

**RELATIONSHIP OF THE ZANJA MADRE
TO MTA'S GOLD LINE PROPERTY
IN RIVER STATION YARD,
CITY OF LOS ANGELES, CALIFORNIA**

Submitted to:

UltraSystems Environmental, Inc. Metropolitan Transportation Authority
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Irvine, CA Los Angeles, CA

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Authors:

Sherry Gust and Mari Pritchard Parker

Principal Investigator:

Mari Pritchard Parker,
Registered Professional Archaeologist

July 2004

**NATIONAL ARCHAEOLOGICAL DATA BASE (NADB)
INFORMATION SHEET**

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Type of Study: Archaeological Evaluation

Sites: 19-003100, 19-003101, 19-003102, 19-003103

USGS Quadrangle: Los Angeles

Area: ~3 Acres

Key Words: Cornfield Yard, Midway Yard, Chinatown, River Station Yard, Zanja Madre, irrigation, Gold Line, Blue Line, Bullring, River Station, Los Angeles River, El Pueblo, Chinatown Yards

EXECUTIVE SUMMARY

Cogstone was retained to evaluate whether any remnants of the first irrigation ditch of Los Angeles, the Zanja Madre, exist on MTA's remnant property in River Station Yard. We conducted a record search, documentary research and a surface examination to evaluate that potential and determine possible locations for trenches to locate subsurface zanja remnants.

The project is located at the edge of modern-day Los Angeles Chinatown, north of the current city center in the River Station Yard. The River Station Yard is a large rail yard west of the Los Angeles River, immediately south of Broadway and north of Spring St. River Station tracks were continuous with tracks of Midway Yard, directly adjacent to the river but north of Broadway, and Cornfield Yard, south and slightly east of River Station. The project area is City of Los Angeles Cultural Monument Number 82 known as River Station Area/Southern Pacific Railroad.

There were three historical archaeological resources known within River Station Yard, probably associated with the Southern Pacific Railroad Company's River Station Pacific Depot and Hotel. Documentary sources, including historic illustrations, were consulted regarding the Zanja Madre and River Station Yard. The original zanja was an open, wide, shallow ditch from the Los Angeles River, past the Plaza, to the fields west of town. While some documentary sources report the Zanja Madre was an open ditch well into the American period, illustrations from the period provide an alternative explanation of the zanja as a closed conduit in the bluff above the original location.

Extensive testing along the base of the bluff below Broadway, the reported location of the original Zanja, revealed no evidence of the Zanja Madre. In contrast, three segments of brick conduit have been revealed set into the bluff and above the grade of the base. These segments follow the contour of the bluff and are on the approach to an historic building known to have been powered by the Zanja Madre.

No further testing on MTA's Gold Line property is recommended as diligent testing has already been performed along the alignment. The new State Park property is devoid of any historic association with the Zanja, although other historical archaeological resources are present. Sampling the mortar and brick of the exposed segments of brick conduit, testing for distribution and consultation regarding preservation options are recommended should alterations be considered on the private property where the possible Zanja remnants occur.

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INTRODUCTION

PURPOSE OF STUDY

Cogstone was retained to evaluate whether any remnants of the first irrigation ditch of Los Angeles, the Zanja Madre, exist on MTA's remnant property in River Station Yard. We conducted a record search, documentary research and a surface examination to evaluate the potential for remnants and to determine possible locations for trenches to locate subsurface zanja remnants.

PROJECT DESCRIPTION

The project is located at the edge of modern-day Los Angeles Chinatown, north of the current city center (Figure 1). River Station Yard is a large historic rail yard west of the Los Angeles River (Figure 2). It is immediately south of Broadway and north of Spring. River Station tracks are continuous with tracks of Midway Yard, directly adjacent to the river but north of Broadway, and Cornfield Yard, south and slightly east of River Station (Mullaly & Petty 2002:50). The

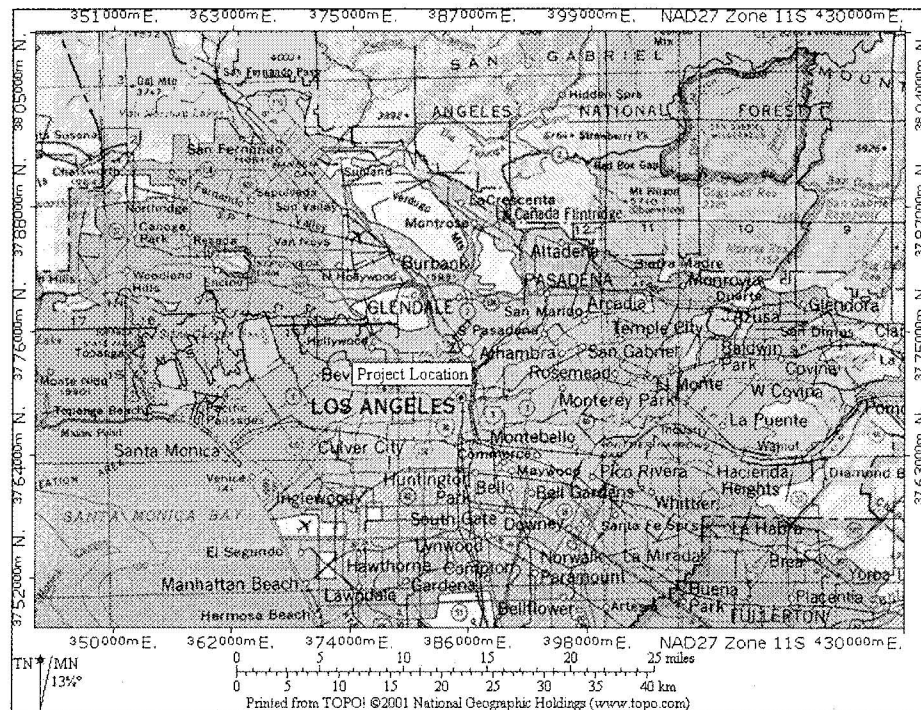


Figure 1. Regional Location Map



Figure 2. River Station Area Map

names and locations of these three yards have often been confused (LA Times 2000). Of the three yards, only River Station Yard had an actual train depot on the Southern Pacific line. The yard is City of Los Angeles Cultural Monument Number 82 known as River Station Area/Southern Pacific Railroad.

The MTA has retained ownership of only a small portion of River Station Yard corresponding to the Metro Rail Gold Line approach to Chinatown Station from the bridge across the Los Angeles River (Figure 3). The bulk of River Station has been purchased by California State Parks for rehabilitation as public space. This space has been called the “Cornfield” property in the political negotiations to acquire the space and designate appropriate uses (Clayton 2000, CSPAC 2003, Garcia et al. 2004, Gold 2001, Ramos 2000, Reynolds and Soto 2003) although there is no direct evidence corn ever grew there. Southern Pacific Railroad personnel interviewed stated that Cornfield Yard was an informal name for an area directly across Spring Street from the southwest end of River Station Yard where corn oil was offloaded to tanker trucks (C. Howell, personal communication, 2004). The remaining portion of the original River Station Yard that parallels N. Broadway, and is north of the Gold Line, is private property.

