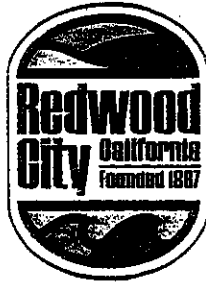


21. APPENDICES

- 21.1 Notice of Preparation and Initial Study
- 21.2 Water Supply Assessment for the Proposed Marina Shores Village Project
- 21.3 Supplemental Air Quality Information
- 21.4 CEQA Standards for EIR Adequacy
- 21.5 CEQA Definition of "Mitigation"
- 21.6 EIR Consultant Team

APPENDIX 21.1
NOTICE OF PREPARATION AND INITIAL STUDY



1017 Middlefield Road
P.O. Box 391
Redwood City, California 94064-0391
Telephone (650) 780-7220
FAX (650) 261-9102

NOTICE OF PREPARATION

To: Responsible Agencies, Trustee Agencies, and Other Interested Parties
Subject: Notice of Preparation of a Draft Environmental Impact Report¹
From: City of Redwood City
Street Address: 1017 Middlefield Road, P.O. Box 391
City/State/Zip: Redwood City, California 94064
Contact: Tom Passanisi, Principal Planner


The City of Redwood City will be the Lead Agency and will prepare an environmental impact report (EIR) for the proposed project identified below. We are interested in the views of your agency as to the appropriate scope and content of the EIR's environmental information pertaining to your agency's statutory responsibilities in connection with the proposed project.

The proposed project, its location, and its potential environmental effects are described in the attached materials, including a copy of the Initial Study.

Due to the time limits mandated by state law, your response must be sent at the earliest possible date but **not later than 30 days** after receipt of this notice.

Please send your response to the Redwood City Planning Department, Attention: Tom Passanisi, Principal Planner, 1017 Middlefield Road, P.O. Box 391, Redwood City, California 94064. Please provide a contact name for your agency with your comments.

Project Title: Marina Shores Village Project
Project Applicant: Glenborough-Pauls, LLC
Project Location: Bair Island Road area of Redwood City, San Mateo County, California
Project Description: The project site is comprised of two non-contiguous properties known as Peninsula Marina (approximately 33.24 acres, including approximately 14.1 acres of water) and Pete's Harbor (approximately 13.21 acres, including approximately 2.9 acres of water) in the Bair Island Road area of Redwood City. The applicant will require a General Plan Amendment, Zoning Text and Zoning Map Amendments, Planned Development Permit approval, a Development Agreement or a Precise Plan, and a Design Review (Architectural) Permit to allow development of approximately 1,930 housing units (in multi-story and townhouse structures) and 312,000 square feet of commercial uses. The development plan includes reducing and reconfiguring the two marina areas from a total of approximately 17.0 acres to 4.9 acres of water. The General Plan Amendment and rezoning would be required to permit residential uses on the southern portion of the project site at an average density of approximately 61.4 dwelling units per acre.


Tom Passanisi, Principal Planner
Telephone: (650) 780-7237
FAX: (650) 780-0128

2/19/02
Date

¹Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, and 15375.



1017 Middlefield Road
P.O. Box 391
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MARINA SHORES VILLAGE PROJECT INITIAL STUDY AND ENVIRONMENTAL CHECKLIST FORM

1. **Project Title:** Marina Shores Village Project
2. **Lead Agency Name and Address:** City of Redwood City
1017 Middlefield Road
P.O. Box 391
Redwood City, California 94064
3. **Contact Person and Phone Number:** Tom Passanisi, Principal Planner
Telephone: (650) 780-7237
FAX: (650) 780-0128
E-mail: tpassanisi@redwoodcity.org
4. **Project Location:** Figure 1 illustrates the project location. The approximately 46-acre project site is located in the Bair Island Road area of Redwood City, on the San Francisco Bay side of the U.S. 101 freeway, between the Whipple Avenue and Woodside Expressway interchanges. The site is generally bounded by Redwood Creek on the north and east; Smith Slough and the Bair Island National Wildlife Refuge on the northwest and west; townhouses, auto retail, and offices on the west; and Redwood Creek and U.S. 101 on the south.
5. **Project Sponsor's Name and Address:** Glenborough-Pauls, LLC
650 Bair Island Road, Suite 201
Redwood City, California 94063
6. **General Plan Designation:** Commercial/Office (Office Park Oriented Uses) and Mixed Use (Commercial and Residential)
7. **Zoning:** CG (General Commercial) and CG-R (General Commercial-Residential Combining)
8. **Description of Project:**

The Marina Shores Village project site includes two non-contiguous properties known as Peninsula Marina (approximately 33.2 acres, including approximately 14.1 acres of water) and Pete's Harbor (approximately 13.2 acres, including approximately 2.9 acres of water). Currently the Redwood City General Plan designates the southern portion of the site as "Commercial/Office (Office Park Oriented Uses)" and the northern portion of the site as "Mixed Use (Commercial and Residential)." Correspondingly, the site is zoned CG ("General Commercial") and CG-R ("General Commercial-Residential Combining") zoning district, respectively.

Table 1 summarizes the proposed land use data, Figure 2 illustrates the proposed site plan, and Figure 3 depicts a typical architectural elevation.

The applicant will require a General Plan Amendment, Zoning Text and Zoning Map Amendments, Planned Development Permit approval, a Development Agreement or a Precise Plan, and a Design Review (Architectural) Permit to allow development of approximately 1,930 housing units and 312,000 square feet of commercial uses on the approximately 46-acre site, including reducing and reconfiguring the two marina areas from a total of approximately 17.0 acres to approximately 4.9 acres of water area.

The current Redwood City General Plan maximum-density residential designation of "Moderate and High-Rise Structures" allows a density of 20 to 40 dwelling units per net acre, corresponding to the City's R-4 ("Multi-Family--Medium Density") and R-5 ("Multi-Family--High Density") residential zones. The residential portion of the project is proposed to be developed at an average density of approximately 61.4 dwelling units per acre (this density computation excludes water areas, as calculated by the Redwood City Planning Department). A General Plan Amendment, Zoning Text and Zoning Map Amendments, Planned Development Permit approval, a Development Agreement or a Precise Plan, and a Design Review (Architectural) Permit will be required to create new, higher density designations for the southern, residential portion of the project site.

(1) Existing Project Site Characteristics. The two project properties--Peninsula Marina and Pete's Harbor--constitute the major portion of the bayfront Bair Island Road area in Redwood City. The two properties are located on the San Francisco Bay side of the U.S. 101 freeway between the Whipple Avenue and Woodside Expressway interchanges. The area has been developed over time with a mix of marina, residential, and commercial uses. A combined 155-unit apartment and 100-slip marina development--the "Villas at Bair Island" and Bair Island Marina--was completed between Peninsula Marina and Pete's Harbor in 1998. In addition, an 80-foot-wide Pacific Gas & Electric (PG&E) easement with overhead electrical transmission towers runs east-west between the two properties.

The project site is bordered on the north and east by Redwood Creek, an intertidal channel that discharges into the bay. On the northwest and west, Smith Slough separates Pete's Harbor from the Bair Island National Wildlife Refuge, which is under the jurisdiction of the U.S. Fish and Wildlife Service and the State Department of Fish and Game. Bair Island Road forms a portion of the project site's western boundary, with recent townhouse development and older auto retail and office uses located across the road from the Peninsula Marina property. Redwood Creek and U.S. 101 comprise the site's southern boundary.

Portions of the project site near Pete's Harbor and adjacent to Bair Island Road are under the jurisdiction of the San Francisco Bay Conservation and Development Commission (BCDC), which is authorized to control bay filling and dredging and bay-related shoreline development.¹ The outer marina at Pete's Harbor is located on land owned by the State of California and is subject to a State Lands Commission land lease that expires in June 2033.

A planned extension of the San Francisco Bay Trail would traverse the project site's southern edge.

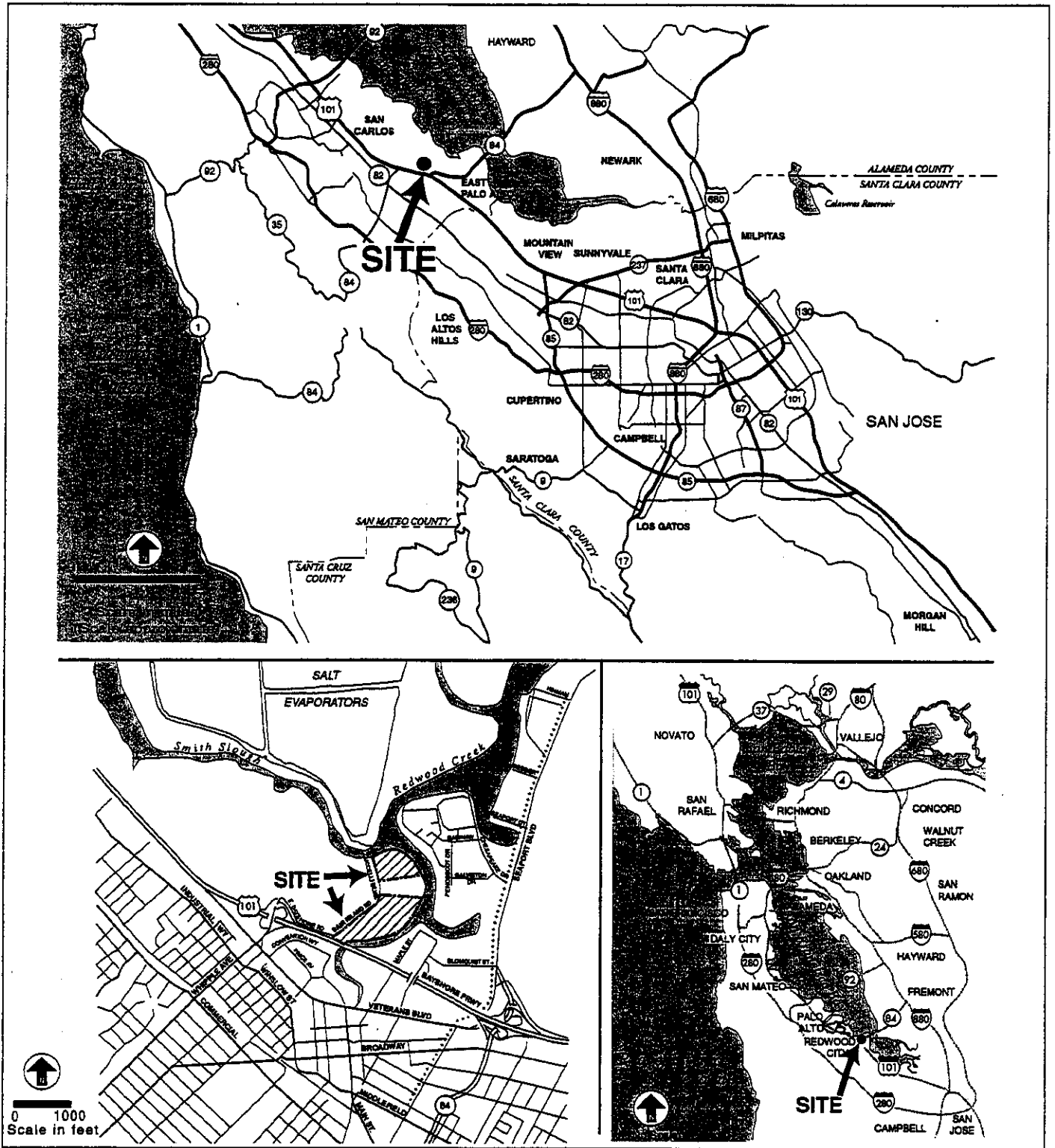
¹ Sources: Telephone communication with Steve McAdam, Deputy Director, BCDC, December 6, 2001; and the San Francisco Bay Plan, BCDC, July 2001, page 5.

Table 1
PROPOSED MARINA SHORES VILLAGE PROJECT LAND USE SUMMARY

<u>Proposed Land Use</u>	<u>(Approx.) Acres¹</u>	<u>Number of Residential Units</u>	<u>Commercial Floor Area (square feet)</u>	<u>Number of Slips</u>
<i>Peninsula Marina Site:</i>				
Residential	19.87			
Towers (8 at 18 to 21 stories each)	--	648	--	--
Low-Rise Flats (4 to 6 stories)	--	599	--	--
Townhouses (2 stories)	--	50	--	--
Commercial				
Office (2 bldgs. at 7 to 9 stories each)	10.12	--	300,000	--
Retail (4 bldgs. at 2 stories each)	--	--	12,000	--
Marina	<u>3.25</u>	<u>--</u>	<u>--</u>	<u>50 to 60</u>
Subtotals:	33.24	1,297	312,000	50 to 60
<i>Pete's Harbor Site:</i>				
Residential	11.57			
Towers (5 at 18 to 21 stories each)	--	368	--	--
Low-Rise Flats (4 to 6 stories)	--	216	--	--
Townhouses (2 stories)	--	49	--	--
Marina	<u>1.64</u>	<u>--</u>	<u>--</u>	<u>30 to 40</u>
Subtotals:	13.21	633	--	30 to 40
TOTALS	46.45	1,930	312,000	80 to 100

SOURCE: Glenborough-Pauls, LLC, November 2001, and the Redwood City Planning Department, December 2001.

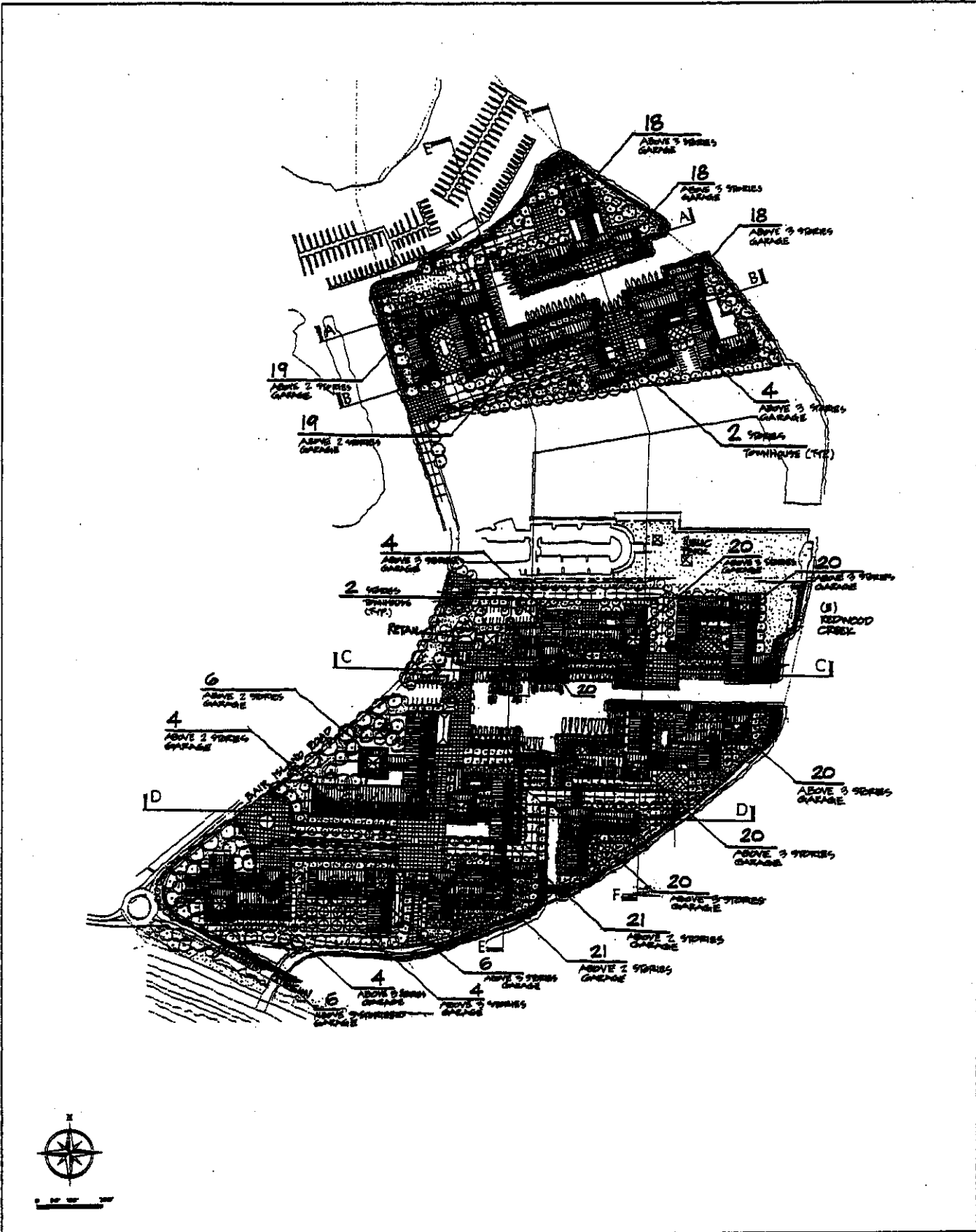
¹ Except for the marinas, acreage calculations include public outdoor landscape/hardscape areas associated with the identified land uses.



SOURCE: Sandy & Babcock International • Architecture • Planning Figure 1

PROJECT LOCATION MAP

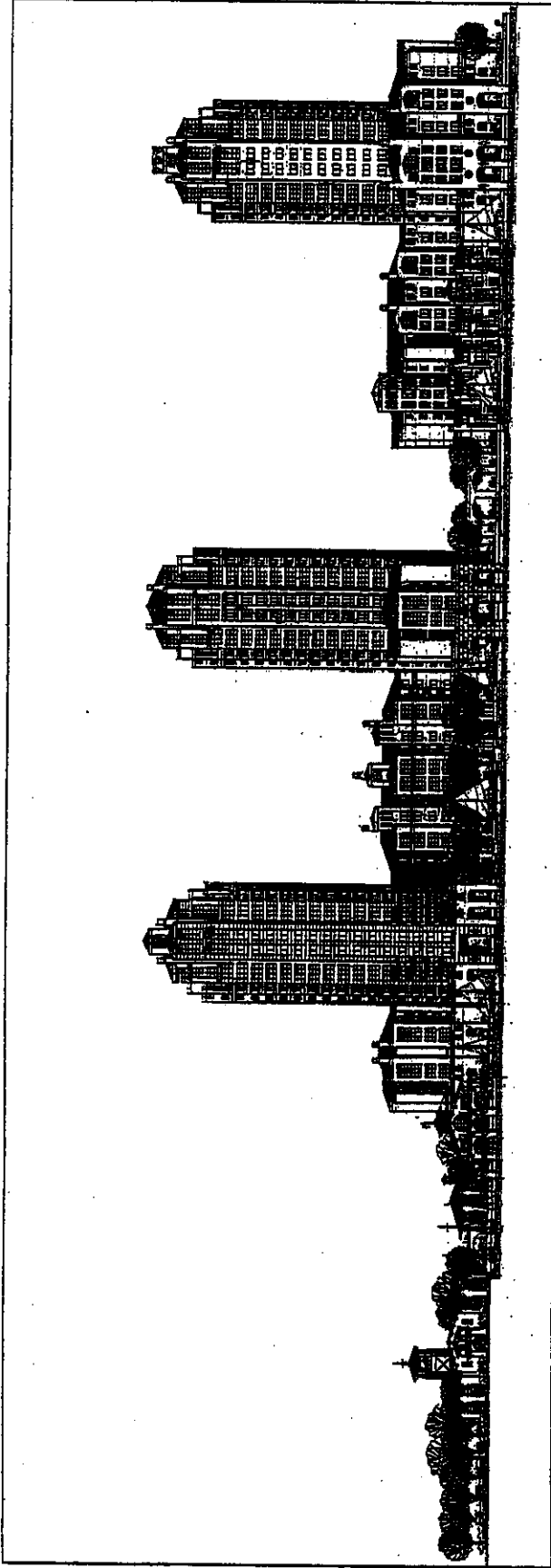
Wagstaff and Associates • Urban and Environmental Planners Marina Shores Village Project EIR • City of Redwood City, CA



SOURCE: Sandy & Babcock International • Architecture • Planning

Figure 2

PROPOSED PROJECT SITE PLAN



ELEVATION AT SOUTH PARCEL CANAL LOOKING NORTH TOWARDS RESTAURANT

0 50
Scale in feet

SOURCE: Sandy & Babcock International • Architecture • Planning

Figure 3

PROPOSED PROJECT TYPICAL ELEVATION

The site is under one of the approach paths of San Carlos Airport, which is located approximately 1.6 miles to the northwest.

