

Page 3 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 128

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

A paneled entry door with windows is accessed by wooden stairs that lead to the porch. At the rear of this section of the building, are seven bays separated by poured concrete walls that project past the walls and above the roof. There are two rectangular plan sections at the northwest end of the primary wing. The smaller section, at the west end of the building, is topped with a shed roof. The larger section, to the north, has a very shallow, pitched, gabled roof. Both sections are accessed by large replacement roll up doors at their southwest ends.

Building 128, originally labeled “Building 4b,” was constructed circa 1930 by the California Cap Company.¹ The original building consisted of what is today the southeast wing of the building and was used as a press house. The press house was where gunpowder was compressed into cakes using weights. There were several other small buildings in the vicinity that were also press houses. The heavy concrete walls at the rear of the original building are reinforced concrete blast walls, intended to limit damage in case of explosion. After UC Berkeley purchased the property in the 1950s, the University added two warehouse additions to the building. The first was the northwest section of the building, built circa 1950.² The smaller west section was added in 1974.³ The building housed internal combustion laboratories and was used for detonation research. Rocket engine tests using model rockets were among the modes of research conducted in Building 128.⁴ By 1980 Building 128 was altered to its current irregular footprint. During the 1980s, large machinery was installed for research into automated recycling.⁵ The building is currently used as a research facility.

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.⁶ Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.⁷ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.⁸

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁹ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco

¹ University of California, Berkeley, 2008, p. 199.

² Shackleton, 2013.

³ University of California, Berkeley, File “Building 128,” located in vertical files in Room 148, Richmond Field Station.

⁴ University of California, Berkeley, File “Building 128,” located in vertical files in Room 148, Richmond Field Station.

⁵ Shackleton, 2013.

⁶ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

⁷ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁸ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁹ Evan Griffins, “Early History of Richmond”, December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

Page 4 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 128

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.¹⁰ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.¹¹ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.¹² Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.¹³ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.¹⁴

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹⁵

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹⁶ The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹⁷

¹⁰ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

¹¹ J.P. Munro-Fraser, p. 675.

¹² Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

¹³ Hulaniski p. 288.

¹⁴ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

¹⁵ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹⁶ Purcell, p. 646.

¹⁷ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

Page 5 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 128

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹⁸ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁹ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.²⁰ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.²¹

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.²² As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."²³ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.²⁴

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²⁵ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²⁶ California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²⁷ The California Cap Company was located on the parcel that is currently the Richmond Field

¹⁸ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁹ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

²⁰ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

²¹ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

²² Pacific Mining News, p. 222.

²³ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

²⁴ Pacific Mining News, p. 222.

²⁵ Oliver, p. 1.

²⁶ Pacific Mining News, p. 222.

²⁷ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

Page 6 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 128

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²⁸ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁹ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.³⁰ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.³¹

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.³² The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.³³ The factory was dismantled and relocated to New Jersey circa 1900.³⁴ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³⁵ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.³⁶ The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³⁷ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³⁸ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁹

²⁸ Oliver, p. 1.

²⁹ Munro-Fraser, p. 424.

³⁰ Purcell, p. 648.

³¹ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

³² Oliver, p. 1.

³³ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

³⁴ Oliver, p. 1.

³⁵ Oliver, p. 2.

³⁶ Hulanski, p. 354.

³⁷ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³⁸ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁹ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

Page 7 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 128

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.⁴⁰ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.⁴¹ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.⁴²

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.⁴³ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.⁴⁴ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴⁵ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴⁶

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴⁷ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴⁸

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁹ The current Buildings 102, 110, 118, 128, 150,

⁴⁰ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

⁴¹ Pacific Mining News, p.222.

⁴² University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

⁴³ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

⁴⁴ Purcell, p. 649.

⁴⁵ Oliver, p. 1.

⁴⁶ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴⁷ University of California, Berkeley, 2008, p. 13.

⁴⁸ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁹ McGauhey, p. 71.

Page 8 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 128
*Recorded by Tetra Tech *Date January 4, 2013 Continuation Update

152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁵⁰ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

The following provides an evaluation of Building 128 under each NRHP/CRHR criteria.

Building 128 does not appear to meet the criteria for listing in the NHRP/CRHR because it lacks historical significance. Although the California Cap Company was the first blasting cap manufacturer in the United States there is no indication that Building 128, as a press house, was central to the development of the plant and its technical processes. In addition, it has been used for a variety of purposes over its lifetime. Therefore it lacks the strength of association to be considered historically significant in relation to any particular events in national, state, or local history to (Criterion A/1).

Although William Letts Oliver and his son Roland Oliver were significant in the history of the explosives industry, no particular association was found between the Oliver family and the building. Therefore it lacks the strength of association necessary to be considered historically significant in relation to any particular persons (Criteria B/2).

Building 128 was constructed in a utilitarian style, with materials commonly used in industrial structures during the early twentieth century. In addition, alterations were performed on the building and additions were constructed over the years in response to changing needs. Therefore it does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual or possess high artistic values (Criterion C/3).

In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

⁵⁰ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 8

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 149

P1. Other Identifier: Richmond Field Station Building 149

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 1984 **T** _____; **R** _____; $\frac{1}{4}$ of **Sec** _____; Diablo **B.M.**

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558448 mE/ 4196467 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 149 is in the southern portion of the Richmond Field Station. Its primary façade faces southeast; it is 720 square feet and was constructed in 1982. It is single story and rectangular in plan.

The building is topped with a front gabled roof, with shallow eaves and exposed rafters on the southwest and northeast elevations. The building is clad in plain and vertical groove plywood. Fenestration is vinyl sashes. The primary entrance, on the southeast elevation, is a flush, at-grade door. A similar door is near the rear of the southwest elevation. The southeast elevation features a flush double door. (See Continuation Sheet)

***P3b. Resource Attributes:** (List attributes and codes) HP4: Ancillary Building

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Southwest and southeast facades of building, camera facing north, January 4, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

1982/UC Berkeley records

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** January 4, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and

other sources, or enter "none.") Historic Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc, 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 149

B1. Historic Name: _____

B2. Common Name: Building 149

B3. Original Use: Unknown B4. Present Use: Storage

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed in 1982

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 149 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References: See Footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 149

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

Building 149 was constructed by UC Berkeley in 1982. Originally it was used for water technology research. It has also been used for solar research. Between 1992 and 1998 it was used as hang glider storage. It is currently being used by the UC Berkeley Concrete Canoe Club.¹ It is not of historic age, as it was constructed 31 years ago.

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.² Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.³ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.⁴

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁵ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁶ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁷ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁸ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁹ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

¹ Shackleton, 2013.

² Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

³ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁴ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁵ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁶ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁷ J.P. Munro-Fraser, p. 675.

⁸ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁹ Hulaniski p. 288.

Page 4 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 149

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.¹⁰

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹¹

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹² The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹³

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹⁴ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁵ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁶ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the

¹⁰ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

¹¹ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹² Purcell, p. 646.

¹³ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹⁴ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁵ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

¹⁶ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

Page 5 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 149

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁷

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹⁸ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."¹⁹ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.²⁰

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²¹ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²² California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²³ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²⁴ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁵ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.²⁶ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁷

¹⁷ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

¹⁸ Pacific Mining News, p. 222.

¹⁹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

²⁰ Pacific Mining News, p. 222.

²¹ Oliver, p. 1.

²² Pacific Mining News, p. 222.

²³ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²⁴ Oliver, p. 1.

²⁵ Munro-Fraser, p. 424.

²⁶ Purcell, p. 648.

²⁷ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

Page 6 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 149

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.²⁸ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.²⁹ The factory was dismantled and relocated to New Jersey circa 1900.³⁰ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³¹ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.³² The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³³ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³⁴ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁵

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁶ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁷ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.³⁸

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.³⁹ As the twentieth century progressed more heavy industry came to Contra Costa County, and by

²⁸ Oliver, p. 1.

²⁹ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

³⁰ Oliver, p. 1.

³¹ Oliver, p. 2.

³² Hulanski, p. 354.

³³ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³⁴ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁵ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁶ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁷ Pacific Mining News, p.222.

³⁸ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

³⁹ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

Page 7 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 149

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

1940 the county was second only to Los Angeles in overall industrial production.⁴⁰ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴¹ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴²

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴³ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴⁴

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁵ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁶ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

The following provides an evaluation of Building 149 under each NRHP/CRHR criteria.

Building 149 does not appear to meet the criteria for listing in NRHP/CRHR because it lacks historical significance. The structure has been used for a variety of purposes throughout its lifetime and as such lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 and B/2).

⁴⁰ Purcell, p. 649.

⁴¹ Oliver, p. 1.

⁴² P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴³ University of California, Berkeley, 2008, p. 13.

⁴⁴ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁵ McGauhey, p. 71.

⁴⁶ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

Page 8 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 149
*Recorded by Tetra Tech *Date January 4, 2013 Continuation Update

The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3). In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

As a storage facility Building 149 does not meet the standard of exceptional importance required for properties under 50 years old to be eligible to the NHRP (Criterion G).

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 11

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

P1. Other Identifier: Richmond Field Station Building 150

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 1984 T ; **R** _____ ; **¼ of Sec** _____ ; Diablo **B.M.**

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10 ; 558497 mE/ 4196497 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 150 is in the southern portion of the Richmond Field Station. Its primary façade faces northeast along Lark Drive. It is 5,410 square feet and was constructed in approximately 1910. The building is single story and rectangular in plan, with additions to the rear (southwest) side. The building is topped with a shallow-pitched, side gabled roof with shallow eaves and exposed shaped wood rafter tails and purlins. Many of the original features remain and the building continues to convey original use as a shop with its sets of industrial, metal-frame, multi-light sashes, walls sided in board formed concrete, and low, open configuration. (See Continuation Sheet).

***P3b. Resource Attributes:** (List attributes and codes) HP15: Educational building

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Northeast and northwest facades of building, camera facing south, January 4, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

Circa 1910/Sanborn maps

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** January 4, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic

Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc. 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

Page 2 of 11

*NRHP Status Code 3D

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

B1. Historic Name: California Cap Company Building 66a

B2. Common Name: Building 150

B3. Original Use: Manufacturing B4. Present Use: Research

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed circa 1910 for California Cap Company; additions constructed circa 1946.

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme History Area Richmond Field Station

Period of Significance 1910 - 1949 Property Type Industrial Applicable Criteria A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 150 at Richmond Field Station appears to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and appears to meet the significance criteria as outlined in these guidelines. Therefore, the building is eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

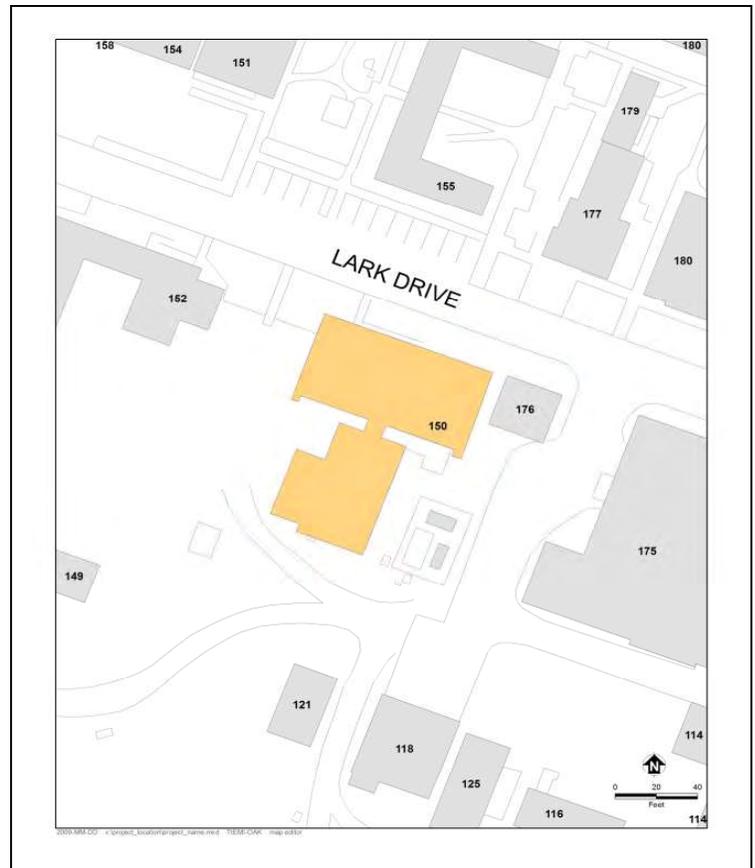
*B12. References: See footnotes and continuation sheet

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 11 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

The main entrance is centered in the primary elevation and is original flush wood double doors with multi-light windows and transoms (Photograph 2). A concrete loading dock in front of these doors is accessed by a set of wooden stairs at its east end and a ramp at its west end.

The northwest elevation features a large roll up metal door. The rear (southwest) elevation of the building lacks the overhanging eaves with their decorative rafter tails that are found on the front and sides of the building. Fenestration at the rear is original, metal-frame, multi-light, industrial sashes.



Photograph 2: Building 150, January 4, 2013, camera facing south

A separate rectangular-plan addition is perpendicular to the main section of the building, at its rear (Photograph 3). It was added in 1946. This addition is topped with a shallow, pitched, gabled roof lower than the main building's roof with an eave overhang and rafter tail treatment mimicking that of the street-facing façade. Fenestration on this addition is multi-light, hung, wood sashes. A flush-mounted wood door is the entrance on the southwest elevation. It is sheltered by a shed roofed awning and accessed by a wooden staircase. An addition on the northwest side of the rear building has an even lower shed roof. The walls are clad in corrugated metal. Fenestration at this addition is horizontal sliding sashes, and the entrance is a large wood sliding door.

Page 4 of 11 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update



Photograph 3: Building 150, January 4, 2013, camera facing northwest

The California Cap Company constructed Building 150 circa 1910. The building was known as “Building 66a” and used for wire insulating. The addition at the southeast end of the building, known as “Building 66,” was also constructed during the California Cap Company era. Aerial photographs show that it had been constructed by 1946. It was used for wire saturating.¹ Insulated wires were an essential element of the fuse-type blasting caps manufactured by the California Cap Company. Wire saturating was one step in the process of manufacturing insulated wire.

After UC Berkeley purchased the property in 1950, the Division of Mechanical Engineering was housed in Building 150. During the 1950s, Associate Dean E. D. Howe supervised Fluid Mechanics Test Facilities in the building.² Over the years the building was used as a petroleum studies facility, a machine shop, and a laboratory for UCSF.³ Building 150 is currently used as an student art facility.

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.⁴ Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native

¹ Sanborn Map, Richmond, 1949.

² University of California, Berkeley, Department of Engineering, “Guide for Engineering Field Station Inspection,” undated, p.2.

³ University of California, Berkeley, 2008, p. 196.

⁴ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

Page 5 of 11 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.⁵ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.⁶

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁷ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁸ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁹ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.¹⁰ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.¹¹ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.¹²

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹³

⁵ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁶ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁷ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁸ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁹ J.P. Munro-Fraser, p. 675.

¹⁰ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

¹¹ Hulaniski p. 288.

¹² Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

¹³ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

Page 6 of 11 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹⁴ The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹⁵

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹⁶ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁷ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁸ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁹

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.²⁰ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."²¹ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.²²

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²³ In the 1870s all blasting caps in the United States

¹⁴ Purcell, p. 646.

¹⁵ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹⁶ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁷ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

¹⁸ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

¹⁹ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

²⁰ Pacific Mining News, p. 222.

²¹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

²² Pacific Mining News, p. 222.

²³ Oliver, p. 1.

Page 7 of 11 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²⁴ California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²⁵ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²⁶ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁷ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.²⁸ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁹

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.³⁰ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.³¹ The factory was dismantled and relocated to New Jersey circa 1900.³² In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³³ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.³⁴ The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in

²⁴ Pacific Mining News, p. 222.

²⁵ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²⁶ Oliver, p. 1.

²⁷ Munro-Fraser, p. 424.

²⁸ Purcell, p. 648.

²⁹ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

³⁰ Oliver, p. 1.

³¹ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

³² Oliver, p. 1.

³³ Oliver, p. 2.

³⁴ Hulanski, p. 354.

Page 8 of 11 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

advertisements.³⁵ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³⁶ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁷

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁸ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁹ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.⁴⁰

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.⁴¹ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.⁴² The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴³ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴⁴

³⁵ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³⁶ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁷ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁸ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁹ Pacific Mining News, p.222.

⁴⁰ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

⁴¹ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

⁴² Purcell, p. 649.

⁴³ Oliver, p. 1.

⁴⁴ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

Page 9 of 11 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴⁵ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴⁶

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁷ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁸ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

Criterion A/1: Building 150 appears to be eligible for listing in the NHRP/CRHR under Criterion A/1 because it is associated with the early explosives industry in the United States. The California Cap company was the oldest blasting manufacturer in the East Bay. Blasting caps, or detonators, were an important safety innovation, invented only a few years before California Cap was opened.⁴⁹ Several other explosives factories were opened in Contra Costa County after the Tonite Powder and California Cap companies, and from the 1880s into the twentieth century the East Bay produced most of the explosives products in California. High-explosive powder and blasting caps were essential to mining, road-building, and other economically important activities in California. These factories also produced munitions that were used during wartime. The manufacturing activities in Building 150, specifically wire insulating and wire saturating, were central to the production processes of the California Cap Company, the first blasting cap company in the United States. Insulated wire was required for blasting caps, one of the primary products of the plant. In addition, Building 150 is closely associated with Building 175, the California Cap Company's primary building.

Criterion B/2: Although William Letts Oliver and his son Roland Oliver were significant in the history of the explosives industry, no particular association was found between the Oliver family and the building, so it lacks the strength of association necessary to be considered historically significant in relation to any particular persons.

Criterion C/3: The building does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual or possess high artistic values. Building 150 is a simple industrial building, so it is not eligible to the NHRP/CRHR for its architecture.

Criterion D/4: In rare instances, buildings themselves can serve as sources of important information, but this building is not a principal source of important information in this regard.

Eligibility for listing on either the NRHP rests on significance and integrity. A property must have both factors to be considered eligible. Loss of integrity, if sufficiently great, would overwhelm the historical significance of a resource and render it ineligible. Integrity of a historic resource is measured by applying seven factors: location,

⁴⁵ University of California, Berkeley, 2008, p. 13.

⁴⁶ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁷ McGauhey, p. 71.

⁴⁸ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

⁴⁹ A detonator is a small explosive charge that ignites a larger charge, allowing for the use of a more stable and thus safer type of explosive.

Page 10 of 11 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

design, setting, workmanship, materials, feeling, and association. Building 150 has retained a sufficient level of integrity in all measures. Although the building has undergone alterations, including the additional square footage constructed at the rear, these alterations have not compromised the historic integrity of the building. It continues to convey its historic significance as a California Cap Company manufacturing facility.

***B12. References (continued):**

Bastin, Donald. *Images of America: Richmond*. Arcadia Publishing, Charleston SC: 2003.

Clausen, Marguerite. "On the Waterfront: An Oral History of Richmond, California". Regional Oral History Office, University of California, Berkeley: 1990.

Contra Costa County Standard. "Stege Powder Plant Blast; One Near Death". June 6, 1941, p. 1A.

Department of the Interior, National Park Service. 1991. "Guidelines for Applying the National Register Criteria for Evaluation," National Register Bulletin 15. Washington, DC: US Government Printing; revised 1995 through 2002.

Eissler, Manual. *A Handbook on Modern Explosives*. Crosby, Lockwood & son, London: 1897.

Griffins, Evan. "Early History of Richmond". December 1938, El Cerrito Historical Society. Website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

Hoover, Mildred B. and Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle. *Historic Spots in California, Fourth Edition*. Stanford University Press, Stanford, California: 1958.

Hulaniski, Frederick J. *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917.

McAlester, Virginia and Lee. *A Field Guide to American Houses*. Alfred A. Knopf, New York: 2006.

McGauhey, P.H. "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call". Regional Oral History Office, University of California, Berkeley: 1974.

Munro-Fraser, J.P. *History of Contra Costa County, California*. W.A. Slocum & Co., San Francisco: 1882.

O'Brien, Morrough. Regional Oral History Office, University of California, Berkeley.

Oliver Family Photograph Collection. Online Archive of California, University of California, Berkeley. Website: http://digitalassets.lib.berkeley.edu/moac/ucb/images/brk00016736_31b_k.jpg. Accessed January 2013.

Oliver, Roland. "Recollections of Early Industries in Stege". August 7, 1959. Located in ephemera file labeled "Stege" at Contra Costa County Historical Society.

Page 11 of 11 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 150

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

Polk, R.L. & Company. *Richmond and Contra Costa County Directory, 1914 – 1915*. Oakland, California: 1915.

Purcell, Ida Mae. *History of Contra Costa County*. The Gillick Press, Berkeley, California: 1940.

Rego, Nilda. "Enterprising Stege lost all and died without a penny". Time Out. March 27, 1994, p. 2, column 4.

Sanborn Insurance Maps

-----Stege, California. 1912.

-----Richmond, California. 1916.

-----Richmond, California. 1949.

San Francisco Chronicle. "EPA Signs Lab Lease in Richmond". June 19, 1991.

Shackleton, Scott. University of California, Berkeley. Personal communication with Julia Mates, Tetra Tech 2013.

United States Census Bureau.

-----Tenth Census of the United States, 1880. National Archives and Records Administration, Washington, D.C. San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

-----Twelfth Census of the United States, 1900. National Archives and Records Administration, Washington, D.C. Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

University of California, Berkeley.

-----"Current Conditions Report." Prepared by Tetra Tech EM Inc. November 21, 2008.

-----"Draft Environmental Impact Report, Proposed U.S. Environmental Protection Agency, Region IX Laboratory at the University of California's Richmond Field Station". Prepared by University of California, Berkeley Planning, Design and Construction Department. July 1991.

-----Building files. Vertical files, Room 148. Richmond Field Station.

University of California, Berkeley, Department of Engineering.

----- "Richmond Field Station Open House." May 28, 1952.

----- "Guide for Engineering Field Station Inspection", undated.

University of California, Berkeley, Research Center. "Feasibility Study, Market Study, Financial Analysis, and Preliminary Master Plan". Prepared by Wallace Roberts & Todd. March 1990.

Von Bernewitz, Max Wilhelm. *Cyanide Practice, 1910 – 1913*. Dewey Publishing Company: 1913.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 8

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 152

P1. Other Identifier: Richmond Field Station Building 152

*P2. Location: Not for Publication Unrestricted

*a. County Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Richmond Date 1984 T _____; R _____; ¼ of Sec _____; Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558495 mE/ 4196494 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 152 is in the southern portion of the Richmond Field Station. It is on the south side of Lark Drive adjacent to Building 150, with its primary façade facing northeast. The vernacular building does not strongly express any particular architecture style. It is two stories and has an irregular plan, is 4,201 square feet, and was constructed prior to 1940. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) HP15: Educational building, HP39:Other

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Southeast and northeast facades of building, camera facing southwest, January 4, 2013.

*P6. Date Constructed/Age and Sources:

Historic Prehistoric Both

Circa 1930s/UC Berkeley records

*P7. Owner and Address:

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

*P8. Recorded by: (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

*P9. Date Recorded: January 4, 2013

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historic

Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc, 2013.

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

Page 2 of 8

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 152

B1. Historic Name: California Cap Company Building 59, Building 60, and Building 142

B2. Common Name: Building 152

B3. Original Use: Box assembly/packing B4. Present Use: Art practice/storage

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed circa the 1930s

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 152 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes)

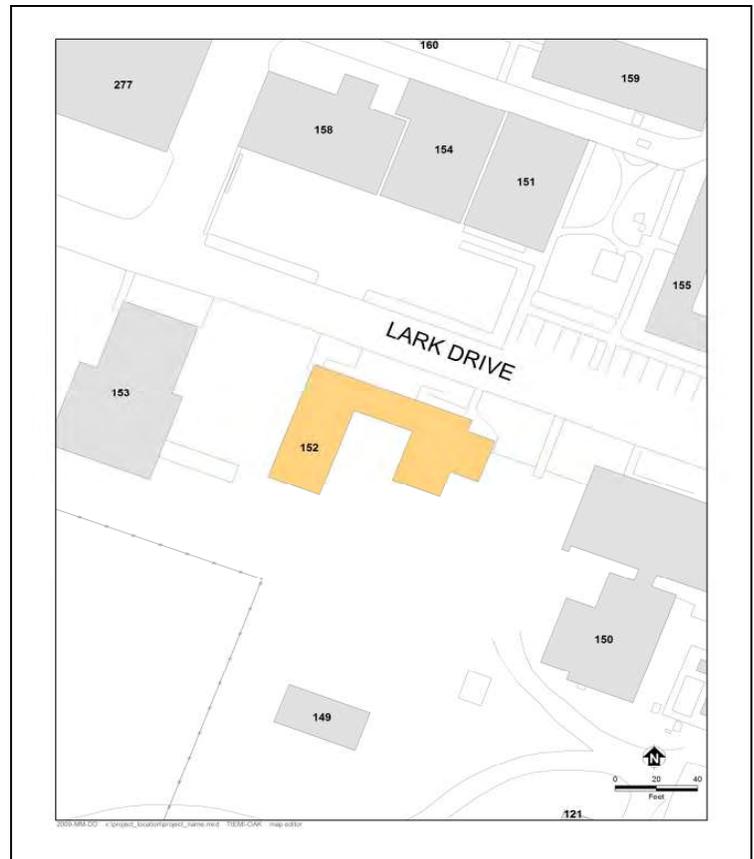
*B12. References: See Footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 152

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

The building consists of two front gabled wings facing the street, joined by a wing that runs parallel to the street. The roof is sheathed in composition shingles. The building is clad in a combination of horizontal wood, vertical board-and-batten, and asbestos siding. Fenestration also varies, and includes vinyl replacement windows and multi-light, double hung wood sashes. An entrance at the east gable is fitted with a flush wood door and accessed by a wood deck with stairs at one end and a ramp at the other. A similar entrance at the west gable is accessed by a concrete loading dock and stairs. A single story addition at the northwest end of the building features a hipped roof covered in corrugated metal. Multi-light, fixed, wood sashes have been painted over on its southeast elevation. The entrance at the northeast elevation is a large wood sliding door with a wood paneled door adjacent to it.

A rear entrance is toward the southwest corner of the west gable, facing the inside of the “U” formed by the building’s wings. It is a flush mounted wood door that is accessed via a set of wooden stairs. The west gable is several feet longer than the east gable at the rear of the building. A small gable roofed shed is to the rear of the building adjacent to its southeast corner.

Building 152 was constructed by the California Cap Company circa the 1930s. It was originally three connected buildings referred to as “Building 59,” Building 60,” and “Building 142”. Wooden boxes were assembled and other carpentry tasks performed in “Building 59,” while “Building 60” was the packing house. “Building 142” was for sawdust storage and a restroom.¹ After UC Berkeley purchased the property in 1950 the building was used for salt water research and storage. A Mineral Dressing laboratory was installed by the Department of Mineral Technology in the late 1950s, but it appears not to have been used.² By 1980 the building was being used primarily for storage.³ In the 1990s Building 152 began to house graduate student Art Practice, the current use of the building.⁴

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.⁵ Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.⁶ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.⁷

¹ University of California, Berkeley, 2008, p. 200, 202.

² University of California, Berkeley, File “Building 152,” located in vertical files in Room 148, Richmond Field Station.

³ University of California, Berkeley, File “Building 152,” located in vertical files in Room 148, Richmond Field Station.

⁴ Shackleton, 2013.

⁵ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

⁶ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁷ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

Page 4 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 152

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁸ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁹ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.¹⁰ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.¹¹ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.¹² Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.¹³

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹⁴

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹⁵ The Vulcan Powder Works and

⁸ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁹ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

¹⁰ J.P. Munro-Fraser, p. 675.

¹¹ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

¹² Hulaniski p. 288.

¹³ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

¹⁴ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹⁵ Purcell, p. 646.

Page 5 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 152

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹⁶

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹⁷ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁸ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁹ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.²⁰

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.²¹ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."²² By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.²³

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²⁴ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²⁵ California Cap Company, which went on to operate on the site for nearly

¹⁶ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹⁷ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁸ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

¹⁹ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

²⁰ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

²¹ Pacific Mining News, p. 222.

²² G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

²³ Pacific Mining News, p. 222.

²⁴ Oliver, p. 1.

²⁵ Pacific Mining News, p. 222.

Page 6 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 152

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²⁶ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²⁷ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁸ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.²⁹ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.³⁰

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.³¹ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.³² The factory was dismantled and relocated to New Jersey circa 1900.³³ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³⁴ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.³⁵ The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³⁶ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³⁷ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the

²⁶ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²⁷ Oliver, p. 1.

²⁸ Munro-Fraser, p. 424.

²⁹ Purcell, p. 648.

³⁰ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

³¹ Oliver, p. 1.

³² Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

³³ Oliver, p. 1.

³⁴ Oliver, p. 2.

³⁵ Hulanksi, p. 354.

³⁶ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³⁷ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

Page 7 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 152

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁸

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁹ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.⁴⁰ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.⁴¹

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.⁴² As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.⁴³ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴⁴ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴⁵

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴⁶ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴⁷

³⁸ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁹ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

⁴⁰ Pacific Mining News, p.222.

⁴¹ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

⁴² Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

⁴³ Purcell, p. 649.

⁴⁴ Oliver, p. 1.

⁴⁵ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴⁶ University of California, Berkeley, 2008, p. 13.

⁴⁷ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

Page 8 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 152

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁸ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁹ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

The following provides an evaluation of Building 152 under each NRHP/CRHR criteria.

