RICHMOND FIELD STATION WORKING PAPER

A STUDY IN SUPPORT OF THE 2020 LONG RANGE DEVELOPMENT PLAN

NOVEMBER 2002

The purpose of Working Papers is to document findings, identify concepts for further consideration and investigation, and inspire creative thinking. They do not represent decisions made nor policies adopted by the University.

Contents

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1 INTRODUCTION

Background

The campus is embarking on a new Long Range Development Plan to guide capital investment at UC Berkeley through 2020. Richmond Field Station (RFS) has the potential to play a significant long-term role in the campus' future growth, and how this site is developed may, in turn, affect both the nature and magnitude of growth on and around the core campus.

Since its acquisition by the University in 1950, the Richmond Field Station has primarily served as a site for large-scale research testing facilities that were not appropriate for the core campus. Since the mid-1980's the Berkeley campus has explored ways to broaden and intensify usage of the site. An Administrative Draft Master Plan for the property was completed in 1993. However, this plan was never finalized and there has been virtually no new development at the site since the completion of the draft plan.

Purpose of Working Paper

The goal of this working paper is to establish a land use framework for RFS that reflects an optimal balance of program needs and environmental stewardship. Toward this end, a Planning Study Committee was formed in April 2002 to identify and characterize those program needs, and help determine how they might best be accommodated. The objectives for the Committee and this working paper were to:

- Assess the value of RFS for instruction, research, recreation and other potential uses – including habitat and resource conservation - and define the physical features that indicate the areas of greatest value for each use.
- Identify the needs of current users at RFS, and anticipated changes through 2020.
- Identify known and potential demands of other users through 2020, including programs now located on the core campus.
- Define a set of principles for development of RFS through 2020, including land use, protective measures for sensitive/valuable areas, and key capital investments and management practices required to support these principles.

Related Plans

This paper is intended to support and complement the UC Berkeley New Century Plan. The scope of the initial versions of that document covered the core campus and environs. The Richmond Field Station Planning Study is one of several studies of peripheral campus properties that will augment the New Century Plan. The campus has also just completed a Strategic Academic Plan. This document sets forth the academic goals of the campus. The RFS working paper has been informed and guided by the findings of Strategic Academic Plan.

2 SITE CONTEXT & PHYSICAL FEATURES

Context

Location. The Richmond Field Station is located on the Richmond south shoreline approximately 6 miles, or about 15 minutes by car, from the UC Berkeley core campus. It is easily accessible by freeway via Interstate I-580 by two interchanges. The nearest BART station is approximately one mile away. The property's bayside location offers both potential research and amenity advantages.

Figure 1: Location of Richmond Field Station

Richmond South Shoreline. The area surrounding the property has undergone rapid change over the past decade. The City has completed the redevelopment of the adjacent former Kaiser Shipyard into a housing complex with 1,300 housing units, marina, parks and trails. With the completion of the Knox Freeway (I-580) in 1990, the area has also begun to attract new R&D uses. The first such development occurred on the Ford Peninsula just to the west of the new marina. In recent years, new R&D development has occurred on former industrial lands just to the west of the Richmond Field Station with the development of the first phases of the State Department of Health Service laboratory and the DiCon Fiberoptics headquarters. The 90-acre industrial property just to the east of the Field Station is about to be redeveloped by a private developer into a new R&D campus.

Figure 2: Richmond South Shoreline

Site Physical Features

Valuable Habitat Areas. The existing biological conditions at the University's Richmond property were documented in a 1994 environmental report[1]. That report mapped the significant habitat areas at the site, most notably the native grasslands and wetlands (see Figures 3 and 4 below). The wetlands and grasslands also provide opportunities for teaching and research as well as serving as recreational amenities.

Grasslands. The native Coastal Terrace Prairie grasslands are especially valuable, both scientifically and historically, since they constitute the best and last remaining example of an ecosystem that once proliferated on the shores of the San Francisco Bay.

The best remnants of this habitat can be found in the western portion of the property just to the east of the long Fog Chamber building (Building 280) and to the west of the EPA lab. These areas are labeled "Undisturbed Coastal Terrace Prairie" in Figure 3. Those areas labeled "Disturbed Coastal Terrace Prairie" are also considered valuable.

Wetlands. Some of these grassland areas also appeared to qualify as seasonal wetlands under Clean Water Act criteria[2]. Seasonal wetlands are lands that contain certain soil and vegetation types and that remain inundated or saturated for an extended period of time during the growing season (usually a week or more).

[1] Brady and Associates Planners and Landscape Architects, Richmond Research Center Master Plan Environmental Impact Report: Existing Conditions and Constraints Report, prepared for the University of California, Berkeley, January 28, 1994.

[2] U.S. Clean Water Act, Section 404.

In addition to these seasonal wetlands in the upland portions of the property, there is a tidal marsh in the southern portion of the site. These areas are labeled "Section 404 Wetlands" or "Section 10 Waters of the U.S." on Figure 4.

These wetlands provide valuable habitat for a variety of fauna and help to filter and clean water. As a result these lands fall under the protection of the U.S. Army Corps of Engineers and other regulatory agencies.

Eucalyptus Stands. The property contains a number of eucalyptus stands that were planted as wind breaks and blast mitigation when the site served as the location of the California Cap Company. These stands help to establish a visual identity for the site. And while not native to the site, the large central stand of eucalyptus provides habitat for raptors and wintering monarch butterflies.

