United States Department of the Interior
National Park Service

National Register of Historic Places Registration Form

This form is for use in nominating or requesting determinations for individual properties and districts. See instructions in National Register Bulletin, *How to Complete the National Register of Historic Places Registration Form.* If any item does not apply to the property being documented, enter "N/A" for "not applicable." For functions, architectural classification, materials, and areas of significance, enter only categories and subcategories from the instructions.

1. Name of Property

Historic name: University Heights Water Storage and Pumping Station Historic District
Other names/site number: University Heights Water Pumping Plant; University Heights Regulating Reservoir; North Park Water Tower; the "Tin Man"
Name of related multiple property listing: N/A
(Enter "N/A" if property is not part of a multiple property listing

DRAFT

2. Location

Street & number: 4236 Idaho Street
City or town: San Diego State: CA County: San Diego
Not For Publication: N/A Vicinity: N/A

3. State/Federal Agency Certification

As the designated authority under the National Historic Preservation Act, as amended,

I hereby certify that this ___ nomination ___ request for determination of eligibility meets the documentation standards for registering properties in the National Register of Historic Places and meets the procedural and professional requirements set forth in 36 CFR Part 60.

In my opinion, the property ___ meets ___ does not meet the National Register Criteria. I recommend that this property be considered significant at the following level(s) of significance:

___national ___statewide ___local

Applicable National Register Criteria:

___A ___B ___C ___D

Signature of certifying official/Title: **Date**

State or Federal agency/bureau or Tribal Government

In my opinion, the property ___ meets ___ does not meet the National Register criteria.

Signature of commenting official: **Date**

Title : **State or Federal agency/bureau or Tribal Government**

4. National Park Service Certification

I hereby certify that this property is:

___ entered in the National Register

___ determined eligible for the National Register

___ determined not eligible for the National Register

___ removed from the National Register

___ other (explain:) _____

_____

Signature of the Keeper Date of Action

5. Classification

Ownership of Property

(Check as many boxes as apply.)

Private:	☐
Public – Local	X
Public – State	☐
Public – Federal	☐

Category of Property

(Check only **one** box.)

Building(s)	☐
District	X
Site	☐
Structure	☐
Object	☐

University Heights Water Storage and Pumping Station Historic District San Diego, CA
Name of Property County and State

Number of Resources within Property
(Do not include previously listed resources in the count)

Contributing	Noncontributing	
1	2	buildings
3	1	sites
6	7	structures
0	0	objects
10	10	Total

Number of contributing resources previously listed in the National Register 0

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6. Function or Use
Historic Functions
(Enter categories from instructions.)
GOVERNMENT/Public Works: Water Storage, Treatment, and Pumping Complex

Current Functions
(Enter categories from instructions.)
GOVERNMENT/Public Works: Water Storage, Treatment,and Pumping Complex
VACANT: Abandoned Areas Converted into Public Right-of-Way and Municipal Park

7. Description

Architectural Classification

(Enter categories from instructions.)

OTHER: Early Twentieth Century Elevated Steel Water Storage Tower
OTHER: Vernacular Early Twentieth Century Bungaloid
OTHER: Mid-Twentieth Century International Style

Materials: (enter categories from instructions.)

Principal exterior materials of the property: Metal: Steel; Concrete; Wood: Weatherboard; Glass; Composition Asphalt

Narrative Description

Summary Paragraph

Located in the northwestern section of the North Park community, between El Cajon Boulevard and an abandoned section of Polk Avenue, the University Heights Water Storage and Pumping Station Historic District occupies 7.67 acres of city-owned land on two city blocks and two abandoned city streets. Within the district's boundaries are ten contributing resources associated with a key municipal water storage, treatment, and distribution plant. While its 127-foot-tall, 1.2 million gallon capacity elevated steel water storage tank dominates, the district contains a 4.9 million gallon water storage reservoir, operating pump house, three concrete water valve vaults, and a caretaker's house. In addition, the district contains the sites of three structures: a chlorinating house, water treatment plant, and 17.5-million gallon concrete reservoir. Although no longer extant, their sites possess sufficient historic value for their contributions to what is still a vital link in the City of San Diego's current water storage, treatment, and distribution system.

Narrative Description

The University Heights Water Storage and Pumping Station Historic District is located on a broad 300 to 400 foot high mesa some 3.5 miles northeast of downtown San Diego, California. Situated in the western section of the present community of North Park, its setting consists of a moderately built up urban neighborhood composed primarily of single story to two story homes and apartment blocks along Idaho and Oregon Streets, the district's respective east and west perimeters. The district's northern perimeter runs along the south shoulder of El Cajon Boulevard, a linear east-to-west-oriented commercial transportation corridor. Its southern perimeter runs along an abandoned and closed east-to-west-oriented section of Polk Avenue. A

poured-in-place concrete walk leading from Oregon Street past a public comfort station to a children's play area at Idaho Street informally marks the southern perimeter.

Except for its massive 12.7-story, 1.2 million gallon capacity elevated steel tank, the district blends in with the surrounding mixed-use commercial and residential neighborhood. Composed primarily of early twentieth century single-family bungalows arranged along a grid-like street pattern, the neighborhood contains few multi-story buildings that might otherwise block the water tank from view. Indeed, at a height of 127 feet, the tower can be seen clearly from as far as three miles away in any direction. The elevated tower is located within the district's northern section, which occupies all of 2.32-acre City Block No. 122 bounded by El Cajon Boulevard and Howard Avenue along its north and south perimeters, and Idaho and Oregon Streets along its respective east and west perimeters. Besides the tower, there are five other contributing historic resources located within Block 122: a 4.9 million gallon concrete water reservoir, pump house, concrete water valve vault, caretaker's residence, and the site of a chlorinating house.[1]

Separating the district's northern and southern sections is a 57-foot-wide by 345-foot-long section of Howard Avenue. A dedicated city street running between Idaho and Oregon Streets, this 0.45-acre section was the site of an above-ground water-treatment plant that played a critical role in the University Heights Water Storage and Pumping Station Historic District from 1928 to 1952. Located beneath the street's southeast corner, just north of the southwest corner of Howard Avenue and Idaho Street, is an underground concrete vault chamber. Accessible via a metal manhole cover, the vault houses metal valves that still redirect water from the City's Chollas Reservoir to the University Heights facility.

The Howard Avenue Vault also contains valves and a 30-inch diameter steel pipe line that once linked the district's northern section to a 17.5 million gallon reservoir. In operation between 1912 and 1967, the massive concrete-walled structure occupies all of City Block No. 151. Extending south from Howard Avenue approximately 630 feet to the district's southern boundary along an abandoned 345-foot-long section of Polk Avenue, the former reservoir site constitutes the district's southern section. An improved 4.9-acre municipal neighborhood park now occupies the area. Non-contributing resources include a recreation building, comfort station, children's playground, concrete walks, and tree-shaded lawn areas.

Contributing Resources:

1. Elevated Metal Water Tank (one contributing structure)

   The district's most visible contributing resource is a 1924-built elevated water storage tower. Located approximately 100 feet northwest of the North Section's southeast corner, the 127-foot-tall riveted steel structure consists of eight interrelated sections: a finial-topped conical cap, tubular tank shell, scaling ladder, circular catwalk, hemispherical ellipsoidal

[1] County of San Diego, *Tax Assessor's Map Book*, No. 445, 1987, 43, sheet 1 of 2; City of San Diego California Water Department, *University Heights North Reservoir, Proposed Placement of Caretaker's House*, Document No. 5808-W (26 November 1952), 1 sheet; Sanborn Map Company, *Sanborn Fire Insurance Maps of San Diego, California* (vol. 3, 1956), sheet 354; and City of San Diego, Property Department, *Land Acquisition Record, University Heights Block 122* (5 May 1995), 1-2.

bottom, "Z" zig-zag strapped channel iron girder support legs, and concrete foundation piers. A central riser contains infill and outflow pipes connecting the tank to an underground valve vault. A unique design feature typical of early twentieth century elevated hemispherical ellipsoidal water towers is the joining of the tops of all twelve diagonal-braced steel girder support legs directly to a circumferential ring around the tank shell, not to the tank's riveted steel plate outer walls. By doing so, the tower becomes one single unified symmetrical structure.[2] Diagonal steel "X" tension braces, with screw-threaded turnbuckles, and horizontal flanged steel braces hold the tower legs taut. Once capable of holding 1.2 million gallons of water, the tank is now empty. However, the tank and its steel girder tower are in good condition. Photographs taken prior to 1960 indicate the water tank and its supporting legs might have had a shiny silver-gray coating.[3] Despite a May 1983 coating of anti-rust Alumizol paint, the tank's conical cap is showing signs of rust. Non-historic elements include several communication antennas and a low-flying aircraft warning light. Additional non-historic elements include a 10-foot-tall steel fabric security fence out from and along the tower's base.

2. Regulating Water Reservoir (one contributing structure)

Except for a small .5 acre section occupied by the water tower and auxiliary structures, this 1952-constructed nearly 5-million gallon capacity Z-shaped concrete-walled above-ground reservoir occupies most of the district's northern section. Set back some 10 feet from the street curb, the reservoir's approximately 10-foot high outer walls, which consist of interlocked pre-stressed gusseted rectangular concrete sections, are devoid of decoration. Inside the reservoir, multiple reinforced concrete columns support its massive pre- stressed reinforced concrete roof. Originally used to store filtered water from the southern raw water reservoir, this 60-year-old structure is still an integral part of the City of San Diego's water supply and distribution system. In good condition, despite superficial additions, it has retained a great deal of its structural integrity. Non-historic, but reversible features include planted shade trees along a narrow planter strip along the base of its west, north, and east-facing walls. There are no planting strips along the reservoir's southwest perimeter wall. Besides the landscaping, other non-contributing features include an approximately 16-foot-tall steel fabric security fencing along the reservoir's roof's outer perimeter. An additional 10-foot-tall steel fabric security fence runs along the inner walls of the east planter along Idaho Street, and along the outer perimeter of the section occupied by the water tower. Two lozenge-shaped plywood-walled and fabric netting-contained "indoor" concession-operated soccer fields on the roof of the reservoir, laid over the faded painted surfaces of former tennis courts and the used car lot parking spaces that preceded the courts, are non-contributing structures. The reservoir's present color scheme does not appear original.

3. Pump House (one contributing structure)

Approximately 29 feet northeast of the water tower's base, adjacent to the reservoir's southeast corner wall, is a rectangular pump house. Also dating from the early 1950s, it is

[2] Allen H. Wright, "A New Large Municipal Water-Tower," *American City* 31 (November 1924): 485.
[3] San Diego History Center, Historic Photograph Collection, *El Cajon Boulevard Aerial*, No. UT 84 (1951).

situated on the site of the Caretaker House's automobile garage.[4] This nondescript vernacular style concrete block-constructed structure may appear to lack individual distinction. However, it played an important role in the complex' operation, serving as the reservoir's pump house between 1952 and 1998. The approximately 20-foot-wide by 65-foot-long single story flat roof structure consists of two parts: a 42-foot-long by 20-foot-wide main west block, attached to a slightly lower 25-foot-long by 20-foot-wide rectangular wing. A single secured doorway in the middle of the west block's south-facing wall provided access to the structure's interior. Three recently installed large regulating valves have replaced three of the original electric-powered water pumps.[5]

4. Caretaker's Residence (one contributing building)

This roughly 40-foot-square wood-frame building once served as the living quarters for the reservoir's caretaker from around 1924 to 1952. Situated on the roof of the southeast corner of the concrete reservoir's western section, this simple, clapboard-sided, gable-end utilitarian building's construction date may coincide with that of the water tower. A comparison of historical photographs indicates that the cottage was originally located at ground level northeast of the water tower, at 4236 Idaho Street. The cottage's additional character-defining vernacular architectural elements include a medium-pitch composition asphalt-covered front gable roof, with louvered attic vents in each tympanum, as well as bands of three 1x1 double-hung windows, and single 1x1 double-hung windows. After the reservoir's 1952 construction, the City Water Department relocated the building up to its present location, where it has been adapted for use by concessionaires. Although relocated, it was done so during the latter part of the district's historic period. The building appears to have maintained most of its historic integrity, except for the closing in of the original recessed southeast porch with metal-framed sliding glass doors.

5. El Capitan Pipeline Valve Vaults (two contributing structures)

Located within the fenced-in area east of the elevated water tank, 13 feet south of the pump house, are two partially buried steel plate-covered concrete vaults. Each contains a large underground gate valve. One is a 21 feet by 15 feet by approximately 8-foot-deep vault that contains a shut-off valve controlling the flow of water from the 1935-installed 36-inch-diameter El Capitan Reservoir steel pipeline. The other is a smaller 12 feet by 11 feet by approximately 8-foot-deep ell-shaped vault that contains a two-way directional valve that once took water from the larger gate valve to the northeast and redirected it into the South Raw Water Concrete Reservoir or the Howard Avenue Water Filtration Plant. Since 1952 and 1967, respectively, the valves direct water straight into the existing North Concrete Water Storage Reservoir.[6]

[4] City of San Diego, Water Department, Division of Development and Conservation, *University Heights Layout*, Drawing No. WD-595, File No. 2760, D3 (September 1937, revised 3 March 1945), 1 sheet; Sanborn Map Company, *Sanborn Fire Insurance Maps of San Diego, California*, vol. 3 (1921-1948), sheet 354.
[5] Gary Hogue [Retired Senior Civil Engineer, City of San Diego Public Utilities Department, Water and Waste Water]. *Interview with Alexander D. Bevil* (22 July 2011)
[6] Hogue, Interview; and City of San Diego, *University Heights Layout*.

6. Chlorinating House Site (one contributing site)

   Located approximately 55 feet due east of the water tower legs, and 70 feet south of the pump house near the northwest corner of Idaho Street and Howard Avenue, this approximately 930 square foot rectangular area is the site of the Chlorinating House. A single-story, gable-end-roofed shed, it replaced a similar structure located some 20 feet southwest of the tower sometime after 1935. While the structure is no longer extant, vestigial gas meter hookup pipes and historic photographs indicate its historic location.[7]

7. Howard Avenue Water Filtration Plant Site (one contributing site)

   Located in the district's Middle Section, this 57-foot-wide by 329-foot-long 0.43-acre section of Howard Avenue, between Idaho and Oregon Streets, was the site of the University Heights Water Storage and Pumping Station's water filtration plant from 1928 to 1952. From 1928 to 1935, the facility consisted of two rows of eight redwood tubs each. Sitting some 9 feet above ground-level, the sand-filled tubs filtered suspended iron and other impurities out of the water stored in the south reservoir. The filtered water was then chlorinated and pumped into the north reservoir, where it would also be on-demand for the elevated tank. Two additional rows of four redwood tubs each were added in 1935 to filter water from the new El Capitan reservoir. After the completion of a modern Alvarado water filtration plant at Lake Murray in 1949, the University Heights plant was phased out and eventually demolished around 1952. The paving of Howard Avenue removed all trace of the plant's location, reducing it to a historic site.[8]

8. Howard Avenue Underground Valve Vault (one contributing structure)

   Located beneath the southeast corner of the Howard Avenue Water Filtration Site, just north of the corner of Howard Avenue and Idaho Street is this rectangular underground concrete vault chamber. Accessible via a metal manhole cover, the approximately 30 square foot underground vault houses a 30 inch diameter metal valve that still redirects water from the City's Chollas Reservoir to the University Heights facility. The vault also contains abandoned valves and sections of 30-inch diameter steel pipe lines that once linked the Howard Avenue Water Filtration Plant to the Chollas Reservoir pipe line and the nearby Raw Water Reservoir between 1912 and 1967.[9]

9. South "Raw Water" Concrete Reservoir (one contributing site)

   This is the site of the University Heights Water Storage and Pumping Station's 600 foot long by 300 foot wide South Reservoir. Also known as the "Raw Reservoir," this 12-to-20-foot-deep above-ground concrete-walled wood plank-covered reservoir stored water

[7] City of San Diego, *University Heights Layout*; Sanborn Map Company (vol. 3, 1921-1948), sheet 354; and (1956), sheet 354; and San Diego History Center, Historic Photograph Collection, *El Cajon Boulevard Aerial*, and *North Park Aerial*, No. 82-13673-1851 (ca. 1955).
[8] City of San Diego, *University Heights Layout*; City of San Diego, Public Library, Photograph Collection, *University Heights Filter Plants* (No. 1303, 6 February 1936); and San Diego History Center, Photograph Collection, *El Cajon Boulevard Aerial*.
[9] City of San Diego Water Department, *University Heights Layout*.

delivered by the Chollas, Otay, and El Capitan water delivery pipelines from 1913 to 1967. Water held in this 17.5 million gallon reservoir was sent on demand through the Filtration Plant into the North Reservoir and Elevated Tank. Located in the district's South Section, the former reservoir's site is located in a 4.80-acre rectangular section of improved municipal urban park extending south from Howard Avenue some 657 feet to the district's southern boundary. The latter extends in an east-to-west direction along an inclusive 318-foot-long by 40-foot-wide .29-acre closed section of Polk Avenue, between Idaho and Oregon Streets. Because the reservoir is no longer extant, this is a historic site where the location itself possesses historic value regardless of any non-contributing existing structures or landscape improvements.

Non-Contributing Resources:

10. Roof-top Soccer Fields (two non-contributing structures)

These two approximately 200-foot-long by 80-foot-wide lozenge-shaped plywood-walled and fabric netting-contained concession-operated soccer "fields" are situated on top of the regulating reservoir's concrete roof's southwest and north-central sections. Installed between approximately 2000 and 2001, they are associated with a sports concession that operates out of the former Custodian's House next to the southwest soccer field. The soccer field concession replaced an earlier tennis sports center.[10] Some of the latter's abandoned tennis courts can still be discerned next to the soccer fields. The soccer fields are reversible, and have no historic association with or lessen the integrity of the University Heights Water Storage and Pumping Station's 1924 to 1967 period of historic significance.

11. Sports Concession Building (one non-contributing building)

This two story side-gabled building sits adjacent to the regulating reservoir's southeast corner. A centrally located internal stairwell provides public access up to a sports recreation concession facility on top of the reservoir. It also contains offices and multiple public restrooms along its top floor. The 1,248 square foot building does not appear in any historic photographs taken prior to 1967. Because of this and its simple stripped-down vernacular style it appears to have been built slightly before or immediately after 1970. The non-contributing building has no impact on the district's historic integrity.

12. Howard Avenue (one non-contributing structure)

This 57-foot-wide by 345-foot-long 0.45-acre section of Howard Avenue, between Idaho and Oregon Streets, is part of a dedicated city street that wasn't improved until after 1952. The street occupies the site of the 1928-1952 University Heights Water Storage and Pumping Station's water filtration plant. Beneath the street's southeast corner, just north of the corner of Howard Avenue and Idaho Street is the contributing Howard Avenue Underground Vault. The structure's 1952 demolition and the paving over of the area to connect Howard Avenue to Idaho and Oregon Streets reduced the location to a historic

[10] Hogue, Interview.

site.[11] The street, along with flanking concrete curbing and sidewalks, is a non-contributing structure that has no impact on the district's historic integrity.

13. North Park Recreation Center (one non-contributing building, one non-contributing site, four non-contributing structures)

The north 4.80-acre section of this 7-acre municipally owned community park is on the site of the historic South Raw Water Concrete Reservoir. Within the landscaped park's northwestern section are the following non-contributing features:

a. Trees and lawn areas (interpreted as one site).
b. A post-1967s-built recreation building, with an attached semi-enclosed indoor gymnasium (one building).
c. Curvilinear concrete pathways extending through the park (one structure).
d. A recently-constructed children's playground at the southeastern corner (one structure).
e. Oregon Avenue parking strip inset along Oregon Street perimeter (one structure).
f. Comfort station (one structure).

The site's southern perimeter separated the district from a multi-purpose sports field that has been in use since 1928.[12] While over 50 years old, the multi-purpose sports field has no historic association with the reservoir. As stated previously, because the location itself possesses historic value the existing non-contributing structures and other landscape features have no impact on the district's historic integrity.