As of November 2001, the 427 existing slips at Peninsula Marina had been vacated, while the 116 inner and 147 outer marina slips at Pete's Harbor remained in use.

(2) Proposed Project Characteristics. As illustrated by Figure 2, the project site includes the approximately 33.24-acre Peninsula Marina and the approximately 13.21-acre Pete's Harbor property. Except for the outer marina at Pete's Harbor, all existing buildings, marinas, and hardscape on the project site would be demolished. The project applicant proposes to then construct "Marina Shores Village," a planned development consisting of approximately 1,930 residential units, 300,000 square feet of office space, and 12,000 square feet of restaurant and retail space, plus support facilities, including parking, public open space, pedestrian plazas and paths, private recreational space, and other on-site amenities. The existing 155-unit "Villas at Bair Island" apartment complex and 100-slip Bair Island Marina are situated on 12 acres between the two project properties.

The proposed project includes the following three primary components:

- a **residential component**, including approximately 1,930 for-sale units in an array of 21-, 20-, 19-, 18-, 6-, and 4-story structures, all atop 2- and 3-story, above-grade parking podiums, plus 2-story, at-grade townhouses;
- a **commercial office component**, totaling approximately 300,000 square feet in two 4- and 6-story structures atop 3-story, above-grade parking podiums; and
- a **restaurant-retail component**, totaling approximately 12,000 square feet in 2-story structures situated around a plaza.

Proposed maximum building heights are 260 feet in the Peninsula Marina portion of the site and 240 feet in the Pete's Harbor portion. The applicant indicates that these maximum heights would be within Federal Aviation Administration guidelines for the two properties.

The project design also includes the following common amenities available for public use: a community plaza, public walkways, a proposed link to the planned Bay Trail extension, a planned revised access to the Bair Island Wildlife Refuge, a community park (along the PG&E transmission line right-of-way), and the two reconfigured marinas.

The project applicant also plans to incorporate an entry-level workforce housing component into the project, with preference to public agency employees (public school teachers, City employees, etc.).

At this stage in the proposed project design, the architectural details (as illustrated on Figures 2 and 3) are conceptual and may change over time. The buildings are anticipated to be constructed mainly of reinforced concrete in a variety of colors. Building foundations are expected to be supported on piles, with exterior slabs, ramps, and other areas hinged to the pile-supported foundations.

(3) Proposed Marina and Shoreline Modifications. The project proposes the reduction and reconfiguration of two of the three existing marina areas as follows:

- Peninsula Marina--from approximately 14.1 acres and 427 slips to approximately 3.25 acres of water area and 50 to 60 slips, including a flushing channel of approximately 450 feet long and 30-to-50 feet wide connecting the marina with Redwood Creek; and

- Inner Pete's Harbor--from approximately 2.9 acres of water area and 116 slips to approximately 1.64 acres of water area and 30 to 40 slips.

Outer Pete's Harbor and its 147 existing slips would remain intact.

Using a sea level elevation of 100 feet as a reference point, the existing shoreline inside and outside the Peninsula Marina and Pete's Harbor marina is a sloped embankment ranging in elevation from 105 to 109 feet. For areas outside these two marinas, the project proposes extending the existing embankment slope to an elevation of 110 feet, which is three feet higher than the 100-year flood elevation of 107 feet. Rip-rap or other erosion-control methods are proposed. The two reconfigured marinas would maintain a top-of-bulkhead elevation of 110 feet and a shoreline walking elevation of approximately 108 feet.

(4) Project Phasing. The proposed project is divided into four sections as follows (see Figure 2, Proposed Project Site Plan):

1. South Residential (Peninsula Marina) phases: SR-1A, SR-1B, SR-1C, SR-2A, SR-2B, SR-3A, SR-3B, and SR-4;
2. Peninsula Marina office phases: O-1 and O-2;
3. Peninsula Marina retail phase; and
4. North Residential (Pete's Harbor) phases: NR-1, NR-2, NR-3, and NR-4.

The project applicant anticipates that the project would be developed over a period of approximately ten years, dependent upon market conditions. At this preliminary point in the phasing plan, the phasing *within each section* is anticipated to follow the sequence illustrated on Figure 2; however, the initial construction date for each section and ultimate construction sequence for the entire proposed project would depend on market conditions.

9. Surrounding Land Uses and Setting:

Previous item 8(1) (Existing Project Site Characteristics) includes a description of the project site's immediate surroundings and setting. Existing land uses and prevalent features surrounding the site include:

To the North: Redwood Creek, Smith Slough, and inoperative salt evaporators.

To the East: Redwood Creek, business park development, dredging activities, and Steinberger Creek.

To the South: Redwood Creek (with a marina) and U.S. 101.

To the West: Industrial, auto retail, cinema, office, and residential uses; Smith Slough; and the Bair Island National Wildlife Refuge.

10. Other Public Agencies Whose Approval is Required:

In addition to approvals by the City of Redwood City, the project may also require approvals by the City/County Association of Governments of San Mateo County (C/CAG) in both its designated role as the County's Congestion Management Agency and Airport Land Use Commission, San Francisco Bay Conservation and Development Commission (BCDC), State Lands Commission,

State Department of Transportation (Caltrans), State Department of Boating and Waterways, State Department of Fish and Game, Regional Water Quality Control Board, and U.S. Army Corps of Engineers. Public agencies with possible project review or consultation roles only include the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and U.S. Environmental Protection Agency.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below may be affected by this project, as indicated by the checklist on the following pages.

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Aesthetics | <input checked="" type="checkbox"/> Hazards & Hazardous Materials | <input checked="" type="checkbox"/> Public Services |
| <input type="checkbox"/> Agricultural Resources | <input checked="" type="checkbox"/> Hydrology/Water Quality | <input checked="" type="checkbox"/> Recreation |
| <input checked="" type="checkbox"/> Air Quality | <input checked="" type="checkbox"/> Land Use/Planning | <input checked="" type="checkbox"/> Transportation/Traffic |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Mineral Resources | <input checked="" type="checkbox"/> Utilities/Service Systems |
| <input checked="" type="checkbox"/> Cultural Resources | <input checked="" type="checkbox"/> Noise | <input checked="" type="checkbox"/> Mandatory Findings of Significance |
| <input checked="" type="checkbox"/> Geology/Soils | <input checked="" type="checkbox"/> Population/Housing | |


DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

- I find that the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
- I find that although the proposed project **COULD** have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.
- I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.
- I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated impact" on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets, if the effect is a "potentially significant impact" or "potentially significant unless mitigated impact." An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project **COULD** have a significant effect on the environment, because all potentially significant effects (1) have been analyzed adequately in an earlier EIR or **NEGATIVE DECLARATION** pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier EIR or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, **nothing further** is required.

Prepared by:

Signature:




John Wagstaff, Principal
Wagstaff and Associates

Date:

2-6-02

Reviewed by:

Signature:



Tom Passanisi
Principal Planner
City of Redwood City

Date:

2/8/02

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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ENVIRONMENTAL IMPACTS:

I. AESTHETICS. *Would the project:*

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| a) <i>Have a substantial adverse effect on a scenic vista?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

Development of the proposed project would alter existing views from internal and offsite vantage points, including adjacent residential and commercial areas, U.S. 101, the Whipple Avenue overpass, and hill areas to the west. The project would be expected to have substantial adverse effects on a scenic vistas, including views through the site towards the Bair Island area, National Wildlife Refuge area, San Francisco Bay, Redwood Creek, and Smith Slough. These issues will be addressed in the EIR.

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| b) <i>Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

U.S. 101 runs immediately south of the project site. This segment of U.S. 101 is not within a state-designated scenic highway. Therefore, the proposed project would not damage scenic resources within a state scenic highway.

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| c) <i>Substantially degrade the existing visual character or quality of the site and its surroundings?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

The proposed project would involve development of approximately 1,930 residential units and 312,000 square feet of commercial space in 22 buildings, ranging in height from 2 to 23 stories. This amount of new development would result in a substantial change in the visual character and quality of the project site and its surroundings. This issue will be addressed in the EIR.

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| d) <i>Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

Nighttime lighting of project-related residential, commercial, and retail areas

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
--	--------------------------------------	--	------------------------------------	--------------

could have adverse effects on nighttime views from adjacent and surrounding residential areas. Daytime glare associated with the tower structures could also affect daytime views in the area. These issues will be addressed in the EIR.

Mitigation. Mitigation measures to be considered in the Marina Shores Village EIR for reduction of potential aesthetic impacts may include, among others, preservation of identified view corridors through the site, compliance with applicable General Plan policies and community design guidelines adopted by the City Council (such as the Redwood City Design Guidelines), and compliance with more specific, EIR-formulated design criteria.

II. AGRICULTURE RESOURCES. *(In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland.) Would the project:*

a) <i>Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	--------------------------	--------------------------	--------------------------	-------------------------------------

No agricultural uses are located on the project site. The project would not result in conversion of any farmland or have a significant impact on agricultural resources.

b) <i>Conflict with existing zoning for agricultural use, or a Williamson Act contract?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	--------------------------	--------------------------	--------------------------	-------------------------------------

Same as II.a above.

c) <i>Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
---	--------------------------	--------------------------	--------------------------	-------------------------------------

Same as II.a above.

<i>Potentially Significant Impact</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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III. **AIR QUALITY.** *(Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.) Would the project:*

- a) *Conflict with or obstruct implementation of the applicable air quality plan?*

The project would generate point source and, in particular, vehicular air emissions. The proposed project and its associated potential impacts on local and regional air emissions will be evaluated in the EIR in relation to applicable Bay Area Air Quality Management District (BAAQMD), State of California, and Federal Clean Air Act guidelines and standards.

- b) *Violate any air quality standard or contribute substantially to an existing or projected air quality violation?*

Proposed intensification of land use on the project site, and associated increases in local vehicular trips and traffic congestion, could contribute to a deterioration of local and regional air quality. See item III.a above.

- c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*

Same as III.b above.

- d) *Expose sensitive receptors to substantial pollutant concentrations?*

Project-related construction activities--including earthmoving and building, marina, and infrastructure construction--could lead to temporary air quality impacts (e.g., construction particulate emissions) on adjacent or nearby sensitive receptors, including residences along Bair Island Road and at the adjacent "Villas at Bair Island." Also, there may be a sensitive receptor (e.g., residential frontage and/or school) along a driving route subject to increased, project-

	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
--	---	---	---	----------------------

related traffic and traffic congestion and associated air emissions increases. These issues will be addressed in the EIR.

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| e) <i>Create objectionable odors affecting a substantial number of people?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

Project-related commercial development involving food service (e.g., restaurants) could result in localized objectionable odor impacts. There may also be temporary objectionable odors related to project demolition and construction equipment operation. These issues will be addressed in the EIR.

Mitigation. Mitigation measures to be considered in the Marina Shores Village Project EIR to reduce identified potential air quality impacts may include, among others, compliance with applicable General Plan and BAAQMD policies, and implementation of measures to reduce traffic congestion (provisions for alternative travel modes, roadway improvements, etc.).

IV. BIOLOGICAL RESOURCES. *Would the project:*

- | | | | | |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| a) <i>Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

The project site includes intertidal and subtidal habitats, and possibly jurisdictional wetlands, along the existing shorelines of Redwood Creek, Smith Slough, and the marinas. The site may provide habitat for candidate, sensitive, or special status species. Also, Smith Slough separates the Pete's Harbor portion of the project from the biologically sensitive Bair Island National Wildlife Refuge. Project construction, including associated marina reconfiguration, could result in substantial adverse direct effects on these sensitive biological habitats and species. In addition, project noise, runoff, lighting and other aspects could result in substantial secondary adverse effects on

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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these biological resources. These issues will be addressed in the EIR.

- | | | | | |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| b) <i>Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

Same as IV.a above. Also, see items IX.b and c.

- | | | | | |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| c) <i>Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

Same as IV.a above. Also, see items IX.b and c.

- | | | | | |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| d) <i>Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

Same as IV.a above. Also, see items IX.b and c.

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| e) <i>Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

The potential direct and indirect biological resource impacts described under item IV.a above may conflict with City-adopted General Plan policies, guidelines, and/or ordinances protecting biological resources. The project site may also contain trees subject to local tree preservation policies or ordinances. These issues will be addressed in the EIR. Also, see items IX.b and c.

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| f) <i>Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved, local, regional, or state habitat conservation plan?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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The project site is located near to the Bair Island National Wildlife Refuge and the San Francisco Bay National Wildlife Refuge, both of which are operated and primarily owned by the United States Fish and Wildlife Service (USFWS). Proposed development on the project site would need to be consistent with biological specifications of any USFWS or California Department of Fish and Game land use plans for the site, as well as the pertinent conservation policies of the Redwood City General Plan

Mitigation. Mitigation measures to be considered in the Marina Shores Village Project EIR to reduce identified biological resources impact potentials may include, among others, (1) compliance with applicable City General Plan policies, tree ordinance regulations, and/or design review guidelines pertaining to biological resources; and (2) implementation of applicable mitigation protocols of other jurisdictional agencies, including the California Department of Fish and Game, the U.S. Army Corps of Engineers, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service.

V. **CULTURAL RESOURCES.** *Would the project:*

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| a) <i>Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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There are no structures on the project site that could potentially be considered significant historical resources.

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| b) <i>Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines §15064.5?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Since the project site is located adjacent to Redwood Creek and near San Francisco Bay, project-facilitated development would present potentials for adverse impacts on Native American cultural resources. If not mitigated, project-related development could alter, damage, or destroy an as yet unidentified and/or unrecorded significant prehistoric archaeological site. (See also

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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item d below.) This issue will be addressed in the EIR.

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| c) <i>Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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The project site itself is located on fill ranging from five to nine feet in depth, on top of Bay mud. Therefore, there is no potential to encounter unique geologic features during project construction. The project site is not located in an area with a history of discovery of unique paleontological resources.

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| d) <i>Disturb any human remains, including those interred outside of formal cemeteries?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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There are no formal cemeteries located on the project site. However, due to its location adjacent to Redwood Creek and near on San Francisco Bay, the project site may contain as-yet-unknown cultural resources, including human remains, that could be altered, damaged, or destroyed by land development activity, if not mitigated. This issue will be addressed in the EIR.

Mitigation. Mitigation measures to be considered in the Marina Shores Village Project EIR in order to reduce or avoid certain potential cultural resource impacts will include, among others, compliance with applicable General Plan policies, compliance with applicable local, state, and federal historic preservation guidelines (including the City's *Historic Resources Element* and as detailed in the *Cultural Resources Management Plan*), and/or compliance with CEQA-specified mitigation protocols in the event that a cultural resource value is encountered during project-related construction activities.

VI. GEOLOGY AND SOILS. Would the project:

- a) *Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:*

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| i) <i>Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

There are no known active faults on the project site; therefore, hazards associated with fault rupture are not expected (source: Department of the Interior, U.S. Geological Survey, *Map Showing Faults and Earthquake Epicenters in San Mateo County, California*, 1986).

ii) <i>Strong seismic ground shaking?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Development of the proposed project would subject additional people and structures to seismic ground shaking. In particular, the project site is composed of approximately five to nine-and-a-half feet of fill over shoreline soils (i.e., Bay mud) prone to liquefaction, differential settlement, shrink-swell, and corrosion. These issues will be addressed in the EIR.

iii) <i>Seismic-related ground failure, including liquefaction?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Same as VI.a.ii above.

iv) <i>Landslides?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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The project site is relatively flat and not susceptible to landslides. The project may be susceptible to damage from creek bank lurching, however. This issue will be addressed in the EIR.

b) <i>Result in substantial soil erosion or the loss of topsoil?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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Grading, construction, and dredging activities associated with the proposed project may result in minor erosion or the loss of some topsoil. According to the project applicant, materials excavated to construct the parking structure, underground drainage improvements, and flushing channel would be used as on-site fill. City-required standard grading and construction-period erosion control techniques would minimize related erosion impacts to less-than-

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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significant levels. Such techniques would include watering active construction areas at least twice daily, covering soil stockpiles, applying non-toxic soil stabilizers, and daily sweeping of paved construction areas.

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| c) <i>Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Same as VI.a.ii above.

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| d) <i>Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Same as VI.a.ii above.

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| e) <i>Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Sanitary sewer service would be provided to the project. Live-aboards would be prohibited at the marinas. No use of septic tanks or alternative wastewater disposal systems is proposed.

Mitigation. The EIR will identify excavation, soil preparation, and foundation and building construction measures to be implemented in order to minimize the risk of damage during an earthquake and to resist the potentially damaging effects of locally unstable soil conditions. It is expected that construction of individual buildings on the project site in conformance with the Uniform Building Code would provide a sufficient level of structural integrity to resist catastrophic failure. Therefore, mitigations will likely focus on the need for special foundation and soil stabilization approaches. At this preliminary point, it is anticipated that building foundations would be pile-supported, with exterior slabs, ramps, and other areas hinged to the pile-supported foundations to accommodate differential settlement. All mitigations will be predicated on the

	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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subsequent (post-EIR) preparation of final engineering designs and on the continuous observation, by a registered soils or geotechnical engineer, of all excavation, grading, dredging, fill operations, and foundation preparation.

VII. HAZARDS AND HAZARDOUS MATERIALS.

Would the project:

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| a) <i>Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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No industrial or other activity involving the transport, use, or disposal of hazardous materials is proposed. However, project-related excavation could expose construction personnel to subsurface soil or groundwater contamination, and project-introduced residential, office, retail, and marina uses could involve the use or disposal of hazardous substances (i.e., fuels, paint, solvents, fertilizers and pesticides, etc.). In addition, project occupants could be exposed to health hazards associated with existing electrical transmission tower lines located on the project site. These issues will be addressed in the EIR.

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| b) <i>Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Same as VII.a above.

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| c) <i>Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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The project site is not within one-quarter mile of an existing or proposed school.

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| d) <i>Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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	<i>Potentially Significant Impact</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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According to a Phase I assessment completed at the site in October 2000, several hazardous materials database events are listed on or within one mile of the project site, including CORRACTS (one site) and ERNS (two sites) on federal lists; and Cal-Sites ASPIS (two sites), LUST (one tank on project site), and HAZNET (one site) on state lists. These findings, and the findings of subsequent Phase II investigations, will be described in more detail in the EIR, and mitigation measures will be identified, as appropriate.