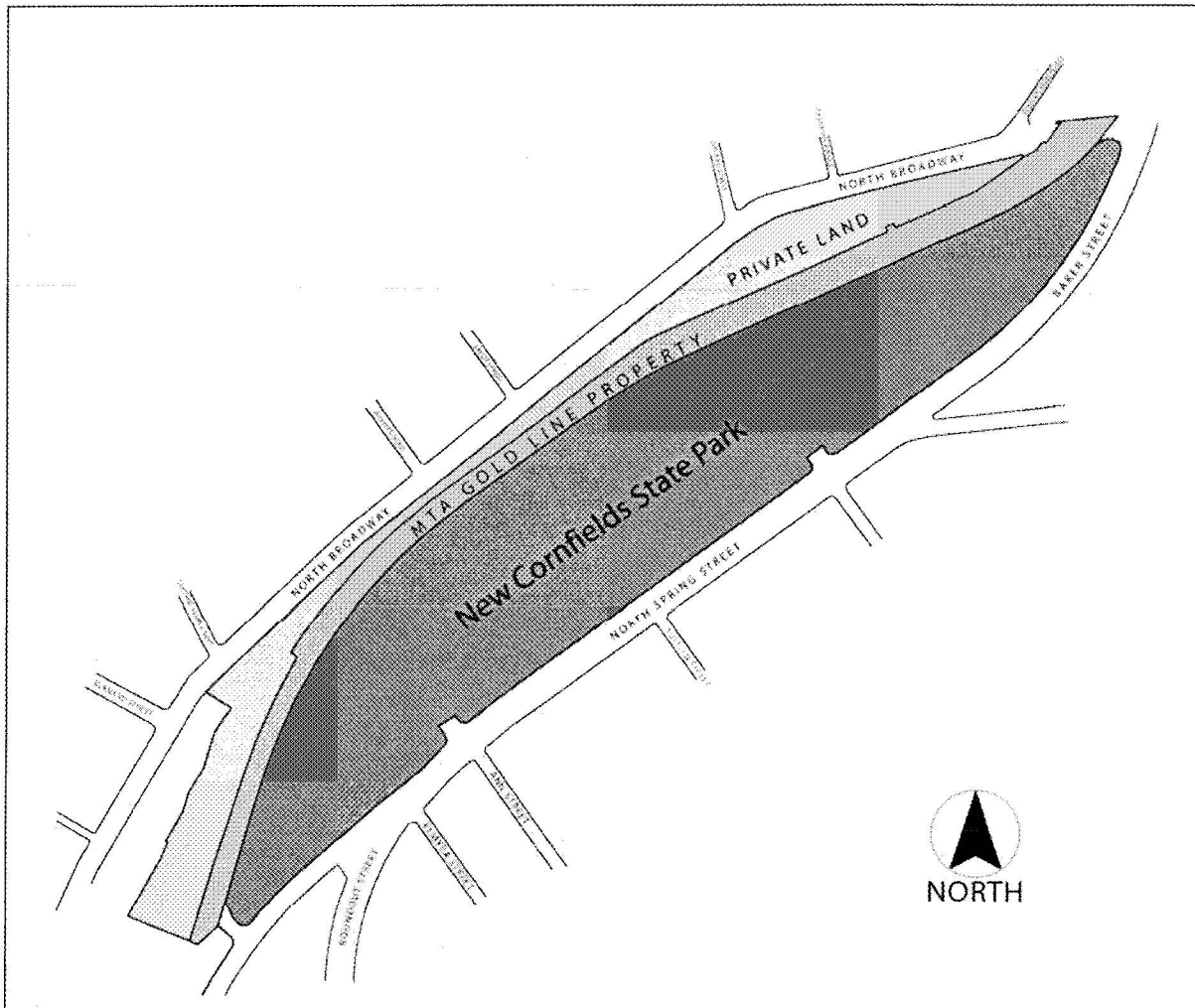


Figure 3. Project property and immediate neighbors

PROJECT PERSONNEL AND ACKNOWLEDGEMENTS

Cogstone Resource Management Inc conducted the project. Mari Pritchard Parker, RPA, served as the Principal Investigator, conducted the field survey for the project and wrote the reconnaissance results. Sherri Gust, RPA, performed the record search and wrote the research section of the report. Sherri Gust, Al Knight (B.A. Anthropology) and Michael Mirro (M. A. Anthropology) performed documentary research. Michael Mirro created the overlay maps. We were greatly assisted by Craig Howell of the Public Utilities History Center and Melody Carver of the Los Angeles History Slugs. These two amateur historians have been pursuing

information on the engineering and history of the zanja system for many years and have accumulated significant research including personal interviews with DWP employees and Southern Pacific Railroad personnel. They were responsible for bringing attention to the first remnant of brick conduit zanja revealed near the project area. We acknowledge their contributions and thank them for their assistance.

Zoric Sheyman and Manuel Gurrola of MTA were also extremely helpful. We thank our colleagues Melinda Horne of Applied Earthworks and John Romani of Compass Rose for their professional courtesy in providing copies of their reports (the reports had not yet been processed and made available by the South Central Coastal Information Center).

RESULTS

RECORD SEARCH

A search for archeological and historic records was completed at the South Central Coastal Information Center located at California State University Fullerton. The project area and a one-mile radius were searched for resources.

There were four historical archaeological resources within the project area; these include 19-003100, 19-003101, 19-003102, and 19-003103. The first two probably associated with the Southern Pacific Railroad Company's River Station Pacific Depot and Hotel. Resource 19-003100 consisted of a scatter of white ceramic dishware fragments, a fragment of olive bottle glass, a clear glass fragment and a rim fragment of milk glass. Resource 19-003101 is a scatter of historic artifacts fragments, which included porcelain, earthenware, red brick, coal, clear glass and metal. The third is a brick structural remnant with a trash scatter. The final one is a section of brick conduit from the water conveyance feature called the Zanja, Resource 19-003103.

One prehistoric archaeological and 13 historical archaeological sites were recorded within a one-mile radius of the project area (Table 1). Project reports listed by the Information Center within the one-mile radius numbered 26 (Table 2). Several were previous projects in River Station Yard, although mislabeled Cornfield Yard due to confusion over the rail yard names.

Table 1. Recorded archaeological and historical sites within one mile radius of the Project Area

Site	Location	Site Type
19-003100	Project area	Historic artifact scatter – prob. River Station Depot & Hotel
19-003101	Project area	Historic artifact scatter – prob. River Station Depot & Hotel
19-003102	Project area	Brick Wall/ Historic Artifact Scatter
19-003103	Project area	Brick conduit zanja section
19-186110	One-mile radius	Union Pacific Railroad/Hobart Tower
19-186112	One-mile radius	Southern Pacific Railroad
19-000007	One-mile radius	Historic scatter
19-000887	One-mile radius	Historic artifacts and structures
19-001575	One-mile radius	Historic artifacts and structures, Native American burials
19-002828	One-mile radius	Historic trash deposit
19-002924	One-mile radius	Historic scatter
19-002928	One-mile radius	Brick building and historic trash deposit
19-002959	One-mile radius	Historic Chinatown artifact scatter
19-100464	One-mile radius	Historic school
19-150329	One-mile radius	Los Angeles Chinatown Heritage & Visitors Center
19-150456	One-mile radius	Naval and Marine Corps Reserve Center
19-186859	One-mile radius	Arroyo Seco Flood Control Channel

Table 2. Archaeological and historical projects completed within one mile of the project area

Author	Ref	Title	Date
Allen, Rebecca	LA3788	Historic Resources Eligibility Survey and Archaeological Resources Inventory Survey of the Naval and Marine Corps Reserve Center.	1997
Anonymous	LA2950	Consolidated Report: Cultural Resource Studies for the Proposed Pacific Pipeline Project	1992
Anonymous	LA4389	Metro Pasadena Project Preliminary Engineering Structural Feasibility for the Los Angeles River Crossing.	1992
Ashkar, Shahira	LA4834	Cultural Resources Inventory Report for Williams Communications, Inc. Proposed Fiber Optic Cable System Installation Project, Los Angeles to Anaheim and Orange County.	1999
Bissell, Ronald M.	LA5425	Emergency Recovery Actions at CA-LAN-2828, Los Angeles County, California.	2001
Budinger, Fred E., Jr.	LA6840	Phase I Archaeological Survey Former Aliso Street MGP Site Los Angeles, California.	2003
Costello, Julia G., Wilcoxon, Larry R.	LA3906	An Archaeological Assessment of Cultural Resources in Urban Los Angeles, California La Placita de Dolores—LAN-887.	n.d.
Dewitt, John	LA6360	City of Los Angeles/Cornfields Site EDA Grant Application.	2000
Dillon, Brian D.	LA3151	Alameda District Plan, Los Angeles California: Prehistoric and Early Historic Archaeological Research	1994
Duke, Curt	LA6377	Cultural Resource Assessment Cingular Wireless Facility No. SM 141-05 Los Angeles County, California.	2002

Foster, John	LA3377	No title listed. CA-LAN-1103	1996
Foster, John M.	LA6336	Archaeological Inventory for Soil Remediation Cornfield Rail Yard Project, City of Los Angeles, California.	2002
Frierman, Jay	LA4383	Cultural Resources Study, Chinatown Senior Citizens Housing Site.	1980
Frierman, Jay D.	LA3910	Monitoring the Restoration and Rehabilitation of the Sepulveda Block 622-624 North Main Street El Pueblo de Los Angeles State Historic Park.	1983
Greenwood, Roberta S.	LA3103	Cultural Resources Impact Mitigation Program Angeles Metro Red Line Segment 1	1993
Hale, Alice	LA6358	Archaeological Monitor Report Chinatown Branch Library 639 North Hill Street Los Angeles, California.	2002
Hatheway, Roger G.	LA4452	Determination of Eligibility Report Chinatown.	1982
Lapin, Philippe	LA5416	Cultural Resource Assessment for Pacific Bell Wireless Facility SM 017-05, County of Los Angeles, CA.	2000
Lee, Portia	LA4218	Seismic Retrofit North Broadway Bridge over the Los Angeles River.	n.d.
Maki, Mary K.	LA3693	Phase I Archaeological Survey of 2 Acres at 1605 Eastlake Avenue Central Juvenile Hall Los Angeles, California.	1997
Messick, P., R. Greenwood, A. Hale	LA6335	Archaeological Monitor Report Historic Cornfield Railroad Yard.	2003
Meyer, Dorothy L.	LA4043	Seismic Strengthening of Existing Bridges- Group J: North Main Street Building Over the Los Angeles River.	1990
Moffat & Nichol	LA4390	Arroyo Seco Bridge Reconstruction Preliminary Design and Seismic Retrofit.	1993
Romani, Gwendolyn	LA4042	Results of Phase I Archaeological Survey Located at 219-223 South Avenue 18, Los Angeles, California.	1998
Unknown	LA4044	Environmental Impact Report: Seismic Retrofit of Olympic Boulevard and North Broadway Bridges Over the Angeles River.	1995
Whitley, David S.	LA3645	Phase I Archaeological Survey and Cultural Resources Assessment of the Metropolitan Water District Headquarters Study Area, Los Angeles, California.	1995

RESEARCH

Zanja History

The Zanja Madre was constructed by community labor within a month of the founding of El Pueblo de Nuestra Señora La Reina de Los Angeles in 1781 (Gumprecht 1999:44). This mother ditch originated near the present N. Broadway bridge and ran across the base of a bluff to the original Plaza, then curved north toward the hills (Layne 1952; Figure 4). A brush and earth dam (toma) was used to divert river water into the ditch.