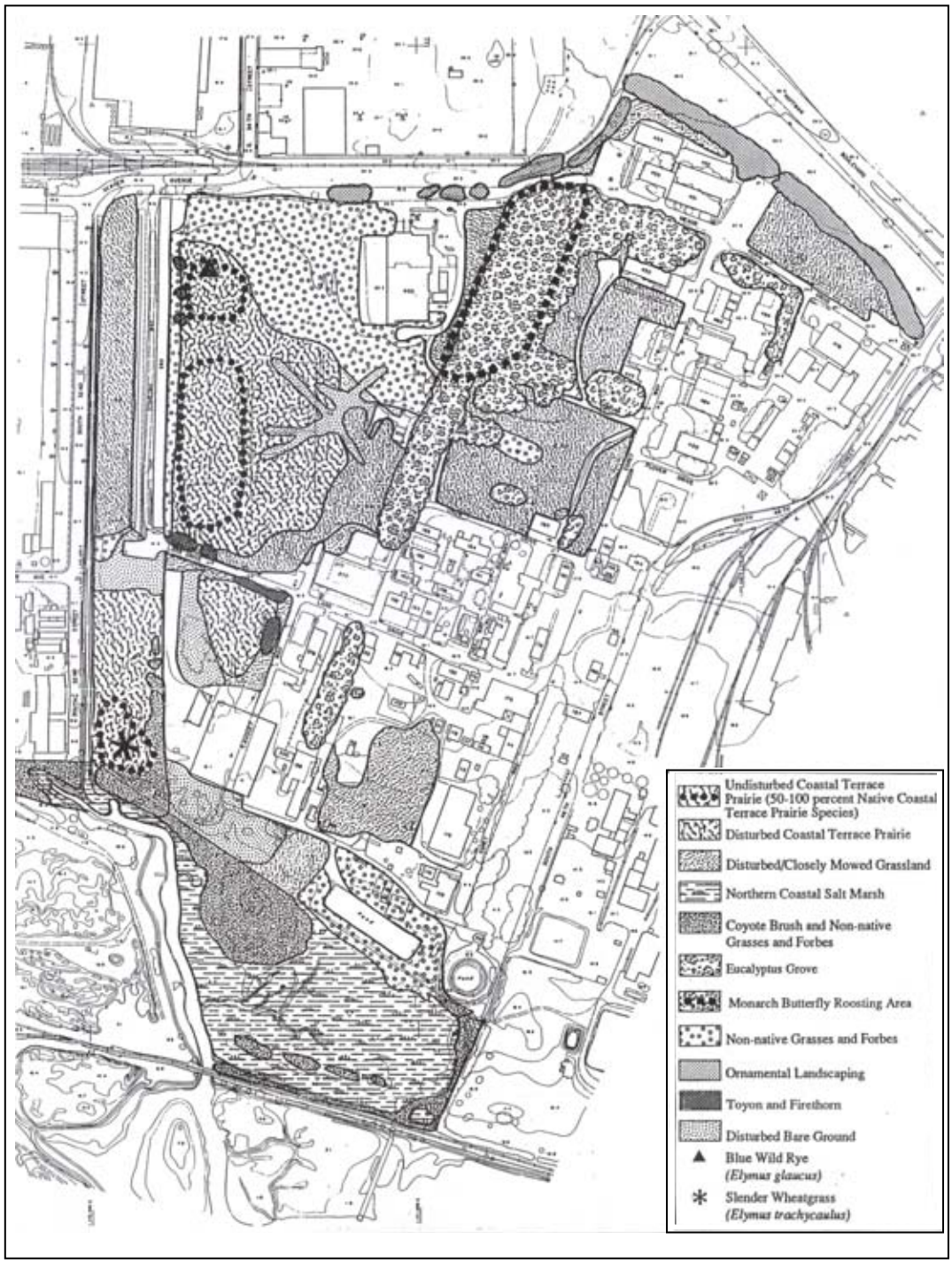


Figure 3

Grasslands and Other Habitat Areas

Source: Brady & Associates, Existing Conditions and Constraints Report, 1994

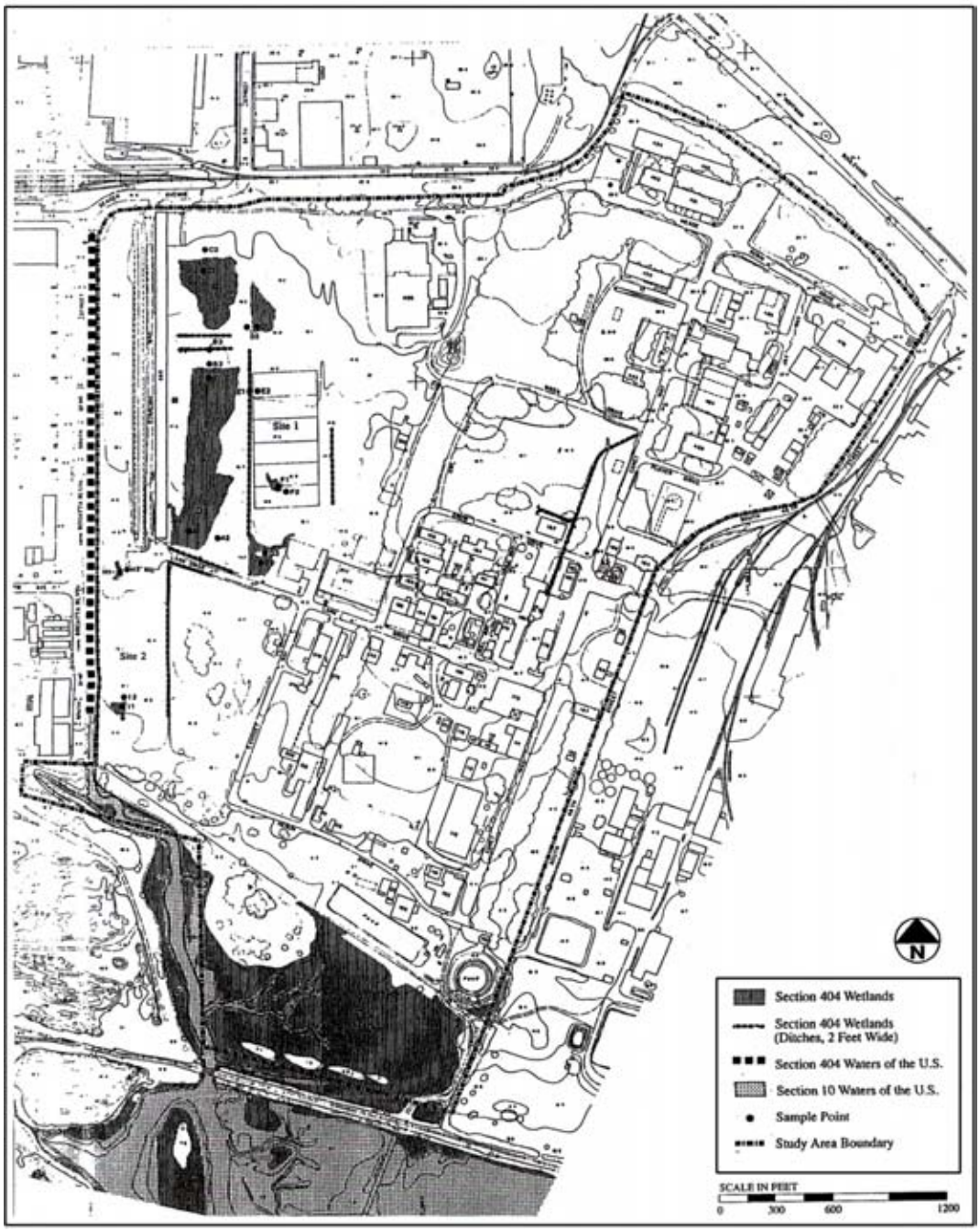


Figure 4
Wetland Areas

Source: Brady & Associates, Existing Conditions and Constraints Report, 1994

Existing facilities. The eastern portion of the Richmond Field Station has been developed and used for a variety of industrial and research purposes since at least 1880. All of the structures in the northeast quadrant of the site were built by the University after it acquired the site in 1950. These include a number of large-scale testing facilities that continue to support campus research needs.

Most of the structures in the remaining area to the east of the eucalyptus trees are one-story wooden structures built prior to 1940. While these older structures currently provide space for University research activities, they do not efficiently use the site. This area of the site could house a much greater quantity of research and office space if these buildings were replaced with newer, multi-story structures. While the age of some of these structures suggests that they may be historically significant, balancing the University's conservation and development values suggests that this area of the site be completely redeveloped over time.

Several areas to the west of the central stand of eucalyptus trees are also developed. These include the 3.3-acre site for the Region 9 Environmental Protection Agency analytical laboratory and the site for the Northern Regional Library Facility (NRLF). The NRLF is planned to grow in phases over time. There is currently no upper limit on the size of the facility. It is expected that the building will expand to the west approximately to the point where South 34th Street would intersect with the University's property.

Selected Existing Facilities. From left to right, top to bottom: Structrual Testing Facility (Bldg. 484); wooden buildings dating from prior to 1940 (Bldgs. 190 and 196); Earthquake Engineering's research offices (Bldg. 481); Earthquake Engineering shaking table facility (Bldg. 420); Northern Regional Library Facility (Bldg. 400).