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| e) <i>For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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San Carlos Airport is located immediately northwest of Steinberger Slough, east of U.S. 101, approximately 1.6 miles northwest of the project site. The project site is under the approach path of San Carlos Airport. Potential safety hazards and noise impacts, and project compliance with the airport's land use plan (San Mateo County Comprehensive Airport Land Use Plan, December 1996), will be addressed in the EIR.

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| f) <i>For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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No private airstrips are known to exist on the project site or in the surrounding vicinity.

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| g) <i>Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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The proposed project would not physically interfere with any existing emergency response plans. However, the project would introduce residential, office, and retail uses in an area that is currently largely undeveloped, which may affect City emergency evacuation planning for the project site. This issue will be reviewed the EIR.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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- h) *Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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The project site is located in an urbanized setting adjacent to San Francisco Bay. There is almost no wildland fire hazard potential.

Mitigation. Mitigation measures to be considered in the EIR to reduce identified potentially significant hazards may include, among others, compliance with applicable Redwood City General Plan and San Mateo County Comprehensive Airport Land Use Plan policies; federal, state, county, or city remediation requirements for contaminated soil and/or groundwater and/or other hazardous materials; and/or city-required fire protection measures.

VIII. HYDROLOGY AND WATER QUALITY. *Would the project:*

- a) *Violate any water quality standards or waste discharge requirements?*

<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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The project site is traversed by and contiguous to a sensitive bayside estuarine, intertidal, and subtidal drainage system, including Redwood Creek, Smith Slough, and the project site marinas. Portions of the project site near Pete's Harbor and adjacent to Bair Island Road are under the jurisdiction of the San Francisco Bay Conservation and Development Commission (BCDC), which is authorized to control bay filling and dredging and bay-related shoreline development. (Sources: Telephone conversation with Steve McAdam, Deputy Director, BCDC, December 6, 2001; and the San Francisco Bay Plan, BCDC, July 2001, page 5).

Also, the Bair Island Road area includes an existing storm drain pumping station.

The anticipated development program may increase local runoff and would involve silt-producing dredging and fill operations, modifications to marina/harbor circulation patterns (including the reduction and

	<i>Potentially Significant Impact</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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reconfiguration of two marinas and the addition of a flushing channel), and possible increases in stormwater and stormwater pollutants into the local drainage system during construction and/or over the long term. These issues will be addressed in the EIR.

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| b) <i>Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Using sea level elevation of 100 feet as a reference point, existing site elevations range from 105 to 111 feet, and groundwater has been encountered onsite at elevations ranging from approximately 101 to 104 feet. At this preliminary point, the project applicant anticipates that (1) the building foundations would be pile-supported, and (2) the bottom floor of the parking structures would be slightly above the groundwater elevation. Project-related development could interfere with groundwater volume and recharge. This issue will be addressed in the EIR.

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| c) <i>Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Project-related development, including the reduction and reconfiguration of the two existing marinas and the addition of a flushing channel, could result in additional erosion or siltation in Redwood Creek, Smith Slough, and the marinas, and/or increases in the amount of impervious surfaces and runoff. See VIII.a above.

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|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| d) <i>Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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amount of surface runoff in a manner which would result in flooding on- or off-site?

Same as VIII.c above.

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| e) <i>Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Same as VIII.c above.

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| f) <i>Otherwise substantially degrade water quality?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Same as VIII.c above.

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| g) <i>Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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According to the flood mapping of the Federal Emergency Management Agency (FEMA) (Source: FEMA Flood Maps, Community Panel No. 0603250011B; May 17, 1982), portions of the project site are in Zone A and could be susceptible to inundation by a 100-year flood. Using sea level elevation of 100 feet as a reference point, the shoreline inside and outside the existing marinas is a sloped embankment ranging in elevation from 105 to 109 feet. For areas outside the marinas, the project proposes extending the existing embankment slope to an elevation of 110 feet, which is three feet higher than the 100-year flood elevation of 107 feet. The reconfigured marinas would maintain a top-of-bulkhead elevation of 110 feet and a shoreline walking elevation of approximately 108 feet. Project susceptibility to flood hazards and project-related effects on potential flood flows will be addressed in the EIR.

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| h) <i>Place within a 100-year flood hazard area structures which would impede or redirect flood flows?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Same as VIII.c and VIII.g above.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
i) <i>Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Same as VIII.g above.

j) <i>Inundation by seiche, tsunami, or mudflow?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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The project site is relatively level. The confluence of Redwood Creek and San Francisco Bay is approximately two miles northeast of the project site; the location is not susceptible to inundation by seiche, tsunami, or mudflow.

Mitigation. Mitigation measures that may be identified in the project EIR to reduce any identified potentials for adverse groundwater, drainage, flooding, or water quality impacts may include, among others: (1) compliance with applicable Redwood City General Plan policies; (2) compliance with Bay Area Stormwater Management Agencies Association (BASMAA) regulations; (3) implementation of conventional runoff control strategies ("best management practices," etc.); (4) compliance with existing state and federal flood protection requirements for flood-prone areas; (5) compliance with area-specific flood hazard mitigation requirements (floodplain management regulations, minimum design flood elevations, etc.); (6) compliance with all applicable Regional Water Quality Control Board and San Mateo Countywide Stormwater Pollution Prevention Program requirements, guidelines, provisions, and restrictions (e.g., grading and erosion control regulations, National Pollution Discharge Elimination System runoff permits, San Mateo Countywide Stormwater Pollution Prevention Program requirements and guidelines, and specific restrictions on the handling, application, and disposal of herbicides, pesticides, and fertilizers, etc.); and (7) application of City-required and other common grading and erosion control techniques.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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IX. LAND USE AND PLANNING. *Would the project:*

- a) *Physically divide an established community?*

The project site is located along the easternmost edge of Redwood City. Existing marina uses at the site would be replaced, reconfigured, or moved to allow for new development at the site. The recently completed "Villas at Bair Island" residential project that separates the two parts of the project site and the existing live-aboard boat community along the southern edge of Redwood Creek immediately south of the site would front onto the proposed development. The project-related land use changes could potentially divide the established marina communities. This issue will be addressed in the EIR.

- b) *Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the Redwood City General Plan, San Mateo County Comprehensive Airport Land Use Plan, and Redwood City Zoning Ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*

The project applicant will require a General Plan Amendment, Zoning Text and Zoning Map Amendments, Planned Development Permit approval, a Development Agreement or a Precise Plan, and a Design Review (Architectural) Permit to allow development of approximately 1,930 housing units and 312,000 square feet of commercial (office and retail) uses. Currently, the Redwood City General Plan designates the southern portion of the site as "Commercial/Office (Office Park Oriented Uses)" and the northern portion of the site as "Mixed Use (Commercial and Residential)." Correspondingly, the project site is zoned CG ("General Commercial") and CG-R ("General Commercial-Residential Combining") zoning districts, respectively. With adoption of the proposed General Plan Amendment, Zoning Text and Zoning Map Amendments, Planned Development Permit approval, a Development Agreement or a Precise Plan, and a Design Review (Architectural) Permit,

	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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the City's current allowable maximum residential density of 20 to 40 dwelling units per acre would be increased to approximately 61.4 dwelling units per acre.

Project development could result in the following land use impacts: (1) overall indirect impacts in changing and intensifying land use and in changing the land use character of the project site; (2) site-specific land use compatibility impacts (e.g., between the proposed project and the existing "Villas at Bair Island" development and existing live-aboard boat community along the southern edge of Redwood Creek, as well as between the proposed project internal land uses); and (3) conflicts with the noise and land use compatibility guidelines for San Carlos Airport set forth in the County's Comprehensive Airport Land Use Plan.

The land use changes and potential direct and indirect land use impacts identified above could also have associated impacts on water quality and drainage, biological resources, traffic and circulation, regional air quality, noise, and utilities/public services. Unless mitigated, these various impacts could possibly conflict with related policies of C/CAG (in its designated role as the Airport Land Use Commission for San Mateo County), BCDC, Regional Water Quality Control Board, State Lands Commission, State Department of Fish and Game, Caltrans, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, National Marine Fisheries Service, State Department of Boating and Waterways, U.S. Environmental Protection Agency, and/or utility/public service master plans. Compliance with all applicable plans, as well as proposed land use designation changes, will be addressed in the EIR.

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| c) <i>Conflict with any applicable habitat conservation plan or natural community conservation plan?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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The project site is separated by Smith Slough from the Bair Island National Wildlife Refuge and the San Francisco Bay National Wildlife Refuge, both of which are operated and primarily owned by the United States

	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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Fish and Wildlife Service (USFWS).
Proposed development on the project site would need to be consistent with any related and applicable specifications or guidelines of the USFWS and/or California Department of Fish and Game.

Mitigation. Mitigation measures included in the EIR to reduce potential land use and planning impacts may include, among others, project changes, additions or refinements to achieve consistency with applicable land use plans, policies and regulations, and to provide adequate transition and/or buffering between potentially incompatible land uses including adjacent and nearby residential, marina, and wildlife refuge areas.

X. MINERAL RESOURCES. *Would the project:*

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| a) <i>Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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A construction materials distributor operates east of the site across Redwood Creek; however, implementation of the proposed project would not affect access to the operation. Because the project site is located on landfill atop Bay mud, no mineral resources are expected to exist on the project site. Therefore, implementation of the project would not result in the loss of a known mineral resource.

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| b) <i>Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
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Same as X.a above.

XI. NOISE. *Would the project result in:*

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| a) <i>Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standard of other agencies?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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Project residential and commercial uses may be exposed to intrusion by existing and/or future San Carlos Airport aviation traffic noise

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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and/or U.S. 101 traffic noise at levels which exceed local or state noise/land use compatibility standards.

Project-generated increases in short-term construction activity and/or long-term operational noise, and vehicular traffic noise on the project site and along roadways serving the project site could also exceed local or state standards. These issues will be addressed in the EIR.

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| b) <i>Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
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The proposed project would not include uses or activities that are expected to produce excessive groundborne vibration or noise levels. There are no known existing sources of excessive groundborne noise in the project vicinity. Anticipated construction activities, including pile-driving and dredging, could produce temporary groundborne vibration or noise; this issue will be addressed in the EIR.

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|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| c) <i>A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

Same as XI.a above.

- | | | | | |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| d) <i>A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

Anticipated project activities--including earthmoving, dredging, and building and infrastructure construction--could result in significant temporary increases in existing noise levels requiring mitigation (see XI.a above). This issue will be addressed in the EIR.

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| e) <i>For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

	<i>Potentially Significant Impact</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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San Carlos Airport is approximately 1.6 miles northwest of the project site. Project-related development may result in the exposure of additional residents and workers to aircraft-related noise. This issue will be addressed in the EIR.

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|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| f) <i>For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

No private airstrip is located on the project site or in the surrounding vicinity.

Mitigation. Mitigations to be considered in the project EIR to reduce certain potential noise impacts may include, among others, noise buffering, architectural noise abatement measures, and construction-period noise control measures, to ensure compliance with applicable General Plan and San Mateo County Comprehensive Airport Land Use Plan noise/land use compatibility standards and other policies.

XII. POPULATION AND HOUSING. *Would the project:*

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| a) <i>Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

The proposed project would involve development of approximately 1,930 housing units and 312,000 square feet of commercial/retail space. The direct effects of this development on local population and housing characteristics, and associated indirect environmental implications (land use planning, geologic, water, air quality, transportation/circulation, biological resources, etc.), will be evaluated in corresponding subsections of the EIR.

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| b) <i>Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

The recently completed "Villas at Bair Island" apartment complex adjacent to the site, and

<i>Potentially Significant Impact</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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live-aboard boats on the southern bank of Redwood Creek, are the only existing housing developments in the project vicinity. These residential uses would not be displaced by project development. A few scattered mobile homes located in parking lots on the project site would be displaced by project development; this would not constitute displacement of "substantial numbers of existing housing." Loss of these residential uses, however, will be addressed in the EIR.

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| c) <i>Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

Same as XII.b above.

Mitigation. Mitigation measures that may be included in the EIR to reduce identified potential population and housing impacts may include, among others, compliance with applicable affordable housing requirements.

XIII. PUBLIC SERVICES.

Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

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|----------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| a) <i>Fire protection?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|----------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|

The proposed development and associated creation of 1,930 new residential units plus 300,000 square feet of office and 12,000 square feet of retail uses would generate substantial additional demands for fire protection, emergency medical, police protection, schools, parks, recreation, and other public facilities and services. The 18-to-24-story tower structures may require specialized fire protection design provisions, training, and/or equipment. These impacts could be significant and would require mitigation.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
b) <i>Police protection?</i> Same as XIII.a above.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) <i>Schools?</i> Same as XIII.a above.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) <i>Parks?</i> Same as XIII.a above.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) <i>Other public facilities?</i> Same as XIII.a above.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Mitigation. Mitigation measures that may be included in the EIR to reduce potential public services impacts include, among others, compliance with related General Plan policies; design changes, additions or refinements to ensure adequate fire protection, emergency access, safety and security; provision of other specific fire protection, police service, or other public facilities improvements; payment of any City-adopted development impact fees and payment of state law-mandated school impact fees.

XIV. RECREATION.

a) <i>Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Project-related residential and commercial development would increase demands for local and regional park and recreational facilities. The project proposes to include a combination of public (landscape and hardscape) and private (water with private boat slips and landscaped podium roof gardens) parkland and open space, amounting to approximately 15.94 acres public and 8.87 acres of private space. (It should be noted that the private open space has not been included in the acreage for the residential density calculations at the site.) In addition, the project applicant is currently negotiating with the USFWS to acquire

<i>Potentially Significant Impact</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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development rights for approximately seven acres within the PG&E tower right-of-way in order to develop this undeveloped corridor into improved parkland (the USFWS recently acquired rights to this acreage from the Peninsula Open Space Trust). The EIR will address these issues and determine the adequacy of proposed parkland and open space at the site.

A planned extension of the San Francisco Bay Trail would pass along the edge of the site. The proposed Bay Trail extension would start north of the site at the terminus of the existing Bay Trail segment in San Carlos near Mariner Park, pass around San Carlos Airport along the levee adjacent to U.S. 101, skirting the edge of the Bair Island National Wildlife Refuge along the southwestern edge of the project site, continue along East Bayshore Road, and connect with the existing Bay Trail segment in the San Francisco Bay National Wildlife Refuge in Menlo Park. The proposed project would need to allow for this segment of the Bay Trail to pass through the site and would be required to comply with any requirements of the Association of Bay Area Governments (ABAG) regarding this Bay Trail link.

The project-related increases in local and regional park demands, and the effectiveness of project-provided open space and recreation provisions in meeting some of this demand, as well as project relationships to regional trail needs and plans, will be addressed in the EIR.

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|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| b) <i>Does the project include recreational facilities, or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

Same as XIV.a above.

Mitigation. Mitigations that may be included in the EIR to reduce potential local and/or regional park and recreation impacts include, among others, compliance with applicable General Plan and ABAG policies, and design and/or funding measures.

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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XV. TRANSPORTATION/TRAFFIC. *Would the project:*

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|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| a) <i>Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

The proposed addition of 1,930 residential units and 312,000 square feet of office and retail space, in combination with other anticipated development in the area, will generate substantial additional daily and peak hour trips. Many of these additional trips will be in the form of external vehicular trips on street systems serving the project site and vicinity, resulting in potentially significant project-specific and cumulative level of service impacts on local and regional roadway links and intersections. The mixed use nature of the project may also have some trip internalization ("smart growth") benefits. The EIR will apply adopted local (Redwood City) and regional (C/CAG) criteria in projecting, identifying, and addressing these impacts and associated mitigation needs.

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|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| b) <i>Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

Same as XV.a above.

- | | | | | |
|--|--------------------------|-------------------------------------|--------------------------|--------------------------|
| c) <i>Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?</i> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|-------------------------------------|--------------------------|--------------------------|

San Carlos Airport is approximately 1.6 miles northwest of the project site. The project does not propose any action that would result in a change in air traffic patterns, a substantial increase in air traffic levels, or a change in the location of airport operations. Any development within the San Carlos Airport Planning Area would be subject to the height, lighting, safety/clear zone, and other

requirements of the San Mateo County Comprehensive Airport Land Use Plan.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
d) <i>Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proposed roadway modifications, including new internal roadways, may have potentially hazardous design features that will need to be evaluated in the EIR.				
e) <i>Result in inadequate emergency access?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The proposed project will be subject to existing fire and other emergency access requirements as a condition of approval. The project's proposed circulation system will be evaluated for adequate emergency access in accordance with Redwood City Fire Department and public safety review requirements.				
f) <i>Result in inadequate parking capacity?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proposed intensification of land uses on the project site would generate an increased demand for parking. The project's proposed parking program and supply will be evaluated in the EIR.				
g) <i>Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The project's circulation features and transit provisions may or may not be in compliance with adopted City policies and standards in support of alternative transportation modes. This issue will be addressed in the EIR.				
<u>Mitigation.</u> Mitigation measures that may be included in the EIR to reduce or avoid identified potential transportation impacts include, among others, compliance with applicable General Plan policies, specific roadway system improvement measures (including the potential extension of Blomquist Street), specific transportation demand management (TDM) measures (special provisions for transit, pedestrians,				

<i>Potentially Significant Impact</i>	<i>Potentially Significant Unless Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
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bicycles, etc.) to reduce peak period vehicular trips, specific provisions for adequate construction-period access and for adequate permanent emergency access, specific approaches toward providing adequate parking, and other specific transit, pedestrian, and bicycle provision measures.

XVI. UTILITIES AND SERVICE SYSTEMS. *Would the project:*

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| a) <i>Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

All project-related development would be subject to applicable (RWQCB) wastewater treatment requirements. The proposed project would result in an increased rate of residential and commercial activity and associated water and wastewater system demands. The project would increase local demands for water and sewer service. This issue, including water source, treatment and delivery system adequacy, and sewer collection system and treatment capacity, will be addressed in the EIR.

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|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| b) <i>Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

Same as XVI.a above.

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|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| c) <i>Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

Project development would increase the amount of impervious surface, resulting in a potential increase in the rate and volume of stormwater runoff from the project site. A new local stormwater drainage system is anticipated as part of the project. Associated impacts and mitigation needs will be addressed in the EIR.

- | | | | | |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| d) <i>Have sufficient water supplies available to serve the project from existing entitlements</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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and resources, or are new or expanded entitlements needed?

Same as XVI.a above.

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|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| e) <i>Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|

Same as XVI.a above.

- | | | | | |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| f) <i>Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

Intensification of uses on the project site would increase the amount of solid waste generated, potentially affecting existing solid waste disposal service and landfill capacity. This issue will be addressed in the EIR.

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|--|--------------------------|--------------------------|-------------------------------------|--------------------------|
| g) <i>Comply with federal, state, and local statutes and regulations related to solid waste?</i> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
|--|--------------------------|--------------------------|-------------------------------------|--------------------------|

As a matter of City policy, all anticipated project-related activity (e.g., construction, dredging, project operation) will be required to comply with federal, state, and local statutes and regulations related to solid waste (e.g., recycling requirements).

Mitigation. Mitigation measures that may be included in the EIR to reduce or avoid potential utilities and service system impacts include, among others, compliance with applicable General Plan policies, and the design and construction of new project-related onsite and offsite utilities and service systems coordinated with planned improvements.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE.