In the early 1850s, the City installed a water wheel at the toma to increase the water supply to the Zanja Madre (Layne 1952:21). About the same time, Eagle Mills (later Roller Mills and Capitol

Milling) was the first company to use the Zanja Madre to power a commercial enterprise (Layne 1952:20) and W. G. Dryden acquired the right to build a domestic use reservoir, with water from the Abila (later Dryden) Springs, in the Plaza supplied by pumps operated by a wheel he built in the Zanja Madre near the present junction of Main and Alameda (Anon. 1897:7-8; see photo of wheel Gumprecht 1999:64). The increased water flow permitted a second zanja to be built in 1857 (later referred to as Zanja 8), branching off the Zanja Madre (Spriggs 1931:16).

Flooding events washed away the toma and wheel more than once and eventually the dam was moved north to the area of modern Riverside Bridge where the river is naturally higher in elevation (Guinn 1915:391-2; Figure 5). The new dam was constructed of wooden planks and a wheel was used to raise the water to a newly constructed reservoir (Buena Vista Reservoir) and to supply the Zanja Madre (Layne 1952:21). Wooden flumes supplied domestic water but were prone to leak and fail (Gumprecht 1999:66).

Layne, citing a long-time local resident, (1952:21) states that the zanja Madre was an open ditch along the base of a bluff until 1877 when a tunnel over 3000 feet long was cut into the sandstone of the bluff. He further states that within a few months the tunnel had caved in and attempts were made to repair it by partially relining it with brick. The tunnel continued to fail and it was abandoned and the original open zanja was used again. However, he also states that the Zanja Madre made an 18-foot drop in a 3-foot wide brick conduit to supply water to Eagle Mills (1952:20).

By the 1880s irrigation ditches radiated in every direction from the river and the City was investing heavily in improvements to the zanja system (Gumprecht 1999:71). Zanjias in downtown and business areas were replaced by closed conduit and iron pipe (Gumprecht 1999:71, Springs 1932:17). By the early 1890s, there were over 50 miles of zanja – about half consisting of flumes, pipe and culvert (Brook 1983:28). By 1906 the zanja system was mostly abandoned or in use only as part of the storm drain system (Costello and Wilcox 1977:75-87).

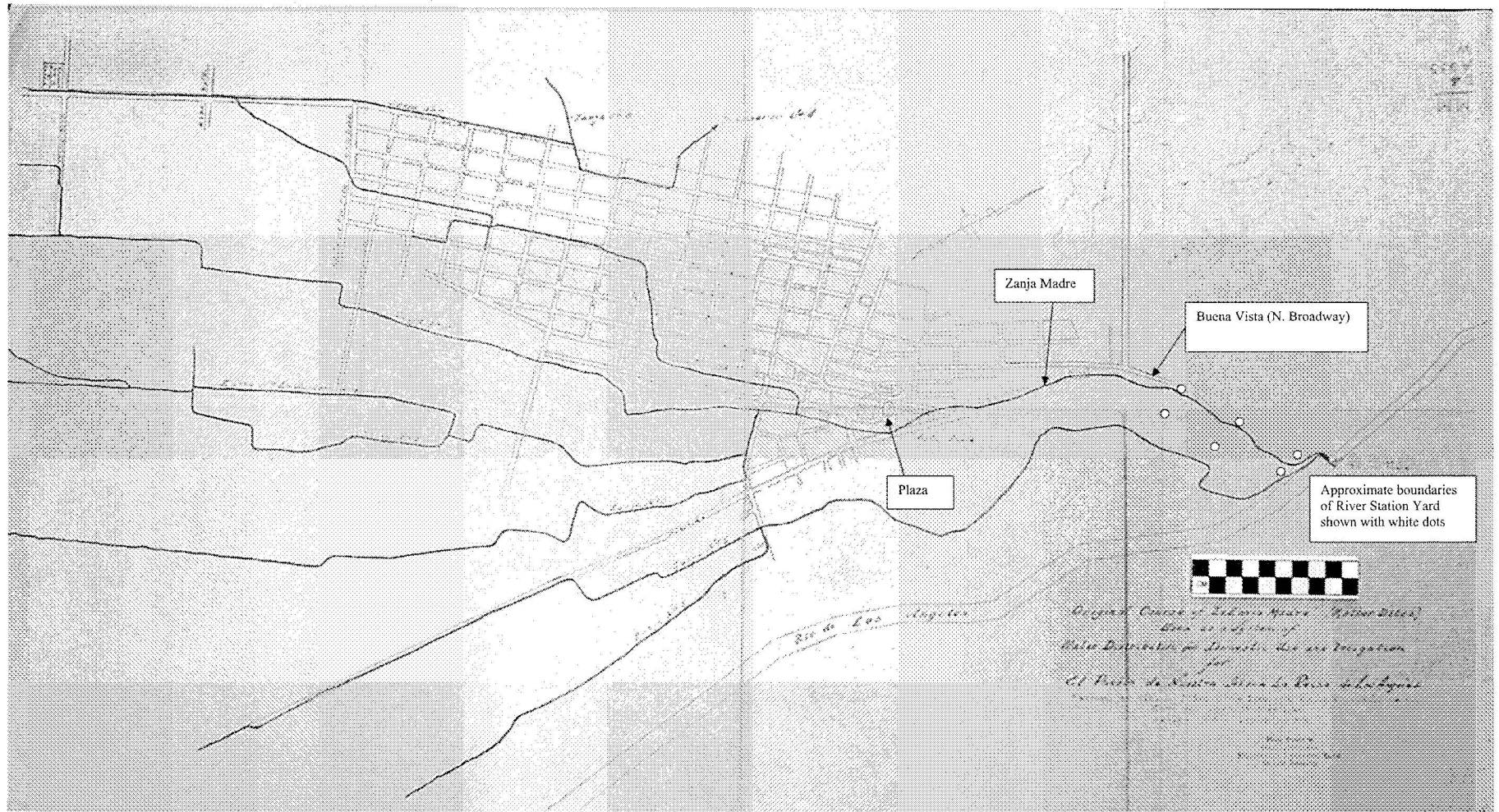


Figure 4. Original Course of "La Zanja Madre" (Stevenson, N.C. n.d.)