No particular association was found between the Building 152 and events significant to national, state, or local history (Criterion A/1). Although the California Cap Company was the first blasting cap manufacturer in the United States there is no indication that the activities that took place in Building 152 were central to the development of the plant or its technical processes. In addition, the building has been used for a variety of purposes throughout its lifetime. Therefore the building is not eligible for inclusion in the NRHP/CRHR for historical significance

Although William Letts Oliver and his son Roland Oliver were significant in the history of the explosives industry, no particular association was found between the Oliver family and the building. Therefore it lacks the strength of association necessary to be considered historically significant in relation to any particular persons (Criterion B/2).

The building does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual or possess high artistic values (Criterion C/3). Building 152 is a vernacular building of a type that was commonly constructed from the late nineteenth to the early twentieth century. Therefore the building is not eligible to the NHRP for its architecture.

In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

⁴⁸ McGahey, p. 71.

⁴⁹ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 8

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 153

P1. Other Identifier: Richmond Field Station Building 153

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 1984 **T** _____; **R** _____; $\frac{1}{4}$ of **Sec** _____; Diablo **B.M.** _____

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 409938 mE/ 4397486 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 153 is in the southern portion of the Richmond Field Station. It is on the south side of Lark Drive adjacent to Building 152, with its primary façade facing northeast. The vernacular building does not strongly express any particular architecture style. It is single story and rectangular in plan, 2,731 square feet, and was constructed in 1959. (See Continuation Sheet)

***P3b. Resource Attributes:** (List attributes and codes) HP15: Educational building; HP39: Other

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Southeast and northeast facades of building, camera facing southwest, January 4, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

1959/UC Berkeley records

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** January 4, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc. 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 153

B1. Historic Name: _____

B2. Common Name: Building 153

B3. Original Use: Shop B4. Present Use: Shop

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed in 1956

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 153 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes)

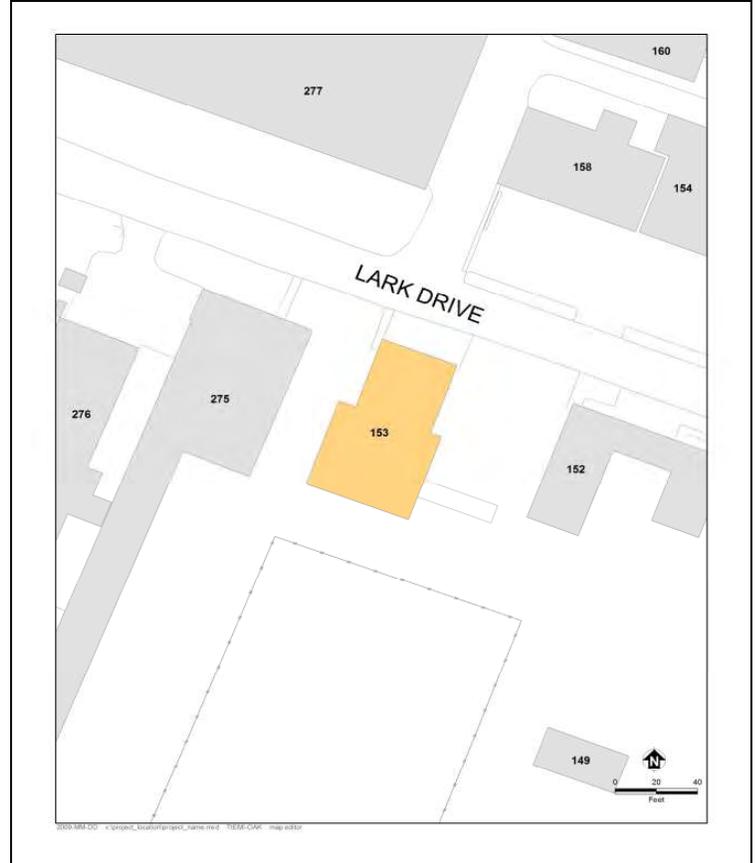
*B12. References: See Footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 153

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

The front section of the building is flat roofed. The walls are covered in stucco, and fenestration is multi-light fixed sashes. The northeast elevation lacks fenestration, but has two entry doors and two large swinging double doors. All doors are wood paneled with windows. A rear addition to the building is topped with both a flat roof and a shed roof section. An entrance at the rear of the southeast elevation is a large sliding door.

Building 153 was constructed by UC Berkeley in 1959. It was used as a modeling shop and for salt water research.¹ The Naval Architecture Department used the building for ship design over the years.² In 1958 the department of Nuclear Engineering was looking for space for gamma-shielding experiments, and may have moved into Building 153 for a time.³ Aerial photography indicates that the addition at the rear (southeast) of the building was constructed in approximately 1975. It is currently used as a research facility and a shop.

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.⁴ Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.⁵ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.⁶

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁷ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁸ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁹ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United

¹ University of California, Berkeley, 2008, p. 196.

² Shackleton, 2013.

³ University of California, Berkeley, File "Building 153," located in vertical files in Room 148, Richmond Field Station.

⁴ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

⁵ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁶ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁷ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁸ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁹ J.P. Munro-Fraser, p. 675.

Page 4 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 153

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.¹⁰ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.¹¹ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.¹²

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹³

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹⁴ The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹⁵

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹⁶ William Letts

¹⁰ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

¹¹ Hulaniski p. 288.

¹² Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

¹³ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹⁴ Purcell, p. 646.

¹⁵ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹⁶ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

Page 5 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 153

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁷ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁸ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁹

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.²⁰ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."²¹ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.²²

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²³ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²⁴ California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²⁵ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²⁶ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11

¹⁷ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

¹⁸ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

¹⁹ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

²⁰ Pacific Mining News, p. 222.

²¹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

²² Pacific Mining News, p. 222.

²³ Oliver, p. 1.

²⁴ Pacific Mining News, p. 222.

²⁵ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²⁶ Oliver, p. 1.

Page 6 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 153

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

deaths and destroyed the plant.²⁷ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.²⁸ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁹

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.³⁰ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.³¹ The factory was dismantled and relocated to New Jersey circa 1900.³² In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³³ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.³⁴ The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³⁵ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³⁶ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁷

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁸ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁹ Roland

²⁷ Munro-Fraser, p. 424.

²⁸ Purcell, p. 648.

²⁹ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

³⁰ Oliver, p. 1.

³¹ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

³² Oliver, p. 1.

³³ Oliver, p. 2.

³⁴ Hulanksi, p. 354.

³⁵ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³⁶ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁷ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁸ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁹ Pacific Mining News, p.222.

Page 7 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 153

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.⁴⁰

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.⁴¹ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.⁴² The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴³ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴⁴

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴⁵ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴⁶

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁷ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁸ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

The following provides an evaluation of Building 153 under each NRHP/CRHR criteria.

⁴⁰ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

⁴¹ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

⁴² Purcell, p. 649.

⁴³ Oliver, p. 1.

⁴⁴ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴⁵ University of California, Berkeley, 2008, p. 13.

⁴⁶ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁷ McGauhey, p. 71.

⁴⁸ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

Page 8 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 153
*Recorded by Tetra Tech *Date January 4, 2013 Continuation Update

Building 153 does not appear to meet the criteria for listing in NRHP/CRHR because it lacks historical significance. The structure has been used for a variety of purposes throughout its lifetime and as such lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 and B/2).

The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3). In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 8

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 163

P1. Other Identifier: Richmond Field Station Building 163

*P2. Location: Not for Publication Unrestricted

*a. County Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Richmond Date 1984 T _____; R _____; ¼ of Sec _____; Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558560 mE/ 4196300 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 163 is at the southeastern edge of the Richmond Field Station. The primary façades of this L-shaped building face northwest and southwest. The vernacular building does not strongly express any particular architecture style. It is single story and 6,430 square feet. The building was constructed prior to 1940.

Both wings of the building have front gabled roofs covered with composition shingles. The walls are clad in horizontal wood siding; a portion of the walls is covered with stucco. Fenestration is aluminum replacement sashes. The primary entrance is a paneled, southeast-facing, wood door. It is accessed by a concrete ramp. Other entrances are centered in each gable end and are flush wood doors. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) HP15: Educational building; HP39: Other

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Northwest and southwest facades of building, camera facing northeast, January 4, 2013.

*P6. Date Constructed/Age and Sources:

Historic Prehistoric Both

1996/UC Berkeley records

*P7. Owner and Address:

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

*P8. Recorded by: (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

*P9. Date Recorded: January 4, 2013

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc, 2013.

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 163

B1. Historic Name: _____

B2. Common Name: Building 163

B3. Original Use: Research/offices B4. Present Use: Research/offices

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed in 1996

*B7. Moved? No Yes Unknown Date: 1996 Original Location: A portion of Building 165

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 163 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes)

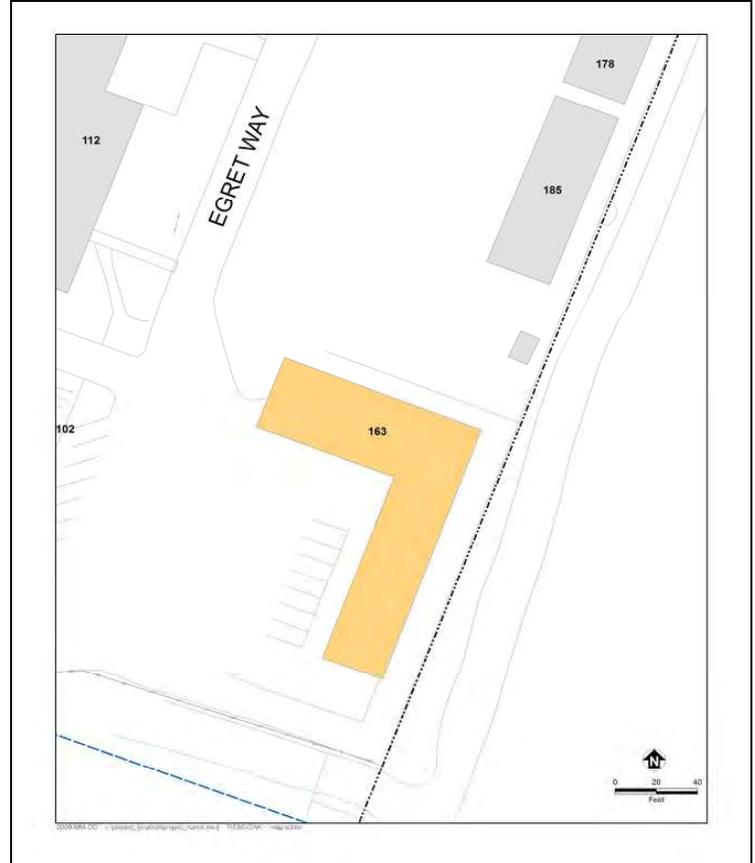
*B12. References: See Footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 163

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

The northwest entrance is accessed by concrete steps. The southwest entrance is accessed by a set of wooden steps and sheltered by a shed roof over the entry. There is a similar entrance on the rear (southeast) elevation.

Building 163 was created when Building 165 and another building were moved and another addition added to it to create Building 163 at this location in 1996. The two buildings that were moved to form Building 163 was a California Cap Company building originally constructed circa 1930. They were connected with a new section at the corner of the “L” to create Building 163. Its site overlaps with the footprint of the U.S. Briquette Company plant and William Letts Oliver’s American Lucol Company. Aerial photographs indicate that the U.S. Briquette buildings were demolished circa the 1960s after UC Berkeley took over the site. Ergonomic studies, seeking to prevent chronic disorders of the upper extremities, have been done in the building since the 1990s.¹ Building 163 continues to be used as a research facility, and houses offices.

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.² Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.³ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.⁴

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁵ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs’ legs raised by Richard Stege for the San Francisco restaurant market.⁶ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁷ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege’s holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were

¹ Shackleton, 2013.

² Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

³ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁴ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁵ Evan Griffins, “Early History of Richmond”, December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁶ Roland Oliver, “Recollections of Early Industries in Stege”, August 7, 1959, p. 1.

⁷ J.P. Munro-Fraser, p. 675.

Page 4 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 163

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

operating from portions of the Stege Ranch.⁸ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁹ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.¹⁰

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹¹

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹² The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹³

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹⁴ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁵ The couple eventually

⁸ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁹ Hulaniski p. 288.

¹⁰ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

¹¹ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹² Purcell, p. 646.

¹³ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹⁴ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁵ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

Page 5 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 163

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁶ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁷

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹⁸ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."¹⁹ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.²⁰

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²¹ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²² California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²³ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²⁴ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁵ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous

¹⁶ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

¹⁷ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

¹⁸ Pacific Mining News, p. 222.

¹⁹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

²⁰ Pacific Mining News, p. 222.

²¹ Oliver, p. 1.

²² Pacific Mining News, p. 222.

²³ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²⁴ Oliver, p. 1.

²⁵ Munro-Fraser, p. 424.

Page 6 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 163

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

explosions which destroyed plant buildings and killed a total of 64 workers.²⁶ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁷

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.²⁸ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.²⁹ The factory was dismantled and relocated to New Jersey circa 1900.³⁰ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³¹ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.³² The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³³ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³⁴ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁵

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁶ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁷ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.³⁸

²⁶ Purcell, p. 648.

²⁷ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

²⁸ Oliver, p. 1.

²⁹ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

³⁰ Oliver, p. 1.

³¹ Oliver, p. 2.

³² Hulanksi, p. 354.

³³ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³⁴ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁵ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁶ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁷ Pacific Mining News, p.222.

³⁸ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

Page 7 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 163

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.³⁹ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.⁴⁰ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴¹ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴²

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴³ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴⁴

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁵ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁶ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

The following provides an evaluation of Building 163 under each NRHP/CRHR criteria.

³⁹ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

⁴⁰ Purcell, p. 649.

⁴¹ Oliver, p. 1.

⁴² P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴³ University of California, Berkeley, 2008, p. 13.

⁴⁴ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁵ McGauhey, p. 71.

⁴⁶ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

Page 8 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 163
*Recorded by Tetra Tech *Date January 4, 2013 Continuation Update

Building 163 does not appear to meet the criteria for listing in National Register of Historic Places because it lacks historical significance. The structure has been used for research throughout its lifetime and as such lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 and B/2).

The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3) The building has been moved from its original location as part of two other buildings. In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

As a research facility Building 163 does not meet the standard of exceptional importance required for properties under 50 years old to be eligible to the NHRP (Criterion G).

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 16

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

P1. Other Identifier: Richmond Field Station Building 175

*P2. Location: Not for Publication Unrestricted *a. County Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Richmond Date 1984 T _____; R _____; ¼ of Sec _____; Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558547 mE/ 4196474 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 175 is in the southern portion of the Richmond Field Station at the intersection of Lark Drive and Egret Way. Its primary façade faces northeast, along Lark Drive. It is 16,502 square feet and was constructed in approximately 1910. The building is single story and rectangular in plan, with additions to the rear (southwest) side. The building is topped with a shallow, pitched-side, gabled roof with shallow eaves and exposed, shaped-wood rafter tails and purlins. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) HP15: Educational building; HP4: Other

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Southeast and northeast facades of building, camera facing southwest, January 4, 2013

*P6. Date Constructed/Age and Sources:

Historic Prehistoric Both

Circa 1910/Sanborn maps

*P7. Owner and Address:

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

*P8. Recorded by: (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

*P9. Date Recorded: January 4, 2013

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none".) Historic Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc, 2013.

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other (list) _____

Page 2 of 16

*NRHP Status Code B3

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

B1. Historic Name: California Cap Company Building 75 & Building 76

B2. Common Name: Building 175

B3. Original Use: Manufacturing/office B4. Present Use: Shop/office

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed circa 1910 for California Cap Company; rear addition constructed circa 1950s; wood sash windows replaced 1969

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme History Area Richmond Field Station

Period of Significance 1910 - 1949 Property Type industrial Applicable Criteria A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 175 at Richmond Field Station appears to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and appears to meet the significance criteria as outlined in these guidelines. Therefore, the building is eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

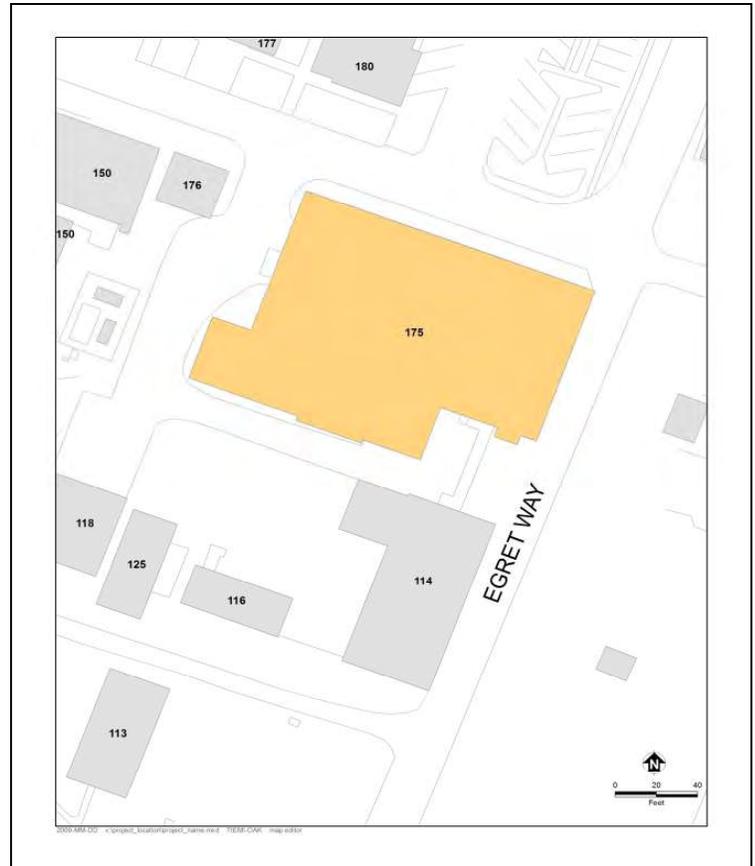
*B12. References: See Footnotes and Continuation Sheet

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

Many of the building's original features remain, and the building continues to convey its original use as a shop with its, walls sided in board formed concrete, and low, open configuration. Fenestration is aluminum replacement windows and small aluminum sliding sashes. The east door has been replaced with a modern glass door.



Photograph 2: Building 175, January 4, 2013, camera facing south

A large, projecting, two-story addition at the southwestern end of the building is topped with a shed roof, its walls are clad in corrugated metal. Fenestration is both multiple pane fixed windows and vinyl replacement windows. A shed roof covers an open area at the center of the rear elevation adjacent to the corrugated addition. Double paneled wood doors with windows are at the center of the façade. A raised concrete ramp leads to these doors. Historic maps and documents show that the building that is now Building 175 was constructed in 1910, when the California Cap Company and Pacific Cartridge Company were operating simultaneously. When in use for the Pacific Cartridge Company, Building 175 was numbered both “Building 75” and “Building 76” and was the primary production facility for Pacific Cartridge. The building appears to have been used as a cartridge loading facility during the early years, where powder was loaded into shells.¹ It also housed a small office, a vault, and cleaning and annealing rooms.² (Metal cartridges were strengthened through heat treating, or annealing.) Both the Pacific Cartridge Company and the California Cap Company were administered from the office in Building 175 (Photograph 3 and 4). By 1916 the company was producing cartridge shells in the building, but no longer loading

¹ Sanborn Map, Stege, 1912.

² Sanborn Map, Stege, 1912.

Page 4 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

powder there.³ Pacific Cartridge Company was absorbed by the California Cap Company circa 1920. The 1949 Sanborn map shows the same uses for the Building 175 but lists only California Cap on the property.⁴



Photograph 3: Building 175, circa 1910, from Bancroft Library's Oliver Family Photograph Collection, labeled "Exterior California Cap Company office, California"

³ Sanborn Map, Richmond, 1916.

⁴ Sanborn Map, Richmond, 1949.

Page 5 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175
*Recorded by Tetra Tech *Date January 4, 2013 Continuation Update



Photograph 4: Building 175, circa 1910, from Bancroft Library’s Oliver Family Photograph Collection, labeled “Pacific Cartridge Co. Exterior – Stege, Calif.”

After UC Berkeley purchased the property in 1950, this building continued to house an office and hazardous chemical storage area.⁵ Building 175 was the Richmond Field Station’s primary facility for maintenance and administration.⁶ During the early 1950s the Department of Engineering’s machine shop was also in Building 175, fabricating experimental equipment for research. By 1952 a new high-speed wind tunnel for research was being assembled in the building.⁷ The University made piecemeal additions to the rear (southwest) of the building beginning in the 1950s. By 1966 Building 175 reached its current footprint and housed machine, carpenter, and welding shops, and an office.⁸ The University removed the original wood frame windows and replaced them with aluminum sashes in 1969.⁹ The building continued to be considered important, as indicated by a 1977 letter arguing for “one of the most important buildings at the Station and if it were lost the program impact could be catastrophic, inasmuch that the Station operations would most likely come to a halt.”¹⁰ It continued to house maintenance operations until approximately 2008 when, in spite of the building’s former importance, it was left vacant. It remained vacant until 2012 when the UC Bindery moved into the building.¹¹

⁵ University of California, Berkeley, 2008, p. 197

⁶ University of California, Berkeley, 2008, p. 20.

⁷ University of California, Berkeley, Department of Engineering, “Richmond Field Station Open House,” May 28, 1952, p. 3.

⁸ Sanborn Map, Richmond, 1966.

⁹ University of California, Berkeley, File “Building 175,” located in vertical files in Room 148, Richmond Field Station.

¹⁰ University of California, Berkeley, File “Building 175,” located in vertical files in Room 148, Richmond Field Station.

¹¹ Shackleton, 2013.

Page 6 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

B10. Significance (continued)

Historic Contexts

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.¹² Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.¹³ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.¹⁴

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.¹⁵ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.¹⁶ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.¹⁷ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.¹⁸ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.¹⁹ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.²⁰

¹² Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

¹³ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

¹⁴ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

¹⁵ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

¹⁶ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

¹⁷ J.P. Munro-Fraser, p. 675.

¹⁸ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

¹⁹ Hulaniski p. 288.

²⁰ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

Page 7 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.²¹

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.²² The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.²³

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.²⁴ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.²⁵ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.²⁶ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.²⁷

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.²⁸ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."²⁹ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock

²¹ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

²² Purcell, p. 646.

²³ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

²⁴ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

²⁵ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

²⁶ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

²⁷ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

²⁸ Pacific Mining News, p. 222.

²⁹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

Page 8 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.³⁰

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.³¹ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.³² California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.³³ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.³⁴ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.³⁵ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.³⁶ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.³⁷

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.³⁸ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.³⁹ The factory was dismantled and relocated to New Jersey circa 1900.⁴⁰ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.⁴¹ Later known as the U.S. Briquette Company, the plant appears to have

³⁰ Pacific Mining News, p. 222.

³¹ Oliver, p. 1.

³² Pacific Mining News, p. 222.

³³ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

³⁴ Oliver, p. 1.

³⁵ Munro-Fraser, p. 424.

³⁶ Purcell, p. 648.

³⁷ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

³⁸ Oliver, p. 1.

³⁹ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

⁴⁰ Oliver, p. 1.

⁴¹ Oliver, p. 2.

Page 9 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

operated at this location until at least 1917.⁴² The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.⁴³ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.⁴⁴ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.⁴⁵

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.⁴⁶ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.⁴⁷ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.⁴⁸

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.⁴⁹ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.⁵⁰ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁵¹ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the

⁴² Hulanksi, p. 354.

⁴³ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

⁴⁴ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

⁴⁵ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

⁴⁶ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

⁴⁷ Pacific Mining News, p.222.

⁴⁸ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

⁴⁹ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

⁵⁰ Purcell, p. 649.

⁵¹ Oliver, p. 1.

Page 10 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁵²

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁵³ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁵⁴

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁵⁵ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁵⁶ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

The following provides an evaluation of Building 175 under each NRHP and CRHR criteria. The property's period of significance is from 1910, when it was constructed, until it ceased to be used for the California Cap Company, in 1949.

Criterion A/1: Building 175 appears to be eligible for listing in the NHRP/CRHR under Criterion A/1 because it is associated with the early explosives industry in the United States, as it was part of the first blasting cap company in the United States. The California Cap company was also the oldest blasting manufacturer in the East Bay area. Blasting caps, or detonators, were an important safety innovation, invented only a few years before California Cap was opened.⁵⁷ Several other explosives factories were opened in Contra Costa County after the Tonite Powder and California Cap companies, and from the 1880s into the twentieth century the East Bay produced most of the explosives products in California. High-explosive powder and blasting caps were essential to mining, road-building, and other economically important activities in California. These factories also produced munitions that were used during wartime.

The manufacturing activities in Building 175, specifically cartridge loading and cartridge production, were central to the production processes of the Pacific Cartridge Company and the California Cap Company. Building 175 was one of the plant's primary manufacturing buildings in the 1910s. In addition, the company was administered from

⁵² P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁵³ University of California, Berkeley, 2008, p. 13.

⁵⁴ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁵⁵ McGauhey, p. 71.

⁵⁶ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

⁵⁷ A detonator is a small explosive charge that ignites a larger charge, allowing for the use of a more stable and thus safer type of explosive.

Page 11 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

the office in the building. The building is at what was the geographical center of the plant between circa 1900 and 1940s, and is featured in historic photographs as the Pacific Cartridge and the California Cap Companies' primary building.

Criterion B/2: Although William Letts Oliver and his son Roland Oliver were significant in the history of the explosives industry, no particular association was found between the Oliver family, the architect or builder, or any person associated with the building, so it lacks the strength of association necessary to be considered historically significant in relation to any particular persons under Criterion B/2.

Criterion C/3: The building does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual or possess high artistic values (Criterion C). Building 175 is an industrial building with little ornamentation, so it is not eligible to the NHRP/CRHR under this criterion.

Criterion D/4: In rare instances, buildings themselves can serve as sources of important information, but this building is not a principal source of important information in this regard.

Eligibility for listing on either the NRHP rests on significance and integrity. A property must have both factors to be considered eligible. Loss of integrity, if sufficiently great, would overwhelm the historical significance of a resource and render it ineligible. Integrity of a historic resource is measured by applying seven factors: location, design, setting, workmanship, materials, feeling, and association. Building 175 retains a sufficient level of integrity in all measures. Although the building has undergone alterations, including the additional square footage constructed at the rear of the building and the replacement of the original wood frame sashes, these alterations have not compromised the historic integrity of the building and Building 175, which continues to convey the its significance as a California Cap Company administration building.

***B12. References (continued):**

Bastin, Donald. *Images of America: Richmond*. Arcadia Publishing, Charleston SC: 2003.

Clausen, Marguerite. "On the Waterfront: An Oral History of Richmond, California". Regional Oral History Office, University of California, Berkeley: 1990.

Contra Costa County Standard. "Stege Powder Plant Blast; One Near Death". June 6, 1941, p. 1A.

Department of the Interior, National Park Service. 1991. "Guidelines for Applying the National Register Criteria for Evaluation," National Register Bulletin 15. Washington, DC: US Government Printing; revised 1995 through 2002.

Eissler, Manual . *A Handbook on Modern Explosives*. Crosby, Lockwood & son, London: 1897.

Griffins, Evan. "Early History of Richmond". December 1938, El Cerrito Historical Society. Website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

Page 12 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Hoover, Mildred B. and Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle. *Historic Spots in California, Fourth Edition*. Stanford University Press, Stanford, California: 1958.

Hulaniski, Frederick J. *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917.

McAlester, Virginia and Lee. *A Field Guide to American Houses*. Alfred A. Knopf, New York: 2006.

McGauhey, P.H. "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call". Regional Oral History Office, University of California, Berkeley: 1974.

Munro-Fraser, J.P. *History of Contra Costa County, California*. W.A. Slocum & Co., San Francisco: 1882.

O'Brien, Morrough. Regional Oral History Office, University of California, Berkeley.

Oliver Family Photograph Collection. Online Archive of California, University of California, Berkeley. Website: http://digitalassets.lib.berkeley.edu/moac/ucb/images/brk00016736_31b_k.jpg. Accessed January 2013.

Oliver, Roland. "Recollections of Early Industries in Stege". August 7, 1959. Located in ephemera file labeled "Stege" at Contra Costa County Historical Society.

Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

Polk, R.L. & Company. *Richmond and Contra Costa County Directory, 1914 – 1915*. Oakland, California: 1915.

Purcell, Ida Mae. *History of Contra Costa County*. The Gillick Press, Berkeley, California: 1940.

Rego, Nilda. "Enterprising Stege lost all and died without a penny". Time Out. March 27, 1994, p. 2, column 4.

Sanborn Insurance Maps

-----Stege, California. 1912.

-----Richmond, California. 1916.

-----Richmond, California. 1949.

San Francisco Chronicle. "EPA Signs Lab Lease in Richmond". June 19, 1991.

Shackleton, Scott. University of California, Berkeley. Personal communication with Julia Mates, Tetra Tech 2013.

United States Census Bureau.

-----Tenth Census of the United States, 1880. National Archives and Records Administration,

Page 13 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Washington, D.C. San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

-----Twelfth Census of the United States, 1900. National Archives and Records Administration, Washington, D.C. Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

University of California, Berkeley.

-----“Current Conditions Report.” Prepared by Tetra Tech EM Inc. November 21, 2008.

-----“Draft Environmental Impact Report, Proposed U.S. Environmental Protection Agency, Region IX Laboratory at the University of California’s Richmond Field Station”. Prepared by University of California, Berkeley Planning, Design and Construction Department. July 1991.

-----Building files. Vertical files, Room 148. Richmond Field Station.