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|---|-------------------------------------|--------------------------|--------------------------|--------------------------|
| a) <i>Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the</i> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
|---|-------------------------------------|--------------------------|--------------------------|--------------------------|

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?

b) <i>Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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c) <i>Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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APPENDIX 21.2

**WATER SUPPLY ASSESSMENT FOR THE PROPOSED MARINA
SHORES VILLAGE PROJECT**

REPORT

To the Honorable Mayor and City Council
From the City Manager

August 26, 2002

Subject

Water Supply Assessment for the proposed Marina Shores Village Project

Recommendation

By motion, approve the Water Supply Assessment for the proposed Marina Shores Village Project pursuant to State of California Water Code § 10910(g)(1).

Background

During 2001, the California Legislature enacted two laws – SB 610 (Costa) and SB 221 (Kuehl) – each designed to achieve greater coordination during the land use planning process between water suppliers and local land use agencies when considering certain large-scale development projects.

SB 610 requires preparation of a Water Supply Assessment (WSA) for any development whose approval is subject to the California Environmental Quality Act (CEQA) and which meets the definition of “project” in Water Code Section 10913 – i.e., residential development projects of more than 500 dwelling units or other types of developments (e.g., hotels and motels, commercial buildings, industrial parks, etc.) using a comparable amount of water. Marina Shores Village is the first project of this scale and this is the first WSA prepared by the Public Works Services staff.

The WSA must describe the proposed project’s water demand over a 20-year period, identify the sources of water available to meet that demand and include an assessment of whether or not those water supplies are, or will be, sufficient to meet the demand for water associated with the proposed project, in addition to the demand of existing customers and other planned future development.

If the conclusion is that water supplies are or will be insufficient, then the WSA is to describe plans (if any) for acquiring additional water supplies, and the measures that are being undertaken to acquire and develop those supplies.

On May 9, 2002, the Redwood City Public Works Services Department received a request from the Planning and Redevelopment Division of the Community Development Services Department to produce a WSA for the proposed Marina Shores Village Project. On July 22, 2002, the Public Works Services Department requested a 30-day extension of time pursuant to the State of California Water Code to complete the WSA, which was granted. The amended deadline for completion and approval of the WSA is September 6, 2002.

The necessity to prepare this WSA comes at a time when the City is taking other actions regarding water supply – which was identified by the City Council as one of their top priorities for 2002-2004:

- The City recently commissioned updated projections of water demand to 2020. The *Redwood City Water Use Forecast 2000 to 2020* (June 20, 2002) was prepared by John Whitcomb, Ph.D. In turn, the Water Use Forecast projections were included in the City's Urban Water Management Plan, Revision No. 1 by amendment through City Council Resolution No. 14459 adopted on July 15, 2002. The projections show a 13% increase in Redwood City water demand by 2020 compared to 2000, including new demand by Marina Shores Village and other planned development.
- Concurrently, the City has been planning for a recycled water project. The Planning Commission recently certified a Mitigated Negative Declaration and the final report of the *Water Recycling Feasibility Study for Redwood City*, by Kennedy/Jenks Consultants (August 7, 2002) is on the City Council meeting agenda for August 26, 2002.

This WSA determines that the City of Redwood City does not currently have sufficient water supply to meet the projected water demands of the proposed Marina Shores Village Project together with those of its existing customers as well as the demands of other planned development. However, if the City implements tentative plans for additional supplies in the near future, there should be sufficient water supply to meet projected future demands. As this WSA points out, Redwood City's supply reliability now and into the future is a key factor in this determination.

Once the WSA has been prepared, it must be approved by the City Council. It should be noted that the City Council's action in approving a WSA for a proposed development project is not an approval or disapproval of the project itself, in part or in whole. Nor is consideration of this WSA a discussion on the merits of, or objections to, the proposed development. As of this date, the draft EIR for the proposed development has yet to be released for public comment, so this determination is very early in the sequence of development review steps. Thus the Council's action should be narrow in its focus on the sufficiency of water supply.

The WSA, including the information regarding plans for acquiring additional supplies, shall be included in the environmental document prepared for the project. In the case of Marina Shores Village, it will be included in the CEQA Draft Environmental Impact Report (EIR), currently in preparation.

At the subsequent stage of project approval/disapproval, the City "shall determine based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses." If the City determines at that point that water supplies will not be sufficient, it must include that determination in its findings for the project.

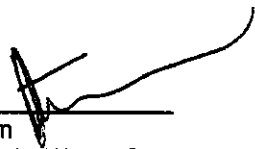
As other large scale projects come forward, Water Supply Assessments will need to be prepared for them as well. And, for large residential projects such as Marina Shores Village, a subsequent water supply analysis will need to be done in connection with the City's approval of a tentative map or development agreement, as required by SB 221 – the other law that also went into effect this year. These documents will describe the situation at the time they are prepared, reflecting progress on City plans for development of recycled water and implementation of conservation programs.

Alternative

The City Council is required to approve and adopt a WSA. The consequences of postponing or canceling action are unknown.

Fiscal Impact

SB 221 and SB 610 do not provide for reimbursement from the State for the costs incurred by cities, counties, and water suppliers to comply with the new laws. Therefore, SB 221 and SB 610 will financially impact cities, counties, and water suppliers. Staff estimates the cost of producing this first WSA is between \$10,000 and \$20,000, borne by the Water Enterprise Fund.



Peter Ingram
Director, Public Works Services



Ed Everett
City Manager

Attachment

Water Supply Assessment (WSA) for the proposed Marina Shores Village Project with attachments

WATER SUPPLY ASSESSMENT
For The Proposed
Marina Shores Village Project

August 26, 2002

**Prepared by the
CITY OF REDWOOD CITY
PUBLIC WORKS SERVICES DEPARTMENT**

**CITY OF REDWOOD CITY
PUBLIC WORKS SERVICES DEPARTMENT**

WATER SUPPLY ASSESSMENT
For The Proposed
Marina Shores Village Project
August 26, 2002

1. OVERVIEW

On May 9, 2002, the Redwood City Public Works Services Department received a request from the Planning and Redevelopment Division of the Community Development Services Department to produce a Water Supply Assessment (WSA) for the proposed Marina Shores Village Project. On July 22, 2002, the Public Works Services Department requested a 30-day extension of time pursuant to the State of California Water Code to complete the WSA, which was granted. The amended deadline for completion and approval of the WSA is September 6, 2002.

This WSA determines that the City of Redwood City (City) does not currently have sufficient water supply to meet the projected water demands of the proposed Marina Shores Village Project together with those of its existing customers as well as the demands of other planned development. However, if the City implements tentative plans for additional supplies through recycled water in the near future, there should be sufficient water supply to meet projected future demands. As this WSA points out, Redwood City's supply reliability now and into the future is a key factor in this determination.

2. BACKGROUND

State Laws

During 2001, the California Legislature enacted two laws – SB 610 (Costa) and SB 221 (Kuehl) – each designed to achieve greater coordination during the land use planning process between water suppliers and local land use agencies when considering certain large-scale development projects.

SB 610 requires preparation of a WSA for any development whose approval is subject to the California Environmental Quality Act (CEQA) and which meets the definition of "project" in Water Code Section 10913 – i.e., residential development projects of more than 500 dwelling units or other types of developments (e.g., hotels and motels, commercial buildings, industrial parks, etc.) using a comparable amount of water.

The WSA must describe the proposed project's water demand over a 20-year period, identify the sources of water available to meet that demand and include an assessment of whether or not those water supplies are, or will be, sufficient to meet the demand for water associated with the proposed project, in addition to the demand of existing customers and other planned future development.

If the conclusion is that water supplies are or will be insufficient, then the WSA is to describe plans (if any) for acquiring additional water supplies, and the measures that are being undertaken to acquire and develop those supplies.

SB 221 is similar in many respects to SB 610. However, it applies only to residential projects of 500 units or more and requires the land use planning agency to include as a condition of approval of a tentative map, parcel map or development agreement a requirement that "sufficient water supply" be available. Proof of a sufficient water supply must be based on a written verification from the public water system that will serve the development.

Thus, the WSA required by SB 610 is to be prepared sufficiently early in the development review process that it can be incorporated in the CEQA evaluation and documentation of the project. In the case of a project which will require an Environmental Impact Report (EIR), the WSA should be available before the Draft EIR is released for public comment. SB 221, by contrast, becomes operative at the point that the city is considering approval of a tentative subdivision map.

The City's Roles and Responsibilities Under SB 610

Both SB 610 and SB 221 are drafted on the assumption that the land use planning agency (i.e., the city or county) is not the water supplier for the proposed project. They thus impose distinct duties on the city/county and on the water supplier – which is assumed to be an entirely separate agency.

In the case of Redwood City, of course, this assumption is incorrect since the City performs both roles. However, the statute's terminology, while awkward, can be adapted to our situation relatively easily.

The "City," as that term is used in the statute, means the components of city government that have responsibilities for the land use decision process. At the staff level, this is the Community Development Services Department, Planning and Redevelopment Division.

The "water supplier," for SB 610 purposes, can be understood to mean the Public Works Services Department, which is responsible for the City's Water Enterprise Fund.

The "governing body," as used in SB 610, refers to the City Council, which is required to approve the WSA at a regular or special meeting.

Use of the WSA

The WSA, including the information regarding plans for acquiring additional supplies, shall be included in the environmental document prepared for the project. In the case of Marina Shores Village, it will be included in the Draft EIR, currently in preparation.

At the stage of project approval/disapproval, the City "shall determine based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses." If the City determines at that point that water supplies will not be sufficient, it must include that determination in its findings for the project.

Urban Water Management Plan (UWMP)

The City of Redwood City has adopted an Urban Water Management Plan (UWMP) pursuant to the State of California 1984 Urban Water Management Planning Act. The UWMP was last amended via Resolution No. 14459 of the City Council on July 15, 2002, and duly forwarded to the State of California Department of Water Resources.

Project Description

The developer of the proposed Marina Shores Village Project, Glenborough-Pauls LLC, conveyed their project description in a letter dated 4/17/2002 to Tom Passanisi, principal planner in the Planning and Redevelopment Division of the Community Services Department, including their original indications of estimated water demand (Attachment 'A'). Also attached is *Table 1.1, Project Summary Data, Administrative Draft EIR* dated June 19, 2002, prepared by Wagstaff and Associates (Attachment 'B').

3. THE MARINA SHORES VILLAGE PROJECT AND PROJECTED WATER DEMAND

The Marina Shores Village Project is a planned development located at Bair Island Road/Ucelli Boulevard east of State Highway 101, or the Bayshore Freeway. It is to consist of approximately 1,930 residential condominium units, 300,000 square feet of office space, and 12,000 square feet of convenience retail and restaurant space plus support facilities including parking, public open space, pedestrian plazas and parks, and private recreational space. (See Attachment 'B')

The future water use at the Project has been estimated by the developer, Glenborough-Pauls, LLC, to be 407 acre feet per year (AF/Y) or 363,030 gallons per day, per Attachment 'A'.

The demand estimated for this project and other planned development was included in the *Redwood City Water Use Forecast 2000 to 2020* (June 20, 2002) prepared by John Whitcomb, Ph.D. (Attachment 'C'). In turn, the Water Use Forecast projections were included in the City's UWMP, Revision No. 1 by amendment through City Council Resolution No. 14459 adopted on July 15, 2002.

4. WATER SUPPLY ANALYSIS

The City of Redwood City receives 100% of its potable water supply from the Hetch Hetchy regional water system operated for the City and County of San Francisco by the San Francisco Public Utilities Commission (SFPUC). Existing water supply entitlements, rights and/or water service contracts relevant to this water supply are:

- 1984 Settlement Agreement and Master Water Sales Contract between Suburban Purchasers and the City and County of San Francisco
- Water Supply Contract between City and County of San Francisco and the City of Redwood City (August 1984)

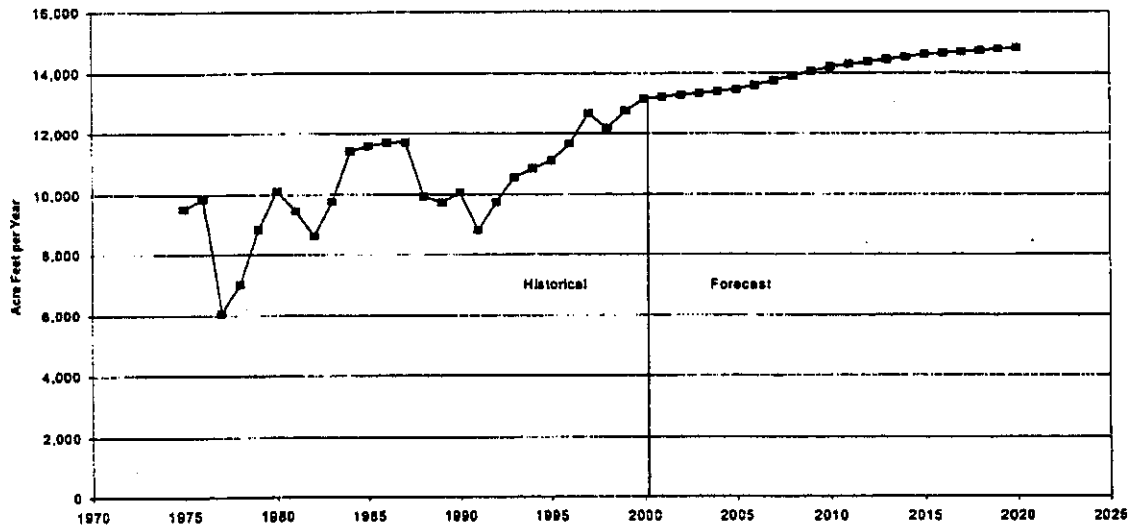
Additionally, the Joint Powers Authority agreement establishing the South Bayside System Authority (SBSA) wastewater treatment works provides that SBSA may produce and sell treated wastewater effluent for potential reuse. SBSA has adopted a policy "*To provide technical and institutional leadership on all subjects related to recycled water and to pursue water recycling in conjunction with the local water suppliers*". SBSA and Redwood City are preparing a recycled water agreement that will establish recycled water capacity rights and cost reimbursement conditions.

Necessary regulatory approvals to deliver the SFPUC water supply are:

- State of Cal. Dept. of Health Services Water Supply Permit #4110022 and Engineer's Report

The quantity of water received by Redwood City in prior years from existing Hetch Hetchy water supply entitlements is shown in Figure 1 (in AF/Y). This figure is reproduced from the Redwood City UWMP, and includes projected future water use.

Figure 1. Historic and Future Water Use



5. GROUND WATER ANALYSIS

Redwood City does not use groundwater. There are no plans to use groundwater in the future.

6. WATER SUPPLY SUFFICIENCY

Determination: Redwood City does not have sufficient water supply to meet the projected water demands of new development projects. In fact, Redwood City is actively pursuing expansion of its water supply for existing customers.

Redwood City's current water supply reliability is shown in Figure 2. This figure is derived from a technical memorandum, *Water Supply Reliability* dated August 15, 2002, by John Whitcomb, PhD (Attachment 'D'). When the SFPUC declares a water shortage, Redwood City will be required to make relatively large water use cutbacks as specified in the Interim Water Shortage Allocation Plan adopted by the SFPUC and all suburban purchasers (including Redwood City) in 2001, pursuant to section 7.03(a) of the Master Water Sales Contract.

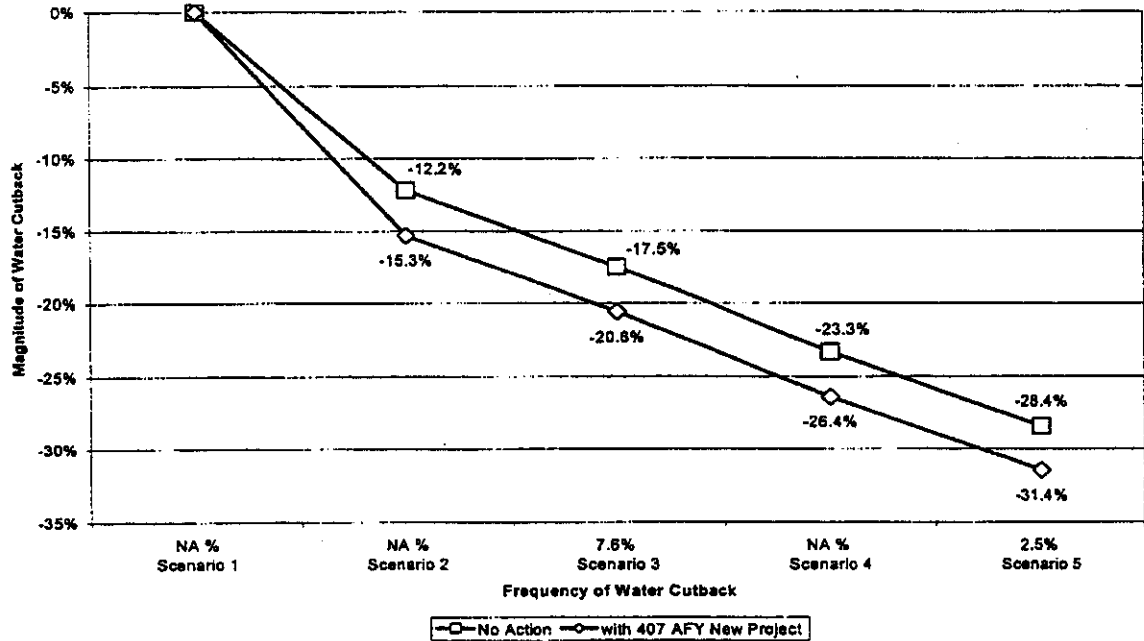
Figure 2 illustrates five water cutback scenarios:

1. Most of the time, the SFPUC will not declare a water shortage.
2. Sometimes the SFPUC will declare a 5% system-wide shortage resulting in a 12.2% Redwood City cutback—the probability of this declaration was not identified by SFPUC.
3. With a probability of 7.6%, the SFPUC will declare a 10% system-wide shortage resulting in a 17.5% Redwood City cutback (about one year in 12).
4. If the SFPUC declares a 15% system-wide shortage, Redwood City will get a 23.3% cutback—the probability of this declaration was not identified by SFPUC.
5. With a probability of 2.5%, the SFPUC will declare a 20% system-wide shortage resulting in a 28.4% Redwood City cutback (about one year in 40).

The frequency and magnitude of these cutbacks is increasing over time.

The City finds that the frequency and magnitude of these cutbacks for existing water users is unacceptable. Figure 2 also shows the degradation in reliability if the 407 AF/Y of new water demands were added as a result of the Marina Shores Village project. The degradation makes the shortage cutbacks about 3% more for existing users than without the project.

Figure 2. Water Supply Reliability



7. INSUFFICIENT WATER SUPPLY

SB 610 provides that "if, as a result of its assessment, the public water system concludes that its water supplies are, or will be, insufficient, the public water system shall provide to the city or county its plans for acquiring additional water supplies, setting forth the measures that are being undertaken to acquire and develop those supplies." Those plans may include information concerning the following:

- (1) The estimated total costs, and the proposed methods of financing the costs, associated with acquiring the additional water supplies.
- (2) All federal, state and local permits, approvals or entitlements that are anticipated to be required in order to acquire and develop the additional water supplies.
- (3) . . . the estimated time frames within which the water system expects to be able to acquire additional water supplies."

(Water Code Section 10911.)

The City has developed tentative plans for a recycled water treatment, storage, pumping and distribution system that will serve high quality water to existing and future water users for landscape irrigation and various industrial uses. This system provides a means of meeting water demands that would otherwise have to be met from potable water sources. The recycled

water system is described in two engineering feasibility reports previously reviewed by the City Council:

- *Water Recycling Feasibility Study for the Redwood Shores Area*, by Kennedy Jenks Consultants, January 22, 2002.
- *Water Recycling Feasibility Study for Redwood City*, by Kennedy Jenks Consultants, August 7, 2002.