Integrity Statement:

Comparing historic with current aerial photographs, maps, and design plans with on-site inspections, 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. Despite alterations, subtractions, and additions (as described), the district's contributing historic resources have 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. The non-contributing resources were constructed after the historic period, and are located on historic sites where the locations themselves possess historic value.

[11] City of San Diego, *University Heights Layout*; and San Diego History Center, *El Cajon Boulevard Aerial*.
[12] City of San Diego, Recreation Centers, *North Park Recreation Center*, last modified 2011, http://www.sandiego.gov/park-and-recreation/centers/northpark.shtml.

8. Statement of Significance

Applicable National Register Criteria

(Mark "x" in one or more boxes for the criteria qualifying the property for National Register listing.)

[X] A. Property is associated with events that have made a significant contribution to the broad patterns of our history.

[ ] B. Property is associated with the lives of persons significant in our past.

[X] C. Property 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.

[ ] D. Property has yielded, or is likely to yield, information important in prehistory or history.

Criteria Considerations

(Mark “x” in all the boxes that apply.)

[ ] A. Owned by a religious institution or used for religious purposes

[ ] B. Removed from its original location

[ ] C. A birthplace or grave

[ ] D. A cemetery

[ ] E. A reconstructed building, object, or structure

[ ] F. A commemorative property

[ ] G. Less than 50 years old or achieving significance within the past 50 years

Areas of Significance

(Enter categories from instructions.)

Community Planning and Development
Engineering

Period of Significance
1924-1967

Significant Dates
1924: Construction of Elevated Metal Water Storage Tank & Chlorination House
1928: Construction of Howard Avenue Water Filtration Plant
1935: Expansion of Howard Avenue Water Filtration Plant
1952: Demolition and Replacement of North Reservoir and Stand Pipe with 4 mil. Gallon Concrete Reservoir; Demolition of Howard Avenue Water Filtration Plant
1967: Demolition of South Reservoir; Transformation of Site into Neighborhood Park; Conversion of North Reservoir into Regulating Reservoir

Significant Person
(Complete only if Criterion B is marked above.)
N/A

Cultural Affiliation
N/A

Architect/Builder
City of San Diego Water Utilities Department
Pittsburg-Des Moines Steel Company

Statement of Significance

Summary Paragraph

The University Heights Water Storage and Pumping Station Historic District is locally significant under National Register Criterion A in the area of Community Planning and Development. It possesses a significant concentration of structures, buildings, and sites that are part of a unified entity connected by plan and use. During its 1924 to 1967 period of historic significance, the University Heights Water Storage and Pumping Station Historic District was one of the City of San Diego's four major municipal water storage, filtration, and distribution facilities. Its 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. While the majority of the district's contributing elements may lack individual distinction, its 127-foot tall elevated water storage tank is significant under National Register Criterion C in the area of Engineering. The elevated tank's design, shape, scale, materials, and construction are

representative of early twentieth century municipal water storage and delivery systems. A highly visible local landmark, it is the only known example of a 12-legged full hemispherical bottom elevated metal water storage tank in Southern California. An integral part of the University Heights Water Storage and Pumping Station Historic District, during its 1924 to 1967 period of historical significance, it provided adequate "head pressure" to propel water through the surrounding area's water delivery system during periods of peak water demand.

Narrative Statement of Significance

Significance under Criterion A

The University Heights Water Storage and Pumping Station Historic District is historically significant under National Register Criterion A in the area of Community Planning and Development. During the district's period of significance, it was one of the City of San Diego's four major municipal water storage, filtration, and distribution facilities. Still in operation, it continues to provide safe, potable water to the residents of downtown and Mid-city San Diego.

The University Heights Elevated Water Tank: 1923-1924

During the early 1920s, the City Water Department discovered that the metal stand pipe next to the north reservoir did not provide enough head pressure for the rapidly growing northern streetcar suburbs. The City Engineer and fire insurance companies urged city leaders to invest in the area's future by increasing the University Heights Water Storage and Pumping Station's ability to distribute water under constant pressure to fight fires in the surrounding communities. For example, if a major conflagration was to occur, the University Heights reservoirs could dry up, forcing the rest of the city to depend on a 24-inch wooden pipe line from the Chollas Reservoir. Both the City Engineer and fire insurance companies recommended the city extend a new 30-inch diameter cast iron pipeline from the Chollas reservoir to the University Heights facility. However, the San Diego Water Department's hydraulic engineer's recommended choice was to erect an elevated riveted steel plate water tank instead of an additional and far more costly pipeline.[13] The City's decision to accept the Water Department's recommendation would reflect its continued acceptance of then innovative American hydraulic engineering design principles.

A typical elevated water 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. Even during periods of peak demand and emergency situations, the amount of water inside the tank would be constant. Typically, when a storage tank's water level fell below a fixed point, an internal float triggered a nearby pumping station. A motorized pump would then send water stored in a nearby reservoir up through a vertical inflow pipe or "riser" directly beneath the tower. When the tank had been refilled to capacity, the float would return to its original position, switching off the pump. A vertical outflow pipe situated adjacent to the inflow pipe sent water via gravity to households,

[13] Allen H. Wright, "A Large Municipal Water-tower," *American City* 31 (November 1924): 485; and City of San Diego, "The Story of Water," n.p.

businesses, fire hydrants, and other locations throughout the water distribution systems service range. A "lantern," a finial vent in the tank's apex, allowed the proper amount of air to enter or exit the water tank in order to facilitate the gravity-forced distribution system. The lantern acted as an anti-siphon device preventing "air locks" from blocking the flow of water; or "negative pressure" from sucking contaminated groundwater back into a leaky water supply system. In addition, because they relied primarily on gravity, water tanks, along with stand pipes, could operate during power outages; albeit, this was true as long as the tank was at full storage capacity.[14]

As stated previously, the purpose of an elevated gravity tank was to either supply water directly or hold it in readiness to compensate for a drop in water pressure during peaks in domestic service demands or fire emergencies.[15] The latter was the case for the University Heights elevated water tank, which would hold approximately 1.2 million gallons of water in reserve to meet peak demand periods, or for fire protection. The elevated water tank's estimated $69,150 construction cost would also be less than the $330,000 to $400,000 it would take to install an additional water main from the Chollas pumping station. Besides, the City Water Department was planning on extending a new pipeline from the future El Capitan reservoir to University Heights in 1927, thus making the new Chollas pipeline superfluous. Additional energy cost savings would occur by refilling the tank during the period of low electrical demand between the hours of 6 p.m. and 6 a.m.[16]

After the passage of a municipal bond act in 1923, the City of San Diego awarded a contract to the Pittsburg-Des Moines Steel Corporation to erect a 1,200,000 million gallon capacity elevated metal water tank on the southeast corner of Block 122 in University Heights.[17] Completed the following year, the new elevated water tank consisted of a 54 foot diameter by 52 foot tall cylindrical body, with a 54 foot diameter by 30 foot deep elliptical spheroid-shaped bottom, and a 54 foot diameter by approximately 10 foot high conical cap. Another standard feature was the use of a circumferential ring above the hemispherical ellipsoidal bottom section. Besides serving as the connecting points for the tops of the tower's support legs, it supported a circumferential steel catwalk with a 3-foot high, V-braced railing. Also typical of the type, adjustable X-shaped vertical steel tension rods and horizontal struts braced the twelve 75 foot 2½ inch tall "Z-laced" steel girder legs in place. The bottom of each leg was bolted to the top of a concrete footing. Completed in 1924, the 127 foot 5.5 inch tall *University Heights Elevated Steel Water Tank* was reportedly the "world's tallest" at the time.[18]

[14] United States Department of the Interior, National Park Service, *Townsend Water Tower, City of Townsend, New Castle County, Delaware*, Historic American Engineering Record No. DE-24 (1990), 2.
[15] Blackburn, "Elevated Tanks," 392; and "Water Storage in Johnstown, Pa.," *American City* 27 (12 July 1922), 11.
[16] C. J. Franklin, "Elevated Steel Tank Solves Portland Water-Supply Problem," *American City* 26 (May 1922), 431-432; "Water Storage in Johnstown, Pa.," 12; and Wright, "Water-tower," 485.
[17] Wright, "Water-tower," 485; and City of San Diego Office of the City Clerk, *An Ordinance Appropriating the Sum of $73,000.00 for the Relief of the Pittsburg-Des-Moines Steel Corporation*, Ordinance No. 9494 (20 May 1924), 1.
[18] City of San Diego Operating Department, *Plan Showing [the] Location of [the] Proposed Elevated Steel Water Tank to Be Erected on Block 122, University Heights*, Document No. 670B, 1778-B (23 May 1923), San Diego

The Expansion of the University Heights Water Storage and Pumping Station: 1924-1947

In anticipation of additional water from the soon to be constructed El Capitan Dam and Reservoir, in 1927 the City Water Department extended a 36-inch-diameter riveted steel pipe line approximately seventeen miles from the Riverview Pumping Plants near the town on Lakeside to the University Heights Water Storage and Pumping Station. With the eventual completion of the El Capitan dam and reservoir in 1935, University Heights would once again receive water from the San Diego River.[19]

Due to an increase in the amount of suspended iron in the water pumped from the Mission Valley wells, the City Hydraulic Engineer oversaw the installation of a water filtration plant at the University Heights facility.[20] Completed in 1928, the facility consisted of sixteen sand-filled redwood tubs mounted on an elevated platform constructed along an east-to-west orientation on a closed section of Howard Avenue. The filtration system worked in the following way: pumps drew one million gallons a day of "raw water" from the south reservoir into and through the sand-filled redwood tubs. The sand could also trap such impurities as iron, grit, and organic matter, before being pumped into the smaller-capacity north reservoir. The pumps either filled the old upright stand pipe or the new elevated water tank with freshly chlorinated water. Both structures provided adequate "head pressure" to propel the water through the northern streetcar suburbs, as well as augmenting the rest of the city's supply during periods of peak water demand.[21]

With its completion, the University Heights water filtration plant was one of three then operating within San Diego's city limits. Besides the previously-mentioned Otay and Chollas water filtration plants, there was an additional plant at Torrey Pines, which had been treating 3 million gallons of water entering the city mains from the Lake Hodges-San Dieguito system since 1920.[22]

After it won a bitter legal battle with the rival Cuyamaca Water Company over paramount rights to San Diego River water in 1930, the City of San Diego began construction of the El Capitan

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History Center, Photograph Collection, *Water Tank: El Cajon Boulevard*, Photograph No. 2621 (1923); City of San Diego Operating Department, *Tank & Tower-University Hts.-Pittsburgh-Des Moines Steel Co.*, Drawing No. 1778 [Copy of Original 16 April 1923 Plan] (March 1930), 1 sheet; and Donald P. Covington, *North Park: a San Diego Urban Village, 1896-1946* (San Diego: North Park Community Association, 2007), 35-36; and National Park Service, *Townsend Water Tower* (1990), 2.

[19] Pyle, "City Water System" (1936), 244; City of San Diego, *Historical Water Utilization (1951),* 9; and City of San Diego, *Water History* (2011).

[20] City of San Diego Bureau of Water Development, *El Capitan Pipeline Aerating Table, University Heights Reservoir* (4 May 1927), 1 sheet; Arnold, "San Diego Water Supply Development" (1950), 45; and City of San Diego, *Historical Water Utilization* (1951), 9.

[21] City of San Diego Operating Department, *University Heights Filter Plant*, Document No. 3651-L (10 November 1927), 1 sheet; Pyle, "City Water System" (1936), 244; "Filtration Plant Will Give S.D. Filtered Water," *San Diego Union* (31 October 1948), 16A; City of San Diego, *Historical Water Utilization* (1951), 9; and Hogue, *Interview* (2011).

[22] Pyle, "City Water System" (1936), 243; Arnold, "San Diego Water Supply Development (1959), 44; and Pryde, "Most Essential Resource" (2004), 130-131. The Torrey Pines water treatment plant remained in operation until 1960. See: San Diego Water Department, "Water History" (2011).

Dam some twenty-two miles northeast of University Heights. Completed in 1935, the dam impounded 38 billion gallons of water within the new El Capitan Reservoir. New 36- and 48-inch-diameter steel pipelines sent 10 million gallons of water a day via the Riverview Pumping Plants to the University Heights Water Storage and Pumping Station. By this time, the latter facility's Filter Plant featured 8 additional redwood tubs to filter the increased amount of water.[23]

In conjunction with the Otay, Chollas Heights, and Torrey Pines facilities, the University Heights Water Storage and Pumping Station was strategically important during World War II. With the addition of 5.3 million gallons a day from the 1943-built San Vicente Reservoir 8 miles northwest of El Capitan, the University Heights facility filtered and distributed millions of gallons of water every day. The dependable supply of potable water for personal as well as industrial use resulted in the rapid development and expansion of San Diego's military facilities, defense industries, and an expanded war-time civilian population of 400,000.[24]

Postwar Changes: 1947-1967

Post-war advances in water filtration techniques would soon render the outdated University Heights Water Filtration Plant obsolete. In 1947 the newly formed San Diego County Water Authority sanctioned the construction of a new pipe line connecting the San Vicente Reservoir to the regional Metropolitan Water District of Southern California. By doing so, San Diego tapped indirectly into the Colorado River, ending its total dependence on local sources of impounded water runoff. Three years later, the City took over operations at the Lake Murray Reservoir (which now received waters from the San Vicente and El Capitan reservoirs), where it constructed a new water filtration plant. With the completion of the Alvarado Filtration Plant at Lake Murray, the City's Municipal Water Department could filter upwards to 66 million gallons of water a day. Although peak capacity in 1948 was 50 million gallons a day, the Alvarado facility could be expanded to filter 100 million gallons daily. With more than three times the total capacity of both Chollas and University Heights, the Alvarado Filtration Plant made the latter two obsolete. As a result, in 1952, the City Water Department abandoned and disassembled the University Heights Water Filtration Plant. In a few years there would be no evidence of the facility along a newly reclaimed and paved-over section of Howard Avenue.[25]

While no longer a water filtration plant, the University Heights facility was still a vital link in the City's water storage and distribution system. So much so, that in 1952 the water department replaced the 1908 and 1910-built metal stand pipe and North Reservoir with a larger Z-shaped 4 million gallon capacity concrete reservoir.[26] In order to accommodate the larger reservoir, the

[23] Pyle, "City Water System" (1936), 244; City of San Diego, "University Heights Layout" (1937), San Diego History Center, Historic Photograph Collection, *University Heights Filter Plant* (1947); Arnold, "San Diego Water Supply Development" (1950), 44-45; City of San Diego, *Historical Water Utilization* (1951), 9; and City of San Diego, *Water History* (2011).
[24] Arnold, "San Diego Water Supply Development" (1950), 40; and City of San Diego, *Water History* (2011).
[25] "Filtration Plant," *San Diego Union* (1948), Arnold, "San Diego Water Supply Development" (1950), 45; City of San Diego, *Historical Water Utilization* (1951), 9; and Hogue, *Interview* (2011).
[26] City of San Diego Water Department, *University Heights North Reservoir Walls and Column Details*, Document No. 5224-W (6 December 1951), 1 sheet; Sanborn Insurance Map Company, *Insurance Maps of San Diego*, California, vol. 3 (1956), sheet 354; and Covington, *North Park*, 35.

water department found it necessary to relocate two original structures on Block 122. The first was the Pump House, which it relocated a few feet north of the elevated water tank. The second was the Caretaker's House, which it placed on top of the new reservoir's southeast corner.[27] At this time, both structures are extant.

The University Heights Water Storage and Pumping Station continued to remain in operation, albeit in a reduced capacity. In 1967 the water department demolished the large 1912-built reservoir. Two years later, the City of San Diego Department of Park and Recreation converted and annexed the site to an existing adjacent community park to the south.[28]

In 1957, the City of San Diego had granted a 5-year lease to Tower Motors, Inc., a local car dealership, to operate a used car lot on top of the north reservoir. The city extended the lease in 1963, 1968, and 1972. There is very little evidence of this activity on the reservoir roof's concrete surface. Sometime after 1972, the City granted a lease to a concessionaire to operate a tennis sports center on the site of the former used car lot. Some evidence of the latter's tennis courts can still be discerned on the concrete roof's surface. After the tennis sports center closed around 2000 or 2001, the City granted another operating lease to a concessionaire to erect and operate two hard-surface soccer fields on the roof. The soccer playing areas are still in operation.[29]

During the 1990s new seismic safety standards forced the city water department to discontinue using the elevated water tank, the tank of which stands empty. The elevated tank had actually been redundant ever since the opening of the Alvarado Filtration Plant in 1952. Situated at an elevation 177 feet higher than the University Heights elevated water tower, its pumps were more than sufficient to provide adequate water pressure throughout the University Heights mesa. While the water tank stands empty, the expanded north reservoir is still in operation. It stores water to allow sediment to settle. Then the water is released back into the system as "flush water" to back wash sediment out of the Alvarado filtration units. If need be, it can also reenter treated water back into the water mains to augment the neighborhood water supply.[30]

Significance under Criterion C

The University Heights Water Storage and Pumping Station's 127-foot tall elevated water storage tank is locally significant under National Register Criterion C in the area of Civil Engineering. The tank's design, shape, scale, materials, and construction are representative of early twentieth century municipal water storage and delivery systems. Touted as "The World's

[27] Sanborn Insurance Map Company, *Insurance Maps of San Diego, California*, vol. 3 (1948), sheet 354; and City of San Diego California Water Department, *University Heights North Reservoir, Proposed Placement of Caretaker's House*, Document No. 5808-W (26 November 1952), 1 sheet.
[28] City of San Diego Engineering Department, *Plans for the Removal of the University Heights South Reservoir*, Document No. 12874-D (27 November 1967), 1 sheet; United States, Department of the Interior, Geographical Survey, *La Jolla, Calif. Topographic Map*, (1967 and Photorevised 1975); and Stephen Hon, North Park Historical Society, *Electronic Mail to Alexander D. Bevil* (8 April 2011).
[29] Hogue, Interview; and City of San Diego, Property Department, *Leases of North Park Reservoir Roof for Auto Storage to Tower Motors, 1957-1972*.
[30] Hogue, *Interview*; and Gary Hogue, *Electronic Mail to Alexander D. Bevil* (18 December 2011).

Tallest" at the time of its 1924 completion, it is the only surviving 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 constructed in San Diego County. However, many surviving early twentieth century elevated steel water storage tanks still serve local communities outside of San Diego. A sample comparison of similar structures has found that they typically feature 4, 6, or 8 Z-laced steel girder-legged towers. However, the University Heights structure is the only known example of a full hemispherical bottom elevated riveted steel plate water storage tank supported by 12 Z-laced girder steel legs in Southern California, if not the entire western United States.[31]

First developed during the late nineteenth century, by the early twentieth century elevated steel water tanks had spread across the American urban landscape. Prior to that, stone or brick-lined reservoirs or stand pipes had been the norm. In 1900 alone, 161 towns had built some form of elevated metal water storage tank.[32] Boone, Iowa reportedly erected the first in 1894. However, the design, similar to a traditional late-nineteenth century western railroad water tank, consisted of a wood stave-built water tank on top of a wood-frame tower.[33] Fort Dodge, Iowa was the first American town to construct an elevated riveted steel plate water tank on a braced steel girder-legged tower as part of its municipal water supply system. Erected in 1894, it was also the first recorded use of an elevated water storage tank built with a full hemispherical ellipsoidal 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.[34]

However, the U.S. Patent Office didn't issue a patent for a "Hemispherical Ellipsoidal Bottom Water Tank Supported on a Riser" until June 25, 1907. The patentee, George Horton, was a civil engineer employed by the Chicago Bridge and Iron Company. By 1912, the elevated steel water tank was the leading type in use throughout the United States. Between 1907 and 1915 Chicago Bridge and Iron would erect over eighty-five elevated tanks in twenty-three states from Virginia to Washington State. By 1915 its rival, the Pittsburg-Des Moines Steel Company, had contracts to build elevated steel water tanks in forty-two states and the District of Columbia, as well as

[31] Wright, "A Large Municipal Water-tower," 485; Hogue, *Interview* and *Electronic Mail*. Note: The number of supporting girder legs—four, six, eight, or twelve—is directly proportional to an elevated tank's projected carrying capacity. See Continuation Sheets. Franklin, C. J. "Elevated Steel Tank Solves Portland Water-Supply Problem," *American City* 431 (2 May 1922), 431-432; and Nathalie Weinstein, "Oregon Takes on Hydropower Projects," *Daily Journal of Commerce*, last modified 10 June 2010, http://djcoregon.com/news/2010/06/10/oregon-takes-on-hydropower-projects/.

