITIES**

	STRONGLY SUPPORT	MILDLY SUPPORT	NEITHER SUPPORT NOR OPPOSE	MILDLY OPPOSE	STRONGLY OPPOSE
132. Jobs program for teens	[58%]	[27%]	[13%]	[1%]	[1%]
133. Neighborhood recreation for all ages	[53%]	[29%]	[16%]	[1%]	[1%]
134. More child care services	[25%]	[28%]	[41%]	[4%]	[2%]
135. Add a waterslide to the city pool or develop new facility	[20%]	[22%]	[34%]	[12%]	[12%]
136. A center for teenagers	[42%]	[32%]	[20%]	[4%]	[2%]
137. A volunteer community service program	[42%]	[36%]	[20%]	[1%]	[1%]
138. Attract more retail services that can also serve youth, such as music stores	[23%]	[37%]	[27%]	[8%]	[5%]
139. Maintain informal places for teens to socialize throughout the community	[34%]	[37%]	[21%]	[5%]	[3%]
140. Maintain informal places for teens to socialize downtown	[27%]	[35%]	[24%]	[9%]	[5%]
141. Involve youth in community issues	[49%]	[35%]	[14%]	[1%]	[1%]
142. Establish mentor programs (i.e. Big Brother/Big Sister)	[40%]	[35%]	[22%]	[2%]	[1%]
143. Provide more counseling services	[30%]	[32%]	[32%]	[4%]	[2%]
144. Provide in-line skating facilities	[25%]	[30%]	[30%]	[8%]	[7%]
145. Provide more movies in town	[41%]	[28%]	[23%]	[4%]	[4%]
146. Establish places for children to display art	[30%]	[33%]	[32%]	[2%]	[3%]

L. If you live in Benicia, please state the route you use to get to work, and the transportation mode used:

147. To the south on I-680 [54%]	To the north on I-680 [11%]	To west on I-780 [35%]
148. Auto (drive alone) [88%]	Carpool/vanpool [8%]	Bus [2%] Bicycle/walk [2%]

Appendix A. Community Survey

M. If you work in Benicia, please state the route you use to come to work, and transportation mode used:

149. From the south on I-680 [31%]                      From the north on I-680 [18%]                      From the west on I-780 [51%]  
 150. Auto (drive alone) [87%]                      Carpool/vanpool [4%]                      Bus [1%]                      Bicycle [2%]                      Walk [6%]

N. How do you perceive the following local health and safety issues? Please indicate if issues are a concern /threat to you.

<u>ISSUES</u>	VERY CONCERNED	MILDLY CONCERNED	NO OPINION	OF LITTLE CONCERN	NOT AT ALL CONCERNED
151. Air quality	[56%]	[28%]	[7%]	[6%]	[3%]
152. Water quality	[57%]	[28%]	[8%]	[5%]	[2%]
153. Toxic waste clean up	[61%]	[24%]	[9%]	[4%]	[2%]
154. Toxic waste handling	[61%]	[22%]	[10%]	[5%]	[2%]
155. Local health care services	[28%]	[35%]	[24%]	[9%]	[4%]
156. Noise from events	[17%]	[25%]	[26%]	[19%]	[13%]
157. Industrial noise	[27%]	[27%]	[21%]	[17%]	[8%]
158. Freeway noise	[22%]	[31%]	[21%]	[18%]	[8%]
159. Other traffic noise	[18%]	[32%]	[24%]	[18%]	[8%]
160. Noise where you live	[25%]	[27%]	[18%]	[18%]	[12%]
161. Noise where you work	[9%]	[15%]	[46%]	[15%]	[15%]
162. Evacuation plans	[25%]	[31%]	[28%]	[10%]	[6%]
163. Crime on the streets	[58%]	[28%]	[6%]	[6%]	[2%]
164. Drug abuse	[61%]	[26%]	[7%]	[4%]	[2%]
165. Burglary	[61%]	[28%]	[6%]	[4%]	[1%]
166. Gang activities	[61%]	[24%]	[7%]	[6%]	[2%]
167. Emergency notification	[44%]	[31%]	[16%]	[6%]	[3%]

O. Please evaluate the following transportation systems/facilities with respect to which items need improvement or need to be provided, are adequate as is, or should be reduced.

<u>OPTIONS</u>	IMPROVE SIGNIFICANTLY	IMPROVE SOMEWHAT	ADEQUATE AS IS	NO OPINION	REDUCE SOMEWHAT	REDUCE SIGNIFICANTLY
168. Bicycle paths	[21%]	[35%]	[42%]	[1%]	[1%]	
169. Bicycle lanes on roads	[20%]	[34%]	[43%]	[2%]	[1%]	
170. Pedestrian paths in the downtown	[14%]	[29%]	[55%]	[1%]	[1%]	
171. Waterfront path system	[29%]	[35%]	[34%]	[1%]	[1%]	

	IMPROVE SIGNIFICANTLY	IMPROVE SOMEWHAT	ADEQUATE AS IS/ NO OPINION	REDUCE SOMEWHAT	REDUCE SIGNIFICANTLY
172. First Street link to Arsenal	[18%]	[25%]	[53%]	[2%]	[2%]
173. Routes for truck traffic in non-industrial areas	[14%]	[23%]	[54%]	[4%]	[5%]
174. Downtown parking	[17%]	[34%]	[48%]	[1%]	[0%]
175. Access to BART station	[34%]	[25%]	[39%]	[1%]	[1%]
176. Access to Amtrak rail passenger service	[26%]	[22%]	[50%]	[1%]	[1%]
177. Ferry service to Bay Area cities	[41%]	[23%]	[33%]	[1%]	[2%]
178. Traffic lights	[9%]	[23%]	[63%]	[3%]	[2%]
179. Bus system	[15%]	[28%]	[55%]	[1%]	[1%]
180. Stop signs	[8%]	[17%]	[70%]	[3%]	[2%]
181. Tourist directional signs	[13%]	[31%]	[54%]	[1%]	[1%]

**Please Provide the Following Background Information**

- |  |   |
|--|---|
| <p>182. <b>Age:</b></p> <ul style="list-style-type: none"> <li>a. 10-14 [0.4%]</li> <li>b. 15-24 [1.5%]</li> <li>c. 25-34 [11.9%]</li> <li>d. 35-44 [32.5%]</li> <li>e. 45-54 [26.7%]</li> </ul> <p>183.</p> <ul style="list-style-type: none"> <li>a. 55-64 [13.0%]</li> <li>b. 65+ [14.0%]</li> </ul> <p>184. <b>Residential Neighborhood:</b></p> <ul style="list-style-type: none"> <li>a. Eastside south of 780 [10.4%]</li> <li>b. Eastside north of 780 [13.3%]</li> <li>c. Westside south of 780 [18.0%]</li> <li>d. Westside north of 780 [20.5%]</li> <li>e. Southampton east of Hastings [19.1%]</li> </ul> <p>185.</p> <ul style="list-style-type: none"> <li>a. Southampton west of Hastings [18.8%]</li> </ul> <p>186. <b>Sex:</b></p> <ul style="list-style-type: none"> <li>a. Female [56.6%]</li> <li>b. Male [43.4%]</li> </ul> <p>187. <b>Household Type:</b></p> <ul style="list-style-type: none"> <li>a. Single [16.7%]</li> <li>b. 2 or more adults [38.6%]</li> <li>c. Single adult with children [5.5%]</li> <li>d. 2 or more adults with children [39.1%]</li> </ul> | <p>188. <b>Housing Type:</b></p> <ul style="list-style-type: none"> <li>a. Single Family Residence [76.1%]</li> <li>b. Apartment [5.9%]</li> <li>c. Mobile Home [2.1%]</li> <li>d. Townhouse/Condominium [11.4%]</li> <li>e. Duplex [1.9%]</li> </ul> <p>189.</p> <ul style="list-style-type: none"> <li>a. Cottage/In law Unit [2.7%]</li> </ul> <p>190. <b>Home Ownership:</b></p> <ul style="list-style-type: none"> <li>a. Own [85.2%]</li> <li>b. Rent [14.8%]</li> </ul> <p>191. <b>Live and work:</b></p> <ul style="list-style-type: none"> <li>a. Live in Benicia [97.5%]</li> <li>b. Work in Benicia [2.5%]</li> </ul> <p>192. <b>Income:</b> Please mark the category that best matches your combined household income before taxes.</p> <ul style="list-style-type: none"> <li>a. Less than \$14,999 [3.6%]</li> <li>b. \$15,000 to \$19,999 [3.3%]</li> <li>c. \$20,000 to \$23,900 [3.9%]</li> <li>d. \$23,901 to \$38,250 [12.4%]</li> <li>e. \$38,251 to \$47,800 [11.6%]</li> </ul> <p>193.</p> <ul style="list-style-type: none"> <li>a. \$47,801 to \$57,350 [12.8%]</li> <li>b. \$57,351 to \$89,999 [29.8%]</li> <li>c. Over \$90,000 [22.6%]</li> </ul> |
|--|---|



# APPENDIX B

## LAND USE CHANGES

This General Plan changes the land use designations of several areas and parcels of land from the designations shown on the 1993 General Plan. All of these changes are consistent with the goals, policies, and programs of this General Plan.

The land use changes are listed, numbered, and described on the following pages. The paragraph numbers correspond to the numbers on the diagram of Land Use Changes at the end of this section. All acreages are gross except as noted. "Net" means streets are completed and not included in the acreage figures.

### LAND USE CHANGES TO THE 1993 GENERAL PLAN

1. The entire former *Sky Valley* Group site (350 acres on three parcels north of Lake Herman Road): **FROM** Low Density Residential, Medium Density Residential, and General Open Space **TO** General Open Space.
2. Three parcels (*IT—formerly Seeno*) (169 acres) north of Lake Herman Road (and north and northwest of the Water Treatment Plant): **FROM** Business and Professional Office **TO** General Open Space.
3. **West Channel Road and California Court**: approximately 33 parcels (134 acres) **FROM** General Industrial **TO** Limited Industrial with a General Open Space buffer adjacent to proposed residential along the south and west edges of the industrial parcels. The buffer area is located between industrial properties on the west side of West Channel and adjacent residential properties. The buffer area is the land between the rear yard property lines of the residential lots in the Southampton subdivision and developed industrial land along the west side of West Channel. The buffer is an average of 200 feet in width, with variations in response to the topography.
4. **Exxon undeveloped land west** of East Second (five parcels; 272 acres): **FROM** General and Limited Industrial **TO** Limited Industrial with a General Open Space buffer of at least 200 feet adjacent to residential. The 1.5-acre reservoir site is to remain Public/Quasi-public.
5. **Exxon undeveloped land east** of East Second (one parcel of 152 acres): **FROM** General Industrial **TO** General and Limited Industrial. General Industrial will begin at a point 700 feet from Exxon's southern property line, adjacent to Low Density Residential, tapering to the open space buffer area adjacent to the

- City cemetery. A General Open Space buffer will be maintained along the south edge of at least 200 feet adjacent to Low Density Residential and Public/Quasi-public. The 7.6-acre City corporation yard is to remain Public/Quasi-public.
6. **Upper Arsenal north** of I-780 (123 acres from approximately the Armory south, to and including Pine Lake): **FROM** General Industrial **TO** Limited Industrial.
  7. **Four Fleetside parcels** (43.5 acres between Industrial Way and the UPRR): **FROM** General Industrial **TO** Open Space-Marsh.
  8. The **third parcel north of Lake Herman Road** between Egret Court and the UPRR: (4.7 acres) **FROM** Limited Industrial **TO** Open Space-Marsh.
  9. West side I-680, south of the northern “Gateway” to Benicia: a former gravel pit enclosed by forested hills, remains General Open Space but the City may redesignate the site as part of a future General Plan amendment.
  10. **East side I-680**, south of the northern “Gateway” to Benicia: three parcels (24 acres) between Goodyear Road and I-680, **FROM** General Open Space **TO** Limited Industrial.

Sites 9 and 10 are marked on the Land Use Diagram with an asterisk. These sites are located on both sides of I-680 north of Lake Herman Road and south of the northern “Gateway” to Benicia. When approaching Benicia from Cordelia, most of the visible land is rural or not developed. About one mile north of Lake Herman Road, two hills form a visual transition—a gateway—to Benicia. Site 9 (acreage may vary) and Site 10 (24 acres) could accommodate urban development and would be the first such sites to be seen after passing through the gateway hills from the north.

In planning for future urban uses on these sites, the City should consider the following:

- (a) Since first impressions of a community are very important, projects at these sites should offer attractive architectural designs, screening of outdoor storage and similar outdoor activity areas, and landscaping which relates to both the development and surrounding rural environment. Existing trees should be retained to the extent feasible, and contour grading techniques should be applied to highly visible areas.
- (b) Freeway-oriented signs should be avoided. Buildings, other large structures, and extensive landscape screening on or east of I-680 should not block views of Suisun Bay. Views of flat building roofs and rooftop equipment should also be avoided.
- (c) Certain environmental issues will need to be satisfactorily addressed prior to allowing development on these sites. They include the potential for seismic activity within the Alquist-Priolo Special Studies Zone and potential impacts associated with the closure of IT.
- (d) A variety of recreational or business uses may be considered for these sites. The sites should not be considered for residential development because they

are isolated from the rest of the residential community and services. The sites should also not be considered for heavy industrial activities. Those should be diverted to the Industrial Park.

- (e) Development on Site 9 must not preclude the public’s ability to access adjacent open space.
11. ***Parcels generally north of Solar Village, Henderson School, and Jack London Park (and generally along Solano Drive, Rose Drive, Sorrel Court, Alder Court, Lupine Court, Toyon Place, Iris Court, Zimmia Court, Gardenia Court, Fuchsia Drive, Wisteria Court, Orchid Drive, Barton Way, Primrose Lane, Daffodil Drive, Snapdragon Place, Periwinkle Place, Morning Glory Drive, and Lyon Court):*** 120 net acres ***FROM*** Medium Density Residential ***TO*** Low Density Residential.  
 Note: This change reflects the density of existing development and is only a change on the Land Use diagram. It is not a change on the ground.
  12. ***Cliff’s Pleasant View*** at the south end of West Ninth Street: 0.76 acres ***FROM*** Low Density Residential ***TO*** Community Commercial.
  13. ***Several parcels*** ***TO*** Community Commercial:
    - a. Southwest corner of West Military at West Sixth: 1.54 acres ***FROM*** Neighborhood Commercial.
    - b. South of West Military adjacent to and east of Willow Glen Park: 0.47 acres ***FROM*** General Commercial.
    - c. Southwest corner of “J” and West Fifth Street: 0.36 acres ***FROM*** Neighborhood Commercial.
    - d. Parcel north side of “J” Street between West Fifth and West Sixth Streets: 0.12 acres ***FROM*** Neighborhood Commercial.
    - e. Parcel north corner of “H” and East Third Street (east of Fitzgerald Field): 0.43 acres ***FROM*** Neighborhood Commercial.
  14. ***Foot of Downtown*** (both sides of First Street south of B Street): 32 net acres ***FROM*** Waterfront Commercial and Open Space–Parks ***TO*** Downtown Commercial.
  15. The blocks on ***either side of Downtown*** from West Second (both sides) to East Second (both sides) and between “E” and “K” Streets: 29.3 net acres ***FROM*** High Density Residential, General Commercial, Neighborhood Commercial, and Business and Professional Office ***TO*** Downtown Mixed Use.
  16. The ***“Yuba” area*** (south of the WWTP and east of East Fourth Street and south of “E” Street): 32 acres ***FROM*** General Industrial ***TO*** Limited Industrial.
  - 17a. Those parts of the ***Lower Arsenal*** now designated General Industrial (north of Lincoln, Polk, and Tyler Streets), General Commercial, and Business and Professional Office (except the Commandant’s House and Clocktower): 44 net acres ***TO*** Lower Arsenal Mixed Use.

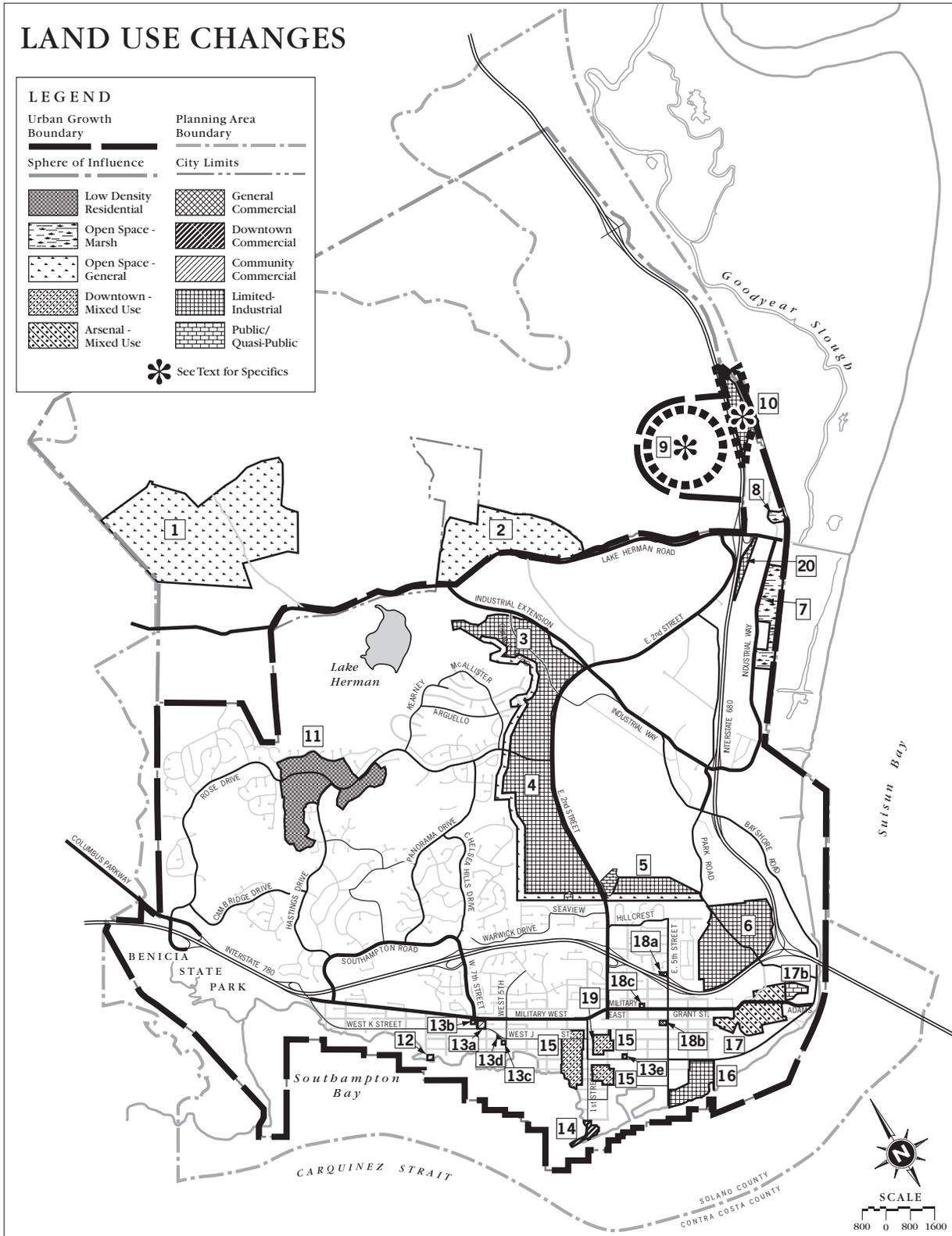


Figure B-1. Land Use Changes (diagram)

- 17b. The *Commandant's House and Clocktower* (7 acres) **FROM** Business and Professional Office **TO** Public/Quasi-public.
- 18a. *Two parcels* on the *west side of East Fifth* immediately north of the I-780 on-ramp: 0.53 acres **FROM** Neighborhood Commercial **TO** General Commercial.
- 18b. *Three parcels on the south side of "L" Street* west of East Fifth plus *one parcel immediately to the south on East Fifth* between "K" and "L" Streets: 0.42 acres **FROM** Neighborhood Commercial **TO** General Commercial.
- 18c. *Two parcels on the north side of Military East* and *one parcel west of East Fourth Street*: 0.29 acres **FROM** Neighborhood Commercial **TO** General Commercial.
- 19. *St. Paul's Episcopal Church*: 0.29 acres, **FROM** Multifamily Residential **TO** Downtown Mixed Use.
- 20. 19± acres *between I-680 and RR tracks* (Fahmy): **FROM** General Commercial **TO** Limited Industrial.

