Railyards Specific Plan
Draft Environmental Impact Report

SCH No. 2006032058
Technical Appendices

August 2007 (P05-097)

Prepared for
City of Sacramento

Prepared by
PBS&J/EIP

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NOTICE OF PREPARATION

CITY OF SACRAMENTO

CALIFORNIA

DEVELOPMENT SERVICES
DEPARTMENT

North Permit Center
2101 Arena Blvd., 2nd Floor
SACRAMENTO, CA 95834

Tele 916-808-5381
FAX 916-808-5328

DATE: March 10, 2006

TO: Interested Persons

FROM: LE Buford, Principal Planner
Development Services Department

RE: **NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT AND SCOPING MEETING FOR THE RAILYARDS SPECIFIC PLAN, SACRAMENTO INTERMODAL TRANSPORTATION FACILITY AND PROJECT LEVEL AREA DEVELOPMENT**

INTRODUCTION

The City of Sacramento ("City") is the lead agency for preparation of an Environmental Impact Report (EIR) for the "Railyards Specific Plan', Sacramento Intermodal Transportation Facility (SITF) and "Project Level Area" proposing mixed-use development of approximately 240 acres located in the Central City/Downtown area of the City of Sacramento. The EIR is an environmental review document being prepared in compliance with the California Environmental Quality Act (CEQA). Under CEQA, upon deciding to prepare an EIR, the lead agency must issue a Notice of Preparation (NOP) to inform all responsible agencies of that decision. The purpose of the NOP is to provide information describing the project and its potential environmental effects to enable comments regarding the scope and content of the information to be included in the EIR. Agencies should comment on such information as it relates to their statutory responsibilities in connection with the project.

Pursuant to CEQA Guidelines section 15168, the EIR is being prepared as a program level EIR for the "Railyards Specific Plan" and Sacramento Intermodal Facility. A program EIR may be prepared on a series of related actions that can be characterized as one large project. It is also intended that the EIR will provide Project Level review of development in the Project Level Area of The "Railyards Specific Plan". Subsequent development activities in The "Railyards Specific Plan" area will be examined in light of the program/project EIR to determine whether any further environmental review is required. Additionally, the EIR will analyze potential impacts that may be associated with possible revisions to the approved Remediation Action Plans for contamination on the site and the related Tri-Party Memorandum of Understanding between the City, Department of Toxic Substance Control (DTSC) and UP Railyards.

The project description, location, and environmental issue areas that may be affected by the project are set forth below. The EIR will evaluate the potentially significant environmental impacts of the proposed project, on both direct and cumulative basis, and will identify mitigation measures that may be feasible to lessen or avoid such impacts. The EIR will provide a programmatic evaluation of potential environmental impacts associated with The RSP, SITF and related entitlements pursuant to section 15168 of the CEQA Guidelines. The EIR will provide a project-specific evaluation of development in the Project Level Area of the "Railyards Specific Plan" pursuant to CEQA Guidelines section 15161.

SUBMITTING COMMENTS

Comments and suggestions as to the appropriate scope of analysis in the EIR are invited from all interested parties. Written comments or questions concerning the EIR for the proposed project should be directed to the environmental project manager at the following address by 5:00 p.m. on April 10, 2006 (Please include the contact person's full name and address in order for staff to respond appropriately):

Scott Johnson, Associate Planner,
City of Sacramento Development Services Department,
2101 Arena Boulevard, Suite 200, Sacramento, CA 95834.
Tele (916) 808-5842 fax (916) 566-3968.
E-mail: srjohnson@cityofsacramento.org

SCOPING MEETING

A public scoping meeting will be held on March 29, 2006, from 6:30 p.m. to 8:00 p.m. at the following location:

Historic City Hall Hearing Room
915 I Street, Second Floor
Sacramento, CA 95814

Responsible agencies and members of the public are invited to attend and provide input on the scope of the EIR.

PROJECT LOCATION/SETTING

The "Railyards Specific Plan" area is approximately 240 acres located in the Central City/Downtown area of the City of Sacramento. Figure 1 (Regional Location Map) shows the location of The "Railyards Specific Plan" area within the Sacramento region. The project area is east of Interstate 5 and south of the American River. The project site is comprised of Assessor's Parcel Numbers (APN) 002-0010-035, -037, -039, -041, -043; 001-0210-013,-016, 006-0023-006.

The site contains the rail depot which is listed on the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) as the Southern Pacific Railroad Company's Sacramento Depot. Built in 1925, the Depot and associated REA building were formally listed on the National Register in 1975. Historically, the Depot has served as Sacramento's main rail station for the past 75 years. Amtrak has two passenger platforms and tracks through the station area. In addition, the site contains Union Pacific mainlines for freight and passenger trains. The Central Shops, previously used for activities of the Southern Pacific Locomotive Works, have been vacant for years.

BACKGROUND

The City Council certified the current Railyards Specific Plan (RSP) and Richards Boulevard Area Plan (RBAP) Environmental Impact Report (EIR) in December, 1993. At that time the City Council approved amendments to the City's General Plan and Central City Community Plan that provided for the land uses proposed in the two plans. The Railyards Specific Plan was approved by the City Council on December 13, 1994. A Supplemental EIR (SEIR) for the RSP and RBAP was certified in late 1994. The SEIR addressed several aspects of the RSP and RBAP that had been further refined including levels of development and timing of infrastructure improvements. Additionally the SEIR evaluated the effects of soil remediation alternatives described in the draft Feasibility Study prepared by Southern Pacific Transportation Company. Development in the RSP area has not occurred with the exception of the restoration and re-use of the REA Building and the extension of Seventh Street. Remediation of contaminated soils on the site is ongoing.

PROJECT DESCRIPTION

The EIR will provide a programmatic evaluation of the "Railyards Specific Plan" and related entitlements pursuant to section 15168 of the CEQA Guidelines and the proposed Sacramento Intermodal Facility. The EIR will provide a

project-specific evaluation of development in the Project Level Area of The "Railyards Specific Plan" pursuant to CEQA Guidelines section 15161.

THE RAILYARDS SPECIFIC PLAN

The project proposes adoption and implementation of the "Railyards Specific Plan" in accordance with section 65451 of the Government Code and approval of related entitlements, including a development agreement, development standards and design guidelines, that would allow mixed-use development, including high-density housing, parks, a canal, open space, cultural, office, hospitality, entertainment, sports, and retail uses, and supporting infrastructure, on approximately 240 acres in the Central City/Downtown Area.

The "Railyards Specific Plan" proposes up to 11,085 mixed-use high density residential units, including town homes, apartments, condominiums, and affordable housing. These units are proposed to be incorporated throughout The "Railyards Specific Plan" area with a focus on the northeast portion of The Railyards site. The "Railyards Specific Plan" also would allow up to 2,986,500 square feet of office uses, up to 1,370,000 square feet of retail, up to 1,000 hotel rooms, up to 421,700 square feet of cultural and entertainment uses, and would include approximately 43 acres of open space.

The project applicant (Thomas Enterprises of Sacramento, LLC) would enter into a development agreement with the City of Sacramento setting forth the needed infrastructure improvements, the timing and method for financing improvements, and other specific performance obligations of the project applicant and the City of Sacramento as they relate to development pursuant to the "Railyards Specific Plan".

The "Railyards Specific Plan" proposes to integrate The Railyards site into the existing downtown area by raising Fifth and Sixth Streets gradually over the Union Pacific Railroad tracks, and by the extension of light rail to the site. On a regional and statewide level, the "Railyards Specific Plan" incorporates existing transportation linkages and the City's plans for the Sacramento Intermodal Transportation Facility ("SITF"), consisting of a variety of transportation services that would integrate cross-country passenger rail, regional rail, light rail and buses, taxis, and other automobiles, bicycles and pedestrians. Transit providers and services are anticipated to include, but are not limited to, Amtrak Capitol Corridor and long-haul trains, Regional Transit buses and trains, Greyhound buses, charter buses, taxis, and possibly high-speed rail.

The "Railyards Specific Plan" also proposes a performing arts facility, the adaptive reuse of the historic central shop buildings (the "Central Shops"), which includes the proposed California Railroad Technology Museum, and a public marketplace. In addition, the "Railyards Specific Plan" proposal includes a series of public parks, including a meandering canal, that would span the development with pedestrian and bicycle trails linking residents to the regional open space system and the Sacramento River.

As described above, the "Railyards Specific Plan" proposes mixed-use development of approximately 240 acres in downtown Sacramento. The "Railyards Specific Plan" identifies proposed uses on the land use plan (Figure 2) with several designations. These land use designations are set forth below:

	Office (sq./ft.)	Residential (units)	Retail (sq./ft.)	Hotel (rooms)	Cultural and Entertainment (sq./ft.)	Open Space (acres)
Max.	2,986,500	11,085	1,370,000	1,000	421,700	43.04
Min.	---	7,534	---	---	---	---

The "Railyards Specific Plan" is divided into the following neighborhood districts that contain varying mixtures of land uses. These districts have no hard boundaries and are intended to represent general concentration areas that highlight and emphasize different amenities and uses throughout plan area.

THE DEPOT DISTRICT

The Depot District would encompass the general area south of the Central Shops from the Sacramento River to Seventh Street. It would include a mix of uses between the areas of Fifth Street and Seventh Street. The "Railyards Specific Plan" would be designed to reflect and support relocation of the rail tracks to an alignment north of the existing tracks, and anticipates that the Depot District would include the City's preferred plan for the SITF,

including inter-city passenger train, light rail, bus, and freight services. The Depot District also would provide an opportunity for connections to the potential future statewide high-speed rail service.

Fifth Street would be extended north and aligned along the eastern edge of the City's anticipated SITF. Fifth Street is proposed as a meandering two-lane street with wide sidewalks and a mix of office, residential, and retail uses. Sidewalks along Fifth Street thus would serve as the primary pedestrian links between downtown and the SITF, integrating The Railyards into downtown Sacramento. Fifth Street would connect the southern portion of the plan area to the north by bridging the 200+ foot wide inter-city rail corridor and would be intended to minimize the visual and physical barriers between downtown and the City's northern neighborhoods.

Sixth Street would be a four-lane north/south arterial street that would traverse the center of the "Railyards Specific Plan" area, providing connection between the Richards Boulevard area to the north and the existing downtown area to the south. Development on either side of Sixth Street is proposed to include residential, commercial, office, and retail uses. Sixth Street connects the Depot District to the Alkali Flat neighborhood, and the scale and design of buildings in this area would reflect this relationship. In addition, Sixth Street serves as a connection for Alkali Flat residents to the various project amenities of the Depot District, the Riverfront District, and the overall plan area.

CENTRAL STATION

Central Station represents the historic core of The Railyards and consists of the area north of the Depot District, bordered on the west by Interstate-5 and on the east and north by Fifth Street. Fifth Street would gradually transition from the Depot District to Fifth Street Emporium and would open up to Central Station on the west, adjacent to the historic Central Shops. The Central Shops would form the heart of Central Station. These are historic brick structures, some dating from as early as 1868, that would be preserved and renovated to provide a mixture of cultural and entertainment uses. One of the historic buildings would hold a public marketplace intended to include specialty food shops and fine dining restaurants. An outdoor plaza is proposed to provide open space sufficient to provide community uses such as a farmer's market, outdoor seating, live entertainment, and other functions intended to make it a community and regional gathering place.

The "Railyards Specific Plan" anticipates that two of the historic buildings would be renovated to create the new Museum of Railroad Technology, expanding the offerings of the existing State Railroad Museum in Old Sacramento. The remaining Central Shops are proposed for cultural and entertainment uses. To the north of the Central Shops, the "Railyards Specific Plan" proposes a state-of-the-art performing arts facility, with access to nearby art galleries, jazz clubs, and restaurants.

FIFTH STREET EMPORIUM

Fifth Street Emporium runs along the eastern and northern boundaries of Central Station. Interstate 5 borders the Fifth Street Emporium to the west. The "Railyards Specific Plan" proposal for this area is to create a 24-hour pedestrian-oriented neighborhood featuring one and two stories of retail and entertainment facilities with loft-style housing and office space uses above. Also proposed are connecting plazas providing access to shops, a boutique hotel, and retail uses. Fifth Street Emporium also is planned to serve as a connector to Central Station, the Riverfront District, the Canal District, and the Sports and Entertainment District.

SPORTS AND ENTERTAINMENT DISTRICT

The Sports and Entertainment District includes the area north of Fifth Street Emporium, from Sixth Street to the east across to Interstate 5 to the west. This District is proposed to include themed restaurants, entertainment, nightclubs, parking structures, a sports arena, office space, a hotel, retail, and residential uses. These uses are proposed within a network of urban open space, including the western edge of the canal feature, an outdoor amphitheater, and large plazas that are intended to function as community gathering spaces.

CANAL DISTRICT

The Canal District occupies the northeast quadrant of the plan area, east of Sixth Street. This District proposes a meandering canal. Open space, pedestrian and bicycle paths, restaurants, neighborhood-supporting retail, and residential units border the canal. A mixed-use transit village surrounding the Regional Transit light-rail station at the intersection of Seventh Street and Big Four Boulevard also is proposed in this District. The station is proposed

in a central location to deliver transit riders to adjacent residential areas as well as to the commercial/office district on Sixth Street. Grocery and other neighborhood-serving retail uses are proposed to surround the station at street level, with office and residential uses above. The housing types proposed in this area, similar to the rest of the "Railyards Specific Plan", include for-sale units, rental units, and affordable housing.

RIVERFRONT DISTRICT

The Railyards would connect to the Sacramento River, with a marina, restaurants featuring views of the area, a hotel, housing, parks and open space and the removal of the elevated portion of Jibboom Street. This redirection of traffic is intended to provide the City, surrounding local jurisdictions, and the region with better pedestrian access to the river.

SACRAMENTO INTERMODAL TRANSPORTATION FACILITY

The Sacramento Intermodal Transportation Facility (SITF) is envisioned as a regional transportation hub that maximizes transit service, connectivity and patronage. The facility would offer service and transferring among multiple modes, including long distance passenger rail, commuter rail, light rail transit, local bus service, intercity bus, bicyclists, pedestrians, taxis, shuttles, automobiles and future high speed rail, regional rail and trolleys.

Situated at the edge of the current downtown and adjacent to the relocated rail corridor the facility would serve the needs of the commuter and long-distance traveler, and is planned as a regional destination and gateway. With its concentration of transportation services, it would enable users from local communities to connect to regional, national and international destinations via direct transfers. The facility would incorporate and continue transportation uses in the Historic Depot with expanded, refurbished and new components providing for retail, commercial, office and entertainment development and user parking.

