



THE CITY OF SAN DIEGO  
**Historical Resources Board**

DATE ISSUED: April 17, 2013 REPORT NO. HRB-13-019

ATTENTION: Historical Resources Board  
Agenda of April 25, 2013

SUBJECT: **ITEM #12 – University Heights Water Storage and Pumping Station  
Historic District**

APPLICANT: Alexander D. Bevil, North Park Historical Society

OWNER: City of San Diego

LOCATION: 2725 El Cajon Boulevard, Greater North Park Community, Council District 3

DESCRIPTION: Review the National Register Nomination of the University Heights  
Water Storage and Pumping Station Historic District

STAFF RECOMMENDATION

Recommend the listing of the University Heights Elevated Metal Water Tank, constructed in 1924, as a historic structure at a local level of significance under National Register Criteria C to the Office of Historic Preservation; and recommend that the proposed University Heights Water Storage and Pumping Station Historic District not be listed under any criteria, due to a lack of integrity and insufficient documentation to support the proposed boundary and period of significance.

BACKGROUND

This item is being brought before the Historical Resources Board pursuant to the Office of Historic Preservation requirement that the local jurisdiction be provided 60 days to review and comment on a National Register of Historic Places nomination. The nomination was submitted by the North Park Historical Society, and includes property owned by the City of San Diego and operated by the Public Utilities and Park and Recreation Departments.

ANALYSIS

A National Register of Historic Places Nomination Report was prepared by Alexander Bevil which concludes that the University Heights Water Storage and Pumping Station Historic District is significant at the local level of significance under National Register Criteria A, with an

identified period of significance of 1924-1967. The District as proposed, which is bounded by El Cajon Boulevard to the north, Idaho Street to the east, the vacated area of Polk Avenue to the south, and Oregon Street to the west, includes nine contributing resources (6 extant and 3 non-extant) and four non-contributing resources (one of which includes multiple components). The nomination also concludes that the University Heights Elevated Metal Water Tank, constructed in 1924, is individually eligible for the National Register at a local level of significance under National Register Criterion C.

Staff has reviewed the nomination, and recommends that the District not be listed as proposed, due to a lack of integrity and insufficient documentation and analysis to support the proposed boundary and period of significance. However, staff does recommend that the Elevated Metal Water Tank be listed as a historic structure under National Register Criteria C. The analysis below will first address the listing of the University Heights Water Storage and Pumping Station Historic District, followed by the Elevated Metal Water Tank as an individually significant historic structure.

### University Heights Water Storage and Pumping Station Historic District

Following the economic boom of the 1880s, the City found that there was an insufficient supply of potable water to support the growing population. In response, a number of water infrastructure projects were undertaken by public and private entities. These projects included additional pumping stations in Mission Valley and Uptown, as well as construction of the Cuyamaca, Sweetwater and La Mesa dams. With the growing population base and the increasing availability and promise of an adequate water supply, land development activity increased. Development of electric streetcar lines allowed this development to spread beyond the city center into outlying areas known as streetcar suburbs. The trenching and laying of privately invested water and sewer lines usually preceded the laying of electric rail lines along the same public right-of-way.

The subdivision of University Heights, surveyed and platted in 1887, was one of the earliest of these streetcar suburbs. However, development in the area was highly limited through the late 1800s and early 1900s. This was due in part to the lack of a potable water supply east of Mission Cliff Gardens. In response, the San Diego Water Company acquired the subject site from the College Hill Land Association c.1894. Using funds donated by the Land Association, the San Diego Water Company constructed a 160,000 gallon stand pipe and pumping station (non-extant) on the northeast corner of the site in 1898, providing enough water and pressure to send water to outlying homes and businesses, as well as provide for adequate fire protection.

In 1900, the people of San Diego voted to de-privatize and manage their own water supply system, placing the subject site under the management of the newly formed City of San Diego Municipal Water Department. As development in University Heights continued to expand and the population grew through the early 1900s, the City Engineer and fire insurance companies urged the City to invest in fire prevention, including the water storage, treatment and distribution capabilities at the University Heights water storage and pumping station site.

The first major improvement was the construction of a partially buried concrete reservoir (non-extant) in 1908 along Oregon Street which measured 337 feet long by 150 feet wide by 10 feet

deep, and held 3.172 million gallons of water. In order to maintain adequate pressure within the system, in 1910 a new 490,660 gallon metal stand pipe (non-extant) was installed near the reservoir at the site of the original stand pipe. In 1913 a second, larger “raw water” reservoir (non-extant) measuring 600 feet long by 300 feet wide and 12-20 feet deep with a 17.5 million gallon capacity was constructed to the south of Howard Avenue. This raw water reservoir would be demolished entirely in 1967 and replaced with a municipal park. Distribution pipelines tying to the City’s water mains were constructed concurrent with the larger south reservoir in 1913. The Howard Avenue underground valve vault (extant), a 30 square foot underground vault accessible via a manhole, was also constructed around this time.