University of California, Berkeley, Department of Engineering.

----- “Richmond Field Station Open House.” May 28, 1952.

----- “Guide for Engineering Field Station Inspection”, undated.

University of California, Berkeley, Research Center. “Feasibility Study, Market Study, Financial Analysis, and Preliminary Master Plan”. Prepared by Wallace Roberts & Todd. March 1990.

Von Bernewitz, Max Wilhelm. *Cyanide Practice, 1910 – 1913*. Dewey Publishing Company: 1913. through 2002.

Photographs:

Page 14 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update



Photograph 2: Building 175, January 4, 2013, looking south



Photograph 3: Building 175, circa 1910, from Bancroft Library's Oliver Family Photograph Collection, labeled "Exterior California Cap Company office, California"

Page 15 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update



Photograph 4: Building 175, circa 1910, from Bancroft Library's Oliver Family Photograph Collection, labeled "Pacific Cartridge Co. Exterior – Stege, Calif."



Photograph 5: Workers outside Building 175 circa 1914, Contra Costa County Historical Society collection

Page 16 of 16 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 175

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update



Photograph 6: Workers inside Building 175 circa 1914,
Contra Costa County Historical Society collection

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 8

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 176

P1. Other Identifier: Richmond Field Station Building 176

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 1984 **T** _____; **R** _____; $\frac{1}{4}$ of **Sec** _____; Diablo **B.M.**

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558516 mE/ 4196491 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 176 is in the southern portion of the Richmond Field Station between Building 175 and Building 150. Its primary façade faces northeast, along Lark Drive. The vernacular building does not strongly express any particular architecture style. It is single story and square in plan, 672 square feet, and was constructed prior to 1940.

***P3b. Resource Attributes:** (List attributes and codes) HP4: Ancillary Building

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Northwest and northeast facades of building, camera facing south, January 4, 2013.

***P6. Date Constructed/Age and Sources:**
 Historic Prehistoric Both

Circa 1930/UC Berkeley records

***P7. Owner and Address:**

U.C. Berkeley
1301 South 46th Street
Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates
Tetra Tech
1999 Harrison Street, Ste 500
Oakland, CA 94612

***P9. Date Recorded:** January 4, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic

Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc, 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record
 District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record
 Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 176

B1. Historic Name: California Cap Company Building 73

B2. Common Name: Building 176

B3. Original Use: Unknown B4. Present Use: Research

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed circa 1930s

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 176 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes)

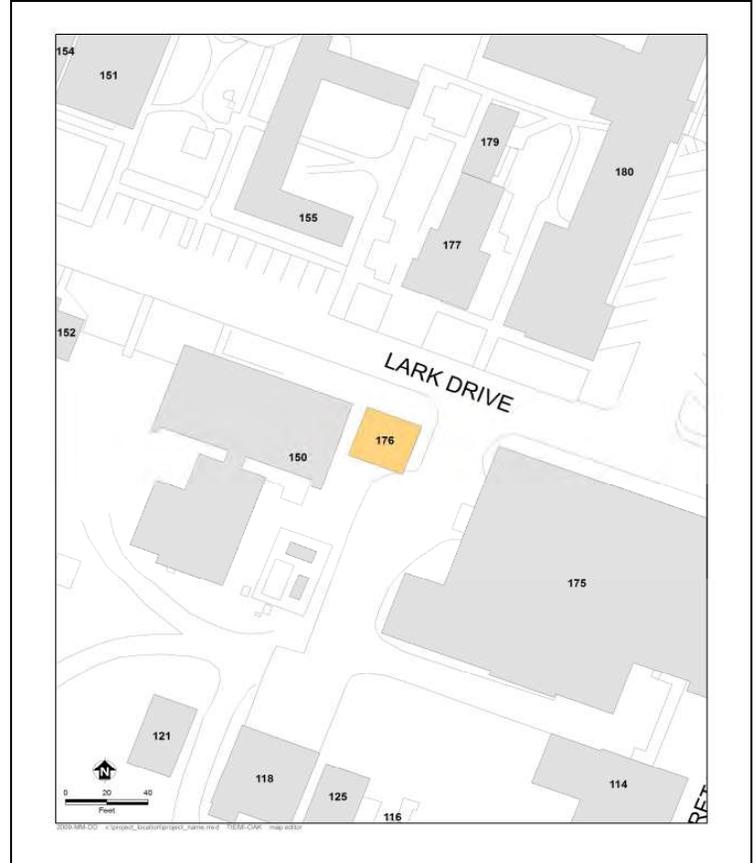
*B12. References: See Footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 176

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

The building is topped with a front gabled roof, with a large vent on the gable ridge. The building's walls are reinforced concrete covered in stucco. The building lacks fenestration. Its only opening is a flush metal door with a small window on the primary (northeast) elevation, accessed by a sloping concrete walkway that leads from the street.

The California Cap Company constructed Building 176 circa the 1930s. It was originally referred to as "Building 73," and was used by the plant as a warehouse. After UC Berkeley purchased the property in 1950 it continued to use the building for storage. Although the building was retrofitted as an animal lab, it was never used for that purpose. In 1998 it was renovated for the use of a private company named Stratacor that works on topical anti-insect solutions.¹

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.² Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.³ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.⁴

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁵ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁶ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁷ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were

¹ Shackleton, 2013.

² Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

³ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁴ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁵ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁶ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁷ J.P. Munro-Fraser, p. 675.

Page 4 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 176

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

operating from portions of the Stege Ranch.⁸ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁹ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.¹⁰

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹¹

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹² The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹³

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹⁴ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁵ The couple eventually

⁸ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁹ Hulaniski p. 288.

¹⁰ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

¹¹ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹² Purcell, p. 646.

¹³ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹⁴ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁵ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

Page 5 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 176

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁶ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁷

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹⁸ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."¹⁹ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.²⁰

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²¹ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²² California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²³ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²⁴ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁵ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous

¹⁶ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

¹⁷ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

¹⁸ Pacific Mining News, p. 222.

¹⁹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

²⁰ Pacific Mining News, p. 222.

²¹ Oliver, p. 1.

²² Pacific Mining News, p. 222.

²³ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²⁴ Oliver, p. 1.

²⁵ Munro-Fraser, p. 424.

Page 6 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 176

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

explosions which destroyed plant buildings and killed a total of 64 workers.²⁶ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁷

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.²⁸ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.²⁹ The factory was dismantled and relocated to New Jersey circa 1900.³⁰ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³¹ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.³² The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³³ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³⁴ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁵

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁶ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁷ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.³⁸

²⁶ Purcell, p. 648.

²⁷ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

²⁸ Oliver, p. 1.

²⁹ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

³⁰ Oliver, p. 1.

³¹ Oliver, p. 2.

³² Hulanksi, p. 354.

³³ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³⁴ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁵ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁶ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁷ Pacific Mining News, p.222.

³⁸ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

Page 7 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 176

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.³⁹ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.⁴⁰ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴¹ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴²

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴³ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴⁴

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁵ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁶ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

³⁹ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

⁴⁰ Purcell, p. 649.

⁴¹ Oliver, p. 1.

⁴² P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴³ University of California, Berkeley, 2008, p. 13.

⁴⁴ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁵ McGauhey, p. 71.

⁴⁶ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

Page 8 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 176
*Recorded by Tetra Tech *Date January 4, 2013 Continuation Update

Evaluation

The following provides an evaluation of Building 176 under each NRHP/CRHR criteria.

Building 176 does not appear to meet the criteria for listing in NRHP/CRHR because it lacks historical significance. The structure has been used for storage throughout its lifetime and as such lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 or B/2).

The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3). In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 8

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 178

P1. Other Identifier: Richmond Field Station Building 178

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 1984 **T** _____; **R** _____; $\frac{1}{4}$ of Sec _____; Diablo **B.M.**

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558587 mE/ 4196368 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 178 is along the southeastern border of the Richmond Field Station. It is set back from Egret Way to the east adjacent to building 185. Its primary façade faces northwest. The utilitarian building does not strongly express any particular architecture style. It is single story, rectangular in plan, 3,950 square feet, and was constructed prior to 1940. The building is topped with a side gabled roof. Its roof and walls are clad in corrugated metal. Fenestration is both aluminum sliding sashes and multiple light wood sashes. There are three entryways on the primary (northwest) elevation. Entrances at the north end and the center of the elevation are metal double doors with windows. The south entrance is a single metal door with a window. At either end of the building the entrances are accessed by sets of wooden stairs. A similar door is at the north end of the rear (southeast) elevation. (See Continuation Sheet)

***P3b. Resource Attributes:** (List attributes and codes) HP4: Ancillary Building

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Northwest and southwest facades of building, camera facing east, January 4, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

Unknown

***P7. Owner and Address:**

U.C. Berkeley
1301 South 46th Street
Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** January 4, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc. 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 178

B1. Historic Name: _____

B2. Common Name: Building 178

B3. Original Use: Unknown B4. Present Use: Art practice

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Unknown

*B7. Moved? No Yes Unknown Date: circa 1990 Original Location: Unknown

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 178 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources. (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes)

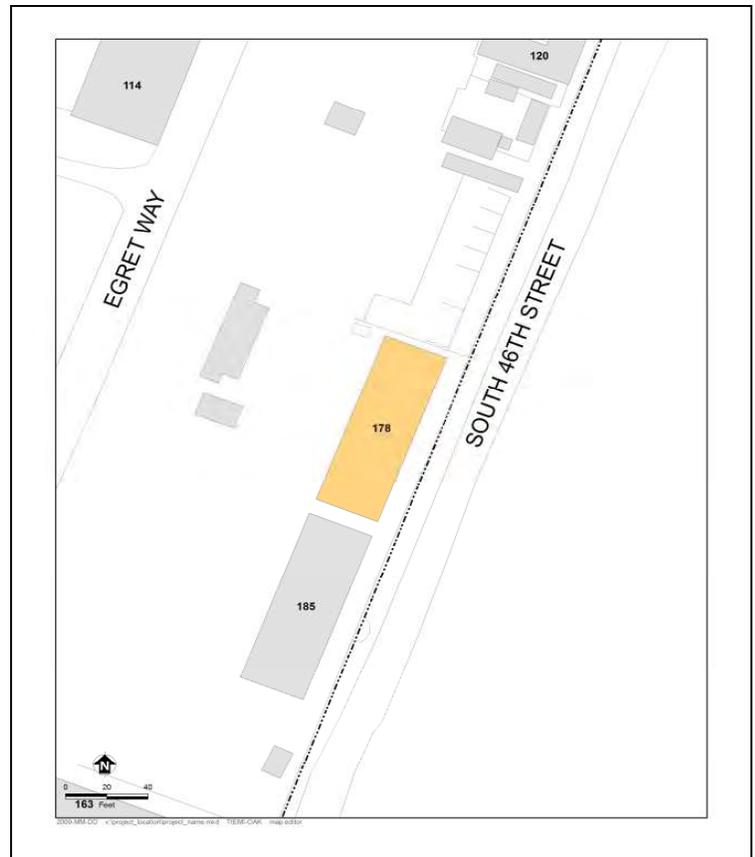
*B12. References: See Footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 178

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

Building 178 appears to have been moved to this location circa 1990. Although UC Berkeley property records and building materials suggest a build date prior to 1950, Building 178 does not appear on aerial photographs of this location until the 1990s. Research has not uncovered its original use or location. Building 178 housed the California Conservation Corps until circa 1999, after which it served as an electrical shop and a warehouse. It is currently used for Art Practice Studies.¹

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.² Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.³ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.⁴

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁵ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁶ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁷ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁸ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁹ Stege was eventually absorbed into Richmond as the latter grew.

¹ Shackleton, 2013.

² Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

³ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁴ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁵ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁶ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁷ J.P. Munro-Fraser, p. 675.

⁸ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁹ Hulaniski p. 288.

Page 4 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 178

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.¹⁰

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹¹

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹² The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹³

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹⁴ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁵ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁶ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the

¹⁰ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

¹¹ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹² Purcell, p. 646.

¹³ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹⁴ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁵ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

¹⁶ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

Page 5 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 178

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁷

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹⁸ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."¹⁹ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.²⁰

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²¹ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²² California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²³ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²⁴ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁵ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.²⁶ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁷

¹⁷ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

¹⁸ Pacific Mining News, p. 222.

¹⁹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

²⁰ Pacific Mining News, p. 222.

²¹ Oliver, p. 1.

²² Pacific Mining News, p. 222.

²³ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²⁴ Oliver, p. 1.

²⁵ Munro-Fraser, p. 424.

²⁶ Purcell, p. 648.

²⁷ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

Page 6 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 178

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.²⁸ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.²⁹ The factory was dismantled and relocated to New Jersey circa 1900.³⁰ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³¹ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.³² The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³³ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³⁴ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁵

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁶ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁷ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.³⁸

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.³⁹ As the twentieth century progressed more heavy industry came to Contra Costa County, and by

²⁸ Oliver, p. 1.

²⁹ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

³⁰ Oliver, p. 1.

³¹ Oliver, p. 2.

³² Hulanksi, p. 354.

³³ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³⁴ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁵ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁶ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁷ Pacific Mining News, p.222.

³⁸ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

³⁹ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

Page 7 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 178

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

1940 the county was second only to Los Angeles in overall industrial production.⁴⁰ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴¹ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴²

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴³ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴⁴

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁵ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁶ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

The following provides an evaluation of Building 178 under each NRHP/CRHR criteria.

Building 178 does not appear to meet the criteria for listing in NRHP/CRHR because it lacks historical significance. The structure has been used for a variety of purposes throughout its lifetime and as such lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 and B/2).

⁴⁰ Purcell, p. 649.

⁴¹ Oliver, p. 1.

⁴² P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴³ University of California, Berkeley, 2008, p. 13.

⁴⁴ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁵ McGauhey, p. 71.

⁴⁶ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

Page 8 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 178
*Recorded by Tetra Tech *Date January 4, 2013 Continuation Update

The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3). In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

As a multiple use building, Building 178 does not meet the standard of exceptional importance required for properties under 50 years old to be eligible to the NHRP (Criterion G).

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 7

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 185

P1. Other Identifier: Richmond Field Station Building 185

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 1984 **T** _____; **R** _____; **¼ of Sec** _____; Diablo **B.M.**

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558577 mE/ 4196342 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 185 is along the southeastern border of the Richmond Field Station. It is set back from Egret Way to the east adjacent to building 178. Its primary façade faces northwest. The utilitarian building does not strongly express any particular architecture style. It is single story, rectangular in plan, 3,165 square feet, and constructed prior to 1940. The building is topped with a side gabled roof. Its roof and walls are clad in corrugated metal and it lacks fenestration. Entryways, at either end of the primary (northeast) elevation, are flush wood doors. The south door is accessed by a set of wooden stairs. Another entryway is at the north end of the rear (southwest) elevation. Building 185 appears to have been moved to this location circa 1990. Although UC Berkeley property records and building materials suggest a build date prior to 1950, Building 185 does not appear on aerial photographs of this location until the 1990s. Research has not uncovered its original use or location. The building has been a support facility since the 1990s.

***P3b. Resource Attributes:** (List attributes and codes) HP4: Ancillary Building

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Northwest and southwest facades of building, camera facing east, January 4, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

Unknown

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** January 4, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc. 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 185

B1. Historic Name: _____

B2. Common Name: Building 185

B3. Original Use: Unknown B4. Present Use: Administrative/Support

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Unknown

*B7. Moved? No Yes Unknown Date: circa 1990 Original Location: Unknown

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 185 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes)

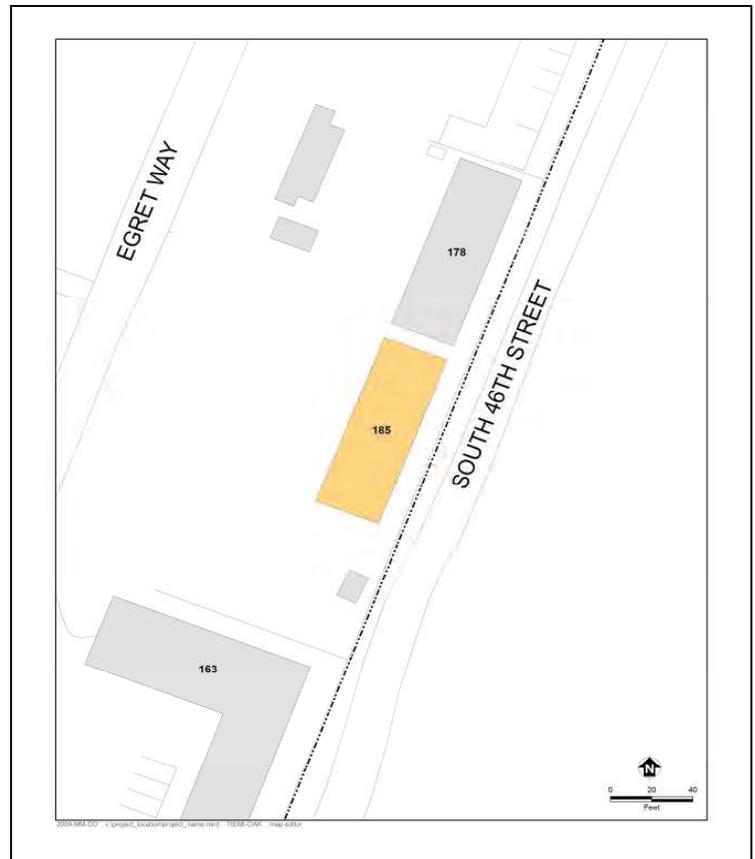
*B12. References: See Footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 185

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.¹ Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.² Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.³

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁴ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁵ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁶ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁷ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁸ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.⁹

¹ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

² Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

³ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁴ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁵ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁶ J.P. Munro-Fraser, p. 675.

⁷ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁸ Hulaniski p. 288.

⁹ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

Page 4 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 185

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹⁰

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹¹ The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹²

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹³ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁴ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁵ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁶

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹⁷ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."¹⁸ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock

¹⁰ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹¹ Purcell, p. 646.

¹² Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹³ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁴ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

¹⁵ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

¹⁶ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

¹⁷ Pacific Mining News, p. 222.

¹⁸ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

Page 5 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 185

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.¹⁹

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²⁰ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²¹ California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²² The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²³ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁴ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.²⁵ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁶

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.²⁷ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.²⁸ The factory was dismantled and relocated to New Jersey circa 1900.²⁹ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³⁰ Later known as the U.S. Briquette Company, the plant appears to have

¹⁹ Pacific Mining News, p. 222.

²⁰ Oliver, p. 1.

²¹ Pacific Mining News, p. 222.

²² Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²³ Oliver, p. 1.

²⁴ Munro-Fraser, p. 424.

²⁵ Purcell, p. 648.

²⁶ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

²⁷ Oliver, p. 1.

²⁸ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

²⁹ Oliver, p. 1.

³⁰ Oliver, p. 2.

Page 6 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 185

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

operated at this location until at least 1917.³¹ The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³² The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³³ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁴

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁵ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁶ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.³⁷

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.³⁸ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.³⁹ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴⁰ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the

³¹ Hulanksi, p. 354.

³² Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³³ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁴ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁵ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁶ Pacific Mining News, p.222.

³⁷ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

³⁸ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

³⁹ Purcell, p. 649.

⁴⁰ Oliver, p. 1.

Page 7 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 185

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴¹

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴² Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴³

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁴ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁵ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

The following provides an evaluation of Building 185 under each NRHP/CRHR criteria.

Building 185 does not appear to meet the criteria for listing in NRHP/CRHR because it lacks historical significance. The structure has been used for a variety of purposes throughout its lifetime and as such lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 and B/2).

The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3). In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

As a multiple use building, Building 185 does not meet the standard of exceptional importance required for properties under 50 years old to be eligible to the NHRP (Criterion G).

⁴¹ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴² University of California, Berkeley, 2008, p. 13.

⁴³ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁴ McGauhey, p. 71.

⁴⁵ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 7

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 197

P1. Other Identifier: Richmond Field Station Building 197

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 1984 **T** _____; **R** _____; $\frac{1}{4}$ of **Sec** _____; Diablo **B.M.**

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558614 mE/ 4196460 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 197 is along the southeastern border of the Richmond Field Station. It is set back from Egret Way to the east adjacent to building 117. Its primary façade faces northeast. The utilitarian building does not strongly express any particular architecture style. It is single story, rectangular in plan, 2,419 square feet, and constructed in 1975. The building is topped with a very shallow-pitched, side-gabled roof. Its roof and walls are clad in corrugated metal. Fenestration is an aluminum sliding sash. Three large open bays provide access to the northern end of the primary (northeast) elevation. A large metal roll up door is at its southern end. The entrance at the south end of the northwest elevation is a flush metal door. UC Berkeley constructed Building 197 in 1975. It has been used for support and heavy vehicle storage since its construction. In addition, drums containing waste petroleum products are stored in the building. The building is not of historic age as it is 38 years old.

***P3b. Resource Attributes:** (List attributes and codes) HP4: Ancillary Building

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Northwest and southwest facades of building, camera facing east, January 4, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

1975/UC Berkeley records

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** January 4, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc. 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

Page 2 of 7

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 197

B1. Historic Name: _____

B2. Common Name: Building 197

B3. Original Use: Vehicle Storage B4. Present Use: Vehicle Storage

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed in 1975

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 197 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

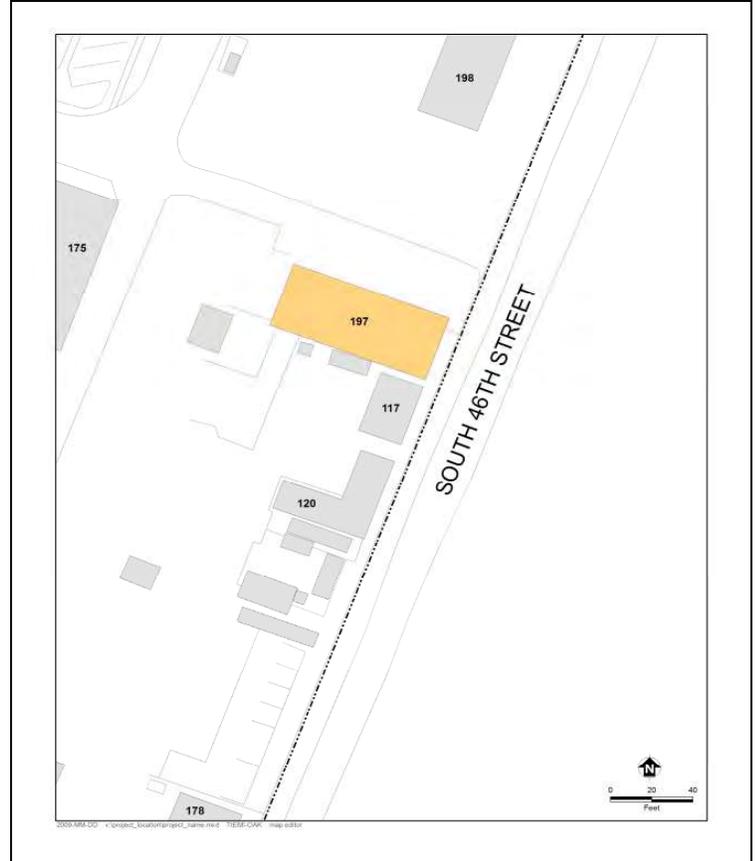
*B12. References: See footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 197

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.¹ Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.² Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.³

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁴ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁵ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁶ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁷ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁸ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.⁹

¹ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

² Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

³ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁴ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁵ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁶ J.P. Munro-Fraser, p. 675.

⁷ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁸ Hulaniski p. 288.

⁹ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

Page 4 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 197

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹⁰

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹¹ The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹²

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹³ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁴ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁵ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁶

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹⁷ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."¹⁸ By 1877 Oliver had left

¹⁰ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹¹ Purcell, p. 646.

¹² Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹³ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁴ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

¹⁵ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

¹⁶ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley: 2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

¹⁷ Pacific Mining News, p. 222.

¹⁸ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

Page 5 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 197

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.¹⁹

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²⁰ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²¹ California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²² The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²³ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁴ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.²⁵ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁶

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.²⁷ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.²⁸ The factory was dismantled and relocated to New Jersey circa 1900.²⁹ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³⁰ Later known as the U.S. Briquette Company, the plant appears to have

¹⁹ Pacific Mining News, p. 222.

²⁰ Oliver, p. 1.

²¹ Pacific Mining News, p. 222.

²² Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²³ Oliver, p. 1.

²⁴ Munro-Fraser, p. 424.

²⁵ Purcell, p. 648.

²⁶ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

²⁷ Oliver, p. 1.

²⁸ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

²⁹ Oliver, p. 1.

Page 6 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 197

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

operated at this location until at least 1917.³¹ The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³² The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³³ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁴

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁵ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁶ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.³⁷

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.³⁸ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.³⁹ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴⁰ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

³⁰ Oliver, p. 2.

³¹ Hulanski, p. 354.

³² Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³³ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁴ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁵ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁶ Pacific Mining News, p.222.

³⁷ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

³⁸ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

³⁹ Purcell, p. 649.

⁴⁰ Oliver, p. 1.

Page 7 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 197
*Recorded by Tetra Tech *Date January 4, 2013 Continuation Update

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴¹

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴² Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴³

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁴ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁵ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

The following provides an evaluation of Building 197 under each NRHP and CRHR criteria.

Building 197 does not appear to meet the criteria for listing in National Register of Historic Places because it lacks historical significance. The structure has been used for a variety of purposes throughout its lifetime and as such lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 and B/2).

The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3). In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

As a storage facility Building 197 does not meet the standard of exceptional importance required for properties under 50 years old to be eligible to the NHRP (Criterion G).

⁴¹ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴² University of California, Berkeley, 2008, p. 13.

⁴³ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁴ McGauhey, p. 71.

⁴⁵ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 8

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 275

P1. Other Identifier: Richmond Field Station Building 275

*P2. Location: Not for Publication Unrestricted

*a. County Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Richmond Date 1984 T _____; R _____; ¼ of Sec _____; Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558393 mE/ 4196523 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 275 is in the southern portion of the Richmond Field Station. It is on the south side of Lark Drive between Building 153 and Building 276, with its primary façade facing northeast. The vernacular building does not strongly express any particular architecture style. It is single story, irregular in plan, 7,914 square feet, constructed in 1956. (See Continuation Sheet)

*P3b. Resource Attributes: (List attributes and codes) HP15: Educational building; HP39: Other

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Northeast and southeast facades of building, camera facing southwest, January 4, 2013.

*P6. Date Constructed/Age and Sources:

Historic Prehistoric Both

1956/UC Berkeley records

*P7. Owner and Address:

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

*P8. Recorded by: (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

*P9. Date Recorded: January 4, 2013

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historic

Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc, 2013.

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 275

B1. Historic Name: _____

B2. Common Name: Building 275

B3. Original Use: Research B4. Present Use: Research/offices

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed in 1956
1966: Addition constructed

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 275 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet.)

B11. Additional Resource Attributes: (List attributes and codes)

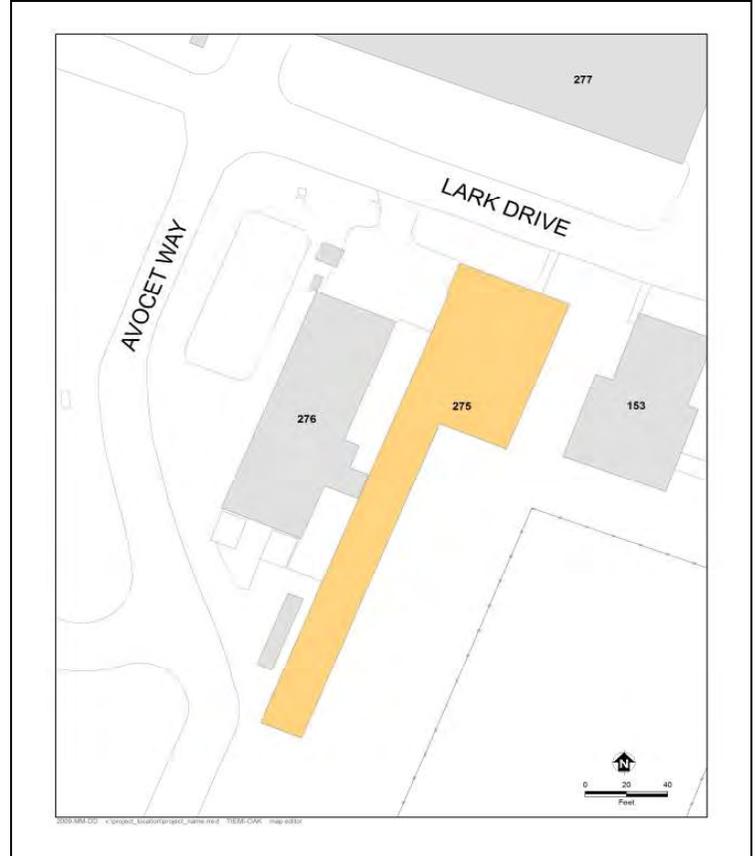
*B12. References: See Footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 275

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

P3a. Description (continued)

The front portion of the building, adjacent to Lark Drive, is topped with a flat roof featuring a broad eave overhang with large exposed roof members. The walls are sided in smooth stucco with vertical wood trim. Fenestration is fixed and awning metal sashes. The entrance is a flush door with a window at the east end of the primary (northeast) elevation.

An older, front-gabled building, with its front gable visible behind the flat roof, is joined to the rear of the main section of the building. Its roof and walls are clad in corrugated metal. Fenestration is multiple light fixed metal sashes. This older section of the building has no entryways.