The facility would encompass approximately 30 acres located between 2nd Street, the Central Shops, 7th Street and I Street. Its design features transportation elements that include passenger waiting areas and amenities, concourse connections to passenger rail platforms, light rail station, local bus transit area, regional bus berths, passenger pick-up and drop-off areas, shuttle and taxi bays, bicycle station, service areas and parking. Surrounding and integrated with these facilities would be plazas, walkways, public open space and landscaped areas. Accessibility and sustainable design would be incorporated into the facility.

The axial alignment of Fourth Street with the Depot would be reestablished along with a pedestrian connection at the intersection of Fourth and I Streets. Similarly on its west side, access improvements are planned that include a Third Street extension into the SITF. Additional on-site circulation improvements, connections with local streets and trails and grade-separated crossings of the rail corridor are anticipated. The SITF would be developed in phases over several years and would require further environmental review pursuant to CEQA and NEPA as appropriate.

THE PROJECT LEVEL AREA OF THE "RAILYARDS SPECIFIC PLAN"

The Project Level Area of the "Railyards Specific Plan" is depicted in Figure 3. The applicant (Thomas Enterprises of Sacramento, LLC) proposes to begin construction within the Project Level Area, and the EIR will analyze development of this subarea of the "Railyards Specific Plan" at a project level.

The Project Level Area of the "Railyards Specific Plan" consists of approximately 86 acres that include part of the Depot District, Central Station, Fifth Street Emporium, and the Sports and Entertainment District. The Project Level Area of The "Railyards Specific Plan" is to be redeveloped with a mixture of residential, cultural, retail, entertainment, public, and office uses. Below is a table summary of proposed land uses in the Project Level Area:

	Office (sq./ft.)	Residential (units)	Retail (sq./ft.)	Hotel (rooms)	Cultural and Entertainment (sq./ft.)	Open Space (acres)
Max.	1,076,500	2,235	1,250,000 and a 20,000 seat sports/event facility	650	421,700	30.96
Min.	----	1,384	---	---	---	---

PROJECT APPROVALS AND/OR ENTITLEMENTS

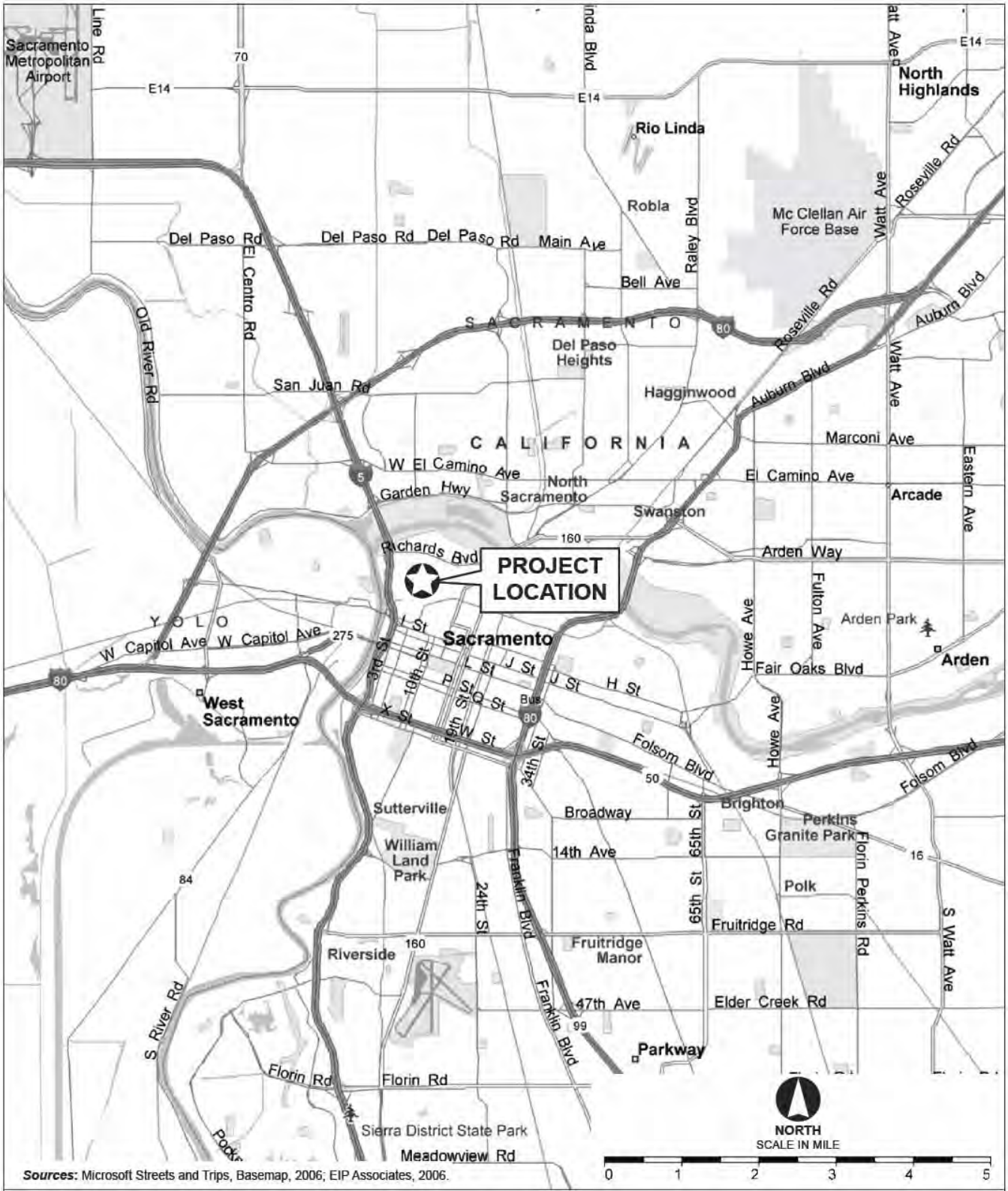
The City approvals/actions anticipated to be considered for the proposed project include, but are not limited to, certification of an EIR and adoption of a Mitigation Monitoring and Reporting Program (MMRP), rescission of the existing Railyards Specific Plan and adoption of the "Railyards Specific Plan", adoption of project-specific development standards and design guidelines, adoption of a development agreement, General Plan amendment, Zoning Code amendment, City Code amendments to sections 18.36 et seq. and 18.48 et seq. The City will further rely on the EIR in conjunction with its consideration of entitlements for subsequent project development, including but not limited to entitlements for the Project Level Area of the "Railyards Specific Plan", as deemed appropriate and consistent with the requirements of CEQA by the City as lead agency and possible . The EIR will also consider possible revisions to the approved Remediation Action Plans for contamination on the site and the related Tri-Party Memorandum of Understanding between the City, Department of Toxic Substance Control (DTSC) and UP Railyards.

In addition to the approvals required from the City of Sacramento, development of the proposed project would require entitlements, approvals, and permits from other local, state, and federal agencies. Such other project approvals may include, but are not limited to, a Section 404 permit from the U.S. Army Corps of Engineers (Corps); a Section 401 certification from the Regional Water Quality Control Board (RWQCB); a construction activity stormwater permit from the RWQCB; a Section 1602 Streambed Alteration Agreement from the California Department of Fish and Game (DFG); a Biological Opinion from the U.S. Fish and Wildlife Service (USFWS); a National Pollutant Discharge Elimination System (NPDES) permit from the RWQCB; and Department of Toxic Substances Control (DTSC) clearances.

ENVIRONMENTAL EFFECTS AND SCOPE OF THE EIR

The EIR will analyze plan-related potentially significant impacts to resources in the plan area. Pursuant to section 15063, subdivision (a), of the CEQA Guidelines, no "Initial Study" has been prepared for the proposed project. Rather, it is anticipated that the EIR will evaluate the full range of environmental issues contemplated for consideration under CEQA and the CEQA Guidelines, including:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities



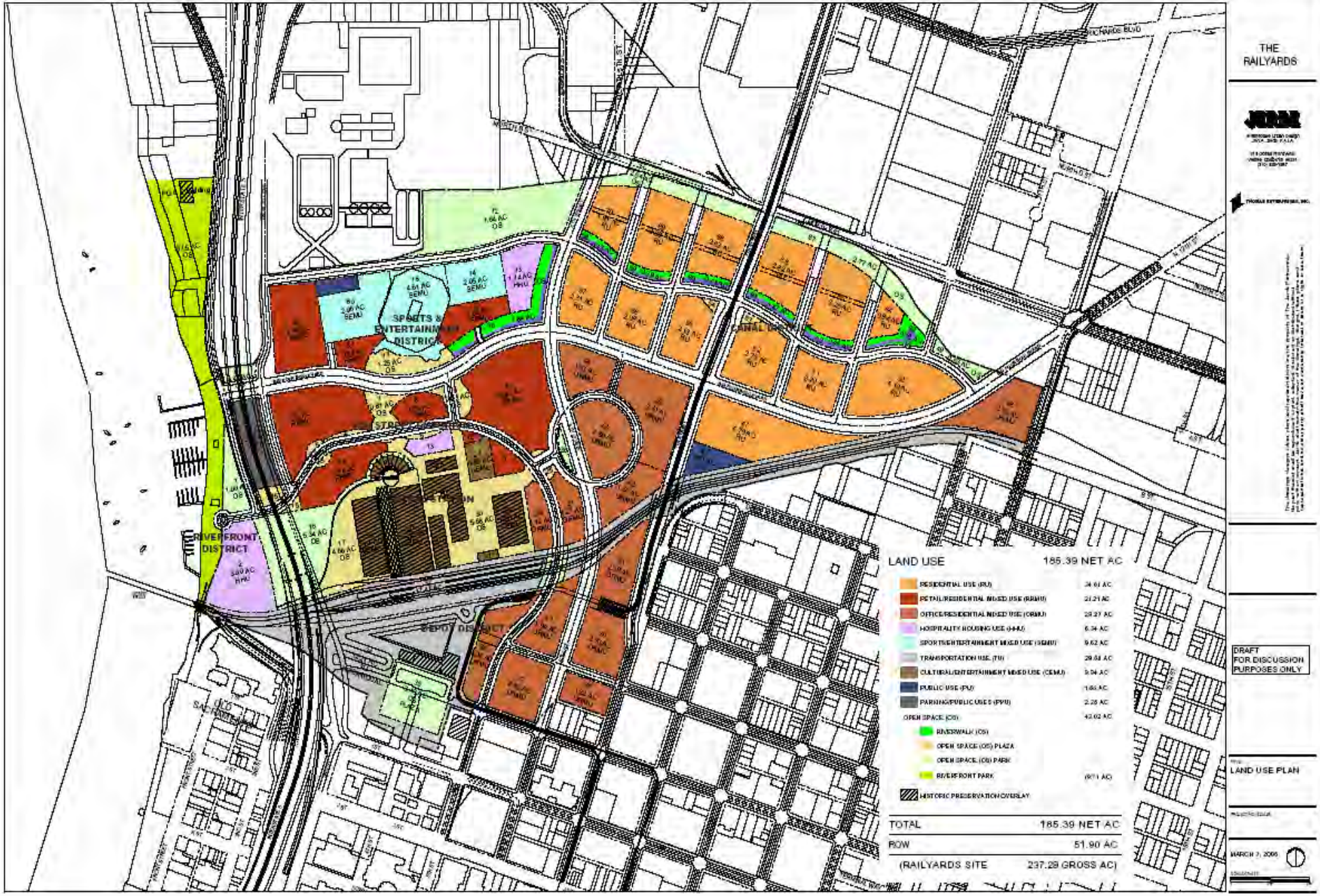
Sources: Microsoft Streets and Trips, Basemap, 2006; EIP Associates, 2006.

EIP

Regional Location Map

10641-00

City of Sacramento


THE RAILYARDS
SPORTS & ENTERTAINMENT DISTRICT
CANAL DISTRICT
RIVERFRONT DISTRICT
DEPOT DISTRICT
LAND USE
185.39 NET AC
RESIDENTIAL USE (RU) 34.61 AC
RETAIL/RESIDENTIAL MIXED USE (RRMU) 21.21 AC
OFFICE/RESIDENTIAL MIXED USE (ORMU) 28.27 AC
HOSPITALITY HOUSING USE (HHU) 6.34 AC
SPORTS/ENTERTAINMENT MIXED USE (SEMU) 9.62 AC
TRANSPORTATION USE (TU) 29.88 AC
CULTURAL/ENTERTAINMENT MIXED USE (CEMU) 9.04 AC
PUBLIC USE (PU) 1.66 AC
PARKING/PUBLIC USES (PPU) 2.28 AC
OPEN SPACE (OS) 42.02 AC
RIVERWALK (OS)
OPEN SPACE (OS) PLAZA
OPEN SPACE (OS) PARK
RIVERFRONT PARK (9.71 AC)
HISTORIC PRESERVATION OVERLAY
TOTAL 185.39 NET AC
ROW 51.90 AC
(RAILYARDS SITE 237.29 GROSS AC)
DRAFT FOR DISCUSSION PURPOSES ONLY
LAND USE PLAN
MARCH 7, 2006


THE RAILYARDS
THOMAS ENTERPRISES, INC.
DRAFT
FOR DISCUSSION
PURPOSES ONLY
PROJECT LEVEL
BOUNDARY
RICHARDS BLVD.
NORTH B ST
NORTH D ST
N 12TH ST
B ST
C ST
D ST
E ST
G ST
OLD SACRAMENTO
TERMINAL WAY
72
7.64 AC
OS
73
1.74 AC
HHU
74
2.05 AC
SEMU
78
4.61 AC
SEMU
80
2.96 AC
SEMU
77
1.25 AC
OS
30
5.58 AC
OS
16
5.34 AC
OS
17
4.66 AC
OS
13

Environmental Planning Services
City of Sacramento
2101 Arena Blvd., Suite 200
Sacramento, CA 95834

Scott Johnson/
Railyards NOP

PUBLIC NOTICE

APPENDIX B
NOP COMMENT LETTERS

Municipal Services Agency

Department of Transportation
Tom Zlotkowski, Director

Terry Schutten, County Executive
Cheryl Creson, Agency Administrator

County of Sacramento

March 29, 2006

Mr. Scott Johnson
City of Sacramento Development Services Department
2101 Arena Blvd, Suite 200
Sacramento, CA 95834

Subject: Railyards Specific Plan

Dear Mr. Johnson:

The Sacramento County Department of Transportation has reviewed the Notice of Preparation of a Draft Environmental Report for the Railyards Specific Plan Project, dated March 10, 2006. We appreciate the opportunity to review this document. Due to the size and scope of the project and unknown extent of traffic impacts, the closest County facilities that may be affected and would like included in the traffic study are identified below:

Interchanges:
- I-80 and W. El Camino Avenue

Intersections:
- El Centro Road and W. El Camino Avenue
- El Centro Road and San Juan Road

Roadway Segments:
- El Centro Road: W. El Camino Avenue to Arena Boulevard

Intersections and roadway segments maintained by the County should be analyzed based on the County of Sacramento Traffic Impact Analysis Guidelines, July 2004.