**Table B-1. Land Use Changes by Category and Acres, 1997**

EXISTING LAND USE CATEGORY	ACRES	PROPOSED LAND USE	ACRES
1. Low Density Residential	208	Open Space	350
Medium Density Residential	12	Open Space	
Open Space	130	Open Space	
2. Business/Professional Offices	169	Open Space	169
3. General Industrial	134	Limited Industrial	114
Open Space			20
4. General Industrial	272.0	Limited Industrial	236
Open Space			36.0
5. General Industrial	29	Limited industrial	23
Open Space			6
6. General Industrial	123	Limited Industrial	123
7. General Industrial	43.5	Open Space/Marsh	43.5
8. Limited Industrial	4.7	Open Space/Marsh	4.7
10. Open Space	24	Limited Industrial	24
11. Medium Density Residential	120	Single Family Residential	120
12. Low Density Residential	.79	Community Commercial	.79

**Table B-1. Land Use Changes by Category and Acres, 1997 (continued)**

<b>EXISTING LAND USE CATEGORY</b>	<b>ACRES</b>	<b>PROPOSED LAND USE</b>	<b>ACRES</b>
13. a. Neighborhood Commercial	1.54	Community Commercial	1.54
b. General Commercial	.47	Community Commercial	.47
c. Neighborhood Commercial	.36	Community Commercial	.36
d. Neighborhood Commercial	.12	Community Commercial	.12
e. Neighborhood Commercial	.43	Community Commercial	.43
14. Waterfront Commercial	.5	Downtown Commercial	4.5
Open Space/Parks	4	Downtown Commercial	
15. Commercial (General, Office, Neighborhood) Public	2.1	Downtown Mixed Use	29.3
Residential (Low Density, Medium Density, PD)	1.2 26.0	Downtown Mixed Use Downtown Mixed Use	
16. General Industrial	32	Limited Industrial	32
17. a. Office	11.5	Lower Arsenal Mixed Use	44.0
General Commercial	10.5	Lower Arsenal Mixed Use	
Limited Industrial	22.0	Lower Arsenal Mixed Use	
b. Business/Professional Office	7.0	Public/Semi Public	7.0
18. a. Neighborhood Commercial	.53	General Commercial	.53
b. Neighborhood Commercial	.42		.42
c. Neighborhood Commercial	.29		.29
19. General Commercial (St. Paul's Church)	.29	Downtown Mixed Use	.29
20. General Commercial (Fahmy)	19±	Limited Industrial	19±

Source: City of Benicia Planning Department, 1997

# APPENDIX C

## GROWTH MANAGEMENT

### 1. WHAT IS GROWTH MANAGEMENT?

In California, “land use planning” and “growth management” are nearly synonymous. Our state is deluged by growth and development. If we want to manage growth, we have to plan, and *vice versa*.

Here is how “Growth Management” is defined in the *California General Plan Glossary*:

“The use by a community of a wide range of techniques in combination to determine the amount, type, and rate of development desired by the community and to channel that growth into designated areas. Growth management policies can be implemented through growth rates, zoning, capital improvement programs, public facilities ordinances, urban limit lines, standards for levels of service, and other programs.”

A “Growth Management” program doesn’t have to use all of the various implementing programs listed in the above definition. In 1991, the Governor’s Office of Planning and Research (GOPR) surveyed the State’s cities and counties to determine the frequency with which those jurisdictions enacted programs to control or manage their growth. Among the more interesting findings were these:

- Growth management activity is concentrated in the more heavily populated portions of the state and relatively rare elsewhere. Overall, approximately 41 percent of the state’s population lives within a city or county with a program to control or manage growth.
- Growth management is common within the urban and urbanizing portions of the state, especially in the San Francisco Bay Area. In 1996, within the nine-county San Francisco Bay Area, 42 percent of the cities and counties had growth management programs, affecting 58 percent of the region’s population.
- Local general plans play a major part in defining growth management goals and policies.
- Cities are more likely to utilize building permit allocation systems and place annual limits on the number of permits issued than are counties. Counties are more likely to adopt urban limit lines and policies to encourage a jobs/housing balance.

- There is little correlation between the existence of formal growth management programs and recent rates of population increase.
- Few growth management programs regulate commercial growth.
- Growth management is on the increase at the local level as a result of State and regional requirements such as Congestion Management Plans.
- Many jurisdictions restrict growth in ways other than through a formal growth management program. Growth is informally restricted through high development impact fees, low residential densities, and maintaining insufficient infrastructure capacity.

## 2. GROWTH MANAGEMENT TECHNIQUES

Even though each city and county has its own approach to growth management, GPR found certain techniques for regulating growth that are commonly used. The four most popular techniques among growth management cities are:

- Level of Service (LOS) standards (49 percent of all programs).
- Annual limits on the number of building permits issued (38 percent of all programs). This implies a simple granting of permits on a first-come, first-served basis until the number of permits allowed for that year have been granted.
- A system of allocating building permits (34 percent of all programs). This implies a “beauty contest,” where developments have to compete for a limited number of permits. Those developments that do the most to meet City goals, measured by a system that awards points, stand the best chance of getting permits.
- Urban limit or urban growth lines (28 percent of all programs). Urban growth boundaries are used to separate urbanizable land from rural land. The purpose of the boundaries is to contain urban growth for the period of time specified by the growth management program. The land within the boundaries—the urban growth area—is generally designated for a combination of purposes: provision of services, compact urban form, siting of future development, or protection of resource lands and environmentally sensitive areas.<sup>1</sup>

The development of urban growth boundaries is a regional issue. Therefore, in establishing an urban growth boundary, it is important to determine the level of State and regional agency interest and involvement with local planning and development decisions. An agreement among local jurisdictions appears to be the most important step in creating successful urban growth area strategies.

When determining the initial urban growth boundary, it is important to incorporate a “market factor” into the urban growth area design. (A market factor is an amount of developable land beyond what is called for in development and population projec-

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<sup>1</sup> This and the following four paragraphs are paraphrased from V. Gail Easley, *Staying Inside the Lines: Urban Growth Boundaries*, American Planning Association, Planning Advisory Service Report No. 440, November 1992.

tions.) A market factor can foster the success of the urban growth area by allowing flexibility in the siting of development and ensuring developers they will be able to build on locations favored by the market. This way, developers are not encouraged to look to areas outside the urban growth area to satisfy that market. In addition, an excess of developable land can have a positive effect on housing affordability by easing pressure on the price of land.

Many urban growth areas were founded on the notion that cities, not counties, should be the providers of urban services. Thus, active support for annexation of unincorporated lands within the urban growth area into the cities should be the goal of both cities and counties.

Regulatory requirements such as minimum densities, transfer of development rights, removal of public subsidies for roads, sewers, and water lines, and concurrency—allowing development only when facilities and services are available to support the development—will also help to make the urban growth boundary successful.

In addition to the four techniques listed above, 73 percent of the cities with growth management programs use their general plans to define growth management goals and policies such as *quality of life* and *jobs/housing balance*.

Growth management is often enacted in response to conditions such as road overcrowding, water shortages, and perceived loss of open space. Some people want to stop growth—to try to keep things just as they are. Others want to slow growth—to prevent too rapid a growth from overwhelming the delivery of municipal services to the community. Still, when people talk about “Growth Management,” more often than not they skip past the goals and jump right to the method, and usually they have in mind a system where some limit is placed on the number of new dwelling units.

Most cities that limit building permits under methods 2 and 3 set a cap on the *rate* of growth. Those cities either limit new development to a specific number of dwelling units per year and a specific increase in the number of square feet of commercial (and industrial) floor area per year, or they limit new development to a specific percentage increase over the dwelling units or the commercial/industrial floor area that existed in a base year. Whether the allowable increase is established in units per year, square feet per year, or in percent, the permitted annual increase is based on either specific measurement or careful estimates of the ability of the existing and projected capacity of the local infrastructure to support growth. It usually is presumed that the infrastructure capacity can be increased at some specific rate and cost.

Method 1, LOS standards, looks more directly at the delivery of specific municipal services. No set annual number of units is determined; rather, development is allowed if infrastructure capacity exists. If one or more municipal services runs out of capacity, the growth spigot is turned off.

But only methods 2 and 3 *directly* regulate the number of dwelling units that can be built.

### 3. ADVANTAGES AND DISADVANTAGES OF GROWTH MANAGEMENT

Growth management continues to be controversial. There is no agreement on its overall efficacy. Each growth management plan has its own particular benefits and problems. It is possible, however, to summarize briefly some of the principal positions for and against growth management.

#### **ARGUMENTS IN FAVOR OF GROWTH MANAGEMENT**

- Promotes efficient use of land by providing incentives for infill development.
- Protects farmlands, environmentally sensitive areas, scenic views, and the quality of life of a community.
- Prevents urban sprawl and the proliferation of low density residential developments.
- Results in fiscally responsible developments that can fully pay for costs of additional housing and commercial building.
- Growth management is a valid expression of local concern over development.
- Reduces traffic congestion.

#### **ARGUMENTS AGAINST GROWTH MANAGEMENT**

- Increases local housing prices, harming low and moderate income people.
- Diverts development to other localities which are often farther away from employment centers, requiring more roads and transportation facilities, resulting in longer commutes, and increasing the cost of living.
- Benefits only those who are already living in a locality, by increasing their property values through restrictive zoning.
- Increases the racial and class distinctions in American society.
- It is impossible to 'stem the tide' since the real problem is population growth, immigration, and migration which are not addressed by local growth management plans.
- Has only a limited impact on traffic congestion.

# APPENDIX D

## DISCUSSION OF SEAPORT PLAN

Although the Seaport Plan is not mandatory and the City is not foregoing any of its authority to designate land uses in the Seaport area, the Seaport Plan is a useful guide to coordinate port efforts in the Bay Area.

The San Francisco Bay Area Seaport Plan constitutes the maritime element of the Metropolitan Transportation Commission's (MTC's) Regional Transportation Plan and is also incorporated in the Bay Conservation and Development Commission's (BCDC's) San Francisco Bay Plan. MTC uses the Seaport Plan to assist in making project funding decisions and in managing the metropolitan transportation system. BCDC uses the Seaport Plan to help guide its regulatory decisions on permit applications, consistency determinations, and related matters.

The Seaport Plan employs land use designations and enforceable policies that local governments apply in their land use and regulatory decisions. Locations determined to be necessary for future port development are designated as "port priority use" areas. Within port priority use areas, marine terminals are identified and reserved specifically for cargo handling operations.

The Seaport Plan designates the Port of Benicia as an active, 3-berth marine terminal. It establishes the Benicia port priority use area as all the land south of I-780 and east of East Seventh Street, including lands around the Yuba complex and Wastewater Treatment Plant, and lands east of the railroad bridge and rail line near Suisun Bay.

The Seaport Plan notes that the Port of Benicia has 750 terminal acres of Neo-bulk and Dry Bulk cargo\*. It also notes that, although good freeway and rail access exists, flat backland for container terminal development is insufficient.

Tidelands and submerged lands which were part of the former Arsenal were leased to Benicia Industries under agreements executed in 1965, 1966, and 1968. The leases expire in 2031 and 2032. The leases apply to tidelands and submerged lands which were part of the former Arsenal. These lands were granted to the City by the State in three parcels, conveyed by three legislative actions. Parcel B, which includes the wharf, was granted in 1964; Parcel C, which includes the land under and east of the Benicia-Martinez Bridge, was granted in 1965; and Parcel A, located west of Parcel B, was granted in 1967 (see Figure D-1).

The legislation stated that the lands were granted “...in furtherance of navigation, commerce, and fisheries...” and shall be used “...for purposes in which there is a general statewide interest...” including a harbor to accommodate and promote commerce and navigation; commercial and industrial uses; an airport and heliport; transportation facilities related to the above uses including streets, highways, railroads, pipelines, bridges, parking, electrical and telephone lines; public buildings and facilities; convention facilities; recreation, fishing, and golfing; and marinas and associated facilities.

The State retained the mineral rights and the right to use the transportation facilities and to construct highways on the lands. The legislation also reserved the public’s right to fish on the submerged lands by granting rights of access over the tidelands.

The legislation provided that the City could lease the granted lands for periods up to 66 years for purposes consistent with the legislation. Accordingly, 66-year leases were executed with Benicia Industries in 1965, 1966, and 1968. The lease for Parcel A specifies that Benicia Industries will only use the premises in a manner consistent with a Master Plan for the entire port area, which plan was submitted to and approved by the City in 1965. The leases for Parcel B and C require that the property be used in a manner consistent with the legislative grant.

The requirement for a master plan for the Port area was contained in a 1965 Master Lease under which the City leased the entire Arsenal port area to Benicia Industries. In accord with the terms of the lease, a master plan for development of the Port area was submitted to and approved by the City on March 12, 1965. (Recent efforts to find a copy of that plan have not been successful.) In 1975, the City and Benicia Industries executed an Exchange Agreement whereby Benicia Industries acquired the upland Port areas in fee. In exchange, the City received waterfront property west of the Arsenal for construction of the marina. Although, the focus of the 1975 Exchange Agreement was the transfer of land, it also terminated the 1965 Master Lease.<sup>1</sup>

The pages following Figure D-1 contain excerpts from the most recent, 1997, Seaport Plan that pertain to Benicia.

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<sup>1</sup> City of Benicia Planning Department.

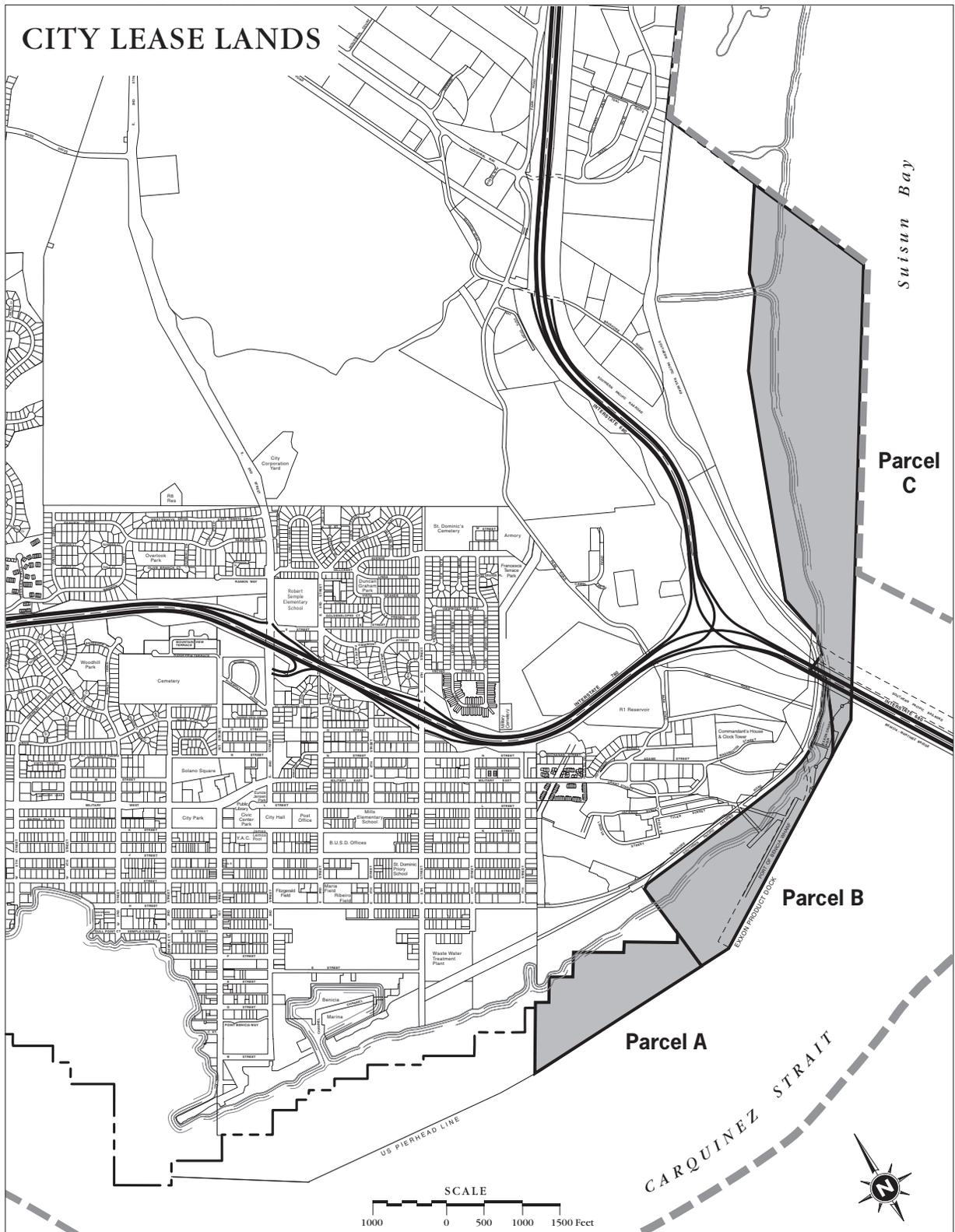


Figure D-1. State Lands parcels A, B, and C, granted to Benicia 1964-1967



# **SAN FRANCISCO BAY AREA SEAPORT PLAN**

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION  
and the  
METROPOLITAN TRANSPORTATION COMMISSION

April 18, 1996

as amended  
September 18, 1997

Prepared by the  
Seaport Planning Advisory Committee  
and  
the staffs of the  
San Francisco Bay Conservation and Development Commission  
and the  
Metropolitan Transportation Commission

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# INTRODUCTION

The San Francisco Bay Area Seaport Plan is the product of a cooperative planning effort of the Metropolitan Transportation Commission (MTC) and the San Francisco Bay Conservation and Development Commission (BCDC). The Seaport Plan constitutes the maritime element of MTC's Regional Transportation Plan, and is incorporated into BCDC's San Francisco Bay Plan, where it is the basis of the Bay Plan port policies. The MTC uses the Seaport Plan to assist in making project funding decisions and managing the metropolitan transportation system, and BCDC uses the Seaport Plan to help guide its regulatory decisions on permit applications, consistency determinations, and related matters.

The Seaport Plan promotes the following goals:

1. Ensure the continuation of the San Francisco Bay port system as a major world port and contributor to the economic vitality of the San Francisco Bay region;
2. Maintain or improve the environmental quality of San Francisco Bay and its environs;
3. Provide for the efficient use of finite physical and fiscal resources consumed in developing and operating marine terminals through the year 2020;
4. Provide for integrated and improved surface transportation facilities between San Francisco Bay ports and terminals and other regional transportation systems; and
5. Reserve sufficient shoreline areas to accommodate future growth in maritime cargo, thereby minimizing the need for new Bay fill for port development.