UC Berkeley constructed building 275 in 1956. Originally it consisted of the long narrow section currently the southwest wing of the building. It was used as a laboratory for hydraulic and coastal engineering, and to test ship hull designs.¹ The facility included a towing tank for experiments. Historic aerial photographs indicate that the front (northeast) portion of the building along Lark Drive was constructed in 1966. The building currently houses offices.

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.² Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.³ Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.⁴

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁵ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁶ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁷ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise

¹ University of California, Berkeley, 2008, p. 14.

² Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

³ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁴ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁵ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁶ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁷ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 675.

Page 4 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 275

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁸ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁹ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.¹⁰

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹¹

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹² The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹³

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹⁴ William Letts

⁸ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁹ Hulaniski p. 288.

¹⁰ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

¹¹ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹² Purcell, p. 646.

¹³ Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹⁴ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

Page 5 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 275

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁵ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁶ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁷

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹⁸ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."¹⁹ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.²⁰

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²¹ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²² California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²³ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²⁴ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11

¹⁵ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

¹⁶ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

¹⁷ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley:2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

¹⁸ Pacific Mining News, p. 222.

¹⁹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

²⁰ Pacific Mining News, p. 222.

²¹ Oliver, p. 1.

²² Pacific Mining News, p. 222.

²³ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²⁴ Oliver, p. 1.

Page 6 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 275

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

deaths and destroyed the plant.²⁵ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.²⁶ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁷

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.²⁸ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.²⁹ The factory was dismantled and relocated to New Jersey circa 1900.³⁰ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³¹ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.³² The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³³ The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³⁴ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁵

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁶ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁷ Roland

²⁵ Munro-Fraser, p. 424.

²⁶ Purcell, p. 648.

²⁷ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

²⁸ Oliver, p. 1.

²⁹ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

³⁰ Oliver, p. 1.

³¹ Oliver, p. 2.

³² Hulanksi, p. 354.

³³ Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³⁴ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁵ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁶ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁷ Pacific Mining News, p.222.

Page 7 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 275

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.³⁸

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.³⁹ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.⁴⁰ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴¹ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴²

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴³ Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴⁴

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁵ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁶ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

³⁸ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

³⁹ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

⁴⁰ Purcell, p. 649.

⁴¹ Oliver, p. 1.

⁴² P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴³ University of California, Berkeley, 2008, p. 13.

⁴⁴ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁵ McGauhey, p. 71.

⁴⁶ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

Page 8 of 8 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 275
*Recorded by Tetra Tech *Date January 4, 2013 Continuation Update

The following provides an evaluation of Building 275 under each NRHP/CRHR criteria.

Building 275 does not appear to meet the criteria for listing in NRHP/CRHR because it lacks historical significance. The structure has been used for research throughout its lifetime and as such lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 and B/2).

The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3). In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 9

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 276

P1. Other Identifier: Richmond Field Station Building 276

*P2. Location: Not for Publication Unrestricted

*a. County Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Richmond Date 1984 T _____; R _____; ¼ of Sec _____; Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 396633 mE/ 4396112 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 276 is in the southern portion of the Richmond Field Station. It is on the south side of Lark Drive adjacent to Building 276, with its primary façade facing northeast. The utilitarian building does not strongly express any particular architecture style. It is single story and rectangular in plan.

The building is topped with a front-gabled roof. Its walls are corrugated metal. Fenestration is multi-light metal sashes. The main entrance is through a flush metal industrial door. A shed roofed addition projects from the rear elevation of the building.

*P3b. Resource Attributes: (List attributes and codes) HP4: Ancillary Building

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1: Northeast façade of building, camera facing south, January 4, 2013.

*P6. Date Constructed/Age and Sources:

Historic Prehistoric Both

1958

*P7. Owner and Address:

U.C. Berkeley
1301 South 46th Street
Richmond, California 94804

*P8. Recorded by: (Name, affiliation, address)

Kara Brunzell & Julia Mates
Tetra Tech

1999 Harrison Street, Ste 500
Oakland, CA 94612

*P9. Date Recorded: January 4, 2013

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the Richmond Field Station prepared by Tetra Tech, Inc. 2013.

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other (list) _____

Page 2 of 9

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 276

B1. Historic Name: _____

B2. Common Name: Building 276

B3. Original Use: Research B4. Present Use: Research

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed in 1958

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 276 at Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

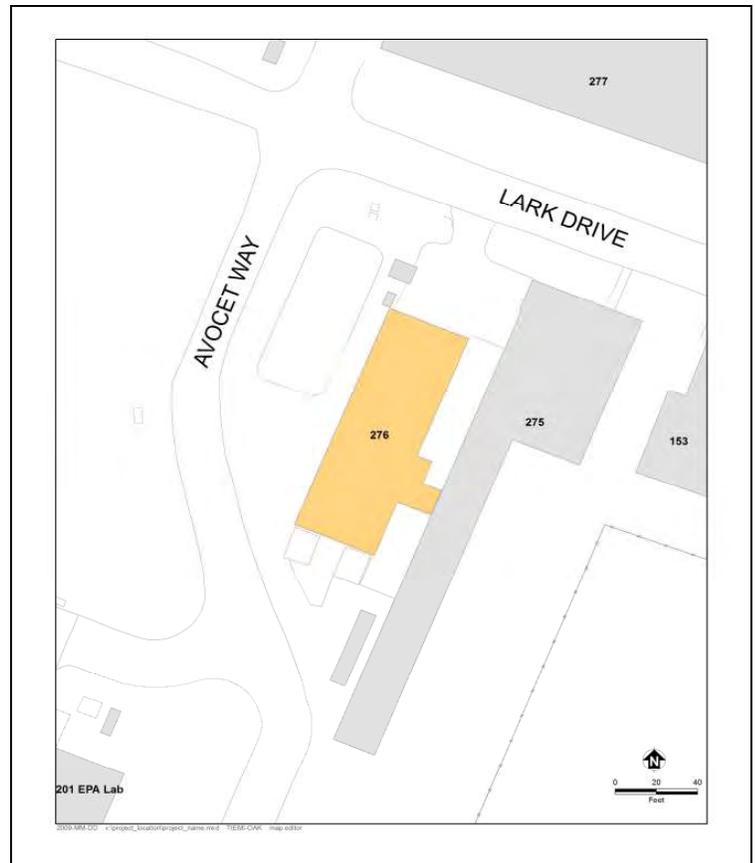
See Footnotes

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: January 2013

(This space reserved for official comments.)



Page 3 of 9 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 276

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.¹ Though subsequent Spanish expeditions passed through the region the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000 acre Rancho San Pablo to the Castros in 1823.² Americans began farming in Contra Costa County in the late 1830s, and by 1882 2/3 of the cultivated land in the county was devoted to wheat production.³

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁴ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo as well as the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁵ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade. He married Minna Quilfelt, who was a widow, in 1870.⁶ Minna Quilfelt Stege died in 1879, leaving the ranch to Stege and her daughter Edith. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Works, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁷ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁸ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867 he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive. Nobel licensed the Giant Powder Company to produce dynamite in California later that year. Giant was the first American company to produce dynamite, and its plant was initially located in Rock House Canyon, in what is today the City of San Francisco. The California Powder Works began manufacturing dynamite in the same area in 1869.⁹

¹ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

² Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

³ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁴ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁵ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁶ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 675.

⁷ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁸ Hulaniski p. 288.

⁹ Ida Mae Purcell, *History of Contra Costa County*, The Gillick Press, Berkeley, California" 1940, p. 645 – 646.

Page 4 of 9 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 276

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

The nineteenth century explosives industry was extremely dangerous, and as San Francisco's population grew explosives manufacturers needed to relocate. Contra Costa County across the bay was attractive since it was accessible due to its proximity to the harbor yet remote from population centers. In addition, the narrow canyons of Contra Costa County, which terminate in small bays, provided a natural geographical defense against explosions by allowing factory design that placed water between different facets of explosives manufacturing.¹⁰

During the 1870s chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch. The San Francisco explosives companies soon followed those explosive companies across the bay to Contra Costa County. In 1880, Giant relocated to Point Pinole, changing its name to the Atlas Powder Company. The California Powder Works soon followed, building a new factory in Hercules, which was named for the brand under which the company sold its powder.¹¹ The Vulcan Powder Works and Judson Powder works also opened in the Stege Ranch area during this era, consolidating Contra Costa County's position as the cradle of the California explosives industry. The East Bay dominated California explosives manufacturing into the twentieth century. In 1902 California had only one powder factory outside Contra Costa and Alameda counties.¹²

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He attended the University of Edinburgh and became a mining engineer. After returning to Chile, Oliver ran an explosives factory, which was nationalized by the Chilean government in 1864. After the loss of his factory, Oliver left Chile for San Francisco.¹³ William Letts Oliver and his wife Carrie lived in Oakland, from about 1880 until Oliver's death in 1918.¹⁴ The couple eventually had six children together: Roland, Edwin, Caroline, Anita, William Harold, and Albert.¹⁵ In addition his various professional activities William Letts Oliver was a yachtsman and an officer of the Bohemian Grove club in the early twentieth century. An avid amateur photographer throughout his lifetime, UC Berkeley's Bancroft Library has a collection of 2700 negatives and prints taken by Oliver and his son.¹⁶

William Letts Oliver initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹⁷ As early as 1870, European explosive companies were experimenting with nitrated guncotton in and by 1875 it was manufactured in England under the name "tonite."¹⁸ By 1877 Oliver had left Chile and was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock

¹⁰ James E. Vance, *Geography and Urban Evolution in the San Francisco Bay Area*, University of California, Berkeley: 1964, p. 27.

¹¹ Purcell, p. 646.

¹² Richmond Record, "Contra Costa County: Under the Vitascope", Richmond:1902.

¹³ Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

¹⁴ United States Census Bureau, Tenth Census of the United States, 1880, National Archives and Records Administration, Washington, D.C., San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.

¹⁵ United States Census Bureau, Twelfth Census of the United States, 1900, National Archives and Records Administration, Washington, D.C., Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

¹⁶ Online Archive of California, "Guide to the Oliver Family Photograph Collection", UC Berkeley:2009, website: <http://www.oac.cdlib.org/findaid/ark:/13030/ft0q2n99r1/> accessed February, 2013.

¹⁷ Pacific Mining News, p. 222.

¹⁸ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

Page 5 of 9 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 276

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

needed an explosive that would remain stable at the high temperatures underground to complete the tunnel, and Oliver was able to solve the problem by substituting tonite for more volatile compounds.¹⁹

The California Cap Company

In 1877 William Letts Oliver was inspired by his success with tonite to leave mining and establish the Tonite Powder Company, on a portion of the former Stege Ranch.²⁰ In the 1870s all blasting caps in the United States had to be imported from Europe. Not only were they expensive, but the timing of deliveries was uncertain, creating business difficulties for the powder plant. Oliver was determined to create his own caps in order to protect the tonite factory business. He experimented until he came up with a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter founded the California Cap Company. It was located adjacent to the Tonite Powder Company a 160 acre parcel carved out of the southern portion of Stege Ranch.²¹ California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.²² The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

The Tonite and California Cap factories, which were the first of several gunpowder and chemical companies in the region, were separated by the Stege agricultural warehouse for safety.²³ The explosives industry during this era was an extremely dangerous one. A horrific explosion in 1882 at the nearby Vulcan Powder Company caused 11 deaths and destroyed the plant.²⁴ Between 1882 and 1918 the Hercules and Atlas plants suffered numerous explosions which destroyed plant buildings and killed a total of 64 workers.²⁵ Despite its focus on safety, the California Cap Company had accidents as well. Two of its Chinese workers were killed in 1917 when one of them dropped a tray of caps. In 1941 an explosion caused a fire and critically injured a worker.²⁶

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888 he formed the American Lucol Company adjacent to the California Cap Company property.²⁷ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station, at the approximate location of Building 163. Lucol manufactured a linseed oil substitute.²⁸ The factory was dismantled and relocated to New Jersey circa 1900.²⁹ In 1903 the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field station property.³⁰ Later known as the U.S. Briquette Company, the plant appears to have

¹⁹ Pacific Mining News, p. 222.

²⁰ Oliver, p. 1.

²¹ Pacific Mining News, p. 222.

²² Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

²³ Oliver, p. 1.

²⁴ Munro-Fraser, p. 424.

²⁵ Purcell, p. 648.

²⁶ Contra Costa County Standard, "Stege Powder Plant Blast; One Near Death", June 6, 1941, p. 1A.

²⁷ Oliver, p. 1.

²⁸ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

²⁹ Oliver, p. 1.

³⁰ Oliver, p. 2.

Page 6 of 9 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 276

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

operated at this location until at least 1917.³¹ The U.S. Briquette Company buildings were demolished sometime in the 1960s.

The Oliver family aggressively promoted their products both through advertising and publishing. The California Cap Company sponsored or published both articles and book-length treatises on the use of explosives. Safety was a key element of the company image, a topic of company-sponsored technical writing as well as a selling point in advertisements.³² The Tonite Powder Company's product was known even outside the United States, and by the end of the nineteenth century the powder's explosive properties were considered comparable to the finest English products.³³ Oliver's sons Roland and Edwin Letts Oliver both graduated from UC Berkeley's College of Mining in 1900. Roland Oliver seems to have spent his entire career working in the family enterprises, while Edwin worked at California Cap between mining and other ventures. The Oliver family also became benefactors of the university, and in 1917 the California Cap Company donated substantial amounts of their products to the College of Mining including 500 electric detonators, 500 delayed action exploders, and 500 blasting caps.³⁴

Eventually the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.³⁵ By 1916 there were at least a dozen buildings on the site. When Oliver died in 1918 his son Roland Oliver took over as president of California Cap Company. By 1922 Roland's brother Leslie Oliver was assistant manager of the plant and Edwin Letts Oliver was a director.³⁶ Roland Oliver substantially expanded the California Cap Company after he took over as president. During this era the plant grew to include 150 buildings and a horse-drawn tram line.³⁷

During the late nineteenth and early twentieth century the California Cap Company was one of the most important local employers.³⁸ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940 the county was second only to Los Angeles in overall industrial production.³⁹ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II California Cap was able to stay open by producing delayed action incendiary bombs that were used against Japan.⁴⁰ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed and the Oliver family looking for a buyer.

³¹ Hulanksi, p. 354.

³² Halbert Powers Gillette, *Rock Excavation: Methods and Cost*, M.C. Clark, New York: 1904, x.

³³ Manual Eissler, *A Handbook on Modern Explosives*, Crosby, Lockwood & son, London: 1897, p. 117.

³⁴ University of California, *The University of California Chronicle*, University of California Press, January, 1917, p. 92.

³⁵ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

³⁶ Pacific Mining News, p.222.

³⁷ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

³⁸ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

³⁹ Purcell, p. 649.

⁴⁰ Oliver, p. 1.

Page 7 of 9 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 276

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

University Research/Richmond Field Station

After World War II UC Berkeley's Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O' Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. The University purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁴¹

The Richmond Field Station has been the location of a research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.⁴² Other early projects at the field station included sea water distillation, heat transfer, and cyclic stress research.⁴³

At first the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁴⁴ The current Buildings 102, 110, 118, 128, 150, 152 175, and 176 all date to the cap company era and have been repurposed for the Richmond Field Station. They also constructed new buildings as funds became available, and by the mid-1950s five new buildings had been completed at the Richmond Field Station.⁴⁵ By the 1970s the department had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

Evaluation

Building 276 does not appear to meet the criteria for listing in NRHP/CRHR because it lacks historical significance. The structure has been used for research throughout its lifetime and lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 and B/2).

The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3) Instead, it is a simple utilitarian building. In rare instances, buildings themselves can serve as sources of important information, however this building is not a principal source of important information in this regard (Criterion D/4).

***B12. References (continued):**

Bastin, Donald. *Images of America: Richmond*. Arcadia Publishing, Charleston SC: 2003.

Clausen, Marguerite. "On the Waterfront: An Oral History of Richmond, California". Regional Oral History

⁴¹ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁴² University of California, Berkeley, 2008, p. 13.

⁴³ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

⁴⁴ McGauhey, p. 71.

⁴⁵ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

Page 8 of 9 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 276

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Office, University of California, Berkeley: 1990.

Contra Costa County Standard. "Stege Powder Plant Blast; One Near Death". June 6, 1941, p. 1A.

Department of the Interior, National Park Service. 1991. "Guidelines for Applying the National Register Criteria for Evaluation," National Register Bulletin 15. Washington, DC: US Government Printing; revised 1995 through 2002.

Eissler, Manual . *A Handbook on Modern Explosives*. Crosby, Lockwood & son, London: 1897.

Griffins, Evan. "Early History of Richmond". December 1938, El Cerrito Historical Society. Website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

Hoover, Mildred B. and Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle. *Historic Spots in California, Fourth Edition*. Stanford University Press, Stanford, California: 1958.

Hulaniski, Frederick J. *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917.

McAlester, Virginia and Lee. *A Field Guide to American Houses*. Alfred A. Knopf, New York: 2006.

McGauhey, P.H. "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call". Regional Oral History Office, University of California, Berkeley: 1974.

Munro-Fraser, J.P. *History of Contra Costa County, California*. W.A. Slocum & Co., San Francisco: 1882.

O'Brien, Morrrough. Regional Oral History Office, University of California, Berkeley.

Oliver Family Photograph Collection. Online Archive of California, University of California, Berkeley. Website: http://digitalassets.lib.berkeley.edu/moac/ucb/images/brk00016736_31b_k.jpg. Accessed January 2013.

Oliver, Roland. "Recollections of Early Industries in Stege". August 7, 1959. Located in ephemera file labeled "Stege" at Contra Costa County Historical Society.

Pacific Mining News, Supplement to Engineering & Mining Journal-Press, "Industrial Notes: Developing of the Blasting Cap Industry", Vol. 1, No. 7, November 1922, p. 222.

Polk, R.L. & Company. *Richmond and Contra Costa County Directory, 1914 – 1915*. Oakland, California: 1915.

Purcell, Ida Mae. *History of Contra Costa County*. The Gillick Press, Berkeley, California: 1940.

Rego, Nilda. "Enterprising Stege lost all and died without a penny". Time Out. March 27, 1994, p. 2, column 4.

Page 9 of 9 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 276

*Recorded by Tetra Tech

*Date January 4, 2013 Continuation Update

Sanborn Insurance Maps

- Stege, California. 1912.
- Richmond, California. 1916.
- Richmond, California. 1949.

San Francisco Chronicle. "EPA Signs Lab Lease in Richmond". June 19, 1991.

Shackleton, Scott. University of California, Berkeley. Personal communication with Julia Mates, Tetra Tech 2013.

United States Census Bureau.

- Tenth Census of the United States, 1880. National Archives and Records Administration, Washington, D.C. San Francisco, California, Roll: 79, Film: 1254079, Page: 170B.
- Twelfth Census of the United States, 1900. National Archives and Records Administration, Washington, D.C. Oakland Ward 3, Alameda, California, Roll: 82, Page: 13A.

University of California, Berkeley.

- "Current Conditions Report." Prepared by Tetra Tech EM Inc. November 21, 2008.
- "Draft Environmental Impact Report, Proposed U.S. Environmental Protection Agency, Region IX Laboratory at the University of California's Richmond Field Station". Prepared by University of California, Berkeley Planning, Design and Construction Department. July 1991.
- Building files. Vertical files, Room 148. Richmond Field Station.

University of California, Berkeley, Department of Engineering.

- "Richmond Field Station Open House." May 28, 1952.
- "Guide for Engineering Field Station Inspection", undated.

University of California, Berkeley, Research Center. "Feasibility Study, Market Study, Financial Analysis, and Preliminary Master Plan". Prepared by Wallace Roberts & Todd. March 1990.

Von Bernewitz, Max Wilhelm. *Cyanide Practice, 1910 – 1913*. Dewey Publishing Company: 1913.

BUILDINGS IN THE INDIRECT APE

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 151

P1. Other Identifier: Richmond Field Station Building 151

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 2013 T 1N ; R 4W; 1/4 of Sec 20; Mt. Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558475 mE/ 4196552 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 151 is in the southern portion of the Richmond Field Station. It is on the north side of Lark Drive, with its primary façade facing southwest. This 2,629 square-foot building is rectangular in plan and is a Soule Steel Company prefabricated building, topped with a front gabled roof. Vents are located at each gable end. The walls and roof are corrugated metal. Fenestration consists of multi-light, metal sashes. There is also a small aluminum frame window in the center of the primary façade. The main entrance consists of a metal industrial door with a glass insert located at the east end. This entrance is sheltered by a metal awning and accessed by a very gradual concrete ramp that runs across the main façade of the building. The rear of the building, at the northeast, contains an overhead mounted sliding door (Photograph 2). In 1965, a 1,600 square-foot addition was constructed on the north end of the building.

***P3b. Resource Attributes:** (List attributes and codes) P39: Other

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1, camera facing northeast, April 30, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

1961/Richmond Field Station Building Files

***P7. Owner and Address:**

University of California, Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** April 30, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")

Historic Properties Survey Report for

Portions of the Richmond Field Station, prepared by Tetra Tech, Inc., 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

Page 2 of 6

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 151

B1. Historic Name: _____

B2. Common Name: Building 151

B3. Original Use: Research B4. Present Use: Research

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed in 1961; additional 20 feet by 40 feet at each end of building, constructed 1965

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 151 at the Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

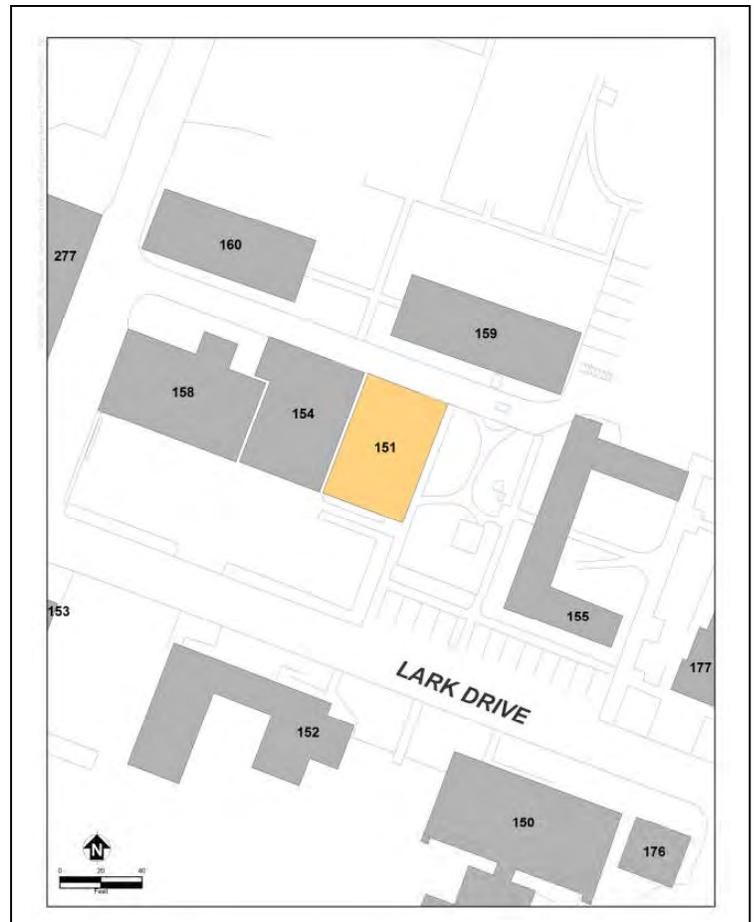
(See Footnotes)

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: April 2013

(This space reserved for official comments.)



Page 3 of 6 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 151

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages came upon the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.¹ Though subsequent Spanish expeditions passed through the region, the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s, the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000-acre Rancho San Pablo to the Castros in 1823.² Americans began farming in Contra Costa County in the late 1830s, and by 1882, two-thirds of the cultivated land in the county was devoted to wheat production.³

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁴ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade, marrying Quilfelt and gaining title to her ranch. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century, several industries, including the California Cap Company, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁵ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County. Stege was eventually absorbed into Richmond as the latter grew.

William Letts Oliver established the Tonite Powder Company and California Cap Company on land purchased from the Stege Ranch in 1877. The California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. The company was operated by Oliver's sons after his death and survived through the end of World War II. By 1949, however, the plant was closed and for sale.

University Research/Richmond Field Station

After World War II, the University of California (UC) Berkeley Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O'Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited for use on a crowded campus. They also wanted a location that was not too remote. UC Berkeley

¹ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

² Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

³ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁴ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁵ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354: Hulaniski p. 288.

Page 4 of 6 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 151

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁶

At first, the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁷ The buildings currently numbered 102, 110, 118, 128, 150, 152, 155, 175, 177, 176, and 180 all date to the California Cap Company era, and were repurposed for the Richmond Field Station. UC Berkeley constructed new buildings as funds became available, and by the mid-1950s, five new buildings had been completed at the Richmond Field Station.⁸ By the 1970s, the Department of Engineering had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

The Richmond Field Station has been the location of research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology and also researched pollution control and disposal of solid and liquid waste.⁹ Other early projects at the field station included heat transfer and cyclic stress research.¹⁰

Another laboratory that utilized Richmond Field Station was the Sea Water Conversion Laboratory (SWCL). In 1952, congress had created and funded the Office of Saline Water in order to encourage desalination studies as a solution to water shortages.¹¹ In response, UC Berkeley Mechanical Engineering professor Everett D. Howe formed the SWCL at the Richmond Field Station in 1958.¹²

Building 154 was constructed circa 1957, for SWCL research, and the program continued to expand under Howe's direction for the next decade. SWCL eventually encompassed most of the buildings on the north side of Lark Drive, including Buildings 151, 155, 158, 177, and 180.¹³ Howe became the coordinator for Saline Water Conversion Projects throughout the UC system and authored several books on desalination before his retirement in 1968.¹⁴ Although Howe has been referred to as a pioneer in the solar distillation of seawater, research has not

⁶ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁷ McGauhey, p. 71.

⁸ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

⁹ University of California, Berkeley, 2008, p. 13.

¹⁰ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

¹¹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.11.

¹² University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

¹³ University of California, Berkeley, Files "Building 151", "Building 154", "Building 158", "Building 177", and "Building 180," located in vertical files in Room 148, Richmond Field Station.

¹⁴ University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

Page 5 of 6 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 151

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

revealed a significant lasting impact on desalination science resulting from his work.¹⁵ Howe's primary contributions appear to have been administering and promoting desalination research. Breakthroughs such as reverse osmosis were developed by scientists at the University of California Los Angeles (UCLA) and the University of Florida. UCLA researchers also designed the pilot desalination plant in Coalinga, California, that went online in 1965, while Howe's role in that effort seems to have been limited to coordination.¹⁶

Professor Alan D.K. Laird became SWCL Director when Howe retired, a position he held until the laboratory was closed in 1987.¹⁷ By 1978, SWCL encompassed twelve separate research projects. During this era, the cluster of buildings devoted to SWCL had grown to include Building 150 on the south side of Lark Drive, as well as the six buildings on the north side of the street. In 1978, Laird proposed a major capital improvement project involving 10,000 square feet of new construction.¹⁸ In 1982, the Office of Saline Water was closed when the Reagan administration made broad cuts to funding for scientific research.¹⁹ Professor Laird's proposed capital improvements were never constructed. Alan D.K. Laird does not seem to have been responsible for groundbreaking contributions to desalination science.

Building 151

Building 151 was constructed in 1961, in order to house expanded activities of the SWCL, which was operated next door in Building 154 by Professor Everett D. Howe. In 1965, a 1,600 square-foot addition was constructed on the north end of the building.²⁰ This building has also housed a solar materials laboratory in later years.²¹ Building 151 is currently used for research.

Evaluation

Building 151 does not meet the criteria for listing in the NRHP or CRHR under Criterion A/1 because it lacks historical significance. The historical record does not indicate that Building 151 was important within local, state, or national events or trends. While academic research is important to anyone directly involved in the field, the historical record must show that the research or studies conducted had a significant impact on historical events and trends. The SWCL and Building 151 are not significant in this regard (Criterion A/1).

Although the structure was used for university research by Professor Howe and others throughout its lifetime, none of the available evidence suggests that the building has association with persons important to the

¹⁵ Soteris A. Kalogirou, *Solar Engineering: Processes and Systems*, Academic Press, Burlington, MA: 2009, p. 31.

¹⁶ Yorem Cohen and Julius Glater, "A Tribute to Sidney Loeb, the Pioneer of Reverse Osmosis Desalination Research," Water Technology Research Center, Chemical and Biomolecular Engineering Research, University of California, Los Angeles, December, 2009, p. 13.

¹⁷ University of California (System) Academic Senate, "1996, University of California: In Memoriam," 1996, Internet website: <http://texts.cdlib.org/view?docId=hb0z09n6nn&doc.view=frames&chunk.id=div00041&toc.depth=1&toc.id=>

¹⁸ University of California, Berkeley, Files "Building 180," located in vertical files in Room 148, Richmond Field Station.

¹⁹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.12.

²⁰ University of California, Berkeley, File "Building 151", located in vertical files in Room 148, Richmond Field Station.

²¹ University of California, Berkeley, 2008, p. 196.

Page 6 of 6 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 151
*Recorded by Tetra Tech *Date April 30, 2013 Continuation Update

B10. Significance (continued)

development of the desalination field. Academic research is important to those working directly in that specific field; however, none of the persons associated with Building 151 had a significant impact on local, state, or national history. Therefore, the building lacks the strength of association necessary to be considered historically significant in relation to any particular persons (Criterion B/2).