Attachment 'E' includes excerpts from the executive summary of the August 7, 2002 final report, presenting the consultant's recommended project, estimated project costs, implementation strategy and schedule for implementation. The recommended project would, at full utilization, deliver up to 1,995 AF/Y, thereby reducing demand on the San Francisco regional water system.

Permits, entitlements and approvals required in order to acquire/develop additional supplies via a recycled water project include:

- Regional Water Quality Control Board approval of Water Reuse Program Technical Report under General Order 96-011. The SBSA has secured approval.
- California Environmental Quality Act (CEQA) clearance. The Redwood City Planning Commission certified the Mitigated Negative Declaration on August 6, 2002.
- Contribution Agreement No. 4-1933-C, entered into on June 6, 2002, by and between the City of Redwood City and the California Department of Transportation (Caltrans). The agreement establishes each party's responsibilities for the construction of a 24-inch recycled water transmission line within the Highway 101 right-of-way.
- City Council approval of project. Consideration of approval of "Alternative D" project (see Attachment 'E') is tentatively scheduled for October 7, 2002.
- State of California Department of Health Services Title 22 approval of Engineer's Report for operation of a recycled water distribution system. Preliminary work on this task is now underway.

In addition to the recycled water project, the Public Works Services Department will be developing additional water conservation measures ("best management practices" or "BMP's") for consideration by the City Council between October 2002 and April 2003. These will be presented in the context of amendments to the City's Urban Water Management Plan. Conservation has been identified as:

- A way to increase supply reliability for existing customers
- A method for accelerating "passive" conservation projections to "active" – i.e.: forcing more rapid replacement of inefficient water fixtures and appliances

Other possible sources of water supply which will be investigated include:

- Transfers of water entitlements and/or banked water from other agencies that are also members of the Bay Area Water Users Association (BAWUA). BAWUA is comprised of the 28 cities, water districts and other utilities that purchase water from San Francisco. The Interim Water Shortage Allocation Plan (IWSAP) adopted by all BAWUA agencies and SFPUC last year provides for voluntary transfers of water among BAWUA agencies during periods when mandatory rationing is in effect on the San Francisco regional water system. Some BAWUA agencies have the capacity to draw more heavily on local groundwater during dry years and thus may be willing to agree to transfer some portion of their San Francisco entitlement to other BAWUA agencies willing to pay for this back up supply. This is a possible source of relief from rationing at levels more severe than those required in neighboring communities. Initial inquiries by the City of other agencies has not produced any affirmative responses. It is not possible to rely on this potential source unless and until contracts are signed with one or more other BAWUA agencies.

- Securing water from willing sellers outside the BAWUA service area is theoretically possible. State laws enacted in the 1980s allow for “wheeling” of water from willing sellers to willing buyers through transmission systems owned by third parties – such as the SFPUC’s San Joaquin pipelines. This is a more complex process and one which would require not only a contract with a water supplier (such as an irrigation agency), but also approval by the SFPUC.

Finally, the SFPUC has adopted a Water Supply Master Plan (2000) and a Capital Improvement Program (2002) which, if implemented successfully, may increase SFPUC’s ability to meet demands of its wholesale water customers such as Redwood City more reliably, and possibly expand supply to meet their projected future demands. The CIP is also intended to strengthen the San Francisco regional water supply system against catastrophic failure during a severe earthquake. The cost of implementing the Water Supply Master Plan and the CIP is high and there are significant uncertainties about the schedule on which the work can be accomplished. This WSA does not assume that Redwood City can expect to receive increased water deliveries from San Francisco, on a reliable basis, during the next 10-20 years.

8. REFERENCES

- City of Redwood City Urban Water Management Plan (UWMP), Revision No. 1, July 15, 2002
- *Water Supply & Development, A User’s Guide to California Statutes including SB 221 (Kuehl) & SB 610 (Costa)*. Association of California water Agencies, Copyright 2002
- 1984 Master Sales Agreement between Suburban Purchasers and the City and County of San Francisco, esp. sections 7.02 and 7.03
- Water Supply Contract between City and County of San Francisco and the City of Redwood City
- State of Cal. Dept. of Health Services Water Supply Permit #4110022 and Engineer’s Report
- *Water Recycling Feasibility Study for the Redwood Shores Area*, by Kennedy/Jenks Consultants, January 22, 2002
- *Water Recycling Feasibility Study for Redwood City*, by Kennedy/Jenks Consultants, August 7, 2002
- Minutes, South Bayside System Authority Commission meeting of February 21, 1996; “Motion approval of SBSA policy statement on recycled water”.
- Minutes, South Bayside System Authority Commission meeting of November 17, 1999; “Resolution approving and authorizing implementation of the First Step Recycled Water Project”.

9. ATTACHMENTS

- A. Glenborough-Pauls, LLC project description in their 4/17/2002 letter to Tom Passanisi
- B. *Table 1.1, Project Summary Data, Administrative Draft EIR* dated June 19, 2002, prepared by Wagstaff and Associates
- C. June 20, 2002 final report, *Redwood City Water Use Forecast 2000 to 2020*, by John Whitcomb, PhD
- D. Technical Memorandum, *Water Supply Reliability* dated August 12, 2002, by John Whitcomb, PhD.
- E. *Water Recycling Feasibility Study for Redwood City*, by Kennedy/Jenks Consultants, August 7, 2002, Executive Summary, Sections ES.1 through ES.5, Figure ES-1, Table ES-1, and Table ES-2.

Glenborough-Pauls, LLC

April 17, 2002

Mr. Tom Passanisi
City of Redwood City
1017 Middlefield Road
Redwood City, CA 94064

Re: Response to - Marina Shores Village Project EIR, Request for Additional Data
from Project Applicant

Dear Tom:

It is our understanding that the attached information completes our response to the March 6, 2002 request for additional data for the Marina Shores Village EIR from Wagstaff and Associates. We also understand that it completes our required responses to those ascertained from the package of correspondence between the Redwood City planning staff and the engineering department with a cover letter dated March 13, 2002.

Enclosed are the water and sewer demand calculations for the proposed project as well as a comparison to the existing uses. As you can see, our proposed plan is a very water efficient development. The vast majority of water use is attributable to the residents and their water use inside the homes, as would be the case for any residential development. Estimated water required for lawn and landscaping is approximately 5% of all water use.

We have also provided additional information that we feel is extremely relevant. An attached Table B summarizes this additional information.


- We believe that the 2.25 person per home standard (which is their lowest standard) required by Redwood City is significantly higher than what our project will ultimately house. As can be illustrated by the high-rise traffic count standard of approximately .38 peak hour trips per resident, our resident profile is anticipated to be older, without children. We anticipate our actual resident count in the 1.75 to 2.0 residents per home range. The resulting water demand at a 2.0 resident count is 42,460 GPD lower, resulting in a total of 416,869 GPD gross and 383,030 GPD net of the existing uses.
- In addition, this information does not include the boats and the 155 live-aboard boaters that were on-site at Peninsula Marina prior to demolishing the marina as the first stage in this development. Per our records, the actual marina water consumption was approximately 20,000 GPD. Subtracting them out of the total would result an actual anticipated net water use increase due to the development of our proposed project of approximately 363,030 GPD.

April 17, 2002
Page 2

Also, per a conversation between Scott Lee of Sandy & Babcock and Marsha Gale of Environmental Vision, the landscape plan that was provided to Ms. Gale last week is sufficient for her to use to complete her work and she does not need additional detail.

Please let me know as soon as possible if this submittal does not complete the requests for additional information. Do not hesitate to contact me with questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark P. Peppercorn", with a long horizontal flourish extending to the right.

Mark P. Peppercorn

Cc: John Wagstaff
Ray Pendro
Judy Davidoff

**MARINA SHORES VILLAGE
ESTIMATED WATER DEMAND**

Date: 4/18/02

BKF Job # 20000281

BKF file: K:\MAIN\2000\0281\EXCEL\sewagecalcs_032502

by: Nick Psychogios

NORTH PARCEL WATER DEMAND (PROPOSED)

FIRE DEMAND

	Fire Area	GPM	Duration	Gallons	FH/BLDG
Residential:	SF		hrs		
Building 1	400,850	4,000	4	960,000	4
Building 2	540,000	4,000	4	960,000	4
Building 3	892,500	4,000	4	960,000	4
Minimum Required:		4,000		960,000	

DOMESTIC DEMAND

	Type	Quantity	GPD
Residential:		Units	
	Multi-Family (2.25 Persons)	633	125,334
Landscape:		SF	
Irrigation	Lawn Area	49,091	4,024
	Planter Area	49,091	1,509
TOTAL GPD			130,867

NORTH PARCEL WATER DEMAND (EXISTING)

FIRE DEMAND

	Fire Area	GPM	Duration	Gallons	FH/BLDG
Residential:	SF		hrs		
Building 1	4,370	1,500	2	180,000	1
Commercial:					
Office	820	1,500	2	180,000	1
Storage	6,220	1,500	2	180,000	1
Restaurant:					
	13,000	1,750	2	210,000	1
Minimum Required:		1,750		210,000	

DOMESTIC DEMAND

	Type	Quantity	GPD
Residential:		Units	
	Single Family (3.4 Persons)	1	299
Commercial:		SF	
	Office	820	135
	Storage	6,220	205
Restaurant:		Seats	
(7 Days per week loading)	Large	150	4125
90 Marina Slips¹	1.5 Persons Per Boat	Persons	
		135	5940
TOTAL GPD:			10,705

SOUTH PARCEL WATER DEMAND (PROPOSED)

FIRE DEMAND

	Fire Area	GPM	Duration	Gallons	FH/BLDG
Residential:	<u>SF</u>		<u>hrs</u>		
Building 1	378,660	4,000	4	960,000	4
Building 2	395,300	4,000	4	960,000	4
Building 3	312,825	3,797	3	683,387	4
Building 4	286,850	3,680	3	662,402	4
Building 5	341,600	3,911	3	703,949	4
Building 6	329,200	3,863	3	695,403	4
Building 7	395,250	4,000	4	960,000	4
Building 8	327,350	3,856	4	925,451	4
Retail:					
	12,000	1,500	2	180,000	1
Commercial:					
Office Bldg 1	283,250	3,663	3	659,287	4
Office Bldg 2	268,025	3,586	3	645,492	4
Minimum Required:		4,000		960,000	

DOMESTIC DEMAND

	Type	Quantity	GPD
Residential:		<u>Units</u>	
	Multi-Family (2.25 Persons)	1,297	256,806
Commercial:		<u>SF</u>	
	Office	300,000	49,500
	Retail	12,000	1,980
Restaurant:		<u>Seats</u>	
	Large	100	2750
Landscape:		<u>SF</u>	
Irrigation	Lawn Area	154,605	12,673
	Planter Area	154,605	4,753
TOTAL GPD			328,462

SOUTH PARCEL WATER DEMAND (EXISTING)

FIRE DEMAND

	Fire Area	GPM	Duration	Gallons	FH/BLDG
Commercial:	SF		hrs		
Buildings 1-4	127,740	3,750	4	900,000	4
Minimum Required:		3,750		900,000	

WATER DEMAND

	Type	Quantity	GPD
Commercial:		SF	
(7 Days per Week Loading)	Office	123,540	20,384
Restaurant:		Seats	
(7 Days per week loading)	Large	100	2750
TOTAL GPD:⁸			23,134

TOTAL PROJECT DOMESTIC WATER DEMAND (GPD): 459,329

TOTAL EXISTING DOMESTIC WATER DEMAND (GPD): 33,839

NET DOMESTIC WATER DEMAND DIFFERENCE (GPD): 425,490

TOTAL PROJECT FIRE WATER DEMAND (GPM): 8,000

TOTAL EXISTING FIRE WATER DEMAND (GPM): 5,500

Notes:

- 1) Domestic Water calculated using sewage demand plus 10%.
- 2) Irrigation based on 4 ft³ of water / 1 ft² of lawn and 1.5 ft³ of water / 1 ft² of landscaping (both per year).
- 3) GPM for fire flow determined from Table A-III-A-1 (p. 1-302, 1997 UFC) using assumed Type II One-HR construction (GPM measured at 20 psi).
- 4) Assumed approved automatic sprinkler system for each building, 50% reduction in fire flow (1997 UFC Exception, p. 1-301).
- 5) Total GPM for Fire Demand assume one residential building or one commercial building on fire.
- 6) For the marina slips, water usage per person living aboard a boat is estimated to be approximately half of the usage for a person in a home. Therefore, a consumption rate of 40 gallons per day per person is used for this calculation.
- 7) Quantity is based on the assumption that 60% of the computed landscape/hardscape area is landscape and 40% is hardscape (i.e. walks, paths, etc.). Of the landscape area, 50% is assumed planter and 50% is assumed lawn.
- 8) An estimated 13,200 gallons per day is not included in this number based on 200 previously occupied marina slips.

Marina Shores Village Project EIR
Response to Request for Additional Data from Project Applicant
4/17/02

TABLE B - continued from page 4 of 4 of Estimated Water Demand from BKF Engineers

Total Project Domestic Water Demand (GPD):	459,329
Total Existing Domestic Water Demand (GPD):	<u>33,839</u>
Net Domestic Water Demand Difference (GPD):	425,490
Reduction to 2.0 occupancts per home (GPD):	<u>(42,460)</u>
Net Project Water Demand with revised resident count (GPD):	383,030
Addition of Peninsula Marina as existing use (GPD):	<u>(20,000)</u>
NET ADJUSTED DOMESTIC WATER DEMAND DIFFERENCE (GPD):	<u><u>363,030</u></u>

ATTACHMENT 'B'

Marina Shores Village Project
 City of Redwood City
 June 19, 2002

Administrative Draft EIR
 Table 1.1
 Page ii

**Table 1.1
 PROJECT SUMMARY DATA**

PROJECT NAME:	Marina Shores Village Project
SITE LOCATION:	Bair Island Road/Uccelli Boulevard, City of Redwood City
SITE AREA:	Approximately 46.45 acres, comprised of two discontinuous properties: Peninsula Marina (33.24 acres, including 14.10 acres of water area) and Pete's Harbor (13.21 acres, including 2.90 acres of water area).
EXISTING GENERAL PLAN DESIGNATION:	Peninsula Marina property: <i>Office Park Oriented Uses</i> ; Pete's Harbor property: <i>Mixed Use (Commercial and Residential)</i> .
EXISTING ZONING:	Peninsula Marina property: <i>CG--General Commercial</i> ; Pete's Harbor property: <i>CG-R--General Commercial-Residential Combining</i> .
EXISTING LAND USE:	Mix of marina, residential, and commercial uses, including approximately 90,000 square feet of office and restaurant space, a harbor master's office, a recreational vehicle repair shop, storage containers and sheds, mobile homes, surface parking, and stored motor vehicles, including inventory from off-site auto dealerships.
PROPOSED LAND USE:	Replacement of all existing improvements (except Outer Pete's Harbor marina) with a new planned development consisting of approximately 1,930 condominium residential units for sale, 300,000 square feet of office space, and 12,000 square feet of convenience retail and restaurant space, in an array of 2-, 4-, 6-, 18-, 20- and 21-story structures, most atop 2- to 3-story above-grade parking podiums, plus support facilities, including parking, public open space, pedestrian plazas and paths, and private recreational space.
DENSITY AND HEIGHT:	Peninsula Marina property: 67.13 units/acre, max. bldg. height: 260 feet; Pete's Harbor property: 54.81 units/acre, max. bldg. height: 240 feet. Commercial FAR: 0.71; overall average residential density: 62.52 units/acre.
MARINA RECONFIGURATION:	Peninsula Marina: from approx. 14.10 acres of water area and 427 slips (already vacated) to approx. 3.80 acres of water area and 50 to 60 slips; Inner Pete's Harbor: from approx. 2.90 acres of water area and 116 slips to approx. 1.66 acres of water area and 30 to 40 slips. No live-aboards.
REQUIRED APPROVALS:	<p>City: (a) certification of the final environmental impact report; (b) approval of a General Plan Amendment and either Zoning Text and Zoning Map Amendments or a Precise Plan, in order to permit residential uses on the Peninsula Marina portion of the project site and create a new high-density (up to 62.52 units/acre) residential designation; (c) approval of a Planned Development Permit and Development Agreement, or Precise Plan; (d) Design Review (Architectural) Permit approval; (e) subdivision map review and approval; (f) improvement plan review and approval; (g) grading permit approval; (h) building permit approval; and (i) various approvals for water and sewer hook-up permits.</p> <p>Other Anticipated Responsible or Trustee Agencies: (a) City/County Association of Governments of San Mateo County (C/CAG), (b) San Francisco Bay Conservation and Development Commission, (c) Regional Water Quality Control Board, (d) State Lands Commission, (e) State Department of Fish and Game, (f) Caltrans, (g) State Department of Boating and Waterways, (h) U.S. Army Corps of Engineers, (i) U.S. Fish and Wildlife Service, (j) U.S. Environmental Protection Agency, (k) National Marine Fisheries Service, (l) State Water Transportation Authority, (m) U.S. Coast Guard, and (n) Federal Aviation Administration.</p>

SOURCE: Wagstaff and Associates, 2002.

**Redwood City Water Use Forecast
2000 to 2020**

Prepared for:

Peter Ingram
Public Works Services Director
City of Redwood City
1400 Broadway
Redwood City CA 94063

Prepared by:

John Whitcomb, PhD
(800) 800-9519

June 20, 2002

Executive Summary

This project develops base water use forecasts for the City of Redwood City (RWC) for the period 2000 to 2020. The forecasts can be used for a variety of water planning activities including:

- Assessing the merits of an expanded recycled water system in Redwood Shores and subsequent proposed phases in other areas
- Updating elements of RWC's Urban Water Management Plan
- Establishing a continuing nexus between water supply planning and RWC's General Plan
- Developing base water use characteristics for potential rates and charges.

The water use forecasts are comprised of seven separate forecasts made for the following user sectors: single family, multiple family, commercial, commercial irrigation, municipal, other, and residential irrigation. The forecasts made for each of these sectors make use of forecasts of key data drivers. The data drivers are number of housing units for the residential sectors, number of employees for the commercial sectors, and population for the other sectors. These data drivers are multiplied by water use coefficients, based on historical water use correlations, to obtain the water use forecasts.

Results are summarized in Exhibits 1 and 2. Holding other factors constant, total water use is expected to increase from 13,170 acre-feet per year (AFY) in 2000 to 15,520 AFY in 2020. This is a 17.8% increase over the 20 years that translates into an annual average 0.82 percent increase. Factoring in passive water conservation from natural replacement of toilets and clothes washers with more efficient technologies decreases the 2020 forecast by 703 AFY to 14,817 AFY. This translates into a 0.59 annual average increase over the 20 years.

Exhibit 1. Base Water Use Forecast in Acre-Feet per Year (AFY)					
	Actual	Forecast Year			
Description	2000	2005	2010	2015	2020
Existing Customers	12,596	12,596	12,596	12,596	12,596
New Customers	0	513	1,386	1,962	2,328
New and Existing Customers	12,596	13,109	13,981	14,558	14,923
Unaccounted for Water	574	524	559	582	597
Total without Conservation	13,170	13,633	14,541	15,140	15,520
Total with Passive Conservation	13,170	13,467	14,191	14,590	14,817

The base water use forecasts do not factor in additional water savings that could be achieved through active water conservation programs. RWC's Urban Water Management Plan addresses potential savings from water conservation "Best Management Practices" (BMPs). The forecasts generated here are used as the base case scenario for that plan.