[32] James Nisbit Hazlehurst, *Towers and Tanks for Water-Works: The Theory and Practice of their Design* (New York: John Wiley & Sons, 1901), 9-10, 135 and 144-145, http://books.google.com/books?id=nwZLAAAAMAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false. Accessed 7-8 July 2012.

[33] Paul E. Vanderlinde, *Bovey Water Tower, Itasca County, Minnesota*, Historic American Engineering Record No. MINN31-BOV-1 (1968), 5-6.

[34] Vanderlinde, *Bovey Water Tower*, 5-6; and Bryan Blackburn, "Elevated Tanks for Fire-Protective Service," *The Engineering Magazine* 44 (December 1912), 390.

eight Canadian provinces and several foreign countries. The average size of their tanks' carrying capacity ranged from between 2,500 to 2 million gallons.[35]

Like its predecessors, the University Heights elevated riveted steel plate water 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. Even during periods of peak demand and emergency situations, the amount of water inside the tank would be constant. Typically, when the storage tank's water level fell below a fixed point, an internal float triggered a nearby pumping station. A motorized pump would then send water stored in the nearby concrete reservoir up through a centrally located vertical inflow pipe or "riser" directly beneath the tower. When the tank had been refilled to capacity, the float would return to its original position, switching off the pump. A vertical outflow pipe situated adjacent to the inflow pipe sent water via gravity to households, businesses, fire hydrants, and other locations throughout the water distribution systems service range. The "lantern," a finial vent at the conical cap's apex, allowed the proper amount of air to enter or exit the water tank in order to facilitate the gravity-forced distribution system. The lantern also acted as an anti-siphon device preventing "air locks" from blocking the flow of water; or "negative pressure" from sucking contaminated groundwater back into a leaky water supply system. In addition, because they relied primarily on gravity, the water tank could operate during power outages; albeit, this was true as long as the tank was at full storage capacity.[36]

Besides its riveted steel plates, and full hemispherical ellipsoidal bottom, the University Heights elevated 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. Connected to the tower's 12 "Z" braced girder legs, they stiffened and protected the tower from lateral shear forces as well as keep compression loads from splaying the legs off their concrete footings. Perhaps the most eye-catching character-defining feature typical to all early twentieth century elevated metal water storage tanks is its high conical cap, topped by a small open-sided metal anti-siphon "lantern." Other minor, but important devices include a vertical steel service ladder and wooden water level gauge mounted on the tank's north-facing wall.[37]

Although no longer functioning as a water storage tank, over the past 88 years the University Heights elevated water storage tank has ingratiated itself into the surrounding community's

[35] Vanderlinde, *Bovey Water Tower*, 6; and Blackburn, "Elevated Tanks." 392.
[36] United States Department of the Interior, National Park Service, *Townsend Water Tower, City of Townsend, New Castle County, Delaware*, Historic American Engineering Record No. DE-24 (1990), 2.
[37] City of San Diego Operating Department, *Tank & Tower-University Hts.-Pittsburgh-Des Moines Steel Co.*, 1 sheet; Vanderlinde, *Bovey Water Tower*, 5-6; and Bryan Blackburn, "Elevated Tanks for Fire-Protective Service," 390.

consciousness.[38] Respondents to a recent informal on-line survey reported that, whether walking or driving in the area, they often use the tank as a visual landmark. Newcomers to the neighborhood use it as a navigational aide. Established residents refer to it in directing visitors to their homes: "Turn south on Oregon, first street west of the water tower." Another respondent echoed an earlier sentiment: "It has a quirky steam-punk charm that somehow reminds me of the Tin Man in the *Wizard of Oz*." Some have even incorporated the "Tin Man" into body art. Less permanent effigies have appeared in children's school coloring exercises and along parade routes during neighborhood appreciation days. Perhaps the following remark best explains the elevated water tank's evocation of a sense of place: "Whenever I fly back into town, I look out the window [of the airplane] and spot the water tower to find [my] neighborhood." "No," it continued, "it won't win any water tower beauty pageants, but it's like the slightly scrawny, yet beloved family pet that fills you with warmth as it welcomes you home."[39]

Developmental history/additional historic context information (if appropriate)

Earliest Development of San Diego's Municipal Water System: 1873-1895

While the University Heights Water Storage and Pumping Station Historic District's period of historical significance extends from 1924 to 1967, the district's history begins in 1898, when the *San Diego Water Company* [SDWCo] built a reservoir and pumping station at this location to store and deliver water pumped from wells in Mission Valley.[40] Incorporated in 1873, the SDWCo had originally supplied water directly to the homes of at least 2,000 of its San Diego customers (in what is now downtown San Diego) from a well located in Pound Canyon. Located in what is now the southern approach to the Cabrillo Freeway in Balboa Park, the wells pumped over 54,000 gallons of water per hour from an underground cavern. The SDWCo erected two large concrete tank reservoirs on two opposing mesas above the canyon. Water mains were laid to deliver water by gravity to the new homes and businesses being built along the waterfront.[41]

As the town expanded, it became necessary for the SDWCo to seek additional sources of potable water. The most logical source was the bed of the San Diego River along Mission Valley. Located some 3.8 miles northeast of downtown San Diego, the river had been a source of water since the Spanish first established a presidio and mission near the river's western mouth in 1769. In 1875, the SDWCo installed a pumping plant in the valley at the base of Sandrock Grade Road (today's Texas Street and Camino Del Rio South). Tapping the river's underground aquifer, the

[38] Alexander D. Bevil, *North Park Water Tower (a.k.a. "The Tin Man"), City of San Diego Historic Resources Inventory* (11 September 1989), 1-2. Due to a political reorganization of the surrounding neighborhood, the University Heights Water Treatment Plant is now within the community of North Park. However, the City's Municipal Water Department still refers to it as the "University Heights Water Treatment Plant." Hogue, Interview (2011).

[39] Katherine Hon, Electronic Mail Alexander D. Bevil (22 December 2011); and Alexander D. Bevil, "The Tin Man," 1-2. Note: The author of this nomination first recorded the local use of the name "Tin Man" when referring to the University Heights elevated water storage tank during his 1989 field survey and recordation.

[40] "Heights Gets Water Supply," *San Diego Tribune* (2 March 1907), n.p. On File at the San Diego Public Library, California Room.

[41] Fred D. Pyle, "History of San Diego City Water System," in *The History of San Diego County*, Carl H. Heilbron, ed. (San Diego: San Diego Press Club, 1936), 242; and Richard F. Pourade, *The History of San Diego: The Glory Years* (San Diego: Union-Tribune Publishing Company, 1964), 108.

Sandrock Grade Plant pumped some 2 million gallons of water a day up the Sandrock Grade Water Pipeline to a holding reservoir at the top of the 350-foot-high south grade overlooking the valley floor. An underground pipeline transported the water via gravity southwestward another mile and a half to what is now the community of Hillcrest. From here it travelled in a southerly direction to a storage reservoir at 5th and Hawthorne Streets above downtown San Diego. In spite of the company's guarantee that the water from its wells was of a "good pure quality," contemporary accounts offered a somewhat different opinion due to its high iron content: "First we boiled the water, then we strained it, then we boiled it again, then we drank something else."[42]

With the completion of a rail link to a transcontinental railroad in 1882, San Diego experienced a building boom as upwards of 2,000 new residents flocked to the area each month.[43] As a result, the SDWCo was hard-pressed to provide water for a San Diego's burgeoning population.[44] In response, in 1887 the SDWCo constructed an additional pumping station near the mouth of Mission Valley. Similar to the Sandrock Grade facility, steam-powered pumps transported San Diego River water up Presidio Hill, where it was stored in four covered reservoirs with a combined storage capacity of 6,600,000 gallons. A pipeline carried water from the reservoirs south across the Middletown plateau to downtown San Diego. However, in order to prevent a vacuum from stopping the flow of water in the pipeline, the company erected a 136-foot-tall 3-foot-diameter iron pressure regulating standpipe at the pipeline's tallest point just south of Presidio Hill.[45]

The City of San Diego wasn't the only area where the building boom of the 1880s had an effect. The extension of steam and electric rail lines into outlying areas had stimulated real estate sales in the neighboring communities of Coronado to the west, and National City and Chula Vista to the south, as well as in the eastern rural communities of Spring Valley, La Mesa, and El Cajon. It soon became apparent to real estate promoters, as well as civic leaders (whose roles, in the case of San Diego at this time, were often interchangeable) that San Diego's water supply was woefully inadequate to supply the growing needs of an ever-expanding population. They realized that, although the majority of the new towns and settlements were being laid out along the semi-arid coastline, there wasn't enough underground water on tap due to inadequate rainfall.

[42] "San Diego Water Company Has Completed Ditch across Mesa," *San Diego Union*, 12 September 1875 3; Elizabeth C. Mac Phail, *The Story of New San Diego* (San Diego: San Diego Historical Society, 1979), 55; Clarence McGrew, *City of San Diego and San Diego County*, vol. 1 (Chicago: The American Historical Society, 1922), 234-235; City of San Diego Water Department, *Historical Water Utilization* (1951), 17; Pourade, *The Glory Years* (1964), 141; Philip R.Pryde, "The Most Essential Resource: Water Supply for the County," in *San Diego: an Introduction to the Region*, Philip R. Pryde, ed. (San Diego: Sunbelt Publications, 2004), 131; and City of San Diego Water Department, "San Diego Water History," last modified 2011, http://www.sandiego.gov/water/gen-info/history.shtml.

[43] Alexander D. Bevil, *Cable Cars & Ostrich Feathers: a Walking Tour of the Mission Cliff Garden Site and the Surrounding Historic Neighborhoods of University Heights* (San Diego: Save Our Heritage Organisation, 1996), 1.

[44] MacPhail, *The Story of New San Diego* (San Diego: San Diego Historical Society, 1979), 106.

[45] City of San Diego, *Historical Water Utilization*, 17. Note: A standpipe is very similar in appearance to an upright cylindrical water storage tank. The difference between a standpipe and a reservoir is the former has a greater height-to-diameter ratio, while the latter has a greater diameter-to-height ratio. See: Chicago Bridge and Iron Company, "Elevated Storage Tanks: Standpipes and Reservoirs," last modified 2011.

Therefore, it would be a matter of necessity to impound the runoff flowing down from the eastern mountains. The latter, on average, experienced about forty inches of rain a year, as opposed to only 10 inches along the coast. The result was the initiation of one of the most extensive private and later public investments in a municipal water system in the United States.[46]

The earliest development was the *San Diego Flume Company*, which sought to impound the waters descending from the Cuyamaca Mountains. In 1887 the company constructed a dam across Boulder Creek and directed the waters from newly formed Lake Cuyamaca down a 31-mile-long aqueduct, which included wooden flumes, tunnels, and ditches through the rural farming communities of El Cajon, Spring Valley, La Mesa, and City Heights to San Diego. The following year, *the San Diego Land and Town Company* financed the construction of the 90-foot-high Sweetwater Dam. The highest dam in the United States at the time, it impounded the waters of the Sweetwater River, which also had its headwaters in the Cuyamacas, for the company's holdings in the National City-Chula Vista area. One year prior, Elisha S. Babcock formed the *Otay Water Company* to take over the *Mount Tecate Land and Water Company*'s efforts to build dams at across lower and upper Otay River and Cottonwood Creek to impound waters flowing from the San Ysidro Mountains. In addition to impounding water for his real estate interests on Coronado, including the Hotel del Coronado, the reservoirs also serviced the South Bay communities of Chula Vista, National City, and the rural communities along the U.S/Mexico International Boundary. Both reservoirs, as well as a third north of at La Mesa behind a dam that the San Diego Flume Company built in 1895, would have a critical role to play in the developmental history of the University Heights Water Storage and Pumping Station.[47]

The Development of University Heights as one of San Diego's Streetcar Suburbs: 1887-1898

Besides the actual or promise of an adequate supply of potable water, the second most important stimulus for San Diego's urban and suburban development during the late 1800s was the proliferation of electric street cars. Radiating out from downtown San Diego's urban center near the harbor area, they extended out into the surrounding windswept mesas overlooking Mission Valley's southern rim and East San Diego. Moreover, 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 expansion of the local water supply and waste delivery systems in conjunction with privately built electric streetcar routes out away from San Diego's downtown core coincided with a wave of speculative growth in San Diego's "Streetcar Suburbs." An outlying residential area whose growth and development were closely shaped by direct access to relatively reliable and cheap streetcar lines, streetcar suburbs proliferated across the United States, especially in the Midwest and Western states. Until the availability and affordability of

[46] MacPhail, *The Story of New San Diego*, 106; G. E. Arnold, "San Diego Water Supply Development Has Long and Interesting History," *Western City* 26 (October 1950): 40; Richard F. Pourade, *The History of San Diego: Gold in the Sun* (San Diego: Union-Tribune Publishing Company, 1965), 36; and Imre E. Quastler and Philip R. Pryde, "San Diegans on the Move: Transportation in the County," in *San Diego: an Introduction to the Region*, Philip R.Pryde, ed. (San Diego: Sunbelt Publications, 2004): 184-185. Pryde, "The Most Essential Resource," 128.
[47] MacPhail, *The Story of New San Diego*, 106-107; Pyle, "History of San Diego City Water System," 243; and Pryde, "The Most Essential Resource," 129.

mass-produced automobiles, the electric streetcar was the primary factor behind the growth of American cities between 1890 and 1928. During this time period, the expansion of privately owned electric streetcar lines, along with power and water utilities into San Diego's outlying areas, would play a major symbiotic role in the creation of modern San Diego.[48]

One of the oldest of San Diego's streetcar suburbs that sprang up during San Diego's 1880s "Railroad Boom" was the community of University Heights, which the *College Hill Land Association* had surveyed and platted in 1887. A large tract of land situated roughly between Cabrillo Canyon and Sandrock Grade south of Mission Valley, it was less than twenty minutes away from downtown San Diego via then-existing inter-urban steam trains and electric-powered streetcars. To stimulate sales, the syndicate advertised that the subdivision would become the home of the prestigious *San Diego College of Arts and Letters*. Part of the total cost of each individual lot sold would go into a college building fund, guaranteeing the school's construction and maintenance. However, the collapse of San Diego's speculative real estate boom in 1889, followed by an ensuing nation-wide economic depression in the early 1890s, quashed any attempts to build a college of higher learning in University Heights.[49]

Nevertheless, by the early 1900s, San Diego's speculation-driven economy was on the rise, particularly in University Heights. In 1898, a consortium of civic, educational, and business leaders were finally successful in bringing an institution of higher learning to the area. The site of the aborted San Diego College of Arts and Letters now housed the new campus of the *San Diego State Normal School*, the forerunner of today's *San Diego State University*. Other improvements that attracted new residents to the area were the Mission Cliff Gardens, a five-acre park with landscaped grounds and an attractive pavilion located at the end of Park Boulevard. Formerly known as *The Bluffs*, and later as *Mission Cliff Park*, the *San Diego Cable Railway*, and later *Citizens Traction Company*, had improved and promoted the park as an end-of-line attraction to promote ridership and land sales along property it owned along the right-of-way. The *San Diego Electric Railway Company* [SDERy], which had purchased the entire streetcar line in 1898, renamed the park the *Mission Cliff Gardens*.[50]

University Heights Standpipe-1898

Perhaps more important to the development of University Heights and other streetcar suburbs was the availability of clean potable water for domestic and commercial use, as well as for waste disposal and fire protection. As mentioned earlier, the SDWCo had already installed a water pipeline across what is now University Heights from Sandrock Grade to Hillcrest. However, there was no provision to store and distribute water east of Mission Cliff Gardens. Therefore, it would be necessary to divert some of the Mission Valley water into a storage reservoir. To

[48] MacPhail, *The Story of New San Diego*, 95; Quastler and Pryde, "San Diegans on the Move" (2004): 185 Bevil, *Cable Cars & Ostrich Feathers*, 2; and David L. Ames and Linda Flint McClelland, *National Register Bulletin: Historic Residential Suburbs, Guidelines for Evaluation and Documentation for the National Register of Historic Places* (National Park Service, Washington D.C., 2002), 17-18.
[49] Bevil, *Cable Cars & Ostrich Feathers*, 1; and Alexander D. Bevil, *Georgia Street Bridge, National Register of Historic Places Listing No. 99000158* (02 December 1999), Section 8:2.
[50] Bevil, *Cable Cars & Ostrich Feathers*, 2-3.

facilitate this, the SDWCo acquired Block 122 of the University Heights Addition from the College Hill Land Association sometime between 1894 and 1895.[51] Located at an elevation of 385 feet above sea level in the addition's eastern section, the 2.47-acre parcel fronted El Cajon Avenue [sic] on the north, Howard Avenue on the south, and Oregon and Idaho Streets on its respective west and east sides.[52] Two years later, in 1897, the College Hill Land Association donated funds for the SDWCo to erect a metal stand pipe on the site.[53] Completed in 1898, engineers estimated that the weight of 160,000 gallons of stored water inside the stand pipe would provide enough hydrostatic pressure to send water to outlying homes and businesses, as well provide for adequate fire protection.[54]

Municipal Acquisition and Expansion: 1901-1912

After a lengthy drought, in 1900 the people of San Diego voted to de-privatize and manage their own water supply system. The following year the newly formed City of San Diego Municipal Water Department obtained the water rights to, as well as the storage and distribution system of the San Diego Water Company within the City's corporate limits for $500,000. This included the transfer of ownership and operation of the University Heights standpipe.[55] Five years later, in 1906, the Water Department entered into a contract with the Southern California Mountain Water Company by which the latter would provide 7,776,000 million gallons of potable water a day from its Otay River-Cottonwood Creek water system. In order to do so, it had to construct an 11-mile-long section of twenty-four-inch-diameter riveted steel pipe between its Otay-Coronado Pipe Line north to the 435-foot high Chollas Heights Reservoir. Located approximately six miles east of downtown San Diego, water first flowed through sand filters at the Chollas Heights water filtration plant before it entered the City's mains via a twenty-four-inch-diameter wooden pipe line. Another pipe line directed filtered water from Chollas 4.5 miles to the northwest to the

[51] County of San Diego, Office of the Assessor, *Tax Assessment "Lot" Books for University Heights, San Diego* (1895), 279.
[52] County of San Diego, Office of the Assessor, *Tax Assessor's Map*, Book 445, Page 43 (1987), sheet 1 of 2; United States Department of the Interior, *Geographical Survey, La Jolla, California*. Topographic Map (1953).
[53] County of San Diego, Office of the Assessor, *Tax Assessment "Lot" Books for University Heights, San Diego* (1896), 50; and "Heights Gets Water Supply," *San Diego Tribune* , n.p.
[54] City of San Diego Water Department, *University Heights Reservoirs: General Arrangement and Detail*, Document No. 2341 (November 1912), 1 sheet; Sanborn Map Company, *Sanborn Fire Insurance Maps of San Diego, California*, vol. 3 (1921), sheet 354; City of San Diego Water Department, Division of Development and Conservation, *University Heights Layout*, Drawing No. WD-595, File No. 2760, D3 (September 1937, revised 3 March 1945), 1 sheet; and Gary Hogue [Retired Senior Civil Engineer, City of San Diego Public Utilities Department, Water and Waste Water], *Interview with Alexander D. Bevil* (22 July 2011). Note: According to Mr. Hogue, the gravitational pressure exerted by water in a closed system, the ratio of head pressure must be greater than pressure loss in a closed system. If the total pressure loss in a piping system exceeds the available head pressure, the water will not flow. See: Base Products Corporation, "Alphabetical Listing of Commonly Used Plumbing Terms," last modified 2011, http://www.basepump.com/Common%20Terms.htm.
[55] City of San Diego, Property Department, *Land Acquisition Record, University Heights Block 122* (5 May 1995), 1; County of San Diego, Office of the Assessor, *Tax Assessment "Lot" Books for University Heights, San Diego* (1902), 43; Pyle, "City Water System," 242; and City of San Diego, *Historical Water Utilization*, 8 and 18.