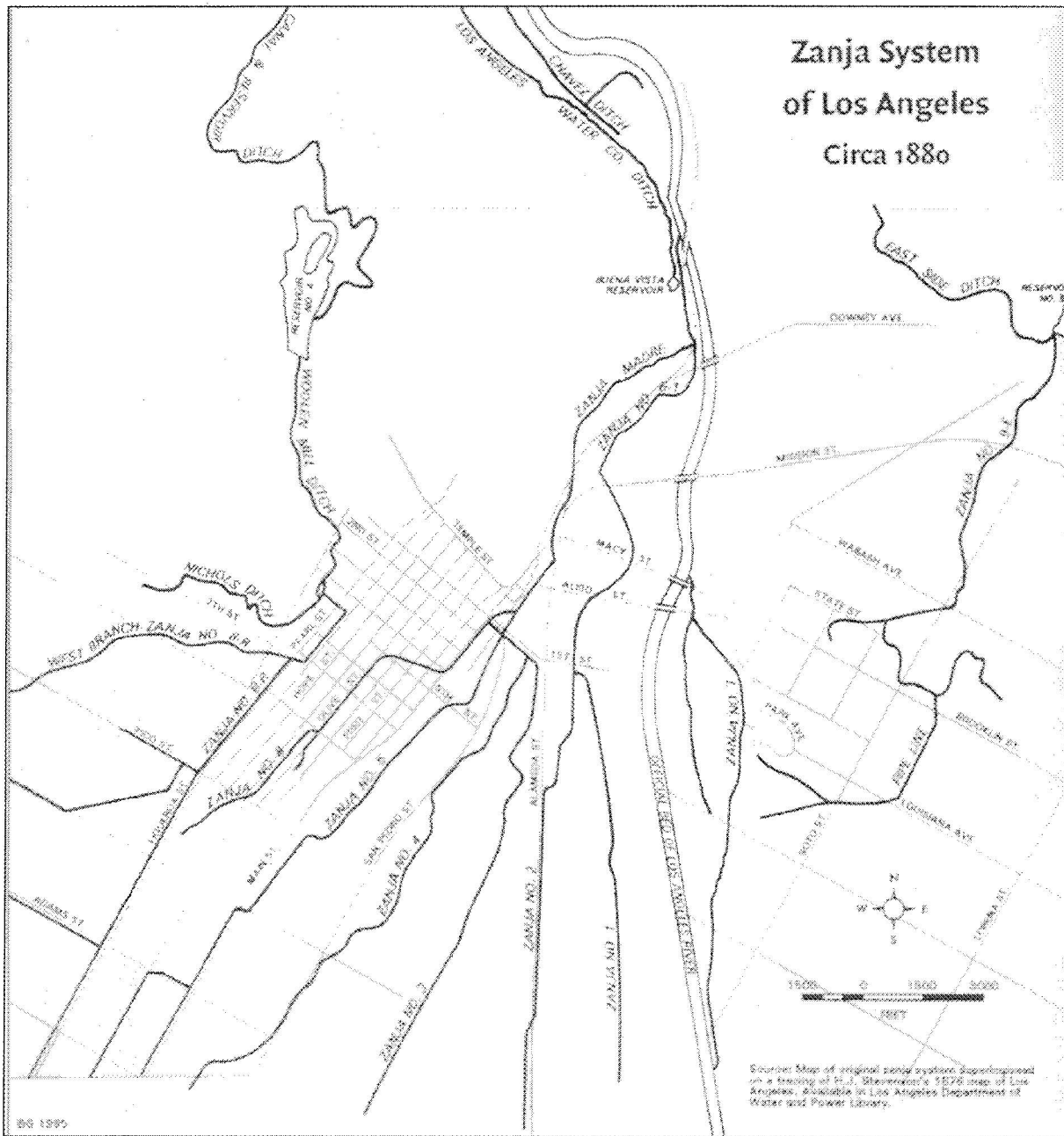


Figure 5. Zanja System of Los Angeles circa 1880 (Gumprecht 1999:72)

Illustrated History of River Station Yard

Lesser known history of the Zanja Madre may be revealed by use of historic maps. The earliest map with landscape features on it is from 1871 (Figure 6). This is well after Los Angeles became an American town and the map marks the location of Sonoratown, the site of the Chinese massacre and, west of downtown only, the open zanja. While the River Station area is off the map to the right, the steep slope of the bluff along which the Zanja Madre flowed to the Plaza is clearly visible. However, no open zanja is illustrated in that location.

The first map of the River Station area located is from 1876 (Figure 7). Once again, the steep slope of the bluff is illustrated, but no open zanja is visible. River Station Depot is clearly present and the railroad active. The Eagle Mills (later Roller Mills and Capitol Milling) building is not illustrated at the right-hand end of the rail yard although it was supposed to be present by 1851.

The next map located was of River Station yard in 1891 (Figure 8). The rail yard is fully developed with many buildings and the Mill is present. Once again the steep slope of the bluff is illustrated and no open zanja is present.

A slightly later map looking north instead of south, illustrates the bluff even better (Figure 9). This 1894 map shows the eastern end of the yard, the river and the bridges well. Again, no open zanja is visible anywhere in the illustration.

The same vista is presented in a 1909 map (Figure 10). Again the steep slope of the bluff is well illustrated as is the relative lack of development on that slope. Note that the roundhouse present in 1894 has been removed, along with the other maintenance buildings. Horne (2003:23) states that a larger, more modern roundhouse at MidwayYard replaced the River Station roundhouse in 1902. Southern Pacific apparently removed the old buildings promptly.

A 1924 aerial photo presents an amazingly similar status for River Station Yard (Figure 11). A 1987 photo (Figure 12) shows more tracks but retains the steep, undeveloped bluff.

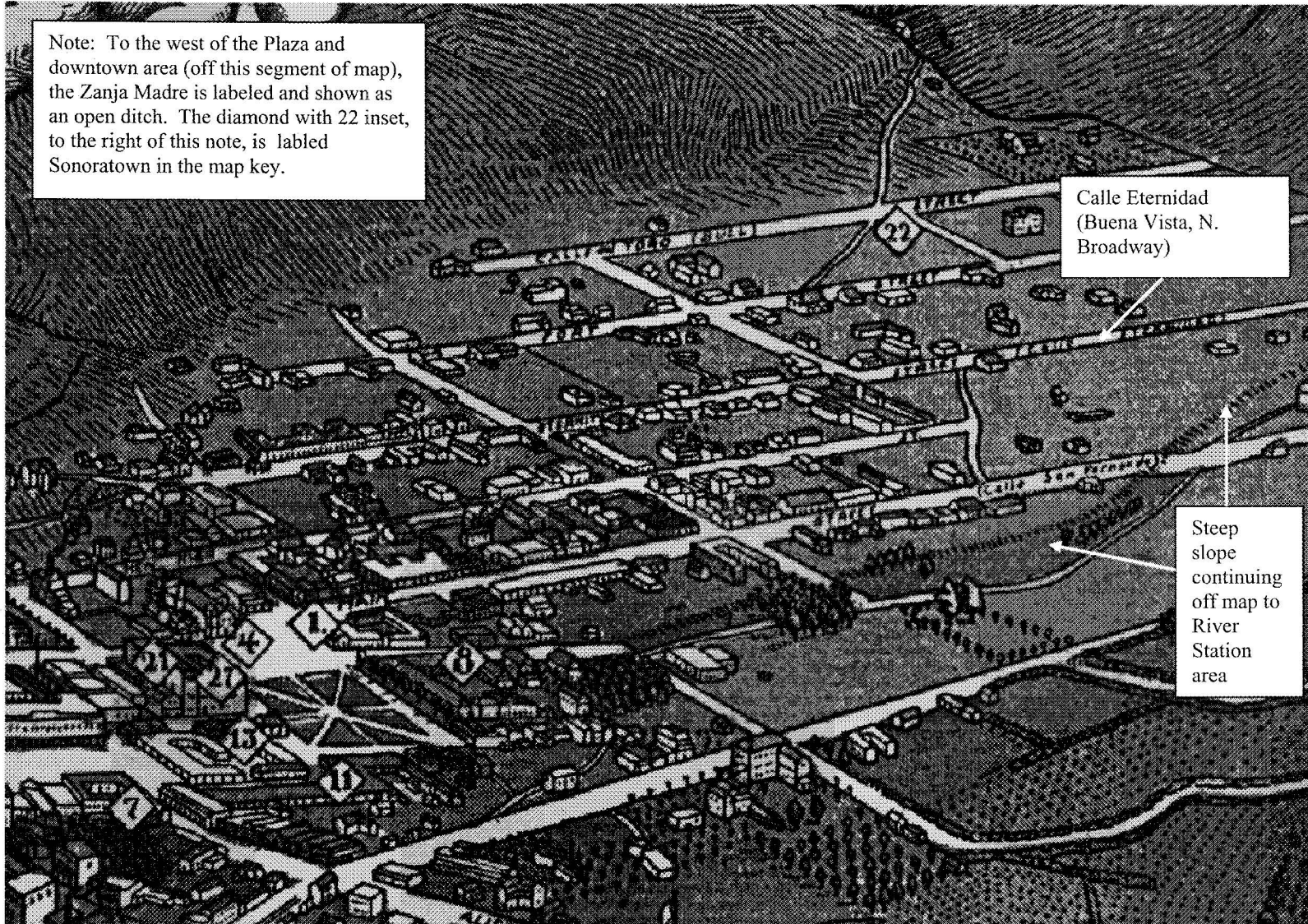


Figure 6. 1871 map of Los Angeles (Gores 1871)