To achieve these goals, the Seaport Plan employs land use designations and enforceable policies that MTC and BCDC use in their funding and regulatory decisions, and that local governments use in their land use and regulatory decisions. Areas determined to be necessary for future port development are designated as *port priority use areas* and are reserved for port-related and other uses that will not impede development of the sites for port purposes. Within port priority use areas, *marine terminals* are identified and are reserved specifically for cargo handling operations. The number of marine terminals (measured by marine terminal berths and amount of land needed for marine terminal use) is derived from an analysis of the Bay Area waterborne cargo demand in 2020 and the capability of existing marine terminals to handle the forecast cargo.<sup>1</sup>

The Seaport Planning Advisory Committee (SPAC) oversaw the development of the original plan in 1982 and its subsequent updates in 1988 and 1995. The SPAC is composed

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1. Terms are defined in the Glossary in Part III.

Introduction

of representatives from BCDC, MTC, the Association of Bay Area Governments, the federal Maritime Administration, the six Bay Area ports, Caltrans, and Save San Francisco Bay Association. Because the analyses were conducted over the course of 1994, recent developments, such as the merger of the Union Pacific and Southern Pacific railroads and the closure of the Oakland Army Base are not analyzed.

In developing the land use designations and policies contained in this plan, the SPAC reviewed a series of reports, developed by BCDC staff and MTC's consultants, which considered changes in the maritime industry and military base closures.<sup>2</sup> The reports provided information to assist the Seaport Planning Advisory Committee in achieving the following objectives:

1. Determine the projected growth in waterborne cargo for the San Francisco Bay Area by the year 2020 and the factors affecting this growth;
2. Determine the capability of existing Bay Area marine terminals to handle container and bulk cargoes, and the factors that will affect future changes in marine terminal capability;
3. Determine the potential for closing military bases to be converted to future use as civilian seaports;
4. Determine the number and location of new marine terminals that will be required to handle the projected growth in waterborne cargo;
5. Determine where the new marine terminals can be developed with the fewest adverse environmental impacts;
6. Determine the amount of shoreline acreage that should be reserved for marine terminal development; and
7. Determine the improvements necessary to navigation channels, roads, and railroad lines to facilitate marine terminal development and ground transportation of cargo.

### **APPROACH TO UPDATING THE SEAPORT PLAN**

The need for additional port facilities was determined by estimating the current civilian waterborne cargo handling capability of existing ports and deducting that total cargo volume from the estimated waterborne cargo volumes in the year 2020. The remaining volume of cargo represents an incremental demand for port facilities in the Bay Area.

There are two ways to accommodate growth in waterborne cargo: (1) by constructing new marine terminals—generally requiring at least some Bay fill and dredging—or (2) by increasing the rate and volume of cargo moved through existing marine terminals with investments in capital or labor. This update of the Seaport Plan follows the trends of the maritime industry and focuses more on the latter strategy. Since 1988, when the Seaport Plan was last updated, the volume of cargo coming through the Bay has increased as predicted in the cargo forecast. At the same time, the number of ship calls has declined and only one new container terminal has been built, although the Seaport Plan predicted that six additional container terminals would be needed to handle the cargo growth. Clearly, productivity gains have been achieved by improving the efficiency of existing facilities, and this

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2. Supporting technical documents are listed in Part III.

approach is more cost effective and timely for the maritime industry than building new, capital intensive facilities.

In reviewing the port priority use areas and marine terminal designations, industry trends and requirements for different types of cargo were used as guidelines for determining which port priority use and marine terminal sites are suitable or necessary for development. Such trends include:

- The increasing size of container vessels (the newest generation of container ships is up to 1,300 feet in length and 150 feet wide, with drafts of 45 to 48 feet);
- The need for deeper and wider channels and berths to accommodate these larger ships;
- The increasing use of containers for break bulk, neo-bulk, and liquid cargoes—some automobiles are now shipped in containers;
- The different economic conditions and planned developments at each Bay Area port, closing military base, and port priority use area;
- The shippers' trend toward consolidation of terminals and the high cost of container terminal development;
- The increasing importance of intermodal transportation of cargo, and;
- The importance of access to at least one, and preferably two or three, rail lines for intermodal shipping.

## MARINE TERMINAL CAPABILITY ANALYSIS

Determining a marine terminal's capability requires measuring the maximum amount of cargo that can be processed at six transfer points, or constraints, where cargo is moved from one area of the terminal to another and where terminal operations can become congested. The constraint points include: ship size and frequency; ship to apron transfer; apron to storage transfer; storage to inland transfer; storage capability; and gate processing. The constraint points were modeled at each terminal in the Bay Area to determine the maximum amount of cargo that could be processed. Because a terminal's cargo throughput is only as high as the maximum amount that can be processed at the most constricting point, the volume of cargo at that point reveals the total capability of the terminal.

This approach to calculating throughput capability blends theoretical and real capability, and therein lies a key difference from the approach used in the 1988 update of the Seaport Plan. While this method accounts for normal operating procedures and management practices that are expected to continue over time, other variables that can change over time have been increased to represent a theoretical cargo handling potential. Factors such as ship calls per year, processing cycle, and throughput density were deliberately increased above historical levels to represent the productivity that could be achieved at a berth.

Terminal capability calculations were performed for each Bay Area berth, and totaled according to cargo type to determine the capability of the individual ports for each cargo type. This total capability was divided by each port's actual number of berths of each cargo type to develop a theoretical berth capability for the various cargo types. Similarly, the terminal acreage required for each type of berth was averaged for West Coast ports to estimate the terminal area needed for each type of cargo berth.

*Introduction*

Once each port's theoretical throughput capability for each cargo type was known, a spreadsheet program was developed to calculate the total cargo volume that could be handled at each port, given various numbers of berths. Using this spreadsheet, future berths were added to or subtracted from the various ports and military bases until the total Bay Area cargo throughput capability approximated the level of cargo forecast for the year 2020.

At the same time, potential marine terminal sites were evaluated for their suitability for marine terminal development. Those sites that did not offer adequate backland, rail and road access, deep water channels, and proximity to an existing port were eliminated, to the greatest extent possible, while still achieving adequate throughput capability to meet the 2020 cargo forecast. Large portions of military bases and port priority use areas were deleted from the Plan because they were economically or geographically unsuitable for port development.

The sites designated in the Seaport Plan will provide adequate throughput capability for the region to meet the volume of cargo forecast for the year 2020, given the constraints under which this Plan was developed. Those constraints include the high costs of developing marine terminals, local governments' land use plans, and the need to minimize filling the Bay for marine terminal development.

## Designations

**PORT OF BENICIA**

The Benicia Port and Terminal Company operates a 3–berth marine terminal on Carquinez Strait, west of the Benicia–Martinez Bridge. The Port imports automobiles and petrocoke at its three berths, and has approximately 750 acres of open storage area. The terminal serves the Exxon refinery as well.

**Findings**

1. Much of the Port’s property consists of upland hills, and although there is good freeway and rail access, there is insufficient flat backland for container terminal development.
2. The Port has sufficient acreage for bulk cargo operations and storage, and has recently proposed developing additional petrocoke storage facilities.
3. The Port’s facilities and operations as of 1994 are shown in Table 8.

**Policies**

1. By the year 2020, the Port of Benicia should have the facilities and annual cargo throughput capabilities shown in Table 9.

2. The Port is designated as an active, 3–berth marine terminal. Figure 3 depicts the Benicia port priority use area.

Table 8: Port of Benicia Current Facilities

	AUTO TERMINAL (Berths 1,2,3)	PETROCOKE (Berth 3)
<i>Terminal Operator</i>	Benicia Port Terminal Co.	Benicia Port Terminal Co.
<i>Cargoes Handled</i>	GM, Ford, Chrysler, Mazda, Toyota automobiles	petrocoke
<i>Total Terminal Area (acres)</i>	750	250*
<i>Length of Berths (feet)</i>	2400	800
<i>Wharf Area (acres)</i>	5.5	5.5
<i>Open Storage Area (acres)</i>	750	N/A
<i>Depth of Water (ft. MLLW)</i>	38	38
<i>Transit Shed Area (acres)</i>	N/A	N/A
<i>Ship Calls in 1993</i>	215	11
<i>Special Equipment/Facilities</i>	vehicle ramps	conveyor 2 storage silos

\* Included within auto terminal acreage.

Table 9: Port of Benicia Future Facilities

TERMINAL	DESIGNATION	TERMINAL ACRES	CARGO TYPE	EFFECTIVE NO. OF BERTHS	EXPECTED THROUGHPUT CAPABILITY*	TOTAL THROUGHPUT
Berths 1-3	Active	500 250	Neo-bulk Dry bulk	2.5 0.5	374,000 600,000	935,000 300,000
<i>Totals</i>		750		3.0		

\* Denotes optimal annual throughput capability, in metric tons.

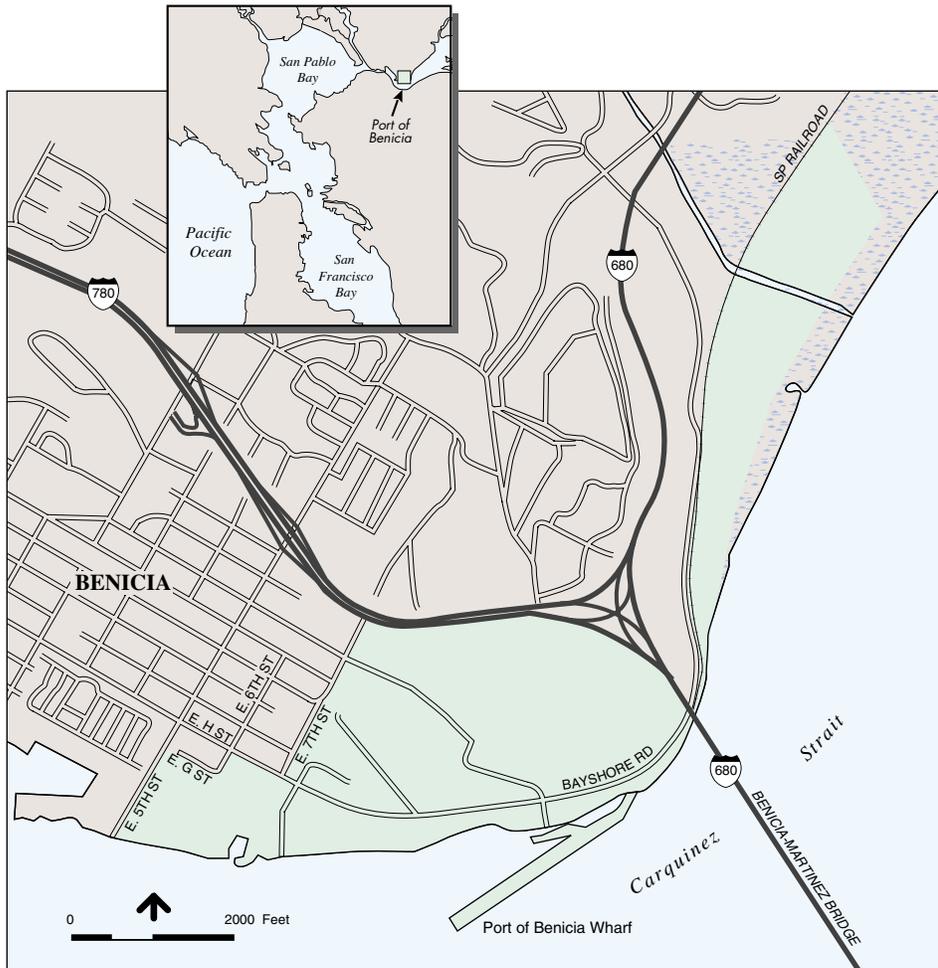


Figure 3: Port of Benicia Port Priority Use Area

- The Seaport Planning Advisory Committee should develop and implement the ongoing cargo monitoring process described in Part I and above in the section titled “Need for Further Studies”. The Committee should also review requests for interim use permits within port priority use areas, changes in use, or deletions of marine terminals or port priority use areas from the Seaport Plan. The Committee should forward its recommendations on such requests to BCDC and MTC.
- Mitigation policy for port development should be coordinated among the responsible federal, state and local agencies.
- The policies of the Comprehensive Management Plan for dredging, which will be developed by the joint agency Long Term Management Strategy, should be implemented by agencies with jurisdiction over dredging in San Francisco Bay, including the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the San Francisco Bay Regional Water Quality Control Board, and BCDC.
- The significant forecast increase in road and rail traffic generated by regional seaports suggests that projects to improve traffic flows should be formally considered in the development of local and regional capital improvement programs. These analyses should consider not only the potential for reducing congestion for overall traffic flows but specifically for freight movements.
- Local and regional government agencies can respond to changes in seaport access conditions if they have current data. Although annual changes may not necessarily indicate a continuing trend, seaport traffic should be monitored on an annual basis as is done with traffic for other modes. MTC should take the lead in compiling seaport traffic data, with the assistance of ports, railroads, and trucking companies.

## PRIORITY USE BOUNDARIES

### Benicia

#### 1. Benicia Waterfront

*East Boundary:* Southwest line of the Benicia-Martinez Bridge (Interstate 680).

*North Boundary:* Southwest line of the Benicia-Martinez Bridge (Interstate 680) westerly along 680 to Interstate 780 to intersection with East 7th Street extended; hence southwesterly to intersection with East H Street; hence northwesterly to intersection with East 6th Street; hence southwesterly to intersection with East G Street; hence northwesterly to East 5th Street.

*West Boundary:* Southerly extension of the west side of East 5th Street to the shoreline.

#### 2. Benicia Industries

*South Boundary:* Northeast line of Benicia-Martinez Bridge (Interstate 680).

*North Boundary:* South line of Southern Pacific Railroad right-of-way south of Bayshore Road to intersection with Benicia City Limit as of April 1996.

*Northeast Boundary:* Northeasterly line of Solano County Assessor’s Parcel No. 78-24-1 (Benicia City Limit as of April 1996).

## GLOSSARY

**Active Terminal Sites** means those existing marine terminal facilities that are currently, and are expected to remain active for the foreseeable future.

**Bay Area Ports** means Encinal Terminals and the ports of Benicia, Oakland, Redwood City, Richmond, and San Francisco.

**Break Bulk Cargo** means cargo handled in individually packaged units.

**Capacity Estimates** or **Region's Capacity** means the estimated cumulative capacity of the Bay Area's marine terminals existing as of the date of this plan.

**Cargo Forecast** means projected flow of waterborne cargo through Bay Area ports (measured in metric tons).

**Containerized Cargo** means general cargo packed in standard size weather tight boxes. Standard container length is twenty feet and height is either nine or nine and one-half feet. Containers are commonly called TEUs, shorthand for twenty-foot equivalent units. Cargo remains in container from origin to destination.

**Demand Estimates** means projected need for future marine terminal development (measured as a number of berths).

**Drayage** means transportation of containers by truck between a container yard and other site, such as a rail yard.

**Dry Bulk Cargo** means cargo loaded or unloaded in conveyor belts, spouts or scoops, and not placed individually; flowing cargoes; rice, grain, various ores, etc.; stored loose.

**Dry Cargo** means all break bulk, containerized, neo-bulk, and dry bulk cargoes.

**Fill** means earth or any other substance or material, including pilings or structures placed on pilings, and structures floating at some or all times and moored for extended periods, such as houseboats and floating docks (Government Code Section 66632(a)).

**Future Marine Terminal** means those berths that are expected to be developed by the year 2020 to meet forecast growth in waterborne cargo.

**Intermodal Transportation** means the convenient, rapid, efficient, and safe transfer of people or goods from one mode to another during a single journey to provide the highest quality and most comprehensive transportation service for its cost.

**Liquid Bulk Cargo** means liquid cargo, such as petroleum or vegetable oil, that is shipped in tanks rather than small individual units.

**Marine Terminal Berth** means a wharf and other marine terminal facilities necessary to support a single ship berth.

**Marine Terminal Capacity** means the maximum capability of a marine terminal to handle cargo measured in metric tons per year.

**Marine Terminal** means any public, private, proprietary or military waterfront facility utilized for the receipt or shipment of waterborne cargo. Marine terminals serving an industrial function where the product transferred over the wharf is processed (e.g., crude oil refineries) are not included in this plan. For purposes of this plan, a marine terminal includes the wharf, storage area, offices, rail and truck facilities, container freight stations, inter-

modal container transfer facilities, areas for maintenance of containers or container - handling equipment, and other functions necessary to the efficient operation of a terminal; it does not include employee parking.

**Metric Ton** means 2,205 lbs. or 1.102 short tons.

**Military Sites** means those shoreline sites within military installations that have potential for marine terminal use, if and when the military no longer needs them.

**Neo-Bulk Cargo** means cargo generally shipped in large quantities and having some characteristics of bulk commodities. Neo-bulk cargoes in the Bay Area are generally automobiles, steel products, and newsprint.

**Port Priority Use Areas** means shoreline sites needed for regional maritime port use that include within their premises marine terminals and directly-related ancillary activities such as container freight stations, transit sheds and other temporary storage, ship repairing, support transportation uses including trucking and railroad yards, freight forwarders, government offices related to the port activity, chandlers and marine services, and employee parking.

**Productivity** means the per berth capacity of marine terminals.

**Regional Transportation System** means the network of railroads, highways, pipelines, airways, waterways, and related facilities and services, and terminal areas, public or private, serving the San Francisco Bay Area.

**Roll-on/Roll-off (RO/RO)** means a method of ocean transport which permits wheeled vehicles (e.g., autos, trucks, forklifts) to drive on and off the vessel under their own power.

**San Francisco Bay Area** means the City and County of San Francisco and the counties of Alameda, Contra Costa, Marin, Napa, San Mateo, Santa Clara, Solano and Sonoma.

**San Francisco Bay** means the four interconnected bays of South San Francisco Bay, Central San Francisco Bay, San Pablo Bay, and Suisun Bay; and all areas subject to tidal action from the south end of South San Francisco Bay to the Golden Gate to the eastern end of Suisun Bay (Grizzly Bay and Honker Bay). In practice, the eastern boundary of the study area is defined to include the Contra Costa County shoreline to the Antioch Bridge and the Solano County shoreline to the extent of the BCDC jurisdiction near Collinsville.

**Short Ton** means 2,000 pounds or 0.907 metric tons.

**Shoreline Sites** means the shoreline lands or uplands bordering the San Francisco Bay.

**Waterborne Cargo** means receipts and shipments of foreign and domestic cargoes shipped in vessels or barges.

**BCDC** means the San Francisco Bay Conservation and Development Commission

**EIR** means Environmental Impact Report, a document required by the California Environmental Quality Act, to analyze the environmental consequences of development projects and plans.

**EIS** means Environmental Impact Statement, required by the federal National Environmental Protection Act.

*Implementation*

**FISCO** means the Naval Fleet and Industrial Supply Center, Oakland, formerly known as the Naval Supply Center Oakland.

**GGPA** means the Golden Gate Ports Association, a voluntary organization of the Bay Area's ports.

**LTMS** means the Long Term Management Strategy for dredging, which will develop coordinated policies for dredging and dredging regulation throughout San Francisco Bay.

**MLLW** means Mean Lower Low Water, a tidal datum that describes the arithmetic mean of the lower low water heights of a mixed tide observed over a specific 19-year cycle.