University Heights Standpipe. The latter would no longer have to depend on water purchased from the San Diego Flume.[56]

Assured of a relatively abundant supply of water, San Diego experienced another wave of speculative real estate activity. The leading impetus for the boom was the 1902 announcement of the United States federal government's building of the Panama Canal. San Diego's boosters reasoned that the canal would turn San Diego into a major American port of call in a new era of trans-Atlantic/Pacific sea trade.[57] In addition, local financier John D. Spreckels announced that he would begin construction of another railroad connecting San Diego's harbor to the man line of the *Southern Pacific Railroad* at El Centro, in the Imperial Valley. Just as the coming of the transcontinental railroad had stimulated growth twenty years earlier, the announcement of Spreckels' railroad and Panama Canal projects would result in a $6 million increase in new construction, and a nearly 50 per cent increase in the city's population between 1902 and 1910.[58]

In addition to the new *San Diego & Arizona Railroad,* Spreckels had a controlling interest in the SDERy. Spreckels, who believed that "transportation determines the flow of population," advocated the current trend in American city planning that electric streetcar lines were the best stimuli for suburban development. As early as 1891, Spreckels had initiated the modernization and expansion of San Diego's existing electric and steam-powered rail lines into outlying suburban areas. Two route extensions along Adams Avenue and University Avenue in 1907 had a profound effect on suburban development along University Heights' respective northeastern and southeastern boundaries.[59] Indeed, the SDERy's policy of low fares, free transfers, and dependable service, in collaboration with aggressive real estate developers, stimulated suburban growth. Access to cheap land encouraged young families, as well as small business owners, to build single-family homes and start businesses, not only in University Heights, but in one of nine new neighborhoods that sprung up along either the Adams or University Avenues streetcar lines like Normal Heights, Kensington Park, North Park, and City Heights. City Heights' growth, in particular, which rose from 400 to 4,000 residents, resulted in its incorporation on November 7, 1911 as East San Diego.[60]

The expansion of San Diego's northern "streetcar suburbs," as well as older residential, business, and commercial districts placed a greater demand on the Municipal Water Department's water storage and delivery system. With hundreds of prospective new homes and businesses being built, they would all require water for personal use, as well as fire protection. Without increased

[56] Pyle, "City Water System," 243; Pourade, *Gold in the Sun*, 36; San Diego Water Department, "*San Diego Water History*;" and Austin H. Adams, "Southern California Mountain Water Company Map," in *The Story of Water in San Diego: and What the Southern California Mountain Water Company Has Done to Solve the Problem* (Chula Vista: Denrich Press, ca. 1905), n.p.
[57] Pourade, *Gold in the Sun*, 4, 5, 112 and 264; and Bevil, *Cable Cars & Ostrich Feathers*, 5.
[58] Bevil, *Cable Cars & Ostrich Feathers*, 5; and Bevil, *Georgia Street Bridge*, Section 8:2.
[59] Bevil, *Cable Cars & Ostrich Feathers*, 5; Richard V. Dodge, *Rails of the Silvergate: the Spreckels San Diego Empire* (San Marino: Golden West Books, 1960), 23, 42-43; and Ames and McClelland, *Historic Residential Suburbs*, 20.
[60] Bevil, *Cable Cars & Ostrich Feathers* (1996), 5; Ames and McClelland, Historic Residential Suburbs, 18; and Bevil, *Georgia Street Bridge*, Section 8: 2.

sources of water, suburban development would come to a standstill. As a result, the City of San Diego began an ambitious water acquisition program that would remain ongoing for the next 90 years.[61]

The first step on San Diego's quest for water began in 1912, when John D. Spreckels, who now owned a controlling interest in the Southern California Mountain Water Company, announced that he would sell the company, including its entire storage and delivery system, in order to help pay off the San Diego & Arizona Railroad's mounting debt. In response, between February and August 1913, the City of San Diego purchased the water company for $4 million, and an option to buy the site of the future Morena Reservoir for $1.5 million by 1914. That year, it built a water treatment plant at Otay Lake to supplement the one at Chollas Heights. Within nine years, it would complete the Morena Dam and link its reservoir and the Cottonwood Creek watershed with the City's water supply at Lower Otay Lake. The City's acquisition of the former Southern California Mountain Water Company's infrastructure created a municipally-owned and operated water supply system that delivered over 13 million gallons a day "from mountain to meter" to over 39,000 residents. In addition, the deal added much-needed capital into the continued building of the San Diego & Arizona Railroad. By doing so, it had a "trickle-down" effect on the local economy, providing jobs and opportunities for investment. All of which attracted more residents, who purchased homes in San Diego, especially in its outlying streetcar suburbs.[62]

The increased demand of water storage and distribution for an ever-expanding city did not leave the renamed *University Heights Water Storage and Pumping Station* idle. University Heights, along with the rest of the early twentieth century streetcar suburbs were transforming San Diego into a substantial city. Because of the value of existing and future homes, businesses, churches, and schools in the area, as well as the health and welfare of hundreds of residents, the City Engineer and fire insurance companies urged city leaders to invest in fire prevention. During a major conflagration, they argued, the existing University Heights water reservoir would dry up, and the city would be forced to depend on the Chollas Heights Reservoir's wooden water supply pipe. Part of the solution would be the latter's replacement with a new thirty-inch-diameter cast iron pipe, and expand the water storage, treatment, and distribution capabilities at University Heights.[63]

New University Heights Water Reservoir and Upright Metal Stand Pipe Constructed: 1908-1913

The first major improvement to the University Heights Water Storage and Pumping Station occurred in 1908, when City Engineer A. F. Growell designed and supervised the installation of a partially buried concrete reservoir along the western perimeter of Block 122 along Oregon

[61] Bevil, *Cable Cars & Ostrich Feathers*, 5; Ames and McClelland, Historic Residential Suburbs, 18; and Bevil, *Georgia Street Bridge*, Section 8: 2.
[62] Pyle, "City Water System," 243; Arnold, "San Diego Water Supply," 44; City of San Diego, Water Utilization, 8; Pourade, *Gold in the Sun*, 175 and 264; Bevil, *Cable Cars & Ostrich Feathers*, 5; and San Diego Water Department, "Water History."
[63] City of San Diego Water Department, "The Story of Water" (n.d.), n.p. On File at the City of San Diego Public Library, Special Collections.

Street.[64] Stretching from El Cajon Boulevard south to Howard Avenue, the 337.60 foot long by 150 foot wide by 10 foot deep reservoir would hold 3.172 million gallons of water from the newly acquired Otay/Chollas water supply line.[65] In order to provide adequate head pressure within the system, in 1910 City Engineer Edwin M. Capps designed and installed a 52.2-foot high by 40-foot-diameter 490,660 gallon-capacity upright cylindrical metal water stand pipe near the reservoir. A worker in a chlorination house on the reservoir's northeast corner monitored the addition of liquid chlorine into the water to prevent contamination.[66]

In order to provide an adequate reserve of water at the University Heights Water Storage and Pumping Station, on April 14, 1905 the City of San Diego purchased all of Block 151 south of the 1908-built concrete reservoir from the College Hill Land Association. The purpose was for the City Engineer to design and supervise the construction of an additional 17.5 million gallon capacity concrete water storage reservoir south of Howard Avenue. Because it was built on gradual slope, the depth of the new 600 foot long by 300 foot wide concrete reservoir graduated from approximately 12 to 20 feet deep.[67] Wooden boards covered both the new *South University Heights Reservoir* and the smaller *North University Heights Reservoir* to prevent evaporation, contamination, and neighborhood children from using them as swimming holes. After the completion of the south reservoir, the north reservoir became a holding tank for sludge flushed out of the south reservoir.[68]

Concurrent with the installation of the south reservoir was the installation of larger water distribution pipe lines from the University Heights Water Storage and Pumping Station to the city's water mains. Between 1913 and 1914 city Water Department crews excavated trenches along the southern perimeter of El Cajon Boulevard to install 12-inch, 24-inch, and 35-inch water distribution pipe lines from the facility. Many of these are still in place and in use after almost 100 years of service.[69]

[64] A. F. Growell, City Engineer, City of San Diego, *Plans for Reservoir to Be Erected on Block 151, University Heights Showing Arrangement of Pipes and Connections* (28 September 1908), 1 sheet.
[65] City of San Diego Water Department, *University Heights Reservoirs: General Arrangement and Detail*, Document No. 2341 (November 1912), 1 sheet; City of San Diego Water Department, Division of Development and Conservation, *University Heights Layout*, Drawing No. WD-595, File No. 2760, D3 (September 1937, revised 3 March 1945), 1 sheet; Sanborn Map Company, *Sanborn Fire Insurance Maps of San Diego, California*, vol. 3 (1921), sheet 354.
[66] Edwin M. Capps, City Engineer, City of San Diego, *Plan of Water Tower, Block 122 University Heights, San Diego, California*, Document No. 892-W (March 1910), 1 sheet; and Sanborn, Insurance Maps (1921), sheet 354.
[67] City of San Diego, *University Heights Reservoirs: General Arrangement and Detail*, Document No. 234 (November 1912), 1 sheet.
[68] City of San Diego, Property Department, Land Acquisition Record, University Heights Block 151, 5 May 1995; Sanborn Insurance Map Company, *Insurance Maps of San Diego, California*, vol. 3 (1921), sheet 349 and vol. 3 (1948), sheet 354; and City of San Diego Public Library, Historic Photograph Collection, *University Heights Reservoir—Cracks and Holes in Wood Covering*, Photograph No. 791 (16 August 1927).
[69] San Diego History Center, Photograph Collection, *El Cajon Blvd. near Louisiana—View East, 1913*, Photograph #15992; and Sanborn, Insurance Maps (1921), sheet 354.

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Previous documentation on file (NPS):

_____ preliminary determination of individual listing (36 CFR 67) has been requested
_____ previously listed in the National Register
_____ previously determined eligible by the National Register
_____ designated a National Historic Landmark
_____ recorded by Historic American Buildings Survey # _____
_____ recorded by Historic American Engineering Record # _____
_____ recorded by Historic American Landscape Survey # _____

Primary location of additional data:

_____ State Historic Preservation Office
_____ Other State agency
_____ Federal agency
__X__ Local government
_____ University
__X__ Other
Name of repository: San Diego History Center

Historic Resources Survey Number (if assigned): N/A

10. Geographical Data

Acreage of Property 7.67

Use either the UTM system or latitude/longitude coordinates

Latitude/Longitude Coordinates
Datum if other than WGS84:_____
(enter coordinates to 6 decimal places)

1.	Latitude:	32.755097°	Longitude:	-117.135007°
2.	Latitude:	32.755100°	Longitude:	-117.133949°
3.	Latitude:	32.752213°	Longitude:	-117.133941°
4.	Latitude:	32.752240°	Longitude:	-117.135005°

Or
UTM References
Datum (indicated on USGS map):

☐ NAD 1927 or ☐ NAD 1983

1.	Zone:	Easting:	Northing:
2.	Zone:	Easting:	Northing:
3.	Zone:	Easting:	Northing:
4.	Zone:	Easting :	Northing:

Verbal Boundary Description

The boundary of the nominated property is delineated by a dashed line on the accompanying map in the Additional Documentation Section entitled “Aerial Photo/Sketch Map of Historic District.” The district’s northern boundary begins at the southeast corner of the intersection of El Cajon Boulevard and Oregon Avenue. It continues 345 feet in an easterly direction across the northern perimeter of Block 122 to a point at the southwest corner of El Cajon Boulevard and Idaho Street. The district’s eastern boundary travels from this point 370 feet due south along Block 122’s eastern perimeter to Block 122’s southeastern corner at Polk

Avenue. The boundary continues another 57 feet across Polk Avenue to the northeastern corner of Block 151 near the southwest corner of Howard Avenue and Idaho Street. The district's eastern boundary continues unbroken for another 630 feet to Block 151's southeastern corner. The latter is located at the northwestern corner of Idaho Street and Polk Avenue. The district's southern boundary continues due west from this point 345 feet along the northern edge of a closed section of Polk Street to Block 151's southwest corner. The district's western boundary begins at this point and continues due north to a point where it meets the point of origin at the northwest corner of Block 122.

Boundary Justification

The boundary encompasses three sections of land that contain a significant concentration of buildings, structures, and sites associated with the district's 1924 to 1967 period of historic significance. The district's boundary generally follows the historic property lines of city Block 122, 151, and a 42–foot wide by 300-foot long section of Howard Avenue, a dedicated City Street that separated the two city blocks.

Property Owner

City of San Diego

c/o Office of the City Clerk

202 "C" Street

San Diego, California 92101

11. Form Prepared By

name/title: Alexander D. Bevil
organization: North Park Historical Society
street & number: 2226 Dwight Street
city or town: San Diego state: CA zip code: 92104
e-mail alexdbevil@yahoo.com
telephone: 619-692-6212
date: 29 July 2012

Additional Documentation

Photograph Log

Name of Property:	University Heights Water Storage and Pumping Station Historic District
City or Vicinity:	San Diego
County:	San Diego
State:	California
Name of Photographer:	Alexander D. Bevil
Date of Photographs:	June 2012
Location of Original Digital Files:	4752 Mt. Longs Dr., San Diego, CA 92117

Photograph #1: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0001
West elevation of water tower, camera facing east on Howard Avenue

Photograph #2: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0002
Northeast corner elevation of water tower and regulating reservoir, camera facing southwest on the northeast corner of El Cajon Boulevard and Idaho Street

Photograph #3: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0003
Southwest corner elevation of water tower, regulating reservoir, and the sites of the Howard Avenue water filtration plant, and "raw water" concrete reservoir, camera facing northeast off the southwest corner of Oregon Street and Howard Avenue

Photograph #4: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0004
Southwest elevation of water tower, regulating reservoir, caretaker's residence, sports concession building, and the sites of the Howard Avenue water filtration plant, and "raw water" concrete reservoir, camera facing northeast off Howard Avenue from the site of the "raw water" concrete reservoir

Photograph #5: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0005
South elevation of caretaker's residence and regulating reservoir, camera facing north from Howard Avenue

Photograph #6: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0006
Southeast elevation of water tower, pump house, chlorinating house site, regulating reservoir and sports concession building, camera facing northeast southwest from Howard Avenue

Photograph #7: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0007
South elevation of pump house and chlorinating house site, camera facing north

Photograph #8: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0008
Interior of pump house, camera facing east at water valves and electrical control panels

Photograph #9: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0009
Overhead view into interior of El Cajon pipeline valve vault, camera facing northeast

Photograph #10: CA_San Diego County_University Heights Water Storage Pumping Station Historic District_0010
Northeastern corner of “raw water” concrete reservoir site (North Park Recreation Center), camera facing south

Contributing Resources

1. Elevated Metal Water Tank
   One Contributing Structure
   Built: 1924
   Aerial Photo/Sketch Map #1
   Historic Photographs #3-4, 6-8
   Photographs #1-5, 9
2. Regulating Water Reservoir
   One Contributing Structure
   Built: 1952
   Aerial Photo/Sketch Map #2
   Historic Photograph #8
   Photographs #2, 3, 9
3. Pump House
   One Contributing Structure
   Built: 1952
   Aerial Photo/Sketch Map #3
   Historic Photograph #7
   Photographs #5-6
4. Caretaker's Residence
   One Contributing Building
   Built: ca. 1924; Relocated to this Location: 1952
   Aerial Photo/Sketch Map #4
   Historic Photograph #7-8
   Photographs #4, 8
5. El Capitan Pipeline Valve Vaults
   Two Contributing Structures
   Built: 1935
   Aerial Photo/Sketch Map #5
   Historic Photograph #7
   Photographs #6-7
6. Chlorinating House Site
   One Contributing Site
   Built: ca. 1924; Removed: ca. 1998
   Aerial Photo/Sketch Map #6
   Historic Photograph #7
   Photographs #5-6

7. Howard Avenue Water Filtration Plant Site
   One Contributing Site
   Built: ca. 1928; Expanded 1935; Removed: ca. 1952
   Aerial Photo/Sketch Map #7
   Historic Photographs #5-7
   Photographs #3-4

8. Howard Avenue Underground Valve Vault
   One Contributing Structure
   Built: ca. 1924
   Aerial Photo/Sketch Map #
   Historic Photograph #7
   Photograph #5

9. South "Raw Water" Concrete Reservoir Site
   One Contributing Site
   Built: 1912; Demolished: 1967
   Aerial Photo/Sketch Map #
   Historic Photograph #2, 6-8
   Photograph #10

Non-Contributing Resources:

10. Roof-top Soccer Fields
    Two Non-contributing Structures
    Built: ca. 2000-2001
    Aerial Photo/Sketch Map #10
    Historic Photograph #N/A
    Photograph #9

11. Sports Concession Building
    One Non-contributing Building
    Built: ca. 1970
    Aerial Photo/Sketch Map #11
    Historic Photographs #N/A
    Photographs #4-5

12. Howard Avenue
    One Non-contributing Structure
    Built: 1952 (est.)
    Aerial Photo/Sketch Map #11
    Historic Photographs #N/A
    Photographs #3-5

13. North Park Recreation Center
    a. Trees and Lawn Area
       One Non-contributing Site
       Built: 1968 (est.)
       Aerial Photo/Sketch Map #13a
       Photographs: 3, 4 & 10

    b. Recreation Building/Outdoor Sports Court
       One Non-contributing Building
       Built: 1968 (est.)
       Aerial Photo/Sketch Map #13b
       Photograph: 3

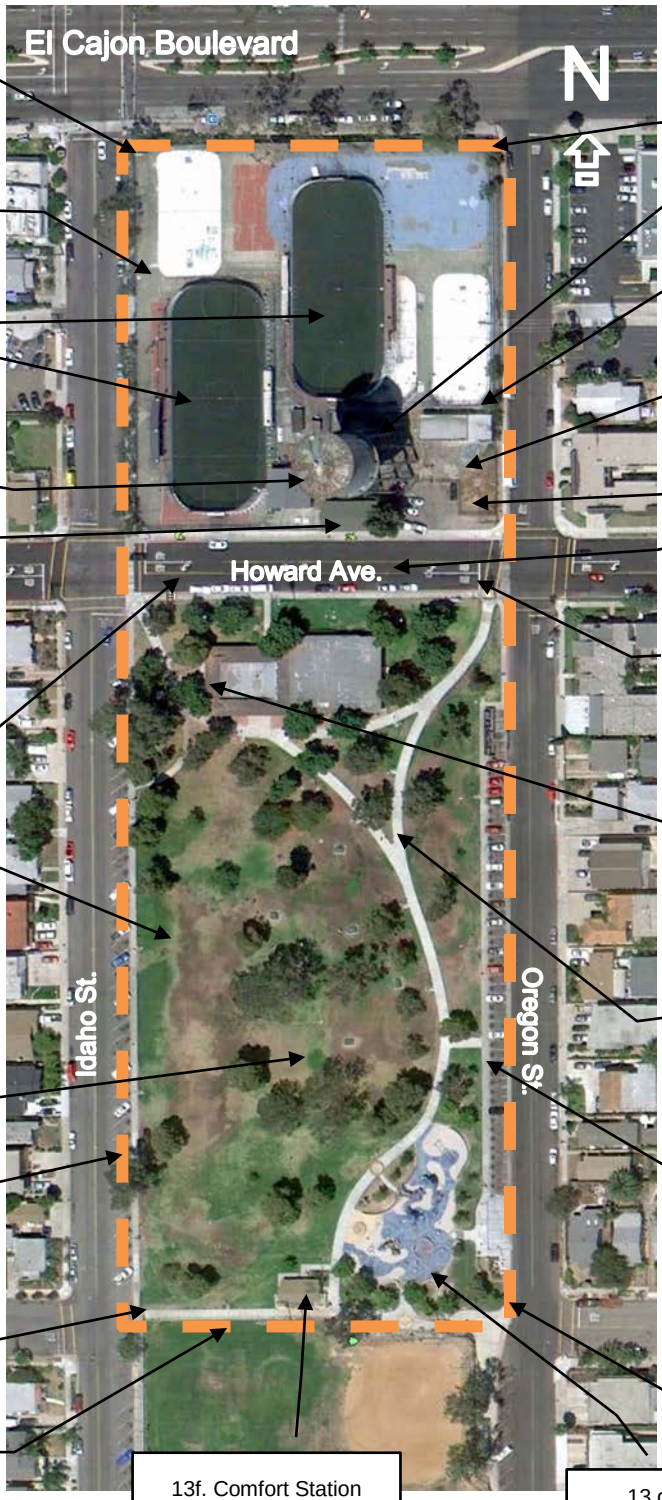
    c. Curvilinear Concrete Pathways
       One Non-contributing Structure
       Built: 1967 (est.)
       Aerial Photo/Sketch Map #13c
       Photographs: 3 & 10

    d. Children's Playground
       One Non-contributing Structure
       Built: 1990 (est.)
       Aerial Photo/Sketch Map #13d
       Photographs: 10

    e. Oregon Avenue Parking Strip
       One Non-contributing Structure
       Built: 1968 (est.)
       Aerial Photo/Sketch Map #13e
       Photographs: 10

    f. Comfort Station
       One Non-contributing Structure
       Built: 1968 (est.)
       Aerial Photo/Sketch Map #13f
       Photographs: 10