Identify funding sources for improvements if the traffic study finds significant negative impacts to County maintained infrastructure.

Please notify us of any updates regarding this project.

If you have any questions please call Scott Fujikawa at 874-5259.

Sincerely,

Matthew G. Darrow
Senior Civil Engineer

MGD:smf

c: Steve Hong, IFS

Railyards
EIR Scoping Public Meeting
March 29, 2006
Notes taken by Scot Mende

Caltrans: What is the difference between the April 10th deadline for the CEQA NOP comments vs. the April 14th deadline for comments on the planning process?

Roxanne Miller: The community had been informed previously that this would be a NEPA/CEQA process.

Roxanne: We were told previously that the process would be driven by the SITF, rather than the overall Railyards process. Where will the funding be derived for the public infrastructure and SITF?

Rich Tolmack (CA Rail Foundation): Concerns of commuters…process is related only marginally with the intermodal terminal feels like a competing process, rather than the priority. Concerned that there will be no NEPA analysis of the move of the tracks. May have an ex post facto NEPA process. Concerned about interim impacts on passengers. There may be a 10 year period where users are subjected to construction impacts. This needs to be a more comprehensive process. Passenger service is fragile – the Sacramento services were specifically impacted by the recent parking problems; if the ridership falls, then funding may be cut. Need to provide positive support of the transit service.

Ernie Gallardo (Capital Station group): Previous plan (1997) was a combined plan with the Railyards and Richards. Would like a finance plan that would combine the Railyards and Richards Boulevard area. The two really seem to be joined at the hip – especially with regard to the circulation plan. The plan shown in the map does not feature the balance of the Richards Boulevard Redevelopment Area. There is a significant difference between the proposed plan and the ROMA plan. The impact on circulation needs to be studied on a combined basis.

> Carol Shearly's response: The City is embarking on a coordinated land use & finance plan process. We acknowledge the need to ensure that the two areas work together.

Alan Miller (Train Riders Assn. of California): Recent construction at the depot has affected the commuters. What sort of period of relief will we have before construction resumes, and for how long will construction proceed? Looking at the timeline, when will the depot be moved to be closer to the tracks? What sorts of guarantees do we have that the depot will be moved?

> L.E. Response: Moving the depot will be studied as part of a preferred alternative as part of the CEQA process. The NEPA process would require an alternatives analysis that studies various approaches to the depot siting.

Kay Knepprath (Save Our Rail Depot coalition): How is the plan for public ownership of the Sacramento Valley Station, incorporated into the EIR? Or is this question addressed only in the finance plan?

> Carol's response: As many of you know, the intermodal facility is about a $300 million project, with a domino game that requires multiple steps and very focused and calculated steps. Each of the pieces -- rail relocation, acquisition of the site, Westside access, each requires its own environmental and legal analysis. In order to achieve the $300 million result, it will take a lot of individual steps. In answer to the question about construction impacts, it will take a lot to get what we want for the transportation hub.
>
> L.E. With regard to acquisition, we will look at the funding, and this will influence the environmental review – especially if federal funds are utilized (this would trigger NEPA analysis).

Dan Hood (Alkali Flat Neighborhood Improvement Association): Comments about the Sacramento Valley Station. Alkali Flat is on the National Register of Historic Places. Concerned about the interface (2 blocks) F/G. The 7th street underpass cut off access. Thus, F Street will be the sole direct access. What pedestrian and bicycle facilities are available to connect these areas? History walk to connect Alkali Flat with the parks in the Railyards is planned. Note that 12th Street LRT cut off access as well. Under the old General Plan, streets and access were oriented north/south, but the new development offers the opportunity for east/west connectivity. Perhaps the LRT tracks should be relocated to be parallel with the existing tunnel. The 7th & F intersection will be quite congested. The intermodal facility is driving this circulation plan, but let's not ignore the opportunity to connect with Alkali Flat. How can we input into the process? Recently there was an announcement on the news about how Sacramento is gaining tourism; this would increase the historic attraction of Sacramento. Also connect up with Discovery Park with pedestrian and bicycle access facilities.

Earl Withycombe (ECOS): Amplify and expand on the comments of the previous speaker. Reduce congestion and improve air quality by providing alternative modes of choice. Request that the EIR contain an analysis of pedestrian and bicycle circulation – on a level equivalent to the analysis on roadways.
Capacity, safety of sidewalks, minimization of delay times crossing barriers (such as the rail tracks). The analysis should include the project and surrounding areas. Wants good pedestrian & bicycle connections to the north, as well as the south and east. When will the environmental impacts of the non-project portion (Canal district)?

> L.E. These areas will be captured on a programmatic level, and further environmental review would be required subsequently.

Andrea Rosen: This is being billed as a programmatic EIR, but it seems like a hybrid between a programmatic and project EIR. For people who want to participate, can you

provide some examples of interface between programmatic and project elements? Also concerned about analysis of existing uses (e.g., depot); in normal EIRs the existing uses are evaluated against alternatives. Since the future use is envisioned to change, this will be tricky part of the analysis. Look at the depot as has been discussed in THIS EIR, rather than deferring to a separate environmental analysis. The public finance plan also needs to account for the future vision of the Sacramento Valley Station. For example, what would the entitlements look like for the 11,000 dwelling units?

> L.E. The environmental review would be phased in terms of timing. We would ask for project-specific details for aspects that are expected to build in the near term. For later phases of development, the entitlements and environmental review would be more programmatic. Beyond 15-20 years, new environmental review would be needed, as the analysis would be stale. In North Natomas, the EIR was done holistically and programmatically; subsequent projects in North Natomas are reviewed at a more project-level of detail.
>
> Carol: We will look at the big picture – including the intermodal – at a programmatic level, plus a detailed look at the project level for Phase I. Later Phases will need a more specific level of review at a later date.

Patty Kleinknecht (Capital Station): Richards and Railyards Plans were prepared 10 years ago. There are a number of projects ready to be launched in the Richards area. We want to be sure that we are working together with both plans and that we understand how the changes in the Railyards plan will impact the Richards area. We don't want to neglect the Richards area.

Randy Owen (Alkali Flat): Specific concern about blocks directly west of 7th Street. We would like these to be predominantly residential; commercial and office creates a ghost town after 5 pm.

STATE OF CALIFORNIA
PUBLIC UTILITIES COMMISSION
505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

ARNOLD SCHWARZENEGGER, *Governor*

April 3, 2006

Scott Johnson
City of Sacramento
2101 Arena Blvd., Suite 200
Sacramento, CA 95834

Dear Mr. Johnson:

Re: SCH 2006032058; NOP - Notice of Preparation

As the state agency responsible for rail safety within California, we recommend that any development projects planned adjacent to or near the rail corridor in the County be planned with the safety of the rail corridor in mind. New developments may increase traffic volumes not only on streets and at intersections, but also at at-grade highway-rail crossings. This includes considering pedestrian circulation patterns/destinations with respect to railroad right-of-way.

Safety factors to consider include, but are not limited to, the planning for grade separations for major thoroughfares, improvements to existing at-grade highway-rail crossings due to increase in traffic volumes and appropriate fencing to limit the access of trespassers onto the railroad right-of-way.

The above-mentioned safety improvements should be considered when approval is sought for the new development. Working with Commission staff early in the conceptual design phase will help improve the safety to motorists and pedestrians in the County.

If you have any questions in this matter, please call me at (415) 703-2795.

Very truly yours,

Kevin Boles
Utilities Engineer
Rail Crossings Engineering Section
Consumer Protection and Safety Division

cc: Pat Kerr, UP

CAPITOL CORRIDOR

April 4, 2006

Mr. Scott Johnson, Associate Planner
City of Sacramento Development Services Department
2101 Arena Boulevard, Suite 200
Sacramento, California 95834

Subject: Capitol Corridor Joint Powers Authority Comments on EIR Scope for the Railyards Specific Plan

Dear Mr. Johnson:

As you are aware, the Capitol Corridor Joint Powers Authority (CCJPA) manages the Capitol Corridor Intercity Passenger Rail service. By far, Sacramento is our busiest station. I have personally been involved in numerous planning and development sessions regarding Sacramento Station improvements of one variety or another since 1999. With respect to the proposed EIR for the Railyards Specific Plan, consistent with prior comments regarding the operations of our service and the busiest station in our service area, I would like to offer the following scoping elements for inclusion in the EIR:

- Parking: this is a continuing and growing need, along with easy in-and-out access, both for parking patrons, as well as for pick-up and drop-off patrons. SacRT light rail access will improve access options, but will likely increase the total number of rail patrons while not diminishing the demand for adequate and plentiful parking.
- Pedestrian Circulation: development options in the area, and close proximity of the station to both Old Sacramento and the State Capitol Buildings/agencies will mean there will likely be a dramatically expanded access by walking to/from the station. Safe and direct passage to/from the station is a critical component for its success. Conformance to the most recent ADA federal requirements for access and information systems must be achieved.
- Signage: standard, highway type signage is exceptionally important, especially for new or occasional users of the train station/intermodal facility. The closer the signage is to standard, easily recognizable directional signage used by Caltrans, the better. Station and platform signage, both fixed and electronic, must conform to the most recent ADA requirements.
- Layover facilities: trains will both 'lay-over' during the day between runs, as well as be serviced and fueled while overnighting in the station. This requires environmental installations for fuel drips, oil separators, water lines, electrical connections, remote fueling connections with site standpipe connections to fuel locomotives in the station, as well as for provision of trash disposal and removal facilities, toilet waste dump connections, electrical 480 volt layover connections (so locomotives do not have to idle all night), and storage facilities for materials and parts associated with layover maintenance.
- Security: design of platforms and access to conform to Homeland Security requirements, up to and including controlled platform access, and secure waiting areas for passengers prior to boarding trains.
- Future operations: provisions for expansion of service to Placer County and Reno/Sparks.
- Capitol Corridor expansion: accommodations must be made for handling up to 46 daily Capitol Corridor trains, 23 in each direction, with approximately half of them continuing on to serve Roseville. 36 trains would be intercity Capitol Corridor trains and an additional 10 train s would be Capitol Corridor Regional Rail (commuter) trains sponsored by the member agencies, but operated as an integrated service with Capitol Corridor trains. Caltrans will need to be consulted for its plans for train service expansion to San Joaquin Valley and other California points.
- Platforms: design must be in compliance with the most recent ADA requirements (platform height, ramps, or other access means), as well as be in compliance with Homeland Security requirements, including fully controlled access to platforms (meaning a secure waiting area after ticket verification/ID check, similar to

CAPITOL CORRIDOR JOINT POWERS AUTHORITY
300 LAKESIDE DRIVE, 14TH FLOOR EAST, OAKLAND CA 94612
510.464.6995 (V) 510.464.6901 (F)

WWW.CAPITOLCORRIDOR.ORG

at airports) and admission to platforms for only those ticketed passengers who have been pre-checked upon entering the secure waiting area.

- Freight bypass tracks: provision must be made for separate main tracks for freight trains so that freight trains do not pass through the passenger platform tracks
- Operations during construction: provision must be made for a safe means to operate existing train service during any phase of construction, including the relocation of tracks and/or other facilities
- Passenger safety: conformance to all federal, state and regulatory agency requirements regarding safety and security of passengers and employees is required.

These scoping comments are intended for inclusion, consideration, and analysis in the proposed EIR. I and my staff look forward to being involved as needed in the development and support of the proposed project. We are most supportive of these long awaited Sacramento improvements. However, we also want to ensure that continuous safe and secure operation of our passenger train service in the future will be provided, and that train services, operations and facilities are preserved and enhanced by the construction of the proposed development.

These scoping comments are not viewed as a complete or final list, but rather the they are the major issue we see that will need to be addressed and resolved in the design of the improvements and development in the RailYards area.

Sincerely,

Eugene K. Skoropowski
Managing Director

Cc; Roger Dickinson, CCJPA Board
Steve Cohen, CCJPA Board
Bill Bronte, Caltrans, Division of Rail

Public Comments

(Please note that this document will be part of the public record.)

Date: March 29, 2006
Location: 915 I Street, Historic City Hall Hearing Room
Project: Railyards Specific Plan, SITF, Project Level Area Development EIR Scoping Meeting

Name (Please Print): ERNIE GALLARDO

Mailing Address: 300 RICHARDS BLVD

Phone Number: (714) 754-1429 **E-Mail Address:** EGALLARDO@GROUP1NV.com

Resident, Business, Organization, etc.: CSD

Comments: FINANCE PLAN & FACILITIES PLAN NEED to INCLUDE RICHARDS BLVD AREA.

Written comments on the environmental impacts associated with the proposed project will be utilized to define the scope of analysis for the EIR prepared for the subject project. Completing and signing this document is voluntary. The City of Sacramento may use this information for statistical purposes, to notify you of any future hearings, or to assist in providing you with further information. This document is a public record and may be subject to inspection and copying by other members of the public.

Comments may be submitted at the open house or sent to Scott Johnson at:
City of Sacramento, 2101 Arena Blvd., 2nd Floor; Sacramento, CA 95834; srjohnson@cityofsacramento.org; or faxed to (916) 566-3968. Please be sure to include your full name, address and phone number.

For more information, contact Scott Johnson at (916) 808-5842

All comments must be submitted by 5:00 p.m. April 10, 2006

DEPARTMENT OF TRANSPORTATION
DISTRICT 3 – SACRAMENTO AREA OFFICE
VENTURE OAKS – MS 15
P.O. BOX 942874
SACRAMENTO, CA 94274-0001
PHONE (916) 274-0614
FAX (916) 274-0648
TTY (530) 741-4509

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April 7, 2006

06SAC0041
03-SAC-05 PM 24.645
Railyards Specific Plan
Notice of Preparation

Mr. Scott Johnson
City of Sacramento
2101 Arena Boulevard, Suite 200
Sacramento, CA 95814

Dear Mr. Johnson:

Thank you for the opportunity to review and comment on the Notice of Preparation (NOP) for the Railyards Specific Plan project. The project includes the Railyards Specific Plan, Sacramento Valley Station (formerly SITF) and a "project level area". The environmental document will cover all three areas. The 240-acre project in downtown Sacramento proposes up to 11,085 mixed use high density residential units, up to 1,370,000 sq. ft. of retail, up to 2,986,500 sq. ft. of office space, up to 1,000 hotel rooms, up to 421,700 sq. ft. of cultural and entertainment uses, and 43 acres of open space. A 20,000 seat sports arena is included as part of this retail square footage.