Building 151 lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction and is a simple, prefabricated building (Criterion C/3).

In rare instances, buildings themselves can serve as sources of important information; however, this building is not a principal source of important information in this regard (Criterion D/4).

Building 151 does not meet the significance criteria for listing in the NRHP or CRHR.



Photograph 2: Building 151, April 30, 2013, camera facing southwest

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 7

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 154

P1. Other Identifier: Richmond Field Station Building 154

*P2. Location: Not for Publication Unrestricted

*a. County Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Richmond Date 2013 T 1N ; R 4W; 1/4 of Sec 20; Mt. Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558463 mE/ 4196555 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Assessor Parcel Number

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 154 is in the southern portion of the Richmond Field Station. It is on the north side of Lark Drive between Buildings 158 and 151, with its primary façade facing southwest. The 2,731 square-foot building has a rectangular footprint and is a prefabricated Dudley Steel Building topped with a front gabled roof. The walls and roof are corrugated metal. Primary fenestration consists of multi-light metal sashes. A metal industrial door with a glass insert is centered in its southwest elevation and serves as the main entrance. This entrance is sheltered by a metal awning and accessed by both concrete stairs and a ramp. The rear of the building contains an overhead-mounted, sliding door (Photograph 2). In 1965, a 1,600 square-foot addition was constructed on the north end of the building.

*P3b. Resource Attributes: (List attributes and codes) HP39: Other

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1, camera facing northeast, April 30, 2013.

*P6. Date Constructed/Age and Sources:

Historic Prehistoric Both

1958/Richmond Field Station building files

*P7. Owner and Address:

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

*P8. Recorded by: (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

*P9. Date Recorded: April 30, 2013

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the

Richmond Field Station, prepared by Tetra Tech, Inc., 2013.

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 154

B1. Historic Name: _____

B2. Common Name: Building 154

B3. Original Use: Research B4. Present Use: Research

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed 1958; Addition constructed 1965

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 154 at the Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

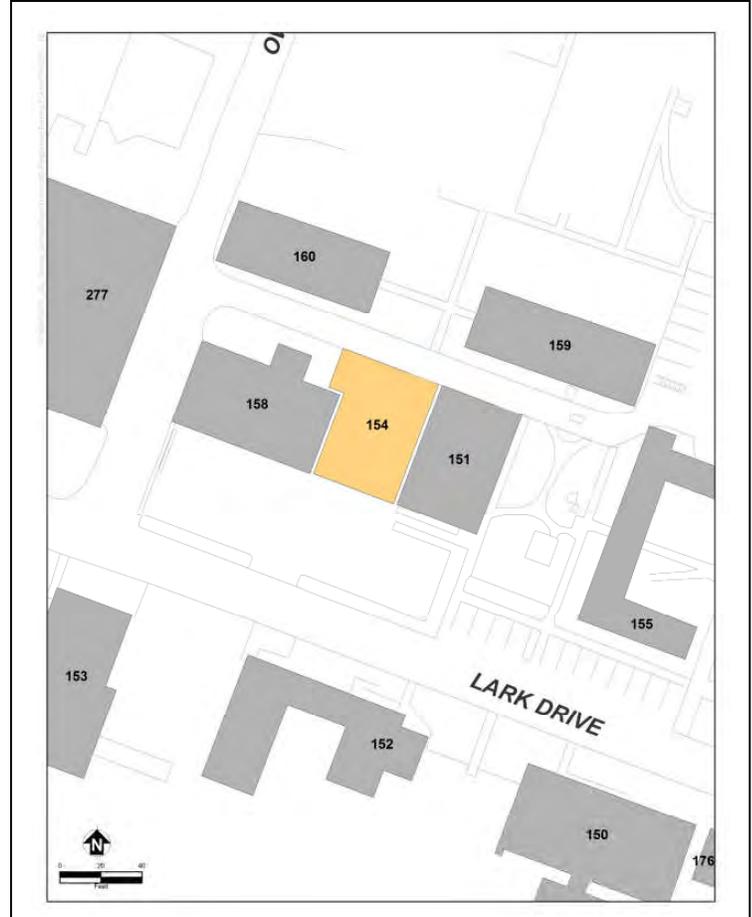
(See Footnotes)

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: April 2013

(This space reserved for official comments.)



Page 3 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 154

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages came upon the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.¹ Though subsequent Spanish expeditions passed through the region, the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s, the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000-acre Rancho San Pablo to the Castros in 1823.² Americans began farming in Contra Costa County in the late 1830s, and by 1882, two-thirds of the cultivated land in the county was devoted to wheat production.³

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁴ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade, marrying Quilfelt and gaining title to her ranch. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century, several industries, including the California Cap Company, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁵ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County. Stege was eventually absorbed into Richmond as the latter grew.

William Letts Oliver established the Tonite Powder Company and California Cap Company on land purchased from the Stege Ranch in 1877. The California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. The company was operated by Oliver's sons after his death and managed to survive through the end of World War II. By 1949, however, the plant was closed and for sale.

University Research/Richmond Field Station

After World War II, the University of California (UC) Berkeley Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O'Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited for use on a crowded campus. They also wanted a location that was not too remote. UC Berkeley

¹ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

² Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

³ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁴ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁵ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354: Hulaniski p. 288.

Page 4 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 154

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁶

At first, the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁷ The buildings currently numbered 102, 110, 118, 128, 150, 152, 155, 175, 177, 176, and 180 all date to the California Cap Company era, and were repurposed for the Richmond Field Station. UC Berkeley also constructed new buildings as funds became available, and by the mid-1950s, five new buildings had been completed at the Richmond Field Station.⁸ By the 1970s, the Department of Engineering had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

The Richmond Field Station has been the location of research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology and also researched pollution control and disposal of solid and liquid waste.⁹ Other early projects at the field station included heat transfer and cyclic stress research.¹⁰

Another laboratory that utilized Richmond Field Station was the Sea Water Conversion Laboratory (SWCL). In 1952, congress had created and funded the Office of Saline Water in order to encourage desalination studies as a solution to water shortages.¹¹ In response, UC Berkeley Mechanical Engineering professor Everett D. Howe formed the SWCL at the Richmond Field Station in 1958.¹²

Building 154 was constructed circa 1958, for SWCL research, and the program continued to expand under Howe's direction for the next decade. SWCL eventually encompassed most of the buildings on the north side of Lark Drive, including Buildings 151, 155, 158, 177, and 180.¹³ Howe became the coordinator for Saline Water Conversion Projects throughout the UC system and authored several books on desalination before his retirement in 1968.¹⁴ Although Howe has been referred to as a pioneer in the solar distillation of seawater, research has not

⁶ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁷ McGauhey, p. 71.

⁸ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

⁹ University of California, Berkeley, 2008, p. 13.

¹⁰ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

¹¹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.11.

¹² University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

¹³ University of California, Berkeley, Files "Building 151", "Building 154", "Building 158", "Building 177", and "Building 180," located in vertical files in Room 148, Richmond Field Station.

¹⁴ University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

Page 5 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 154

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

revealed a significant lasting impact on desalination science resulting from his work.¹⁵ Howe's primary contributions appear to have been administering and promoting desalination research. Breakthroughs such as reverse osmosis were developed by scientists at the University of California Los Angeles (UCLA) and the University of Florida. UCLA researchers also designed the pilot desalination plant in Coalinga, California, that went online in 1965, while Howe's role in that effort seems to have been limited to coordination.¹⁶

Professor Alan D.K. Laird became SWCL Director when Howe retired, a position he held until the laboratory was closed in 1987.¹⁷ By 1978, SWCL encompassed twelve separate research projects. During this era, the cluster of buildings devoted to SWCL had grown to include Building 150 on the south side of Lark Drive, as well as the six buildings on the north side of the street. In 1978, Laird proposed a major capital improvement project involving 10,000 square feet of new construction.¹⁸ In 1982, the Office of Saline Water was closed when the Reagan administration made broad cuts to funding for scientific research.¹⁹ Professor Laird's proposed capital improvements were never constructed. Alan D.K. Laird does not seem to have been responsible for groundbreaking contributions to desalination science.

Building 154

Building 154 was constructed circa 1958 as a Seawater Conversion Laboratory, which was operated by Professor Everett D. Howe (Photograph 3). In 1965, a 1,600 square-foot addition was constructed on the north end of the building.²⁰ Initially labeled Building 158A, by 1970, it was being referred to as Building 154.²¹ Space station research, sewage system evaluation, robotics evaluation, and insect research also took place in the building.²² Building 154 is currently used for research.

Evaluation

Building 154 does not meet the criteria for listing in the NRHP or CRHR under Criterion A/1 because it lacks historical significance. The historical record does not indicate that Building 154 was important within local, state, or national events or trends. While academic research is important to anyone directly involved in that field, in order to be eligible for the NRHP or CRHR, the historical record must show that the research or studies conducted had a significant impact on historical events and trends. The SWCL and Building 151 are not significant in this regard.

¹⁵ Soteris A. Kalogirou, *Solar Engineering: Processes and Systems*, Academic Press, Burlington, MA: 2009, p. 31.

¹⁶ Yorem Cohen and Julius Glater, "A Tribute to Sidney Loeb, the Pioneer of Reverse Osmosis Desalination Research," Water Technology Research Center, Chemical and Biomolecular Engineering Research, University of California, Los Angeles, December, 2009, p. 13.

¹⁷ University of California (System) Academic Senate, "1996, University of California: In Memoriam," 1996, Internet website: <http://texts.cdlib.org/view?docId=hb0z09n6nn&doc.view=frames&chunk.id=div00041&toc.depth=1&toc.id=>

¹⁸ University of California, Berkeley, Files "Building 180," located in vertical files in Room 148, Richmond Field Station.

¹⁹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.12.

²⁰ University of California, Berkeley, File "Building 154," located in vertical files in Room 148, Richmond Field Station.

²¹ Sanborn Maps, 1966, 1970.

²² University of California, Berkeley, 2008, p. 196.

Page 6 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 154

*Recorded by Tetra Tech *Date April 30, 2013 Continuation Update

B10. Significance (continued)

Although the structure was used for university research by Professor Howe and others throughout its lifetime, none of the available evidence suggests that the building has association with persons important to the development of the desalination field. Academic research is important to those working directly in that specific field; however, none of the persons associated with Building 154 had a significant impact on local, state, or national history. Therefore, the building lacks the strength of association necessary to be considered historically significant in relation to any particular persons (Criterion B/2).

Building 154 lacks any identifiable architectural stylistic design and is a simple prefabricated building. It does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3).

In rare instances, buildings themselves can serve as sources of important information; however, this building is not a principal source of important information in this regard (Criterion D/4).

Building 154 does not meet the significance criteria for listing in the NRHP or CRHR.

Photographs (continued):



Photograph 2: Rear of building 154, April 30, 2013, camera facing southeast

Page 7 of 7 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 154

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 3, Building 154 at center between Buildings 158 and 151, circa 1965, camera facing northwest

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 12

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

P1. Other Identifier: Richmond Field Station Building 155

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 2013 T 1N ; R 4W; 1/4 of Sec 20; Mt. Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558463 mE/ 4196555 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 155 is in the southern portion of the Richmond Field Station. It is on the north side of Lark Drive between Buildings 151 and 177. The vernacular building does not strongly express a particular architecture style. It has 1,896 square feet and one story, with an irregular "U" plan. It was constructed in 1953 by combining three building dating from the 1920s.

The building consists of two side gabled wings joined by a wing that runs perpendicular to the street, forming a "U" shape. The roof is sheathed in replacement composition shingles, its walls clad in horizontal wood siding. Fenestration throughout the building consists of fixed, square, wood frame windows. (See Continuation Sheet)

***P3b. Resource Attributes:** (List attributes and codes) P39: Other

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1, Camera facing north, April 30, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

1953/Richmond Field Station Building Files

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** April 30, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic

Properties Survey Report for Portions of the

Richmond Field Station, prepared by Tetra Tech, Inc., 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

B1. Historic Name: “Building 64”, “Building 67”, and “Building 92”

B2. Common Name: Building 155

B3. Original Use: Manufacturing B4. Present Use: Research, offices

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Three original buildings constructed circa 1920; moved, connected, and remodeled into one building 1953; replacement windows were likely installed in the 1950s; concrete foundation added 1977.

*B7. Moved? No Yes Unknown Date: 1953 Original Location: Richmond Field Station

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 155 at the Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). The building was evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code and does not appear to meet the significance criteria in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

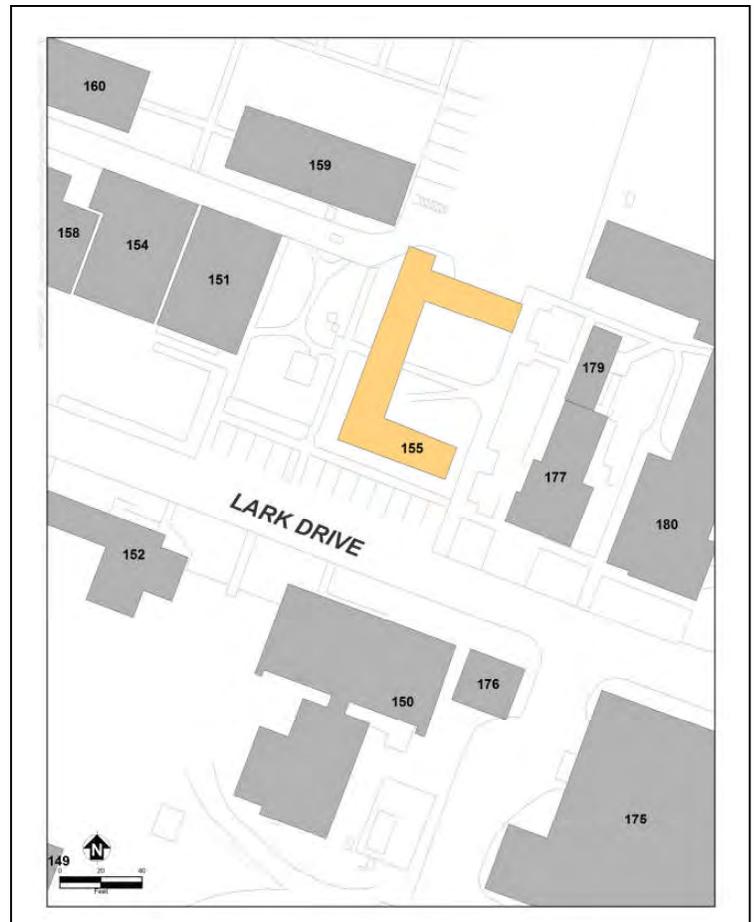
(See Footnotes)

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: April 2013

(This space reserved for official comments.)



Page 3 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

P3a. Description (continued)

The windows are not original and were likely replaced during the 1950s. A paneled wood door reached by a set of wooden stairs is centered in the gable end of the southwest wing, which is the closest to Lark Drive. The southwest elevation of the northeast wing features a similar entrance. A third entrance, centered in the connecting wing and faces southeast, is fitted with a modern door and accessed by a concrete ramp.

Construction of Building 155 was pieced together from former California Cap Company buildings, “Building 64”, “Building 67”, and “Building 92”. The California Cap Company constructed these three buildings circa 1920.¹ The buildings were originally used for waterproofing and assembling by the California Cap Company.² In 1953, the University of California (UC) appears to have turned “Building 67” perpendicular to its original position to form a connecting wing in a single “U” shaped building. In addition to joining the three buildings, UC replaced original siding and original windows on all three buildings. At first, the southwest wing adjacent to Lark Drive was labeled Building 155, and the northeast (rear) wing was labeled Building 157. At some point, all three wings became known as Building 155.³ In 1977, a concrete foundation was installed under the building.⁴

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages came upon the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.⁵ Though subsequent Spanish expeditions passed through the region, the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s, the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000-acre Rancho San Pablo to the Castros in 1823.⁶ Americans began farming in Contra Costa County in the late 1830s, and by 1882, two-thirds of the cultivated land in the county was devoted to wheat production.⁷

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁸ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo, as well as from the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years, the frogs’ legs raised by Richard Stege for the San Francisco

¹ University of California, Berkeley, File “Building 155,” located in vertical files in Room 148, Richmond Field Station.

² University of California, Berkeley, 2008, p. 200 – 204.

³ Sanborn Map, 1966.

⁴ Scott Shackleton, University of California, Berkeley, Personal communication with Julia Mates, Tetra Tech 2013.

⁵ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

⁶ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁷ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁸ Evan Griffins, “Early History of Richmond”, December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

Page 4 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

restaurant market.⁹ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade, marrying Quilfelt and gaining title to her ranch. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Company, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.¹⁰ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.¹¹ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867, he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive.

During the 1870s, chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch.

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹² As early as 1870, European explosive companies were experimenting with nitrated guncotton. By 1875, it was being manufactured in England under the name "Tonite."¹³ In 1877, Oliver was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive to complete the tunnel that would remain stable at the high temperatures underground, and Oliver was able to solve the problem by substituting Tonite for more volatile compounds.¹⁴

The California Cap Company

In 1877, William Letts Oliver established the Tonite Powder Company on a portion of the former Stege Ranch.¹⁵ Oliver eventually invented a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter then founded the California Cap Company. It was located

⁹ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

¹⁰ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

¹¹ Hulaniski p. 288.

¹² Pacific Mining News, p. 222.

¹³ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

¹⁴ Pacific Mining News, p. 222.

¹⁵ Oliver, p. 1.

Page 5 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

adjacent to the Tonite Powder Company on a 160-acre parcel carved out of the southern portion of Stege Ranch.¹⁶ The California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.¹⁷ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888, he formed the American Lucol Company adjacent to the California Cap Company property.¹⁸ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station. Lucol manufactured a linseed oil substitute.¹⁹ The factory was dismantled and relocated to New Jersey circa 1900.²⁰ In 1903, the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field Station property.²¹ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.²² The U.S. Briquette Company buildings were demolished during the 1960s.

Eventually, the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.²³ By 1916, there were at least a dozen buildings on the site. By 1922, the California Cap Company was substantially expanded and the plant grew to include 150 buildings and a horse-drawn tram line.²⁴

During the late nineteenth and early twentieth century, the California Cap Company was one of the most important local employers.²⁵ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940, the county was second only to Los Angeles in overall industrial production.²⁶ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II, California Cap Company was able to stay open by producing delayed action incendiary bombs that were used against Japan.²⁷ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed.

¹⁶ Pacific Mining News, p. 222.

¹⁷ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

¹⁸ Oliver, p. 1.

¹⁹ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

²⁰ Oliver, p. 1.

²¹ Oliver, p. 2.

²² Hulaniski, p. 354.

²³ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

²⁴ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

²⁵ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

²⁶ Purcell, p. 649.

²⁷ Oliver, p. 1.

Page 6 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

University Research/Richmond Field Station

After World War II, the UC Berkeley Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O'Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. UC Berkeley purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.²⁸

At first, the Department of Engineering utilized the buildings left behind by the California Cap Company. The department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.²⁹ The current Buildings 102, 110, 118, 128, 150, 152, 155, 175, 177, 176, and 180 all date to the California Cap Company era and were repurposed for the Richmond Field Station. UC Berkeley also constructed new buildings as funds became available, and by the mid-1950s, five new buildings had been completed at the Richmond Field Station.³⁰ By the 1970s, the Department of Engineering had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

The Richmond Field Station has been the location of research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. The focus of SERL was primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.³¹ Other early research projects at the field station included heat transfer and cyclic stress research.³²

Another laboratory that utilized the Richmond Field Station was the Sea Water Conversion Laboratory (SWCL). In 1952, Congress had created and funded the Office of Saline Water in order to encourage desalination studies as a solution to water shortages.³³ In response, UC Berkeley Mechanical Engineering professor Everett D. Howe formed the SWCL at the Richmond Field Station in 1958.³⁴

Building 154 was constructed circa 1957 for SWCL research, and the program continued to expand under Howe's direction for the next decade. SWCL eventually encompassed most of the buildings on the north side of Lark

²⁸ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

²⁹ McGauhey, p. 71.

³⁰ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

³¹ University of California, Berkeley, 2008, p. 13.

³² University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

³³ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.11.

³⁴ University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

Page 7 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

Drive, including Buildings 151, 155, 158, 177, and 180.³⁵ Howe became the coordinator for Saline Water Conversion Projects throughout the UC system and authored several books on desalination before his retirement in 1968.³⁶ Although Howe has been referred to as a pioneer in the solar distillation of seawater, research has not revealed a significant lasting impact on desalination science resulting from his work.³⁷

Howe's primary contributions appear to have been administering and promoting desalination research. Breakthroughs such as reverse osmosis were developed by scientists at the University of California Los Angeles (UCLA) and the University of Florida. UCLA researchers also designed the pilot desalination plant in Coalinga, California, that went online in 1965, while Howe's role in that effort seems to have been limited to coordination.³⁸

Professor Alan D.K. Laird became SWCL Director when Howe retired, a position he held until the laboratory was closed in 1987.³⁹ By 1978, SWCL encompassed twelve separate research projects. During this era, the cluster of buildings devoted to SWCL had grown to include Building 150 on the south side of Lark Drive as well as the six buildings on the north side of the street. In 1978, Laird proposed a major capital improvement project involving 10,000 square feet of new construction.⁴⁰ In 1982, the Office of Saline Water was closed when the Reagan administration made broad cuts to funding for scientific research.⁴¹ Professor Laird's proposed capital improvements were never constructed. Alan D.K. Laird does not seem to have been responsible for groundbreaking contributions to desalination science.

Building 155

Activities in the building in the early years included Low Pressure Research and Sea Water Conversion program administration. The Catalytic Liquefaction of Biomass Project, also known as the Biocrude project, moved into Building 155 in the late 1970s.⁴² Building 155 was later used as a solar research facility.⁴³ It is currently used for research and houses non-profit offices.

³⁵ University of California, Berkeley, Files "Building 151", "Building 154", "Building 158", "Building 177", and "Building 180," located in vertical files in Room 148, Richmond Field Station.

³⁶ University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

³⁷ Soteris A. Kalogirou, *Solar Engineering: Processes and Systems*, Academic Press, Burlington, MA: 2009, p. 31.

³⁸ Yorem Cohen and Julius Glater, "A Tribute to Sidney Loeb, the Pioneer of Reverse Osmosis Desalination Research," Water Technology Research Center, Chemical and Biomolecular Engineering Research, University of California, Los Angeles, December, 2009, p. 13.

³⁹ University of California (System) Academic Senate, "1996, University of California: In Memoriam," 1996, Internet website: <http://texts.cdlib.org/view?docId=hb0z09n6nn&doc.view=frames&chunk.id=div00041&toc.depth=1&toc.id=>

⁴⁰ University of California, Berkeley, Files "Building 180," located in vertical files in Room 148, Richmond Field Station.

⁴¹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.12.

⁴² University of California, Berkeley, File "Building 155," located in vertical files in Room 148, Richmond Field Station.

⁴³ University of California, Berkeley, 2008, p. 196.

Page 8 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

Evaluation

No association was found between Building 155 and events significant to national, state, or local history. Although the California Cap Company was the first blasting cap manufacturer in the United States, there is no indication that the activities in Building 155 were central to the development of the plant or its technical processes. Academic research took place in the building after UC Berkeley took over the property, and while academic research is important to anyone directly involved in the field, the historical record must show that the research or studies had a significant impact on events and trends for a building to be eligible for the NRHP or CRHR. The historical record does not indicate such significance, and Building 155 is not eligible for inclusion in the NRHP or CRHR under Criterion A/1.

Although the Olivers were significant in the history of the explosives industry, no particular association was found between the Oliver family and Building 155. Although the structure was used for university research by Professor Howe and others throughout its lifetime, none of the available historical evidence suggests that the building has association with persons important to the development of the desalination field. Academic research is important to those working directly in that specific field; however, none of the persons associated with Building 155 had a significant impact on local, state, or national history. The building lacks the strength of association necessary to be considered historically significant in relation to any particular persons (Criterion B/2).

The building does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual or possess high artistic values. Building 155 is a vernacular building of a type that was commonly constructed in the early twentieth century. It has been heavily altered over the years since UC Berkeley took possession in 1950, so the building is not eligible for the NRHP or CRHR for its architecture (Criterion C/3).

In rare instances, buildings themselves can serve as sources of important information; however, this building is not a principal source of important information (Criterion D/4).

Building 155 does not meet the significance criteria for listing in the NRHP or CRHR.

Page 9 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 2, California Cap Company “Building 64” and “Building 67,” 1921,
camera facing northeast

Page 10 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 3, Buildings 155 and 157, 1953, camera facing west



Photograph 4, Buildings 155 and 157, circa 1953, camera facing northwest

Page 11 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 5, gable end, southwest wing, April 20, 2013, camera facing west



Photograph 6, Building 155, April 30, 2013, northeast wing, camera facing southwest

Page 12 of 12 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 155

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 7, Building 155, connecting wing, April 30, 2013, camera facing west

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 6

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 158

P1. Other Identifier: Richmond Field Station Building 158

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 2013 T 1N ; R 4W; 1/4 of Sec 20; Mt. Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558442 mE/ 4196541 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Assessor Parcel Number

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 158 is in the southern portion of the Richmond Field Station. It is on the north side of Lark Drive, with its primary façade facing southwest. The 3,343 square-foot building is a rectangular, prefabricated building topped with a front gabled roof. It features shallow eaves with exposed rafters and exposed steel purlins. The walls and roof are corrugated metal. Fenestration consists of multi-light metal sashes and replacement sliding sashes. An overhead-mounted, sliding, metal door is centered in its southwest elevation. An entrance fitted with a single metal industrial door with a glass insert is located adjacent to the large door to the east. This entrance is sheltered by a metal awning and accessed at grade.

***P3b. Resource Attributes:** (List attributes and codes) P39: Other

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1, camera facing northeast, April 30, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

Circa 1957

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** April 30, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the

Richmond Field Station, prepared by Tetra Tech, Inc., 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary # _____
HRI # _____

Page 2 of 6

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 158

B1. Historic Name: _____

B2. Common Name: Building 158

B3. Original Use: Research B4. Present Use: Research

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed 1957; replacement windows no date

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 158 at the Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

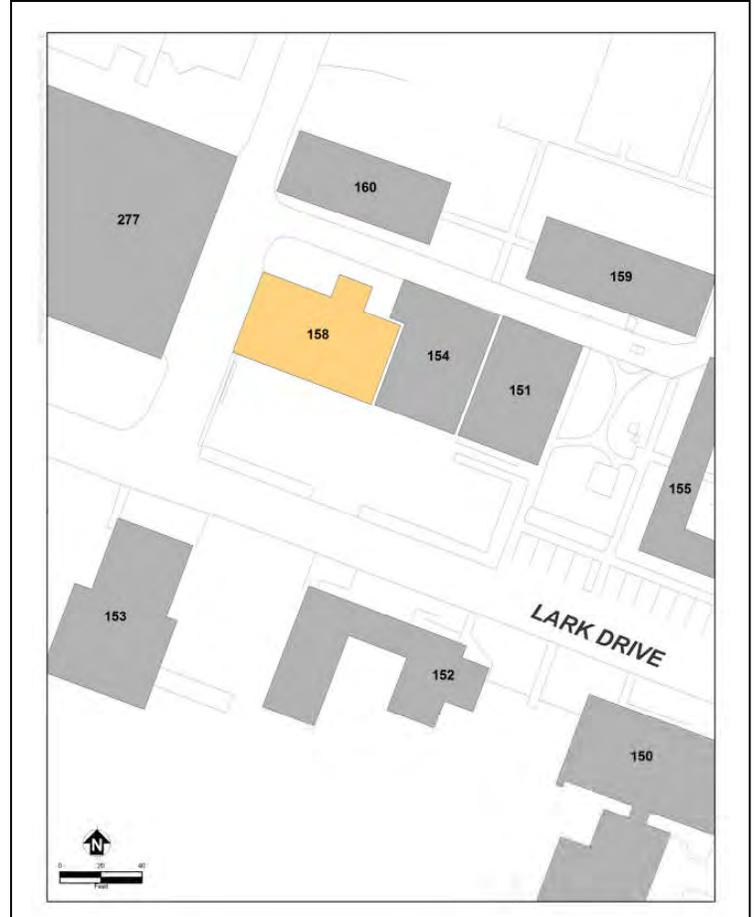
(See Footnotes)

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: April 2013

(This space reserved for official comments.)



Page 3 of 6 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 158

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages came upon the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.¹ Though subsequent Spanish expeditions passed through the region, the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s, the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000-acre Rancho San Pablo to the Castros in 1823.² Americans began farming in Contra Costa County in the late 1830s, and by 1882, two-thirds of the cultivated land in the county was devoted to wheat production.³

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁴ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade, marrying Quilfelt and gaining title to her ranch. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century, several industries, including the California Cap Company, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁵ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County. Stege was eventually absorbed into Richmond as the latter grew.

William Letts Oliver established the Tonite Powder Company and California Cap Company on land purchased from the Stege Ranch in 1877. The California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. The company was operated by Oliver's sons after his death and managed to survive through the end of World War II. By 1949, however, the plant was closed and for sale.