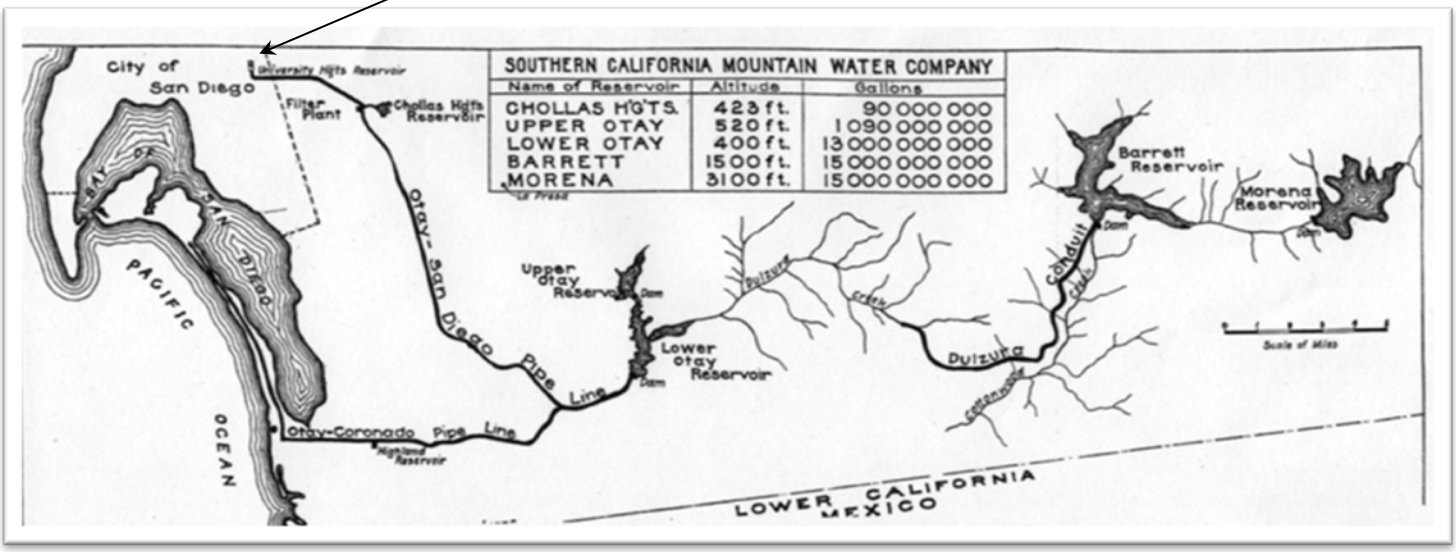
Aerial Photo/Sketch Map of Historic District
Scale: 1"=165'



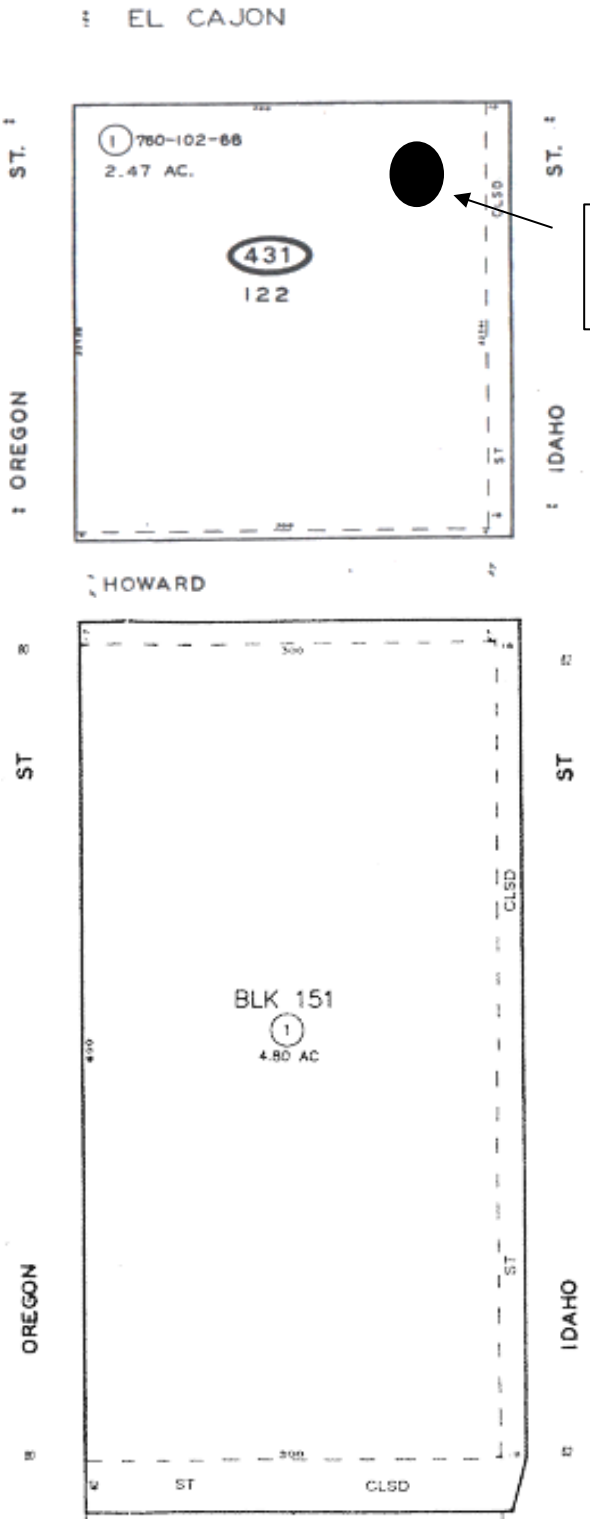
Lat/Long Coordinates #1
2. Regulating Water Reservoir
10. Roof-top Soccer Fields
4. Caretaker's Residence
11. Sports Concession Building (Non-contributing)
7. Howard Avenue Water Filtration Plant Site
9. South "Raw Water" Reservoir Site
13a Trees and Lawn Area (Non-contributing)
District Boundary
Lat/Long Coordinates #4
Polk Ave. (Street Closed)
13f. Comfort Station (Non-contributing)
13.d. Children's Playground (Non-contributing)
Lat/Long Coordinates #3
13e. Oregon Ave. Parking Strip (Non-contributing)
13c.Curvilinear Concrete Pathways (Non-contributing)
13b. Recreation Building/Outdoor Sports Court (Non-contributing)
8. Howard Avenue Underground Valve Vault
12. Howard Avenue
6. Chlorinating House Site
5. El Capitan Pipeline Valve Vaults
3. Pump House
1. Elevated Metal Water Tank
Lat/Long Coordinates 2

Map Showing the Location of the University Heights Water Storage and Pumping Station within the Context of the San Diego's Water Distribution Network, ca. 1905

University Heights Reservoir and Pumping Station



Historical Evolution of the District's Development
Blocks 122, 151 and Howard Avenue
1898-1907

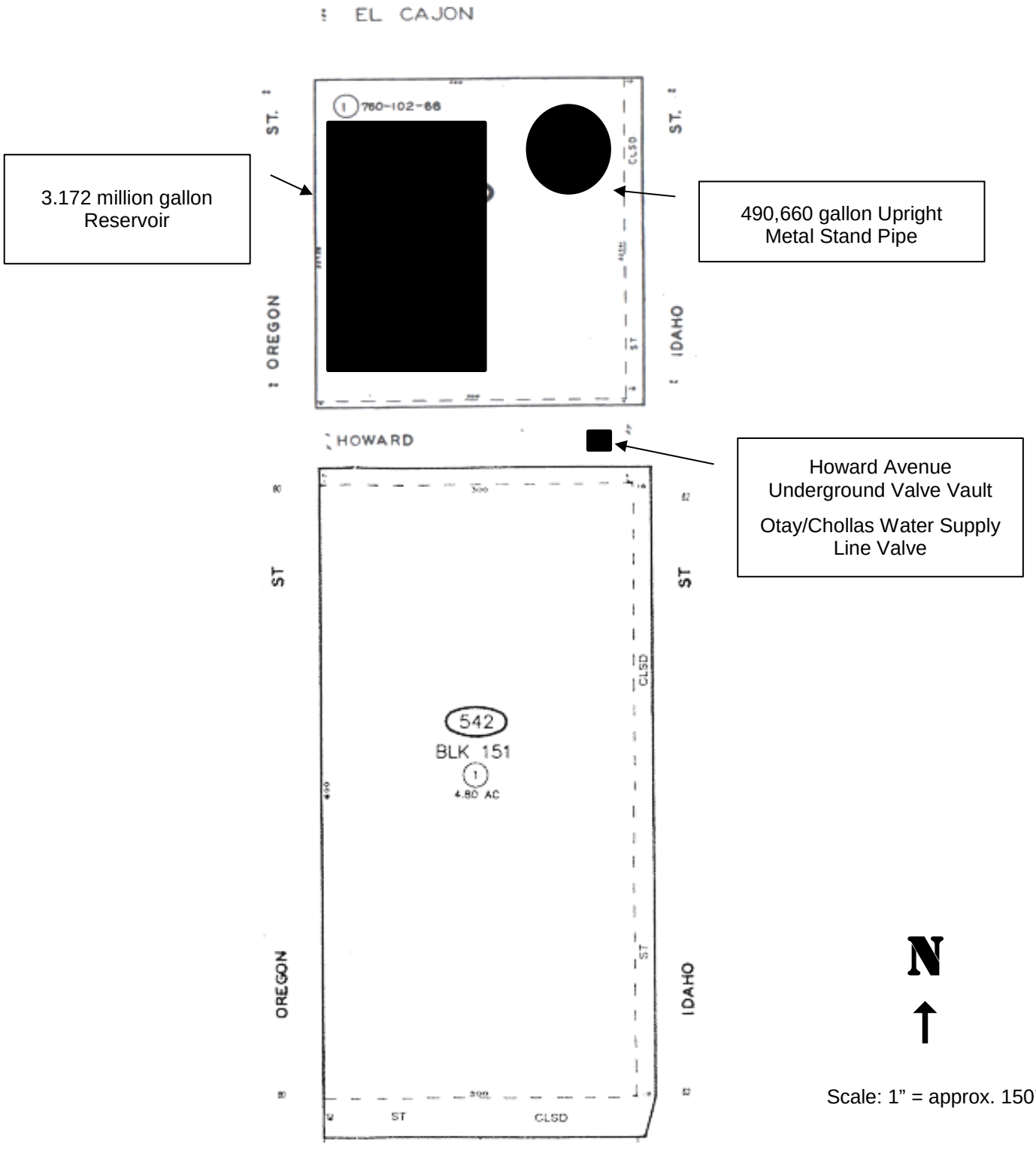


160,000 gallon Upright Metal Stand Pipe (Approximate Location)

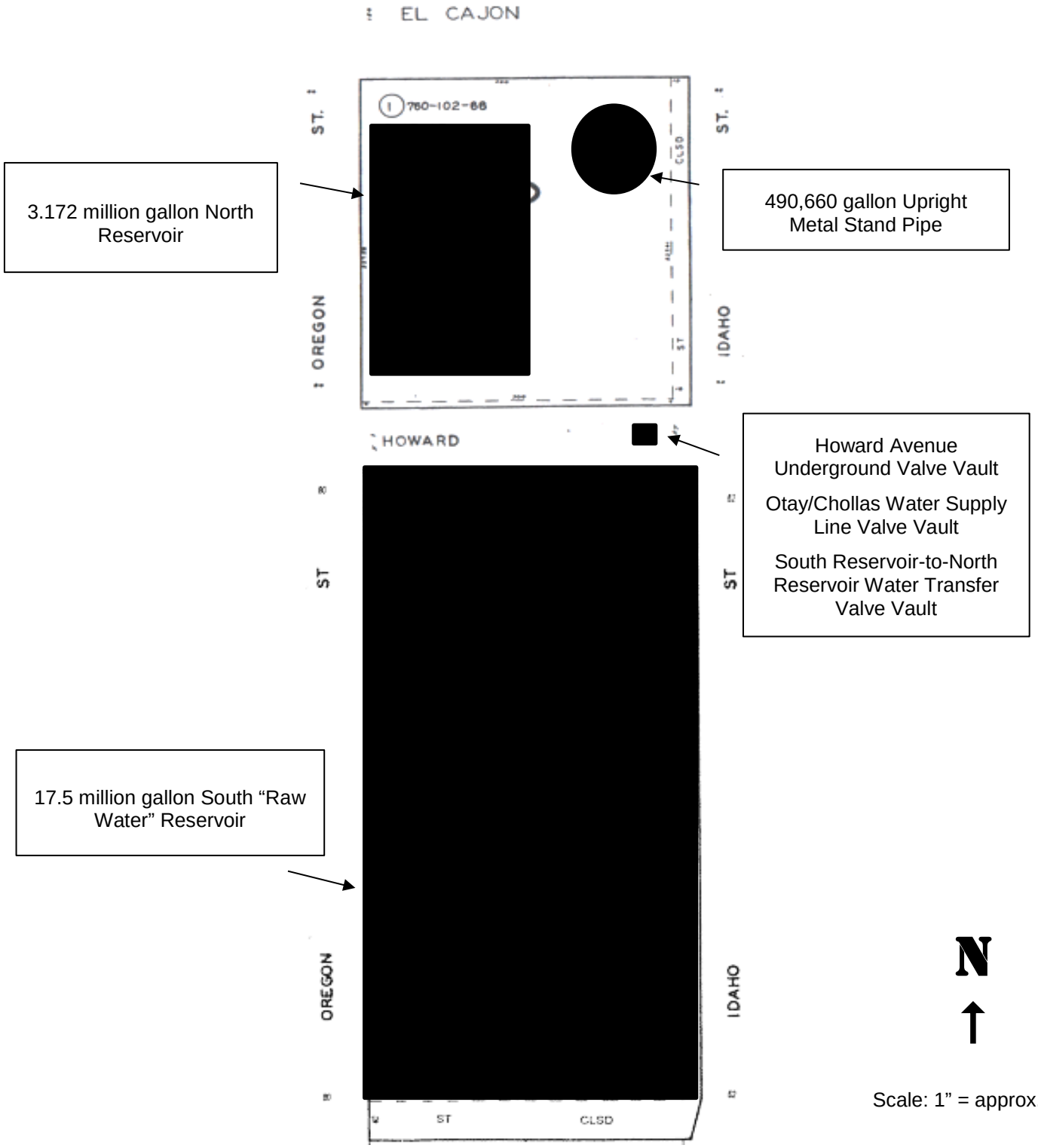
N

Scale: 1" = approx. 150'

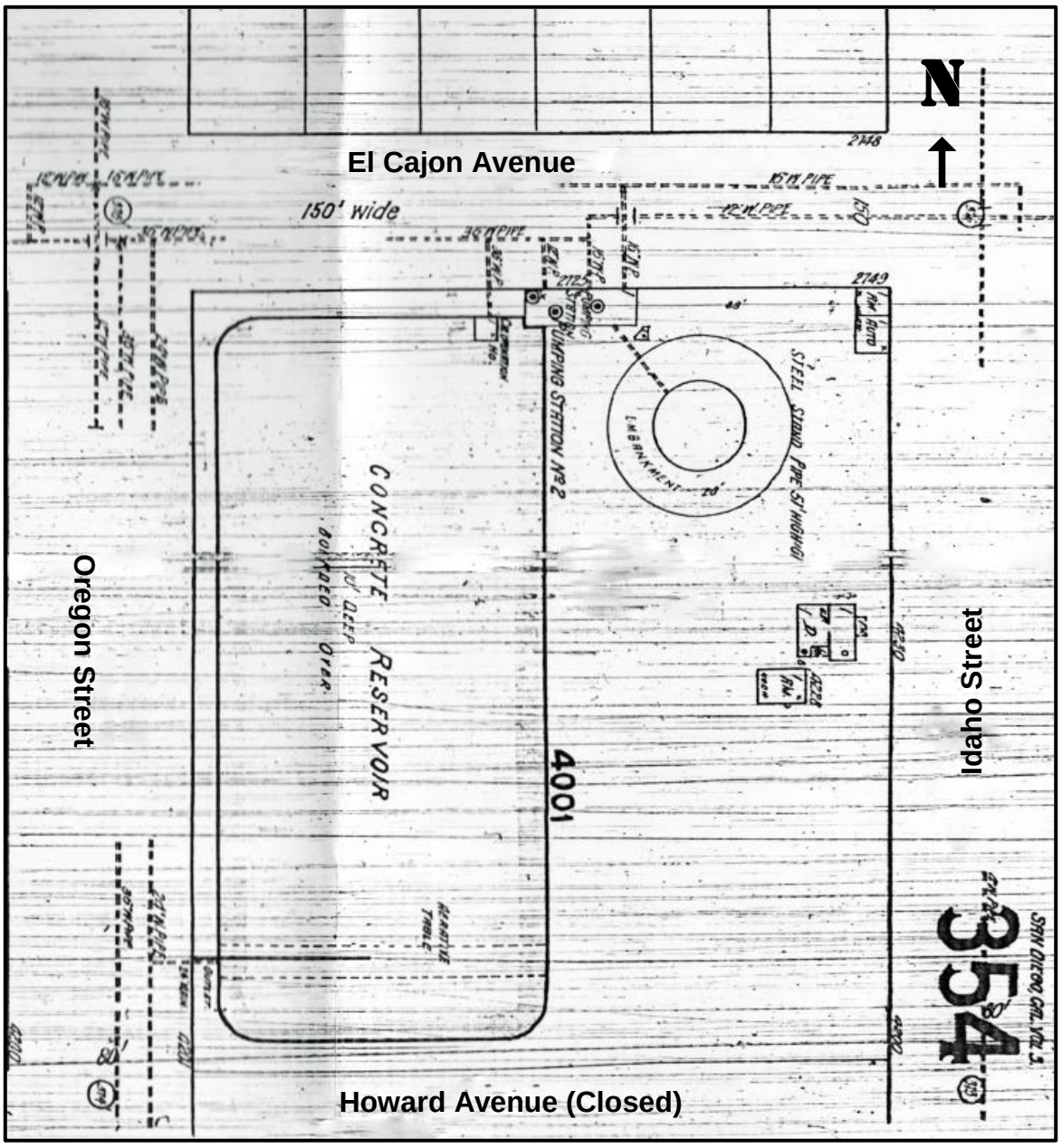
Historical Evolution of the District's Development
Blocks 122, 151 and Howard Avenue
1908-1912



Historical Evolution of the District's Development
Blocks 122, 151 and Howard Avenue
1913-1923