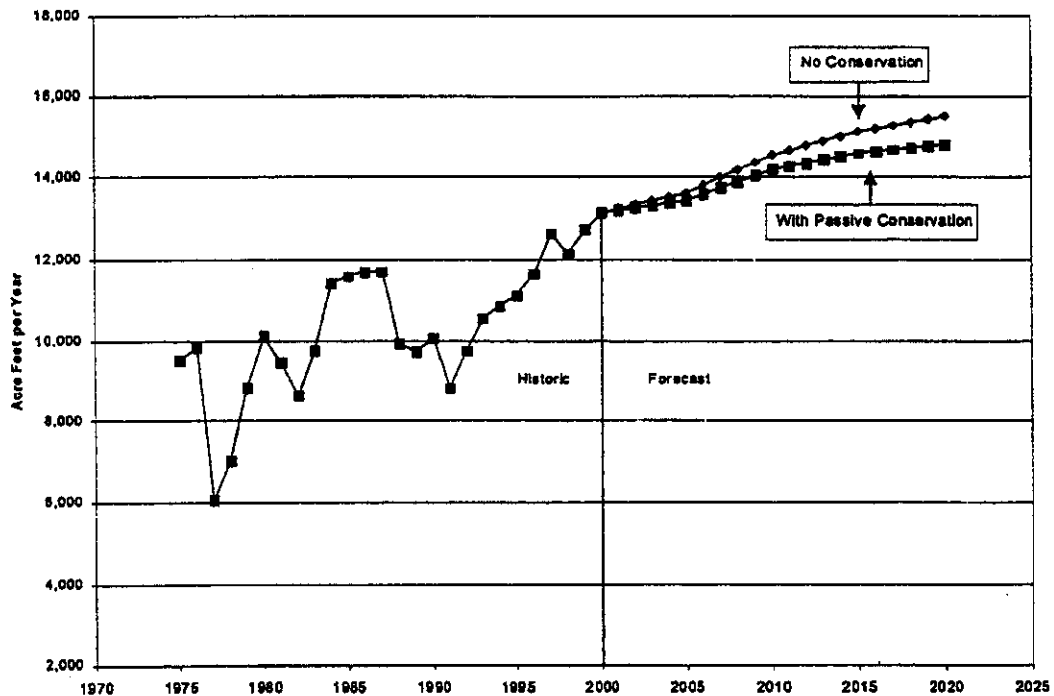
The 0.59 rate of future growth in water use is less than that experienced by RWC in the past. From 1975 to 2000, the annual average rate of growth was 1.3 percent, largely a

result of the significant growth occurring in the Redwood Shores area. RWC is now nearing build-out, with less land available for new development. However, RWC's Community Development Services Department expects significant increases in multiple-family housing via redevelopment in the downtown area and new projects east of Highway 101. From 2000 to 2020, RWC expects a 63.3 percent increase in multiple-family dwelling units. This compares with only a 1.9 percent increase in single-family units over the same period.

The water use forecasts are based on normal local weather conditions. Actual future water use will vary with abnormal temperature and rainfall, but this evaluation suggests that annual water demand only varies by +/- 2 percent because of local weather. This stability is largely a result of stability in local temperatures on an annual basis. Swings in water demand are much more impacted by perceptions of water supply drought in the Hetch Hetchy water system, such as those experienced in 1976/77 and 1991.

This evaluation also explores the issue of water use intensification. Rapid increases in real estate prices and rents can cause some water use customers to use existing space more intensively (e.g., more persons per square foot). Over 1997 to 2000, analysis shows RWC has experienced some water use intensification. However, it is difficult to predict the future trend of intensification. Hence, the forecasts generated here assume that the intensification levels experienced in 2000 will remain constant over our 20-year planning horizon.

Exhibit 2. Base Water Use Forecast



1. Objective and Approach

The objective of the research described in this report is to develop water use forecasts for the City of Redwood City (RWC) for the 20-year period 2000 to 2020. The resulting water use forecasts can assist RWC with a variety of water planning decisions/functions, including supporting the decision-making process underlying construction of water recycling facilities in the Redwood Shores area.

A variety of methods are available to forecast water use. There are pros and cons associated with each, and data availability is often an important selection determinant. Previously, RWC has used simple extrapolation methods for water use forecasting. This approach has minimal data and analytic requirements, but an extrapolation of the past is not necessarily the best predictor of the future.

Because RWC has available several key sources of information regarding future drivers of water use (e.g., housing units and employment), it is logical to make use of this information as is done via the following single variable model:

$$\text{WATER}_{s,t} = \text{DRIVER}_{s,t} * \text{COEFFICIENT}_{s,t}$$

where

$\text{WATER}_{s,t}$	= water use of sector s in time t
$\text{DRIVER}_{s,t}$	= data driver of sector s in time t
$\text{COEFFICIENT}_{s,t}$	= water use per driver coefficient of sector s in time t

In RWC's case there are seven sectors identified in the billing system as follows:

- single family residential
- multiple family residential
- commercial
- commercial Irrigation
- government
- other
- residential irrigation

As described in Section 2, the data drivers are number of housing units for the residential sectors, number of employees for the commercial sectors, and population for the other sectors. Section 3 describes the development of the coefficients that are based on historical water use correlations, as potentially adjusted for weather, water prices, and expected water conservation transformations. Once the data drivers and their associated coefficients are identified, water use forecasts over a 20-year period are developed as described in Section 4. Lastly, Section 5 describes sensitivity analyses of the water use forecasts to underlying assumptions.

2. Water Use Drivers

Data drivers for each water use sector are defined in Exhibit 3.

Exhibit 3. Water Use Drivers by Sector		
Water Use Sector	Water Use Driver	Source
Single Family	Number of single family dwelling units	RWC Housing Element, 1999-2006
Multiple Family	Number of multiple family dwelling units	RWC Housing Element, 1999-2006; RWC Planning
Commercial	Number of employees	ABAG
Commercial Irrigation	Number of employees	ABAG
Government	Population	ABAG
Other	Population	ABAG
Residential Irrigation	Number of multiple family dwelling units	RWC Housing Element, 1999-2006; RWC Planning

The values of these data drivers are shown in Appendix A in 5-year increments over the forecast period. These dwelling unit, employee, and population estimates are the best current information available. They can and should be updated as expectations of future circumstances change.

For the single-family residential class, dwelling units are segmented into six categories based on the year the dwelling unit was constructed. Water use patterns are known to vary with vintage based on factors such as water fixture efficiency and size of landscape. We obtained year built by obtaining tax assessor information from San Mateo County and linking this information with the water use billing data via parcel number. We defined the categories, partly, to match the years associated with key plumbing code changes.

For the multiple-family residential class, dwelling units are segmented into three categories based on the number of dwelling units at a site. The categories include homes with 2 to 4, 5 to 25, and over 25 dwelling units. Water use patterns are known to vary with the number of units at a site based on factors relating to demographics and landscaping. We were not able to obtain year built information for each account in this sector.

3. Water Use Coefficients

The water use coefficients are based on analysis of historical water use billing records. The coefficients mirror the water use driver framework. We investigated adjusting the coefficients for weather, water prices, and water conservation technologies. The sections below describe how the coefficients are adjusted for each.

3.1 Weather

In water use forecasting, it is typical to “weather normalize” base year water use. Water use tends to increase with hot, dry weather and decrease with cool, wet weather. Hence, it is important to adjust for abnormal weather patterns in order to establish an unbiased starting point for the forecasts.

We collected monthly rain and daily maximum temperature data from the National Atmospheric and Oceanic Administration for the Redwood City weather station over the period 1948 to date. Our analysis of this data shows that weather during the calendar year 2000 was closer to normal than any other year in the series. This simplifies the weather normalization task as the 2000 water use data are already effectively weather normalized. The annual weather values for 2000 and normal are shown in Exhibit 4.

Exhibit 4. Weather for Year 2000		
Description	2000	Normal
Annual Rain (inches)	19.57	20.21
Annual Average of Daily Max Temperature (°F)	71.0	71.3

3.2 Water Prices

Changes in water prices are also known to change customers’ behavioral decisions regarding water use. Following the first law in economic demand theory, as the real price of a commodity increases, the quantity demanded by consumers decreases.

A review of RWC water prices shows they have remained relatively stable over recent years after adjusting for inflation. This finding of rate stability again simplifies the analysis as there is no need to make water price adjustments to base year water use. Appendix E contains the 2002 water price schedule.

3.3 Water Conservation Technologies

Water fixtures have tended to become more water efficient over time because of improvements in water conservation technologies. In this study, we specifically account for known water using efficiencies occurring with toilets and clothes washers. These are the two largest end uses of indoor residential water use, making up about half of total use.

Toilet manufactures came out with 1.6 gallon per flush toilets, known as ultra-low flush toilets or ULFTs, in 1989. Toilets before this time used 3.5 gallon per flush or more. In January 1992, a California Plumbing Code change required all new toilets to be ULFTs. Many older, less-efficient toilets were still being sold, however, at this time. A Federal plumbing code change effective January 1994 mandated ULFTs be used in all new

construction as part of the Energy Policy Act of 1992. In 1994 the older toilets were no longer manufactured on a national level and ULFT penetration has been increasing since.

Engineering changes have also improved the water and energy efficiency associated with clothes washers. Over the last five years, this efficiency has been associated with horizontal axis washers, although other high-efficiency alternatives are also evolving. A Federal code change has mandated high-efficiency clothes washer be the only product sold by 2007.

Appendix B shows the residential water use coefficients, as well as the estimated penetration rates and water savings associated with ULFTs and high-efficiency clothes washers for the residential sectors. The current penetration rates are estimated from a water conservation baseline penetration study recently completed by East Bay Municipal Water District (2001). Future penetration rates are based on expected natural rates of replacement. RWC could accelerate these replacement rates via water conservation programs and incentives. RWC is currently participating in a high-efficiency washer rebate program through the Bay Area Water Users Association. This acceleration is not factored into the base water use forecasts generated in this study. It is included in sensitivity analyses described in Section 5.

Appendix C shows estimated water savings associated with ULFT installation at commercial sites. It shows the universe of toilets installed at commercial sites within the city as of 1992, along with water savings and penetration rate assumptions.

4. Water Use Forecasts

Water use forecasts are generated for a given year by multiplying the relevant data driver by its water use coefficient. Appendix D shows the results. These forecasts should be interpreted as expected "normal" year forecasts. Weather, pricing, water-use intensification, conservation, and data driver variations can alter these expected values as discussed in the next section.

Water forecasts are developed by sector. They are comprised of sub-forecasts made for:

- existing users as of 2000
- new users after 2000, and
- water conservation occurring from natural replacement of water fixtures.

For existing users, the forecasts assume that the indoor and outdoor water use patterns experienced in 2000 will remain constant, except for the explicit accounting for water conservation occurring from natural replacement of water fixtures. For new single-family customers, the 2000 water use coefficients are used as derived from homes built between 1993-2000 as they are deemed to be the most representative of the future. For the new multiple family customers, we use the coefficients associated with sites with over 25 dwelling units; most if not all new multiple family growth is expected by the RWC Planning Department to be large-scale projects.

In calculating total system water demands, we factor in a 4% increase to reflect unaccounted for water in the distribution system; it equals the difference between the water put into the water distribution system and total billed water use. For the calendar year 2000, this mass balance accounting shows unaccounted for water use equals 4.4%. For the future years, the forecast calculation assumes unaccounted water use will be 4.0%. Having an unaccounted for factor of about 4.0% is relatively good. Comparable water systems typically experience unaccounted water from 5 to 10%.

5. Sensitivity Analysis

This section explores how variations in assumptions can impact the base case point estimates generated in Appendix D. Specifically, we looked at water use intensification and weather variation.

5.1 Water Use Intensification

Increasing residential and commercial space costs can lead to intensification of use at an existing site. Apartments, for example, can see more persons per unit as higher rent costs cause more people to live together to make the rent. Similarly, business owners are financially motivated to put more employees per square foot to manage costs.

We tested the hypothesis of intensification by comparing FY 1997/98 water use to FY 2000/01 water use. We found that water use did increase by about 8 percent on a water use per bill basis for both multiple family and commercial customers. This held true for winter as well as annual water use (weather is not likely to cause this change).

Although this evidence supports water use intensification over the 4-year period, it does not necessarily mean it will continue in the future. In fact, prices in the real estate market have decreased in recent months. Therefore, for the purposes of forecasting, we assume that the intensification levels experienced in 2000 will remain constant over our 20-year planning horizon.

5.2 Weather Variation

RWC's annual water demand only varies by about +/- 2 percent as a result of weather. This conclusion is drawn from analysis of statistical regression models of monthly water purchases as a function of weather between 1975 and 2001. Note weather can significantly impact RWC's water supplies via the Hetch Hetchy water system; shortages in supply can consequently require RWC to take actions to cut water demands (e.g., 1991). Absent supply shortages, however, RWC's annual water demand does not vary greatly because of local weather.

This lack of variability in annual water use is largely a function of the lack of variability in annual temperatures. Over the 1948 to 2001 period, about 70 percent of the time

annual average temperature did not vary by more than 1°F from its average of 70.3°F and never had a difference greater than 3°F. Although greater differences are experienced on a month-to-month basis, they tend to average out over the year. This stability creates stability in annual water demand. Exhibit 5 plots temperature against monthly water use over 1975 to 2001. Water use and temperature are highly correlated.

Annual rainfall, in contrast, is much more variable. However, rain tends to fall in the winter and early spring months when temperatures and irrigation demands are relatively low. Hence, rainfall variability does not tend to greatly impact annual water demands. Rainfall has a much bigger impact on water supply (Hetch Hetchy) than demand.

Our model correlating water use with weather was specified to measure the deviations in water use (as shown in Exhibit 5) from deviations in normal temperature and rainfall as follows:

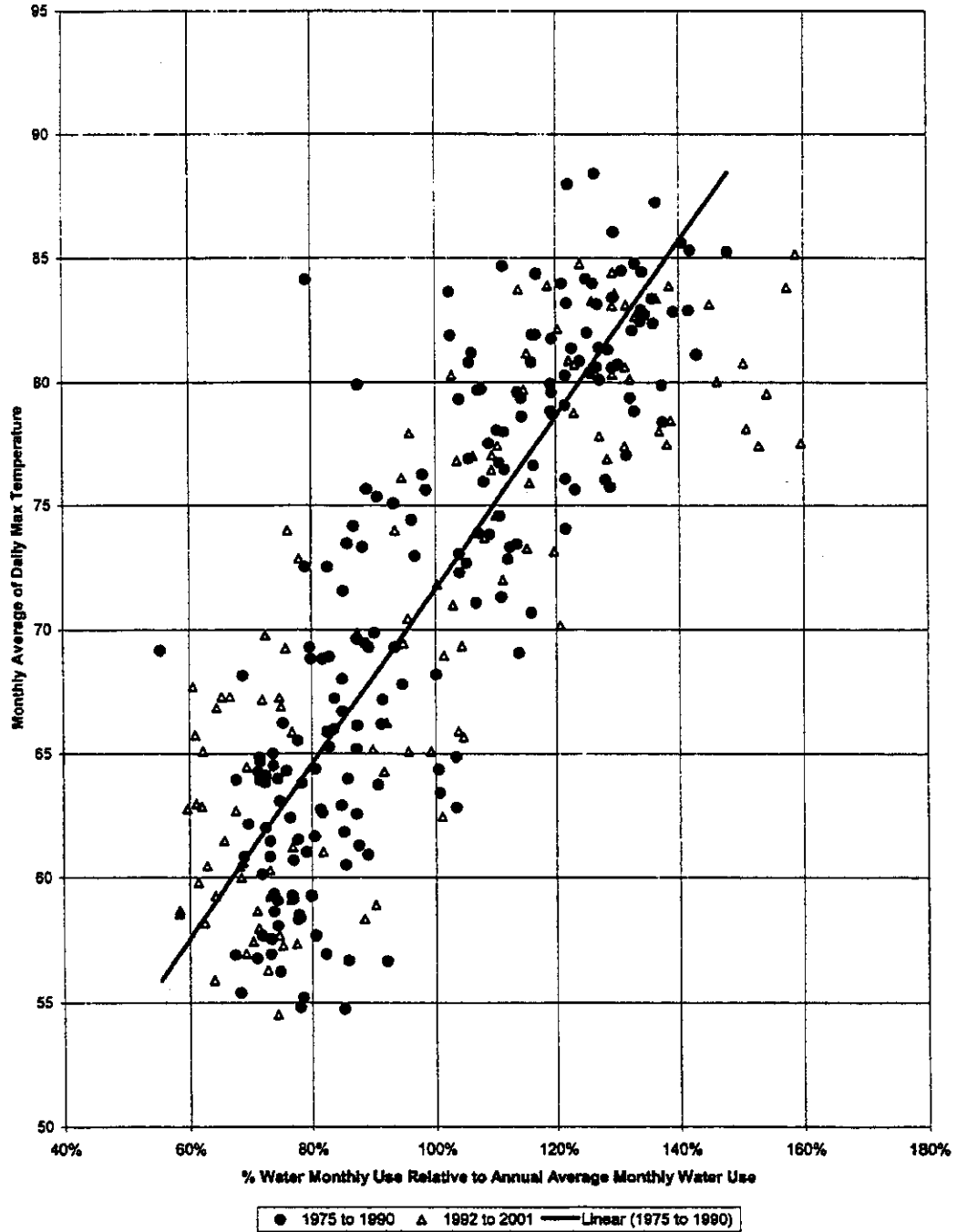
$$WATER_t = \sum_{i=1}^{12} \alpha_i \times MONTH_{i,t} + \beta_1 \times TEMPDEV_t + \beta_2 \times RAINDEV_t$$

where,

WATER_t = ratio of water use in month t to a 12-month moving average of *WATER_t*
MONTH_{i,t} = binary variable creating one unique α intercept for each calendar month
TEMPDEV_t = temperature deviation in month t from the average for that month (°F)
RAINDEV_t = rainfall deviation in month t from the average for that month (inches)
 $\alpha_i, \beta_1, \beta_2$ = coefficients estimated using least squares regression

After estimating the model, we used actual weather data from 1949 to 2001 to simulate the maximum impacts on annual water use. From this exercise, we determine that water use can be expected to vary +/- 2 percent from weather alone on annual basis.