**MTC** means the Metropolitan Transportation Commission.

**NAS Alameda** means the Naval Air Station at Alameda.

**NSC Alameda** means the Naval Supply Center Annex at Alameda.

**RTP** means the Regional Transportation Plan, prepared and implemented by the MTC.

**TEU** means one container, or one twenty-foot equivalent unit.

# APPENDIX E

## DISCUSSION OF PUBLIC TRUST DOCTRINE

The Public Trust Doctrine provides that tidal and navigable freshwater within California, the lands beneath, and the living resources inhabiting those waters are held in special title. Public Trust lands may be either publicly or privately owned. In either case, the State retains and holds in trust the public's collective rights to fully use and enjoy Public Trust lands and waters for commerce, navigation, fishing, recreation, open space, scenic value, aquatic habitat, and related educational, scientific, and public purposes. Where Public Trust lands are privately owned or have been granted to the City, the State has conveyed the lands but keeps, in trust for the people of the state, the public's collective rights to use and enjoy the property. The City desires to maintain, protect, and enhance the ecological integrity of this land within the given urban context.



# APPENDIX F

## DEVELOPMENT AGREEMENT FOR PINE LAKE AREA

RESOLUTION NO. 87-36

A RESOLUTION AUTHORIZING THE MAYOR TO EXECUTE A DEVELOPMENT AGREEMENT BETWEEN THE CITY OF BENICIA AND BENICIA INDUSTRIES (PINE LAKE PROPERTY)

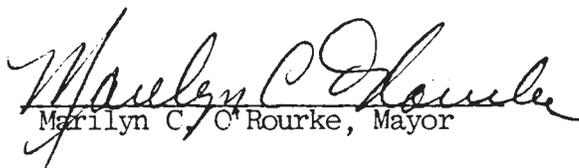
BE IT RESOLVED BY THE COUNCIL OF THE CITY OF BENICIA that Marilyn C. O'Rourke, Mayor, be and she hereby is authorized to execute a Development Agreement between the City of Benicia and Benicia Industries conveying the Pine Lake property to Benicia Industries, subject to the provisions in the Development Agreement.

On motion of Councilmember Roetzer, seconded by Councilmember Ciarrocchi, the above resolution was introduced and passed by the Council of the City of Benicia at a regular meeting of said Council held on the 3rd day of March, 1987, and adopted by the following vote:

Ayes: Councilmembers Ciarrocchi, Fuller, Roetzer, Temple and  
Mayor O'Rourke

Noes: None

Absent: None

  
Marilyn C. O'Rourke, Mayor

Attest:

  
Frances D. Greco, City Clerk

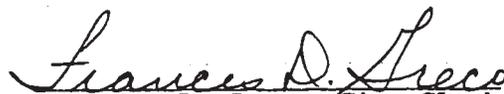
I, Frances D. Greco, City Clerk of the City of Benicia, County of Solano, State of California, hereby certify that the foregoing resolution was introduced and passed by the Council of the City of Benicia at a regular meeting of said Council held on the 3rd day of March, 1987, and adopted by the following vote:

Ayes: Councilmembers Ciarrocchi, Fuller, Roetzer, Temple and  
Mayor O'Rourke

Noes: None

Absent: None

WITNESS my hand and the seal of said City this 4th day of March, 1987.

  
Frances D. Greco, City Clerk

CITY OF BENICIA  
RESOLUTION NO. 87-37

Authorizing the City of Benicia to Convey to  
Benicia Industries, Inc. Certain Real Property  
and to Execute a Deed

WHEREAS, on November 21, 1986, the City of Benicia, a political subdivision of the State of California (hereinafter called the "City"), received from legal counsel for Benicia Industries, Inc. ("Benicia Industries") a demand that the City convey to Benicia Industries certain real property within the City known as "Pine Lake" and more particularly described on Exhibit A attached hereto; and

WHEREAS, Benicia Industries has stated that it will commence litigation to compel conveyance of Pine Lake if the City does not promptly convey Pine Lake; and

WHEREAS, the City has analyzed its possible defenses to such an action and, upon advice of counsel, has concluded that the conveyance should be made, subject to a Development Agreement in the form attached hereto as Exhibit B; and

WHEREAS, conveyance of the real property in question would be accomplished by execution of a deed in the form attached hereto as Exhibit C;

NOW, THEREFORE, the City Council of the City of Benicia (the "Council") resolves as follows:

RESOLVED, that the Council does hereby irrevocably authorize the grant to Benicia Industries of certain real property as described on Exhibit A attached hereto;

FURTHER RESOLVED, that Marilyn C. O'Rourke, Mayor of the City of Benicia, and Frances Greco, Clerk of the City of Benicia, are hereby authorized, for and on behalf of and in the name of the Council, to execute, attest and deliver any and all documents, including the Development Agreement in the form attached hereto as Exhibit B and deed in the form attached hereto as Exhibit C, and to take any and all action that may be necessary or desirable in connection with completion of the grant.

On motion of Council Member Roetzer, seconded by Council Member Ciarrocchi, the Council of the City of Benicia introduced and passed the above Resolution at a regular council meeting held in Benicia, California on March 3,, 1987, and adopted the following vote:

Ayes: Councilmembers Ciarrocchi, Fuller, Roetzer, Temple and Mayor O'Rourke

Noes: None

Absent: None

  
Marilyn C. O'Rourke, Mayor

Attest:

  
Frances Greco, City Clerk

EXHIBIT A

Commencing at the most Westerly corner of that certain 690.33+ Acre parcel of land identified as TRACT NO. 1 on a map entitled "BENICIA ARSENAL, CALIFORNIA, BOUNDARY MAP," dated October, 1935 and recorded in Book 8 of Maps, Page 8, Records of Solano County, California; thence along the Northwest boundary of said Benicia Arsenal, North 29° 15' East, 270.18 feet to the proposed Northerly Right-of-Way line of State Highway X-SOL-74-C; thence leaving said boundary and proceeding along said proposed Right-of-Way South 63° 26' 17" East, 258.40 feet; South 76° 01' 39" East, 277.27 feet; thence South 83° 09' 35" East, 321.60 feet to the true point of beginning of Area No. 2; thence leaving said Right-of-Way line North 60° 18' 00" West, 267.76 feet; North 5° 28' 30" East, 673.27 feet; North 79° 24' 30" East, 999.31 feet; South 39° 19' 00" East, 873.27 feet; and South 6° 21' 37" East, 143.56 feet to the above described Northerly Right-of-Way line; thence along said line South 80° 48' 21" West, 352.90 feet; South 81° 23' 53" West, 500.05 feet; South 82° 30' 25" West, 408.65 feet; and North 83° 09' 35" West, 136.16 feet to the true point of beginning, containing 26.802 acres, more or less.

DEVELOPMENT AGREEMENT

This Agreement is entered into this 3rd day of March, 1987 by and between the City of Benicia, a municipal corporation ("CITY") and Benicia Industries, Inc., a California corporation ("BENICIA INDUSTRIES") for the consideration hereinafter identified.

RECITALS:

1. CITY and BENICIA INDUSTRIES, together with the Surplus Property Authority of the City of Benicia, entered into a Property Exchange Agreement in 1975, authorized by CITY's City Council by Resolution No. 75-27 and approved by CITY's electorate on May 27, 1975, which provided, among other things, for CITY's conveyance to BENICIA INDUSTRIES of that certain real property described as set forth on Exhibit A attached hereto (hereinafter referred to as the "Pine Lake Property").

2. A question subsequently arose as to CITY's obligation under the Exchange Agreement to convey the Pine Lake Property to BENICIA INDUSTRIES. On November 20, 1986 BENICIA INDUSTRIES notified CITY in writing that it would commence legal action to compel the making of such conveyance by CITY unless an acceptable compromise agreement could be reached.

3. By Resolution No. 87-37, CITY's City Council has authorized the settlement of such dispute, upon advice of counsel, by the conveyance of the Pine Lake Property to BENICIA INDUSTRIES subject to the provisions of this Development Agreement. This Agreement is entered into in consideration of the settlement of such dispute.

AGREEMENT:

1. BENICIA INDUSTRIES agrees for itself, its successors and assigns, as a covenant running with the Pine Lake Property, that as conditions to any land use permits or entitlements for development of any portion of the Pine Lake Property or subdivision thereof, and as a condition precedent to the issuance of any building permit for any portion of the Pine Lake Property, the Owner/Developer thereof shall:

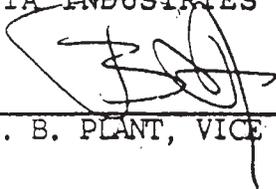
(a) Submit to CITY for its review and approval a plan for the Owner/Developer's setting aside of an open space or greenbelt area (the "Open Space Plan") along the Pine Lake Property boundaries adjacent to Interstate Highway 780, reasonably designed to provide an attractive entry to CITY along Interstate Highway 780, which Open Space Plan CITY may require comprise up to but not more than six and one-half percent (6.5%) of the total gross land area of the Pine Lake Property. Said Open Space Plan shall provide for the Owner/Developer's landscaping and maintenance of said open space or greenbelt area at the Owner/Developer's sole cost pursuant to a landscape plan to be submitted to CITY for review and approval at the time of or prior to submittal of a Development Plan, and in any event prior to issuance of building permits, for all or any portion of the Pine Lake Property.

(b) Submit to CITY for its review and approval a plan to incorporate and maintain in the development of the Pine Lake Property an attractive lake or water presence (the "Aquatic Plan"), which may include a single lake, multiple lakes or ponds, or decorative waterways, to be installed at Owner/Developer's sole cost, reasonably adequate to be in keeping with the historical designation of the property as the Pine Lake Property and reasonably related to the economic development of the property. The acreage included in the Aquatic Plan shall be credited against landscape acreage requirements (to be considered separate and apart from the above-referenced open space or greenbelt area), imposed by the CITY under regulations prevailing at the time that Development Permits are requested. The Aquatic Plan shall be designed so that some or all of the body or bodies of water shall be visible from Interstate Highway 780.

2. A Memorandum of Agreement Imposing Covenants Running With the Land, in the form attached hereto as Exhibit B, has been entered into concurrently herewith, which CITY may record in Solano County Official Records. If CITY records such Memorandum, CITY shall record a document terminating such covenants upon CITY's review and acceptance of and the Owner/Developer's completion or bonding for completion of the aforementioned Open Space Plan and Aquatic Plan.

3. It is understood that this Development Agreement is not intended to and shall not be deemed as providing any land use entitlement or permit for the development or subdivision of the Pine Lake Property, all of which shall be and remain subject to the Owner/Developer's compliance with ordinances of the City of Benicia then in effect.

BENICIA INDUSTRIES

By: 

P. B. PLANT, VICE PRESIDENT

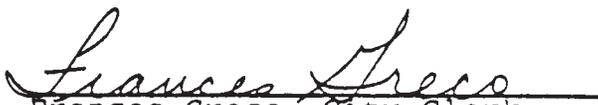
And:

JOHN J. VOLLERT, SECRETARY-TREASURER

CITY OF BENICIA

  
Marilyn C. O'Rourke, Mayor

ATTEST:

  
Frances Greco, City Clerk

# APPENDIX G

## HAZARDOUS SUBSTANCES IN BENICIA

General locations of identified known or suspected hazardous substances sites in Benicia are shown on Figures G-1, G-2, and G-3. Figure G-1 shows the city as a whole, while Figures G-2 and G-3 show enlargements of the Downtown/Arsenal and Industrial areas of Benicia, respectively. Tables G-1 and G-2 present the site name, address, and regulatory database in which the site was identified for sites shown on Figures G-1, G-2, and G-3.

### 1. IDENTIFIED HAZARDOUS WASTE SITES

A computerized search of regulatory agency lists shows a number of sites within the Benicia planning area that are also potentially contaminated with hazardous wastes.<sup>1</sup> These lists include sites where contamination is either suspected or confirmed by the regulatory agencies. The agency lists that were reviewed to identify the sites are described in the appendix of the Safety Background Report.

Identification of a site on a regulatory agency list does not necessarily indicate that contamination has occurred, only that the regulatory agencies have had reason to suspect that contamination has occurred. Regulatory agency files were not reviewed to determine the status of the sites identified by the record search.

There are 57 identified hazardous waste sites in the planning area. With four exceptions—the IT Panoche Hazardous Waste Facility (Map site 1), the Braito Landfill (Map site 2), the landfill at the Benicia State Park site (Map site 54), and the leaking underground storage tank at The Food and Liquor Store, 51 West J Street (Map site 36)—all of the sites identified by the records search are located within the Downtown or industrial areas of Benicia. Because of this, the potential for a site to be located close to an immobile population considered a sensitive receptor, such as a hospital or school, is low.

<sup>1</sup> NATEC Environmental Reporting Services, Ltd, Environmental Disclosure Report, November 29, 1995.

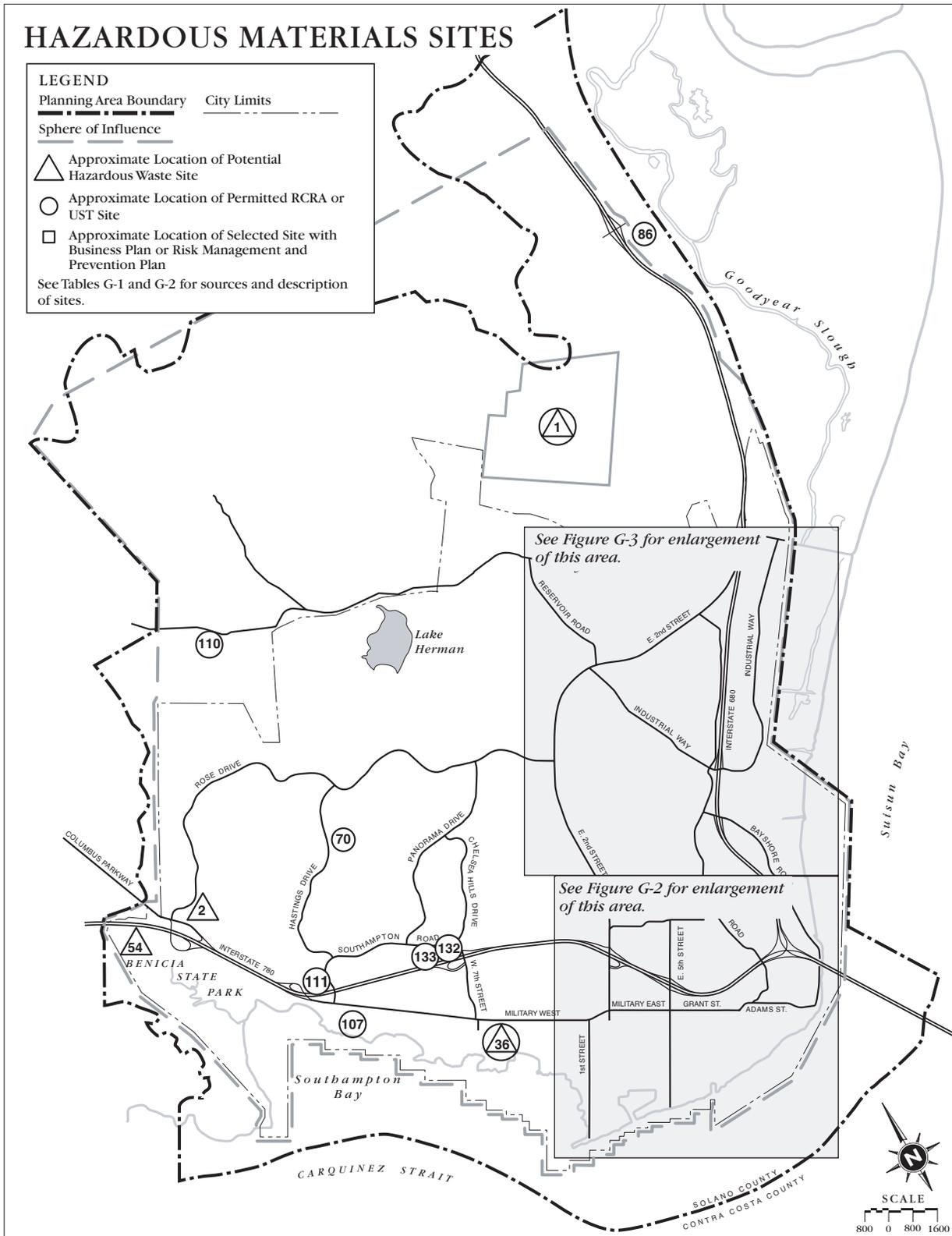


Figure G-1. Hazardous Materials Sites in the Benicia Planning Area

# HAZARDOUS MATERIALS SITES

## LEGEND

△ Approximate Location of Potential Hazardous Waste Site

○ Approximate Location of Permitted RCRA or UST Site

See Tables G-1 and G-2 for sources and description of sites.

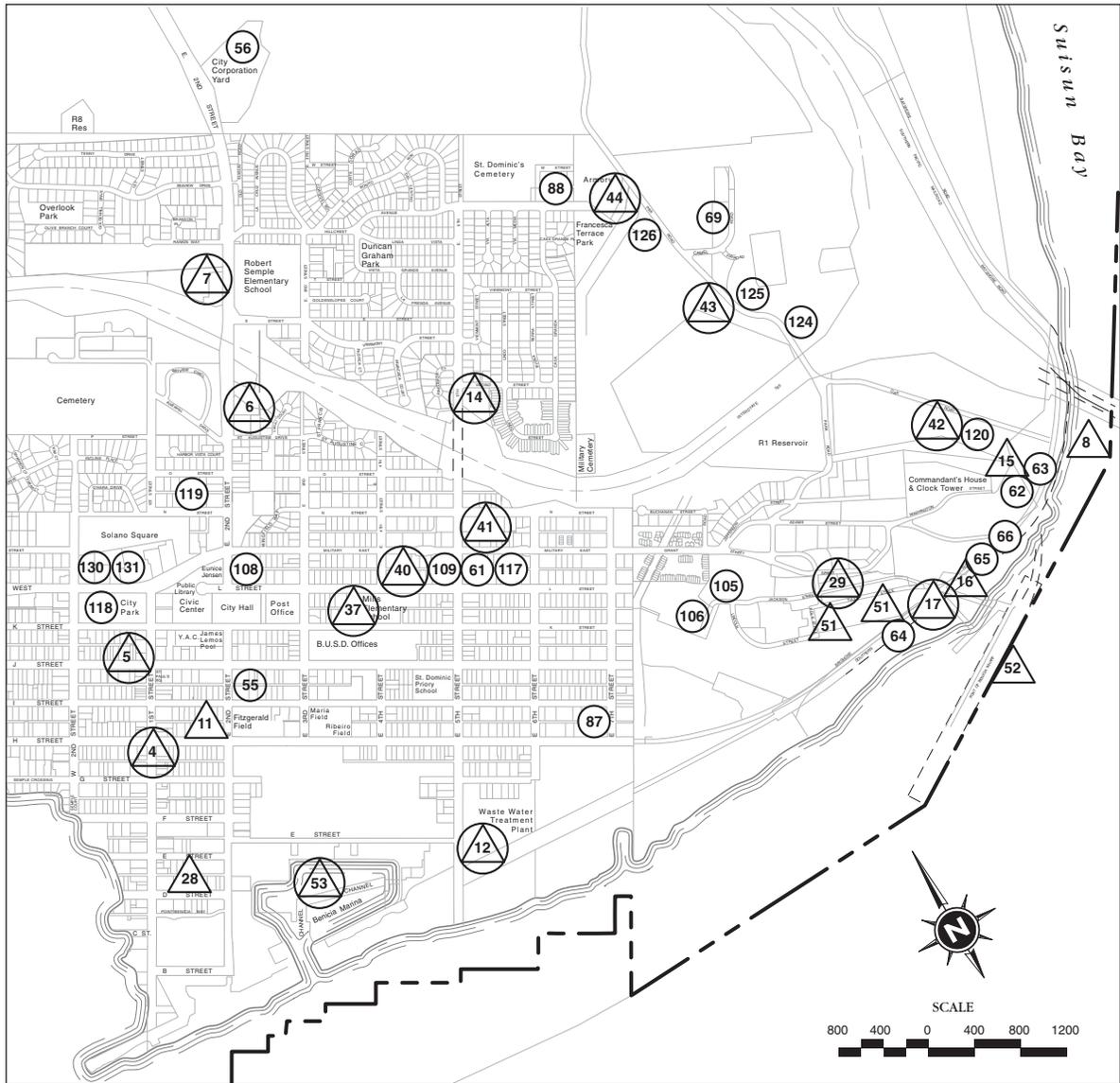


Figure G-2. Hazardous Materials Sites in the Downtown Area

# HAZARDOUS MATERIALS SITES

**LEGEND**

- △ Approximate Location of Potential Hazardous Waste Site
- Approximate Location of Permitted RCRA or UST Site

See Figures G-1 and G-2 for sources and description of sites.