The proposal's transportation infrastructure includes: relocating rail tracks to an alignment north of the existing tracks, extending 3rd Street to the Depot, extending 4th Street to the Depot and providing a pedestrian crosswalk at I Street, extending and raising 5th and 6th Streets gradually over the Union Pacific (UP) Railroad tracks, extending N. 12th Street through the development, extending light rail through the site and building a station, removing the elevated portion of Jibboom Street, and building a meandering canal with pedestrian uses bordering it. Note that N. 12th Street and 5th Street will be extended underneath Interstate-5 (I-5) to connect with the riverfront. Also, the transportation infrastructure assumes high speed rail as part of the project.

Our comments are below:

- It is anticipated that completion of this project will add significantly to congestion on the freeways that border and traverse downtown Sacramento as well as the interchanges that connect to downtown's local streets. A Traffic Impact Study (TIS) should be completed. The TIS should consider all

possible traffic impacts to all ramps, ramp intersections, and the mainline. The "Guide for Preparation of Traffic Impact Studies" can be found on our website at: http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/. We request a meeting with the City to discuss and coordinate the scope of the TIS.

- Any traffic impacts will require fair share mitigation funding for future improvements, such as ramp widening, ramp intersection improvements, signalization modification, mainline improvements, bus/carpool lane improvements, and/or additional local road connections across the American River between the project site and the South Natomas area.

- Caltrans has begun planning the Measure A-funded bus/carpool lane improvements along I-5. These improvements allow for direct bus/carpool connections along I-80 from Roseville to downtown Sacramento. New drop-ramp access from I-5 to a local street exclusively for bus/carpool lanes is being considered between the J Street and Richards Boulevard interchanges. These drop-ramps could provide direct access to the Sacramento Valley Station during peak hours and to the Railyards development area during non-peak commute hours. The City, project developer, and Caltrans should begin discussions to appropriately coordinate the Railyard's local road system with this bus/carpool lane access point.

- The existing Amtrak Depot is the busiest Amtrak station in northern California. Construction and the ultimate build out of the Railyards project should be planned to ensure that this existing use is not impeded. The environmental document should analyze potential impacts during construction and at ultimate project buildout to Amtrak ridership and operations including the
  - adequacy of relocated/new platforms to shelter passengers from commuter and longer intercity trains,
  - access for arriving and departing passengers including long term parking and pick up/drop off areas,
  - ability to allow for future expansions of Amtrak operations and service,
  - safety of the proposed track realignment which places a curve between the I-5 bridge columns/footings and the river crossing.

- The potential impact on operations and ridership during construction and track realignment is of particular concern and should be addressed in the environmental document.

- The environmental document should address the feasibility of moving the existing Depot building, its future use, and placement in terms of the project's internal transportation circulation. This is especially important since its relocation affects the remainder of the rail-related improvements proposed in the application.

- Please note for the draft environmental document that
  - San Joaquin Amtrak rail service, and Amtrak feeder buses (with 35 daily departures) also provide service to the Depot,
  - Three tracks and a layover track currently service the Depot—not "two platforms and tracks".

- The project area is expected to house the statewide high-speed train system's northern terminal. The potential ridership and station placement should be studied within the environmental document.

- For project purposes, note that Caltrans' access to land underneath I-5 is protected via an existing easement with Union Pacific Railroad. That easement should be continued in the event of the sale of the entire parcel so that Caltrans may continue to access the area for maintenance and operational concerns.

If you have any questions about these comments or to schedule the Traffic Impact Study scope meeting, please contact Alyssa Begley at (916) 274-0635.

Sincerely,

BRUCE DE TERRA, Chief
Office of Transportation Planning—South

c: Wayne Lewis, Transportation Planning
Jim Calkins, Traffic Operations
Carlos Portillo, Project Management
Rick Deming, HQ Rail
Patrick Merrill, HQ Rail
Matt Paul, HQ Rail
Tom Ganyon, Right of Way
Ken Lastufka, Environmental Planning
Brian Sumpter, Encroachment Permits
Douglas Coleman, Hazardous Waste
Kenneth Murray, Landscape
Gerry Wong, Design
Carrie Pourvahidi, California High Speed Rail Authority
Alyssa Begley, Transportation Planning

Alan C. Lloyd, Ph.D.
Agency Secretary
Cal/EPA

Department of Toxic Substances Control

Maureen F. Gorsen, Director
8800 Cal Center Drive
Sacramento, California 95826-3200

Arnold Schwarzenegger
Governor

Mr. Scott Johnson
Associate Planner
City of Sacramento Development Services Center
2101 Arena Blvd., Suite 200
Sacramento, California 95834

COMMENTS ON CITY OF SACRAMENTO'S MARCH 10, 2006 NOTICE OF PREPARATION OF A DRAFT ENVIRONMENTAL IMPACT REPORT, RAILYARD SPECIFIC PLAN, UNION PACIFIC SACRAMENTO RAILYARD, SACRAMENTO, CALIFORNIA

Dear Mr. Johnson:

The Department of Toxic Substances Control (DTSC) received and reviewed the March 10, 2006 Notice of Preparation (NOP) for a Draft Environmental Impact Report (Draft EIR) for the Railyards Specific Plan, Union Pacific Sacramento Railyard. DTSC appreciates the opportunity to review and comment the NOP, and is eager participate and provide information to facilitate implementation of the California Environmental Quality Act process at the site.

Since DTSC is providing lead regulatory oversight for the cleanup of contaminated soil and groundwater at the Railyard, our review focused on the aspects of the NOP related to the historical and ongoing remedial measures at the site. The sections titled "Project Approvals and/or Entitlements" and "Environmental Effects and Scope of the EIR", both on page 6 of the NOP, indicate site contamination remediation issues will be considered and discussed in the Draft EIR. We have no specific comments to add to the NOP's general summary of topics to be addressed the Draft EIR.

Close communication between all responsible agencies during preparation of the Draft EIR will be essential to assure the document is complete and up to date. As you are probably aware, significant cleanup and characterization activity is occurring on portions of the Railyard site at this time, and more are planned. Of the designated Study Areas (which are shown on the attached figure), Remedial Action Plans (RAPs) have been completed and approved for the Northern Shops, Central Corridor, Car Shop Nine, Sacramento Station, and the Lagoon Study Area. DTSC, UP, the Regional Water Quality Control Board, and the City of Sacramento are coordinating on a

modification of the approved RAP for the Northwest Corner of the Lagoon Study Area. Also, we are reviewing the major documents leading to RAP approval for the Central Shops/South Plume Groundwater Area, the Lagoon Groundwater Study Area, and the former Manufactured Gas Plant on the western side of the site.

In addition to the updated remedial measures above, the Draft EIR should incorporate specific conditions related to cleanup practices that were described in the 1994 Railyards Specific Plan EIR (SCH# 91042057).

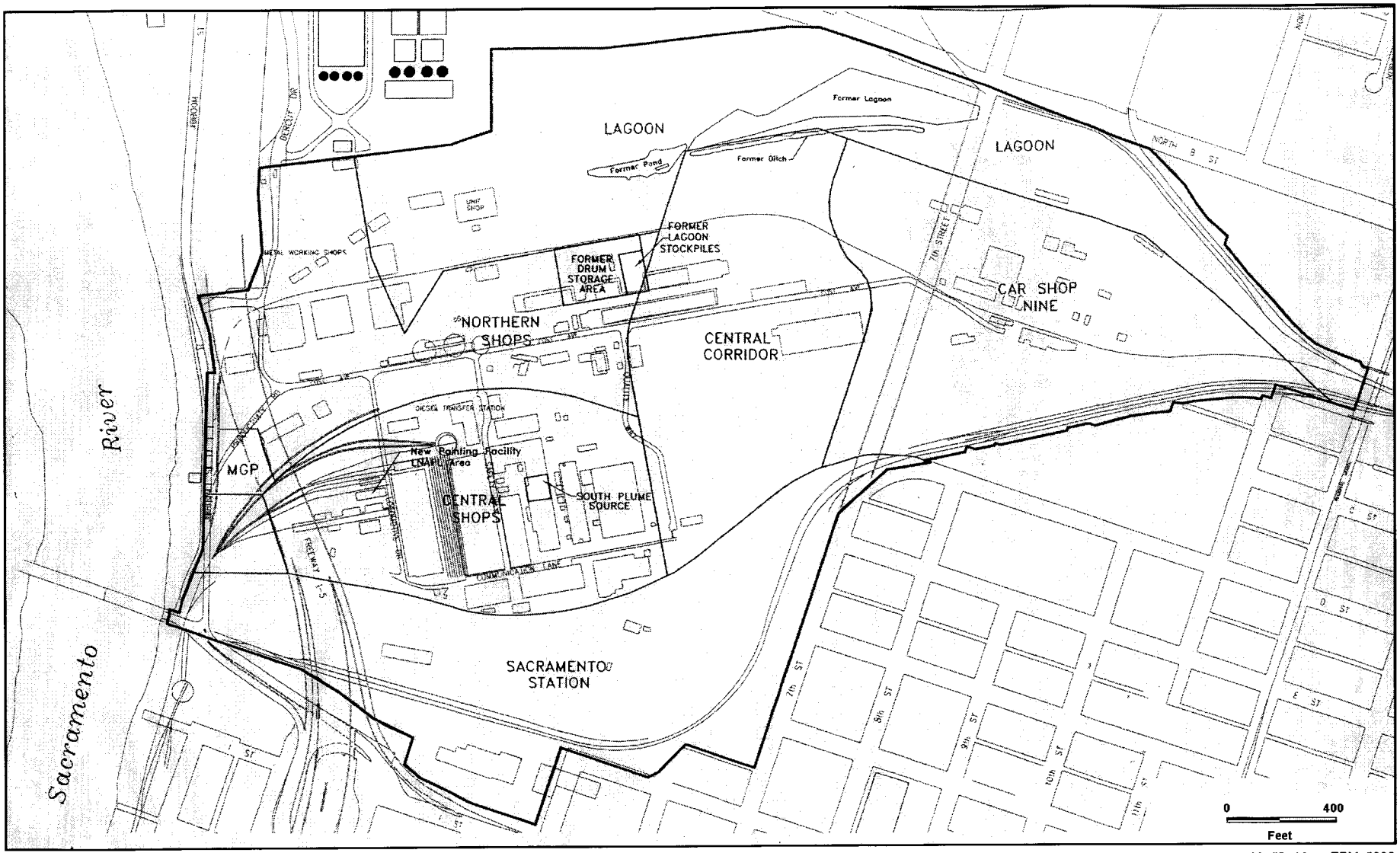
DTSC looks forward to receiving the Draft EIR for a complete review of the specific issues related to remediation of contamination at the site. As the Draft EIR project proceeds, and if you have any questions regarding site investigation and remediation, please contact Mr. Paul Carpenter at (916) 255-6534.

Sincerely,

Fernando Amador, P.E., Chief
Sacramento Responsible Party Unit

Attachment: Union Pacific Downtown Sacramento Railyard Study Areas (2006)

cc: Mr. Paul Carpenter
Engineering Geologist
Sacramento Responsible Party Unit
Northern California-Central Cleanup Operations Branch
Site Mitigation and Brownfields Reuse Program
Department of Toxic Substances Control
8800 Cal Center Drive
Sacramento, California 95826



Union Pacific Downtown Sacramento Railyard Study Areas (2006)

Modified from ERM, 2005

Alkali Flat Neighborhood Improvement Association

April 7, 2006

Carol Shearly, Director of Planning
City of Sacramento
915 I Street
Sacramento, CA 95814

Comments regarding the Railyards Specific Plan, SITF, Project Level Area Development EIR

This letter represents the comments of the Alkali Flat Neighborhood Improvement Association (AFNIA) regarding the proposed Railyards infill development that borders our neighborhood at 7th Street. Our association is an education based California nonprofit corporation that has provided objective preservation and redevelopment analysis within the Alkali Flat area since 1982.

To begin, we are very pleased that the Railyards plan includes and is supportive of the California Railyards Technology Museum. At the same time, there are some planning issues associated with the infrastructure and scale of the project due to its proximity to another very different and significant cultural asset.

The massing, setbacks and building heights that are proposed along 7th Street raise concerns because of existing small scale Victorian buildings east of 7th Street. An outdated zoning overlay for the west area of Alkali Flat calls for a transition of building heights on these blocks bounded by 7th, 8th, D and F Streets. This overlay is the result of prior speculation encouraged by the now obsolete New Roma Plan for the Railyards. We believe the overlay has a negative impact on preservation efforts there since it encourages property owners to destroy culturally important buildings for more profitable development. Such transitional zoning should be required in the Railyards area, not within a registered historical district. To further ensure compatibility with the adjacent neighborhood, consideration should be given for an extension of F Street from the 5th Street pedestrian oriented development to 7th Street, opening up the "backside" of the development by creating a lateral east west entryway.

In the Fall, 2005, the AFNIA Board approved a project called the History Walk which seeks to reinforce Sacramento's railroad history by promoting an interpretive pathway between Alkali Flat, the Railyards Museum and Old Sacramento. All these areas are culturally related and together provide a more complete picture of how California and the Old West developed at that time. Alkali Flat is home to the only Sacramento residential historic districts adopted by the National Register of Historic Places. Not coincidentally, the only other national districts in Sacramento are Old Sacramento and the Railyards Museum. We wholeheartedly support the developer's proposed pedestrian and bicyclist connections to the Alkali Flat neighborhood and are interested to see further detail.

There is not a strong east west connection between the easterly residential areas and the Railyards, as presented. We believe a much stronger connection would be of mutual benefit to the Project and adjacent neighborhoods since about as many residential units are located to the east as will be constructed in the Railyards itself. The 7th Street underpass, already completed, and its possible future widening will discourage pedestrians and cyclists. The underpass also truncates the main east west bicycle route on E Street. Moreover, the current General Plan (also in an update process) encourages north south access from the neighborhoods to the Central Business District, not east west.

The only remaining intersection within the residential district that abuts the Railyards is 7th and F Streets: *there are no other viable east west access points*. The only other routes are through heavy traffic in the Central Business District such as on G, H and I Streets, 7th Street, or 12th Street. Historically, the large number of workers living in Alkali Flat, Washington District and further east in Boulevard Park warranted an eastern main gate to the Railyards at 7th and F Streets.

Efforts to make western Alkali Flat neighborhood a pedestrian safe environment and encourage alternatives to automobile travel will be impossible if development occurs as currently planned. 7th Street has potential to become a boundary that keeps pedestrians and cyclists away from the Railyards much like 12th Street divides Alkali and Mansion Flats. As 7th Street could become a major collector, there is concern that traffic from outside the neighborhood will inundate local streets. Major parking garages may empty at that intersection. Light Rail emerges from the Sacramento Valley Station at that intersection. As planned, there are many reasons why pedestrians and cyclists would be best advised to avoid the intersection although it is the most direct route for them to get into the Railyards. Since pedestrians and cyclist seek "short cuts", the city may need to install "Do Not Enter" or "Wrong Way" signs to restrict access to F Street in the Railyards area.