Built in 1924, the Elevated Metal Water Tank (extant) is the most visible structure onsite, measuring 127 feet tall with a capacity of 1.2 million gallons. The caretaker’s residence (extant), a simple vernacular building, was constructed the same year and later relocated on site in 1952. In 1928, the Howard Avenue water filtration plant (non-extant) was constructed in the location of present-day Howard Avenue. From 1928-1935, the water filtration plant consisted of two rows of eight redwood tubs sitting nine feet above ground level. Two additional rows of four redwood tubs were added in 1935. These sand-filled tubs filtered suspended iron and other impurities out of the water stored in the south reservoir. Rendered obsolete by the construction of new facilities at Lake Murray in 1949, the water filtration plant was completely demolished in 1952.

A chlorinating house (non-extant) replaced an older chlorinating house in 1935, but has since been demolished. In 1952, the original 3-million gallon north reservoir was replaced by a 5-million gallon, z-shaped regulating water reservoir (extant). Also constructed in 1952, the pump house (extant) is a simple vernacular concrete block structure which served as the reservoir’s pump house between 1952 and 1998. Lastly, in 1952 and 1967 the El Capitan pipeline valve vaults (extant) were constructed to direct water into the north concrete water storage reservoir.

*CRITERION A – Property is associated with events that have made a significant contribution to the broad patterns of our history.*

The nomination states that the proposed University Heights Water Storage and Pumping Station Historic District is significant under National Register Criterion A in the area of Community Planning and Development. However, the narrative discussion of Criterion A in the nomination primarily provides information on the development of the site over time, as opposed to how the District is significant under Criterion A for its association with the planning and development of the community. Contextual information regarding the development of San Diego and its streetcar suburbs is provided in the “Developmental history/additional historic context information” section beginning on Page 20 of Section 8 of the nomination. This information discusses the importance of adequate water supply and infrastructure in the expansion of early suburban development. The University Heights Water Storage and Pumping Station was constructed beginning in 1898 to accommodate demands of increased growth and development in University Heights and does reflect this context. However, other than the site being one of four major municipal water storage, filtration, and distribution facilities; there is no clear statement of significance provided for the proposed District. In addition, the nomination does not provide sufficient information or analysis to

support the proposed period of significance and district boundary. Lastly, the integrity of the district, which includes extant and non-extant resources, is not adequately addressed.

The nomination has identified the period of significance for the proposed University Heights Water Storage and Pumping Station Historic District as 1924-1967. This period encompasses the construction of the Elevated Water Storage Tank in 1924 and extends through the demolition of the south reservoir (which was converted to park use) and the conversion of the north reservoir into a regulating reservoir in 1967. However, the period of significance identified does not reflect the earliest water storage and distribution infrastructure elements at the site. These elements were first constructed in 1898 and are more directly related to the early development of University Heights as a streetcar suburb, which is the basis for significance under Criterion A. If significance of the District is predicated on the importance of adequate water supply in the development of the streetcar suburb of University Heights, then excluding the first 26 years of the site's operation and influence in the development of University Heights is not appropriate. This may be a reflection of a lack of extant resources from this early period, which raises the issue of integrity. Beginning the period of significance in 1924 is also inconsistent with the nomination's inclusion of the south "raw water" reservoir (non-extant) that was constructed in 1913.

In addition, there is no clear justification for the end date of 1967, which is long after the establishment of University Heights as a streetcar suburb. The chosen end-date is also questionable given that the site continues to be operated by the Public Utilities Department for water storage and distribution. The summary paragraph on Page 12 of Section 8 of the nomination raises further questions regarding the appropriateness of the 1924-1967 period of significance with the statement that the proposed District's "steady supply of millions of gallons of safe potable water was directly responsible for the expansion of Mid-City San Diego's 'streetcar suburbs' from 1907 to 1942."

In regard to integrity, the nomination states only that "the district contains a cohesive collection of contributing and non-contributing buildings, structures and sites associated with the evolution of the University Heights Water Storage and Pumping Station Historic District from 1924 to 1967... the district's contributing resources retained their historic significance in regards to their location, site, design, materials and workmanship, and continue to convey the feeling and association of a historic municipal water facility." However, as stated previously, the discussion of integrity does not address the fact that the four earliest structures on site built between 1898 and 1924, which were more directly related to the development of University Heights as a streetcar suburb, are no longer extant. Furthermore, three of the nine contributing resources identified are non-extant "sites" with no significant physical remnants remaining - those being the south "raw water" reservoir, the Howard Avenue water filtration plant, and the chlorinating house. This is inconsistent with National Register guidance that defines sites as containing archaeological resources or remains of historic buildings, or having an association with historically significant events. In addition to these non-extant resources, one of the contributing resources identified was relocated on site in the 1950s. The remaining five contributing sites are extant, but have experienced some modification, such as the recreation fields that were constructed on top of the regulating reservoir. The contributing resources identified in the nomination, as well as their construction date and status, are summarized in the table below.