University Research/Richmond Field Station

After World War II, the University of California (UC) Berkeley Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O'Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited for use on a crowded campus. They also wanted a location that was not too remote. UC Berkeley

¹ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

² Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

³ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁴ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁵ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354: Hulaniski p. 288.

Page 4 of 6 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 158

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁶

At first, the Department of Engineering utilized the buildings left behind by the California Cap Company. The Department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁷ The current buildings numbered 102, 110, 118, 128, 150, 152, 155, 175, 177, 176, and 180 all date to the California Cap Company era, and were repurposed for the Richmond Field Station. UC Berkeley constructed new buildings as funds became available, and by the mid-1950s, five new buildings had been completed at the Richmond Field Station.⁸ By the 1970s, the Department of Engineering had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

The Richmond Field Station has been the location of research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. SERL focused primarily on sewage treatment technology and also researched pollution control and disposal of solid and liquid waste.⁹ Other early projects at the field station included heat transfer and cyclic stress research.¹⁰

Another laboratory that utilized Richmond Field Station was the Sea Water Conversion Laboratory (SWCL). In 1952, congress had created and funded the Office of Saline Water in order to encourage desalination studies as a solution to water shortages.¹¹ In response, UC Berkeley Mechanical Engineering professor Everett D. Howe formed the SWCL at the Richmond Field Station in 1958.¹²

Building 154 was constructed circa 1957, for SWCL research, and the program continued to expand under Howe's direction for the next decade. SWCL eventually encompassed most of the buildings on the north side of Lark Drive, including Buildings 151, 155, 158, 177, and 180.¹³ Howe became the coordinator for Saline Water Conversion Projects throughout the UC system and authored several books on desalination before his retirement in 1968.¹⁴ Although Howe has been referred to as a pioneer in the solar distillation of seawater, research has not

⁶ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

⁷ McGauhey, p. 71.

⁸ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

⁹ University of California, Berkeley, 2008, p. 13.

¹⁰ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

¹¹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.11.

¹² University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

¹³ University of California, Berkeley, Files "Building 151", "Building 154", "Building 158", "Building 177", and "Building 180," located in vertical files in Room 148, Richmond Field Station.

¹⁴ University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

Page 5 of 6 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 158

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

revealed a significant lasting impact on desalination science resulting from his work.¹⁵ Howe's primary contributions appear to have been administering and promoting desalination research. Breakthroughs such as reverse osmosis were developed by scientists at the University of California Los Angeles (UCLA) and the University of Florida. UCLA researchers also designed the pilot desalination plant in Coalinga, California, that went online in 1965, while Howe's role in that effort seems to have been limited to coordination.¹⁶

Professor Alan D.K. Laird became SWCL Director when Howe retired, a position he held until the laboratory was closed in 1987.¹⁷ By 1978, SWCL encompassed twelve separate research projects. During this era, the cluster of buildings devoted to SWCL had grown to include Building 150 on the south side of Lark Drive, as well as the six buildings on the north side of the street. In 1978, Laird proposed a major capital improvement project involving 10,000 square feet of new construction.¹⁸ In 1982, the Office of Saline Water was closed when the Reagan administration made broad cuts to funding for scientific research.¹⁹ Professor Laird's proposed capital improvements were never constructed.

Building 158

Building 158 was constructed circa 1957 for use as a research facility. It appears to have been the first building constructed for use by Professor Everett D. Howe's Seawater Conversion Laboratory.²⁰ The building is currently used for research.

Evaluation

Building 158 does not meet the criteria for listing in the NRHP or CRHR under Criterion A/1 because it lacks historical significance. The historical record does not indicate that Building 158 was important within local, state, or national events or trends. While academic research is important to anyone directly involved in the field, the historical record must show that the research or studies conducted had a significant impact on historical events and trends in order to be eligible for the NRHP or CRHR. Building 158 is not significant in this regard (Criterion A/1).

Although the structure was used for university research by Professor Howe and others throughout its lifetime, none of the available evidence suggests that the building has association with persons important to the development of the desalination field. Academic research is important to those working directly in that specific field; however, none of the persons associated with Building 158 have had a significant impact on local, state, or

¹⁵ Soteris A. Kalogirou, *Solar Engineering: Processes and Systems*, Academic Press, Burlington, MA: 2009, p. 31.

¹⁶ Yorem Cohen and Julius Glater, "A Tribute to Sidney Loeb, the Pioneer of Reverse Osmosis Desalination Research," Water Technology Research Center, Chemical and Biomolecular Engineering Research, University of California, Los Angeles, December, 2009, p. 13.

¹⁷ University of California (System) Academic Senate, "1996, University of California: In Memoriam," 1996, Internet website: <http://texts.cdlib.org/view?docId=hb0z09n6nn&doc.view=frames&chunk.id=div00041&toc.depth=1&toc.id=>

¹⁸ University of California, Berkeley, Files "Building 180," located in vertical files in Room 148, Richmond Field Station.

¹⁹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.12.

²⁰ University of California, Berkeley, File "Building 158", located in vertical files in Room 148, Richmond Field Station.

Page 6 of 6 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 158

*Recorded by Tetra Tech *Date April 30, 2013 Continuation Update

B10. Significance (continued)

national history. Therefore, the building lacks the strength of association necessary to be considered historically significant in relation to any particular persons (Criterion B/2).

Building 158 lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3).

In rare instances, buildings themselves can serve as sources of important information; however, this building is not a principal source of important information in this regard (Criterion D/4).

Building 158 does not meet the significance criteria for listing in the NRHP or CRHR.

Photographs (continued):



Photograph 2, Building 158 at left with Buildings 154 and 151 to the right, circa 1965,
camera facing northwest

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 13

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

P1. Other Identifier: Richmond Field Station Building 177

*P2. Location: Not for Publication Unrestricted

*a. County Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Richmond Date 2013 T 1N ; R 4W; 1/4 of Sec 20; Mt. Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558528 mE/ 4196527 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 177 is in the southern portion of the Richmond Field Station. It is on the north side of Lark Drive, with its primary façade facing southwest. The vernacular building does not strongly express any particular architectural style. It is a 2,969 square-foot, two-story building with a modified rectangular plan. It is topped by a front gabled roof; its walls are clad in horizontal wood siding. A decorative octagonal vent is centered in the front gable. Fenestration consists of replacement vinyl sashes. The building's main façade is centered in the southwest elevation and features a full width, hipped roof porch. (See Continuation Sheet.)

*P3b. Resource Attributes: (List attributes and codes) P39: Other

*P4. Resources Present: Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1, camera facing north, January 4, 2013.

*P6. Date Constructed/Age and Sources:
 Historic Prehistoric Both

Circa 1920

*P7. Owner and Address:

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

*P8. Recorded by: (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

*P9. Date Recorded: April 30, 2013

*P10. Survey Type: (Describe) Intensive

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the

Richmond Field Station, prepared by Tetra Tech, Inc., 2013.

*Attachments: NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record
 District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record
 Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

B1. Historic Name: “Building 72”, “Building 131”

B2. Common Name: Building 177

B3. Original Use: Maintenance Shop/Rest Rooms B4. Present Use: Offices

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Two original buildings constructed circa 1920; renovated and renumbered 1953; buildings joined, porch remodeled, windows replaced circa 1990s

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 177 at the Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

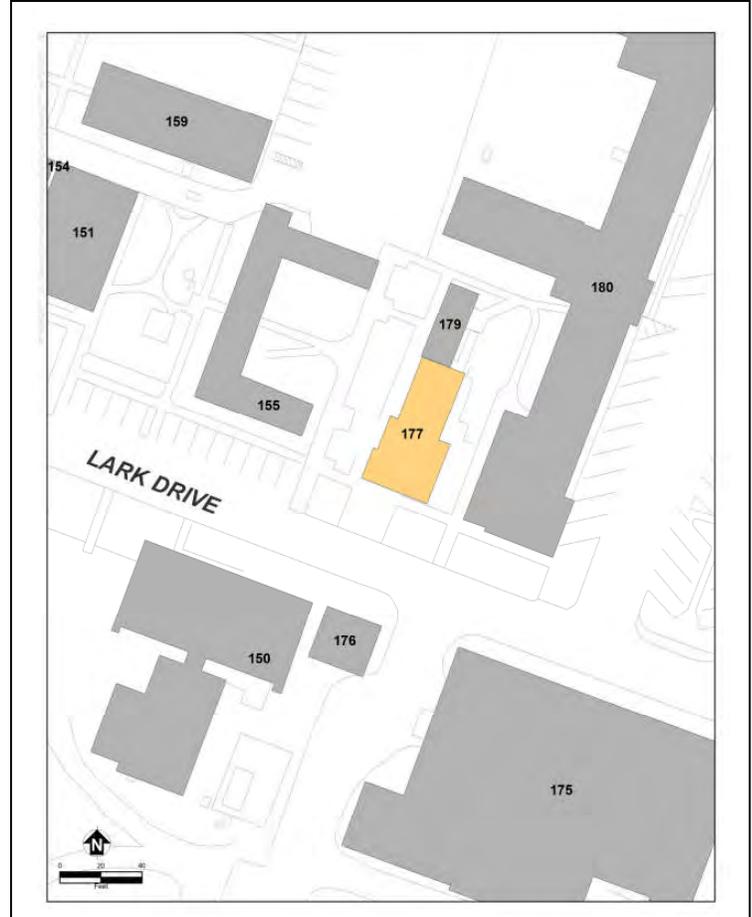
(See Footnotes)

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: April 2013

(This space reserved for official comments.)



Page 3 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

P3a. Description (continued)

The two-story main wing of Building 177 is connected to a small, single-story building at the rear, the former Building 179 (Photograph 2). The single story gable at the rear (northeast) of the building features decorative stickwork at the eaves (Photograph 3). An exterior industrial-style staircase leads to the rear portion of the main wing's second floor (Photograph 4).

Originally constructed circa 1920, Building 177 was known as "Building 72" during the California Cap Company era. "Building 72" consisted of the two story main wing of what is today Building 177, and is depicted on Sanborn Maps as a "Rest Room." A separate one story building to the rear, "Building 131," was also labeled as "Women's Rest Room" and a "Water Closet" on historic maps.

By the time the University of California (UC) took over the property in 1950, Building 177 had small additions added onto its facade and had become somewhat dilapidated (Photographs 5 and 6). The University renovated the building in 1953, removing some of the additions and changing the shed roofed entry porch to a small gable roof (Photograph 7). By 1966, Building 177 was being utilized as a maintenance shop. California Cap Company's "Building 131" at the rear was renumbered Building 179 and continued to be used as a restroom until it was joined to Building 177. Although Building 179 is still shown on maps of the Richmond Field Station, the rear portion of the building is currently labeled Building 177.

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages came upon the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.¹ Though subsequent Spanish expeditions passed through the region, the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s, the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000-acre Rancho San Pablo to the Castros in 1823.² Americans began farming in Contra Costa County in the late 1830s, and by 1882, two-thirds of the cultivated land in the county was devoted to wheat production.³

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁴ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo, as well as from the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years, the frogs' legs raised by Richard Stege for the San Francisco

¹ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

² Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

³ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁴ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

Page 4 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

restaurant market.⁵ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade, marrying Quilfelt and gaining title to her ranch. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Company, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁶ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁷ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867, he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive.

During the 1870s, chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch.

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.⁸ As early as 1870, European explosive companies were experimenting with nitrated guncotton. By 1875, it was being manufactured in England under the name "Tonite."⁹ In 1877, Oliver was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive to complete the tunnel that would remain stable at the high temperatures underground, and Oliver was able to solve the problem by substituting Tonite for more volatile compounds.¹⁰

The California Cap Company

In 1877, William Letts Oliver established the Tonite Powder Company on a portion of the former Stege Ranch.¹¹ Oliver eventually invented a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter then founded the California Cap Company. It was located

⁵ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁶ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁷ Hulaniski p. 288.

⁸ Pacific Mining News, p. 222.

⁹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

¹⁰ Pacific Mining News, p. 222.

¹¹ Oliver, p. 1.

Page 5 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

adjacent to the Tonite Powder Company on a 160-acre parcel carved out of the southern portion of Stege Ranch.¹² The California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.¹³ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888, he formed the American Lucol Company adjacent to the California Cap Company property.¹⁴ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station. Lucol manufactured a linseed oil substitute.¹⁵ The factory was dismantled and relocated to New Jersey circa 1900.¹⁶ In 1903, the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field Station property.¹⁷ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.¹⁸ The U.S. Briquette Company buildings were demolished during the 1960s.

Eventually, the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.¹⁹ By 1916, there were at least a dozen buildings on the site. By 1922, the California Cap Company was substantially expanded and the plant grew to include 150 buildings and a horse-drawn tram line.²⁰

During the late nineteenth and early twentieth century, the California Cap Company was one of the most important local employers.²¹ As the twentieth century progressed more heavy industry came to Contra Costa County, and by 1940, the county was second only to Los Angeles in overall industrial production.²² The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II, California Cap Company was able to stay open by producing delayed action incendiary bombs that were used against Japan.²³ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed.

¹² Pacific Mining News, p. 222.

¹³ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

¹⁴ Oliver, p. 1.

¹⁵ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

¹⁶ Oliver, p. 1.

¹⁷ Oliver, p. 2.

¹⁸ Hulaniski, p. 354.

¹⁹ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

²⁰ University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

²¹ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

²² Purcell, p. 649.

²³ Oliver, p. 1.

Page 6 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

University Research/Richmond Field Station

After World War II, the UC Berkeley Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O'Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. UC Berkeley purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.²⁴

At first, the Department of Engineering utilized the buildings left behind by the California Cap Company. The department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.²⁵ The current Buildings 102, 110, 118, 128, 150, 152, 155, 175, 177, 176, and 180 all date to the California Cap Company era and were repurposed for the Richmond Field Station. UC Berkeley also constructed new buildings as funds became available, and by the mid-1950s, five new buildings had been completed at the Richmond Field Station.²⁶ By the 1970s, the Department of Engineering had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

The Richmond Field Station has been the location of research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. The focus of SERL was primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.²⁷ Other early research projects at the field station included heat transfer and cyclic stress research.²⁸

Another laboratory that utilized the Richmond Field Station was the Sea Water Conversion Laboratory (SWCL). In 1952, Congress had created and funded the Office of Saline Water in order to encourage desalination studies as a solution to water shortages.²⁹ In response, UC Berkeley Mechanical Engineering professor Everett D. Howe formed the SWCL at the Richmond Field Station in 1958.³⁰

Building 154 was constructed circa 1957 for SWCL research, and the program continued to expand under Howe's direction for the next decade. SWCL eventually encompassed most of the buildings on the north side of Lark

²⁴ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

²⁵ McGauhey, p. 71.

²⁶ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

²⁷ University of California, Berkeley, 2008, p. 13.

²⁸ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

²⁹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.11.

³⁰ University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

Page 7 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

Drive, including Buildings 151, 155, 158, 177, and 180.³¹ Howe became the coordinator for Saline Water Conversion Projects throughout the UC system and authored several books on desalination before his retirement in 1968.³² Although Howe has been referred to as a pioneer in the solar distillation of seawater, research has not revealed a significant lasting impact on desalination science resulting from his work.³³

Howe's primary contributions appear to have been administering and promoting desalination research. Breakthroughs such as reverse osmosis were developed by scientists at the University of California Los Angeles (UCLA) and the University of Florida. UCLA researchers also designed the pilot desalination plant in Coalinga, California, that went online in 1965, while Howe's role in that effort seems to have been limited to coordination.³⁴

Professor Alan D.K. Laird became SWCL Director when Howe retired, a position he held until the laboratory was closed in 1987.³⁵ By 1978, SWCL encompassed twelve separate research projects. During this era, the cluster of buildings devoted to SWCL had grown to include Building 150 on the south side of Lark Drive as well as the six buildings on the north side of the street. In 1978, Laird proposed a major capital improvement project involving 10,000 square feet of new construction.³⁶ In 1982, the Office of Saline Water was closed when the Reagan administration made broad cuts to funding for scientific research.³⁷ Professor Laird's proposed capital improvements were never constructed. Alan D.K. Laird does not seem to have been responsible for groundbreaking contributions to desalination science.

Building 177

Like the other buildings on the north side of Lark Drive, Building 177 was utilized by the SWCL. By 1978, the building had been abandoned, and its demolition was proposed. Eventually, however, the Richmond Field Station used the building for offices. The full width porch was added and the original windows replaced circa the 1990s.

Evaluation

No association was found between Building 177 and events significant to national, state, or local history (Criterion A/1). Although the California Cap Company was the first blasting cap manufacturer in the United States, there is no indication that the activities that took place in Building 177 were central to the development of the plant or its technical processes. Academic research took place in the building after UC Berkeley took over the

³¹ University of California, Berkeley, Files "Building 151", "Building 154", "Building 158", "Building 177", and "Building 180," located in vertical files in Room 148, Richmond Field Station.

³² University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

³³ Soteris A. Kalogirou, *Solar Engineering: Processes and Systems*, Academic Press, Burlington, MA: 2009, p. 31.

³⁴ Yorem Cohen and Julius Glater, "A Tribute to Sidney Loeb, the Pioneer of Reverse Osmosis Desalination Research," Water Technology Research Center, Chemical and Biomolecular Engineering Research, University of California, Los Angeles, December, 2009, p. 13.

³⁵ University of California (System) Academic Senate, "1996, University of California: In Memoriam," 1996, Internet website: <http://texts.cdlib.org/view?docId=hb0z09n6nn&doc.view=frames&chunk.id=div00041&toc.depth=1&toc.id=>

³⁶ University of California, Berkeley, Files "Building 180," located in vertical files in Room 148, Richmond Field Station.

³⁷ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.12.

Page 8 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

property, and while academic research is important to anyone directly involved in the field, the historical record must show that the research or studies conducted had a significant impact on historical events and trends in order to merit eligibility for listing in the NRHP or CRHR. The historical record does not indicate that Building 177 is eligible in this regard under Criterion A/1.

Although the Olivers were significant in the history of the explosives industry, no particular association was found between the Oliver family and the building. Although Building 177 was used for university research by Professor Howe and others throughout its lifetime, none of the available evidence suggests that the building has association with persons important to the development of the desalination field. Academic research is important to those working directly in that specific field; however, none of the persons associated with Building 177 had a significant impact on local, state, or national history. Therefore, the building lacks the strength of association necessary to be considered historically significant in relation to any particular persons (Criterion B/2).

The building does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual or possess high artistic values. Building 177 is a vernacular building of a type that was commonly constructed in the early twentieth century. In addition, it has been heavily altered over the years since UC Berkeley took possession in 1950, and the building is not eligible for listing in the NRHP or CRHR for its architecture (Criterion C/3).

In rare instances, buildings themselves can serve as sources of important information; however, this building is not a principal source of important information in this regard (Criterion D/4).

Building 177 does not meet the significance criteria for listing in the NRHP or CRHR.

Page 9 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 2, rear of Building 177, April 30, 2013,
camera facing southeast

Page 10 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 3, rear of single-story portion of Building 177 showing decorative stickwork,
April 30, 2013, camera facing south

Page 11 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 4, rear of two-story portion of Building 177 showing exterior stairs,
January 4, 2013, camera facing southwest

Page 12 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

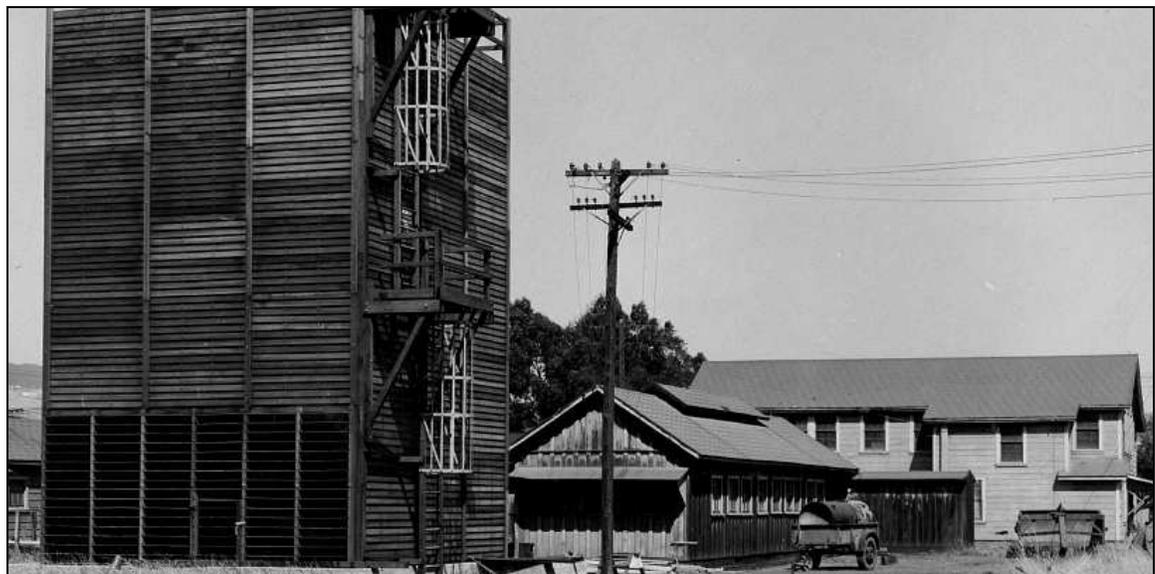
*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 5, Building 177 (background), 1952, camera facing east



Photograph 6, Building 177 (Cooling Tower and "Building 64" in foreground),
1952, camera facing east

Page 13 of 13 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 177

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 7, Building 177 with former Building 179 at left of frame, 1953,
camera facing east

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 10

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

P1. Other Identifier: Richmond Field Station Building 180

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 2013 T 1N ; R 4W; 1/4 of Sec 20; Mt. Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558555 mE/ 4196547 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 180 is in the southern portion of the Richmond Field Station. It is on the north side of Lark Drive, and its primary façade faces southwest. The vernacular building does not strongly express any particular architectural style. It is 11,008 square feet, single-story, and has an irregular plan. It is topped with a cross gabled roof. The primary fenestration consists of aluminum replacement sliding and awning sashes. The main entrance is centered in the southeast elevation. Its aluminum framed glass door is sheltered by a flat roofed entry porch and accessed via concrete steps. (See Continuation sheet)

***P3b. Resource Attributes:** (List attributes and codes) 39: Other

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1, camera facing northeast, April 30, 2013

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

Circa 1920/Sanborn maps

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** April 30, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the

Richmond Field Station, prepared by Tetra Tech, Inc., 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

B1. Historic Name: “Building 44”, “Building 170”, “Building 171”, “Building 172”, “Building 185”

B2. Common Name: Building 180

B3. Original Use: Manufacturing B4. Present Use: Offices

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Five original buildings constructed circa 1920; joined circa 1940; renumbered 1953; windows replaced circa 1980s

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 180 at the Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). Furthermore, the building has been evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code and does not appear to meet the significance criteria as outlined in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

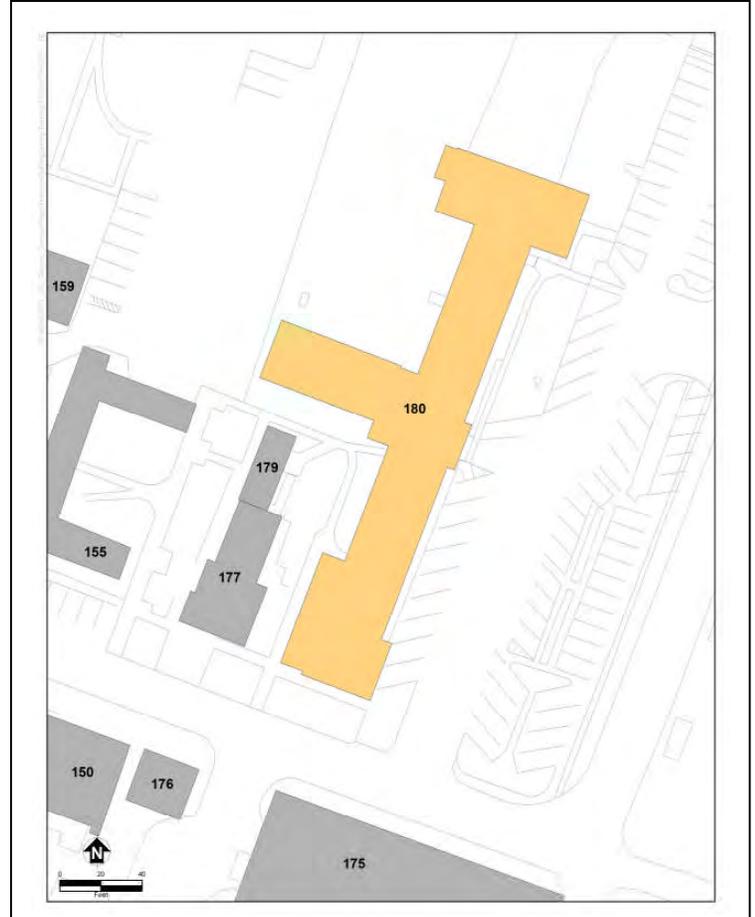
(See Footnotes)

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: April 2013

(This space reserved for official comments.)



Page 3 of 10 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

P3a. Description (continued)

Building 180 was constructed piecemeal, combining several buildings, over a period of decades from about the 1920s through the 1930s. This is why the building has multiple types of wall cladding, including two sizes of brick, horizontal wood siding, and vertical groove plywood (Photographs 1-5). A small two-story wing at the northeast corner of the building contains multi-light wood sash windows that have been painted over (Photograph 4).

During the California Cap Company era, the five connected buildings that comprise what is now Building 180 were devoted to manufacturing. “Building 44,” which became the south half of Building 180’s main wing, was devoted to plugging, soldering, and concaving (Photograph 5) when originally used by the California Cap Company. Wire cutting was performed in “Building 185,” which became the small two-story wing at the north end of the building (Photograph 4). The north half of the building’s main wing was “Building 170,” where plugging was conducted for the company (Photograph 3). “Building 171,” currently the west wing of Building 180, was a match head manufacturing area (Photograph 1). “Building 172” is at the center of Building 180’s main wing and was originally an office (Photograph 2). Concrete blast walls on either side of the office protected the space from the explosives handled in Buildings 44 and 170.¹

After the University of California (UC) took over and renumbered the five buildings, the space on which Building 180 now stands was used for photography work and offices. Most of the building’s windows were replaced with aluminum sashes sometime during the 1980s (Photographs 1, 2, and 3). In 1982, restrooms and a conference room were installed in Building 180 (Photograph 5). The new restroom facility served the Sea Water Conversion complex which, prior to 1982, did not have plumbed indoor toilets.² It is currently used as offices.

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages came upon the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.³ Though subsequent Spanish expeditions passed through the region, the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s, the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000-acre Rancho San Pablo to the Castros in 1823.⁴ Americans began farming in Contra Costa County in the late 1830s, and by 1882, two-thirds of the cultivated land in the county was devoted to wheat production.⁵

¹ Sanborn Maps, 1949.

² University of California, Berkeley, File “Building 180,” located in vertical files in Room 148, Richmond Field Station.

³ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

⁴ Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

⁵ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

Page 4 of 10 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁶ Adjacent to San Francisco Bay in what would eventually become the southern portion of the City of Richmond, a wharf and produce warehouse were constructed on the ranch in the 1860s to ship agricultural produce to the San Francisco markets from Rancho San Pablo, as well as from the Quilfelt ranch. The warehouse and wharf were used to transport cattle, grain, fruit, and in later years, the frogs' legs raised by Richard Stege for the San Francisco restaurant market.⁷ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade, marrying Quilfelt and gaining title to her ranch. Stege began selling off portions of his ranch to raise money while continuing his frog-raising and other ventures. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century several industries, including the California Cap Company, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁸ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County.⁹ Stege was eventually absorbed into Richmond as the latter grew.

The Explosives Industry in Contra Costa County

Swedish chemist Alfred Nobel laid the foundation for the high-explosives industry with his innovations beginning in 1860s, inventing first a detonator and then a blasting cap. In 1867, he invented dynamite, which was safer, cheaper, and more powerful than nitroglycerine, which had been the most commonly used explosive.

During the 1870s, chemical and explosives manufacturers began opening in the vicinity of what would eventually become Richmond. The Tonite Powder Company, Western Mineral Company, and California Cap Company were established at 1877 on the Stege ranch.

William Letts Oliver

William Letts Oliver was born in Chile to English parents in 1844. He initially gained familiarity with an explosive called guncotton while manufacturing collodion for his photography hobby.¹⁰ As early as 1870, European explosive companies were experimenting with nitrated guncotton. By 1875, it was being manufactured in England under the name "Tonite."¹¹ In 1877, Oliver was mining in the western United States. Engineers working on the Sutro Tunnel in the Comstock needed an explosive to complete the tunnel that would remain stable at the high temperatures underground, and Oliver was able to solve the problem by substituting Tonite for more volatile compounds.¹²

⁶ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁷ Roland Oliver, "Recollections of Early Industries in Stege", August 7, 1959, p. 1.

⁸ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354.

⁹ Hulaniski p. 288.

¹⁰ Pacific Mining News, p. 222.