The Alkali and Mansion Flats Historic Neighborhood Association (AMFHNA) petitioned the City last year for traffic calming measures in the western part of the neighborhood as a matter of pedestrian safety. This petition is awaiting funding that is potentially unavailable for many years.

Specific pedestrian and cyclist connections are not shown in the plan. Will there be a trolley on 5th or 6th Street? Specifically under 6th Street, could the Light Rail be routed further north to emerge at E and 7th Streets? Could there be a safety island between the Light Rail, auto traffic and 7th Street? How will traffic be slowed on 7th as it approaches the F Street intersection? Can the 7th Street tunnel be extended further south to G Street, with a surface street constructed over it at 7th and F Streets? What alternatives will be examined?

Appropriate development at the intersection of 7th and F Streets presents a real opportunity to reinforce and strengthen Sacramento's heritage and support today's downtowner who is inclined towards walking and cycling. Without such planning, even more automobile travel and parking will be demanded to make the Railyards a viable project.

Thank you for this opportunity to be heard.

William Masters
Secretary
Alkali Flat Neighborhood Improvement Association

WM:rdh

cc: Ray Tretheway, Councilmember, District 1, City of Sacramento
Steve Cohn, Councilmember, District 3, City of Sacramento
Roger Dickinson, Supervisor, District 1, County of Sacramento
Suheil J. Totah, Vice President Development, Thomas Enterprises, Inc.
Paul Hammond, Director of Public Programming, California State Parks
Hinda Chandler, AIA, Project Director-Architect, City of Sacramento
Ed Cox, Program Analyst, City of Sacramento
Cathleen Williams, Chair, Redevelopment Advisory Committee, Sacramento Housing and Redevelopment Agency
Sean Wright, Acting President, Alkali and Mansion Flats Historic Neighborhood Association

State of California • Arnold Schwarzenegger, Governor
State and Consumer Services Agency
DEPARTMENT OF GENERAL SERVICES
Real Estate Services Division Asset Planning and Enhancement Branch

April 10, 2006

Post-it® Fax Note 7671	Date 4/10/06	# of pages ▶ 1
To Scott Johnson	From John Brooks	
Co./Dept. City of Sac	Co. DGS	
Phone #	Phone #	
Fax # 5660-3968	Fax # 376-1833	

Hard copy to follow

Mr. Scott Johnson, Associate Planner
City of Sacramento
Development Services Department
2101 Arena Boulevard, Suite 200
Sacramento, CA 95834

Dear Mr. Johnson:

This letter is in response to the Notice of Preparation of the Environmental Impact Report (EIR) for the City of Sacramento's "Railyards Specific Plan", Sacramento Intermodal Transportation Facility and Project Level Area development. The Department of General Services (DGS) is interested in this project as it is in close proximity to the State-owned Office of State Publishing located at 344 North Seventh Street, Sacramento.

The DGS requests that this office be included on the distribution list for further notifications, EIRs, and planning documents. If you have any questions, please contact Anne Garbeff, Senior Planner, at (916) 376-1807.

Sincerely,

JOHN H. BROOKS, Chief
Asset Planning and Enhancement Branch

JHB:KW:md

cc: Bob Sleppy, Chief, Environmental Management, Professional Services Branch, Department of General Services
Jim Derby, Assistant Chief, Asset Planning and Enhancement Branch, Real Estate Services Division, Department of General Services
Zach Miller, Regional Portfolio Manager, Asset Planning and Enhancement Branch, Real Estate Services Division, Department of General Services
Anne Garbeff, Senior Planner, Asset Planning and Enhancement Branch, Real Estate Services Division, Department of General Services
Kathryn Welch, Associate Planner, Asset Planning and Enhancement Branch, Real Estate Services Division, Department of General Services

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Larry Greene
AIR POLLUTION CONTROL OFFICER

April 10, 2006

Mr. Scott Johnson
City of Sacramento
Development Services Department
2101 Arena Boulevard, Suite 200
Sacramento, CA, 95834

SUBJECT: Sacramento Downtown Railyards #P05-097
SMAQMD # SAC200500788B

Dear Mr. Johnson:

Thank you for providing the project listed above to the Sacramento Metropolitan Air Quality Management District (District). Staff comments follow.

Relative to the description of the "project," we suggest the movement of the UP rail lines themselves be included for analysis in this project. The Railyards Specific Plan cannot be implemented unless the rail lines are moved north. As the NOP states, the Specific Plan "*would be designed to reflect and support relocation of the rail tracks to an alignment north of the existing tracks, and anticipates that the Depot District would include the City's preferred plan for the SITF, including inter-city passenger train, light rail, bus, and freight services.*" Because of this interrelatedness of the act of moving the lines and the ability to implement the project, we believe the analysis for the Railyards Specific Plan should include the air quality impacts of moving the railroad lines.

In addition, we also believe the EIR should look at the air quality effects of the street re-routing. One of the proposed alternatives in the EIR should examine the benefits of keeping the current alignment of Jiboom Street. In addition, the document needs to closely look at the Sports/entertainment complex and its impact on air quality.

Because of the size of this project, we believe it will generate short term (construction) and long-term (operations) air quality impacts which will be in excess of the established threshold. An air quality analysis should be done on the project in order to determine if those impacts are significant. Relative to the construction impacts, if those impacts are significant, the SMAQMD standard on-site construction mitigation measures as described on our website, www.airquality.org should be used. All other feasible mitigation should also be used, including the use of an off-site mitigation fee.

Also, because of the size of the project, we recommend that the City require an Operational Air Quality Mitigation Plan which has a goal of reducing operational emissions by at least 15 %. We will be happy to work with the proponent to choose appropriate measures. The Plan needs to be created and endorsed by us prior to the publication of the environmental document. In that way, the readers of the document will be informed of the air quality impacts and mitigation at the same time. Given the aggressive schedule for the entitlements for this project, we suggest the City encourage the proponent to contact us as soon as possible to begin work on the Plan.

Because the project is located close to freeways (Highway 5/99) and to train locomotives on a major train line, we recommend the DEIR deal with the health impacts of toxic air contaminants from the mobile sources. A separate risk assessment of the site needs to be done. The health risks of concern have to do with toxic air contaminants associated with diesel particulates.

The California Air Resources Board (CARB) recently adopted the "Air Quality and Land Use Handbook: A Community Health Perspective" to provide guidance to local planners and decision-makers about land use compatibility issues. The Handbook suggests that, at a minimum, the siting of residential uses should not occur within 500 feet of a freeway. Traffic-related studies referenced in the Handbook reflect that the additional health risk attributable to the proximity effect was strongest within 1,000 feet. Other studies conducted near Southern California freeways indicate a dramatic drop off in the concentration of ultra-fine particulates beyond 300 feet. We urge the City to consider the most recent CARB guidance on air quality and land use prior to making a decision on this project. If the City approves this project, we urge the City to consider locating non-residential uses in the parts of the project area closest to the freeway, or to minimize impacts on residential development, mitigation measures, such as development guidelines that orient buildings away from the freeway or providing appropriate setback or buffer zones should be included.

All projects are subject to SMAQMD rules and regulations in effect at the time of construction. Please see the attached document describing SMAQMD Rules which may apply to this project.

If you have questions, please contact me at 874-4885 or jborkenhagen@airquality.org

Sincerely,

Jeane Borkenhagen

Jeane Borkenhagen
Associate Air Quality Planner Analyst

cc: Larry Robinson SMAQMD
Suheil Totah Thomas Enterprises

Enc: SMAQMD Rules & Regulations Statement

SMAQMD Rules & Regulations Statement

*The following statement is recommended as standard condition of approval or construction document language for **all** construction projects within the Sacramento Metropolitan Air Quality Management District (SMAQMD):*

All projects are subject to SMAQMD rules and regulations in effect at the time of construction. A complete listing of current rules is available at www.airquality.org or by calling 916.874.4800. Specific rules that may relate to construction activities may include, but are not limited to:

Rule 201: General Permit Requirements. Any project that includes the use of equipment capable of releasing emissions to the atmosphere may require permit(s) from SMAQMD prior to equipment operation. The applicant, developer, or operator of a project that includes an emergency generator, boiler, or heater should contact the District early to determine if a permit is required, and to begin the permit application process. Portable construction equipment (e.g. generators, compressors, pile drivers, lighting equipment, etc) with an internal combustion engine over 50 horsepower are required to have a SMAQMD permit or a California Air Resources Board portable equipment registration.

Rule 403: Fugitive Dust. The developer or contractor is required to control dust emissions from earth moving activities or any other construction activity to prevent airborne dust from leaving the project site.

Rule 442: Architectural Coatings. The developer or contractor is required to use coatings that comply with the volatile organic compound content limits specified in the rule.

Rule 902: Asbestos. The developer or contractor is required to notify SMAQMD of any regulated renovation or demolition activity. Rule 902 contains specific requirements for surveying, notification, removal, and disposal of asbestos containing material.

Other general types of uses that require a permit include dry cleaners, gasoline stations, spray booths, and operations that generate airborne particulate emissions.

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Light Rail Office:
2700 Academy Way
Sacramento, CA 95815
(916) 648-8400

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April 10, 2006

Mr. Scott Johnson, Associate Planner
City of Sacramento
Development Services Department
2101 Arena Boulevard, Suite 200
Sacramento, CA 95834

Subject: Comments on the Notice of Preparation for the Railyards Development

Dear Mr. Johnson:

Thank you for the opportunity to review and comment on the revised development application for the redevelopment of the Union Pacific Railyards project. RT is now preparing a Draft Environmental Impact Statement and Report (DEIS/R) for transit improvements from downtown Sacramento through the Natomas area to the Sacramento International Airport, also known as the Downtown/Natomas/Airport (DNA) Corridor Project.

On December 15, 2003, the Sacramento Regional Transit (RT) Board of Directors adopted the Truxel Road Light Rail Transit Alternative as the Locally Preferred Alternative (LPA) for the DNA Corridor. This alignment includes light rail serving the proposal Sacramento Intermodal Transportation Facility (SITF) and looping through the area to North 7th Street located along the eastern portion of the Railyards project. A set of engineering plan sheets showing the alignment is enclosed for your use.

In December 2005, the RT Board of Directors reaffirmed this decision and adopted a phased implementation approach for transit improvements in the corridor. The first phase of this approach, Minimum Operable Segment One (MOS-1), would provide light rail service between downtown Sacramento and the Richards Boulevard Area. RT is now working on a detailed analysis of MOS-1 that will be incorporated into the DEIS/R that is expected to be released for public review and comment in December 2006.

The comments in this letter pertain to the impact that the proposed development plan would have on the DNA project, in particular to MOS-1.

RT's suggestions for additional analysis or issues that should be considered in the environmental document are indicated in the following items.

1. Coordination between DNA and Railyards Environmental Documents
As noted above, an environmental document for the Railyards corridor will be released by December 2006 (approximate date). RT and the City should work together to ensure that both documents reflect the most up-to-date assumptions and include the latest definition for both projects.

2. Circulation Plan / North 7th Street
The circulation plan for the proposed development application identifies a widened North 7th Street with light rail in the median of the roadway as part of the second phase of The Railyards project. RT has developed an alignment for light rail along North 7th Street based on a two-lane roadway, with light rail tracks located on the west side of the street in a semi-exclusive right-of-way outside of the trafficway.

RT would like to see a revised circulation plan that would accommodate the DNA Corridor by either including the widening of North 7th Street from F Street to North B Street in the Phase 1 infrastructure program and/or by re-aligning North 7th Street so that the ultimate configuration of the roadway is prepared in Phase 1. RT is also concerned that an exclusive light rail undercrossing of North 7th Street is not specifically identified in the development application. In order to resolve this concern, we would ask that the City work with Thomas Enterprise to consider constructing a widened undercrossing of the Union Pacific Railroad tracks that would accommodate light rail transit.

The revised development application should indicate a preliminary schedule for constructing a new undercrossing of the Union Pacific Railroad tracks should be identified. RT is willing to work with the City to develop an agreement on an interim configuration of light rail along North 7th Streets and through the existing Union Pacific undercrossing.

Finally, the DNA MOS-1 extension of light rail service may include a bypass track along North 7th Street between F Street and H Street. Any improvements along this section of North 7th Street should be designed to accommodate the bypass track and these improvements should occur as part of the Phase 1 development plan. RT recommends that the City and Thomas Enterprises reserve a right-of-way for a future bypass track in the aforementioned section of North 7th Street.

3. 7th Street Two-Way Operation
RT understands that the City is studying the possibility of converting 7th Street to two-way operation between G and H Streets. If this occurs, we request that RT be consulted to determine if light rail operations will be impacted.

4. Impacts to Roadways outside of The Railyards

RT is concerned that the development of Phase 1 of The Railyards will have a significant impact on the roadway network outside of the Railyards development. RT and the City are currently exploring the potential for widening North 12th Street to accommodate future traffic volumes and construct a grade-separation interchange at the intersection of North 12th and Richards Boulevard. RT is concerned that the additional vehicle trips generated by development of Phase 1 may reduce the Level-of-Service (LOS) at the North 12th Street / Richards Boulevard intersection and escalate the need for constructing these improvements. North 12th Street provides the only rail link between Northeast Sacramento, the RT light rail maintenance facility on Academy Way and the rest of RT's light rail system. RT recommends that the City consider expanding its analysis to address traffic impacts from the Phase 1 development on North 12th Street between Richards Boulevard and North B Street and identify the impact to LOS at the intersection of North 12th Street and Richards Boulevard.

RT also recommends that the expanded traffic analysis should identify additional intersections south of the development in downtown Sacramento that may experience significant LOS impacts from the Phase 1 development proposed for the Railyards.

5. Light Rail Stations

RT will work with the City of Sacramento to ensure that the cost of both the new Sacramento Valley and Railyards light rail stations are included in the Phase 1 infrastructure plan for the Railyards development. In particular, the existing Sacramento Valley Light Rail Station would need to be relocated as part of the development of the Phase 1 roadway system and the SITF. RT would like the City to request that Thomas Enterprise include the cost of relocation/reconstructing a new Sacramento Valley Light Rail Station and the future Railyards (North 7th Street and Big Four Boulevard) Station in the infrastructure program for the Railyards project.

6. Traction Power Substation

The electrical power needs of an extension of light rail service to Richards Boulevard will require a new Traction Power substation in the Railyards. Current DNA plan and profile drawings developed by RT's engineering consultant identify a Traction Power Substation adjacent to the proposed DNA alignment near the intersection of the extension of North 5th Street and F Street. RT would like to see the City and Thomas Enterprises identify a site that could accommodate a future Traction Power Substation.

7. Utility Installation

RT's consultant has reviewed the schematic plans for Sewer, Storm Drainage and Potable Water facilities. These plans indicate facilities located in portions of streets where light rail tracks would be constructed. RT recommends that the City and Thomas Enterprise provide RT with more specific plans for Potable Water, Storm

Drainage and Sanitary Sewer facilities as these plans are developed to ensure that proposed facilities are not located under RT light rail tracks.