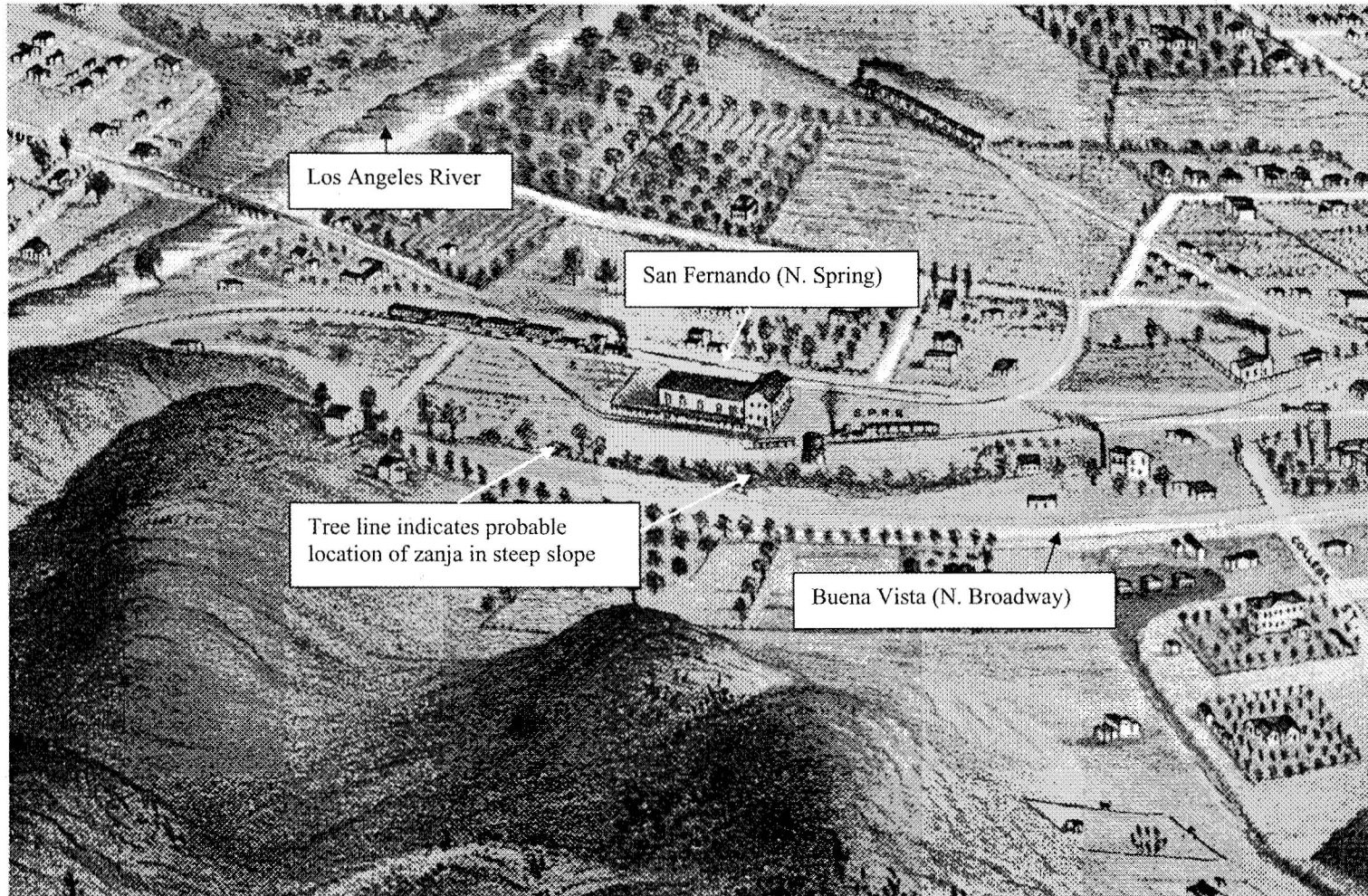


Figure 7. 1876 map of River Station Yard looking south from the Elysian Hills (Glover 1877)

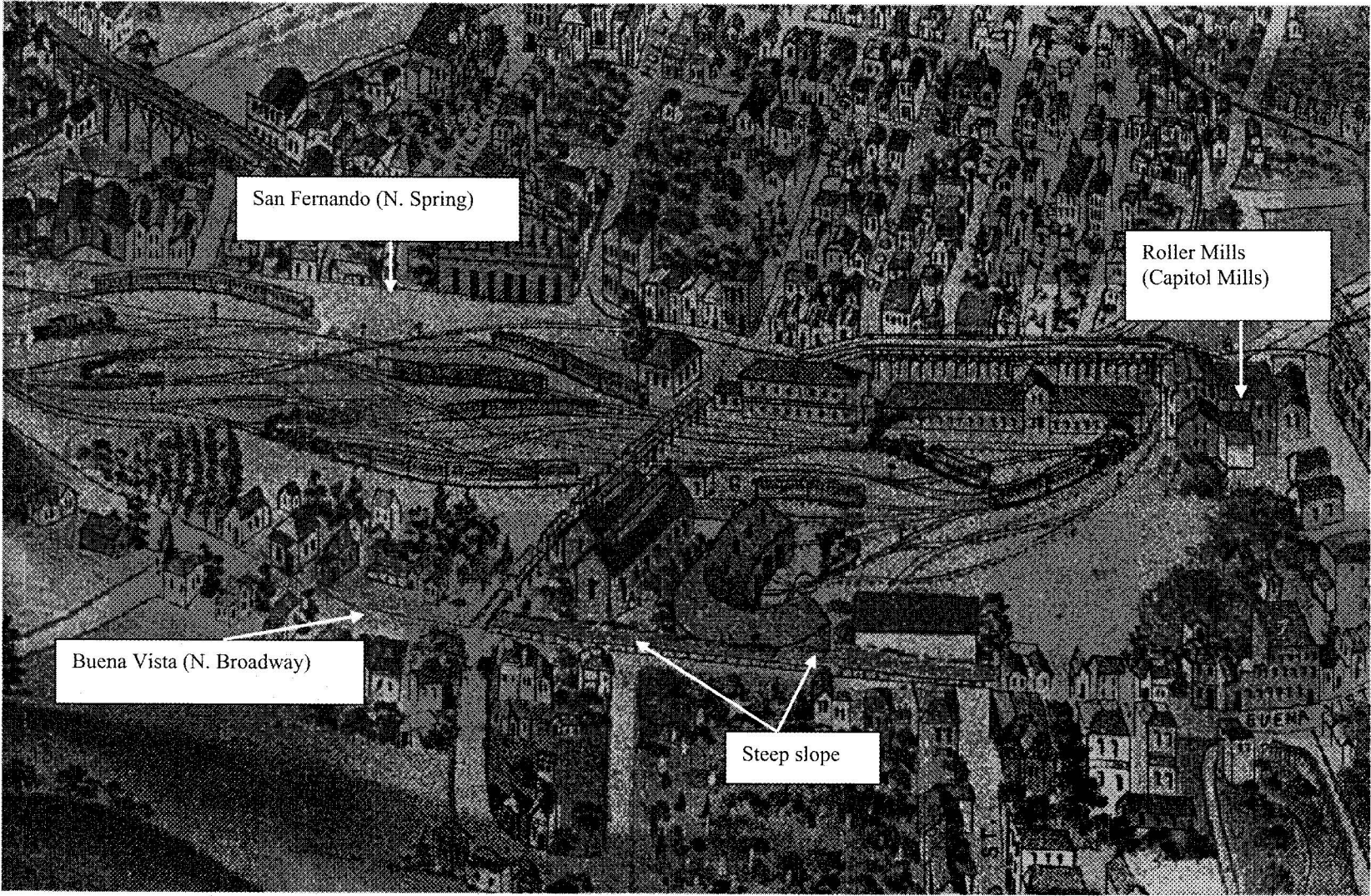


Figure 8. 1891 map of River Station Yard looking south from the Elysian Hills (Elliott 1891)