Exhibit 5. Water Use and Temperature



Appendix A. Water Use Drivers

Description	1950	1960	1970	1980	1990	2000	2005	2010	2015	2020
Population - Service Area						82,088	85,783	87,638	90,033	91,658
Population - City (1)	25,544	48,290	55,886	54,951	66,072	75,402	78,800	80,500	82,700	84,100
% Change from 2000							4.5%	6.8%	9.7%	11.5%
Population - Outside City (2)	NA	NA	NA	NA	NA	6,686	6,988	7,138	7,333	7,458
% Change from 2000							4.5%	6.8%	9.7%	11.5%
Single Family Accounts/Units - Service Area						16,365	18,520	18,598	18,669	18,714
% Change from 2000							0.8%	1.3%	1.7%	1.9%
Year Built										
Pre 1960						12,889	12,869	12,889	12,889	12,889
1960-89						1,414	1,414	1,414	1,414	1,414
1970-82						1,604	1,604	1,604	1,604	1,604
1983-92						1,400	1,400	1,400	1,400	1,400
1993-00						1,057	1,057	1,057	1,057	1,057
Post 2000							155	233	304	349
							45	68	66	68
							110	165	236	281
Multiple Dwelling Units - Service Area						11,242	12,379	16,463	17,273	18,367
% Change from 2000							10.1%	37.6%	53.6%	63.3%
Units per Site										
2-4 Units						2,234	2,234	2,234	2,234	2,234
5-25 Units						5,189	5,189	5,189	5,189	5,189
25+ Units						3,819	4,947	8,031	9,840	10,925
Post 2000 (5)							1,137	4,221	8,031	7,115
Development Projects:							491	1,882	2,579	3,410
Downtown Area Plan							200	1,065	1,930	1,930
Miraflores Shores Village							0	580	580	580
Century 12 Site							50	100	150	200
Accessory Dwelling Units							32	66	100	134
50-foot Wide Duplex lots							32	32	32	32
Rokison Road Site							0	79	160	239
Brewster/Minslow							0	16	33	48
Arguello/Marshall							0	19	40	59
Middlefield Area							15	5	10	15
852-860 Walnut St.							50	100	150	200
Transit Corridors (mixed use district)							208	208	208	208
Franklin Street (Phase 1)							4	4	4	4
885 Woodside Rd. - mixed use							7	7	7	7
150 El Camino - mixed use							50	50	50	50
El Camino/Vera site										
Total Dwelling Units - Service Area						29,607	30,899	34,081	36,941	37,971
% Change from 2000							4.4%	15.0%	21.4%	25.2%
Total Employment - City (6)						41,720	52,290	56,530	57,940	59,560
% Change from 2000							6.4%	8.2%	10.8%	13.8%

(1) Association of Bay Area Governments (ABAG)
 (2) For 2000 = 2,352 SF accounts * 2.74 persons plus 83 MF units * 2.6 persons; others years = rate of population growth in RWC
 (3) RWC planners estimate maximum of 68 lots available for SF development.
 (4) Assumes that outside city growth of SF units is in direct proportion to RWC population growth.
 (5) MF Dwelling unit forecasts based on projects identified by RWC Planning.
 (6) Association of Bay Area Governments (ABAG)

Appendix B. Water Use Coefficients - Residential

Single Family Residential		Multiple Family Residential			
Year Built	Gallons/Day/Account	Forecast Year		Forecast Year	
		2000	2005	2010	2015
Pre 1960	288.8	285.1	280.8	275.6	271.8
1960-69	292.4	288.8	284.6	279.5	275.8
1970-82	312.9	309.3	305.0	300.0	296.2
1983-92	329.9	325.8	321.1	315.7	311.8
1993-00	254.5	252.7	249.8	245.8	243.1
Post 2000	248.0	246.0	242.8	240.6	240.6
ULFT Penetration Rate (1)					
Pre 1960	39%	50%	60%	67%	73%
1960-69	42%	52%	61%	68%	74%
1970-82	42%	52%	61%	68%	74%
1983-92	31%	44%	54%	63%	69%
1993-00	79%	83%	86%	89%	91%
Post 2000	100%	100%	100%	100%	100%
Assumed natural replacement rate of toilets					4.0%
GPCD Water Savings (2)					8.9
High Efficiency Clothes Washers (1)					
Pre 1960	10%	16%	30%	52%	67%
1960-69	10%	16%	30%	52%	67%
1970-82	10%	16%	30%	52%	67%
1983-92	10%	16%	30%	52%	67%
1993-00	10%	16%	30%	52%	67%
Post 2000	20%	33%	54%	71%	88%
Assumed natural replacement rate of washers (3)					7.1%
H-Axis washer % of new sales (4)	10%	20%	50%	100%	100%
GPCD Water Savings (5)					5.6
ULFT Penetration Rate (1)					
2-4 Units	45%	55%	63%	70%	76%
5-25 Units	45%	55%	63%	70%	76%
25+ Units	45%	55%	63%	70%	76%
Assumed natural replacement rate of toilets					4.0%
GPCD Water Savings					8.9
High Efficiency Clothes Washers (1)					
2-4 Units	5%	13%	28%	50%	66%
5-25 Units	5%	13%	28%	50%	66%
25+ Units	5%	13%	28%	50%	66%
Assumed natural replacement rate of washers (3)					7.1%
H-Axis washer % of new sales	25%	50%	100%	100%	100%
GPCD Water Savings (5)					5.6
% of units with clothes washers at site					50%

(1) Based on EBMUD Penetration Study 2001
 (2) AWWARF Residential End-Use Study (1999)
 (3) Average useful life of toilet is 14 years.
 (4) Federal energy efficiency act will mandate high efficiency after 2007.
 (5) Result for a 2001 study conducted in Seattle by Aquacraft.

Appendix C. Water Use Coefficients - Commercial

Subgroup	Number of 1992		% of GPD Savings		Total GPD Savings (\$)	% of Total Savings	Forecast Year				
	Toilets (1)	Toilets (2)	Toilets	per ULFT (2)			2000	2005	2010	2015	2020
Hotels	1,980	16	14%	16	31,679	9%	0	-57	-104	-142	-173
Eating	340	47	2%	47	15,984	5%	AF per Year ULFT Incremental Water Savings				
Health	1,679	21	12%	21	35,266	10%					
Offices	4,151	20	29%	20	83,028	23%					
Retail/ Wholesale	3,241	40	23%	40	129,643	37%					
Other	761	18	5%	18	13,691	4%	ULFT Penetration Rate				
Industrial	953	23	7%	23	21,914	6%	22%	36%	48%	58%	65%
Churches	228	28	2%	28	6,385	2%	Annual natural replacement rate: 4.0%				
Government	323	25	2%	25	8,079	2%	ULFTs exclusively on market Jan 1, 1994.				
Schools: K to 12	431	18	3%	18	7,760	2%					
All Subgroups	14,088	100%	100%		353,429	100%					

(1) Based on 1992 U.S. Economic Census data and toilet coefficients (CUWCC, The CII/ULFT Savings Study, 2001).

(2) Based on The CII ULFT Savings Study (CUWCC, 2001). School savings of 18 gpd is assumed.

(3) Equals number of toilets multiplied by GPD savings per ULFT. Total represents potential savings if all 1992 CII toilets are retrofitted with ULFTs. Some of this potential is already realized.

Zip Codes Included:

84061 94062 94063 94065

Appendix D. Water Use Forecasts

Class Description	Total Acre Feet per Year				
	Actual 2000	2005	2010	2015	2020
Single Family	6,014	5,983	5,916	5,830	5,765
Existing Customers	6,014	6,014	6,014	6,014	6,014
New Customers		44	66	87	100
Conservation: Toilets & Washers		-75	-165	-271	-349
Multiple Family	2,356	2,544	3,100	3,398	3,565
Existing Customers	2,356	2,356	2,356	2,356	2,356
New Customers		222	825	1,178	1,390
Conservation: Toilets & Washers		-34	-81	-137	-182
Commercial	2,355	2,404	2,410	2,441	2,454
Existing Customers	2,355	2,355	2,355	2,355	2,355
New Customers		106	159	228	272
Conservation: Toilets		-57	-104	-142	-173
Commercial - Irrigation	1,110	1,181	1,201	1,230	1,264
Existing Customers	1,110	1,110	1,110	1,110	1,110
New Customers		71	91	120	154
Municipal - City	20	20	21	21	22
Existing Customers	20	20	20	20	20
New Customers		1	1	2	2
Other	115	121	123	127	129
Existing Customers	115	115	115	115	115
New Customers		5	8	11	13
Residential - Irrigation	626	689	861	962	1,022
Existing Customers	626	626	626	626	626
New Customers		63	235	336	396
Total					
Existing Customers	12,596	12,596	12,596	12,596	12,596
New Customers	0	513	1,386	1,962	2,328
New and Existing Customers	12,596	13,109	13,981	14,558	14,923
Unaccounted for Water (4.0%)	574	524	559	582	597
Total without Conservation	13,170	13,633	14,541	15,140	15,520
Passive Conservation	0	-166	-350	-550	-704
Total with Passive Conservation	13,170	13,467	14,191	14,590	14,817

**Appendix D
CITY OF REDWOOD CITY
WATER RATE SCHEDULE**

Effective January 1, 2002

BI-Monthly Billing	RESIDENTIAL Water Rates	COMMERCIAL Water Rates	Redwood City (1,2,3,4,5)
<u>Bi-Monthly Basic Service Charge</u>	\$20.88	<u>Commercial Monthly Service Charge</u>	
All Residential Accounts pay the same Basic Service Charge in areas 1, 2, 3, 4, 5	(Monthly \$10.44)	5/8" 3/4" 1" 1 1/2" 2" 3" 4" 5" 6" 8" 10"	\$ 9.47 \$ 14.21 \$ 23.68 \$ 47.35 \$ 75.76 \$ 142.05 \$ 236.75 \$ 473.50 \$ 473.50 \$ 473.50 \$ 473.50
<u>Residential Water Rates</u>		<u>Commercial Water Rates</u>	
0-10 Units (Lifeline) 11-25 Units 11-50 Units 11-75 Units 76+ Units	\$.88 \$1.75 \$2.00 \$2.25 \$2.50	0 - 15 Units 0 - 75 Units 75+	\$1.75 \$1.80 \$1.80

* Note- Emerald Lake Hills water rates in parity with all others
Sewer Rates = \$19.57 per month for a single family dwelling effective January 1, 2002

Technical Memorandum

To: Peter Ingram, RWC Public Works Services Director
From: John B. Whitcomb, PhD, Consultant
Date: August 15, 2002
Subject: RWC Water Supply Reliability

This technical memorandum presents my analysis of the water supply and demand balance for the City of Redwood City (RWC) water system. Assessing water demand/supply reliability can be useful in supporting a variety of water planning functions including:

- Assessing the merits of an expanded recycled water system in Redwood Shores and subsequent proposed phases in the Greater Bayfront and Central Redwood City.
- Determining the availability of water for new developments under new state laws adopted via Senate Bills 221 and 610.
- Assessing the need for expanded water conservation programs and/or other new water supplies.
- Understanding and developing drought response actions to match the risk accepted by the City in purveying water to its customers.

The discussion of water supply reliability is described in following four sections:

1. SFPUC water supply
2. RWC Water demand
3. Reliability: the water supply and demand balance
4. Selecting a proper level of reliability

1. SFPUC Water Supply

RWC currently purchases 100% of its potable water supplies from the San Francisco Public Utilities Commission (SFPUC). The SFPUC serves as a wholesaler of water from the Hetch Hetchy Water and Power System. To quantify the future reliability of water supplies from this source, I consulted the following three sources of information:

- San Francisco Public Utilities Commission (SFPUC) Water Supply Master Plan, April 2000.

RWC Water Supply Reliability

- Bay Area Water Users Association, Interim Water Shortage Allocation Plan, July 2001.
- Nicole M. Sandkulla, P. E., Bay Area Water Users Association (BAWUA).

From this information I generated Exhibit 1 showing the current level of water supply reliability for RWC. Because the future is unknown, reliability must be expressed in probabilistic terms using the best information available. It is important to note that as part of the 1984 Master Water Sales Contract RWC has a contractual "water supply assurance" of 12,243 acre-feet per year (AFY). However, this amount relates to a legal definition and not an absolute volume guaranteed. In times of shortage, the SFPUC will provide less than the assurance as illustrated in Exhibit 1.

Exhibit 1. SFPUC Water Supply Reliability

Scenario	(1) Hetch Hetchy System Demand Cutback	(2) BAWUA Demand Cutback	(3) RWC Demand Cutback	(4) RWC Allocation AFY	(5) Historical Probability	(6) Future Probability 2010
1	0%	0.0%	0.0%	>12,243	NA	NA
2	-5%	-6.4%	-12.2%	11,584	NA	NA
3	-10%	-12.0%	-17.5%	10,891	7.6%	6.3%
4	-15%	-18.2%	-23.3%	10,124	NA	5.1%
5	-20%	-23.6%	-28.4%	9,456	2.5%	2.5%
6	>-20%	>-23.6%	>-28.4%	<9,456	0.0%	2.5%

- (1) The Interim Water Shortage Allocation Plan addresses system wide cutbacks up to 20%.
- (2) Values provided by Nicole Sandkulla, Bay Area Water Users Association.
- (3) Based on worksheet from Nicole Sandkulla, updated with FY 1999/00 and 2000/01 water use.
- (4) Based on FY 2000/01 water use totals.
- (5) Probability of each scenario occurring in a given year based on hydrology from 1921 to 1999.
Information taken from Figure 2-5 in SFPUC Water Supply Master Plan, April 2000.
The probability of a 5% and 15% cutbacks not addressed, hence reported as not available (NA).
- (6) Future probabilities based on interpolation of the 260 and 325 MGD demand scenarios in master plan.

Exhibit 1 shows that the frequency and magnitude of water use cutbacks. From a statistical perspective, given current circumstances in a given year there is a:

- 89.9% chance of no water shortage or a 5% cutback. Unfortunately, the SFPUC master plan did not identify the probability of a 5% cutback. For San Francisco and most BAWUA agencies, a 5% system cutback will be a minor event met with voluntary conservation. For RWC, in contrast, a 5% system cutback will lead to a 12.2% RWC cutback—a significant event requiring some active conservation interventions.

RWC Water Supply Reliability

- 7.6% chance of a 17.5% cutback—this would entail a major “event” requiring water conservation and rationing.
- 2.5% chance of a 28.4% cutback—this would be a “dramatic” event involving major disruptions with customers.

The probabilities developed in the SFPUC master plan relate to water demands exhibited in about the FY 1998/99 and FY 1999/2000 period. As members of BAWUA use more water in the future, the frequency and magnitude of the cutbacks will increase. In fact, BAWUA’s water use has increased in the last few years and is projected to increase over time out to at least 2030 (BAWUA Annual Survey of Results FY 2000-01, December 2001). The last column of Exhibit 1 shows an estimate of the degradation in water supply reliability for the year 2010. The frequency of cutbacks equal to or exceeding 17.5% will grow from 10.1% to 16.4% over this period. It is also anticipated that cutbacks will be of greater magnitude.

2. RWC Water Demand

Future water demands for RWC are quantified and described in the report titled *Redwood City Water Use Forecast 2000 to 2020*, submitted to RWC by John B. Whitcomb, PhD, June 20, 2002. The forecasts are also included in the RWC Urban Water Management Plan. The bottom line water use forecasts are reproduced in Exhibit 2.

Exhibit 2. RWC Water Demand Forecast, Acre Feet per Year (1)

Actual 2000	Forecast Year			
	2005	2010	2015	2020
13,170	13,467	14,191	14,590	14,817

(1) Forecasts include 4% unaccounted-for water rate and passive conservation resulting from natural replacement of toilets and clothes washers with more efficient models. They do not include active conservation or water substitution resulting from using recycled water for irrigation.

3. Reliability: The Water Supply And Demand Balance

Comparing the water supply data shown in Exhibit 1 with the demand data shown in Exhibit 2, it is obvious that RWC is in a high risk, low reliability situation at the moment. RWC has one of the lowest levels of reliability of the BAWUA members. I also believe RWC has one of the lowest levels of water supply reliability in Northern California, although obtaining accurate measures of reliability is difficult. As a consequence, I have not collected benchmarks for comparison at this time.

The SFPUC water supply situation will remain unchanged until at least July 2009 when the existing Master Water Sales Contract and BAWUA / SFPUC Interim Shortage Allocation Plan expire and are renegotiated. It is difficult to predict the outcome of the renegotiations, but it is unlikely that RWC will improve its water supply reliability from this source.

4. Selecting A Proper Level Of Reliability

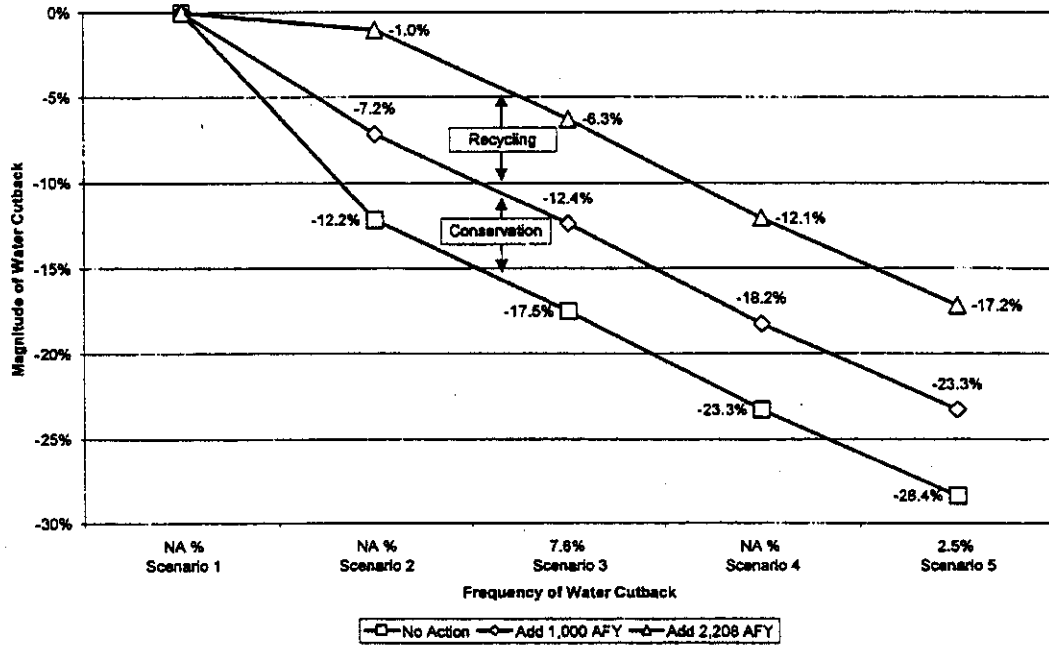
What is the appropriate level of reliability? There is no exact engineering answer, but rather the appropriate level is a judgment call dependent on the level of risk RWC is willing to take, and how much RWC is willing to pay to minimize this risk.

Exhibit 3 graphically shows how water supply reliability increases with water supply additions of 1,000 AFY for water conservation and an additional 1,208 for water recycling (priority customers 1 and 2 in the Redwood Shores area identified by Kennedy/Jenks Consultants, *Water Recycling Feasibility Study for Redwood City*, August 2002).

Focusing on scenario 3 (SFPUC cutback of 10%), RWC's cutback under current arrangements would be 17.5%. If 1,000 AFY of additional supplies could be obtained via conservation, the cutback would be reduced to 12.4%. With 1,208 AFY of additional supplies from recycling (2,208 AFY total), the cutback would be a very manageable 6.3%.

Readers should note that the reliabilities presented are for existing water customers as of FY 2000/2001. As shown in Exhibit 2, water use is expected to grow 1,647 AFY over the next 20 years. The thirst of this new growth needs to be quenched from new water supplies if the water reliability of existing customers is not to decay incrementally.