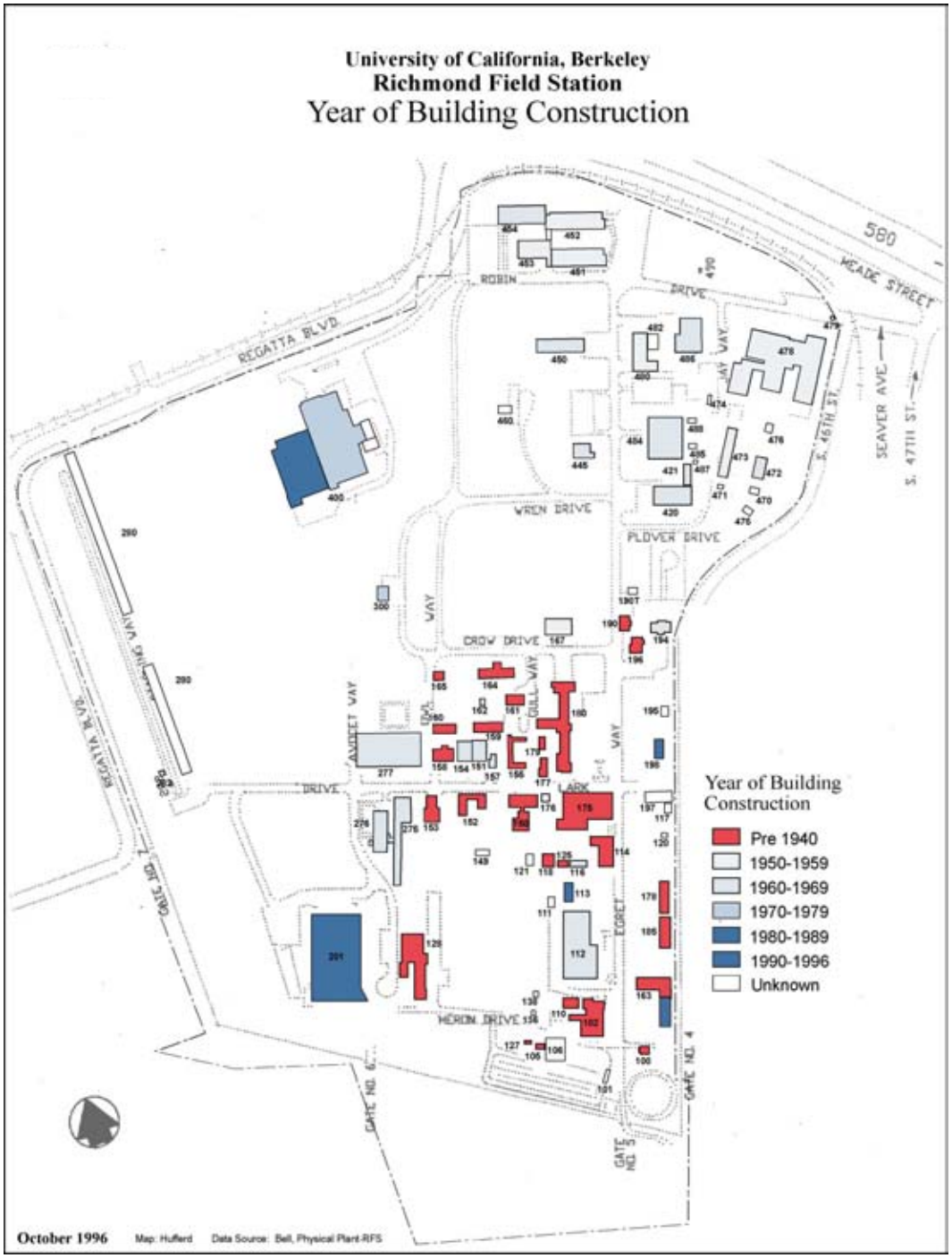


Figure 5

Existing Structures by Period of Construction

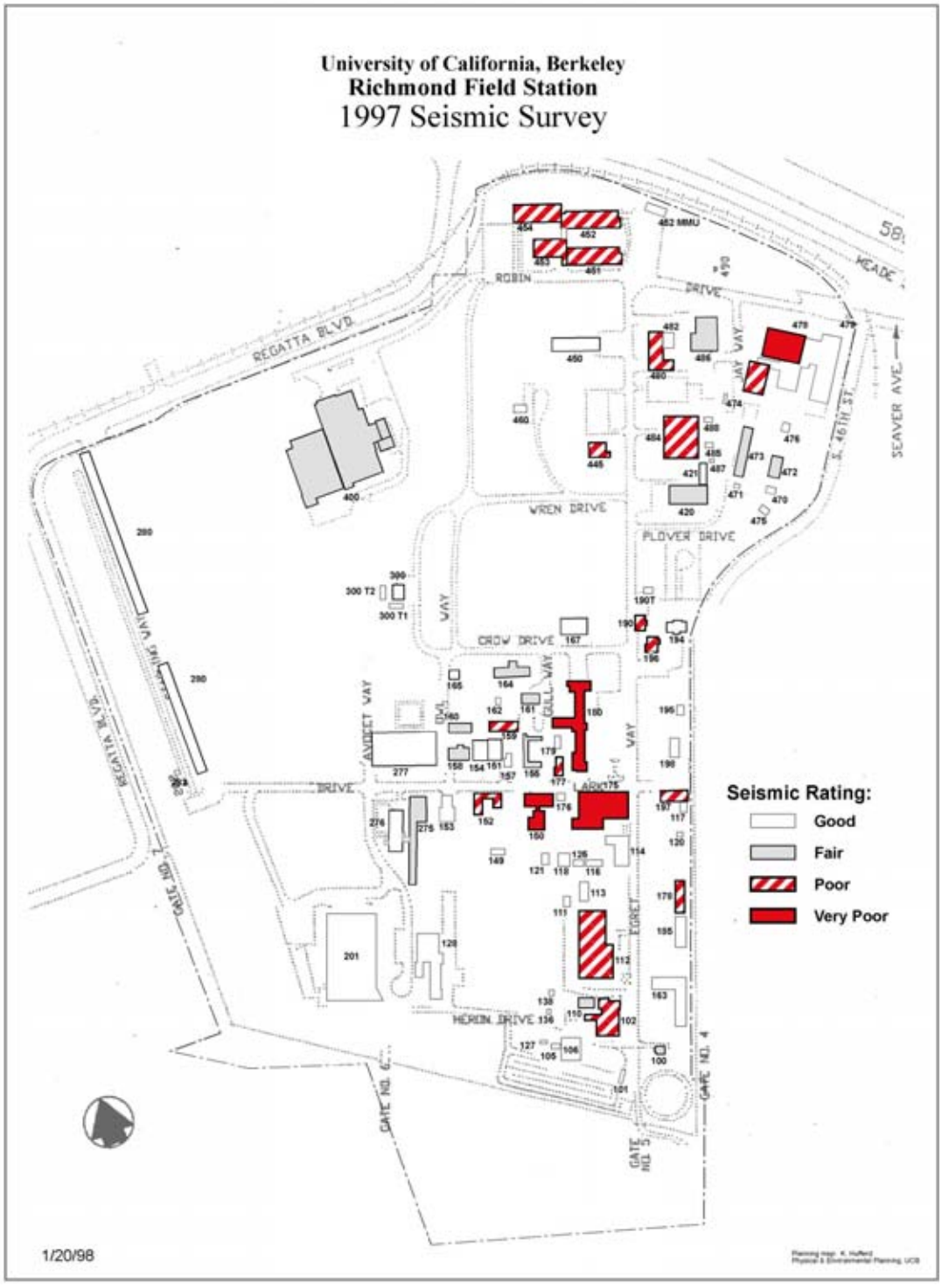


Figure 6

Seismic Ratings of Existing Structures

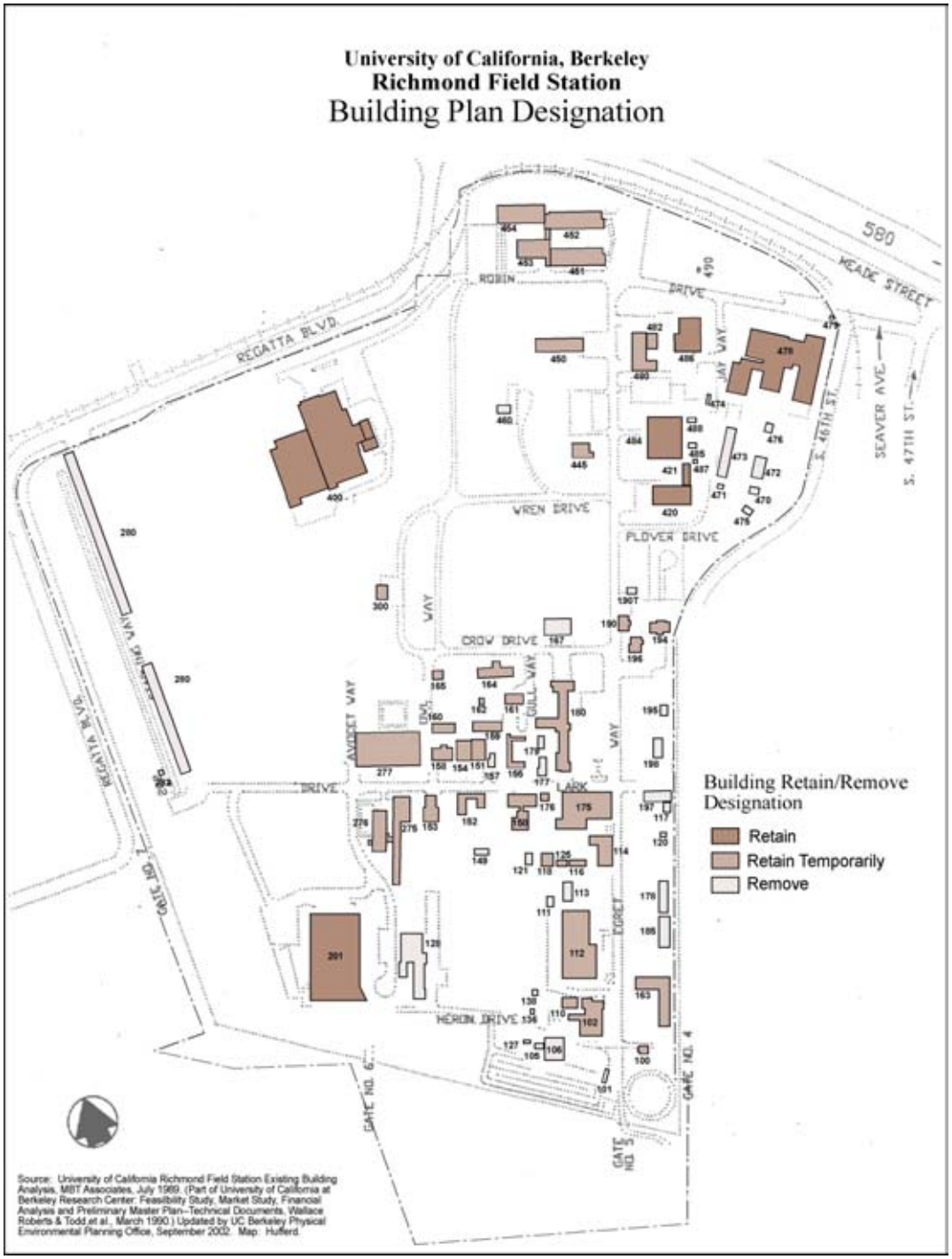


Figure 7
Retain/Remove Designation for Existing Buildings

Site Infrastructure and Amenities. There is a general perception among Berkeley campus faculty that the overall quality of the infrastructure and amenities at Richmond Field Station are of poor quality and insufficient to meet the demands of high quality university research.

Utilities. While it is true that certain utilities are in need of improvement, the upgrading of these systems, while essential, does not represent a significant barrier to development of the site. A sub-committee of the RFS Planning Committee reviewed the status of the utilities on the site (see Appendix). The sub-committee's report noted that the quality of the data network at the RFS actually exceeds that on the central campus. The most critical utilities systems in need of improvement are the electrical capacity to the site and the telephone system.

Connectivity to the Core Campus. Perhaps the biggest barrier to increased usage of the RFS properties is the perception on the part of the campus faculty that it is remote and disconnected from the core campus. While the site is approximately 15 minutes by automobile from the Berkeley campus, difficulties in finding parking on or near the core campus add to the difficulty in traveling by car between the two sites. The existing shuttle bus between the RFS and Berkeley campus currently runs on an hourly schedule. This is considered to be inadequate to serve the need for quick for frequent trips between the two sites.

Amenities. The Richmond property is currently poorly served by retail and food services. There is no restaurant or café on the Richmond Field Station and there are few in the immediate vicinity of the site. In addition to being an inconvenience, it is felt that absence of such services limits opportunities for informal interactions and collegiality at the site. While the site has a small exercise facility with weight lifting and other workout equipment, the site suffers from a lack of adequate recreation facilities.

The views of the San Francisco Bay and access to the Bay Trail are among the site's most cherished existing amenities.

Figure 8: View from Richmond Field Station shoreline

3 POTENTIAL UC SITE DEMAND