8. Arena Service

RT would like to work with the City and Thomas Enterprises to explore the possibility of providing direct light rail service to any proposed Arena location in the Sports and Entertainment District. In order to facilitate this service, the revised development plan will need to include provisions to dedicate a 40-foot right-of-way for light rail transit along or in the median to a proposed Arena Site for light rail tracks. RT will also need a 60-foot wide, 400-foot long dedication of land for a light rail station platform.

In addition, a pedestrian circulation route with adequate sidewalk space should be developed between the proposed Arena and Sacramento Valley Station to provide an alternate route for Light Rail and bus patrons who wish to walk to the Sacramento Valley Station.

9. Vehicle Storage

RT is appreciative that the Revised Development Plan indicates sufficient right-of-way along F Street north of the Sacramento Valley Light Rail Station for the storage of light rail vehicles. However, with the addition of the proposed Arena in the Sports and Entertainment District, RT will need additional storage capacity for special event service that may be provided.

Although the land use plan map identifies light rail vehicle storage along the extension of F street east of the new SITF, RT will want to explore with the development team additional locations where vehicles could be stored for midday storage and special event service. If a new Arena is constructed in the Sports/Entertainment District west of North 7th Street, storage for rail vehicles could become a critical element for efficient light rail operations.

10. Bus circulation within the vicinity of the SITF

Nine bus routes currently serve or stop within one block of the current Amtrak Station. RT would like the City to conduct an analysis of how the proposed circulation plan and the construction of the new roadways for the Railyards would impact bus circulation to the existing Sacramento Valley Station and how bus operations would be affected during the construction of the proposed SITF.

11. Establish a TMA for the Railyards

RT recommends that the City consider establishing a Transportation Management Association (TMA) for the Railyards area to encourage employers to provide transit passes and incentives for employees to use public transportation and other alternatives to single-occupant vehicle trips. We also recommend that this TMA include the 10,000 new residential units planned as part of the development. RT is interested in working with the City and Thomas Enterprises to provide incentives for residents and employees to use transit.

12. TLC Plan for the Railyards Station and Canal District
RT plans to conduct a Transportation for Livable Communities (TLC) analysis of the Canal District around the proposed Railyards Station (at North 7th Street and Big Four Boulevard). This planning work will be separate from the DNA DEIS/R but will occur concurrent to the development of the environmental document. RT will work with the City and Thomas Enterprises in identifying appropriate land uses to enhance future transit ridership at these two stations.

13. Streetcar Study
RT will soon be initiating a street car feasibility project that would link downtown Sacramento, the riverfront area and West Sacramento. As part of this study, it is possible that a streetcar alignment will be studied in the Railyards area. A streetcar service would make use of the proposed circulation network for the Railayrds and RT would ask that the City and Thomas Enterprises work with RT to ensure that roadways are designed to keep options open for a street car alignment and ancillary facilities.

As part of the DNA Corridor Study, RT will continue to work closely City staff and Thomas Enterprises concerning development of the SITF and redevelopment of the Union Pacific Railyards. Should you have additional questions concerning the DNA Corridor Study, please contact Joanne Koegel, the RT Project Manager, at (916) 488-4043.

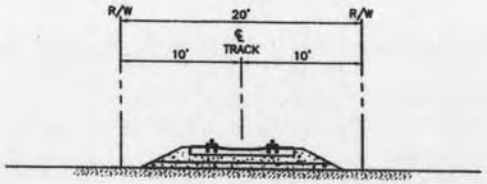
Sincerely,

Taiwo Jaiyeoba

Taiwo Jaiyeoba
Director of Planning

Enclosure: December 2004 DNA Engineering Plan Sheets

cc: Dr. Beverly Scott, General Manager/CEO, RT
Michael R. Wiley, Deputy General Manager, RT
Joanne Koegel, DNA Project Manager, RT
Myrna Valdez, Project Manager, Parsons Brinckerhoff



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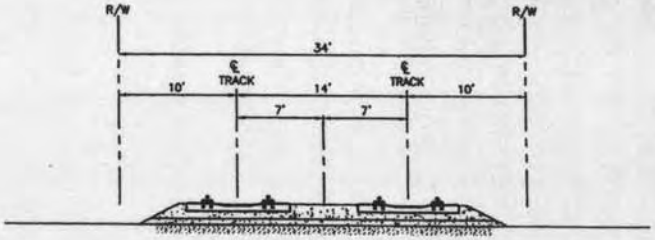

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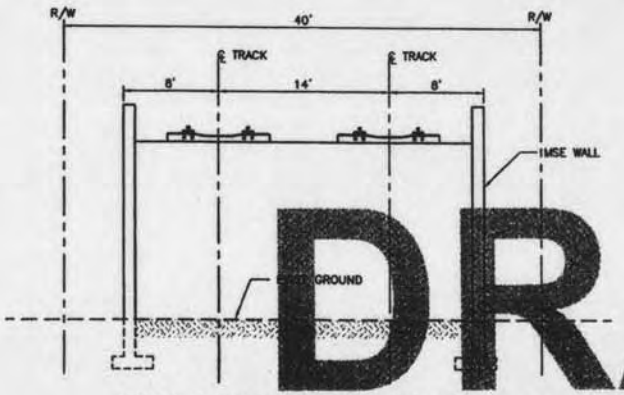

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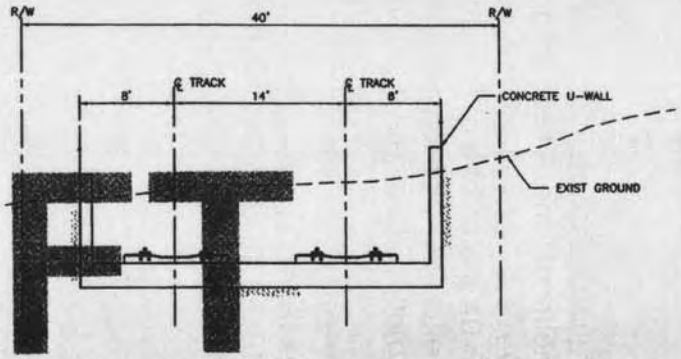

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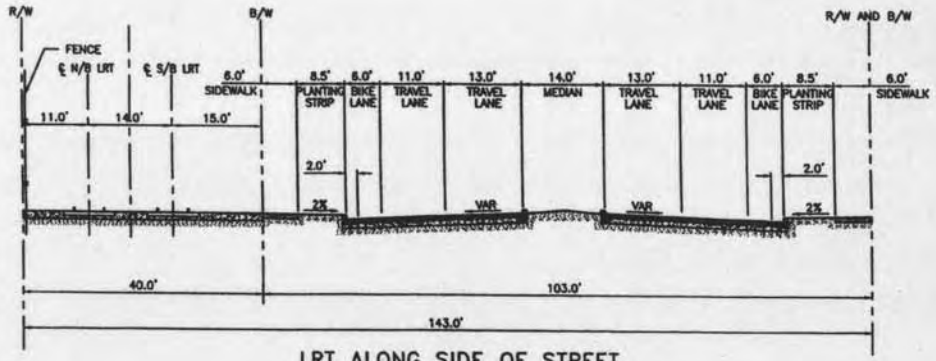
SACRAMENTO REGIONAL TRANSIT DISTRICT
DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR
TYPICAL SECTIONS

001



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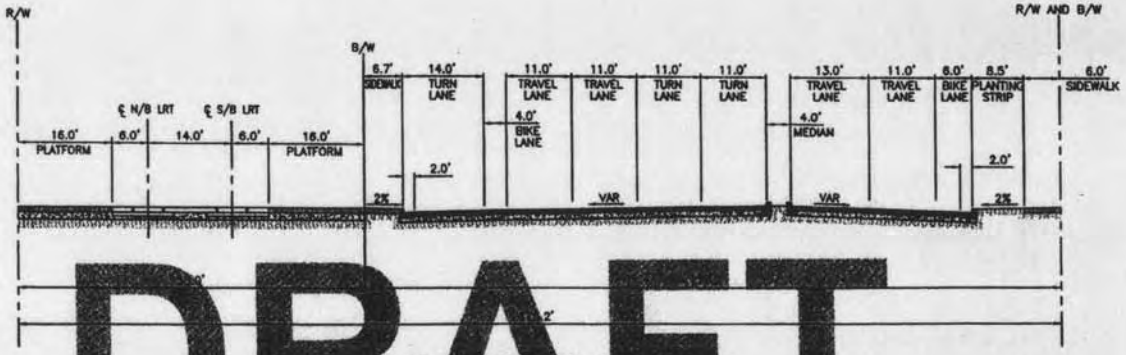
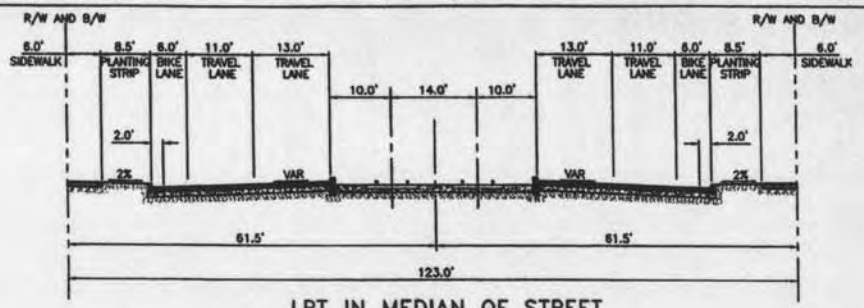
NTS

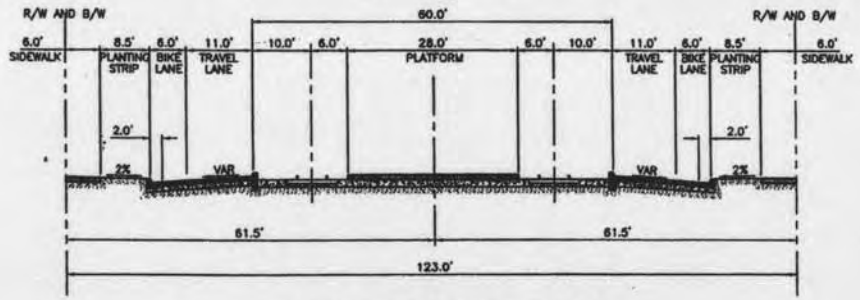


LRT ALONG SIDE OF STREET
T INTERSECTION, LEFT TURN LANES AT
SIDE PLATFORM LRT STATION)
NTS

Downtown Natomas Airport	PB PARSONS BRINCKERHOFF 3840 ROSIN COURT, SUITE 200 SACRAMENTO, CALIFORNIA 95834 Tele: 916-567-2500 Fax: 916-925-3517	DRAFT DEC 2004	DESIGNED BY: R. McFARLAND DRAWN BY: H. NGUYEN CHECKED BY: R. MCFARLAND	DATE: 10-10-03 DATE: 10-10-03 DATE: 10-10-03	SACRAMENTO REGIONAL TRANSIT DISTRICT DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR TYPICAL SECTIONS	004



LRT IN MEDIAN OF STREET
(MID BLOCK)
NTS



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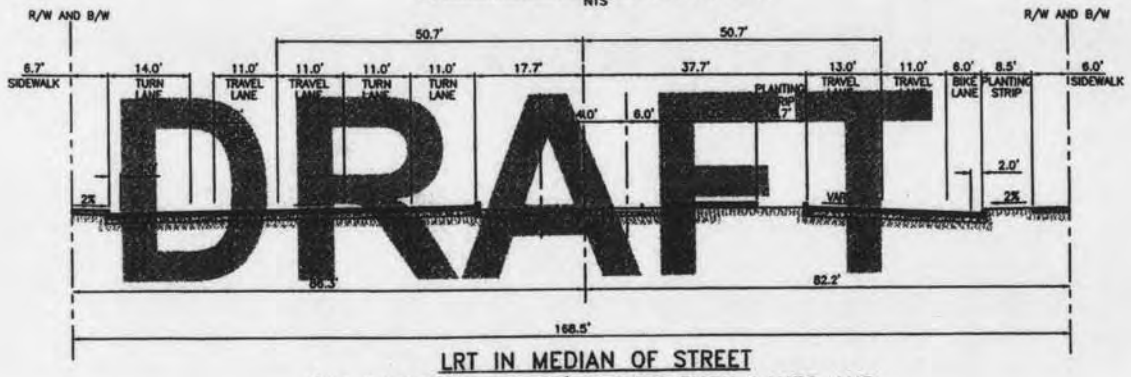
W/CENTER PLATFORM STATION
NTS



LRT IN MEDIAN OF STREET
(AT INTERSECTION W/ 2 LEFT TURN LANES AND
STAGGERED SIDE PLATFORM LRT STATION)
NTS

Downtown Natomas Airport

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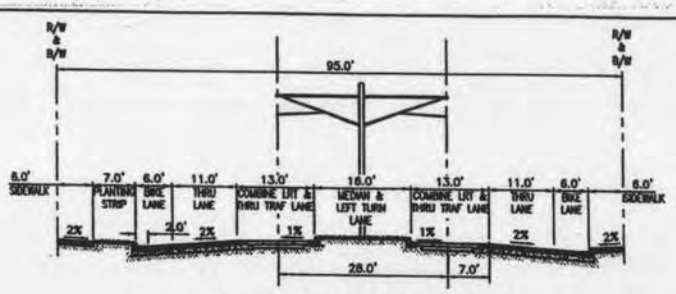
SACRAMENTO REGIONAL TRANSIT DISTRICT
DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR
TYPICAL SECTIONS

005



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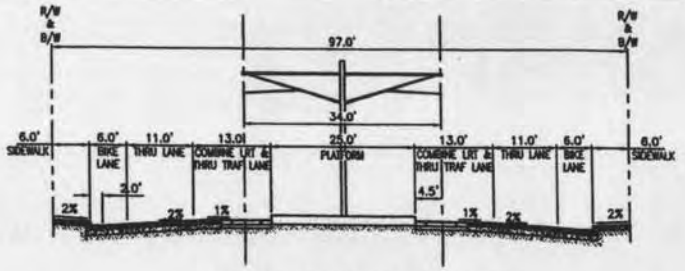

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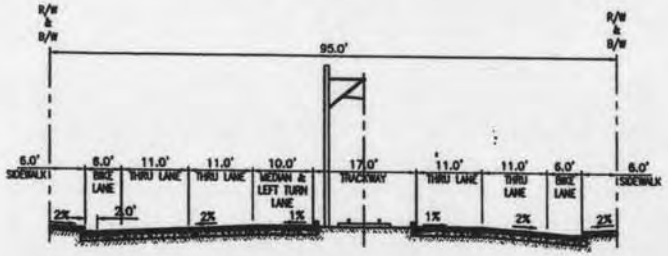