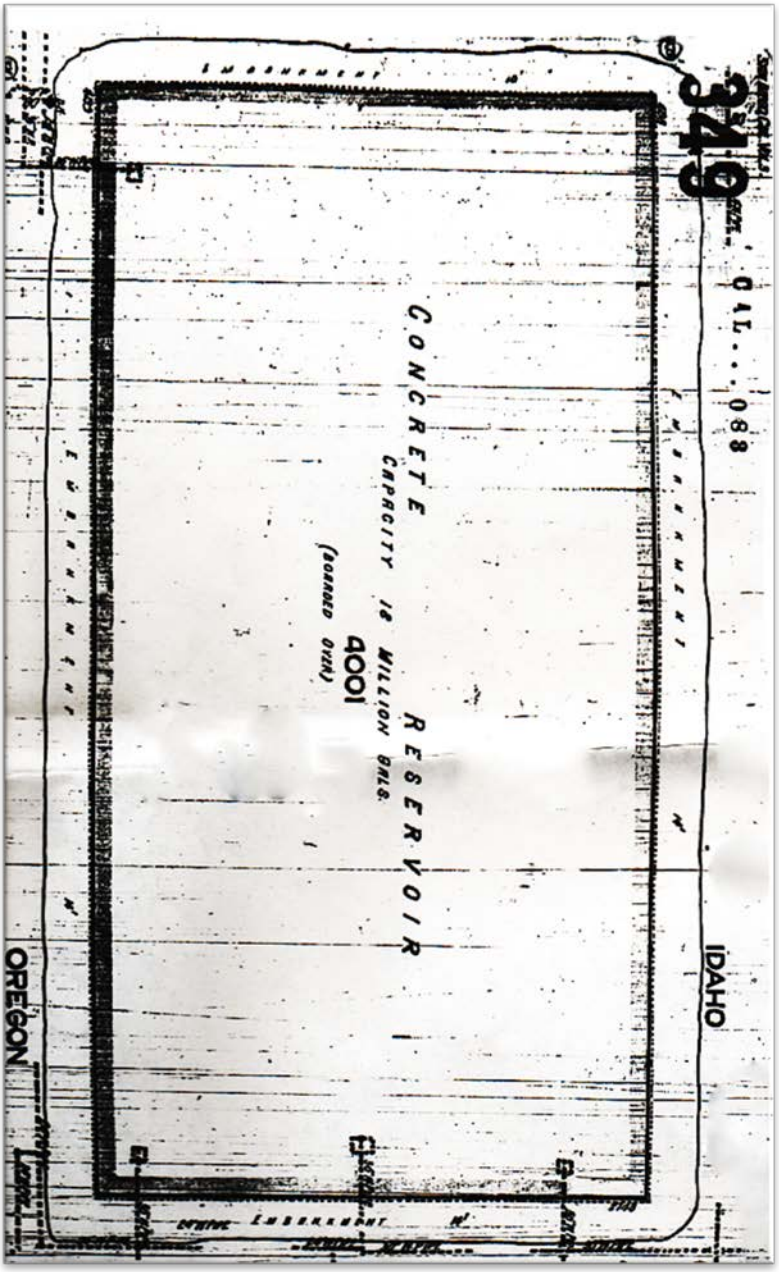
Historical Evolution of the District's Development
Block 122
1921
Sanborn Insurance Map, San Diego, Vol. 3, Sheet 354, 1921



Map Not to Scale

Historical Evolution of the District's Development
Block 151
1920
Sanborn Insurance Map, San Diego, Vol. 3, Sheet 349, 1920

Howard Avenue
(Closed)



N

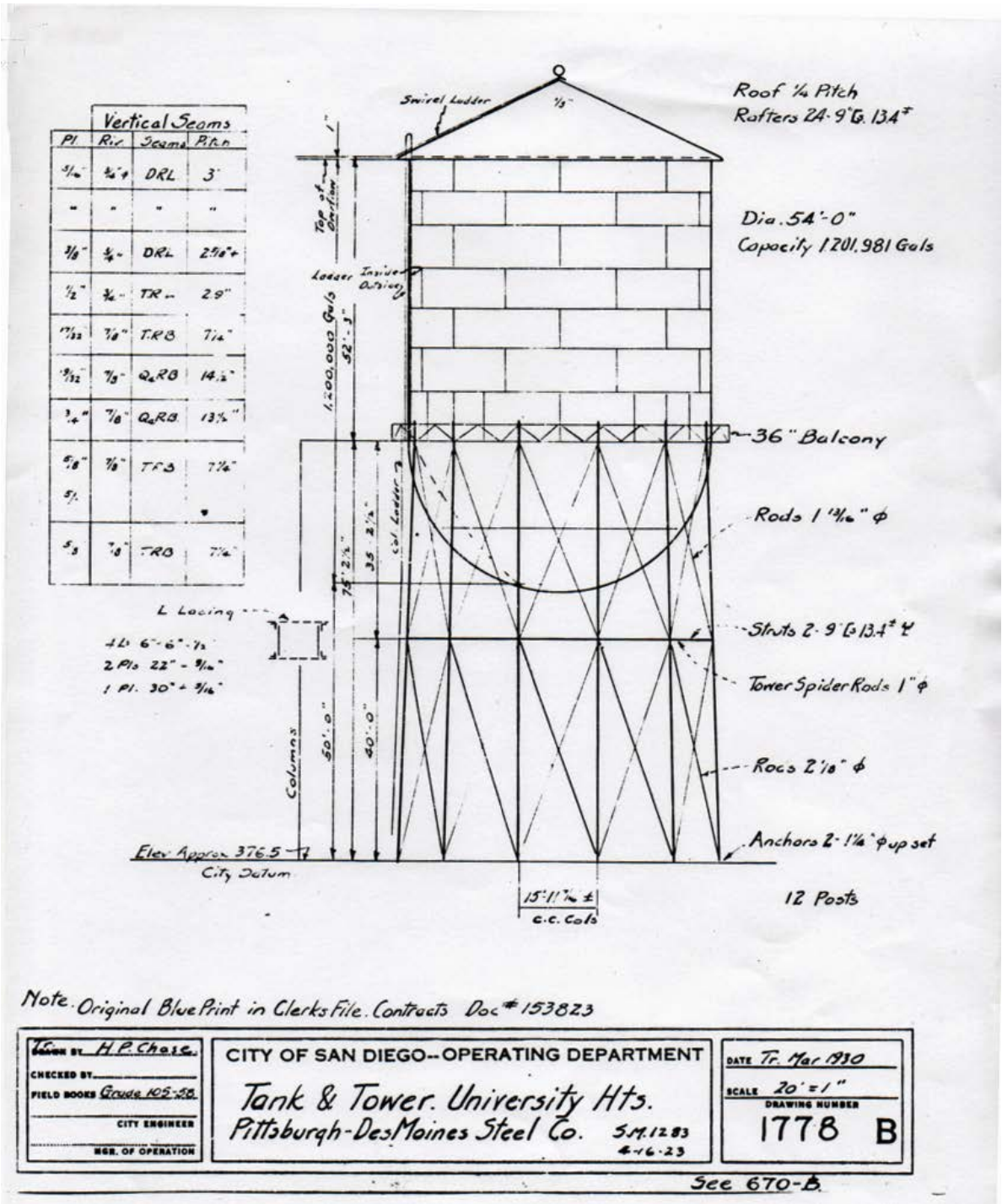
Map Not to Scale

Polk Avenue (Closed)

Historical Evolution of the District's Development

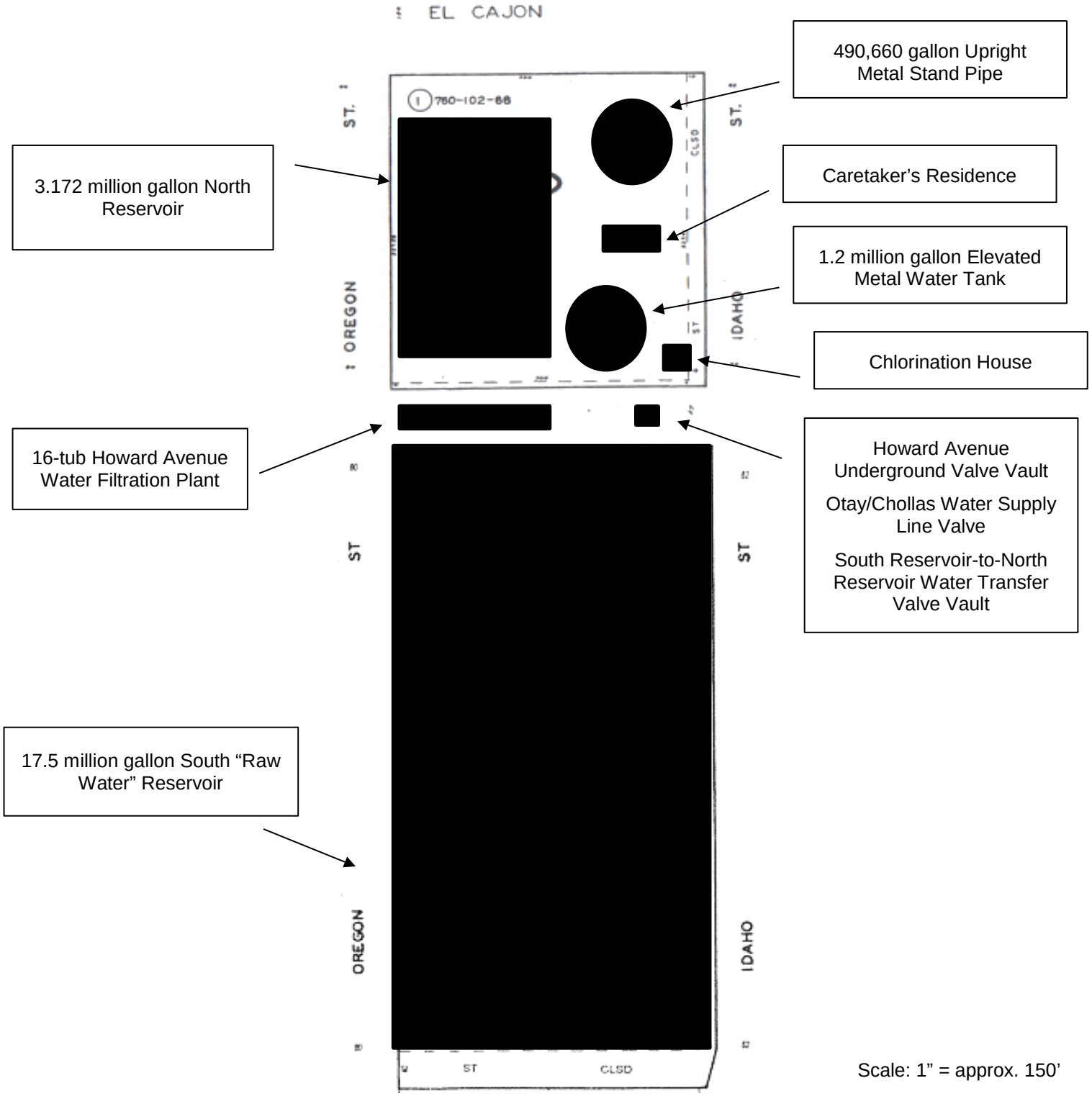
Block 122, 1924-1930

City of San Diego. Operating Department. University Heights Water Tank and Tower, 16 April 1923; reprinted March 1930



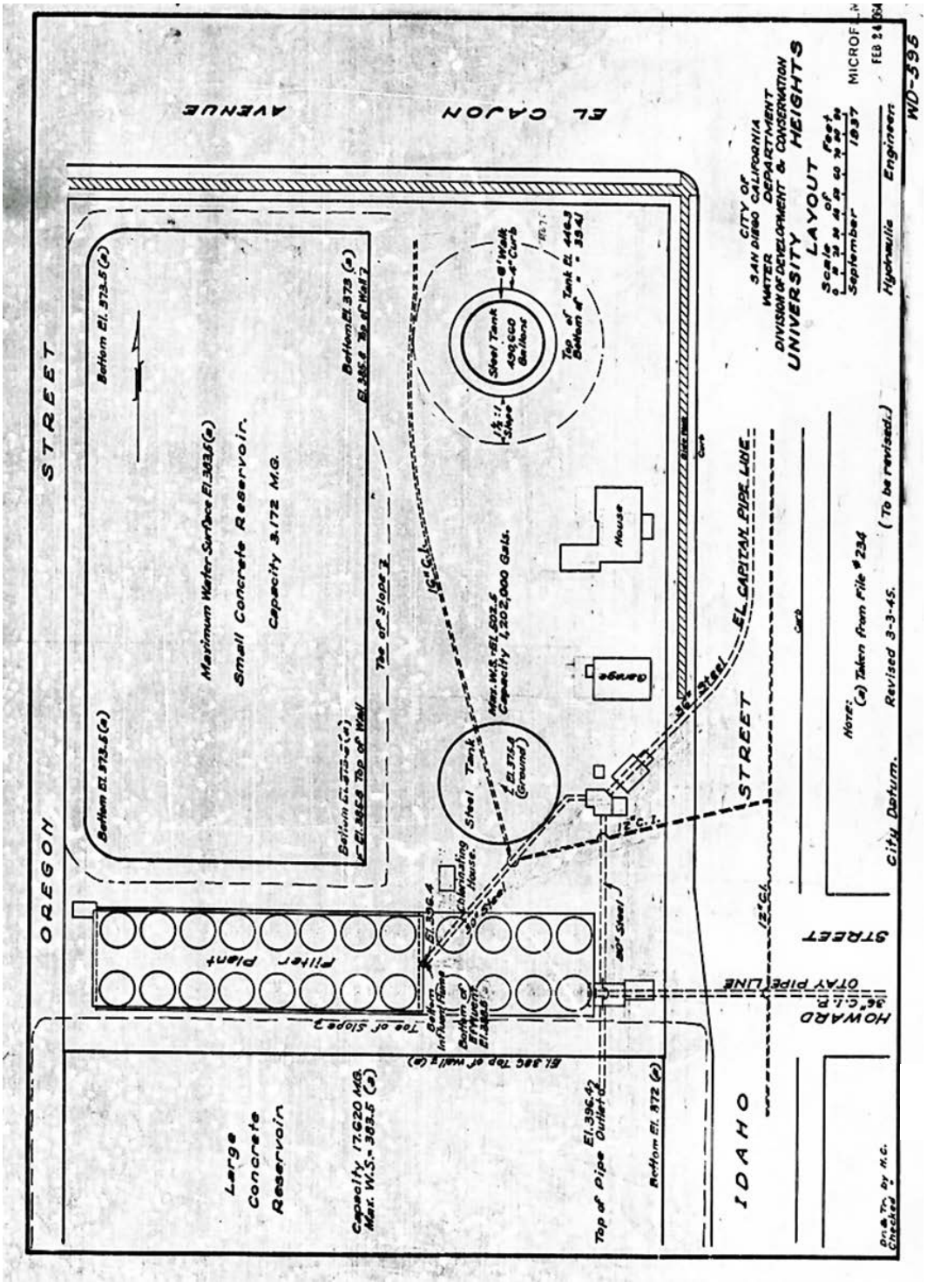
Historical Evolution of the District's Development

Blocks 122, 151 and Howard Avenue
1924-1934



Scale: 1" = approx. 150'

Historical Evolution of the District's Development
Block 122 and Howard Avenue Layout, 1937-1945
City of San Diego. Water Department. University Heights Layout, September 1937; Revised 3 March 1945.