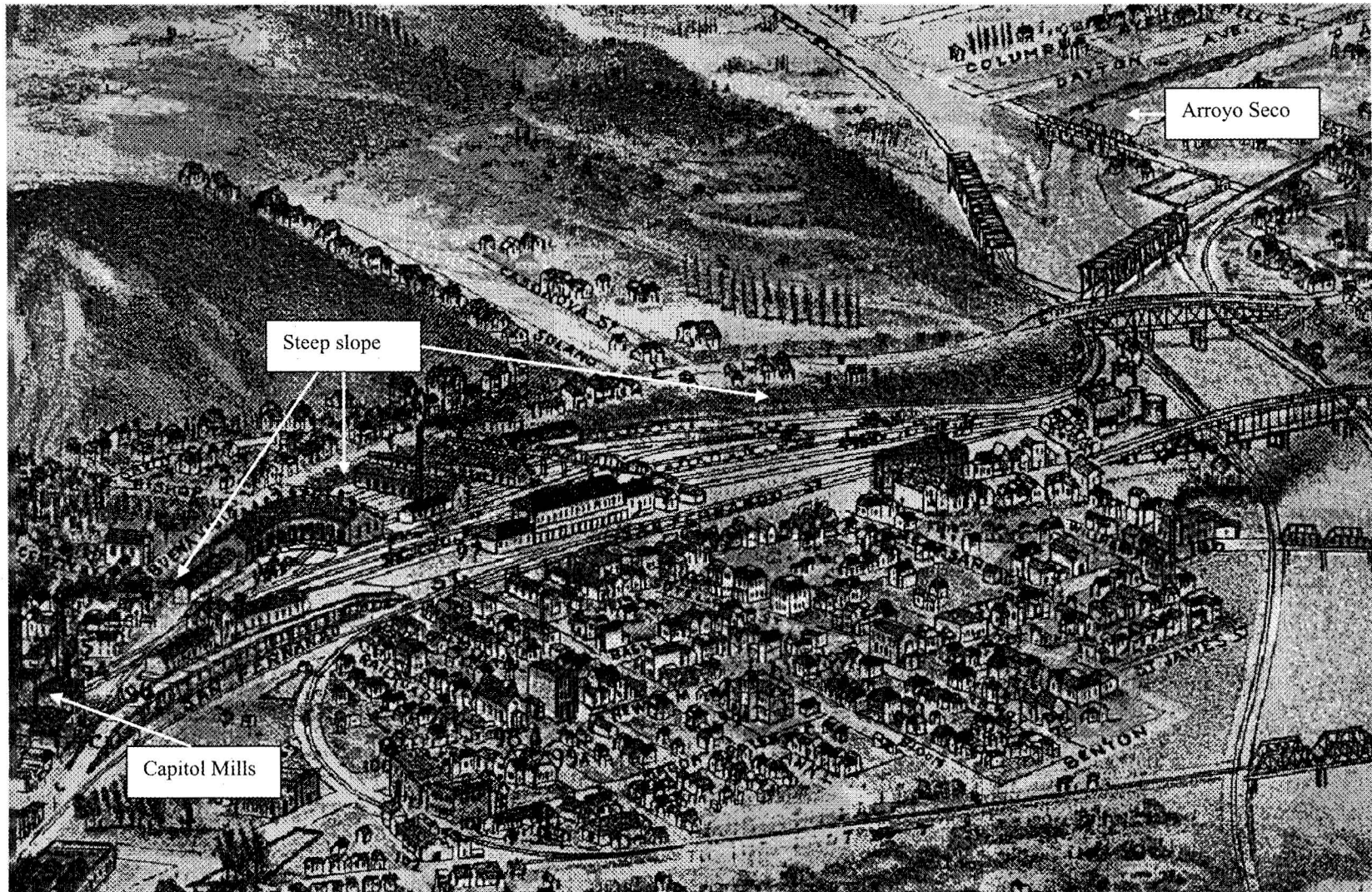


Figure 9. 1894 map of River Station Yard looking northeast (Pierce 1894)

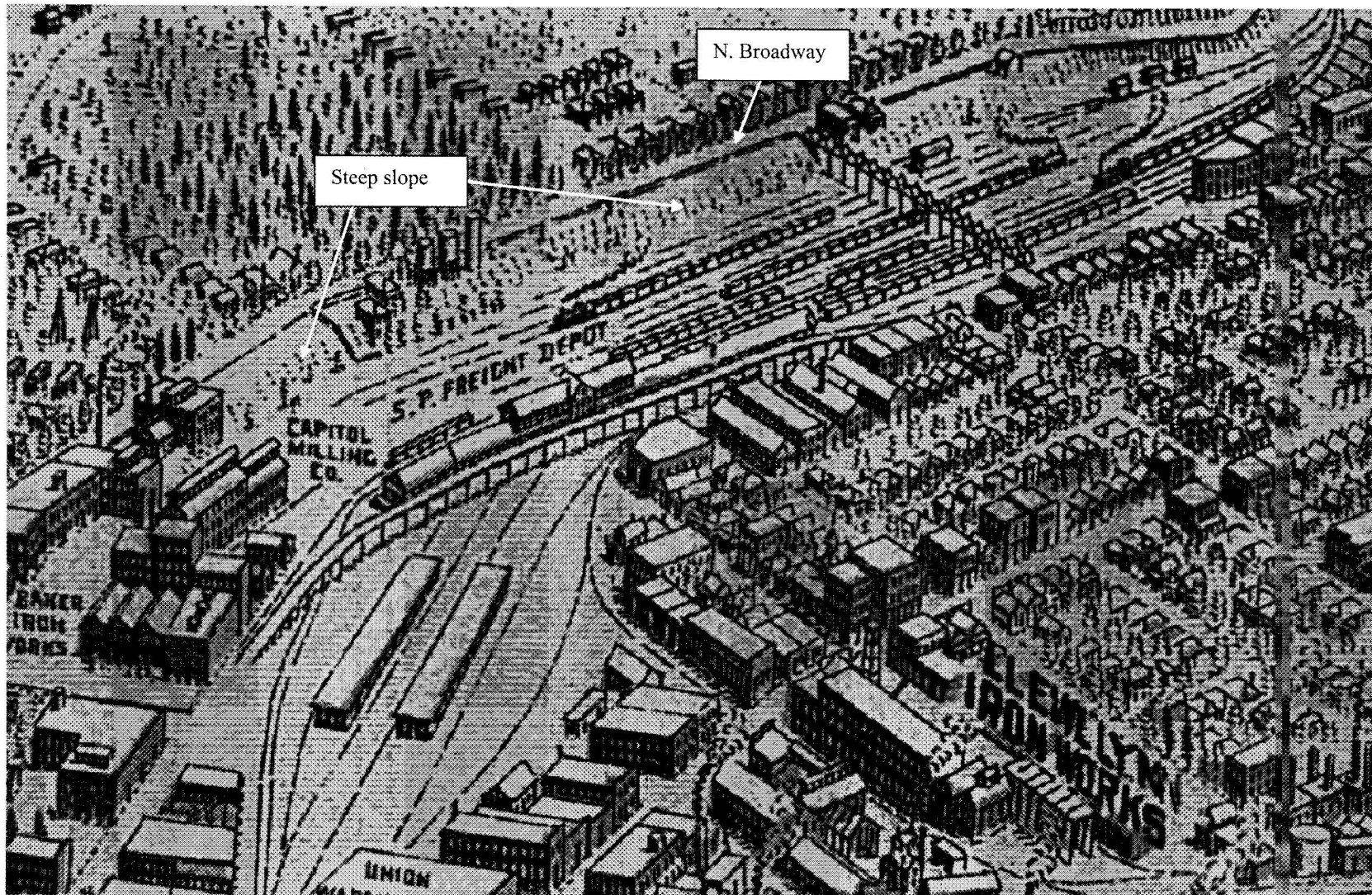


Figure 10. 1909 map of River Station Yard looking north (Gates 1909)

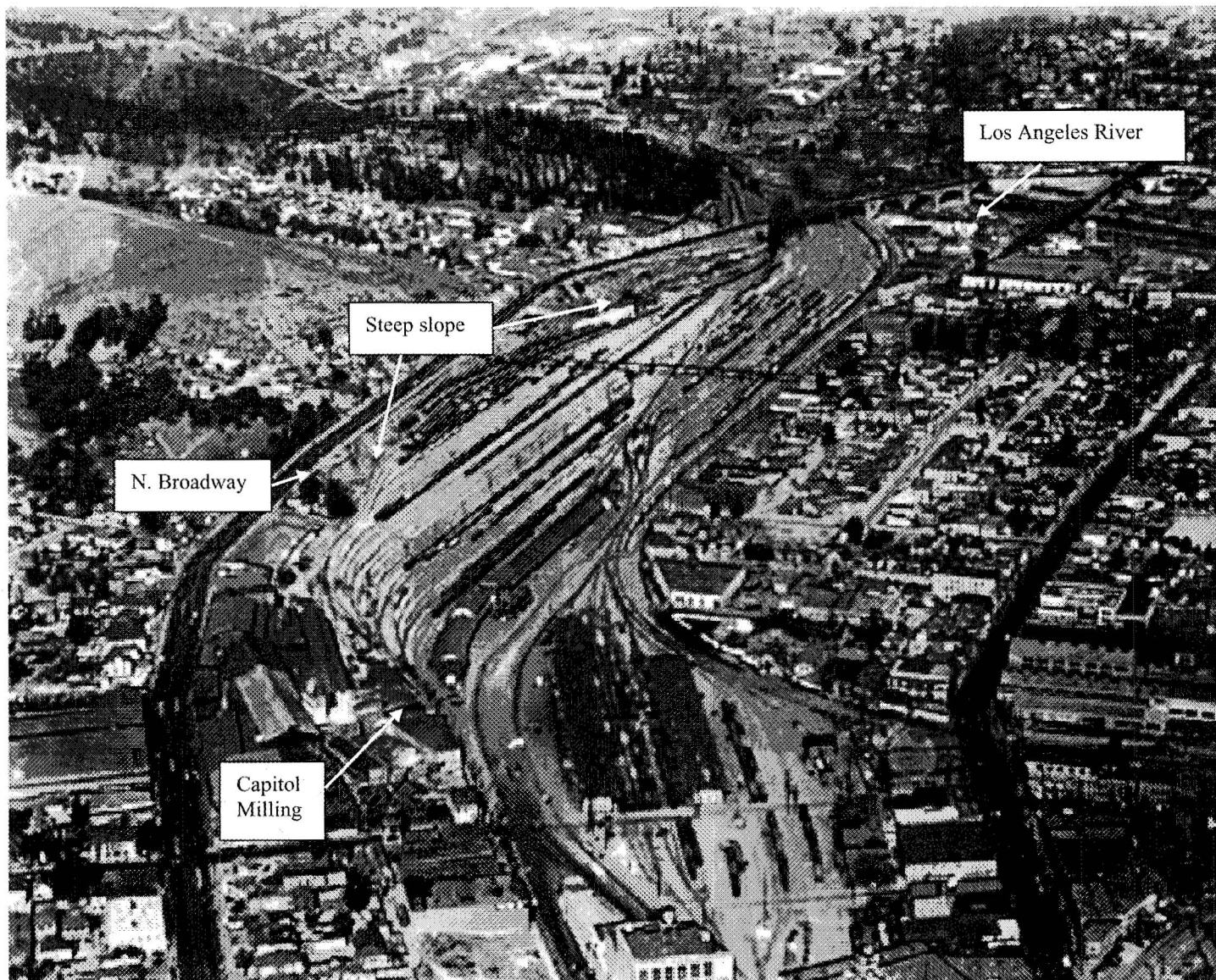


Figure 11. 1924
Aerial of River
Station Yard
looking northeast
(LAPLPD 1924)