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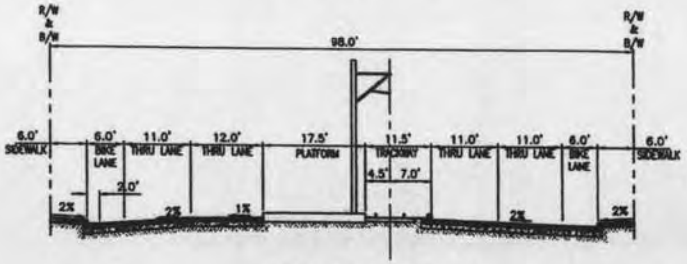
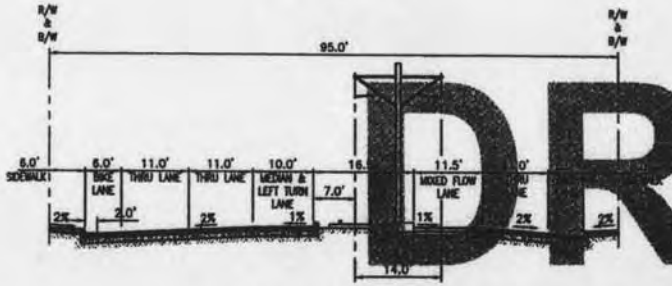


LRT SINGLE TRACK
EXCLUSIVE ROW
(PLATFORM)
NTS



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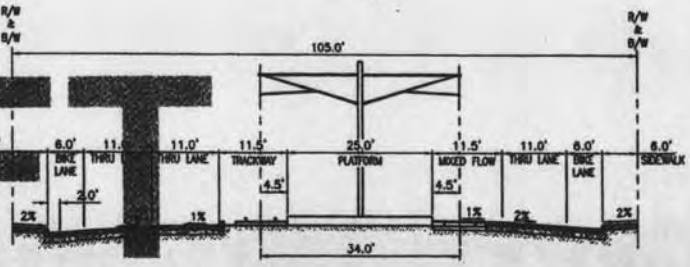
ONE TRACK IN MIXED FLOW LANE
(MID BLOCK)
NTS



LRT DOUBLE TRACK
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ONE TRACK IN MIXED FLOW LANE
(CENTER PLATFORM)
NTS

Downtown Natomas Airport

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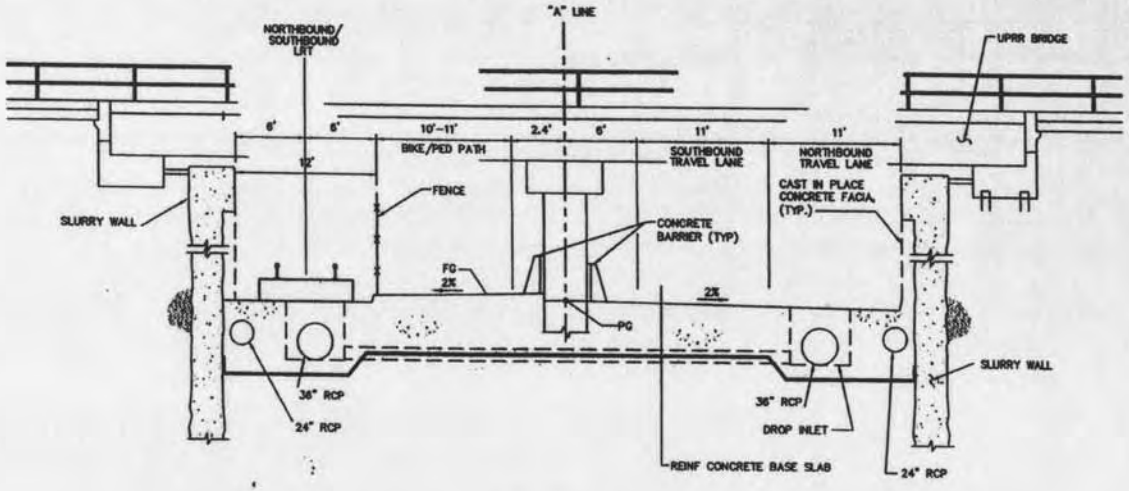

7th STREET @ UPRR OVER CROSSING
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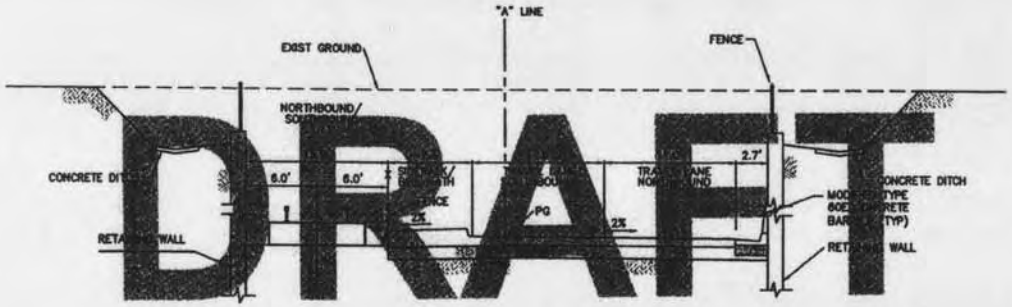
NTS



7th STREET @ APPROACH TO UPRR
2 LANES EAST SIDE W/LRT & BIKE/PED
PATH WEST SIDE (MODIFY CURRENT PROJECT)
NTS

Downtown Natomas Airport

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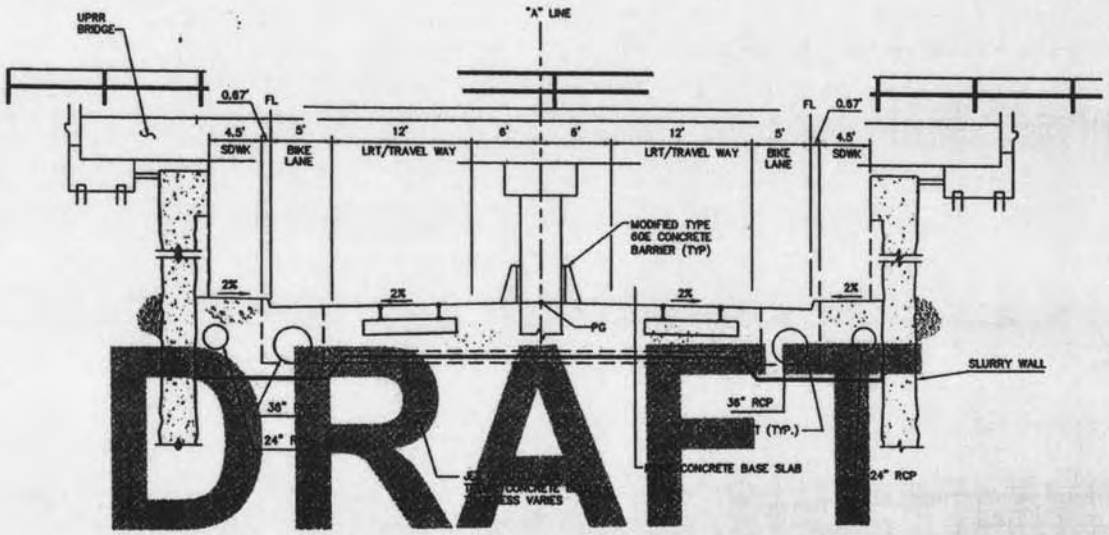
SACRAMENTO REGIONAL TRANSIT DISTRICT
DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR
TYPICAL SECTIONS

008



LRT IN 7th STREET @ UPRR UNDERCROSSING MIXED FLOW
(MODIFY CURRENT PROJECT)
NTS

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SACRAMENTO REGIONAL TRANSIT DISTRICT
DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR
TYPICAL SECTION

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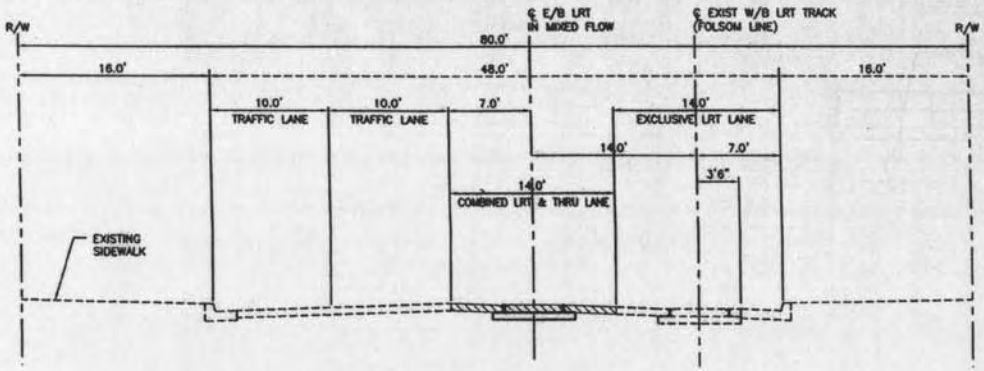

LRT IN "H" STREET
TYPICAL SECTION
NTS

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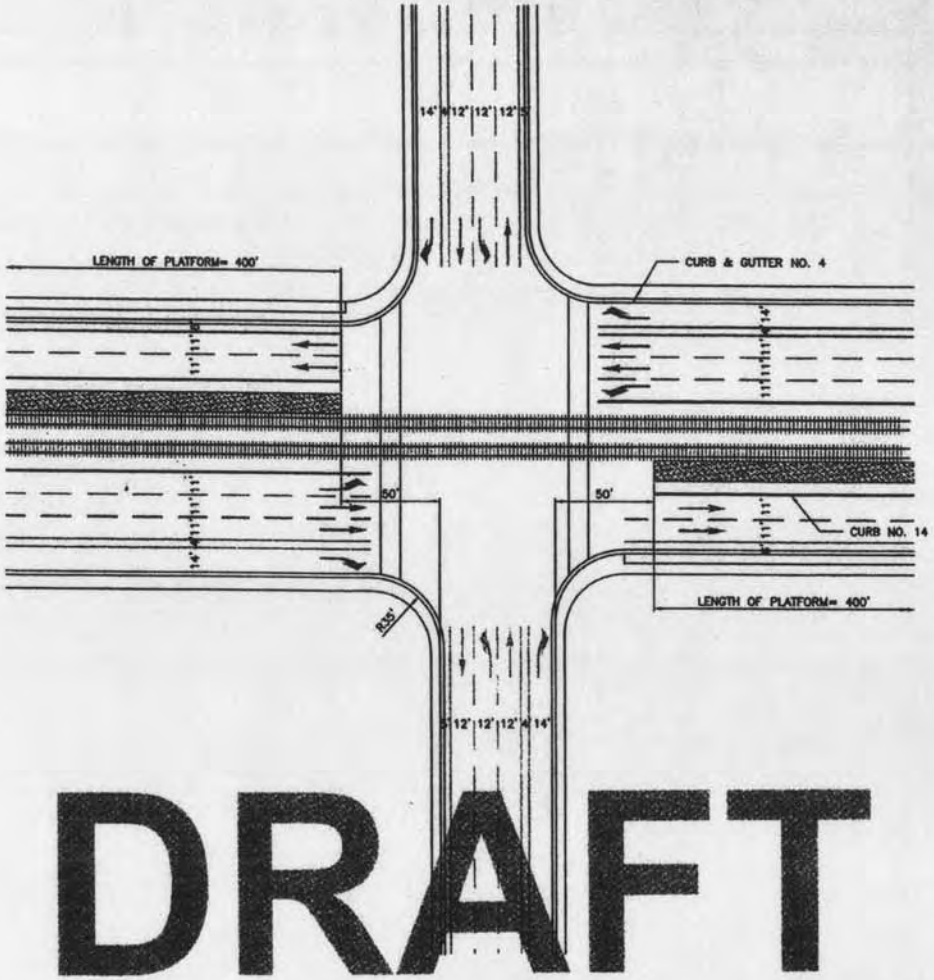

TYPICAL
LRT STATION LAYOUT
IN STREET MEDIAN
STAGGERED SIDE PLATFORMS
NTS

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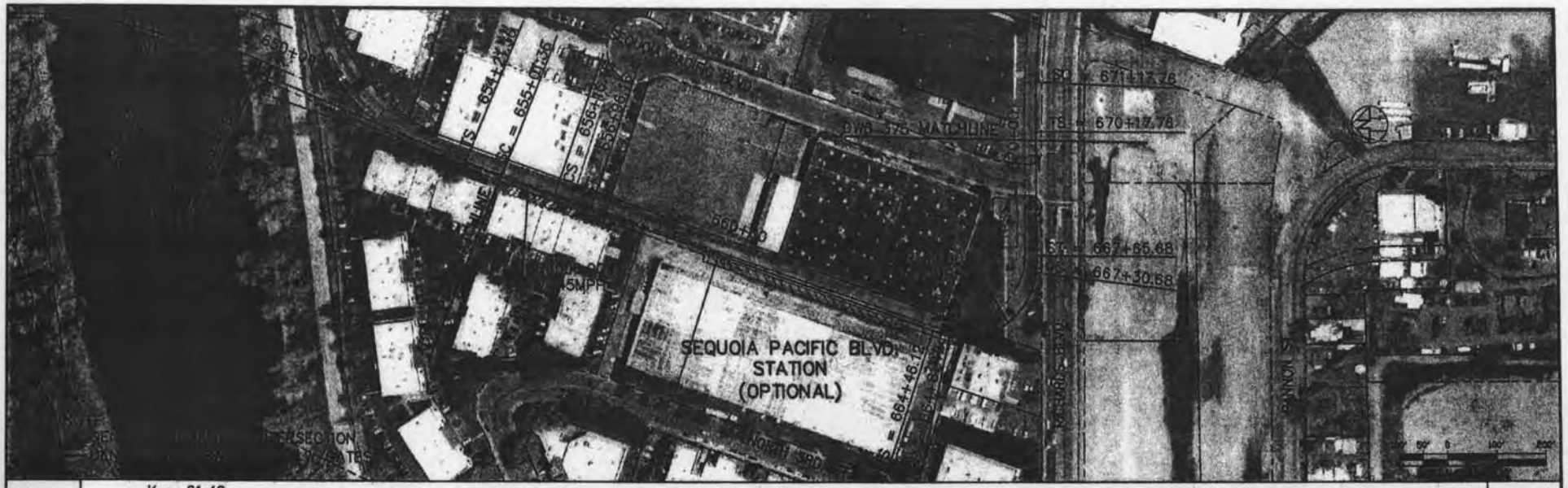
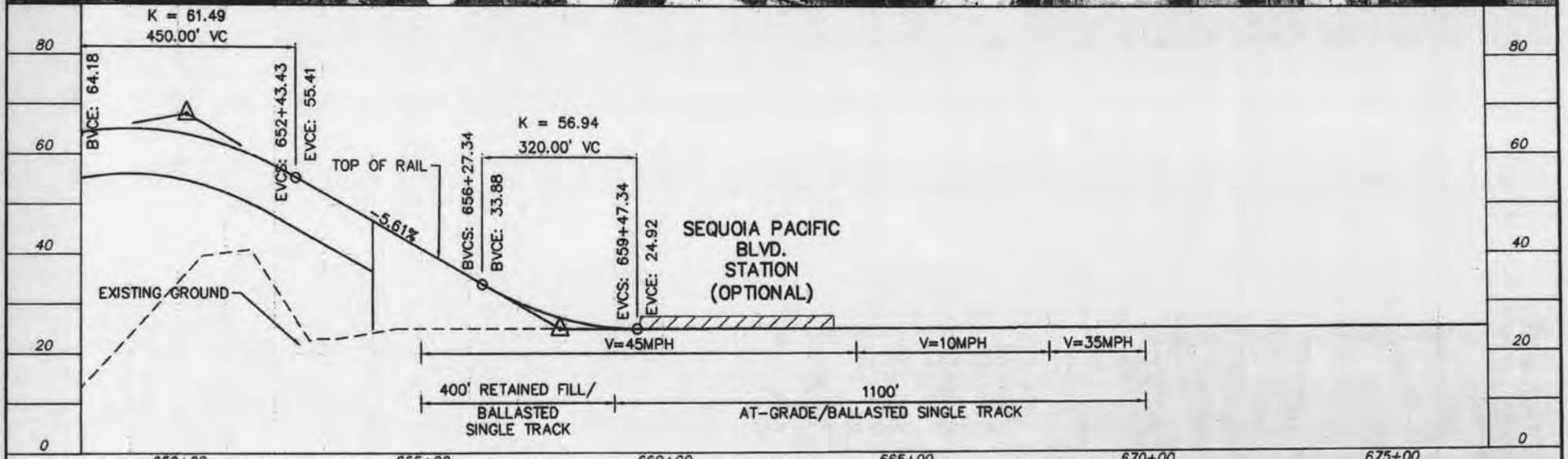
SACRAMENTO REGIONAL TRANSIT DISTRICT
DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR
INTERSECTION DETAIL