Figure G-3. Hazardous Materials Sites in the Industrial Area

Table G-1. Identified Hazardous Waste Sites, Benicia Planning Area

MAP	SITE NAME	SITE ADDRESS	CERCLIS	SARA	Cal -Sites	Cortese	LUST	SWIS	WMUDS	WDS
1	IT Panoche Facility	Lake Herman Rd.			X				X	X
2	Braitto Landfill	Rose Drive			X			X	X	
4	Benicia Auto Parts	800 First St.					X			
5	Schneider, Harry	1001 First St.					X			
6	Texaco	1602 E Second St.				X	X			
7	Exxon	1925 E Second St.				X	X			
8	Exxon Corp., Benicia Refinery	3400 E Second St.		X	X				X	X
9	Exxon Marketing Terminal	3410 E Second St.				X	X			
10	49650 Second St. E	4650 E Second St.					X			
11	PG&E-MGP-Benicia	H/East Second/ I/ First St			X					
12	Benicia Wastewater Treatment Plant	614 E Fifth St.			X	X	X			
14	Food and Liquor	1500 E Fifth St.				X	X			
15	Suba Mfg., Inc.	921 Bayshore Rd.		X						
16	AAA Sales	2989 Bayshore Rd.				X	X			
17	Lutz Property	3001 Bayshore Rd.				X	X			
18	AJ Chemical Co., Inc.	200 Channel Rd.			X					
19	W.T. Universal Engineering	105 E Channel Rd.				X	X			
20	Universal Engineering	155 E Channel Rd.					X			
21	PIE Trucking Terminal	155 E Channel Rd.				X				
22	Liquid Carbonic	331 E Channel Rd.				X	X			
23	Corey Construct. Co.	511 E Channel Rd.				X	X			
24	Metropolitan Van & Storage	115 W Channel Rd.				X	X			
25	Bay Area/ Diablo Petroleum	116 W Channel Rd.					X			
26	JPH INC	300 W Channel Rd.					X			
27	Bezzarides Property	398 W Channel Rd.					X			
28	Benicia Dredge Disposal	1 E&D Streets			X					
29	Olin Corp.	Bldg. 68, Industrial Way	X		X					

**Table G-1. Identified Hazardous Waste Sites, Benicia Planning Area (cont.)**

MAP	SITE NAME	SITE ADDRESS	CERCLIS	SARA	Cal -Sites	Cortese	LUST	SWIS	WMUDS	WDS
30	Insured Transporters Inc.	100 Industrial Way				X	X			
31	Import Dealer Service	175 Industrial Way					X			
32	Ryder Truck Rentals	317 Industrial Way				X	X			
33	Disalvo Trucking	345 Industrial Way					X			
34	Bedford Properties	435 Industrial Way				X	X			
35	Benicia Industrial Park	4251 Iowa					X			
36	Food & Liquor Store	510 W J St.				X	X			
37	Liberty High School	350 E K St.	X		X					
38	City of Benicia	250 Lake Herman Rd					X			
39	Dresser-Rand Co.	3781 Mallard Dr.				X	X			
40	Liquor Warehouse	457 E Military St.				X	X			
41	7-Eleven	500 E Military St.				X	X			
42	Toyota Motor Sales	1 Oak Rd.					X			
43	Commercial Carriers Inc.	1898 Park Rd.				X	X			
44	Benicia Industries	2050 Park Rd.				X				
45	Huntway Refining Co.	3001 Park Rd.		X						
46	The Customer Co.	4457 Park Rd.				X	X			
47	Pepsi-Cola West	4701 Park Rd.				X	X			
48	Breuners	539 Stone Rd.				X	X			
49	W.R. Meadows of CA., Inc.	160 Teal Ct.				X	X			
50	Century Insulation Inc.	203 Teal Ct.					X			
51	Cal Auto Center	Bldg. 89, Tyler St.			X					
52	WQC-Maintenance Dredging	Benicia Port Terminal Dock						X		
53	Benicia Marina Dredging	Foot of Second at Waterfront St.			X					
54	Benicia State Recreation Area	Benicia State Park							X	
NA	Benicia Municipal Dump	City of Benicia			X					
NA	Benicia Arsenal Site	Industrial Park			X					
NA	Benicia Industrial Park	Bayshore Rd.			X					

**Table G-1. Identified Hazardous Waste Sites, Benicia Planning Area (cont.)**

Abbreviations:

CERCLIS =	Comprehensive Environmental Response, Compensation and Liability Information System.
SARA =	Toxic Chemical Release Inventory of Title III of the Superfund Amendments and Reauthorization Act.
Cortese =	Listing of potential and confirmed hazardous waste sites, previously maintained by the Office of Planning and Research.
Cal-Sites =	Listing of potential hazardous waste sites maintained by the California Department of Toxic Substances Control (DTSC).
LUST =	Leaking Underground Storage Tank List.
WDS =	Waste Discharge System, list of sites with waste discharge requirements.
WMUDS =	Waste Management Unit Discharge System, identifies waste management units.
SWIS =	Solid Waste Information Systems database.
NA =	Not applicable, site could not be located with available information.

Notes:

1. See Appendix C of the Safety Background Report for an explanation of each database identified.
2. There is no Site 13 in this Figure.

*Source: Orion Environmental Associates; NATEC Environmental Reporting Service, November 29, 1995.*

Sites identified on the regulatory lists also represent only those sites which are suspected of being contaminated or have had cause for hazardous materials investigations, generally due to site disturbance activities such as removal of an underground storage tank, a spill of hazardous substances, or excavation for construction. The extensive history of urbanization and use of hazardous substances in Benicia makes it likely that additional sites exist within the project area that have not yet been identified or reported to regulatory agencies. These sites may be identified through future construction activities or other site disturbances. Land uses of concern, either existing or previous, are generally associated with industrial and some commercial activities. Chemical handling and storage practices are a common source of contamination.

The sections below describe the types of sites identified in the search.

**CERCLIS SITES**

Two sites were identified on the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list which includes sites designated for investigation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). One CERCLIS site is Olin Corporation (Map site 29) and the other is the Liberty High School (Map site 37). The need for investigation of these sites would be determined on the basis of a preliminary assessment or site inspection.<sup>2</sup> The

<sup>2</sup> A preliminary assessment and site inspection are the first two steps of investigation under CERCLA to identify whether a site is potentially contaminated. A preliminary assessment generally includes a review of site information and a site visit. If the potential for contamination is indicated, then a site inspection is generally conducted to review the site in more detail and samples are usually collected from areas that are suspected to be contaminated.

status of these sites was not available in the information included with the records search. However, City staff believes that the EPA has conducted a preliminary assessment of Liberty High School and has concluded that no further action is warranted there.

#### **Cal-Sites**

Fourteen sites were identified on the Cal-Sites list which includes sites identified by the Historical Abandoned Site Survey Program and researched by the California Department of Health Services (currently known as the Department of Toxic Substances Control or DTSC). These sites were identified by the agency as potential hazardous waste sites, but sampling has not necessarily been conducted to evaluate the potential for contamination. Based on the database review, the DTSC has recommended no further action for the Benicia Arsenal Site and the Benicia Marina Dredging (Map site 53). The lead regulatory agency for six of the sites including the Exxon Refinery (Map site 8), AJ Chemical Corporation (Map site 18), Benicia Dredge Disposal Site (Map site 28), Benicia Wastewater Treatment Plant (Map site 12), Cal Auto Center (Map site 51), and Benicia Municipal Dump (no site number) was transferred to the RWQCB. The lead regulatory agency for the Olin Chemical Corporation (Map site 29) has been transferred to the Solano County Environmental Management Department, and the lead regulatory agency for Liberty High School (Map site 37) has been transferred to the US EPA. The Benicia Industrial Park (Map site 35) has been remediated, and a site screening was recommended for the previous PG&E manufactured gas plant (Map site 11). DTSC is the Lead Agency for the IT site (Map site 1).

#### **WASTE DISCHARGE SYSTEM DATABASE SITES**

Three sites were identified in the Waste Discharge System database; this database includes sites that have been issued waste discharge requirements by the RWQCB. The sites that were identified in the database are the IT Panoche Facility (Map site 1), the Exxon Refinery and Maintenance Dredging at the Exxon Refinery Dock (Map site 8) and maintenance dredging at the Benicia Port Terminal Dock (Map site 52). The waste discharge requirements were issued because hazardous wastes are present at the IT Panoche Facility and the Exxon Refinery. The wastes associated with the maintenance dredging are inert dredge spoils that should not pose a threat to public health or the environment. The Exxon Refinery and the Benicia Wastewater Treatment Plant each have a National Pollutant Discharge Elimination System (NPDES) permit issued by the RWQCB for designated process water and domestic wastewater.

#### **WASTE MANAGEMENT UNIT DATABASE SYSTEM SITES**

Four sites were identified in the Waste Management Unit Database System which is used by the RWQCB to track and inventory waste management units. This database enhances the Waste Discharge System database and contains information regarding waste management units falling under the Solid Waste Assessment Test program and the Toxic Pits Clean Up Act program. The IT Panoche Facility (Map site 1), Braito

Landfill (Map site 2), Exxon Refinery (Map site 8), and Benicia State Recreation Area (Map site 54) are identified on this database.

#### **SOLID WASTE INFORMATION SYSTEMS DATABASE SITES**

The Braito Landfill (Map site 2) was also identified in the Solid Waste Information Systems database, which is an inventory of active, inactive, and closed solid waste disposal and transfer facilities.

#### **SARA SITES**

Three sites were identified in the Toxic Chemical Release Inventory database (SARA). These are sites that were required to file an annual toxic chemical release inventory form with the US EPA and the California Environmental Protection Agency. Facilities are required to report releases to air, water, and land under Section 313 of the Emergency Planning and Community Right to Know Act (Title III of the Superfund Amendments and Reauthorization Act of 1986). The Exxon Refinery (Map site 8) reported releases of various organic compounds, metals, and acids. Suba Manufacturing (Map site 15) reported releases of toluene and methanol to the air. Huntway Refining Company (Map site 45) reported releases of various organic compounds and hydrochloric acid.

#### **CORTESE LIST SITES**

Twenty-five sites were identified on the Cortese List, which includes both potential and confirmed hazardous waste sites as of November 1990. This list was originally maintained as a compilation of potential hazardous waste sites identified in many regulatory databases. Twenty-four of these sites were also identified on the Leaking Underground Storage Tank (LUST) list which includes sites with confirmed leaking underground storage tanks indicating that they were on the Cortese List because of a confirmed leak. The reason for the listing of Benicia Industries (Map site 44) is not clear from the information contained in the database.

#### **LUST SITES**

Twenty-six sites were identified in the Leaking Underground Storage Tank (LUST) database. This database includes sites that have reported leaks from underground storage tanks. Leaking underground storage tanks are a common source of soil and groundwater contamination. Underground storage tanks have been used in a wide variety of industries for storage of gasoline, diesel, waste oils, and other chemicals. Prior to regulation in the 1980s, underground tanks were typically not subject to monitoring or provided with secondary containment. If a tank leaked, the contents could migrate to the soil, and if undetected, could then also contaminate the groundwater. Contaminated groundwater plumes can migrate long distances and affect adjacent land uses.

## **2. HAZARDOUS MATERIAL AND WASTE HANDLERS**

Hazardous substances are commonly used and handled within Benicia under a wide variety of permitted activities and land uses. The use of these substances presents a lower risk to the public and the environment than the potential hazardous waste sites identified above because the handling and storage of these materials are extensively regulated with the objective of protecting public health and the environment. This section includes a summary of current uses of hazardous materials in Benicia including sites with permitted underground storage tanks, sites permitted to handle hazardous wastes under the Resource Conservation and Recovery Act (RCRA), and selected sites that have filed Business Plans or Risk Management and Prevention Plans with the Solano County Department of Environmental Management.

### **UNDERGROUND STORAGE TANKS**

Sites with currently permitted underground storage tanks were identified during the records search; the sites identified within Benicia are listed in Table G-1 and shown in Figures G-1, G-2, and G-3. The records search identified 64 sites with permitted underground storage tanks. With the exception of one site located at 1280 West “K” Street located in a residential area, all of the sites are located within the downtown or industrial areas of Benicia. Current requirements for underground storage tanks include tightness testing on a regular basis to monitor for leakage reduces the potential for undetected leakage from these underground storage tanks. However, these sites are potential sources of hazardous waste contamination for soil or groundwater or both because of incidental leakage or spillage that may have gone undetected. Any soil or groundwater contamination at a site with a permitted underground storage tank would typically be identified when required samples are collected during tank repairs or replacement.

Unpermitted underground storage tanks may be present at sites where the use of the tank was discontinued before monitoring requirements were implemented in the 1980s. Soil or groundwater contamination or both could also occur at these sites; however, there is no agency tracking of these sites. It would be necessary to perform a detailed review of the site history to identify whether there is an unpermitted underground storage tank at a specific site.

**Table G-2. Permitted RCRA and Underground Storage Tank Sites,  
Benicia Planning Area**

MAP #	SITE NAME	SITE ADDRESS	RCRA	UST
1	IT Corporation	Lake Herman Road	TSD/LQ	X
4	Benicia Auto Parts	800 First Street		X
5	ARCO Station	1001 First Street		X
6	Texaco Station	1602 East Second Street		X
7	Exxon Service Station	1925 East Second Street	SQ	X
8	Exxon Corp Benicia Refinery	3400 East Second Street	LQ	X
9	Exxon Marketing Terminal	3410 East Second Street	LQ	X
10	BP Oil Co	3410 East Second Street	LQ	
12	Benicia Wastewater Treatment Plant	614 East Fifth Street	T	
14	Benicia Food Mart	1500 East Fifth Street		X
17	Lutz Tire/ Metro Tire	3001 Bayshore Road		X
18	AJ Chemical Co Inc	200 Channel Road	LQ	
22	Liquid Carbonic	331 E Channel Road		X
25	Bay Area Petroleum Co	116 W Channel Road		X
27	Bezzerrides Co., Inc.	398 W Channel Road		X
29	Olin Corporation	Bldg 68 Industrial Park	TSD /LQ	
30	Insured Transporters Inc.	100 Industrial Way		X
31	Import Dealer Service	175 Industrial Way		X
33	Di Salvo Trucking	345 Industrial Way		X
35	Bedford Properties	4251 Iowa		X
36	Liquor & Food (Bob's)	510 W J St		X
38	City of Benicia Water Treatment	Lake Herman Road		X
40	Liquor Warehouse	457 E Military St		X
41	7-Eleven Food Store #2211	500 E Military St	LQ	X
42	Toyota Motor Sales	1 Oak Rd		X
43	Commercial Carriers Inc	1898 Park Rd	SQ	X
44	Benicia Industries	2050 Park Rd		X
45	Huntway Refining Co	3001 Park Rd	LQ	
46	The Customer Company	4457 Park Rd		X
47	Pepsi Cola Co	4701 Park Rd		X
48	Breuners	539 Stone Rd		X
49	W.R. Meadows of California, Inc	160 Teal Ct	SQ	X
50	Century Insulation Inc	203 Teal Ct		X
53	Benicia Marina	266 E B St		X
55	Pacific Bell	935 East Second Street	T/LQ	X
56	City of Benicia Corp Yard	2400 East Second Street		X
57	Noyes Lumber	4563 East Second Street		X
58	Paul H Lindemann	4588 East Second Street	SQ	
59	Gary Raes	4588 East Second Street	SQ	
60	A L Gears	4740 East Second Street	SQ	
61	Welsh Products, Inc.	1201 East Fifth Street		X
62	Distribution & Auto Service	700 Bayshore Road	SQ	

**Table G-2. Permitted RCRA and Underground Storage Tank Sites, Benicia Planning Area (cont.)**

MAP #	SITE NAME	SITE ADDRESS	RCRA	UST
63	Benicia Industries	700 Bayshore Road		X
64	Larry Hazard	2980 Bayshore Road		X
65	Goulds Pro Shop	3000 Bayshore Road	SQ	
66	Western American Forest	3150 Bayshore Road		X
67	Paint Yard Toll Plaza Benicia	Benicia Bridge Toll Plaza	SQ	
68	California Erectors	4500 California Ct		X
69	Benicia Pump Repair	2161 Camel Rd	SQ	
70	Channel Trucking	471 Camellia Ct	T	
71	Bond Co.	105 Channel Road		X
72	Benicia Auto & Truck	265 Channel Road	SQ	
73	Benicia Plumbing	265 Channel Ct		X
74	Channel Trucking Inc	265 Channel Ct		T
75	Benicia Fabrication	101 E Channel Road	SQ	
76	Chemical Waste Management	155 E Channel Road		X
77	Alhambra Natural Water Company	393 E Channel Road	LQ	
78	Rust Industrial Cleaning	511 E Channel Road		T
79	Corey Delta Inc.	511 E Channel Road		X
80	Excel Transportation	290 W Channel Road	T/sq	
81	Ryder Truck Rental	300 W Channel Road	SQ	X
82	Delta Tech Service Inc	397 W Channel Road	T/sq	
83	Coca Cola	530 Getty Ct	LQ	X
84	Krogh Pump Co	531 Getty Ct Ste C	SQ	
85	Fisher Serv Co	531 Getty Ct Ste D	LQ	
86	Dillingham Construction	2100 Goodyear Rd	SQ	
87	Diesel Systems, Inc	674 E H St	UNK	
88	State Military Dept. Oms	711 Hillcrest Ave	SQ	X
89	Pepsi Cola Benicia Central	652 Indiana		X
90	ITT Hancock Ind.	Bldg Cl-1 Industrial Park	LQ	
91	Bay Area Instrument	175 Industrial Way	SQ	
92	Ryder Truck Rental	243 Industrial Pkwy		X
93	Infergene Corporation	433 Industrial Way	SQ	
94	Benicia Viii W 9	433 Industrial Way, Ste 220	SQ	
95	Ace Hardware Corporation	433 Industrial Way		X
96	Kemper Real Estate	433 Industrial Way		X
97	Pacific Rim Environmental	433 Industrial Way, Ste 206	T	
98	APM Inc	441 Industrial Way	SQ	
99	Chemical Waste Management	610 Industrial Way		X
100	Universal Engineering Inc	610 Industrial Way	T/LQ	
101	Hadley Auto Transport	3800 Industrial Way	SQ	X
102	Underground Construction	5145 Industrial Way	LQ	X
103	Big 4 Rents Benicia	5251 Industrial Way	SQ	
104	Sonoco Properties Company	4347 Iowa	SQ	