Value for Potential UC Site Uses. The University's Richmond property has a variety of physical attributes that provide both conservation and development opportunities to serve campus research, instruction, recreation and habitat conservation goals. Certain areas of the property are especially well-suited for the development of research and instruction building space, while other areas are most appropriate for conservation in order to meet a variety of teaching, research, recreation or habitat objectives.

In many instances, conservation and development values can complement one another at the site. For example, the preservation of certain habitat areas provides opportunities for the campus to conduct teaching and research associated with these areas. Additional facilities to house such environmental research and instruction activities, if appropriately sited, could complement the conservation and preservation of these habitat areas. In other instances, conservation and development values must be balanced to optimize the utility of the site to meet a range of University objectives.

The Richmond Field Station Planning Committee reviewed the physical attributes of the site and developed a composite map of the property's key opportunities and constraints (see Figure 9).

Needs of Current Site Users. The Planning Committee surveyed the needs of the current departments using the site. The Committee found that their needs would not come close to filling the total development capacity of the site. Thus, there would clearly be significant capacity for other Central campus programs that might need additional research space at the site.

The anticipated needs of the major current users are outlined below.

PATH Program. The program is growing and is dispersed throughout the Richmond campus. Collocating the programs would enhance collaborations within the unit. Large test tracks are needed and could possibly be relocated to a larger facility (i.e., Alameda Naval Base decommissioned airport runway) in order to free up development sites might be impacted by the current track alignments.

Forest Products Lab. The operation is static and the unit is utilizing all of their space. They would like to consolidate their outlying buildings and have had thoughts of putting a 2-story addition on their main facility.

Integrative Biology. The fields, salt marshes, and tidal mudflats are currently being used for teaching and research. The program needs a facility where students could gather and where equipment could be stored.

Earthquake Engineering Research Center (and PEER). EERC is also housed in several buildings. Currently, a federally funded large-scale experimental facility is being constructed in Building 484. The EERC population will be increasing and one facility with experimental, office and library facilities would be best.