CONTRIBUTING ELEMENT	BUILT	BUILDING	STRUCTURE	SITE	EXTANT		NOTES
					Yes	No	
Elevated Metal Water Tank	1924		x		x		
Regulating Water Reservoir	1952		x		x		Recreation Fields Constructed On Top
Pump House	1952		x		x		
Caretaker's Residence	1924	x			x		Relocated On-Site 1952
El Capitan Pipeline Valve Vaults (2)	1952 1967		x		x		Below Grade
Chlorinating House Site	1935			x		x	Demolished, Gas Hook-Ups Remaining
Howard Avenue Water Filtration Plant Site	1928			x		x	Demolished Entirely 1952
Howard Avenue Underground Valve Vault	c. 1908- 1912		x		x		Below Grade
South "raw water" Concrete Reservoir	1913			x		x	Demolished Entirely 1967

Issues related to integrity are not limited to loss of built resources, and include other changes to the site that have occurred over time. The most significant of these occurred in 1967 when Howard Avenue was extended through the site (at the former location of the water filtration plant) and the south "raw water" reservoir was demolished entirely, re-graded and converted to a municipal park. These modifications substantially reduced the size of the original site and significantly altered the setting and feeling of the site, in addition to obvious loss of materials and design.

These changes to the site over time, particularly in 1967, also raise questions as to the appropriateness of the proposed District boundary, which encompasses Howard Avenue and the municipal park that occupies the site of the former south "raw water" reservoir. Given that the reservoir was demolished entirely and the site re-graded before the park improvements were installed, this area no longer retains any association with the University Heights Water Storage and Pumping Station, and therefore inclusion of this parcel in the District boundary is not appropriate.

Therefore, given the highly limited significance statement, the lack of information and analysis to support the identified period of significance and district boundary, and the identified issues related to integrity, staff recommends that the University Heights Water Storage and Pumping Station Historic District not be listed on the National Register under Criterion A.

#### Elevated Water Storage Tank

*CRITERION C – Embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.*

First developed during the late nineteenth century, by the early twentieth century elevated steel water tanks had spread across the American urban landscape. In 1984, the first elevated riveted steel plate water tank on a braced steel girder-legged tower was constructed in Iowa. It was also the first recorded use of an elevated water storage tank built with a full hemispherical ellipsoidal bottom, as opposed to a flat bottom. Both practical and economical, its design negated the flat-bottom tank's need for heavy girder and floor beams. Another innovative design feature was the bolting of the steel girder support legs directly to the tank shell via a circumferential catwalk ring above the hemispherical ellipsoidal bottom section, thus making the tank and tower one single unified symmetrical structure. By 1912, the elevated steel water tank was the leading type in use throughout the United States.

Like its predecessors, the University Heights Elevated Water Storage Tank's design and engineering were based on the basic concept of a gravity-generated water pressure distribution system. The ratio between the water tank's storage capacity and height above ground, as well as its supply pipe diameter, determined the amount of serviceable water it could deliver throughout the surrounding area. At the time of its construction in 1924 it was touted as the "largest elevated tank in the world." Measuring 127 feet tall with a capacity of 1.2 million gallons, the tank is an example of an early twentieth-century, riveted, steel plate-constructed, conical-capped, elevated, full hemispherical bottom municipal water storage tank with Z-laced girder leg supports. It is the only such example in San Diego County. In addition, the use of 12 Z-laced girder steel legs (a reflection of the elevated tank's projected carrying capacity) makes it rarer still, as there are no other examples known in Southern California.

Besides its riveted steel plates and full hemispherical ellipsoidal bottom, the University Heights Elevated Water Storage Tank's character defining features include the bolting of the steel girder support legs directly to the tank shell via a circumferential ring above the hemispherical ellipsoidal bottom section. The ring also supports another design feature common to all early twentieth century elevated water storage tanks: a circumferential steel catwalk with a 3-foot high, V-braced railing. Additional design features typical of early twentieth century elevated water tanks include adjustable X-shaped steel tension "spider" rods with steel turnbuckles and horizontal flanged struts; a high conical cap topped by a small open-sided metal anti-siphon "lantern"; an a vertical steel service ladder and wooden water level gauge mounted on the tank's north-facing wall.

The University Heights Elevated Water Tank reflects early twentieth century civil engineering efforts to ensure adequate water supply and fire protection to growing cities. The Tank further reflects the evolution of water tank design, embodying the character defining features of a riveted, steel plate-constructed, conical-capped, elevated, full hemispherical bottom municipal water storage tank with Z-laced girder leg supports. In addition, it is the only example in San Diego County and the only known tank supported by 12 Z-laced girder leg supports in Southern California. Therefore, staff recommends that the University Heights Elevated Water Storage Tank be designated at the local level of significance under National Register Criterion C, with a period of significance of 1924, as a resource whose design, shape, scale, materials and construction embody the distinctive characteristics of early twentieth century municipal water storage and delivery systems.

## CONCLUSION

Based on the information submitted, it is recommended that the Historic Resources Board recommend listing of the University Heights Elevated Metal Water Tank, constructed in 1924, as a historic structure at a local level of significance under National Register Criteria C to the Office of Historic Preservation; and recommend that the proposed University Heights Water Storage and Pumping Station Historic District not be listed under any criteria, due to a lack of integrity and insufficient documentation to support the proposed boundary and period of significance.



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Attachment: 1. National Register Nomination under separate cover