**Table G-2. Permitted RCRA and Underground Storage Tank Sites, Benicia Planning Area (cont.)**

MAP #	SITE NAME	SITE ADDRESS	RCRA	UST
105	Benicia Mini Storage	711 Jackson St		X
106	J R Schneider Co Inc	849 Jackson St	LQ	
107	City of Benicia	1280 W K St		X
108	City of Benicia Police Dept	200 E L St		X
109	Reeds Body & Fender	479 E L St	SQ	
110	Teodora Bello Dairy	Lake Herman Rd		X
111	Mack X-Ray	1752 London Dr	T	
112	Ingersoll Rand Corp Service D	3673 Mallard Dr	LQ	
113	L&M Pallet	3781 Mallard Dr		X
114	Hydro Tech Transportation	3800 Mallard Dr	T	
115	S.E.G.Trucking	4050 Mallard Dr		X
116	Delta Debris Box Service	4080 Mallard Dr	T	
117	Beacon Mini Mart	505 E Military St		X
118	City of Benicia Fire	150 W Military		X
119	Family Doctor Medical Group	160 E N St	SQ	
120	Benicia Import Auto Service	1 Oak Rd	SQ	
121	Conhagen	3900 Oregon St	SQ	
122	Precision Products	3900 Oregon St, Ste 3	SQ	
123	Allied Muffler	3948 Oregon St	LQ	
124	IT Transportation Corp	1845 Park Rd	T	
125	LK Comstock & Company	1879 Park Rd		X
126	Predelivery Service Corp	2050 Park Rd		X
127	Earthmovers Supply Co	3909 Park Rd, Ste a	SQ	
128	United States Can Company	4168 Park Rd	SQ	
129	A L Gears	4361 Park Rd	SQ	
130	Chevron #2661	10 Solano SQ		X
131	Benicia Cleaners	25 Solano SQ	SQ	
132	Perfection Cleaners	886 Southampton Rd	LQ	
133	Raleys 381	892 Southampton Rd	SQ	
134	Pacific Rim	3690 Sprig Dr	T/sq	
135	Cal-Bay Ind Serv Inc	3801 Sprig Dr	T	
136	Clean Drum Co	3845 Sprig Dr	T	
137	Roadway Express	3872 Sprig Dr	SQ	
138	PEM Insulation Co Inc	510 Stone Rd	T	
139	Cratex Mfg Co Inc	518 Stone Rd	SQ	
140	M and N Valve Corp	524 Stone Rd, Unit E	SQ	
141	Latchford Packaging Company	601 Stone Rd, Unit a	LQ	
142	Del-Tec	945 Teal Dr		X
143	Blair and Sons Inc	3867 Teal Dr	SQ	
144	Insultemp Inc	3948 Teal Dr	T	
145	JP Services Inc	3959 Teal Dr	T	
146	Hydro Service	3985 Teal Dr, Ste B	SQ	
147	Berco Parts Center	4072 Teal Dr	SQ	

Notes to Table G-2: Permitted RCRA and Underground Storage Tank Sites, Benicia Planning Area:

**Table G-2. Permitted RCRA and Underground Storage Tank Sites, Benicia Planning Area (cont.)**

Abbreviations:

- RCRA = Resource and Conservation Recovery Act
- UST = Underground Storage Tank. "X" in this column indicates that the site has at least one UST permitted by the State of California
- T = RCRA Permitted Transporter
- SQ = RCRA Permitted Small Quantity Generator
- LQ = RCRA Permitted Large Quantity Generator
- TSD = RCRA Permitted Transfer, Storage and Disposal Facility
- NA = Not applicable, site could not be located with the information available
- UNK = Type of RCRA facility was not identified.

*Source: Orion Environmental Associates; NATEC Environmental Reporting Service, November 29, 1995.*

**RCRA SITES**

Sites within Benicia that are permitted to handle hazardous wastes under the Resource Conservation and Recovery Act implemented by the US EPA are identified in Table G-1 and are shown on Figures G-1, G-2 and G-3. Twenty sites are classified as large quantity generators. Forty-two sites are permitted as a small quantity generator. Nineteen sites are classified as a treatment facility. Two sites are classified as a transfer, storage, and disposal facility. Handling of hazardous wastes at a permitted facility does not indicate that contamination has occurred, only that there is the potential for hazardous wastes to be present.

With the exception of a transporter located at 471 Camellia Court (Map site 70), a small quantity generator located at 886 Southampton Road (Map site 132), and a large quantity generator located at 892 Southampton Road (Map site 133), all of the permitted RCRA facilities are located in the Downtown or industrial areas of Benicia. Site 70 is in a residential neighborhood, so it could be a home business address that has hazardous materials stored at another location. Sites 132 and 133 are the Perfection Cleaners and the Raleys located in the Southampton Shopping Center on Southampton Road.

**BUSINESS PLANS AND RISK MANAGEMENT AND PREVENTION PLANS**

The Solano County Environmental Management Department implements regulations requiring businesses which handle hazardous substances to file Business Plans. Businesses which handle extremely hazardous materials are required to submit Risk Management and Prevention Plans (RMPPs).

The list of businesses which have filed Business Plans or Risk Management and Prevention Plans with the Solano County Environmental Management Department includes businesses which handle materials classified as hazardous under a very broad definition, including any chemical that requires a material data safety sheet. This means that plans are on file for businesses using materials which, when handled properly, pose a minimal risk to human health and the environment. For this reason, the list obtained from the Solano County Environmental Management Department was reviewed, and only those sites which handle chemicals identified on the following lists were included in this report:

- OSHA Process Safety Management Plan.
- Acutely hazardous materials identified in Appendix A to Title 40, CFR Part 355.
- Wastes classified as hazardous under Title 40, CFR Part 264.
- Wastes classified as hazardous under Title 22 of the California Code of Regulations.

Identified sites are listed in Table G-2.

The chemicals that were used as criteria for site identification in this report were selected because they are considered to have the greatest potential to affect human health or the environment if released. In the event of a release, the handlers of these materials would be required to notify regulatory agencies immediately and to mitigate the release.

In addition to those sites identified in Table G-2, the Benicia Wastewater Treatment Plant handles acutely hazardous materials including gaseous chlorine and sulfur dioxide. The Benicia Water Treatment Plant handles gaseous chlorine. Under state law, these facilities are not required to submit an RMPP, so they are not included in Table G-3. However, these facilities are required to have Process Safety Management Plans which include a risk hazard analysis. Preparation of such plans was underway as of 1996.

Other types of hazardous substances commonly used in industrial and commercial areas include chemicals such as solvents, degreasers, and industrial process chemicals. These can be toxic to human health and the environment even at low concentrations due to their persistence and bioaccumulative properties. Storage and handling of chemicals over extended periods increases the likelihood of spillage or accidents, which can build up over time without proper clean-up and management procedures. Prior to regulation, industrial discharges—whether intentional, inadvertent, or accidental—were common sources of water and soil pollutants.

**Table G-3. Selected Sites with Business Plans or Risk Management and Prevention Plans, Benicia Planning Area**

SITE NAME	SITE ADDRESS	MATERIAL OR WASTE	AHM	OSHA PSM	HAZARDOUS WASTE
Exxon Co. USA	3410 2nd Street	Waste Oil			X
Rick's Automotive	4592 2nd Street	Waste Antifreeze			X
Longs Drugstore Fixture	4700 2nd Street	Waste Paint Waste Solvent Waste Sludge			X X X
Sanders Towboat Service	201 5th Street	Waste Oil			X
Western America Forest	3150 Bayshore	Waste Oil			X
Metl-Saw Systems, Inc.	2950 Bay Vista	Solvent Waste			X
YLA	2970 Bay Vista	Solvent Waste			
Benicia Fabrication & Machine	101 Channel	Waste Oil			X
North Bay Water Services	250 Channel	Chlorine Waste Acid Solution Waste Antifreeze	X	X	X X
Clementina Refinery Services	251 Channel	Waste Oil			X
Allwaste Services of Northern CA	395 Channel	Waste Oil			X
Huntway Refinery	3001 Park	Oily Sludge			X
Jim Sinnott	511 Channel	Waste Oil			X
Benicia Lube & Oil	2026 Columbus	Waste Oil			X
Coca Cola Bottling Co. of CA	530 Getty	Waste Oil Waste Antifreeze			X X
XFisher Service Co.	531 Getty	Waste Oil			X
Benicia Industries, Inc./Chrys	2650 Harbor	Waste Mineral Spirits			X
Manitowoc Western	100 Industrial Way	Waste Oil Waste Hydraulic Oil			X X
Agreko	160 Industrial Way	Waste Oil			X
Dunlop Manufacturing, Inc.	170 Industrial Way	Waste Hydraulic Oil Waste Solvent			X X
Kilgore Inc.	485 Industrial Way	Waste Oil			X
Corey Delta	610 Industrial Way	Waste Oil Oily waste debris Waste Anti-freeze			X X X
Underground Construction, Inc.	5145 Industrial Way	Waste Oil			
Big 4 Rents	5251 Industrial Way	Waste Oil			X
Cal Cork	4280 Iowa	Sulfur Dioxide	X		
Reed's Body & Fender Works	479 L Street	Waste Solvent			X
Big O Tires	415 Military	Waste Oil			X
Conhagen	3900 Oregon	Used Gear Oil Oily Wash Water			X X

**Table G-3. Selected Sites with Business Plans or Risk Management and Prevention Plans, Benicia Planning Area (cont.)**

SITE NAME	SITE ADDRESS	MATERIAL OR WASTE	AHM	OSHA PSM	HAZARDOUS WASTE
Allied Manufacturing	3948 Oregon	Waste Mineral Spirits			X
Predelivery Service Corp.	2050 Park	Paint Waste			X
Earthmovers Supply	3909 Park	Waste Oil			X
Pepsi Cola Co.	4701 Park	Waste Oil			X
Unico Replacement Parts	1209 Polk	Waste Solvent			X
Chevron #2661	10 Solano Square	Waste Oil Waste Antifreeze			X X
Benicia Cleaners	25 Solano Square	Waste Perchloro-ethylene			X
BFI Services Group, Inc.	945 Teal	Waste Oil			X
Garske's Boat Yard	C	Waste Oil			X

Explanation of column headings:

AHM = Acutely hazardous material identified in Appendix A to Title 40 of the Code of Federal Regulations, Part 355. Only those sites with quantities greater than quantities identified in the regulations are included.

OSHA PSM = California OSHA Process Safety Management Standard. Only those sites with quantities greater than quantities identified in the regulations are included.

HAZARDOUS WASTE = Waste classified as hazardous by the criteria contained in Title 40 of the Code of Federal Regulations, Part 264, or by the criteria contained in Title 22 of the California Code of Regulations. Sites which handle waste oil are only included when the reported quantity is greater than 110 gallons. All other waste handlers identified are included, regardless of the quantity of waste handled.

Source: *Clint Holzwarth, Citizen Advisor; Solano County Environmental Management Department, January, 1996.*

The potential for contamination at a site which handles hazardous substances depends on numerous factors, such as the type of business, type(s) and quantities of hazardous substances, handling and management practices, control and spill containment systems, adequacy of accident prevention and safety programs, training programs and emergency response plans, adjacent land uses, etc. When handled properly and when used in compliance with permitting and other regulatory requirements, hazardous substances do not necessarily pose a human health concern or a threat to the environment. Nevertheless, the nature of hazardous materials implies that there is an inherent risk to human health or the environment. The potential for accidents, earthquakes, unauthorized releases, or other mishaps beyond the control of normal operating procedures exists with associated potential for public health and environmental effects, albeit within acceptable standards.

Given the wide range of industries in Benicia, it is difficult to discuss, by industry type, the hazards that would occur. Toxic hazards from any industry typically include hazards to employees relating to chemical use during the manufacturing processes, or inadvertent or accidental spillage during transport and handling. The latter could also potentially release toxic chemicals to the soil or groundwater. Other types of toxic hazards could include inadvertent releases of airborne substances, including toxic gases, fumes, or dust, which could expose workers or the community to health hazards. In addition to toxic hazards, public health and safety concerns relate to the potential for fire and explosive hazards and transportation-related accidents.<sup>3,4</sup>

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<sup>3</sup> Harte, John; Holdren, Cheryl; Schneider, Richard; and Shirley, Christine, *Toxics A to Z, A Guide to Everyday Pollution Hazards*. University of California Press, 1991.

<sup>4</sup> Encyclopedia of Occupational Health & Safety, Third Edition, 1983. Technical Editor Dr. Luigi Parmeggiani. International Labor Office, Geneva.

# APPENDIX H

## WEBSITES FOR GEOLOGIC INFORMATION

During review of the General Plan, a request was made to include websites for geological information on, or related, to Benicia. While it is not possible to include all such websites, the following pages should assist the reader in getting started.

Start here...

<http://quake.wr.usgs.gov/CALHAZ/hazardtype.html>

### **Choose a Subject:**

[Seismic Zonation, Earthquake Shaking, and Liquefaction - Geologic Investigations](#)

[Earthquakes - Public Planning, Response, and Policy](#)

[Earthquake Triggered Landsliding](#)

[Landslides, Debris Flows, and Slope Stability - Geologic Investigations](#)

[Landslides - Public Planning, Response, and Policy](#)

[Flooding and Erosion](#)

[Erosion and Landsliding Triggered by Timber Harvesting](#)

[Volcanic Hazards](#)

[Coastal Hazards and Policy](#)

[Geologic Hazards to Dams](#)

[Geologic Maps and Fault Maps](#)

[Landslide and Slope Maps](#)

[Land Use Maps](#)

[Miscellaneous Subjects](#)

Select this...

**[Go to County List.](#)**

**[Return to Hazards Home Page.](#)**

<http://quake.wr.usgs.gov/CALHAZ/counties.html>

**Choose an county to search:**

- [Alameda County](#)
- [Alpine County](#)
- [Amador County](#)
- [Butte County](#)
- [Calaveras County](#)
- [Colusa County](#)
- [Contra Costa County](#)
- [Del Norte County](#)
- [El Dorado County](#)
- [Fresno County](#)
- [Glenn County](#)
- [Humboldt County](#)
- [Inyo County](#)
- [Kern County](#)
- [Kings County](#)
- [Lake County](#)
- [Lassen County](#)
- [Madera County](#)
- [Marin County](#)
- ⋮
- [Napa County](#)
- [Nevada County](#)
- [Placer County](#)
- [Plumas County](#)
- [Sacramento County](#)
- [San Benito County](#)
- [San Francisco County](#)
- [San Joaquin County](#)
- [San Luis Obispo County](#)
- [San Mateo County](#)
- [Santa Clara County](#)
- [Santa Cruz County](#)
- [Shasta County](#)
- [Sierra County](#)
- [Siskiyou County](#)
- [\*\*Solano County\*\*](#)
- [Sonoma County](#)

Selecting this...

<http://quake.wr.usgs.gov/CALHAZ/county/sohaz.html>

Brings you  
here...

## Solano County Geologic Hazards

References are organized by year of publication within each subject area. Click on a specific subject area to jump down.

[Seismic Zonation, Earthquake Shaking, and Liquefaction -](#)

[Geologic Investigations](#)

[Earthquakes - Public Planning, Response, and Policy](#)

[Earthquake Triggered Landsliding](#)

[Landslides, Debris Flows, and Slope Stability - Geologic Investigations](#)

[Landslides - Public Planning, Response, and Policy](#)

[Flooding and Erosion](#)

[Geologic Hazards to Dams](#)

[Geologic Maps and Fault Maps](#)

[Landslide and Slope Maps](#)

[Land Use Maps](#)

[Miscellaneous Subjects](#)

### **Seismic Zonation, Earthquake Shaking, and Liquefaction - Geologic Investigations-Solano County**

Make sure to check out the online [earthquake shaking maps](#) from the Association of Bay Area Governments (ABAG).

1. TITLE: Liquefaction potential of the Sacramento-San Joaquin Delta, California.  
AUTHOR(S): Finch-Michael-O  
SOURCE: Master's Thesis, 466 p., 103 Refs.  
YEAR: 1987
2. TITLE: Tectonic environment of the 1892 Vacaville/Winters earthquake, and the potential for large earthquakes along the western edge of the Sacramento Valley, California.  
AUTHOR(S): Eaton-Jerry-P  
SOURCE: Open-File Report U. S. Geological Survey. 16 p., 10 Refs.  
YEAR: 1986  
REPORT NUMBER: USGS Open File Report, OF 86-0370  
AVAILABILITY: U. S. Geological Survey, Open-File Service Section, Western Distribution Branch, Federal Center, Denver, CO

3. TITLE: Computer-based earthquake mapping, San Francisco Bay area.  
AUTHOR(S): Perkins-Jeanne; Olmstead-Donald-A  
SOURCE: Open-File Report U. S. Geological Survey. 201 p.  
YEAR: 1980  
REPORT NUMBER: USGS Open File Report, OF 80-1147  
AVAILABILITY: U. S. Geological Survey, Open-File Service Section, Western Distribution Branch, Federal Center, Denver, CO
  
4. TITLE: Earthquake losses to buildings in the San Francisco Bay area.  
AUTHOR(S): Algermissen-S-T; Steinbrugge-K-V  
SOURCE: Brabb, E. E. Progress on seismic zonation in the San Francisco Bay region. U. S. Geological Survey Circular. p. 61-72., 13 Refs.  
YEAR: 1979  
REPORT NUMBER: USGS Circular, C 0807  
AVAILABILITY: U. S. Geological Survey, Earth Science Information Center (ESIC), Menlo Park, CA
  
5. TITLE: Progress on seismic zonation in the San Francisco Bay region.  
AUTHOR(S): Brabb-E-E  
SOURCE: U. S. Geological Survey Circular. 91 p.  
YEAR: 1979  
REPORT NUMBER: USGS Circular, C 0807  
AVAILABILITY: U. S. Geological Survey, Earth Science Information Center (ESIC), Menlo Park, CA
  
6. TITLE: Seismic risk studies for San Francisco and for the Greater San Francisco Bay area.  
AUTHOR(S): Oliveira-C-S  
SOURCE: Report Earthquake Engineering Research Center, College of Engineering, University of California, Berkeley, California. (78/16). 126 p., 74 Refs.  
YEAR: 1978  
AVAILABILITY: National Technical Information Service, Springfield, VA
  
7. TITLE: Differentiation of sedimentary deposits for purposes of seismic zonation.  
AUTHOR(S): Lajoie, K-R; Helley, E-J  
SOURCE: U. S. Geological Survey Professional Paper. Stud. seism. zonation San Franc. Bay reg.. p.A39-A51  
YEAR: 1975  
REPORT NUMBER: USGS Professional Paper, P 0941-A  
AVAILABILITY: U. S. Geological Survey, Earth Science Information Center (ESIC), Menlo Park, CA

Visit this web site for the full list of documents.

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# APPENDIX I

## REQUIREMENTS FOR AN ACOUSTICAL ANALYSIS

An acoustical analysis prepared pursuant to the Noise Section in the General Plan shall:

1. Be the financial responsibility of the applicant.
2. Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics. The City may require that the person is a designated "Member" of the Institute of Noise Control Engineering (INCE).
3. Noise analyses shall provide documentation that Type I or II noise measurement equipment was used when noise measurements are required. All equipment shall be calibrated in the field prior to and after conducting noise measurements with a matching calibrator. The analyses shall provide documentation on the noise level data used for the analysis, methods for calculating noise levels and methods used for modeling noise levels.
4. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions and the predominant noise sources. Generally, to describe the ambient noise conditions, background noise level measurements should be conducted for a minimum of 24-hours. The measurements should include hourly average ( $L_{eq}$ ), maximum ( $L_{max}$ ), and other statistical descriptors where deemed appropriate. Written explanations of any noise peaks should also be included.