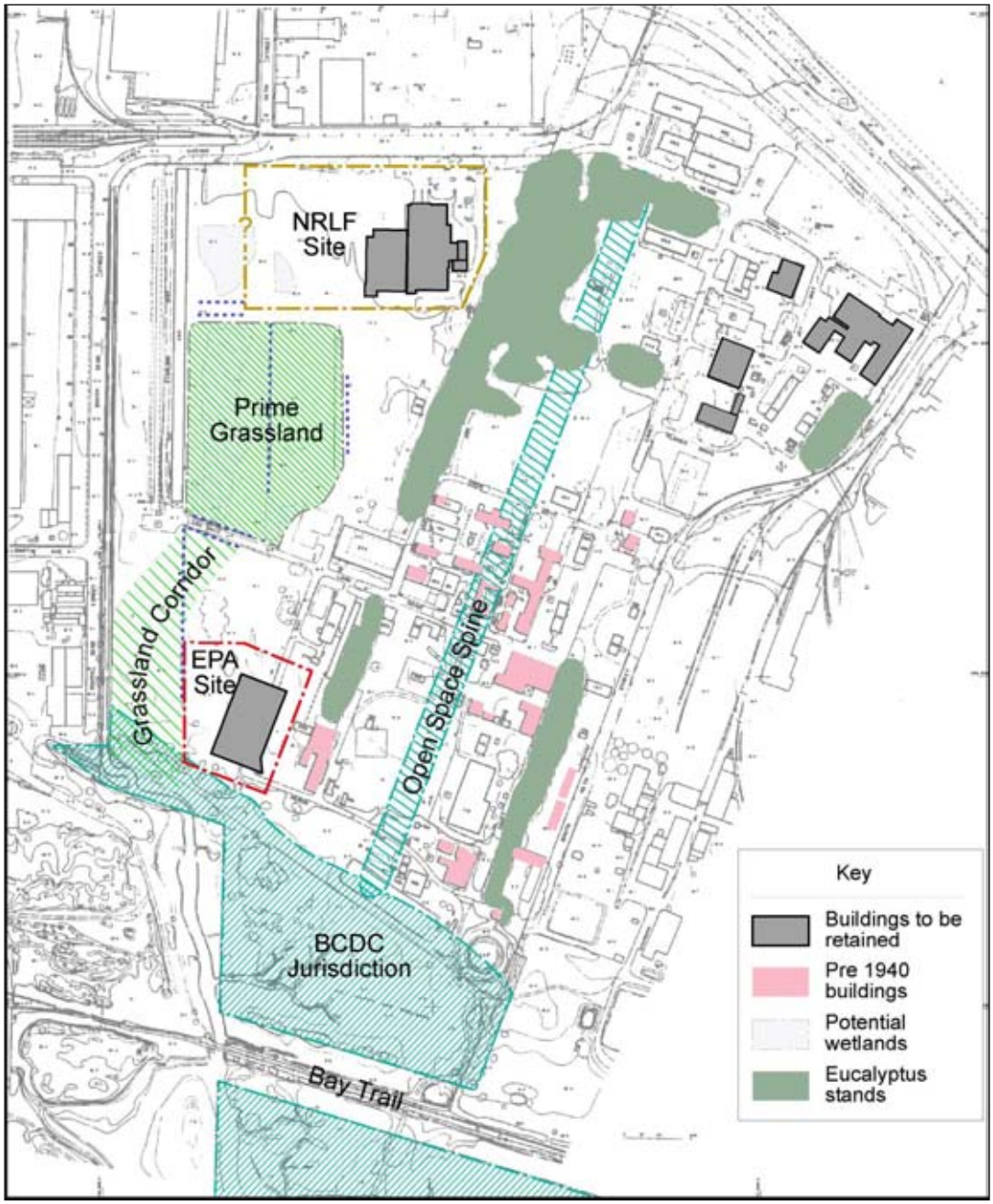


Figure 9
Key Opportunities/Constraints

Institute of Environmental Science and Engineering. Most of the IESE faculty want to be located on campus. Bioengineering faculty are waiting for Hearst Mining Bldg and Stanley projects to be completed so they can move back to campus.

Institute of Transportation Studies (ITS). ITS could utilize a conference center for the ITS Extension Tech Transfer program since it is growing. Also there is a need for a high-grade teaching facility. The much of the pavement research program is moving off site in the next five years, however, some research may continue at the RFS. This may open up space in Building 480 and the Fog Building.

Northern Regional Library Facility. A third phase of the library storage facility has been approved and is expected to begin constructed in the next year. The long-range plan for the library calls for additional phases to be construction over time. The land use plan provides for a total of six phases of the library to be accommodated.

4 RECOMMENDED DEVELOPMENT PRINCIPLES

Land Use. The mapping of site physical features and study committee discussions about the future research needs of the campus lead to an examination of the areas most appropriate for development and those most appropriate for habitat conservation. The study committee then mapped these areas. The resultant land use plan allocates approximately one-half of the Richmond property for habitat conservation/restoration and the other half for development (see Figure 10). The plan preserves the most valuable upland native grassland and wetland habitats and links these areas to the salt marsh via a grassland corridor.

> **Principle 1.** Preserve the most valuable native grassland and wetland habitat areas on the site and link these to the salt marsh via a grassland corridor.

The plan suggests redevelopment of those areas of the site that have been sparsely developed in the past. The area labeled "Core Developable Area" would be the most suitable for gradual, but complete redevelopment into high quality research offices and labs for the University. The development capacity of this 44-acre area could total approximately 1 million gross square feet.[3]

> **Principle 2.** Gradually redevelop the central core area of the Richmond property, replacing the older modest structures with high quality research facilities that complement and support the teaching, research and public service mission of the Berkeley campus.

The land use concept also designates areas that are largely already developed, namely the EPA lab site, the Northern Regional Library Facility (NRLF) site and expansion area, and an area designated for the Large Scale Testing Facilities in the northeast portion of the property. The latter two areas provide for necessary growth.

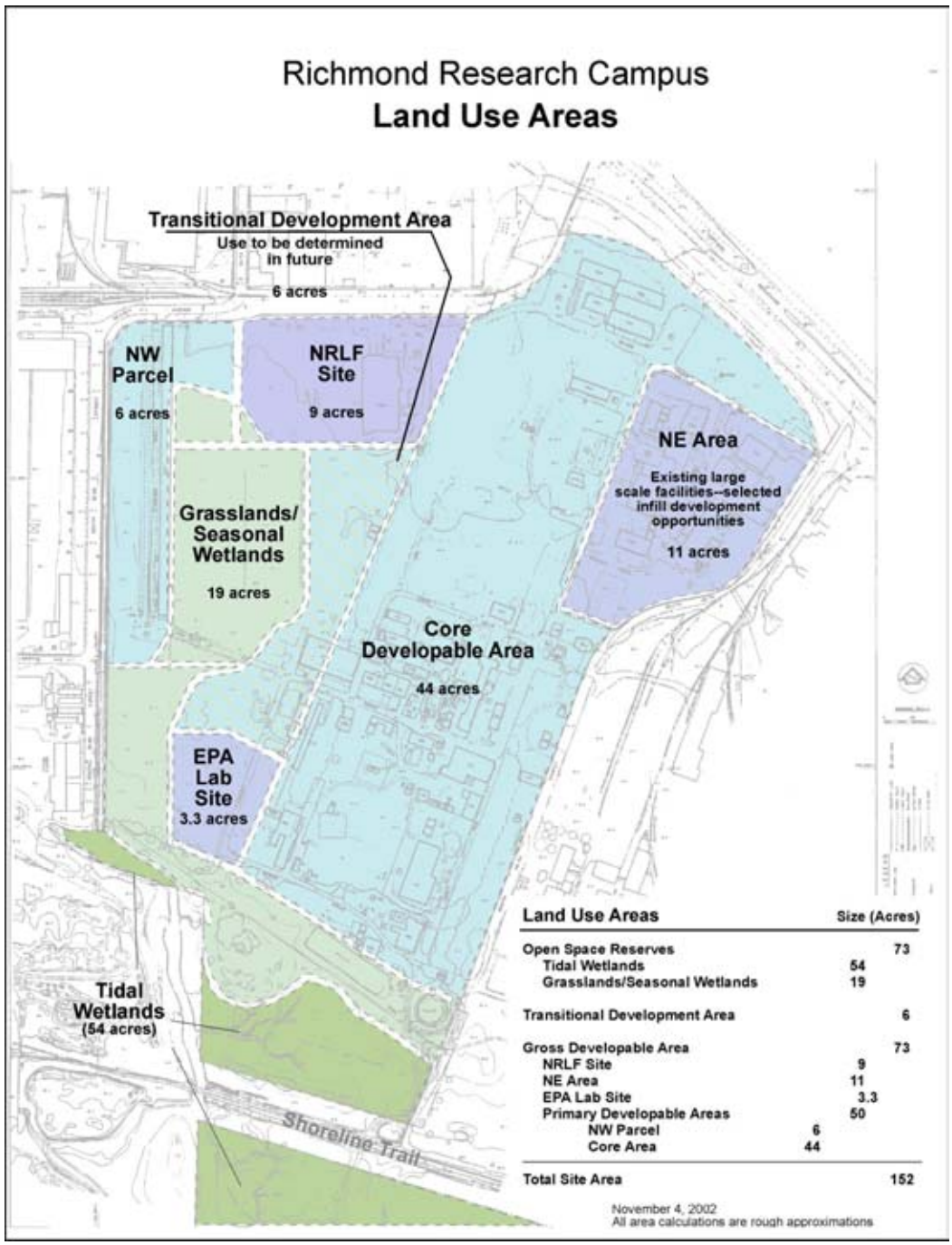
> **Principle 3.** Accommodate the relatively modest growth needs of the current university users of the Richmond property. Concentrate expansion of Large Scale Testing Facilities in the northeast portion of the property.