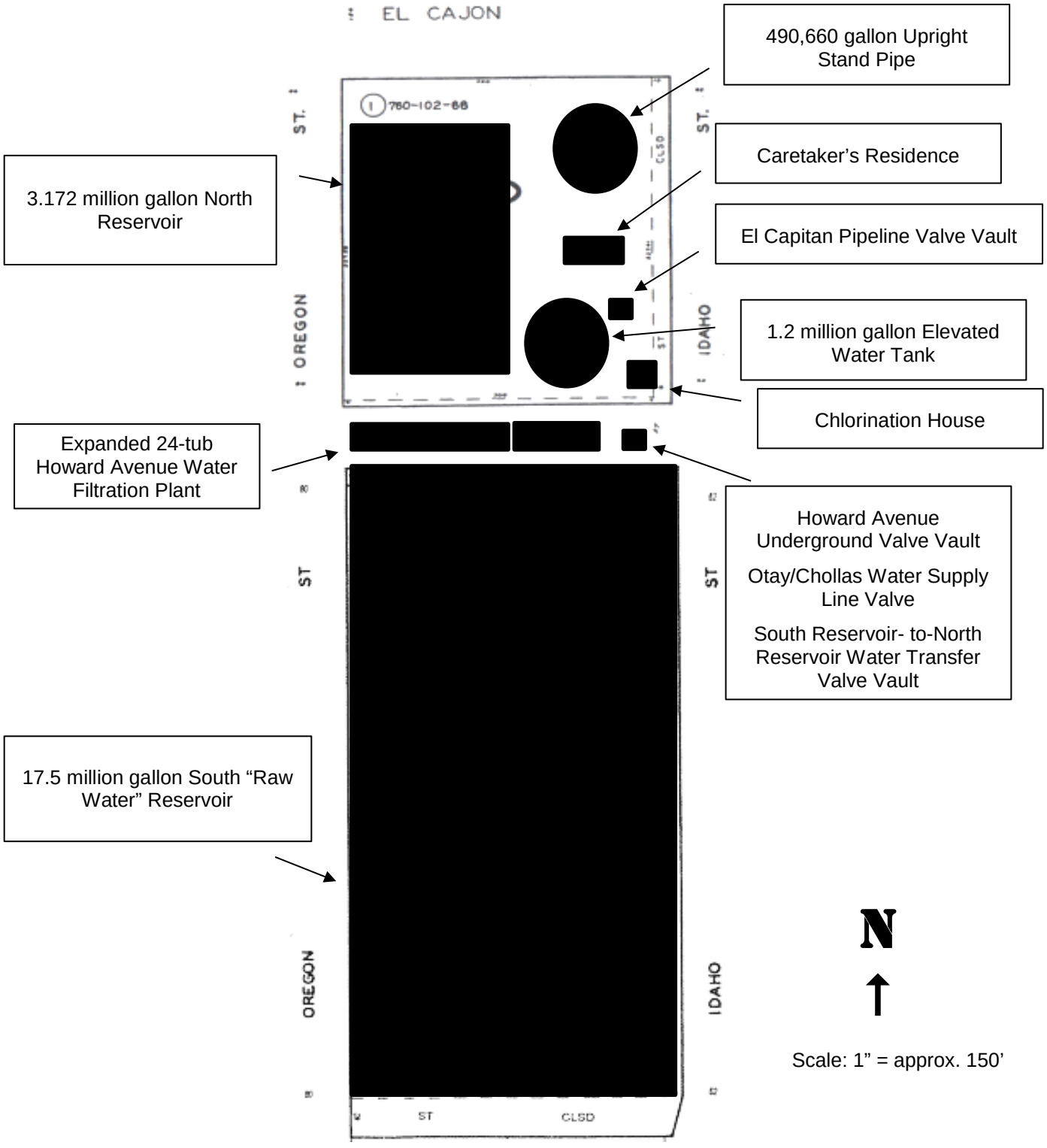


N

Map Not to Scale

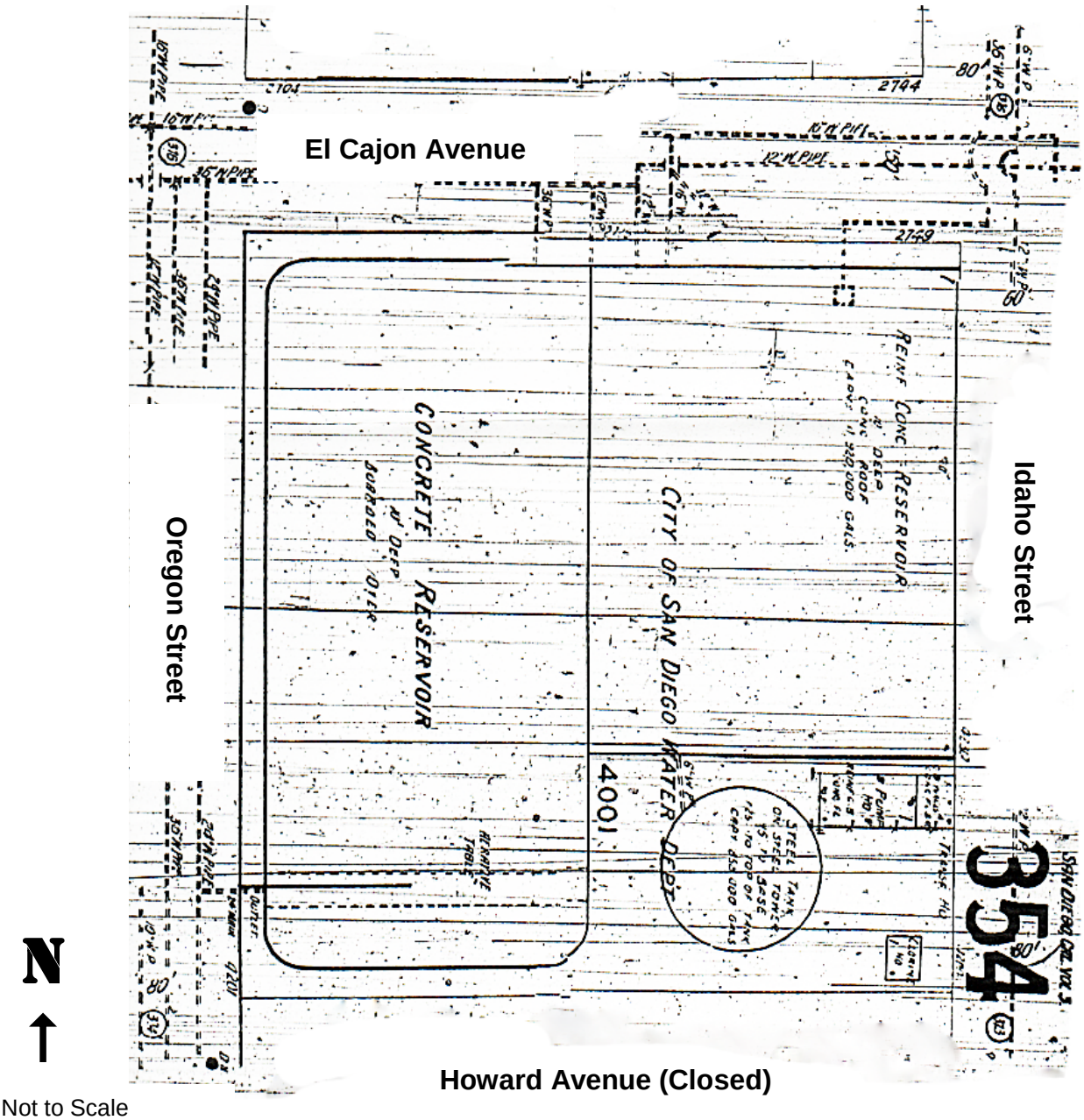
Historical Evolution of the District's Development

122, 151 and Howard Avenue
1945-1951



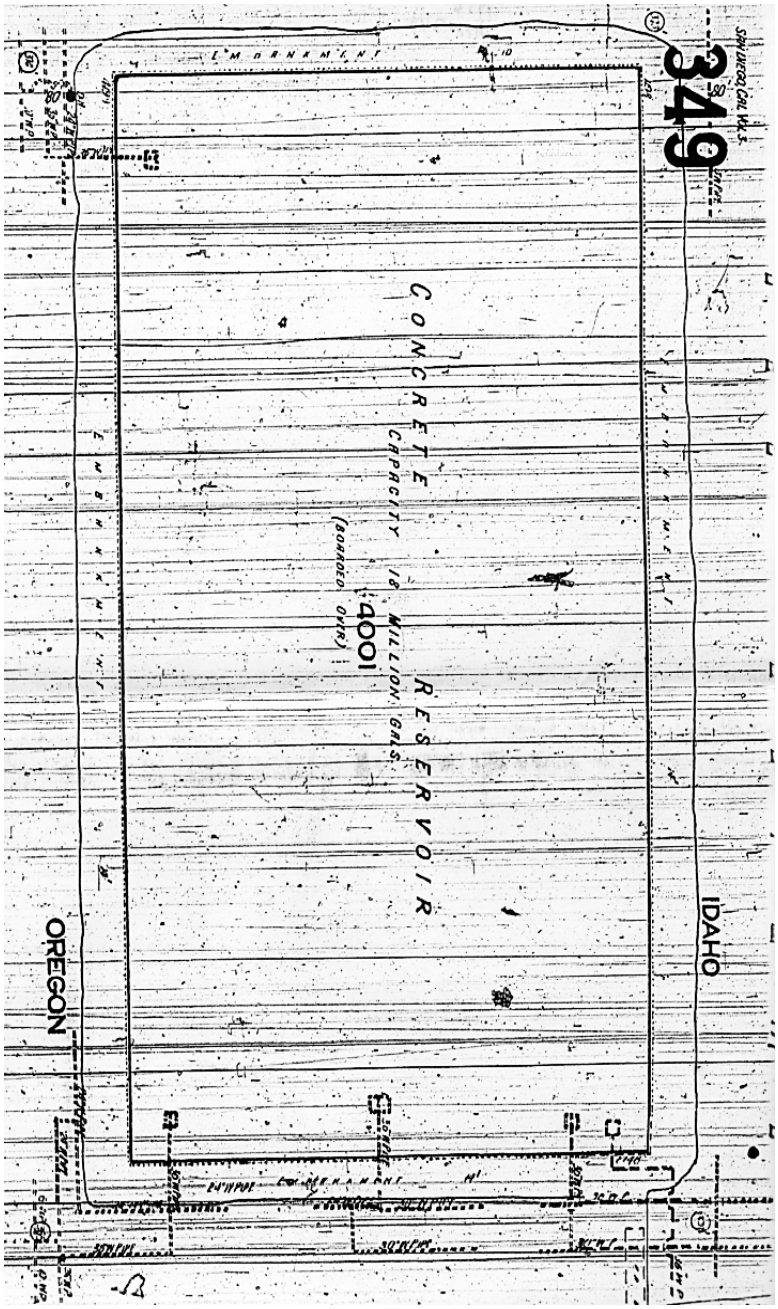
Historical Evolution of the District's Development

Block 122 Layout, 1951-1956
Sanborn Insurance Map, San Diego, Vol. 3, Sheet 354, 1956



Map Not to Scale

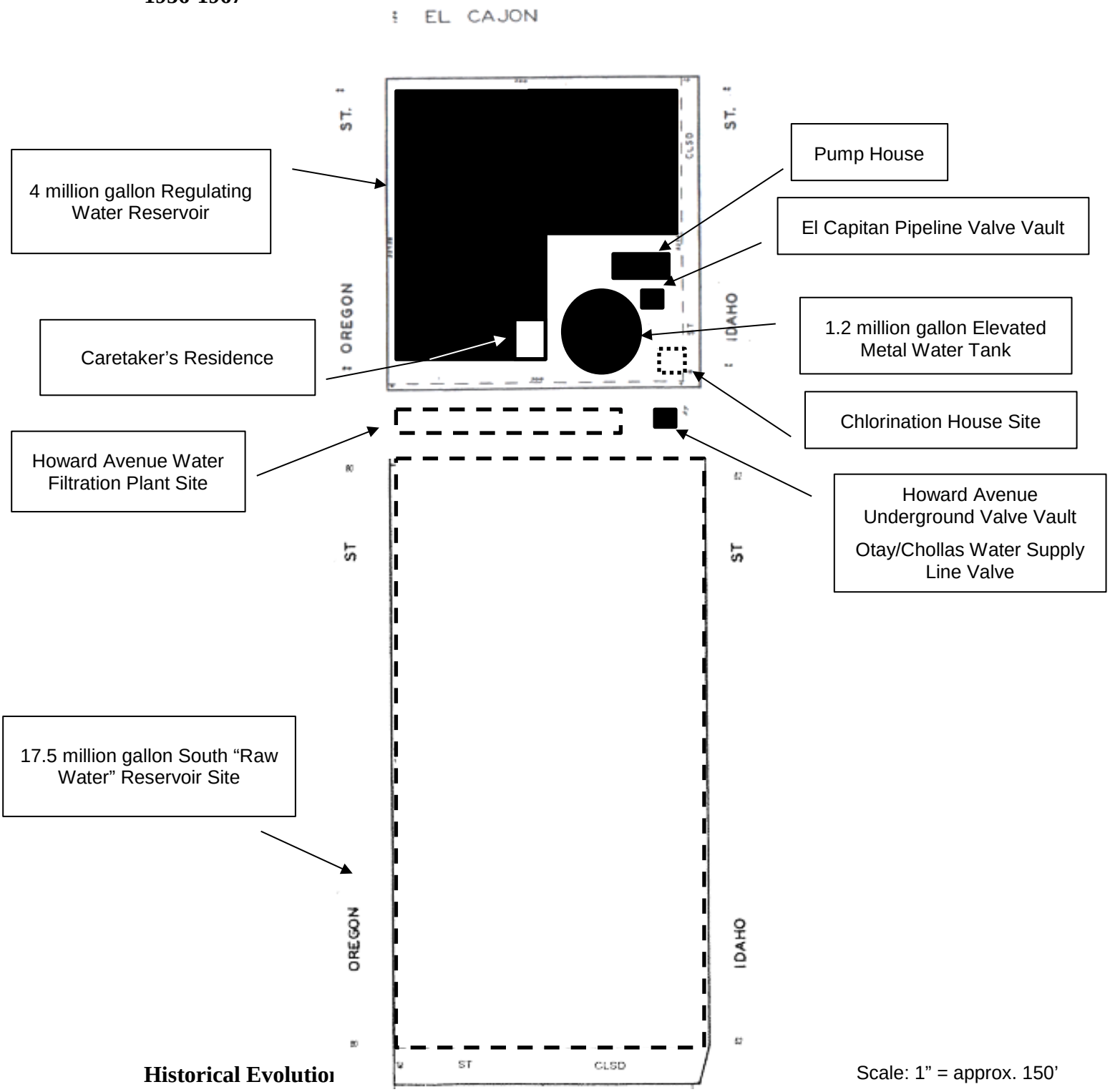
Historical Evolution of the District's Development
Block 151 Layout, 1951-1956
Sanborn Insurance Map, San Diego, Vol. 3, Sheet 349, 1956



N

Map Not to Scale

Historical Evolution of District's Development
Blocks 122, 151 and Howard Avenue
1956-1967

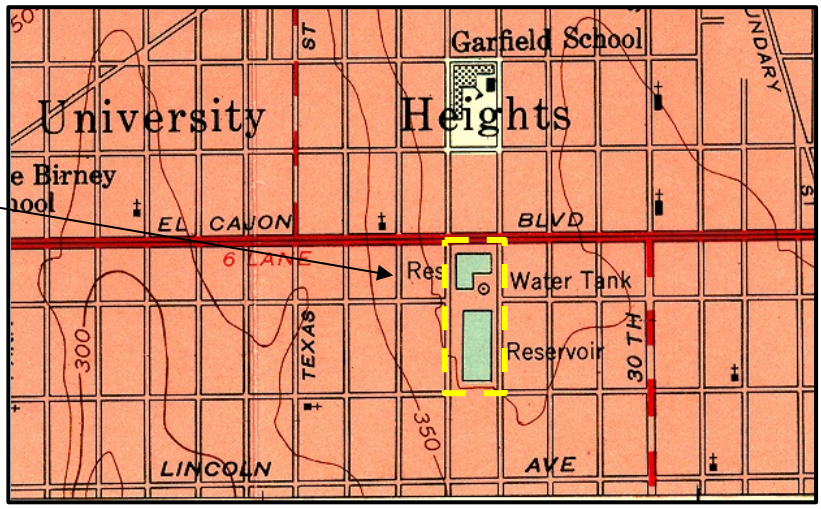


Historical Evolutio

Scale: 1" = approx. 150'

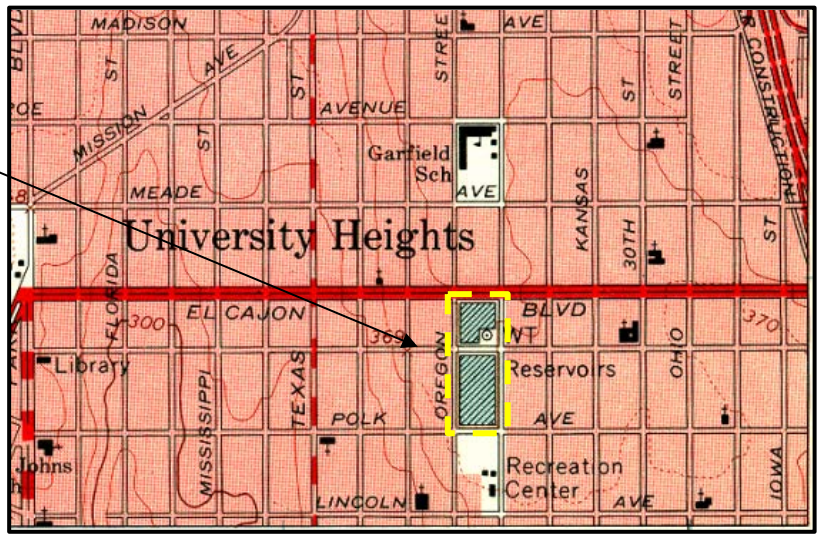
U.S. Topographic Quad Map
La Jolla, California
1953

District Location



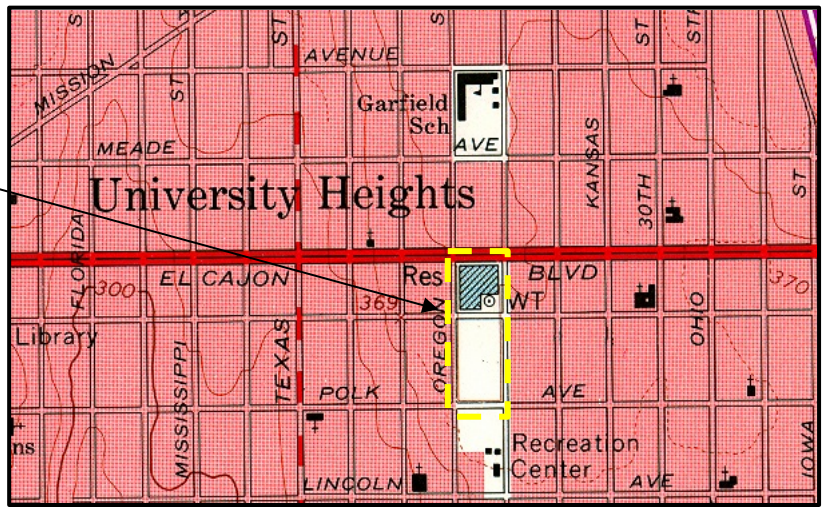
U.S. Topographic Quad Map
La Jolla, California
1967

District Location



U.S. Topographic Quad Map
La Jolla, California
1967-Photorevised 1975

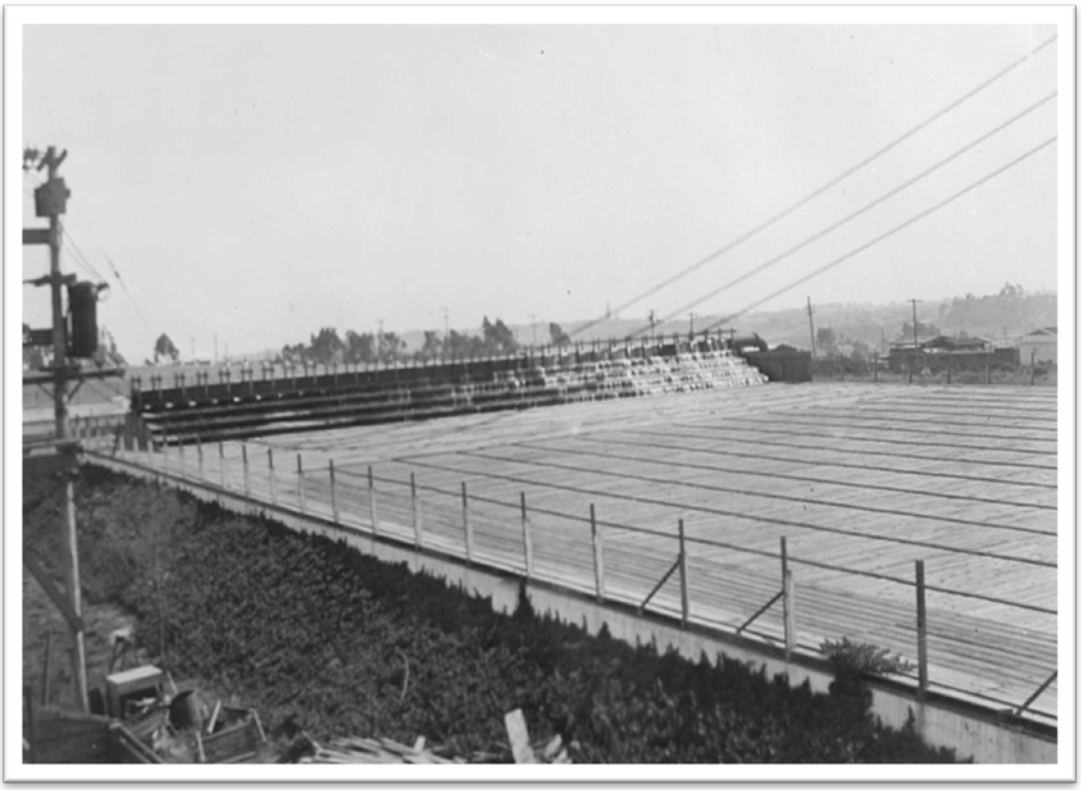
District Location



Maps Not to Scale

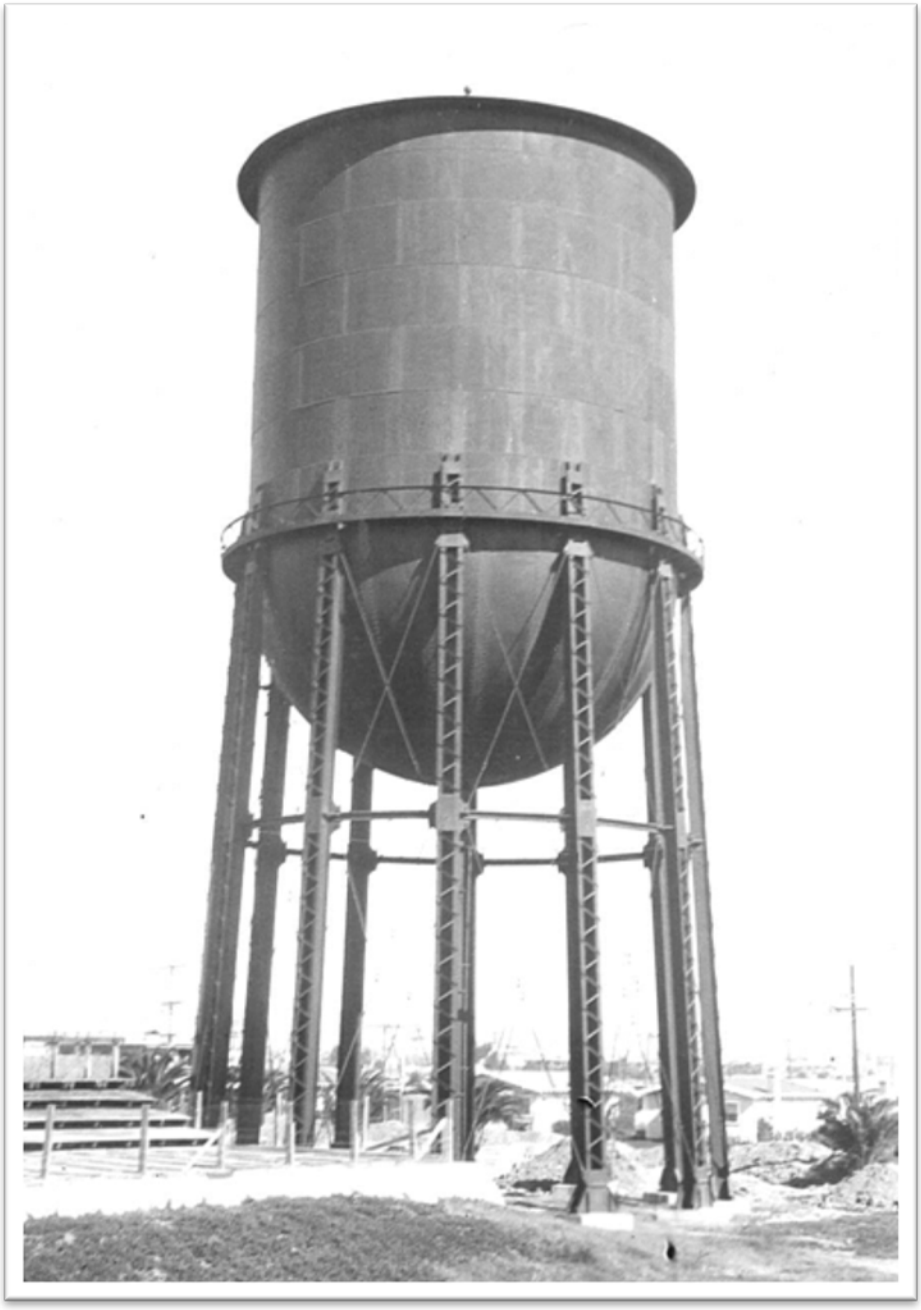
Historic Photographs

Historic Photograph #1
El Cajon Boulevard near Louisiana Street
Looking West at University Heights Water Standpipe (Arrow)
Date: 1913
San Diego County, CA
Photograph #15992
San Diego History Center—Union-Tribune Photograph Collection