Exhibit 3. Water Supply Reliability Enhancements



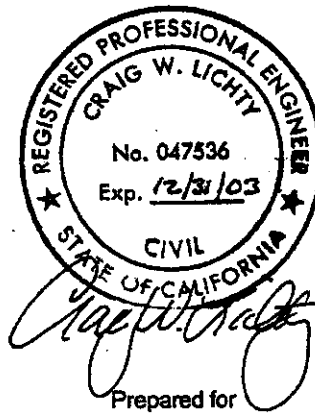
Kennedy/Jenks Consultants

622 Folsom Street
San Francisco, California 94107

Water Recycling Feasibility Study for Redwood City

Final Report

7 August 2002



Prepared for

City of Redwood City
1400 Broadway
Redwood City, California 94063

Executive Summary

ES.1 Background

Redwood City (the City) is 100% reliant on one source of potable water supply, the San Francisco Hetch Hetchy regional water system. Currently, the City is consuming approximately 1,000 acre-feet per year (AF/yr) over the contractual (wholesale) supply assurance of 12,243 AF/yr. The Redwood City Water Use Forecast for 2000 to 2020, dated June 20, 2002 (prepared by John Whitcomb, PhD), includes water supply projections associated with future housing, employment, and population, etc. The Water Use Forecast explores future water supply scenarios including the "worst case" scenario that excludes any water conservation and a scenario that takes into account passive water conservation. The potential water supply savings associated with an active water conservation scenario are addressed in the City's Urban Water Management Plan. Based on these forecasts and planning, the City will need additional water supplies to meet both current and future needs.

The City has four options to reduce current demands on the Hetch Hetchy supply, in order to comply with the supply assurance and provide supply for future growth:

1. Negotiate water transfers from other agencies that use the Hetch Hetchy regional system
2. Negotiate a new source of potable water supply via the regional system ("wheeling")
3. Implement water conservation measures
4. Implement a water recycling program for landscape irrigation and industrial uses

This study builds upon the joint recycled water pilot project being operated in Redwood Shores by the South Bayside System Authority (SBSA) and the City, and on the Water Recycling Feasibility Study for the Redwood Shores Area (Kennedy/Jenks Consultants, January 22, 2002).

ES.2 Market Assessment

Three geographical areas within the City were reviewed relative to providing a new market for recycled water use. The areas generally include Redwood Shores, the "Greater Bayfront Area" and Central Redwood City. Potential recycled water uses are primarily for landscape irrigation in Redwood Shores and Central Redwood City. Some industrial uses, and potential for internal uses such as toilet flushing, exist primarily in the Greater Bayfront area and, to a lesser extent, Central Redwood City.

To facilitate subsequent evaluations in this report, the potential customers were grouped into four classifications:

Priority 1 Customers:

- Existing First Step Project customers (dedicated landscape irrigation meters)
- Customers with agreements in place for service
- Potential customers or groups of customers that have relatively large irrigation or industrial demands, and are adjacent to potential transmission pipeline corridors

Priority 2 Customers:

- Potential customers or groups of customers that have small to medium-sized demands, and are adjacent to or relatively near potential transmission pipeline corridors

Priority 3 Customers:

- Potential customers or groups of customers with relatively small demands, that are either remote from potential transmission pipeline corridors, or may have higher customer site retrofit costs
- Proposed future developments or re-development sites, or existing customer sites that are served by private wells or the California Water Service Company

Priority 4 Customers:

- Landscaped sites that are not presently irrigated or other uses that have very low demands
- Sites that are very remote from potential transmission pipeline corridors, require significant additional pumping because of site elevation, or appear to have very challenging/expensive customer site retrofit costs

Priority 1 and 2 customers represent the most viable customers that are ready to be served, if the City implements a mandatory use ordinance or obtains individual agreements for service. The annual recycled water demand from Priority 1 and 2 customers represents the most reasonable minimum estimate of potential "new water supply" for integrated water supply planning. Some portion of Priority 3 customer demands appear able to be cost-effectively served, however, service in many cases is dependent upon establishing institutional agreements to replace a current water supplier or future development or redevelopment activities. Priority 4 customers do not appear viable for a number of reasons. Although they were considered initially, their demands do not appear to be a source of "new water supply" for the City.

The potential recycled water demand for Priority 1, 2, and 3 customers in Redwood City appears to range between about 1,100 and 3,172 acre feet per year (AF/yr), for a Redwood Shores only project and a City-wide project, respectively. Within these projections, about 582 AF/yr is for future developments or redevelopment projects that are in various stages of planning.

ES.3 Alternatives Development and Evaluation

Eight preliminary alternatives were developed for hydraulic analysis. The eight alternatives encompass a full range of possible system configurations, so different levels of service to the three geographical areas and customer priority levels could be investigated. In addition, both centralized and decentralized storage and pumping options were included to investigate the cost-effectiveness of different system configurations. The alternatives ranged from small systems (Priority 1 and 2 customers in Redwood Shores only) to City-wide systems (Priority 1, 2, and 3 customers in all three geographical areas) providing a range of new water supply from just over 1,100 AF/yr up to approximately 3,172 AF/yr.

Preliminary estimates of capital costs and cost effectiveness (cost per acre-foot of water delivered) were developed for the eight preliminary alternatives based on pipeline sizes and lengths, storage and pumping capacity, treatment costs, and standby connections. The conclusions drawn from the preliminary alternatives analysis are as follows:

- The cost effectiveness of City-wide alternatives that serve only Priority 1 and 2 customers tends to be much lower than for alternatives that include Priority 3 customers. When the Priority 3 customers are added to City-wide distribution systems, the cost-effectiveness increases by about 35%. This is because Priority 3 customers make up a large percentage of total potential recycled water demand outside the Redwood Shores, and the transmission pipeline system becomes more cost-efficient when the Priority 3 customer demands are included.
- Preliminary alternatives with centralized storage and pumping at SBSA are more cost effective than the alternatives with decentralized storage and pumping. The cost required for decentralized pump stations is greater than the cost savings realized by reduced pipeline sizes in the transmission system.
- In an attempt to improve cost-effectiveness of a City-wide project while maintaining a substantial recycled water supply, fine-tuning was performed by eliminating distribution pipelines to customers that appeared to be relatively expensive on a cost per AF/yr delivered basis. A slight improvement in cost effectiveness was realized in this fine-tuning.

Based on the results of the preliminary alternatives evaluation, final alternatives were developed to meet the range of the City's projected water supply needs, while providing the best value and preserving flexibility for future system growth and expansion. All of the final alternatives included some level of service to Priority 3 customers. The four Final Alternatives A through D are summarized in Figures ES-1 through ES-4. To preserve flexibility for future expansion of the recycled water system, the transmission pipelines are sized under each final alternative to serve all of the Priority 1, 2, and 3 customers in each of the three geographical areas (as in Alternative B).

ES.4 Recommended Project

Based on an evaluation of cost-effectiveness, water supply, and future flexibility considerations, Project Alternative D is recommended to the City for use in project planning and

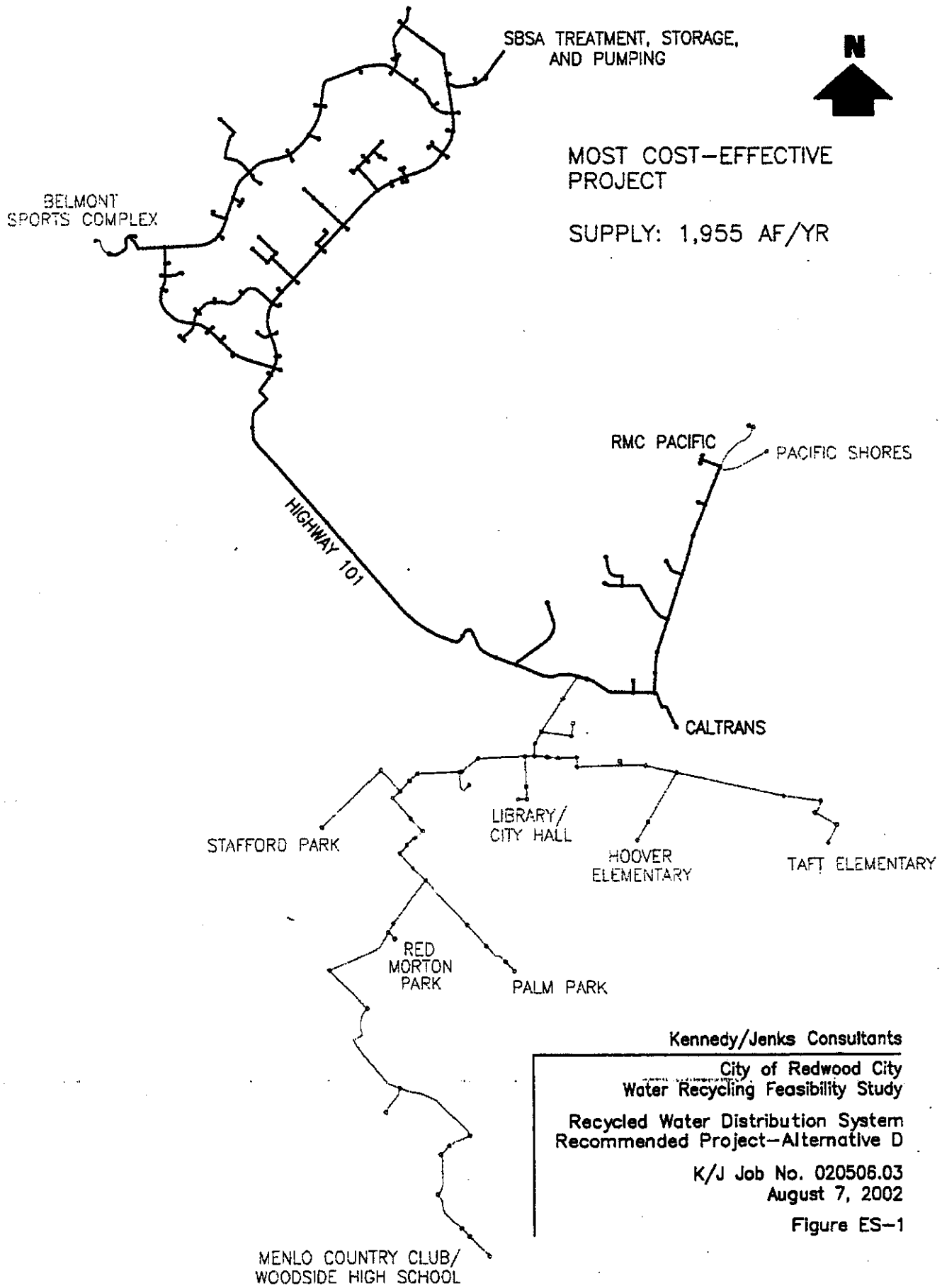
implementation, determining a financing strategy, and in developing an initial rate and revenue plan. Refer to Figure ES-1 for a schematic plan of Alternative D. The primary reason for recommending Alternative D is that it is the most cost-effective project configuration that provides an adequate water supply (1,955 AF/yr) to:

1. Reduce existing demands on the San Francisco Hetch Hetchy regional water system to be within the City's contractual supply assurance.
2. Provide a source of future water supply for potential new developments within the City.

Alternative D also provides significant flexibility for the future, so the City can continue to explore the benefits of additional water conservation measures, overall water supply reliability and drought tolerance issues, water transfers and other water supply management options. If the City requires additional recycled water supply in the future, the pipelines provided under Alternative D are oversized to allow the system to expand across Bayshore Highway 101 into Central Redwood City for a City-wide project (3,172 AF/yr as in Alternative B). The system could also support expansion into adjacent communities to meet future needs if the City were to negotiate agreements for transmission of water from SBSA to other retail water suppliers.

Additional benefits and considerations associated with recommending Alternative D are included in Section 5 of this report.

The total estimate of probable capital cost, including facilities construction, service connections and site retrofits, engineering, construction management, administration and a 20% project contingency is approximately \$36,819,000. The portion of this cost associated with providing oversized pipelines for future flexibility is approximately \$4,891,000. Alternative D capital costs are summarized in Table ES-1.



MOST COST-EFFECTIVE PROJECT

SUPPLY: 1,955 AF/YR



Kennedy/Jenks Consultants
City of Redwood City
Water Recycling Feasibility Study
Recycled Water Distribution System
Recommended Project—Alternative D
 K/J Job No. 020506.03
 August 7, 2002
 Figure ES-1

MENLO COUNTRY CLUB/
WOODSIDE HIGH SCHOOL

Table ES-1: Recommended Project (Alternative D) Capital Cost Summary

Item	Description	Cost
1	Storage and Standby Potable Connections	\$ 5,704,000
2	Pumping	\$ 1,320,000
3	Transmission Pipeline	\$ 15,248,000
4	Special Crossings by Jack and Bore	\$ -
5	Treatment Facilities	\$ 1,636,000
	Subtotal Facilities	\$ 23,908,000
6	Service Connections and Retrofit (10% of Facilities Cost)	\$ 2,391,000
	Subtotal Facilities & Connections	\$ 26,299,000
	Engineering, CM, and Administration (20%)	\$ 5,260,000
	Contingency (20%)	\$ 5,260,000
	TOTAL	\$ 36,819,000

ES.5 Implementation Strategy

The basic implementation strategy for Alternative D water supply and capital improvement program is summarized in Table ES-2. The implementation concept is to simultaneously build backbone infrastructure facilities such as treatment, pumping, storage and transmission pipelines, while aggressively preparing in detail for customer connections and site retrofit. Based on the experiences of other Bay area projects, customer coordination and site retrofit requirements are typically underestimated, and actual recycled water use has fallen short of original projections.

The proposed project could be implemented in multiple phases. Treatment, storage, pumping, and pipeline transmission facilities to serve the Redwood Shores Area could be constructed in fiscal year (FY) 2003/2004, and customer services and site retrofits could be constructed over a three-year period between 2003 and 2006, so full supply benefits are obtained during the 2007 irrigation season. The Greater Bayfront Area project phase may be driven by future developer schedules, but it is tentatively planned that the 5-mile transmission line from SBSA to the Whipple Avenue/Highway 101 Interchange could be in place by the year 2006, while the entire Greater Bayfront Area could be served by 2009. In this scenario, the entire Alternative D project could be in place by 2009, which may be advantageous to the City as the Master Sales Agreement between San Francisco and suburban purchasers will be renegotiated in 2009/2010 (contract expiration).

Table ES-2: Phased Implementation Capital Cost and Recycled Water Supply Summary

Fiscal Year	Incremental Water Supply Added (AF/yr)		Total Water Supply (AF/yr) ¹	Capital Costs ²		
	RWS	GBF		RWS	GBF	Cost
2002/2003	0.0	0.0	50.5	1/3 treatment 1/3 transmission 1/3 pumping & storage	1/2 Highway 101 Pipeline	\$ 763,000 \$ 4,103,000 \$ 3,266,200 \$ 1,120,000 \$ 9,252,200
2003/2004	32.3	0.0	82.8	2/3 treatment 2/3 transmission 2/3 pumping & storage 1/3 customer retrofit	1/2 Highway 101 Pipeline	\$ 1,527,000 \$ 8,206,000 \$ 6,532,400 \$ 1,030,000 \$ 1,120,000 \$18,415,400
2004/2005	409.2	0.0	492.0	1/3 customer retrofit	04/05 TOTAL	\$ 1,030,000 \$ 1,030,000
2005/2006	376.9	0.0	869.0	1/3 customer retrofit	1/2 transmission in-system standby connection 1/3 customer retrofit 05/06 TOTAL	\$ 1,030,000 \$ 3,399,000 \$35,000 \$86,000 \$ 4,550,000
2006/2007	376.9	236.4	1482.2		1/2 transmission 1/3 customer retrofit 06/07 TOTAL	\$ 3,399,000 \$ 86,000 \$ 3,485,000
2007/2008	0.0	236.4	1718.6		1/3 customer retrofit 07/08 TOTAL	\$ 86,000 \$ 86,000
2008/2009	0.0	236.4	1954.9		08/09 TOTAL	\$ 0
2009/2010	0.0	0.0	1954.9		09/10 TOTAL	\$ 0
2010/2011	0.0	0.0	1954.9		10/11 TOTAL	\$ 0

GRAND TOTAL \$36,819,000

Note 1: Water supply includes existing First Step customers

Note 2: Including treatment, storage, pumping, transmission piping, service laterals, site retrofit, engineering and construction services, administration, and 20% project contingency

Table ES-2 Abbreviations: RWS – Redwood Shores Area
GBF – Greater Bayfront Area

APPENDIX 21.3
SUPPLEMENTAL AIR QUALITY INFORMATION

APPENDIX :AIR QUALITY ASSUMPTIONS AND METHODOLOGY

CALINE-4 MODELING

The CALINE-4 model is a fourth-generation line source air quality model that is based on the Gaussian diffusion equation and employs a mixing zone concept to characterize pollutant dispersion over the roadway. Given source strength, meteorology, site geometry and site characteristics, the model predicts pollutant concentrations for receptors located within 150 meters of the roadway. The CALINE-4 model allows roadways to be broken into multiple links that can vary in traffic volume, emission rates, height, width, etc..

A screening-level form of the CALINE-4 program was used to predict concentrations.¹ Normalized concentrations for each roadway size (2 lanes, 4 lanes, etc.) are adjusted for the two-way traffic volume and emission factor. Calculations were made for a receptor at a corner of the intersection, located at the curb. Emission factors were derived from the California Air Resources Board EMFAC7-G computer program based on a 2002 and 2020 vehicle mix.

The screening form of the CALINE-4 model calculates the local contribution of nearby roads to the total concentration. The other contribution is the background level attributed to more distant traffic. The 1-hour background level in was taken as 8.4 PPM and the 8-hour background concentration was taken as 3.5 PPM in 2002. The 1-hour background level in was taken as 7.0 PPM and the 8-hour background concentration was taken as 2.9 PPM in 2020. These backgrounds were estimated using isopleth maps and correction factors developed by the Bay Area Air Quality Management District.

Eight-hour concentrations were obtained from the 1-hour output of the CALINE-4 model using a persistence factor of 0.7.

NEW VEHICLE TRAVEL EMISSIONS

Estimates of regional emissions generated by project traffic were made using a program called URBEMIS-7G.² URBEMIS-7G is a program that estimates the emissions that result from various land use development projects. Land use project can include residential uses such as single-family dwelling units, apartments and condominiums, and nonresidential uses such as shopping centers, office buildings, and industrial parks. URBEMIS-7G contains default values for much of the information needed to calculate emissions. However, project-specific, user-supplied information

¹ Bay Area Air Quality Management District, BAAQMD CEQA Guidelines, 1996 (Revised 1999).

² San Joaquin Valley Unified Air Pollution Control District, URBEMIS-7G User's Guide, May 1998.

can also be used when it is available.

Inputs to the URBEMIS-7G program include trip generation rates, vehicle mix, average trip length by trip type and average speed. Trip generation rates for project land uses were provided by the project transportation consultant. Average trip lengths and vehicle mixes for the Bay Area were used. Average speed for all types of trips was assumed to be 30 MPH.

The URBEMIS-7G runs assumed summertime conditions with an ambient temperature of 85 degrees F.

The analysis was carried out under the worst-case assumption that project build-out would occur by the year 2010.

APPENDIX 21.4

CEQA STANDARDS FOR EIR ADEQUACY

According to Section 15151 of the CEQA Guidelines, the standards for Adequacy of an EIR are as follows:

An EIR should be prepared with a sufficient degree of analysis to provide decision-makers with information which enables them to make a decision which intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreement among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure.

APPENDIX 21.5

CEQA DEFINITION OF "MITIGATION"

According to Section 15370 of the CEQA EIR Guidelines, the term "mitigation" includes:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
- (b) Minimizing impacts by limiting the degree of magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the impacted environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- (e) Compensating for the impacts by replacing or providing substitute resources or environments.

21.6 EIR CONSULTANT TEAM

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