¹¹ G.A. Price Cuxson, ed., "Society of Engineers: Transactions for 1889", E. & F. N. Spon, London: 1890, p. 95.

¹² Pacific Mining News, p. 222.

Page 5 of 10 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

The California Cap Company

In 1877, William Letts Oliver established the Tonite Powder Company on a portion of the former Stege Ranch.¹³ Oliver eventually invented a blasting cap that was safer to use and had better detonating qualities than imported detonators. Oliver and his partner Freeborn Fletter then founded the California Cap Company. It was located adjacent to the Tonite Powder Company on a 160-acre parcel carved out of the southern portion of Stege Ranch.¹⁴ The California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. Richard Stege, meanwhile, continued to reside on the ranch, and contracted with Tonite Powder and California Cap to transport their products to the railroad.¹⁵ The California Cap Company was located on the parcel that is currently the Richmond Field Station. The Tonite Powder Company appears to have been located to the east on the parcel that became the Stauffer Chemical Company and later the Zeneca site, although its exact location is unclear.

William Letts Oliver continued to innovate throughout his long career in the chemical and explosives industries. In 1888, he formed the American Lucol Company adjacent to the California Cap Company property.¹⁶ The Lucol plant was at what is currently the southeastern corner of the Richmond Field Station. Lucol manufactured a linseed oil substitute.¹⁷ The factory was dismantled and relocated to New Jersey circa 1900.¹⁸ In 1903, the Hotaling Briquette Works opened on Lucol's site at the southeast corner of the current Richmond Field Station property.¹⁹ Later known as the U.S. Briquette Company, the plant appears to have operated at this location until at least 1917.²⁰ The U.S. Briquette Company buildings were demolished during the 1960s.

Eventually, the Tonite factory appears to have been incorporated into the California Cap Company. The Olivers also formed an entity named Pacific Cartridge Company circa 1910. The Pacific Cartridge Company operated from the California Cap plant during World War I.²¹ By 1916, there were at least a dozen buildings on the site. By 1922, the California Cap Company was substantially expanded and the plant grew to include 150 buildings and a horse-drawn tram line.²²

During the late nineteenth and early twentieth century, the California Cap Company was one of the most important local employers.²³ As the twentieth century progressed more heavy industry came to Contra Costa

¹³ Oliver, p. 1.

¹⁴ Pacific Mining News, p. 222.

¹⁵ Nilda Rego, "Enterprising Stege lost all and died without a penny", Time Out, March 27, 1994, p. 2, column 4.

¹⁶ Oliver, p. 1.

¹⁷ Max Wilhelm Von Bernewitz, *Cyanide Practice, 1910 – 1913*, Dewey Publishing Company: 1913, p. 327.

¹⁸ Oliver, p. 1.

¹⁹ Oliver, p. 2.

²⁰ Hulaniski, p. 354.

²¹ R.L. Polk & Company, *Richmond and Contra Costa County Directory, 1914 – 1915*, Oakland, California: 1915.

²² University of California, Berkeley, *Current Conditions Report*, Prepared by Tetra Tech EM Inc., November 21, 2008, p. 11.

²³ Marguerite Clausen, "On the Waterfront: An Oral History of Richmond, California", Regional Oral History Office, University of California, Berkeley, 1990, p. 21.

Page 6 of 10 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

County, and by 1940, the county was second only to Los Angeles in overall industrial production.²⁴ The nineteenth-century California Cap Company was dwarfed by the scale of some of the newer enterprises, and its physical plant and technology were aging. During World War II, California Cap Company was able to stay open by producing delayed action incendiary bombs that were used against Japan.²⁵ The California Cap Company could not survive the transition to a peacetime economy, however, and by 1949 the plant was closed.

University Research/Richmond Field Station

After World War II, the UC Berkeley Engineering Department needed an off-campus location in order to perform experiments that required more space than a laboratory. Department Chair Morrrough P. O'Brien and others in the department were performing experiments with sewage, sea water, and other materials unsuited to use on a crowded campus. They also wanted a location that was not too remote. UC Berkeley purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.²⁶

At first, the Department of Engineering utilized the buildings left behind by the California Cap Company. The department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.²⁷ The current Buildings 102, 110, 118, 128, 150, 152, 155, 175, 177, 176, and 180 all date to the California Cap Company era and were repurposed for the Richmond Field Station. UC Berkeley also constructed new buildings as funds became available, and by the mid-1950s, five new buildings had been completed at the Richmond Field Station.²⁸ By the 1970s, the Department of Engineering had conducted many experiments at the Richmond Field Station that could not have been performed on the main campus.

The Richmond Field Station has been the location of research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to undertake research at the site. The focus of SERL was primarily on sewage treatment technology, and also researched pollution control and disposal of solid and liquid waste.²⁹ Other early research projects at the field station included heat transfer and cyclic stress research.³⁰

Another laboratory that utilized the Richmond Field Station was the Sea Water Conversion Laboratory (SWCL). In 1952, Congress had created and funded the Office of Saline Water in order to encourage desalination studies as

²⁴ Purcell, p. 649.

²⁵ Oliver, p. 1.

²⁶ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

²⁷ McGauhey, p. 71.

²⁸ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

²⁹ University of California, Berkeley, 2008, p. 13.

³⁰ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

Page 7 of 10 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

a solution to water shortages.³¹ In response, UC Berkeley Mechanical Engineering professor Everett D. Howe formed the SWCL at the Richmond Field Station in 1958.³²

Building 154 was constructed circa 1957 for SWCL research, and the program continued to expand under Howe's direction for the next decade. SWCL eventually encompassed most of the buildings on the north side of Lark Drive, including Buildings 151, 155, 158, 177, and 180.³³ Howe became the coordinator for Saline Water Conversion Projects throughout the UC system and authored several books on desalination before his retirement in 1968.³⁴ Although Howe has been referred to as a pioneer in the solar distillation of seawater, research has not revealed a significant lasting impact on desalination science resulting from his work.³⁵

Howe's primary contributions appear to have been administering and promoting desalination research. Breakthroughs such as reverse osmosis were developed by scientists at the University of California Los Angeles (UCLA) and the University of Florida. UCLA researchers also designed the pilot desalination plant in Coalinga, California, that went online in 1965, while Howe's role in that effort seems to have been limited to coordination.³⁶

Professor Alan D.K. Laird became SWCL Director when Howe retired, a position he held until the laboratory was closed in 1987.³⁷ By 1978, SWCL encompassed twelve separate research projects. During this era, the cluster of buildings devoted to SWCL had grown to include Building 150 on the south side of Lark Drive as well as the six buildings on the north side of the street. In 1978, Laird proposed a major capital improvement project involving 10,000 square feet of new construction.³⁸ In 1982, the Office of Saline Water was closed when the Reagan administration made broad cuts to funding for scientific research.³⁹ Professor Laird's proposed capital improvements were never constructed. Alan D.K. Laird does not seem to have been responsible for groundbreaking contributions to desalination science.

³¹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.11.

³² University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

³³ University of California, Berkeley, Files "Building 151", "Building 154", "Building 158", "Building 177", and "Building 180," located in vertical files in Room 148, Richmond Field Station.

³⁴ University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

³⁵ Soteris A. Kalogirou, *Solar Engineering: Processes and Systems*, Academic Press, Burlington, MA: 2009, p. 31.

³⁶ Yorem Cohen and Julius Glater, "A Tribute to Sidney Loeb, the Pioneer of Reverse Osmosis Desalination Research," Water Technology Research Center, Chemical and Biomolecular Engineering Research, University of California, Los Angeles, December, 2009, p. 13.

³⁷ University of California (System) Academic Senate, "1996, University of California: In Memoriam," 1996, Internet website: <http://texts.cdlib.org/view?docId=hb0z09n6nn&doc.view=frames&chunk.id=div00041&toc.depth=1&toc.id=>

³⁸ University of California, Berkeley, Files "Building 180," located in vertical files in Room 148, Richmond Field Station.

³⁹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.12.

Page 8 of 10 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

Evaluation

No association was found between Building 180 and events significant to national, state, or local history (Criterion A/1). Although the California Cap Company was the first blasting cap manufacturer in the United States, there is no indication that the activities that took place in Building 180 were central to the development of the plant or its technical processes. Academic research took place in the building after UC Berkeley took over the property, and while academic research is important to anyone directly involved in the field, the historical record must show that the research or studies conducted had a significant impact on events and trends in order to merit listing in the NRHP or CRHR. The historical record does not indicate such significance, so the building is not eligible for inclusion in the NRHP or CRHR for historical significance (Criterion A/1).

Although the Olivers were significant in the history of the explosives industry, no particular association was found between the Oliver family and the building. The building was used for university research by Professor Howe and others throughout its lifetime; however, none of the available historical evidence suggests that the building has association with persons important to local, state, or national history. Academic research is important to those working directly in that specific field; however, none of the persons associated with Building 180 have the strength of association necessary to be considered eligible under Criterion B/2.

The building does not embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual or possess high artistic values. Building 180 is a combination of five buildings that were joined to make one building complex and has alteration dates from 1930 through 1950. The building is not eligible for the NRHP or CRHR for its architecture (Criterion C/3).

In rare instances, buildings themselves can serve as sources of important information; however, this building is not a principal source of important information in this regard (Criterion D/4).

Building 180 does not meet the significance criteria for listing in the NRHP or CRHR.

Page 9 of 10 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 2, Building 180, primary entrance in main wing, April 30, 2013,
camera facing west



Photograph 3, Building 180, rear of main wing, April 30, 2013,
camera facing east

Page 10 of 10 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 180

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

Photographs (continued):



Photograph 4, Building 180, northeast wing,
April 30, 2013, camera facing south



Photograph 5, Building 180, south end of main wing,
April 30, 2013, camera facing west

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 1

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 198

P1. Other Identifier: Richmond Field Station Building 198

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 1984 **T** _____; **R** _____; $\frac{1}{4}$ of **Sec** _____; Diablo **B.M.**

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558629 mE/ 4196501 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 198 is in the southern portion of the Richmond Field Station across Lark Drive from Building 197. It is a 1,800 square-foot, rectangular plan, prefabricated building, topped with a very shallow pitched, gable roof with vents in the gables. Its walls and roof are corrugated steel and the building lacks fenestration. A large metal roll-up door is centered in its northwest elevation, while its southwest elevation features a metal industrial entrance door at grade.

***P3b. Resource Attributes:** (List attributes and codes) HP39: Other

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1, camera facing northeast, April 30, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

1981

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** April 30, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic Properties Survey Report for Portions of the

Richmond Field Station, prepared by Tetra Tech, Inc., 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record

District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record

Other (list) _____

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 1

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 201

P1. Other Identifier: Richmond Field Station Building 201

***P2. Location:** Not for Publication Unrestricted

*a. County Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad Richmond Date 1984 T _____; R _____; ¼ of Sec _____; Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558629 mE/ 4196501 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 201 is in the southwestern portion of the Richmond Field Station, along Avocet Way, on a 3.5-acre parcel. It is a single-story structure and houses the U.S. Environmental Protection Agency's Region IX laboratory and office building. It is a 46,000 square-foot tilt-up building that is ornamented through with reveals and indentations in the tilt-up panels, with sculpting. Covered trellises surround the building's walkways, and the main entrance features a modern glass enclosure. It was constructed in 1992.

***P3b. Resource Attributes:** (List attributes and codes) HP14: Government Building

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1, camera facing northwest, April 30, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

1992/Richmond Field Station Building Records

***P7. Owner and Address:**

U.C. Berkeley

1301 South 46th Street

Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates

Tetra Tech

1999 Harrison Street, Ste 500

Oakland, CA 94612

***P9. Date Recorded:** April 30, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic

Properties Survey Report for Portions of the Richmond Field Station, prepared by Tetra Tech, Inc., 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other (list) _____

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code _____

Other Listings _____
Review Code _____ Reviewer _____ Date _____

Page 1 of 5

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 277

P1. Other Identifier: Richmond Field Station Building 277

***P2. Location:** Not for Publication Unrestricted

***a. County** Contra Costa

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Richmond **Date** 2013 T 1N ; R 4W; 1/4 of Sec 20; Mt. Diablo B.M.

c. Address _____ City _____ Zip _____

d. UTM: (give more than one for large and/or linear resources) Zone 10; 558397 mE/ 4196579 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) Assessor Parcel Number

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

Building 277 is in the southern portion of the Richmond Field Station. It is on the north side of Lark Drive, with its primary façade facing northwest. It is 21,426 square feet and was constructed circa 1966. The single-story building is a rectangular plan, prefabricated building topped with a front gabled roof. The walls and roof are corrugated metal. Fenestration consists of metal sash windows that appear to have been repurposed from a vehicle. Its primary entrance is in the northwest elevation, which faces Avocet Way. A metal industrial entry door is set inside a large sliding door. Building 277 was constructed as a model basin building for salinity intrusion study. It has been used throughout its life for storage.

***P3b. Resource Attributes:** (List attributes and codes) HP39: Other

***P4. Resources Present:** Building Structure Object Site District Element of District Other (Isolates, etc.)



P5b. Description of Photo: (View, date, accession #) Photograph 1, camera facing east, April 30, 2013.

***P6. Date Constructed/Age and Sources:**

Historic Prehistoric Both

1966/Richmond Field Station Building Files

***P7. Owner and Address:**

U.C. Berkeley
1301 South 46th Street
Richmond, California 94804

***P8. Recorded by:** (Name, affiliation, address)

Kara Brunzell & Julia Mates
Tetra Tech
1999 Harrison Street, Ste 500
Oakland, CA 94612

***P9. Date Recorded:** April 30, 2013

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") Historic

Properties Survey Report for Portions of the Richmond Field Station, prepared by Tetra Tech, Inc., 2013.

***Attachments:** NONE Location Map Sketch Map Continuation Sheet Building, Structure, and Object Record Archaeological Record District Record Linear Feature Record Milling Station Record Rock Art Record Artifact Record Photograph Record Other (list) _____

Page 2 of 5

*NRHP Status Code 6Z

*Resource Name or # (Assigned by recorder) Richmond Field Station Building 277

B1. Historic Name: _____

B2. Common Name: Building 277

B3. Original Use: Storage B4. Present Use: Storage

*B5. Architectural Style: Vernacular

*B6. Construction History: (Construction date, alteration, and date of alterations) Constructed in 1966

*B7. Moved? No Yes Unknown Date: _____ Original Location: _____

*B8. Related Features: _____

B9. Architect: Unknown b. Builder: Unknown

*B10. Significance: Theme N/A Area N/A

Period of Significance N/A Property Type N/A Applicable Criteria N/A

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

Building 277 at the Richmond Field Station does not appear to meet the criteria for listing in the National Register of Historic Places (NRHP). The building was evaluated in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and does not appear to meet the significance criteria in these guidelines. Therefore, the building is not eligible for listing in the California Register of Historical Resources (CRHR). (See Continuation Sheet)

B11. Additional Resource Attributes: (List attributes and codes)

*B12. References:

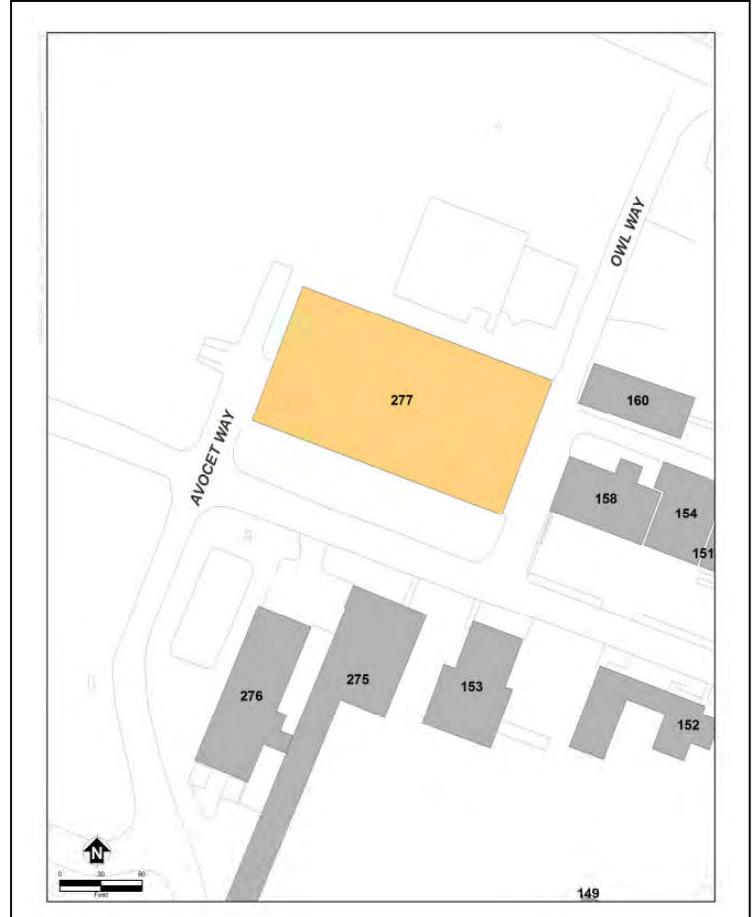
(See Footnotes)

B13. Remarks:

*B14. Evaluator: Kara Brunzell

*Date of Evaluation: April 2013

(This space reserved for official comments.)



Page 3 of 5 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 198

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

Historic Context

Europeans arrived in what would become Contra Costa County in 1772, when a Spanish expedition led by Pedro Fages discovered the San Pablo Bay and the confluence of the Sacramento and San Joaquin rivers.¹ Though subsequent Spanish expeditions passed through the region, the Spanish do not appear to have settled in the area during the mission period. In the 1820s and 1830s, the Mexican government began granting large tracts of land in the area to its citizens, including Ranchos San Pablo, San Ramon, and Pinole. The first permanent non-native settlers were Francisco Castro and his wife Maria Gabriela Berryessa. The Mexican government granted the 18,000-acre Rancho San Pablo to the Castros in 1823.² Americans began farming in Contra Costa County in the late 1830s, and by 1882, two-thirds of the cultivated land in the county was devoted to wheat production.³

Minna C. C. Quilfelt (or Quilfeldt) purchased 600 acres of Rancho San Pablo in 1852 and 1853.⁴ German native Richard Stege settled on Rancho San Pablo in the late 1860s after stints in the gold fields and the Siberian fur trade, marrying Quilfelt and gaining title to her ranch. A town named Stege formed on Richard Stege's holdings, and by the late nineteenth century, several industries, including the California Cap Company, the United States Briquette Company, the Stauffer Chemical Works and the Stege Lumber Manufacturing Company, were operating from portions of the Stege Ranch.⁵ Richmond incorporated in 1905, and by 1917 was already the largest city in Contra Costa County. Stege was eventually absorbed into Richmond as the latter grew.

William Letts Oliver established the Tonite Powder Company and California Cap Company on land purchased from the Stege Ranch in 1877. The California Cap Company, which went on to operate on the site for nearly seven decades, was the first manufacturer of blasting caps in the United States. The company was operated by Oliver's sons after his death and managed to survive through the end of World War II. By 1949, the plant was closed and for sale.

University Research/Richmond Field Station

After World War II, the University of California (UC) Berkeley Engineering Department needed an off-campus location to do experiments requiring more space than a laboratory. Department Chair Morrrough P. O'Brien and others in the department were experimenting with sewage, sea water, and other materials unsuited for use on a crowded campus, and they wanted a location that was not too remote. UC Berkeley purchased the California Cap Company from the Oliver family for the use of the Engineering Department in 1950.⁶

¹ Mildred B. Hoover, Hero E. Rensch, Ethel G. Rensch, Douglas E. Kyle, *Historic Spots in California, Fourth Edition*, Stanford University Press, Stanford, California: 1958, p. 129.

² Donald Bastin, *Images of America: Richmond*, Arcadia Publishing, Charleston SC: 2003, p. 9.

³ J.P. Munro-Fraser, *History of Contra Costa County, California*, W.A. Slocum & Co., San Francisco: 1882, p. 55 – 57.

⁴ Evan Griffins, "Early History of Richmond", December 1938, El Cerrito Historical Society, website: <http://www.elcerritowire.com/history/pages/EarlyRichmond.htm>, accessed January 2013.

⁵ Frederick J. Hulaniski, *The History of Contra Costa County, California*. Elms Publishing Company, Berkeley, California: 1917, p. 354: Hulaniski p. 288.

⁶ P.H. McGauhey, "The Sanitary Engineering Research Laboratory: Administration, Research and Consultation, 1950-1975 – An Interview Conducted by Malca Call", Regional Oral History Office, University of California, Berkeley, 1974, p. 70.

Page 4 of 5 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 198

*Recorded by Tetra Tech

*Date April 30, 2013 Continuation Update

B10. Significance (continued)

At first, the Department of Engineering used the buildings left behind by the California Cap Company. The department established a machine shop, computer shop, receiving facility, mail service, and other facilities in addition to laboratories in the old detonator company buildings.⁷ The current buildings numbered 102, 110, 118, 128, 150, 152, 155, 175, 177, 176, and 180 all date to the California Cap Company era, and were repurposed for the Richmond Field Station. UC Berkeley constructed new buildings as funds became available, and by the mid-1950s, five new buildings had been completed at the Richmond Field Station.⁸ By the 1970s, the Department of Engineering had conducted many experiments at the Richmond Field Station that could not have been done on the main campus.

The Richmond Field Station has been the location of research overseen by numerous UC Berkeley departments over the years. The Sanitary Engineering Research Laboratory (SERL) was one of the first departments to do research at the site. SERL focused primarily on sewage treatment technology and also researched pollution control and disposal of solid and liquid waste.⁹ Other early projects at the field station included heat transfer and cyclic stress research.¹⁰

Another laboratory that used Richmond Field Station was the Sea Water Conversion Laboratory (SWCL). In 1952, Congress created and funded the Office of Saline Water to encourage desalination studies as a solution to water shortages.¹¹ In response, UC Berkeley Mechanical Engineering professor Everett D. Howe formed the SWCL at the Richmond Field Station in 1958.¹² Professor Alan D.K. Laird became SWCL Director when Howe retired, a position he held until the laboratory was closed in 1987.¹³

Building 277

Building 277 was constructed in 1966. The building has been used for rock storage since its construction.

Evaluation

Building 277 does not meet the criteria for listing in the NRHP or CRHR because it lacks historical significance. The structure has primarily been used for storage throughout its lifetime and lacks the strength of association necessary to be considered historically significant in relation to any particular events or persons (Criteria A/1 and B/2).

⁷ McGauhey, p. 71.

⁸ University of California, Berkeley, Department of Engineering, "Guide for Engineering Field Station Inspection", undated, p. 3.

⁹ University of California, Berkeley, 2008, p. 13.

¹⁰ University of California, Berkeley, Department of Engineering, "Richmond Field Station Open House", May 28, 1952, p. 3 – 4.

¹¹ Heather Cooley, Peter H. Gleick, and Gary Wolff, "Desalination, With a Grain of Salt: A California Perspective," Pacific Institute, Oakland, California: 2006, p.11.

¹² University of California (System) Academic Senate, "1991, University of California: In Memoriam," 1991, Internet website: <http://texts.cdlib.org/view?docId=hb4t1nb2bd&doc.view=frames&chunk.id=div00031&toc.depth=1&toc.id=>

¹³ University of California (System) Academic Senate, "1996, University of California: In Memoriam," 1996, Internet website: <http://texts.cdlib.org/view?docId=hb0z09n6nn&doc.view=frames&chunk.id=div00041&toc.depth=1&toc.id=>

Page 5 of 5 *Resource Name or # (Assigned by recorder) Richmond Field Station Building 198

*Recorded by Tetra Tech *Date April 30, 2013 Continuation Update

B10. Significance (continued)

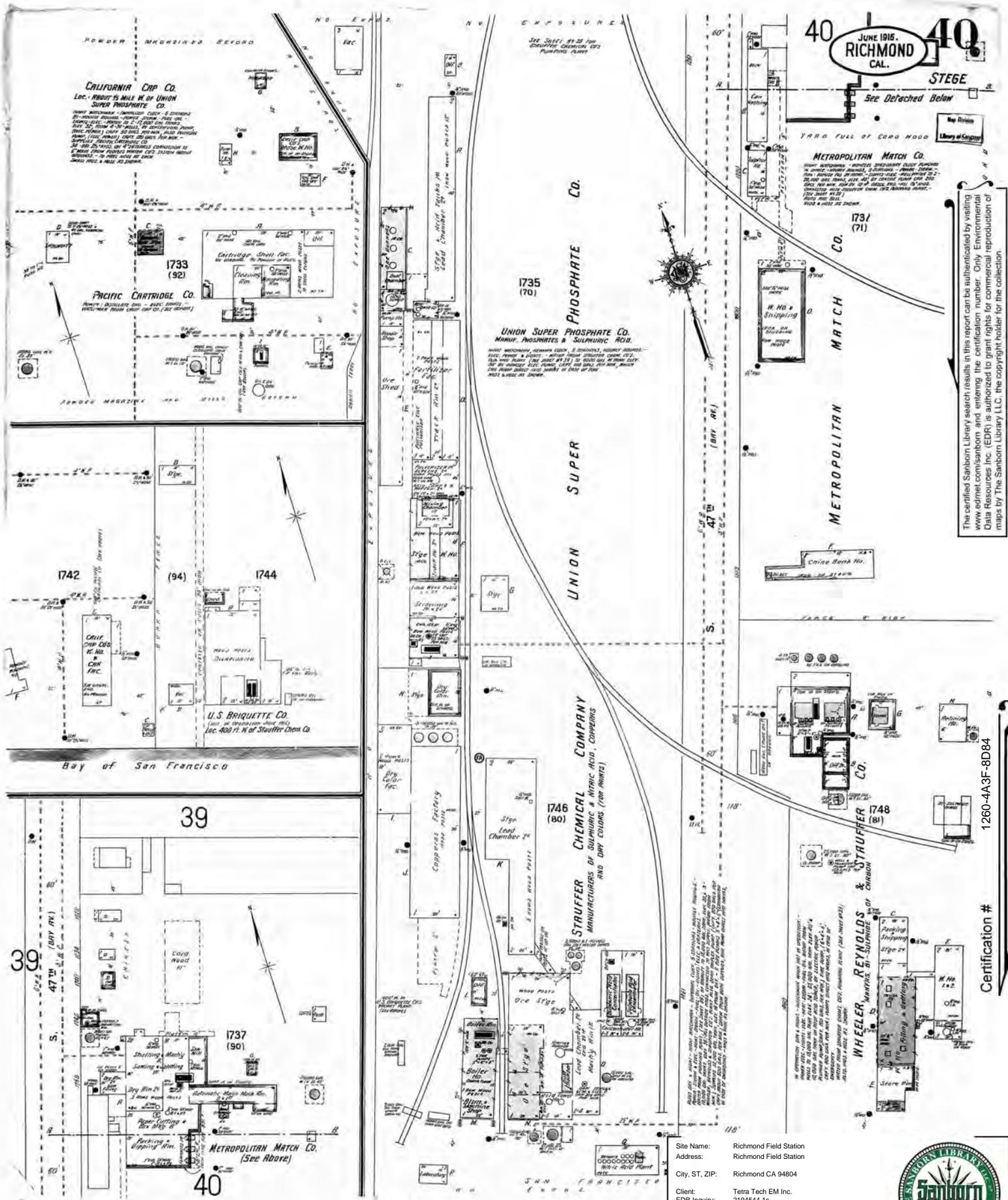
The utilitarian building lacks any identifiable architectural stylistic design and does not embody distinctive architectural or engineering qualities of type, period, or method of construction (Criterion C/3).

In rare instances, buildings themselves can serve as sources of important information, but this building is not a principal source of important information (Criterion D/4).

Building 277 does not meet the significance criteria for listing in the NRHP or CRHR.