> **Principle 4.** Include areas that meet the current and future needs of the existing specialized facilities on the site such as the EPA lab and the Northern Regional Library Facility.

An area between the Core Developable Area and the prime grassland/wetland area has been designated as a Transitional Development Area. This area provides a transition area between the developed and native grassland areas of the site and thus has potential value for both. As a result, a decision about the use of this land will be made at a future time.

> **Principle 5.** Designate the area between the Core Development Area and the prime upland grassland/wetland areas as a Transitional Development Area and defer the decision about the use of this area to a future date.

[3] The total development capacity assumes development density of 2 to 3 story buildings and the eventual development of some parking structures. The assumed Floor Area Ratio at build out would be 0.5.



Land Use Area	Development Density	Development Capacity (GSF)
Primary Developable Areas		
NW Parcel	FAR .35 to .5	91,000 -- 131,000
Core Area	FAR .35 to .65	671,000 -- 1,246,000
NE Area		
Existing		72,000
New	FAR .35	61,000
NRLF		
Existing		185,000
Estimated Additional		420,000
EPA Lab		45,000
Transitional Area	FAR .0 to .5	0 -- 131,000
Total Build Out		1,545,000 -- 2,291,000

Figure 10
Land Use Area

The Northwest Parcel is separated from the Core Development Area by the grassland and the NRLF and therefore this area may be most suitable for leasing to non-University R&D facilities that have research relationships with the University.

> **Principle 6** Consider development of non-University R&D facilities in the Northwest Parcel of the Richmond Property.

In general, the Richmond property has strong potential to serve as a high-quality auxiliary research campus complementing core campus research programs. While the site has a development capacity for perhaps as much as 2 million gross square feet overall, of which 1.3 million could be new university research space, demand for such potential space has been low due to the perceived remoteness of the site and the lack of high-quality amenities and infrastructure. The university must first make certain strategic investments in the property before the site's potential as a true research campus can be realized. A number of initial strategic investments necessary to improve the connectedness of the site to the core campus and to augment the infrastructure, amenities and facilities on the property are outlined below.

> **Principle 7** In order to greatly enhance the viability of the site for new university research facilities, make strategic investments in the amenities and infrastructure at the Richmond property, to ensure they are of a quality commensurate with a first class research university.
>
> **Action 7.1**. The campus should immediately fund and complete key planning documents necessary to better prepare the site for expedited development, including:
>
> - an overall site master plan, including plans for infrastructure development and an illustrative diagram that will convey the expected high quality research environment at full build out
> - site design guidelines
> - a master plan EIR
> - site management policies and principles

With such investments the site should be more aggressively "marketed" to campus faculty in a variety of research disciplines. An important complement to these investments will be a renaming of the facility to reflect the campus' commitment to a first quality research environment. One suggestion for a new name is the "University of California, Berkeley -- Marina Bay Research Campus."

> **Principle 8** Aggressively "market" the Richmond property to campus faculty as a viable alternative for location of new research facilities.
>
> **Principle 9** Rename the property to reflect the campus' commitment to the site as a first quality research environment.
>
> **Action 9.1.** Campus staff should undertake formal steps to rename the Richmond facility.

While a range of research disciplines could be accommodated on the Richmond site, it is particularly well suited for certain clusters of research activities. Such research clusters include:

- Large-Scale Engineering Research. The site currently houses important research and testing facilities for earthquake, transportation, civil and environmental engineering. In particular, transportation research is likely to demand additional facilities at Richmond. While an excess of such facilities could diminish the potential use of the site for other forms of research, there is room for additional large-scale facilities in the northeast portion of the site.
- Environmental/Sustainability Center. There is a potential to expand upon the academic and research programs currently using the site's natural habitats and to develop a showcase for environmental and sustainable technologies.
- Biotechnology Center. The Berkeley campus could cluster new bioscience laboratories on the site and establish research partnerships with existing and future biotech companies in Richmond and elsewhere in the East Bay.
- IT Center. The facility is currently served by high quality data and networking infrastructure. The Berkeley campus could capitalize on this existing investment by developing the site as a showcase for information technologies.
- Outreach/Education Center. Social science and public policy ORU's and outreach activities could be located on the site taking advantage of the sites accessibility to greater Bay Area. A new center for educational outreach to local schools could be established and might include the creation of a UC-run charter school.
- Retreat/Conference Center. A modest conference facility adjacent to the shoreline could capitalize on the retreat-like natural resources at the site.

Principle 10. Consider creating a wide variety of research concentrations at the Richmond property. Such concentrations or "clusters" could include, but not be limited to: Large-Scale Engineering Research, Environmental/Sustainability Center, Biotechnology Center, IT Center, and, Outreach/Education Center. These site use scenarios are not necessarily mutually exclusive; in fact, a combination of research clusters on the site is likely.

Action 10.1. The campus should study the feasibility of developing a multi-tenant research building. This facility could provide space for UC programs as well as private sector tenants. The University programs might expand into space leased to private tenants if the need arises over time.

Principle 11. Consider development of a modest retreat/conference center on the property.

Action 11.1. Campus staff should examine the feasibility of developing a new conference facility at the Richmond site.

While the Berkeley campus is in need of additional faculty and student housing, long-term residential facilities are not recommended for the Richmond site. This is due in part to the presence of soil and water contamination caused by prior industrial uses on and adjacent to the Richmond property. While the University is embarking upon a plan to clean up the site, it would be prohibitively expensive to meet the clean-up standards for housing. Additionally, the existing

[See RFS Site Use Scenarios Chart
in separate PDF file]

critical mass of research facilities and other attributes make it particularly well suited for additional research facilities, while the University's residential needs can be met elsewhere.

> **Principle 12** The Richmond property should not be considered as a location for campus housing, perhaps other than accommodations for short-term visiting scholars or conferences/retreats.

Additionally, it is not recommended that the site serve as a "back office" administration center. Such needs can be better met at the University's facilities at 6701 San Pablo or elsewhere.

> **Principle 13** The development of "back office" administrative facilities at the Richmond property is not recommended.

Natural Habitats/Ecological Areas. The Richmond property contains a number of natural environmental habitats that currently serve as teaching and research resources for the campus and provide the potential for new academic and research opportunities. The habitat types of particular interest are the coastal terrace prairie and the northern coastal salt marsh. Future plans for the site should provide for the preservation of these habitats and should include measures to provide a natural habitat corridor linking the marsh with the upland prairie. While not native, the eucalyptus groves present on the site provide a habitat for raptors and butterflies and provide an important visual identity for the property. It is recommended that the largest stand of these trees in the central northern portion of the site also be preserved.

Because the campus has no formal mechanism for recording and tracking individual research projects making use of these habitats, such projects are often neither informed of one another nor protected from public intrusion and damage. The prime coastal terrace prairie grassland, the wildlife corridor and the marsh and bay lands should be formally designated as an Ecological Study Area (ESA) of the Berkeley campus.

With such a designation, a formal campus management entity could not only maintain a registry of all education and research projects in the ESAs, it could also:

- identify and promote synergy among those projects,
- track external funding prospects for new research initiatives,
- identify and recommend strategies for protection from invasive plants, animals and humans, and
- identify and recommend strategies for improved coexistence of recreation and education/research.

> **Principle 14.** Preserve important natural areas on the Richmond property, particularly the coastal terrace prairie and the northern coastal salt marsh, not only for their value as teaching and research resources, but for their habitat value as well.

> **Principle 15.** The prime coastal terrace prairie grassland, the wildlife corridor and the marsh and bay lands should be formally designated as an Ecological Study Area of the Berkeley campus and a formal management entity be designated to oversee the ESA.

> **Action 15.1**. The Vice Chancellor for Research should establish a formal management entity for the Richmond ESA as soon as possible, and should consider incorporating the

establishment of such a management entity for the new ESA into the emerging strategy for Field Stations.