To describe typical existing hourly ambient conditions, generally, the logarithmic average of the measured  $L_{eq}$  values for each of the day and night periods should be provided. Unusual events which may influence measured data should either be discarded, or the noise level measurements should be re-taken.

5. Estimate existing and projected cumulative (20 years) noise levels in terms of  $L_{dn}$  or CNEL and/or the standards of Table 4-4 and compare those levels to the adopted policies of the Noise section in the General Plan.

The noise level standards contained within Table 4-4 shall be applied to a typical hour of operation. When a peak hour of operation is expected to occur consistently during daily or weekly operations, the standards shall also be applied to those operations.

6. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise section, giving preference to proper site planning and design over mitigation measures which require the construction of noise barriers or structural modifications to buildings which contain noise-sensitive land uses.
7. Estimate noise exposure after the prescribed mitigation measures have been implemented.
8. Describe a post-project assessment program which could be used to evaluate the effectiveness of the proposed mitigation measures.

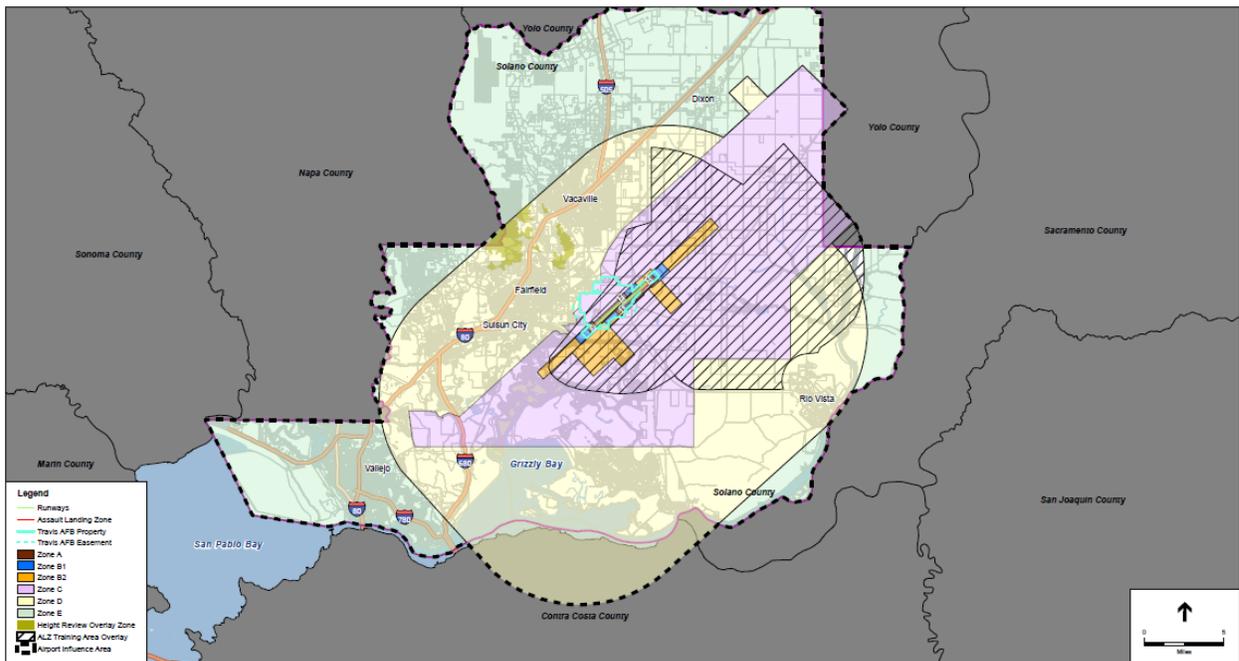
The noise report prepared pursuant to these guidelines should be written in a clear and concise manner, utilizing non-technical terminology whenever feasible. All technical terms should be defined in a format understandable to the general lay person.

# APPENDIX J

## TRAVIS AIR FORCE BASE AIRPORT LAND USE COMPATIBILITY PLAN (ALUCP)

The Travis ALUCP can be viewed in its entirety in the Community Development Department or on the website of the Solano County Airport Land Use Commission. Excerpt information is provided herein for reference.

All of Solano County falls within the Airport Influence Area (AIA) for the Travis ALUCP. The AIA is divided into Compatibility Zones A, B1, B2, C, D, and E, along with the Assault Landing Zone and Height Review Overlay Zones. Compatibility Zones A, B1 and B2 lie closest to the Air Force Base, while zones C, D and E are in outlying areas. Benicia is located in Compatibility Zones D and E. Of note for the City of Benicia, objects taller than 200 feet height and commercial-scale solar facilities require Airport Land Use Commission review. The ALUCP summary of Compatibility Zones D and E, along with Policy 3.34 relating to wind turbines, meteorological towers, and wildlife hazards, is included in this Appendix.



SOURCE: Mead & Hunt, 2016; Travis AFB, 2014; Solano County GIS Dept., 2016; ESA Airports, 2016; ESRI

Travis AFB ALUCP Update, 130898  
Figure 1  
Compatibility Zones

## 4.6 Compatibility Zone D

Compatibility Zone D (see Figure 1) includes all other locations beneath any of the Travis AFB airspace protection surfaces delineated in accordance with FAR Part 77 as well as areas subject to frequent aircraft overflight. Limitations on the height of structures and notice of aircraft overflights are the only compatibility factors within this zone.

Zone	Locations	Maximum Densities/Intensities		
		Residential (du/ac)	Other Uses (people/ac)	
			Indoor Uses	Outdoor Uses
D	Other Airport Environs	No Limit	No Limit	

Additional Criteria	
Prohibited Uses	Other Development Conditions
<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>ALUC review required for objects &gt; 200 feet AGL</li> <li>All proposed wind turbines must meet line-of-sight criteria in Policy 5.6.1</li> <li>All new or expanded commercial-scale solar facilities must conduct an SGHAT glint and glare study for ALUC review</li> <li>All new or expanded meteorological towers &gt; 200 feet AGL, whether temporary or permanent, require ALUC review</li> <li>For areas within the Bird Strike Hazard Zone, reviewing agencies shall prepare a WHA for discretionary projects that have the potential to attract wildlife that could cause bird strikes. Based on the findings of the WHA, all reasonably feasible mitigation measures must be incorporated into the planned land use.</li> <li>For areas outside of the Bird Strike Hazard Zone but within the Outer Perimeter, any new or expanded land use involving discretionary review that has the potential to attract the movement of wildlife that could cause bird strikes are required to prepare a WHA.</li> </ul>

### 4.6.1 General Standards

The general standards applicable to the review of proposed land use actions in the vicinity of Travis AFB are set forth in Table 1. There are no general restrictions for Zone D.

### 4.6.2 Noise Criteria

As a condition for approval of development within Zone C, a notice regarding aircraft operational impacts on the property shall be attached to the property deed. An example of a deed notice is contained in Appendix D of this document. See Policy 5.2.4 for additional details on acceptable interior noise levels.

### 4.6.3 Safety Criteria

There are no particular safety requirements for Zone D. For a discussion of other additional safety risks that require special review and assessment, which include but are not limited to wind turbine facilities and solar facilities (see Section 5.6), meteorological towers (see Section 5.7), and wildlife hazards (see Section 5.8).

#### 4.6.4 Airspace Protection Criteria

Proposed buildings that are 200 feet or higher AGL require ALUC review, excluding buildings on land for which the US Air Force controls an easement and grants a waiver to height restrictions. No hazards to flight, including physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations, and land uses that may attract birds to increase in the area shall be permitted. For a description of the FAR Part 77 surfaces, see Policy 5.4.3.



### 4.7 Compatibility Zone E

Compatibility Zone E (see Figure 1) includes the area located between Zone D and the AIA boundary, which is coterminous with the Solano County boundaries. Zone E requires ALUC review for all proposed buildings or structures that are 200 feet or higher AGL. There is no limit on the types of land uses, densities, or intensities, although large stadiums and similar uses should be avoided in this compatibility zone.

Zone	Locations	Maximum Densities/Intensities		
		Residential (du/ac)	Other Uses (people/ac)	
			Indoor Uses	Outdoor Uses
E	Remainder of Airport Influence Area	No Limit, Although Large Stadiums and Similar Uses Should Be Avoided		

Additional Criteria	
Prohibited Uses	Other Development Conditions
<ul style="list-style-type: none"> <li>No Limit</li> </ul>	<ul style="list-style-type: none"> <li>Airspace review required for objects &gt; 200 feet AGL</li> <li>All proposed wind turbines must meet line-of-sight criteria in Policy 5.6.1</li> <li>All new or expanded commercial-scale solar facilities must conduct an SGHAT glint and glare study for ALUC review</li> <li>All new or expanded meteorological towers &gt; 200 feet AGL, whether temporary or permanent, require ALUC review</li> <li>Outside of the Bird Strike Hazard Zone but within the Outer Perimeter, any new or expanded land use involving discretionary review that has the potential to attract the movement of wildlife that could cause bird strikes are required to prepare a WHA.</li> </ul>

## 5.4 Airspace Protection Standards



### 5.4.1 Purpose of Airport Land Use Commission Policies

Tall structures, trees, and other objects, particularly when located near airports or on high terrain, may constitute hazards to aircraft in flight. Federal regulations establish the criteria for evaluating potential obstructions. These regulations also require that the FAA be notified of proposals for creation of certain such objects. The FAA conducts aeronautical studies of these objects and determines whether they would be hazards, but it does not have the authority to prevent their creation. The purpose of ALUC airspace protection policies, together with regulations established by local land use jurisdictions and the state government, is to ensure that hazards to the navigable airspace do not occur.

### 5.4.2 Airport Land Use Commission Review of Height of Proposed Objects

Based upon FAA criteria, proposed objects that would exceed the heights indicated in Chapter 4 for the respective compatibility zones potentially represent airspace obstruction issues. Development proposals that include any such objects shall be reviewed by the ALUC. Objects of lesser height normally would not have a potential for being airspace obstructions and therefore do not require ALUC review with respect to airspace protection criteria (noise and safety concerns may still be present) except as otherwise stated in this LUCP. Caution should be exercised, however, with regard to any object more than 50 feet AGL proposed to be located on a site that is substantially higher than the surrounding terrain. Please see Chapter 4 for detailed height review requirements for each of the compatibility zones.

### 5.4.3 Height Restriction Criteria

The general criteria to be used in assessing whether objects may represent airspace obstructions are established by Part 77 of the Federal Aviation Regulations (FAR), Safe, Efficient Use and Preservation of the Navigable Airspace. In general, the height of objects in the vicinity of Travis AFB shall be limited so as not to exceed the imaginary airspace surfaces defined for the airport in accordance with Part 77 criteria.

- (a) A simplified diagram of the FAR Part 77 Subpart C surfaces for Travis AFB is depicted in Figure 3. In certain circumstances, objects may need to be restricted to heights less than the limits indicated by Figure 3.

- (1) In locations along portions of instrument approach procedure routes, restrictions of object heights to less than indicated by FAR Part 77 may be necessary so as not to impair the utilization of these procedures. The applicable criteria are set forth in the United States Standard for Terminal Instrument Procedures (TERPS). Review of objects relative to these criteria normally is conducted by the FAA as part of aeronautical studies. Independent ALUC review is not necessary; rather, the ALUC's function is to ensure compliance with the FAA recommendations.
  - (2) In other parts of the airport vicinity — especially where common visual flight routes cross areas of moderately high terrain — tall objects could pose airspace hazards even if they do not exceed FAR Part 77 limits. Based upon airport land use commissioners' knowledge of such locations, the ALUC may find lower height limits to be appropriate or may require objects to be obstruction marked and lighted. Input of Travis AFB personnel should be sought with regard to any such cases that may be brought to the ALUC's attention.
- (b) Objects may be permitted to exceed FAR Part 77 criteria under the following conditions.
- (1) On property over which the Air Force controls an easement, exceptions to the height limits shall be made only if Air Force grants a waiver to the restrictions.
  - (2) In locations where the ground level exceeds or lies within 35 feet of a Part 77 horizontal or conical surface (the Height Review Overlay Zone), objects up to 35 feet in height AGL are permitted. Taller objects may also be acceptable if they would be situated within 100 feet of other objects or high terrain having equal or higher elevation. The ALUC may, but is not required to, grant exceptions to other proposed objects if the FAA has completed an aeronautical study of the proposal and concluded that the object would not be a hazard to air navigation. Other factors, including the commissioners' knowledge of local airspace and the views of Travis AFB personnel, shall also be taken into account in the ALUC's decision to grant such exceptions.
- (c) All height requirements shall be measured AGL in all other locations.

#### **5.4.4 Obstruction Marking and Lighting**

In general, the need for marking and lighting of obstructions is determined by the FAA as part of aeronautical studies conducted in accordance with FAR Part 77. Under most circumstances, when reviewing proposed structures that exceed the height criteria indicated in Policy 5.4.3, the ALUC expects to abide by the FAA's conclusions regarding marking and lighting requirements. However, situations may arise in which the ALUC, because of its particular knowledge of local airports and airspace, may reach a different determination than that of the FAA. In such instances, the ALUC may determine either that a proposed structure is unacceptable or that it is acceptable only if marked and lighted. Any marking and lighting that the ALUC may require shall be consistent with FAA standards as to color and other features.

#### **5.4.5 Federal Aviation Administration Notification**

Proponents of a project that may exceed the elevation of a Part 77 surface must notify the FAA as required by FAR Part 77, Subpart B, and by the State Aeronautics Act, Public Utilities Code Sections 21658 and 21659. (Notification to the FAA under FAR Part 77, Subpart B, is required even for certain proposed construction that does not exceed the height limits allowed by Subpart C of the regulations. Refer to Appendix B of this document for a copy of these sections of the state codes and to Appendix C for the specific FAA notification requirements. A copy of the

form to be submitted to the FAA — FAA Form 7460, Notice of Proposed Construction or Alteration — is included in Appendix C as well.)

- (a) Local jurisdictions shall inform project proponents of the requirements for notifying the FAA.
- (b) The requirement for notifying the FAA shall not necessarily trigger an airport compatibility review of an individual project by the ALUC unless required in accordance with the Policies of this LUCP including but not limited to Policy 5.4.2.
- (c) FAA review is required for any proposed structure more than 200 feet AGL of its site. All such proposals also shall be submitted to the ALUC for review regardless of where in the county the object would be located.
- (d) Any project submitted to the ALUC for consistency determination for reason of height issues shall include a copy of FAR Part 77 notification to the FAA and the results of the FAA's analysis. The FAA's determination may represent one aspect of a project's compatibility factors. Therefore, a no-hazard determination by FAA does not guarantee ALUC approval of a proposed project.

#### **5.4.6 Other Flight Hazards**

Land uses that may cause visual, electronic, or wildlife hazards to aircraft in flight shall not be permitted within 14,500 feet of the Travis AFB runways (as depicted in Figure 4). Specific characteristics to be avoided include new or expansion of existing land uses that result in:

- (a) Glint, glare or distracting lights that could be mistaken for airport lights;
- (b) Sources of dust, steam, high-velocity exhaust plumes, or smoke that may impair pilot visibility;
- (c) Sources of electrical interference with aircraft communications or navigation; and
- (d) Any use, especially landfills and certain agricultural uses, that may attract an increased number of birds.
- (e) Radar interference, which is required to be minimized by only erecting commercial and non-commercial wind turbines in certain areas of the County, consistent with Policy 5.6.1.

## 5.6 Renewable Energy Standards

With the increase in both energy demand and renewable energy technology, renewable energy facilities have developed across several areas of Solano County. The ALUC shall apply the following policies to account for wind turbine and solar facilities.



### 5.6.1 Wind Turbine Facilities

The presence of wind turbines can generate air traffic control radar interference, rotor turbulence, and vertical obstruction hazards for aircraft operations at Travis AFB. To ensure adequate hazard prevention for aircraft operations and to minimize radar interference, the following requirements below present limits for wind turbine development and operation.

The beyond the radar line-of-sight method of siting wind turbines is the most proven and effective method for minimizing wind turbine impacts on a radar's aircraft detection capabilities. Siting wind turbines outside of the radar's line-of-sight is critical to mitigating additional cumulative effects arising from the addition of new turbines to those already existing within the current radar line-of-sight as every turbine within the radar's line-of-sight negatively impacts the radar.

New wind turbine facilities, depending on height, are subject to the following limitations. Height of all wind turbines shall be reported in feet AGL as measured at the apex of the blade at its highest point.

- (a) This LUCP does not restrict wind turbines, whether commercial or non-commercial, 100 feet or less in height AGL from being built anywhere in the County.
- (b) No wind turbine greater than 100 feet in height AGL shall be within a line-of-sight of the Travis AFB Digital Airport Surveillance Radar (DASR) Radar Installation. All commercial and non-commercial wind turbine facilities greater than 100 feet in height AGL shall provide an individual radar line-of-sight analysis to demonstrate that the placement of the proposed wind turbine is not within a line-of-sight to the Travis DASR Radar Installation and shall be referred to the ALUC for a consistency determination. The line-of-sight method used in such analysis shall, at a minimum, be performed using a standard curvature of the earth radar beam assessment model to provide an accurate radar line-of-sight. A discussion of the methodology and assumptions that are to be used in the line-of-sight analysis is found in Appendix H.

This requirement applies throughout the AIA (and is advisory outside of Solano County). The five example line-of-sight depictions presented in Appendix H of this LUCP do not show the boundary of the area within which the line-of-sight requirement applies, but rather depict a shaded area (labeled "viewshed" on the Legend) which illustrates, at a large scale, approximately where wind turbines that are 100 feet, 200 feet, 300 feet, 400 feet, and 500 feet in height AGL, respectively, would likely be within the line-of-sight of the Travis AFB DASR Radar Installation. Conversely, the remaining areas that are not shaded as "viewshed" are areas where wind turbines of the specified heights are not likely to be within the line-of-sight of the Travis AFB DASR Radar Installation.

- (c) Existing commercial and non-commercial wind turbines, in existence at the time of adoption by the ALUC of this LUCP, can be replaced at identical dimensions and

constructed of the same materials without ALUC review; however, the turbine materials shall not increase the height or reflectivity of the wind turbine. All replacement turbines with different dimensions (e.g., taller or with larger blades or rotor diameter) than the originally permitted turbine are subject to Policy 5.6.1(b) above, if greater than 100 feet in height AGL, and shall be referred to the ALUC for a consistency determination and shall include an individual radar line-of-site analysis to demonstrate that the placement of the proposed wind turbine is not within a line-of-sight to the Travis DASR Radar Installation.

- (d) In locations where new commercial and/or non-commercial wind turbines are authorized under this LUCP, these facilities can be replaced without ALUC review if there is no increase in height or reflectivity.

### 5.6.2 Solar Facilities

Solar facilities can create reflective glint and glare hazards to aircraft pilots and air traffic controllers. The FAA advises the use of, and Travis AFB employs, the Sandia National Laboratories-developed Solar Glare Hazard Analysis Tool (SGHAT) that allows a user to analyze proposed photovoltaics array systems and recommends mitigation methods if needed. This method provides high-accuracy predictions of potential impacts on airportsensitive receptors and allows for evaluation of design alternatives to avoid glare impacts.