Figure 12. 1987 photo of River Station Yard looking southwest to downtown (LAPLPD 1987)

Previous Archaeological Investigations

Archaeological monitoring of pipeline construction in River Station Yard was conducted by Science Applications International Corporation (Berryman and Woodman 2001). They list only “slaughterhouse debris” as being present in one location in the Yard (Berryman and Woodman 2001:27). No bone was collected and no other notes were made. Since no slaughterhouse is known from any time period, it seems unlikely that this deposit was characterized correctly.

Archaeological testing of the theoretical location of the Zanja Madre at the base of the bluff was conducted in 2000 by Applied Earthworks for the Area of Direct Impact (ADI) for the Metro Blue Line (now called the Gold Line; Horne 2003). This testing consisted of nine test trenches (Figure 13), ranging from 10-30 feet in length and 5-6 feet in depth. Sediments encountered in the testing consisted mostly of disturbed fill sediments or disturbed fill sediments overlying native fluvial sands and gravels. Remnant building materials –brick, steel pipe, sewer pipe, cement slabs, - were encountered as were scattered historical archaeological materials such as glass and ceramic. Small, torch-cut segments of track were also present in the fill.

Testing of soil remediation zones was performed in 2002 by Greenwood and Associates in River Station Yard (Foster 2002). Cultural materials were encountered in 1 of 21 trenches (Figure 13). The one positive trench resampling the roundhouse foundations previously discovered by Applied Earthworks.

Archaeological monitoring of soil remediation test grids was performed in 2002-2003 by Greenwood and Associates in River Station Yard (Messick et al. 2003). Materials encountered, present in 8 of 18 grids (Figure 13), were extremely similar to those recovered by Applied Earthworks. A deep cultural deposit was encountered in one grid along N. Spring Street and consisted of historical archaeological materials probably associated with the Pacific Hotel that once operated in River Station Yard.

RECONNAISSANCE

Prior to survey, a composite map was constructed from archival research and referenced during the survey (see Figure 13). The cultural resources reconnaissance survey was conducted on June 10, 2004. The survey was conducted on foot, surveying all ground between the MTA Gold Line on the north and Spring St on the south. The area between the Gold Line's north fence and Broadway is private property and was not accessible for pedestrian survey. The area was inspected visually and photographed.

The MTA property at River Station Yard is at present a large graded and compacted lot with no structures except fences and the Gold Line track (Figure 14). The natural surface has been heavily impacted by construction and removal of structures including buildings and rail features. An under ground utility corridor (Pacific Pipeline) was noted and appears to bisect the area.

The soils in the area are alluvial and colluvial river deposits consisting of small to large gravels and cobbles that have been disturbed and compacted by historic construction activity. The MTA Gold Line is set at the base of a steep slope south, and below grade of, Broadway. This is the described location of the original open Zanja Madre. However, extensive testing (Horne 2003) did not reveal any identifiable features related to the zanja in this location.

The steep slope of the bluff below Broadway (private property) has been impacted at the western end in some areas due to the construction of sections of retaining wall for a parking structure (in 2000) and paved lot (recently). A five-foot length of brick conduit approximately 3.5 feet in diameter was discovered in 2000 (Maese 2000) after construction of a parking structure (Figure 15). Note the new asphalt visible in the photo. This brick conduit was identified as the Zanja Madre dating to approximately 1885 (Wesson 2002, Horne 2003).

Since that time, a parking lot has been installed below the slope where the brick conduit was found in 2000. Two additional sections of brick conduit were visible during the field survey. Both are located by following the slight curve of the hillside southwest from the 2000 segment (Figure 16, 17).

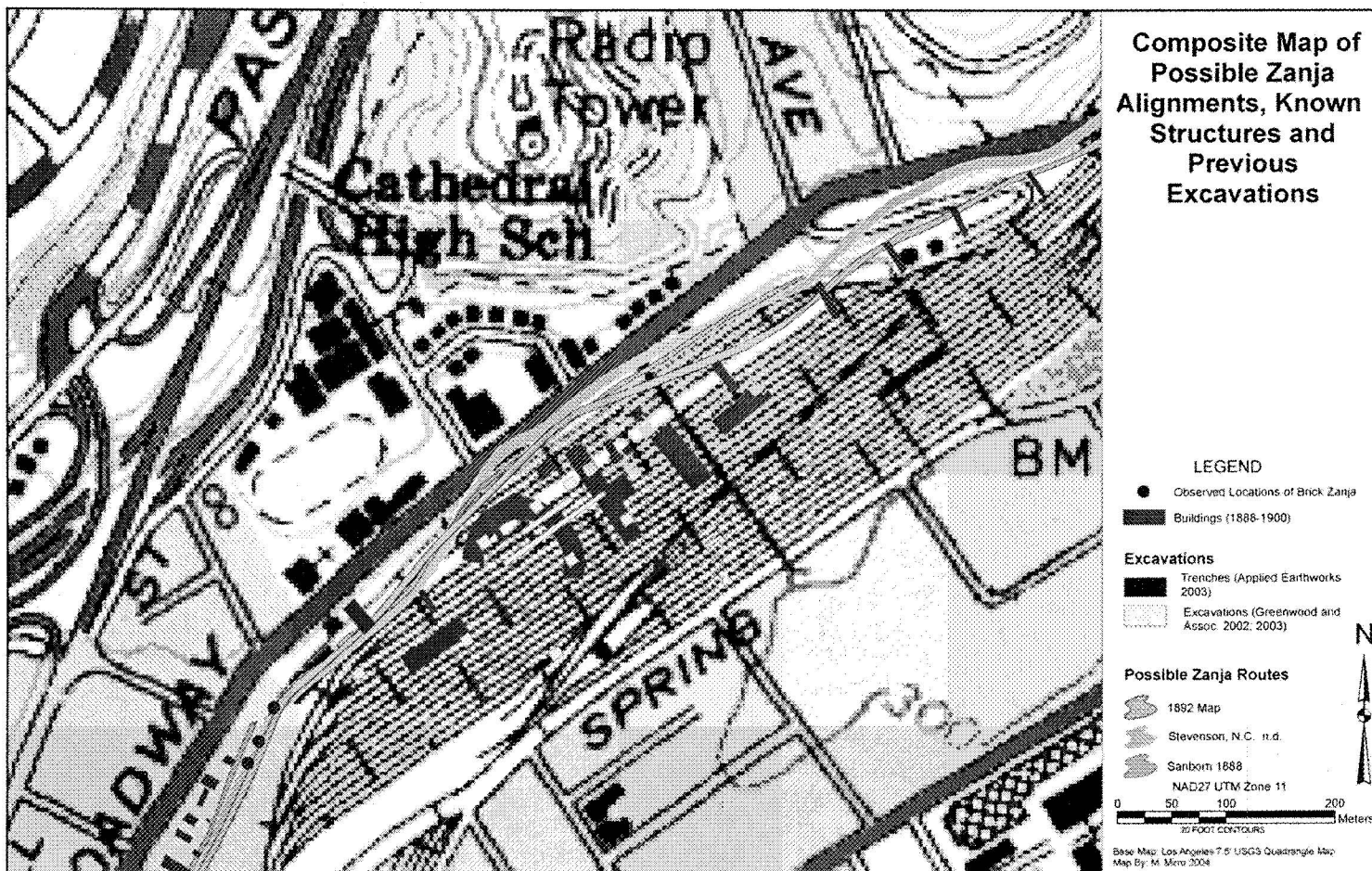


Figure 13. Composite Map of Possible Zanja Alignments, Known Structures and Previous Excavations