APPENDIX B

HISTORIC SANBORN MAPS



The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Site Name: Richmond Field Station
 Address: Richmond Field Station
 City, ST, ZIP: Richmond CA 94804
 Client: Tetra Tech Em Inc.
 EDR Inquiry: 2194544.1s
 Order Date: 4/11/2008 12:01:56 PM
 Certification #: 1260-4A3F-8D84



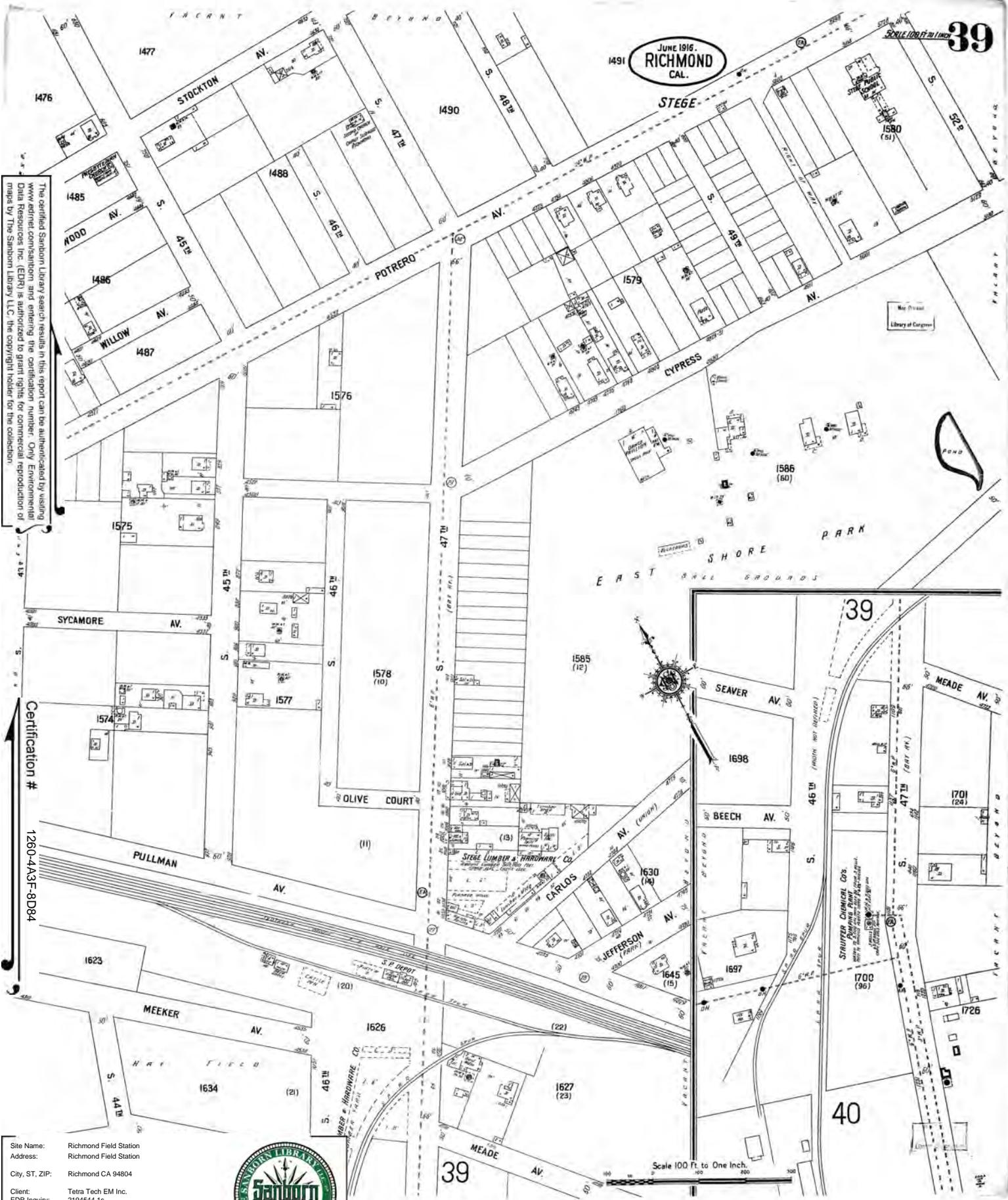
The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification #
1260-4A3F-8D84

Site Name: Richmond Field Station
 Address: Richmond Field Station
 City, ST, ZIP: Richmond CA 94804
 Client: Tetra Tech EM Inc.
 EDR Inquiry: 2194544.1s
 Order Date: 4/11/2008 12:01:56 PM
 Certification #: 1260-4A3F-8D84



Copyright: 1916



39

40

Scale 100 Ft. to One Inch.

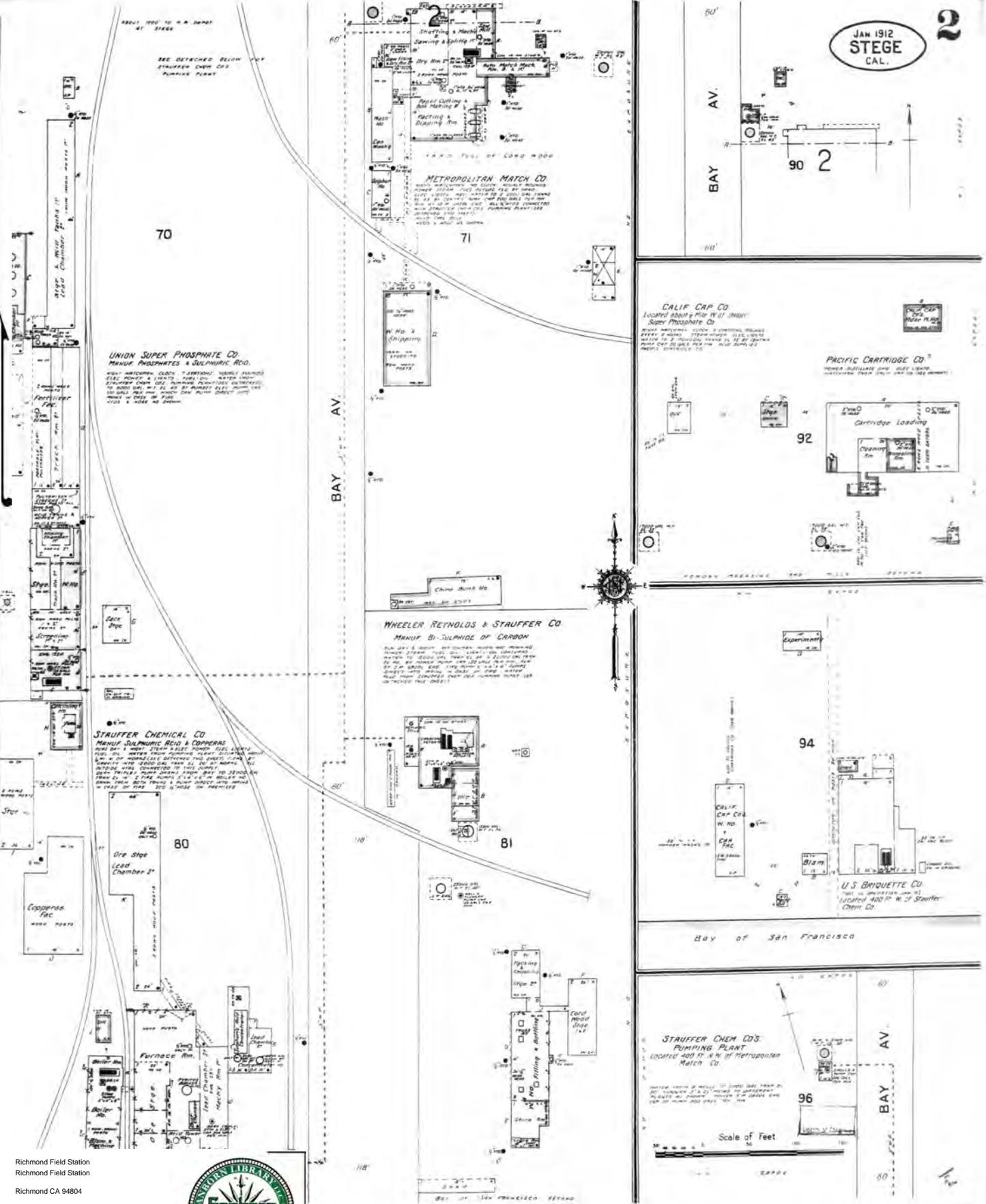
The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

Certification # 1260-4A3F-8D84

Site Name: Richmond Field Station
 Address: Richmond Field Station
 City, ST, ZIP: Richmond CA 94804
 Client: Tetra Tech EM Inc.
 EDR Inquiry: 2194544.1s
 Order Date: 4/11/2008 12:01:56 PM
 Certification # 1260-4A3F-8D84



Copyright: 1912



JAN 1912
 STEGE
 CAL.

2

BAY AV.

90 2

70

71

BAY AV.

92

94

81

80

Bay of San Francisco

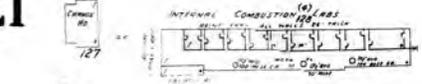
96

BAY AV.

Scale of Feet

221

(1742)



2742

2743

2744

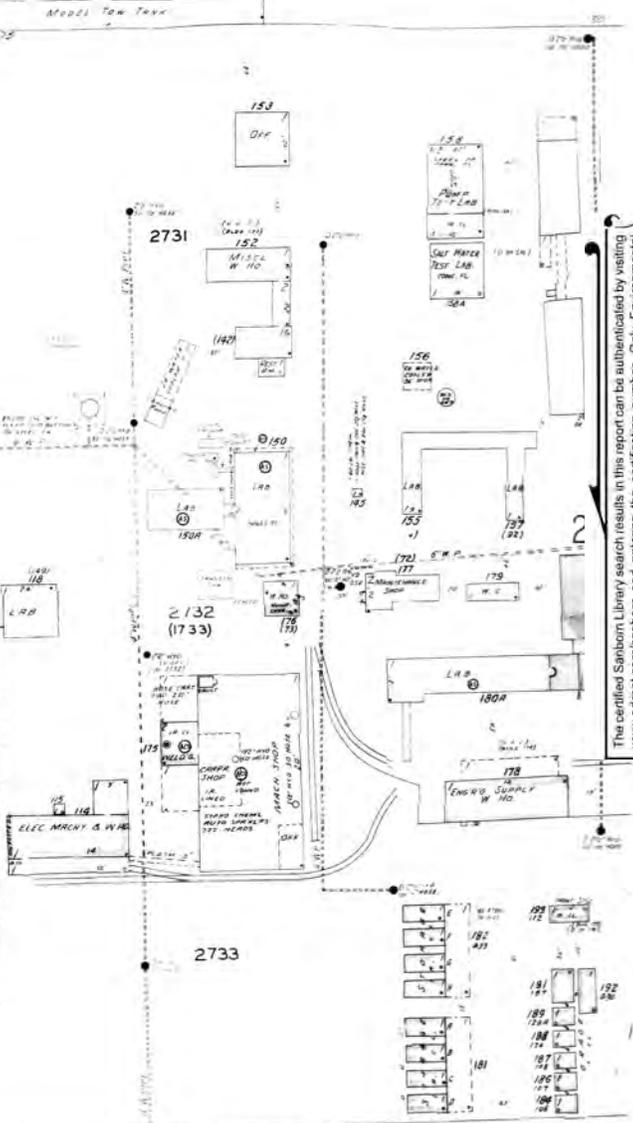
(1742)

UNIVERSITY OF CALIFORNIA RICHMOND FIELD STATION ASSOC RISK

PRIVATE RD

223

224



The certified Sanborn Library search results in this report can be substantiated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

1260-4A3F-8D84

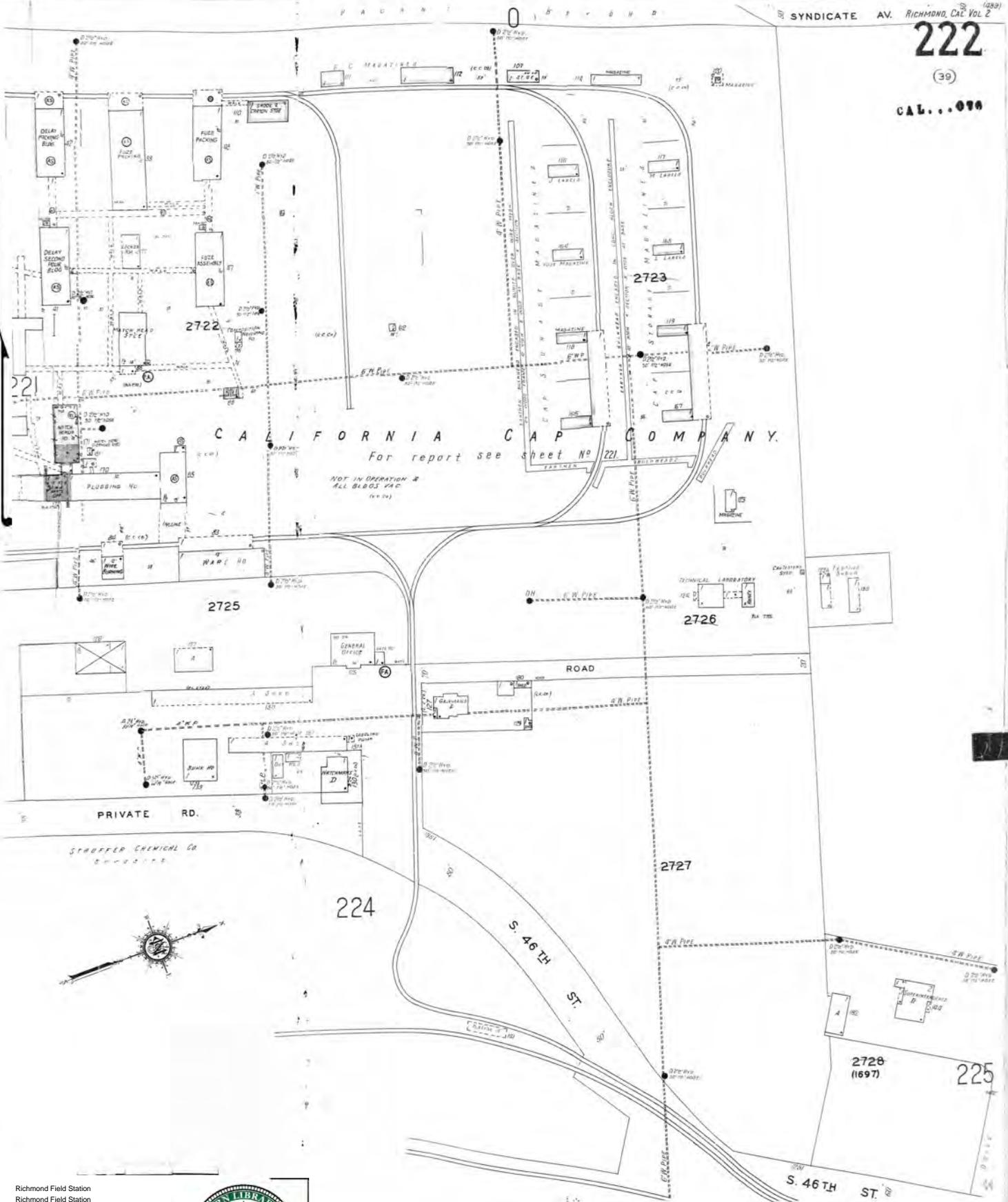
Certification #

Site Name: Richmond Field Station
Address: Richmond Field Station
City, ST, ZIP: Richmond CA 94804
Client: Tetra Tech EM Inc.
EDR Inquiry: 2194544.1s
Order Date: 4/11/2008 12:01:56 PM
Certification #: 1260-4A3F-8D84

Copyright: 1966



The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources, Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.



CALIFORNIA CAP COMPANY
For report see sheet No 221

NOT IN OPERATION &
ALL BLDGS VAC
(1924)

Certification #
1260-4A3F-8D84

Site Name: Richmond Field Station
Address: Richmond Field Station
City, ST, ZIP: Richmond CA 94804
Client: Tetra Tech EM Inc.
EDR Inquiry: 2194544.1s
Order Date: 4/11/2008 12:01:56 PM
Certification #: 1260-4A3F-8D84



CAL...076

RICHMOND CAL 11L2

221

(40)

SAN FRANCISCO BAY

CALIFORNIA CAP COMPANY

2742

2731

2743

2732 (1733)

(1742)

2744

2733

PRIVATE RD

STAUFFER CHEMICAL CO. OPPOSITE

223

UNION SUPER PHOSPHATE CO. OPPOSITE

224



The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

1260-4A3F-8D84

Certification #

Site Name: Richmond Field Station
Address: Richmond Field Station
City, ST, ZIP: Richmond CA 94804
Client: Tetra Tech EM Inc.
EDR Inquiry: 2194544.1s
Order Date: 4/11/2008 12:01:56 PM
Certification #: 1260-4A3F-8D84

Copyright: 1949



Certified Sanborn® Map Report



Sanborn® Library search results
Certification # 1260-4A3F-8D84

**Richmond Field Station
Richmond Field Station
Richmond, CA 94804**

Inquiry Number 2194544.1s

April 11, 2008



The Standard in Environmental Risk Information

440 Wheelers Farms Rd
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

Certified Sanborn® Map Report

4/11/08

Site Name:

Richmond Field Station
Richmond Field Station
Richmond, CA 94804

Client Name:

Tetra Tech EM Inc.
135 Main Street
San Francisco, CA 94105



EDR Inquiry # 2194544.1s

Contact: Carolyn Ferlic

The complete Sanborn Library collection has been searched by EDR, and fire insurance maps covering the target property location provided by Tetra Tech EM Inc. were identified for the years listed below (selected maps only*). The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by Sanborn Library LLC, the copyright holder for the collection.

Certified Sanborn Results:

Site Name: Richmond Field Station
Address: Richmond Field Station
City, State, Zip: Richmond, CA 94804
Cross Street:
P.O. # NA
Project: 103DS1518012.01
Certification # 1260-4A3F-8D84



Sanborn® Library search results
Certification # 1260-4A3F-8D84

* Environmental Data Resources, Inc. has been instructed by Tetra Tech EM Inc. to print ONLY the Sanborn Maps for the years listed below:

- 1970 (3)
- 1966 (3)
- 1949 (3)
- 1916 (2)
- 1912 (1)

Total Maps: 12

The Sanborn Library includes more than 1.2 million Sanborn fire insurance maps, which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- Library of Congress
- University Publications of America
- EDR Private Collection

Limited Permission To Make Copies

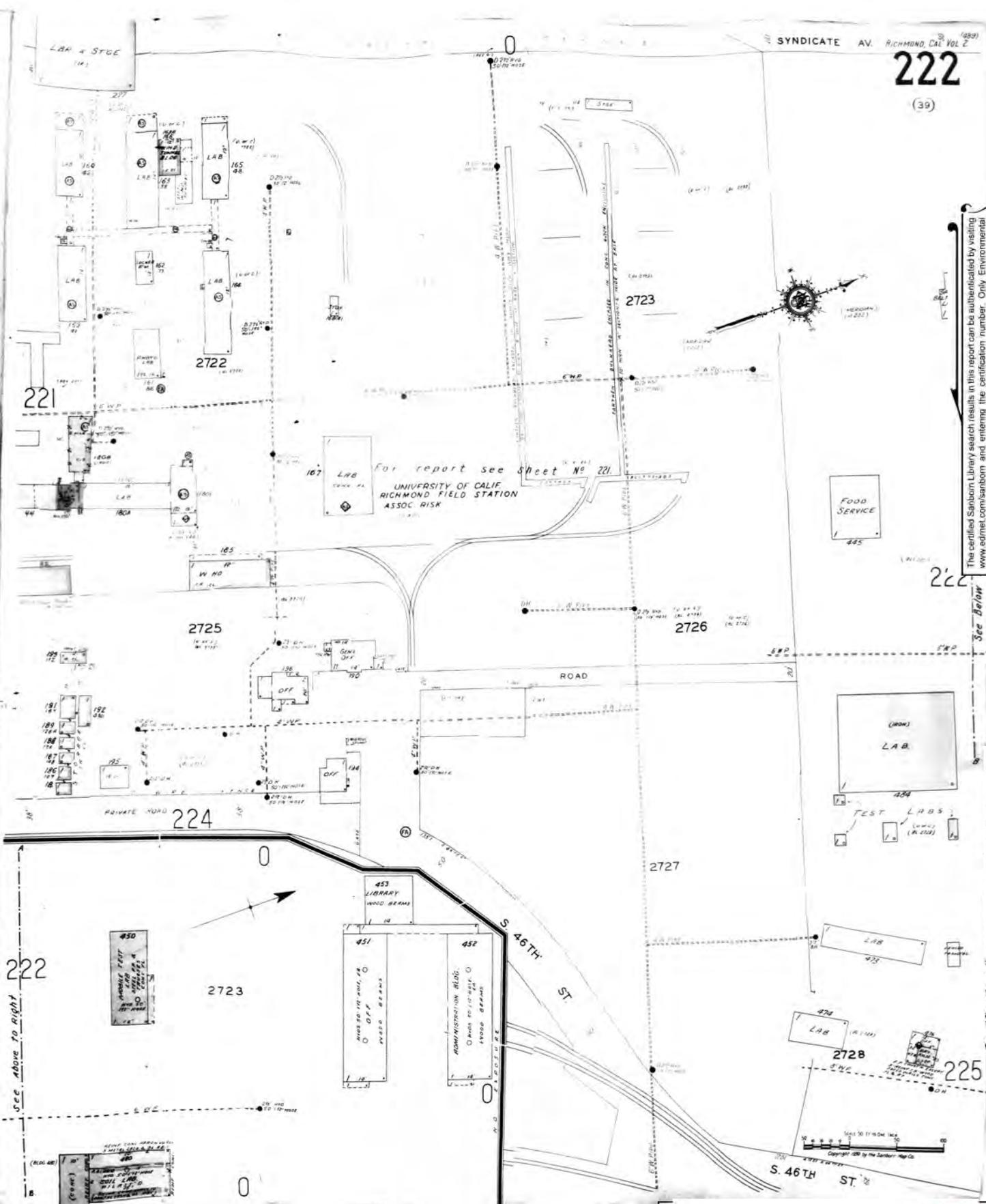
Tetra Tech EM Inc. (the client) is permitted to make up to THREE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

Disclaimer - Copyright and Trademark notice

This Report contains certain information obtained from a variety of public and other sources reasonably available to Environmental Data Resources, Inc. It cannot be concluded from this Report that coverage information for the target and surrounding properties does not exist from other sources. NO WARRANTY EXPRESSED OR IMPLIED, IS MADE WHATSOEVER IN CONNECTION WITH THIS REPORT. ENVIRONMENTAL DATA RESOURCES, INC. SPECIFICALLY DISCLAIMS THE MAKING OF ANY SUCH WARRANTIES, INCLUDING WITHOUT LIMITATION, MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE. ALL RISK IS ASSUMED BY THE USER. IN NO EVENT SHALL ENVIRONMENTAL DATA RESOURCES, INC. BE LIABLE TO ANYONE, WHETHER ARISING OUT OF ERRORS OR OMISSIONS, NEGLIGENCE, ACCIDENT OR ANY OTHER CAUSE, FOR ANY LOSS OF DAMAGE, INCLUDING, WITHOUT LIMITATION, SPECIAL, INCIDENTAL CONSEQUENTIAL, OR EXEMPLARY DAMAGES. ANY LIABILITY ON THE PART OF ENVIRONMENTAL DATA RESOURCES, INC. IS STRICTLY LIMITED TO A REFUND OF THE AMOUNT PAID FOR THIS REPORT. Purchaser accepts this Report "AS IS". Any analyses, estimates, ratings, environmental risk levels or risk codes provided in this Report are provided for illustrative purposes only, and are not intended to provide, nor should they be interpreted as providing any facts regarding, or prediction or forecast of, any environmental risk for any property. Only a Phase I Environmental Site Assessment performed by an environmental professional can provide information regarding the environmental risk for any property. Additionally, the information provided in this Report is not to be construed as legal advice.

Copyright 2008 by Environmental Data Resources, Inc. All rights reserved. Reproduction in any media or format, in whole or in part, of any report or map of Environmental Data Resources, Inc., or its affiliates, is prohibited without prior written permission.

EDR and its logos (including Sanborn and Sanborn Map) are trademarks of Environmental Data Resources, Inc. or its affiliates. All other trademarks used herein are the property of their respective owners.



The certified Sanborn Library search results in this report can be substantiated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

See Above to Right

See Below

1260-4A3F-8D84

Certification #

Site Name: Richmond Field Station
 Address: Richmond Field Station
 City, ST, ZIP: Richmond CA 94804
 Client: Tetra Tech EM Inc.
 EDR Inquiry: 2194544.1s
 Order Date: 4/11/2008 12:01:56 PM
 Certification # 1260-4A3F-8D84



Site Name: Richmond Field Station
 Address: Richmond Field Station
 City, ST, ZIP: Richmond CA 94804
 Client: Tetra Tech EM Inc.
 EDR Inquiry: 2194544.1s
 Order Date: 4/11/2008 12:01:56 PM
 Certification # 1260-4A3F-8D84



Copyright: 1970

P. 68754)
 RICHMOND, CAL VOL 2

225

"NP"
 MAR 1947



219

ELLS (S 50TH ST)

217

2586
 EAST SHORE PARK

2585
 SAMUEL GOMPERS PUBLIC SCHOOL

2578

2574

2622
 ASSOC RISK
 UNIVERSITY OF CALIFORNIA
 ENGINEERING FIELD STATION

2627

ASSOC RISK
 STAUFFER CHEMICAL CO
 RICHMOND RESEARCH
 CENTER

2701

2700

STAUFFER CHEMICAL CO
 ASSOC-RISK

2698

222

2628

2754

216

The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

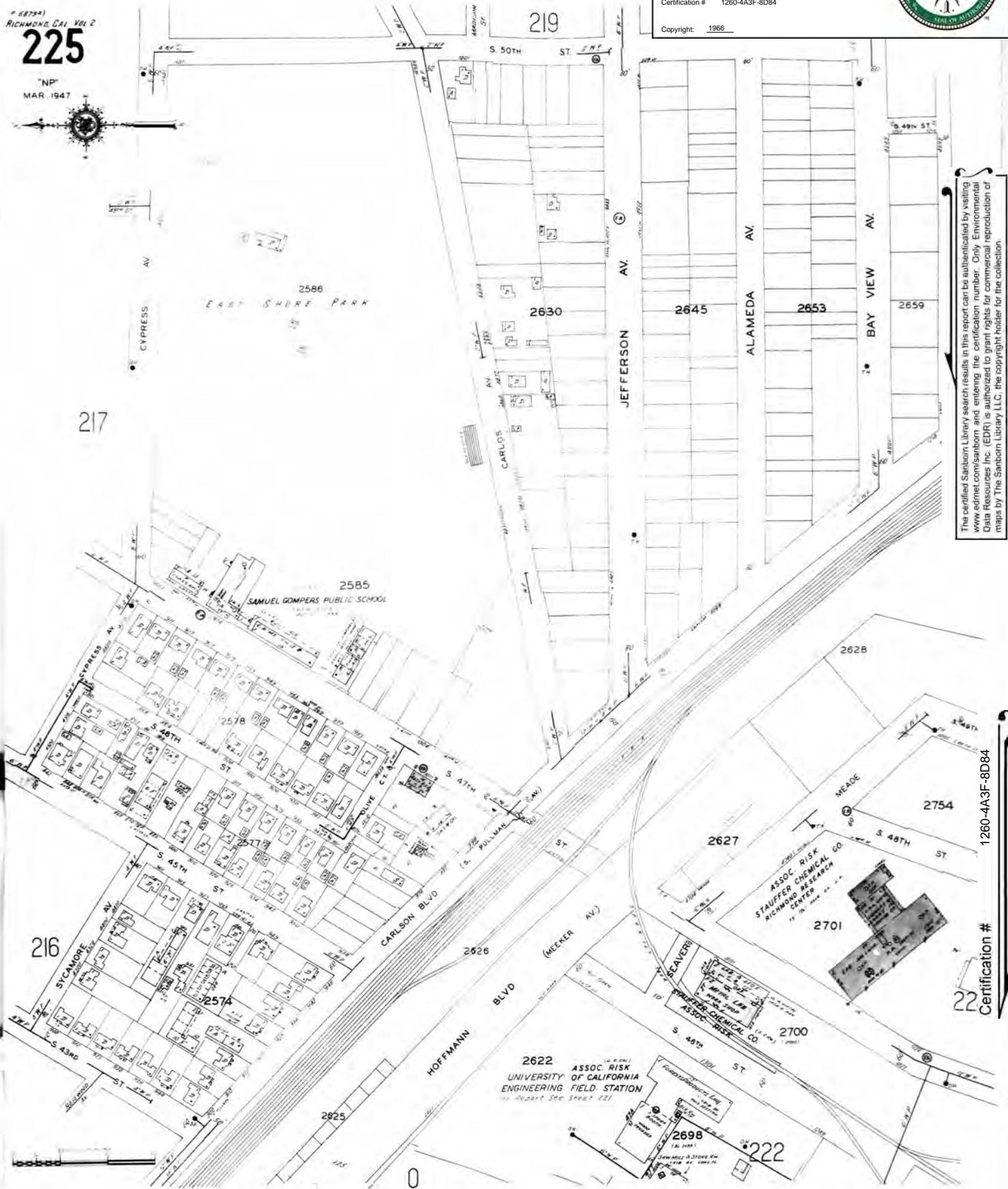
1260-4A3F-8D84

22 Certification #

SCALE 1/8" = 1' ON THE MAP

6873A)
RICHMOND, CAL VOL 2
225

"NP"
MAR 1947



Site Name: Richmond Field Station
Address: Richmond Field Station
City, ST, ZIP: Richmond CA 94804
Client: Tetra Tech EM Inc.
EDR Inquiry: 2194544.1s
Order Date: 4/11/2008 12:01:56 PM
Certification #: 1260-4A3F-8D84
Copyright: 1966



The certified Sanborn Library search results in this report can be authenticated by visiting www.edrnet.com/sanborn and entering the certification number. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by The Sanborn Library LLC, the copyright holder for the collection.

1260-4A3F-8D84
Certification # 22