- (a) No commercial-scale solar facility shall have a potential for glint or glare in an existing or planned Airport Traffic Control Tower cab at Travis AFB. No commercial-scale solar facility shall have a potential for glare or more than a low potential for after-image along the final approach path for any existing landing threshold or future landing threshold (including any planned interim phases of the landing thresholds) as shown on the Layout Plan for Travis AFB. All new or expansion of existing commercial-scale solar facilities shall be reviewed by the ALUC and shall be required to conduct a glint and glare study based on the Sandia National Laboratories-developed SGHAT model, in order to demonstrate no glint or glare risk. These LUCP policies concerning solar facilities are minimum requirements. The FAA may issue further policies or guidance in the future which may also be applicable to solar facilities within the AIA or to environmental review of those facilities. (See, FAA, Interim Policy, FAA Review of Solar Energy Systems Projects on Federally Obligated Airports, 78 Fed. Reg. 63277 (Oct. 23, 2013), stating that the FAA plans to publish an update to its *Technical Guidance for Evaluating Selected Solar Technologies on Airports*.)



## 5.7 Other Height Regulations

### 5.7.1 Meteorological Towers

Meteorological towers can pose a safety hazard for low-flying aircraft, affecting pilots and aircraft operations.

- (a) All proposed new or expanded meteorological towers 100 feet in height AGL or greater in Compatibility Zone C, or 200 feet AGL or greater in Compatibility Zones D and E, whether temporary or permanent, shall require ALUC review.
- (b) All meteorological towers, whether temporary or permanent, regardless of height, shall be subject to the height requirements stated elsewhere in this LUCP.
- (c) All meteorological towers, regardless of height and whether temporary or permanent, shall be marked and lighted for safety in adherence with the FAA's marking and lighting requirements contained in FAA Advisory Circular AC-70/7460-1K, "Obstruction Marking and Lighting." The requirements of Public Utilities Code Section 21417, requiring marking of meteorological towers of certain heights in certain locations, may supersede Policy 5.7.1(c), to the extent Section 21417 requires marking. If Section 21417 ceases to be in effect, its requirements would not supersede this paragraph. The requirements of this Policy and Section 21417 are a minimum, and it is encouraged that meteorological towers be marked and lighted to any greater extent as may be prudent as industry practice improves.



### 5.7.2 Objects Greater Than 100 feet AGL

In addition to meteorological towers, other types of towers and tall objects can pose a safety hazard for low-flying aircraft, affecting pilots and aircraft operations.

- (a) All proposed new or expanded objects 100 feet in height AGL or greater in Compatibility Zone C, or 200 feet AGL or greater in Compatibility Zones D and E, whether temporary or permanent, shall require ALUC review and shall be subject to the height requirements stated elsewhere in this LUCP.
- (b) All proposed new or expanded objects 100 feet in height AGL or greater in Compatibility Zone C, or 200 feet AGL or greater in Compatibility Zones D and E, whether temporary or permanent, shall be marked and lighted for safety. Unless otherwise specified by the ALUC, each new or expanded structure under this Policy must, at a minimum, conform to the FAA's marking and lighting specifications set forth in the FAA's final determination of "no hazard" and the associated FAA study for that particular structure. For purposes of this Policy, any specifications, standards, and general requirements set forth by the FAA in the structure's determination of "no hazard" and the associated FAA study are mandatory, and project applicants shall be bound to implement those specifications through appropriate project approvals and entitlements. Additionally, each structure under this policy must be marked and lighted in accordance with any



in accordance with any marking and lighting requirements prescribed by the ALUC. The requirements of this paragraph 5.7.2(b) apply to meteorological towers and to other objects greater than 100 feet in height AGL.

- (c) To the extent that the FAA does not provide marking and lighting specifications for a proposed object taller than 100 feet AGL, due to the height or type of the object or for any other reason, the requirements and specifications for marking and lighting the particular proposed object for safety shall be determined after consideration of any FAA requirements for the same or similar type of object.

## 5.8 Wildlife Hazards

### 5.8.1 Wildlife Hazards

Figure 4 depicts two wildlife hazard zones, the Bird Strike Hazard Zone and the Outer Perimeter, which contain specific development requirements. The Bird Strike Hazard Zone is delineated by a radius 14,500 feet from the runway centerlines. The Outer Perimeter is located five miles from the farthest edge of the Air Force Base's air operations area (AOA), which the FAA recommends for any hazardous wildlife attractant if the attractant could cause hazardous wildlife movement into or across the approach or departure airspace. FAA Advisory Circular 150/5200-33B provides guidance for minimizing the risks that certain wildlife species pose to aircraft. The Outer Perimeter is based on the fact that Travis AFB serves turbine-powered aircraft. Together, these perimeters encompass portions of all compatibility zones and present additional conditions on certain types of land uses that are known to attract wildlife that are hazardous to aircraft operations. See FAA Circular 150/5200-33B in Appendix G for specific land use details and restrictions, including a description of conflicting land uses<sup>1</sup>. The following regulations do not apply to existing land uses.



### 5.8.1 Known Wildlife Hazards in Solano County

Land uses identified in Table 3 are known to attract certain species groups in Solano County, as described in more detail in Appendix I.

- (a) Bird Strike Hazard Zone: Within the Bird Strike Hazard Zone as shown on Figure 4, new or expanded land uses involving discretionary review that has the potential to attract wildlife and cause bird strikes are required to prepare a wildlife hazard analysis (WHA). Reviewing agencies shall prepare a WHA for projects that have the potential to attract wildlife that could cause bird strikes. If the land use development would comply with the policies of the 2002 LUCP with respect to bird strike hazards within the Bird Strike Hazard Zone, then based on the findings of the WHA, all reasonably feasible mitigation measures must be incorporated into the planned land use. Expansion of existing wildlife attractants includes newly created areas and increases in enhanced or restored areas.

<sup>1</sup> Land uses in existence that do not meet the wildlife hazard policies of this LUCP, upon adoption, are not required to eliminate existing wildlife hazards. Thus, existing activities and uses would be allowed to remain, and only new or expanded land uses are required to meet the aforementioned standards. It should be noted that these regulations are not intended to prohibit existing agricultural activities

**TABLE 3**  
**SPECIES GROUPS KNOWN TO BE ATTRACTED TO LAND USE TYPES IN THE VICINITY OF TRAVIS AFB**

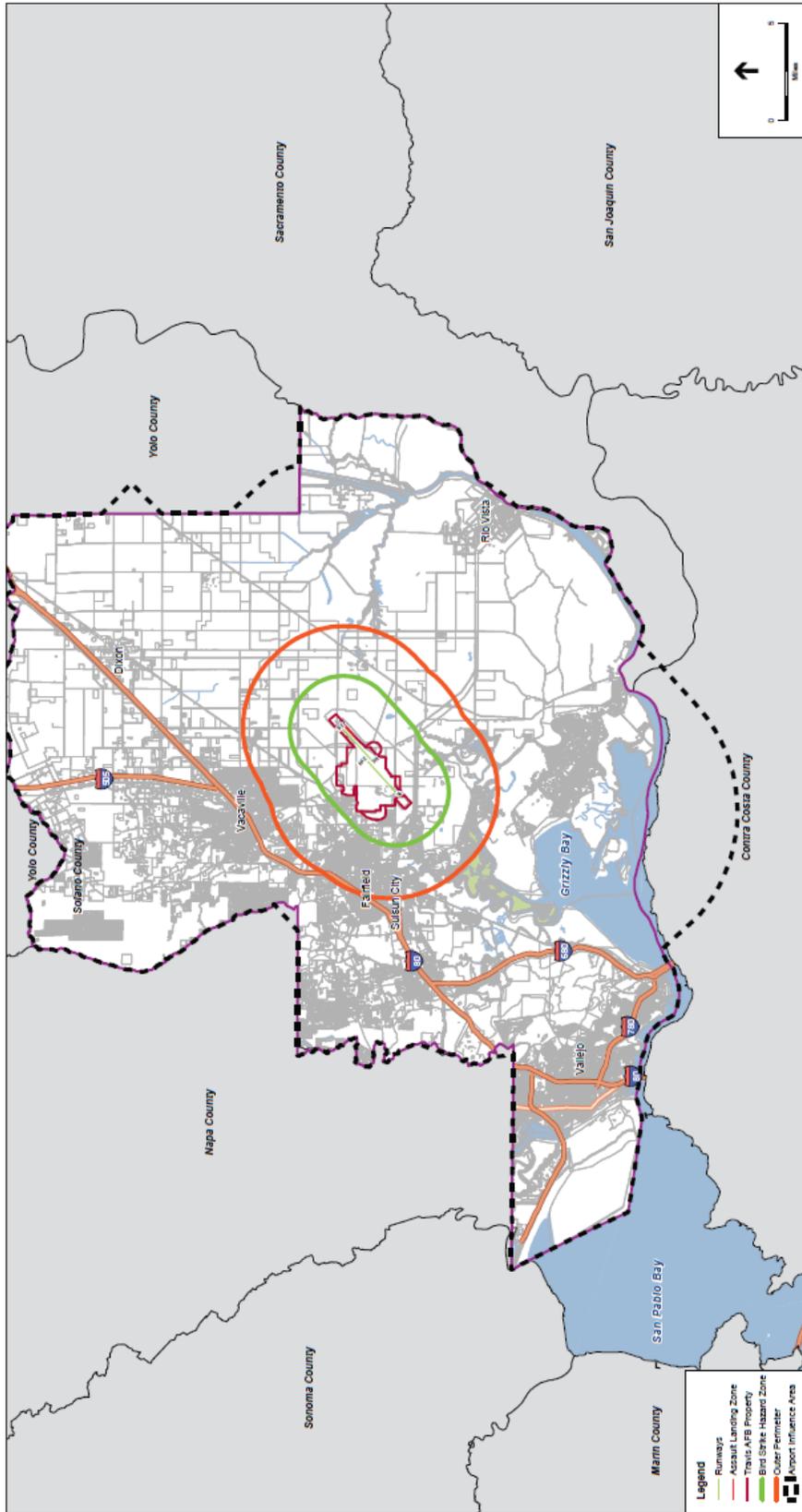
Land Use Type/Habitat Feature	Species Group(s) Known to be Attracted to Land Use Type/Habitat Feature
Public Parks	Swallows, sparrows, blackbirds/starlings, crows/ravens, doves, pigeons, geese and ducks
Golf Courses	Geese and ducks, blackbirds/starlings, sparrows, swallows
Water Treatment Plants	Geese and ducks, cormorants/pelicans, herons, shorebirds
Landfills	Gulls, blackbirds/starlings, vultures
Agricultural Lands	Hawks, vultures, blackbirds/starlings, crows/ravens
Rivers and Creeks	Egrets, songbirds, geese and ducks, mammals such as raccoons and otters
Estuarine/Wetland Habitat	Shore birds, blackbirds, geese and ducks, egrets, cormorants, pelicans
Open Space	Hawks, swallows, sparrows, kestrels, coyote, owls, turkey/pheasants, osprey, eagles, vultures

NOTE: Table 3 is not comprehensive; it provides general groups of wildlife that may use each land use type/habitat feature. SOURCE: ESA, 2015.

(b) Outer Perimeter: Outside the Bird Strike Hazard Zone but within the Outer Perimeter, as shown on Figure 4, any new or expanded land use involving discretionary review that has the potential to attract the movement of wildlife and cause bird strikes are required to prepare a WHA. Expansion of existing wildlife attractants includes newly created areas and increases in enhanced or restored areas. The WHA must demonstrate wildlife movement that may pose hazards to aircraft in flight will be minimized.

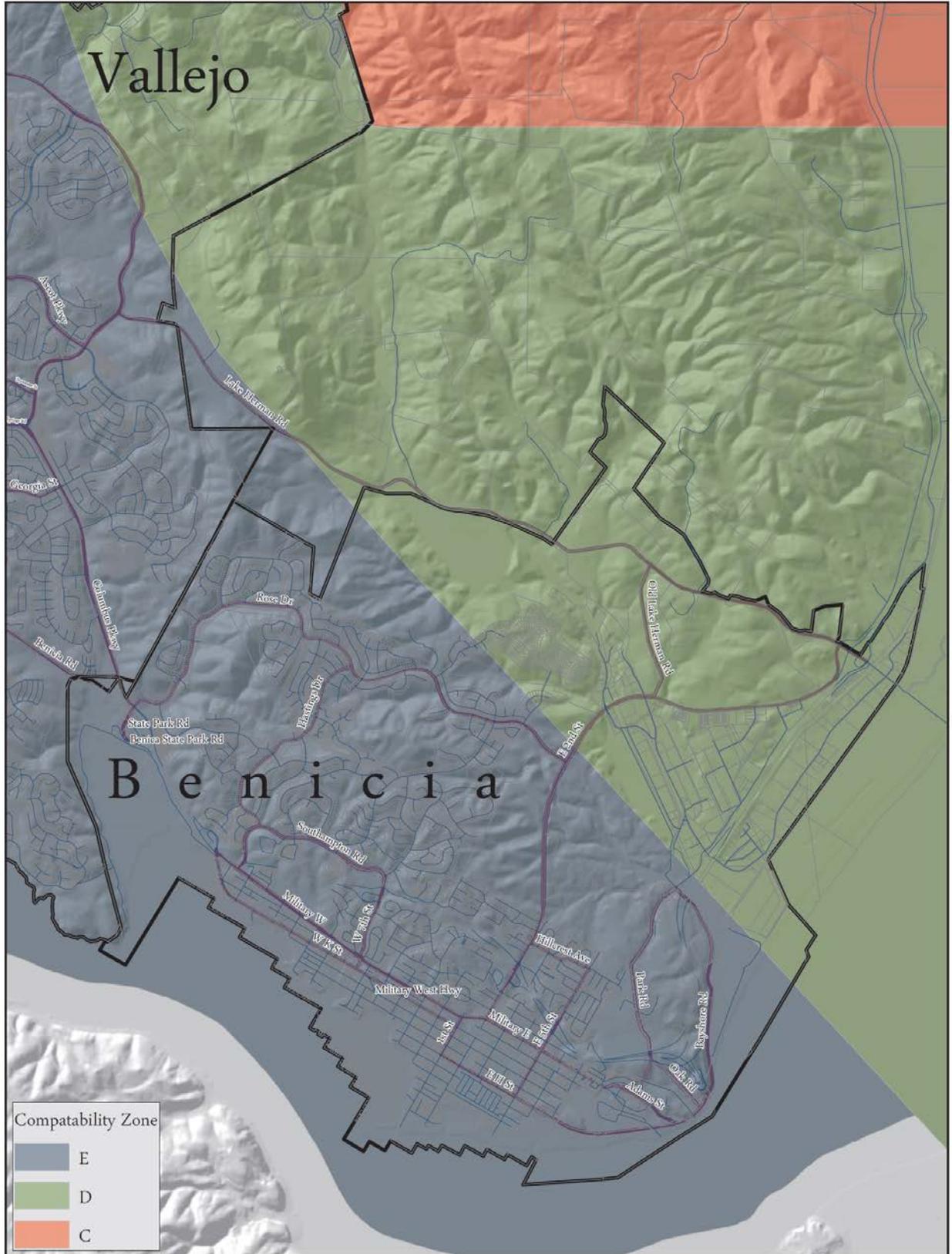


- (c) All discretionary projects located within the Bird Strike Hazard Zone and Outer Perimeter are required to consider the potential for the project to attract hazardous wildlife, wildlife movement, or bird strike hazards as part of environmental review process required by the California Environmental Quality Act (CEQA).
- (d) Because biological and hazard impacts are required to be examined in the context of CEQA compliance, it is anticipated that most projects will develop the information necessary to prepare a WHA and demonstrate compliance with this Policy 5.8.2 as part of the CEQA process, and that separate documentation will not be needed. Proposed projects within the Bird Strike Hazard Zone that have the potential to cause a significant adverse impact under Policy 5.8.2(c), with or without mitigation, shall be reviewed by the ALUC (including but not limited to projects requiring an environmental impact report, mitigated negative declaration, or equivalent document).

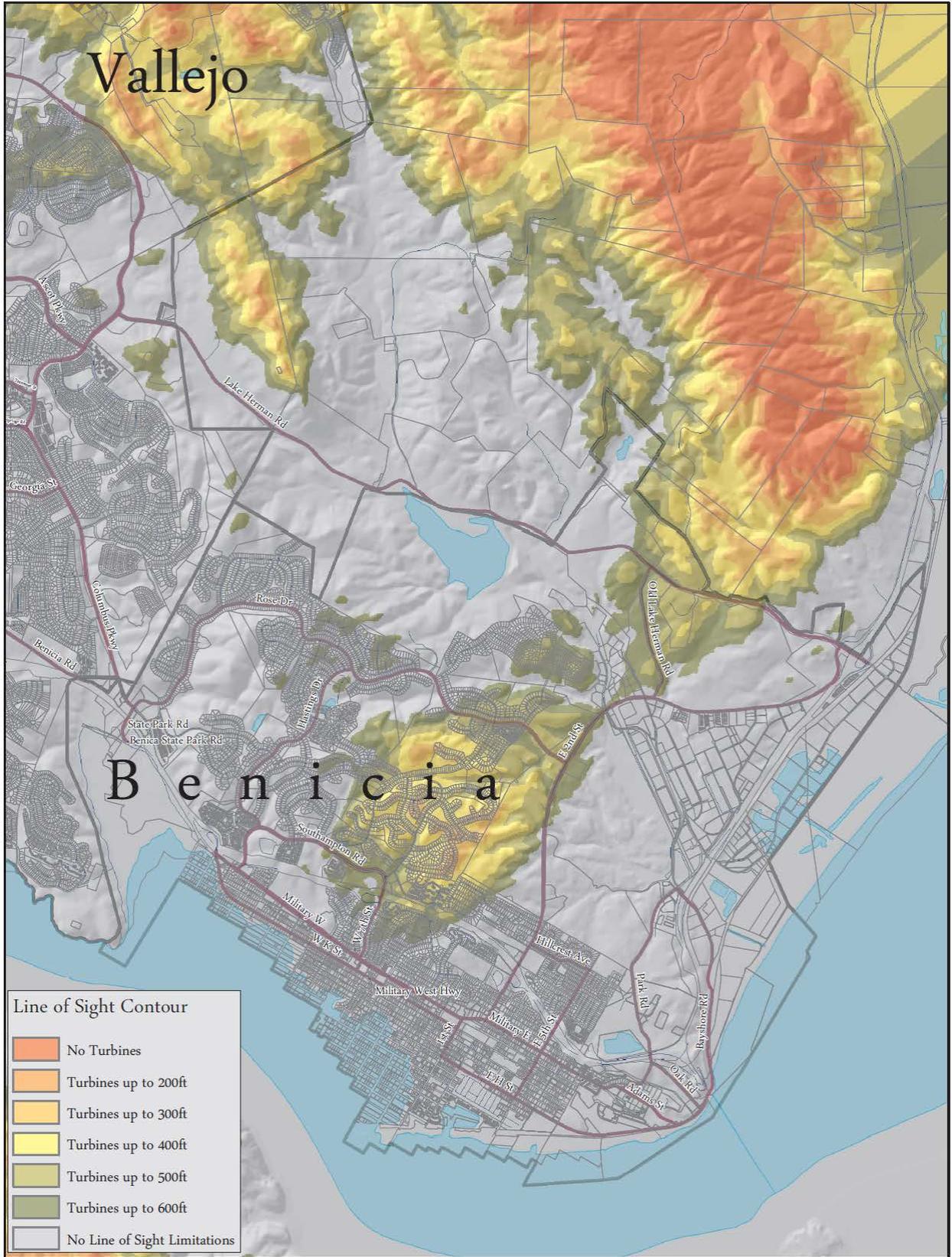


Travis AFB LUICP Update - 130899  
**Figure 4**  
 Wildlife Hazard Analysis Boundaries

SOURCE: Mead & Hunt, 2015; Travis AFB, 2014; Solano County GIS Dept., 2015; ESA-Airports, 2015; EBRI



*Compatibility Zones in Benicia*



*Line of Sight Contour*