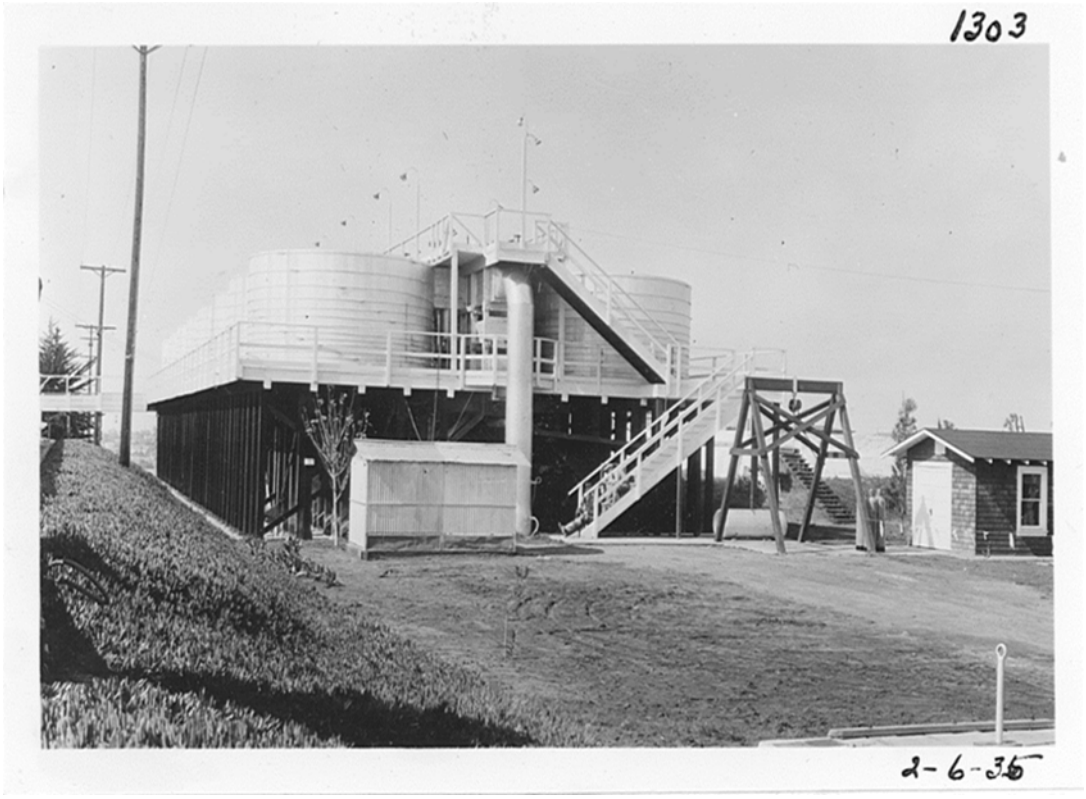


Historic Photograph #2
South Raw Water Reservoir
Looking Southwest
Date: ca. 1914
San Diego County, CA
Photograph #1894
San Diego Public Library Photograph Collection

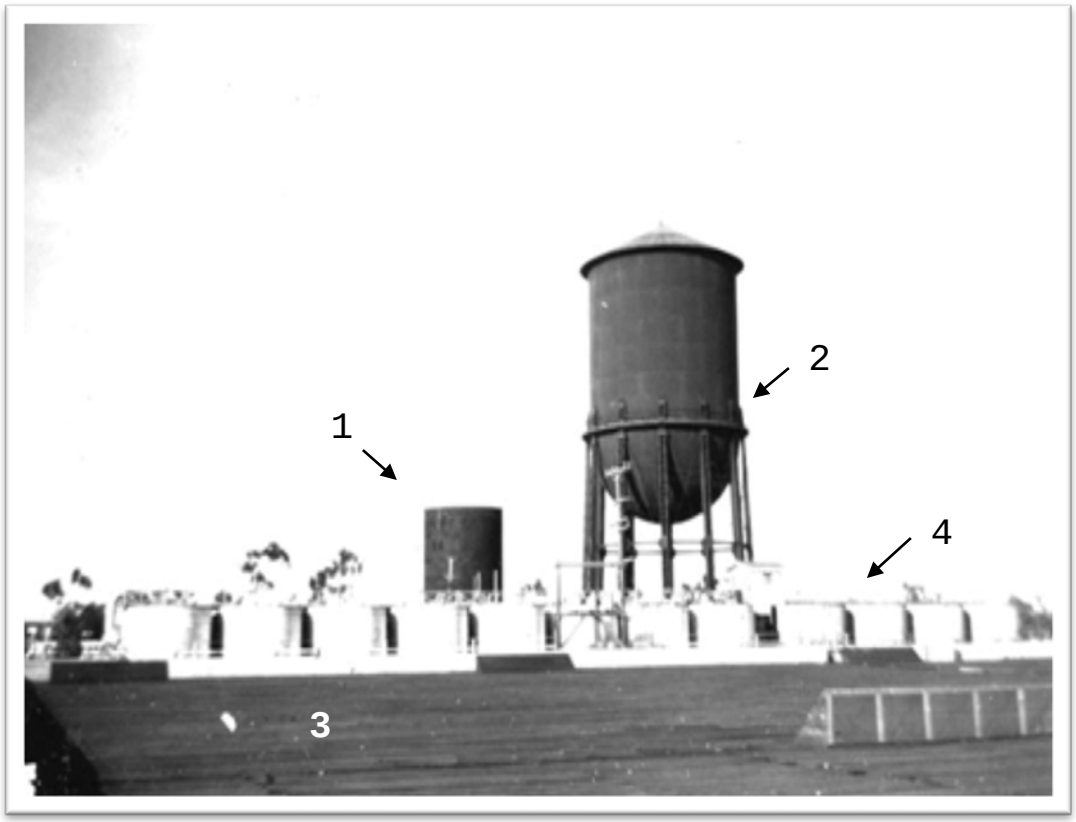
Historic Photograph #3
University Heights Elevated Water Storage Tank
Looking Northeast
Date: ca. 1923
San Diego County, CA
Photograph #2621
San Diego History Center Photograph Collection



Historic Photograph #4
University Heights Elevated Water Storage Tank
Looking Northeast
Date: ca. 1924
San Diego County, CA
Photograph #1898
San Diego Public Library Photograph Collection



Historic Photograph #5
University Heights Water Filtration Plant on Howard Avenue
Looking West
Date: 6 February 1935
San Diego County, California
Photograph #1303
San Diego Public Library Photograph Collection

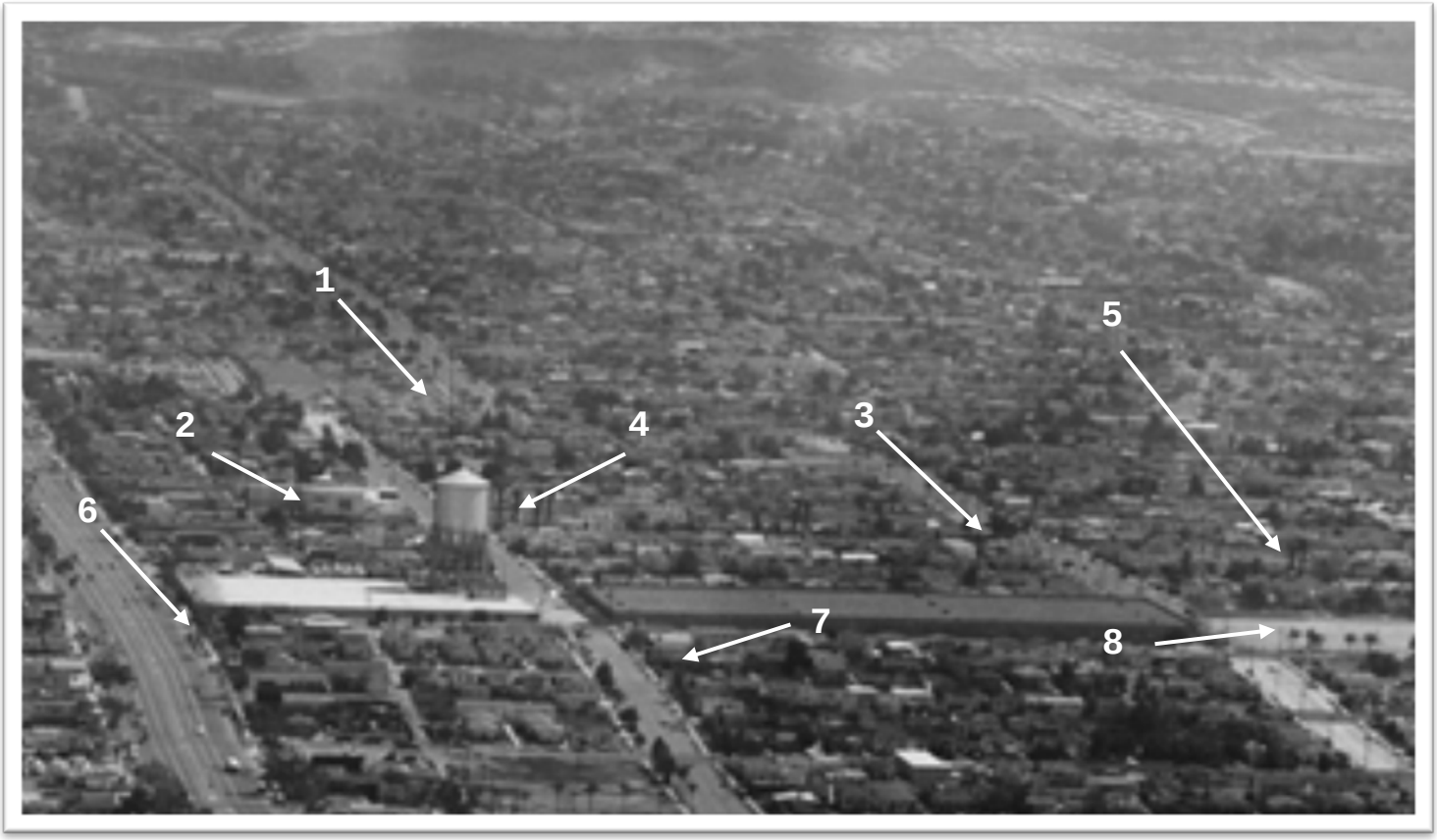


Historic Photograph #6
University Heights Water Storage and Pumping Station
1. Metal Standpipe
2. Elevated Water Tank
3. Raw Water Reservoir
4. Howard Ave. Water Filtration Plant
Looking North
Date: 1947
San Diego County, California
Photograph # N/A
San Diego Public Library Photograph Collection

Historic Photograph #7
University Heights Water Storage and Pumping Station
Looking Northwest

1. Site of Metal Standpipe
2. Elevated Water Tank
3. South Raw Water Reservoir
4. Howard Avenue Water Filtration Plant
5. North Water Reservoir
6. Caretaker's Residence
7. Pump House
8. El Capitan Pipeline Valves Vaults
9. Chlorinating House
10. Howard Ave. Valves Vault

Date: 1951
San Diego County, California
Photograph # UT 84—El Cajon Boulevard Aerial
San Diego History Center Photograph Collection



Historic Photograph #8
University Heights Water Storage and Pumping Station
Looking East
1. Elevated Water Tank
2. North Water Reservoir
3. South Raw Water Reservoir
4. Relocated Caretaker's Residence
5. Sport Recreation Field
6. El Cajon Boulevard
7. Howard Avenue
8. Polk Avenue
Date: 1954
San Diego County, California
Photograph S-2062—University Heights Aerial
San Diego History Center Photograph Collection

Comparison Resources

The following properties are similar in type, design, style, function, and materials to that of the University Heights Water Storage and Pumping Station Historic District. They are included to place the latter within the larger historic context of early Twentieth Century American municipal elevated water storage tanks.

Cuyuna Iron Range Municipally-Owned Elevated Metal Water Tank Thematic Resources

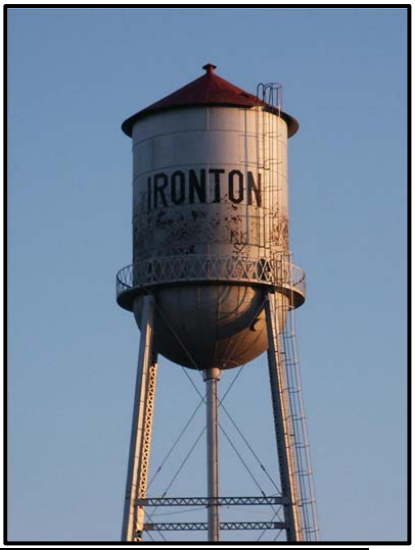
Location: Crow Wing County, Minnesota

National Register of Historic Places Status: Listed 22 October 1980

Description: Five nearly identical surviving municipally owned riveted steel elevated water storage tanks. Each consists of a cylindrical tank, with a finial-topped conical roof, hemispherical bottom, diagonal X-braced cable-trussed 4-legged zig-zag "Z" braced-girder trestle tower attached to a circular metal balcony, flanged horizontal braces, external metal service ladder, and a riser pipe connect it to the municipal water system. Each has the community name lettered on the tank's outer surface.

Significance: The five surviving elevated metal water tanks combine engineering, public works, and community planning within the general area known as the Cuyuna Iron Range.

They represent an historical occurrence peculiar to the development of communities along the Cuyuna Range. Funded by an exorbitant property tax on iron ore mining between 1912 and 1924, the elevated water tanks set standards for up-to-date municipal water storage and delivery systems. As engineering artifacts, these metal structures constitute a cluster of similar structures represent a once-prolific structural type that is rapidly disappearing from the American urban landscape.[70]



Ironton Elevated Metal Water Tank
Location: Ironton, Minnesota
National Register of Historic Places Status:
Listed 17 October 1980
Description: Elevated riveted ellipsoidal-bottom, conical caped steel water tank on built-up zig-zag "Z" braced steel girder legs, with diagonal cable-tension X braces, flanged horizontal braces, and central riser.
Significance: Erected in 1913, it is one of five surviving elevated riveted steel municipal water storage tanks associated with regional public works projects between 1918 and 1924.[71]

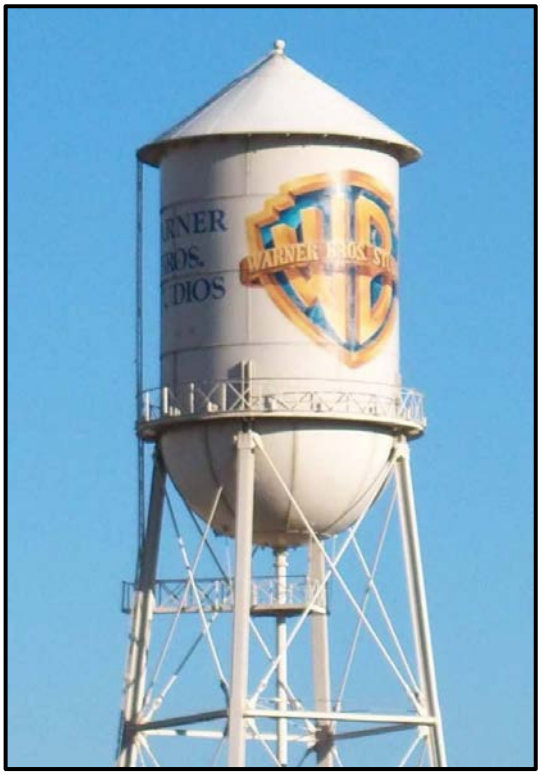
[70] Framm, Robert M., *Cuyuna Iron Range Municipally-Owned Elevated Metal Water Tank Thematic Resources* (National Register of Historic Places No. 64000350, 27 September 1979), 1-4.
[71] Framm, *Cuyuna Iron Range*, 1-4; and BruceS, "Elevated Metal Water Tank, Ironton," Waymarking.com!, accessed 7 July 2012, http://www.waymarking.com/waymarks/WM3G1A_Elevated_Metal_Water_Tank_Ironton.

Townsend Water Tower
Location: Townsend, Delaware
National Register of Historic Places Status: Townsend Historic District, 1986
HAER No. DE-24, 1990
Description: Elevated riveted ellipsoidal-bottom, conical caped steel water tank on built-up zig-zag "Z" braced steel girder legs, with diagonal cable-tension X braces, flanged horizontal braces, and central riser.
Significance: Erected in 1929 as part of the utility infrastructure of the town of Townsend, Delaware.[72]

Right
Townsend Water Tower
Detail of bottom of tower's southwest channel iron support leg's zig-zag "Z" braces, diagonal "X" brace anchor, foot and concrete pad; looking east.[73]

[72] United States Department of the Interior, National Park Service, *Townsend Water Tower, City of Townsend, New Castle County, Delaware*, Historic American Engineering Record No. DE-24, Philadelphia, 1990.
[73] United States Department of the Interior, *Townsend Water Tower*.

Wasco Elevated Metal Water Tank
Location: Wasco, California
National Register of Historic Places Status:
Not Listed
Description: Elevated riveted ellipsoidal-bottom, conical caped steel water tank on built-up zig-zag "Z" braced steel girder legs, with diagonal cable-tension X braces, flanged horizontal braces, and central riser.
Significance: Erected sometime between 1913 and 1924, the water tower still services the small agricultural town of Wasco, in California's central valley.
Note: The big rose painted on the tower denoted Wasco as the "Rose Capital of the World." [74]



Right
Warner Bros. Studios Elevated Metal Water Tank
Location: Burbank, California
National Register of Historic Places Status:
Not Listed
Description: Elevated riveted ellipsoidal-bottom, conical caped steel water tank on built-up zig-zag "Z" braced steel girder legs, with diagonal cable-tension X braces, flanged horizontal braces, and central riser.
Significance: Iconic landmark erected in 1926. [75]

[74] Silvergull, "Water Tower—Wasco, CA," Waymarking.com Accessed 7 July 2012, http://www.waymarking.com/waymarks/WM913J_Water_Tower__Wasco_CA.
[75] Raine Vara, "Warner Brothers Studios Water Tower Located in Burbank, California," World of Stock, Accessed 7 July 2012, http://www.worldofstock.com/stock_photos/TAC2510.php).