Transportation. Greatly improved transportation linkages to the core campus are essential in order for the Richmond campus to serve as a true auxiliary research campus. There is general consensus that transit service to and from the core campus is inadequate, due both to the total travel time and frequency of service.

The College of Engineering and Parking and Transportation representatives are currently negotiating with the State Department of Health Services to expand the shuttle frequency from once every hour to once every ½ hour. However, due to changes in the shuttle routing the total travel time could increase from 20 minutes to 30 minutes per one-way trip between the Richmond site and the core campus. The new route would decrease travel time to and from BART, however, by linking directly to the El Cerrito Del Norte station versus the Downtown Berkeley station.

Principle 16. Provide a high-quality, efficient shuttle service linking the Richmond property to the core campus. The shuttle frequencies should be at least once every half hour. The total travel time should be reduced to 20 minutes to the extent possible. The shuttle should also provide access to BART.

Principle 17. Solicit the advice of campus faculty with expertise in transportation on measures to ease transportation between the Richmond property and the core campus. Such measures could include making available environmentally sound car share vehicle, "station cars" and/or the designation of central campus parking spaces for use by Richmond researchers.

Action 17.1. Assuming DHS agrees to cooperate with UC on shuttle services, campus staff should coordinate with the Parking and Transportation staff to monitor the new shuttle service and survey riders about the trade-off between increased travel time to campus and the improved frequency of service and shorter travel time to BART. Staff should study the logistical and financial implications of alternative shuttle plans that could shorten the travel time to campus *and* provide improved access to BART, particularly during commute hours.

Other measures to ease transportation between the Richmond and core campuses should be explored. The campus should consider making environmentally sound car share vehicles available to provide for trips that cannot be accommodated via the shuttle bus. Reserved parking spaces could be provided on the central campus for such vehicles. Parking should continue to be provided for free at the Richmond site for the foreseeable future to encourage greater use of the property.

Action 17.2. Campus planning, parking and transportation staff with input by the Institute for Transportation Studies should evaluate the logistical and financial implications of providing transportation improvements to and from the core campus such as car share or station car vehicles and reserved central campus parking.

Infrastructure, amenities and security. A number of improvements to the utility systems will be necessary in order for the Richmond property to provide for future growth, in terms of both capacity and reliability. Many programs at the RFS are perceived to receive lower levels of security than they would on the core campus. The Richmond site currently suffers from a relative lack of amenities such as cafes, retail services and a wide array of recreational facilities. The College of

Engineering plans to install a small café on the site in spring 2003. The campus should consider subsidizing the café operations, if initial revenues are insufficient maintain the café.

Principle 18. Maintain and improve the utility and infrastructure systems at the Richmond property commensurate with the growth needs and a quality fitting a first class university research campus.

Action 18.1. As a next step, campus staff should develop a utilities improvement plan to ensure levels of service comparable to the core campus as the Richmond property develops. In particular, this plan should recommend ways to improve the following utilities:

- Electrical power—Immediate steps should be taken to work with PG&E to provide for additional electrical power capacity at the site.
- Telephone service—The telephone system should be upgraded and converted to a switching system that will be compatible with that of the core campus to allow for use of campus prefixes such as 642-xxxx and 643-xxxx and thereby enable expedited dialing.
- Water main—The existing transite piping should be replaced with a more durable system.

Principle 19. Make early investments to significantly improve the amenities such as cafes, retail services, and recreational facilities available to users of the site.

Action 19.1. Campus staff should monitor the financial performance of the initial café and develop recommendations to ensure continuation of this amenity.

Action 19.2. Staff should develop a plan for improved and expanded walkways and hiking and biking trials.

Action 19.3. Campus staff should coordinate with recreational sports to evaluate what additional recreation facilities should be added to the site and to develop a funding strategy to support them.

Principle 20. In order to ensure site security, the facility should remain fenced and secured at the site's perimeter for the near-term. However, the master plan should anticipate a development scenario that would allow for a more open facility that would better integrate the site with the surrounding Richmond shoreline.

5 CONCLUSION

The University's 152-acre Richmond property is the principal land resource available to the Berkeley campus to help meet its long-range demand for additional research space. The site's assets, particularly its accessibility to the greater Bay Area, attractive bayside setting, natural habitat areas and proximity to private and governmental R&D development in the Richmond South Shoreline, coupled with its significant development capacity, provide the University with the opportunity to create a premiere research facility supporting and complementing teaching, research and public service programs of the Berkeley campus.

The research campus should be incorporated as seamlessly as possible into the fabric of the Berkeley campus as its major property asset and as an early option for expansion of programs, primarily in the areas of research and public service. It must be viewed as an integral, complementary component of the Berkeley campus, and should include as broad an array of disciplines as is feasible and desirable.

In order for the site to realize this potential the campus administration must work to overcome the general reluctance on the part of most faculty members to consider Richmond as a potential site for research and related facilities. The development principles and proposed implementation actions outlined in this report would be important initial steps toward addressing these strategic investment needs.

APPENDIX

List of Development Principles and Actions

Utilities report and maps

Richmond Field Station Working Paper

Development Principles and Actions

Principle 1. Preserve the most valuable native grassland and wetland habitat areas on the site and link these to the salt marsh via a grassland corridor.

Principle 2. Gradually redevelop the central core area of the Richmond property, replacing the older modest structures with high quality research facilities that complement and support the teaching, research and public service mission of the Berkeley campus.

Principle 3. Accommodate the relatively modest growth needs of the current university users of the Richmond property. Concentrate expansion of Large Scale Testing Facilities in the northeast portion of the property.

Principle 4. Include areas that meet the current and future needs of the existing specialized facilities on the site such as the EPA lab and the Northern Regional Library Facility.

Principle 5. Designate the area between the Core Development Area and the prime upland grassland/wetland areas as a Transitional Development Area and defer the decision about the use of this area to a future date.

Principle 6. Consider development of non-University R&D facilities in the Northwest Parcel of the Richmond Property.

Principle 7. In order to greatly enhance the viability of the site for new university research facilities, make strategic investments in the amenities and infrastructure at the Richmond property, to ensure they are of a quality commensurate with a first class research university.

Action 7.1. The campus should immediately fund and complete key planning documents necessary to better prepare the site for expedited development, including:

- an overall site master plan, including plans for infrastructure development and an illustrative diagram that will convey the expected high quality research environment at full build out
- site design guidelines
- a master plan EIR
- site management policies and principles

Principle 8. Aggressively "market" the Richmond property to campus faculty as a viable alternative for location of new research facilities.

Principle 9. Rename the property to reflect the campus' commitment to the site as a first quality research environment.

Action 9.1. Campus staff should undertake formal steps to rename the Richmond facility.

Principle 10. Consider creating a wide variety of research concentrations at the Richmond property. Such concentrations or "clusters" could include, but not be limited to: Large-Scale Engineering Research, Environmental/Sustainability Center, Biotechnology Center, IT Center, and, Outreach/Education Center.

These site use scenarios are not necessarily mutually exclusive; in fact, a combination of research clusters on the site is likely.

> **Action 10.1**. The campus should study the feasibility of developing a multi-tenant research building. This facility could provide space for UC programs as well as private sector tenants. The University programs might expand into space leased to private tenants if the need arises over time.

Principle 11. Consider development of a modest retreat/conference center on the property.

> **Action 11.1**. Campus staff should examine the feasibility of developing a new conference facility at the Richmond site.

Principle 12. The Richmond property should not be considered as a location for campus housing, perhaps other than accommodations for short-term visiting scholars or conferences/retreats.

Principle 13. The development of "back office" administrative facilities at the Richmond property is not recommended.

Principle 14. Preserve important natural areas on the Richmond property, particularly the coastal terrace prairie and the northern coastal salt marsh, not only for their value as teaching and research resources, but for their habitat value as well.