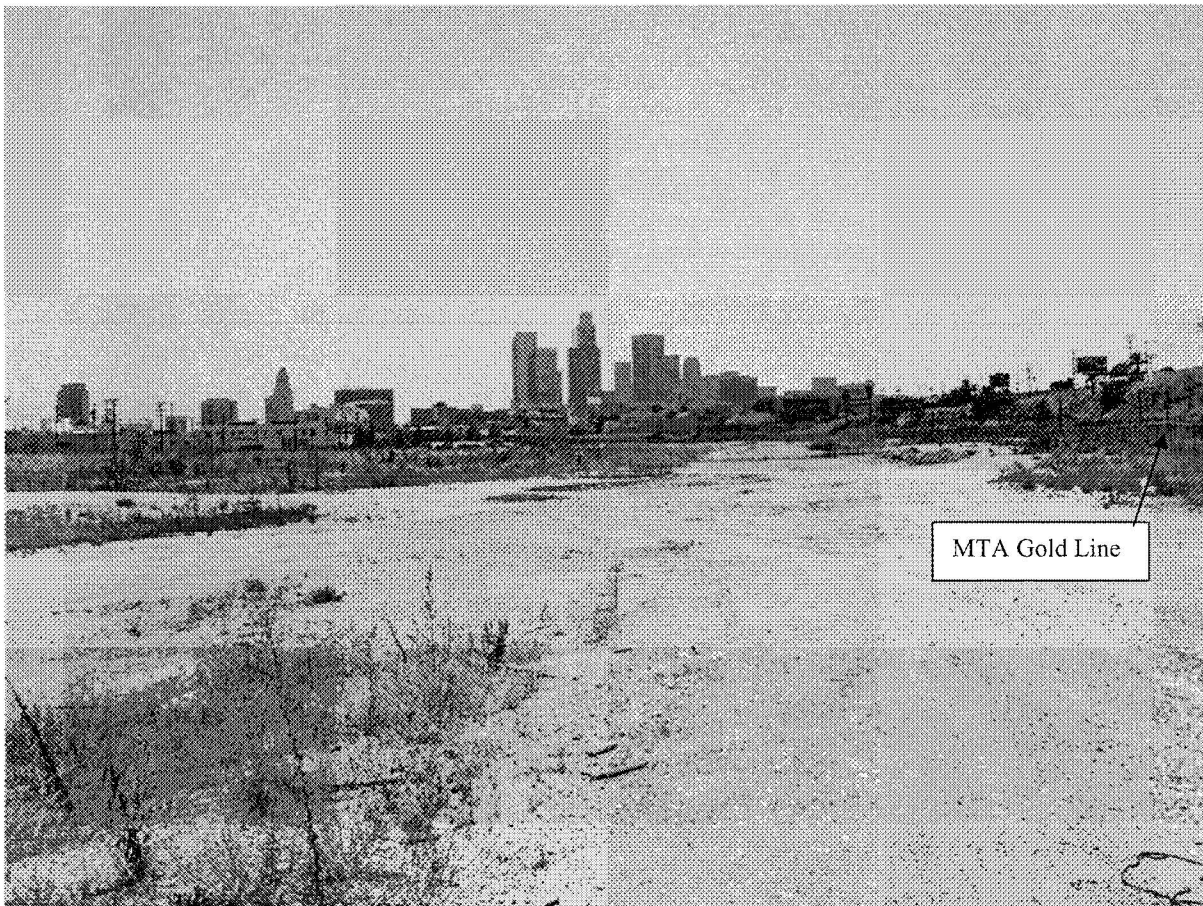


Figure 14. River Station Yard, looking west to downtown Los Angeles

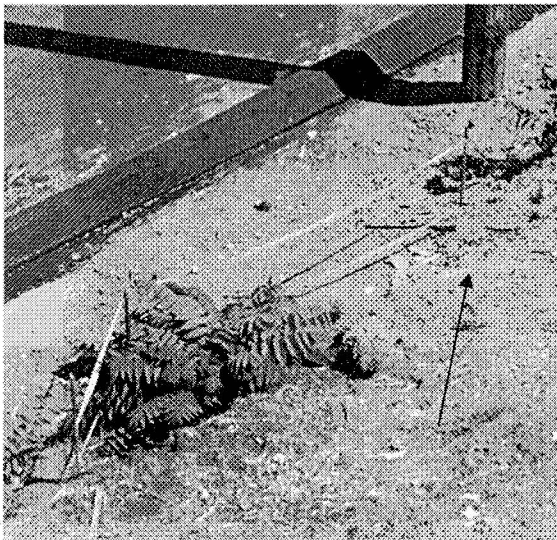


Figure 15. Previously known brick conduit (19-003103) adjacent to project area



Figure 16. Exposed brick conduit near project area, east section



Figure 17. Exposed brick conduit near project area west section

These three known segments are all on private property north of the Gold Line. Their locations in the hillside below Broadway seem to indicate that the brick conduit may continue in the remainder of the undisturbed bluff just above grade (Figure 18).

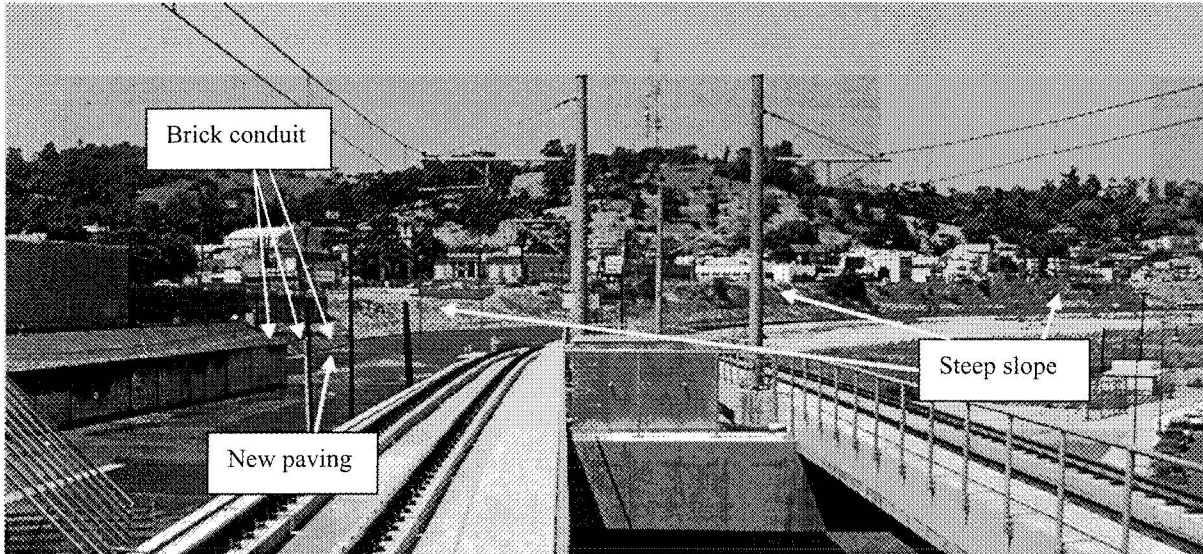


Figure 18. View north to Elysian Hills showing Gold Line platform, newly paved area and locations of exposed brick conduit.

CONCLUSIONS

The open Zanja Madre was described as running along the base of the bluff below North Broadway. Extensive trenching and soil work within River Station Yard, especially directly in the area at the base of the bluff, has not revealed any evidence of the original open zanja. The Gold Line property was appropriately tested in 2000 and there is no evidence that potential zanja remnants would be revealed by further excavation work along the Gold Line route. We do not recommend any further excavations on the Gold Line property. There is also no evidence that any portion of the Zanja Madre ever crossed the old River Station Yard property that is now Cornfield State Park.

Three sections of brick conduit paralleling the route of the Zanja Madre, but in the face of the bluff below Broadway and above grade of the original open zanja, are now known. These segments are on approach to the Capitol Milling building where historic sources report brick conduit zanja by the mid 1850s and imply that it was present much earlier. The circumference of the known segments matches the historically reported dimensions. The location in the bluff also matches that implied by historic illustrations. Thus, they may truly be remnants of the Zanja Madre.

Alternatively, they may represent storm drains installed in the early 20th Century. Very similar brick conduit features were revealed during excavations along First Street and Temple Street (near Grand Avenue) where no zanja branches are known to have existed (Mirro and Gust 2004).

We recommend the following if and when the private property owner develops or alters that property: (1) testing of the mortar and bricks from the exposed brick conduit segment for dating purposes, (2) shovel or auger testing outward from the known segments along the bluff to determine the extent of feature, (3) shovel or auger testing in a grid toward Capitol Milling to determine if any fall is present as historically reported, (4) excavation into the bluff in at least one location to determine if any evidence of a tunnel in sandstone is present as historically reported, and (5) appropriate preservation.

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