Principle 15. The prime coastal terrace prairie grassland, the wildlife corridor and the marsh and bay lands should be formally designated as an Ecological Study Area of the Berkeley campus and a formal management entity be designated to oversee the ESA.

> **Action 15.1**. The Vice Chancellor for Research should establish a formal management entity for the Richmond ESA as soon as possible, and should consider incorporating the establishment of such a management entity for the new ESA into the emerging strategy for Field Stations.

Principle 16. Provide a high-quality, efficient shuttle service linking the Richmond property to the core campus. The shuttle frequencies should be at least once every half hour. The total travel time should be reduced to 20 minutes to the extent possible. The shuttle should also provide access to BART.

Principle 17. Solicit the advice of campus faculty with expertise in transportation on measures to ease transportation between the Richmond property and the core campus. Such measures could include making available environmentally sound car share vehicle, "station cars" and/or the designation of central campus parking spaces for use by Richmond researchers.

> **Action 17.1.** Assuming DHS agrees to cooperate with UC on shuttle services, campus staff should coordinate with the Parking and Transportation staff to monitor the new shuttle service and survey riders about the trade-off between increased travel time to campus and the improved frequency of service and shorter travel time to BART. Staff should study the logistical and financial implications of alternative shuttle plans that could shorten the travel time to campus *and* provide improved access to BART, particularly during commute hours.
>
> **Action 17.2.** Campus planning, parking and transportation staff with input by the Institute for Transportation Studies should evaluate the logistical and financial implications of providing transportation improvements to and from the core campus such as car share or station car vehicles and reserved central campus parking.

Principle 18. Maintain and improve the utility and infrastructure systems at the Richmond property commensurate with the growth needs and a quality fitting a first class university research campus.

Action 18.1. As a next step, campus staff should develop a utilities improvement plan to ensure levels of service comparable to the core campus as the Richmond property develops. In particular, this plan should recommend ways to improve the following utilities:

- Electrical power—Immediate steps should be taken to work with PG&E to provide for additional electrical power capacity at the site.
- Telephone service—The telephone system should be upgraded and converted to a switching system that will be compatible with that of the core campus to allow for use of campus prefixes such as 642-xxxx and 643-xxxx and thereby enable expedited dialing.
- Water main—The existing transite piping should be replaced with a more durable system.

Principle 19. Make early investments to significantly improve the amenities such as cafes, retail services, and recreational facilities available to users of the site.

Action 19.1. Campus staff should monitor the financial performance of the initial café and develop recommendations to ensure continuation of this amenity.

Action 19.2. Staff should develop a plan for improved and expanded walkways and hiking and biking trials.

Action 19.3. Campus staff should coordinate with recreational sports to evaluate what additional recreation facilities should be added to the site and to develop a funding strategy to support them.

Principle 20. In order to ensure site security, the facility should remain fenced and secured at the site's perimeter for the near-term. However, the master plan should anticipate a development scenario that would allow for a more open facility that would better integrate the site with the surrounding Richmond shoreline.

Richmond Field Station Study Committee
Utilities Sub-Committee Report

June 12, 2002

Executive Summary

The Richmond Field Station (RFS) Utilities Sub-committee was tasked with reviewing and evaluating each of the utility systems currently providing service to RFS. Included in the evaluation are brief descriptions of each system and identified limitations, which may impact future planning and development of the Richmond Field Station.

Electrical Power

There are currently two PG&E 12,000 Volt power feeds providing service to RFS. The western feed near gate seven is dedicated to the Environmental Protection Agency Building (Bldg 201), the eastern feed entering near the main gate provides power to the rest of the facility. The eastern feed enters the facility near building 478, the power is transmitted over aerial lines which extend down the center of the facility. There are 8 sub stations, which feed from this main line and provide distributions to all the buildings. The current system has seen numerous upgrades and is considered to be in good condition.

Limitations:
The current system while in good condition is aging and approaching full capacity. With the expected construction of the NRLF Phase 3 addition, the system will be near full capacity. Any new construction plans for the future will require increased service by PG&E. This process could require considerable time and resources. ***Under grounding of the current overhead feed is also suggested as a future-planning goal, these issues should both be addressed in the future development plan.***

Natural Gas

The RFS natural gas system is also fed by PG &E, the gas main feeds from Meade Street along S 46th street. The main RFS meters are located near building 476 and near building 120. From these locations the system is reduced in pressure and distributed to all the buildings via small gas mains running along the RFS roadways. The RFS gas mains were upgraded in the early 80's, and are considered in excellent condition.

Limitations:
There are currently no limitations regarding the natural gas system that might impact future facility planning.

Water Mains

The East Bay Utility District (EBMUD) provides the domestic water feed to the facility. EBMUD provides the feed from a 12-inch main located on along South 47th Street. The EBMUD 12 inch feed is reduced to an 8-inch main, which feeds the rest of the RFS campus. There are also two 12-inch fire mains that feed two large fire hydrant loops. These enter the facility near gates 7 and 10, they are dedicated fire mains which cannot be tapped for domestic service. The 12-inch mains were installed in the late 80's and early 90's. The size of the main should adequately provide service for future development. The Fire Marshal will require that additional loops be added as development areas are identified.

Limitations:
The current water main running throughout the facility is primarily composed of an 8-inch transite pipe. Although very durable, this material has become brittle with age and is rapidly approaching its life expectancy. The maintenance department is currently experiencing periodic failures along this line. ***The system should be replaced to support current and future development plans.***

Storm Drains

The storm drainage system at RFS relies mainly on surface swales to control and direct run off. There are additional underground culverts that also assist in this function. These culverts are primarily found along the Egret Way. Along the northern section of the facility there is also a large 24-inch concrete storm line that is maintained by the city. Historically, this was used as a city sewer overflow but was disconnected in the eighties. It currently provides very little storm support to the facility but because of its size provides additional expansion room for future development.

Limitations:
The current metal culverts that support the drainage along Egret Way, are beginning to fail. They have out lived their designed life expectancy. The RFS maintenance department has a three-year plan for replacing all the culverts that pass under the street. ***The culverts paralleling the street will require replacement over the next four to six years. The replacement culverts should be sized to allow for future expansion.***

Sewer Lines

The campus is presently served by two large City mains that flow through campus from east to west: one in the north quadrant in Mead/Robin Drive, and one along the south boundary at the shoreline. The City has available capacity in these lines and at the treatment plant. There is currently remediation work planned for the shoreline sewer line that may require it to be relocated. This may allow an opportunity for the University/Zeneca to size up the line for future expansion.

Limitations:
There are no apparent sewer limitations that might impact future development planning.

Telephone

The RFS phone system is managed by Campus Network Services. The current feed from the outside world is provided by Pacific Bell. The current copper feed throughout the facility is being evaluated and replaced by CNS. Many of the old air filled phone cables have recently been replaced with modern gel filled cables. The conduit system feeding the facility appears to be approaching capacity. The ROLM switch that is currently providing phone service to a majority of the campus is approaching its maximum life expectancy. CNS is currently evaluating replacement options.

Limitations:
The obstacles impacting development plans would include the current switch capacity and reliability, the limitations of the incoming Pac Bell trunk lines and the conduit capacity through out the RFS campus. ***All these issues must be addressed prior to implementing development plans.***

Network

This is the most recently updated utility system on the RFS campus. The campus is currently receiving a fiber signal from the main campus via a TCI leased fiber. This fiber can support up to one-gigabyte network speed. The campus fiber currently terminates in building 196 where all the RFS routers are located. For redundancy there is also a Pac Bell DSL system, which will automatically feed the campus signal if the TCI fiber fails. Each of the RFS buildings is fed with a twelve-strand fiber cable. All the buildings have recently been upgraded with 100-megabyte switches and cabling. The RFS campus network system actually exceeds the current 10-megabyte campus standard.

Limitations:
The only limitation impacting network planning would be the current conduit capacity through out the RFS campus. Many of these conduits are shared for both network and telephone use. ***Future development would require additional conduit pathways***

[Utility maps to be inserted here]