011





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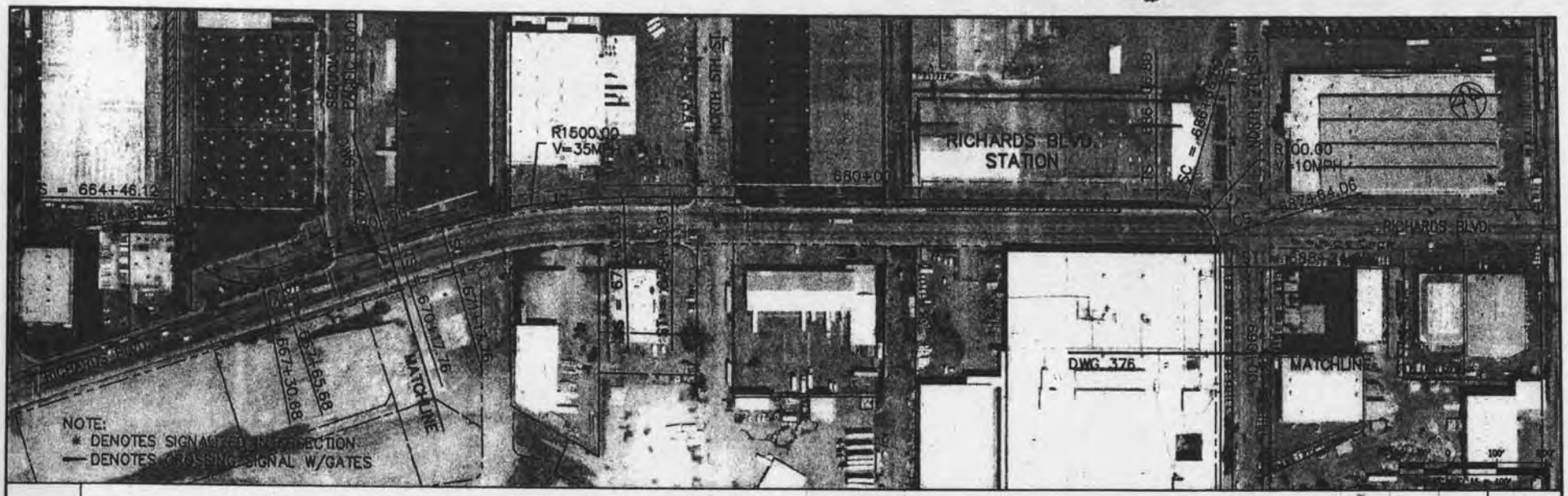

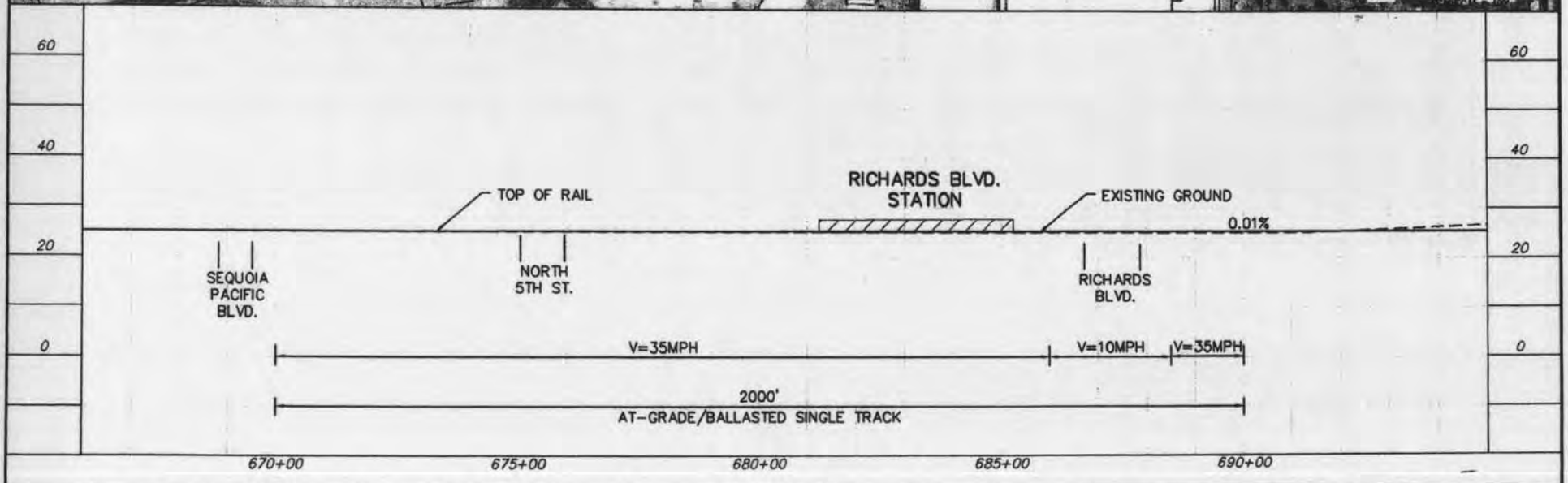

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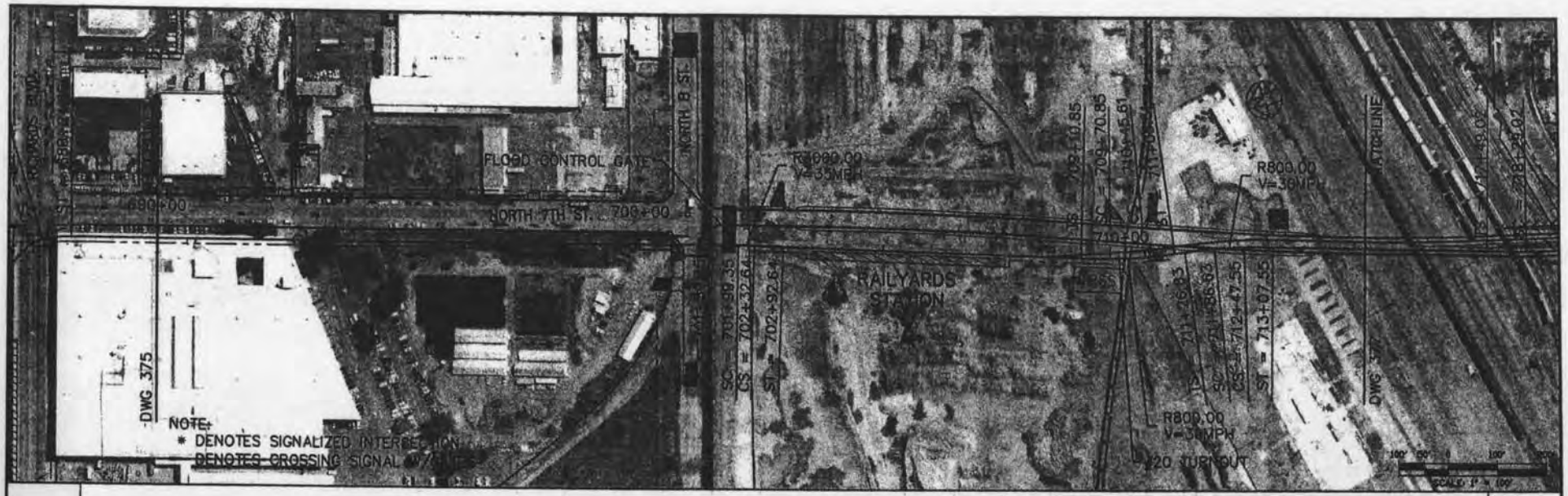
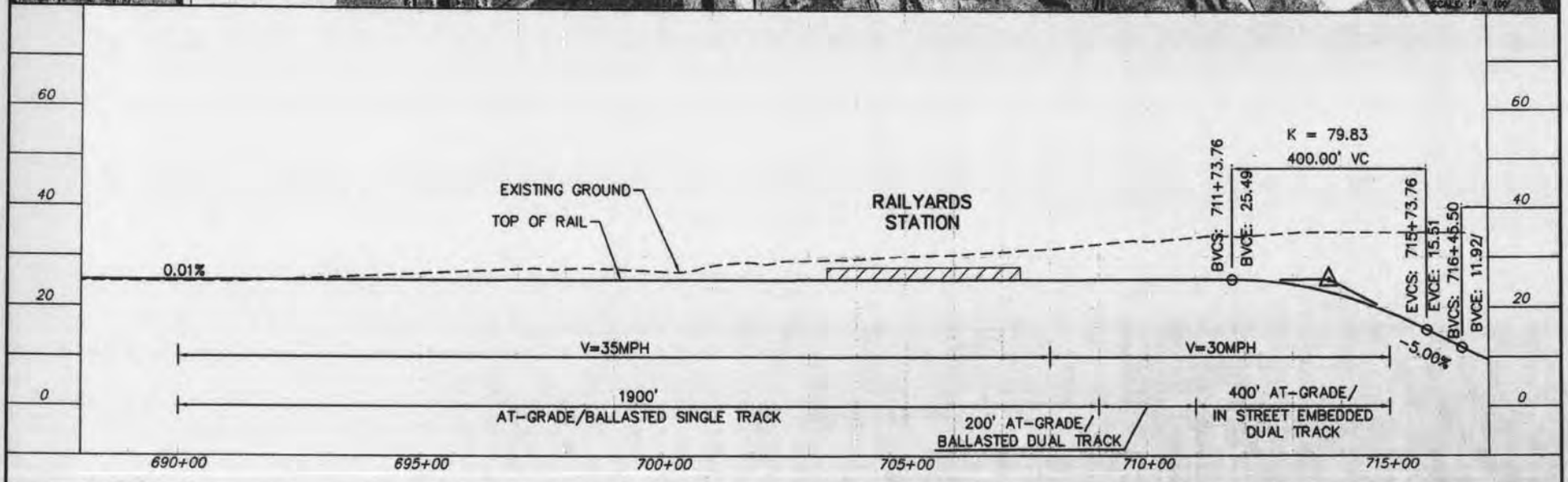
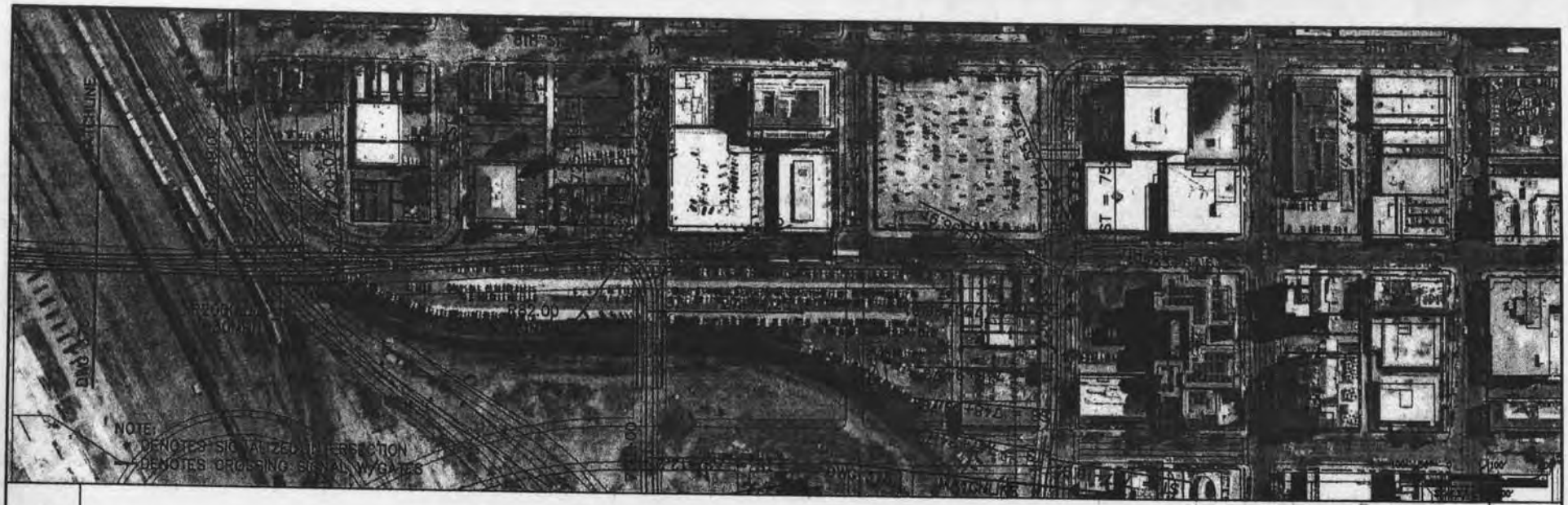
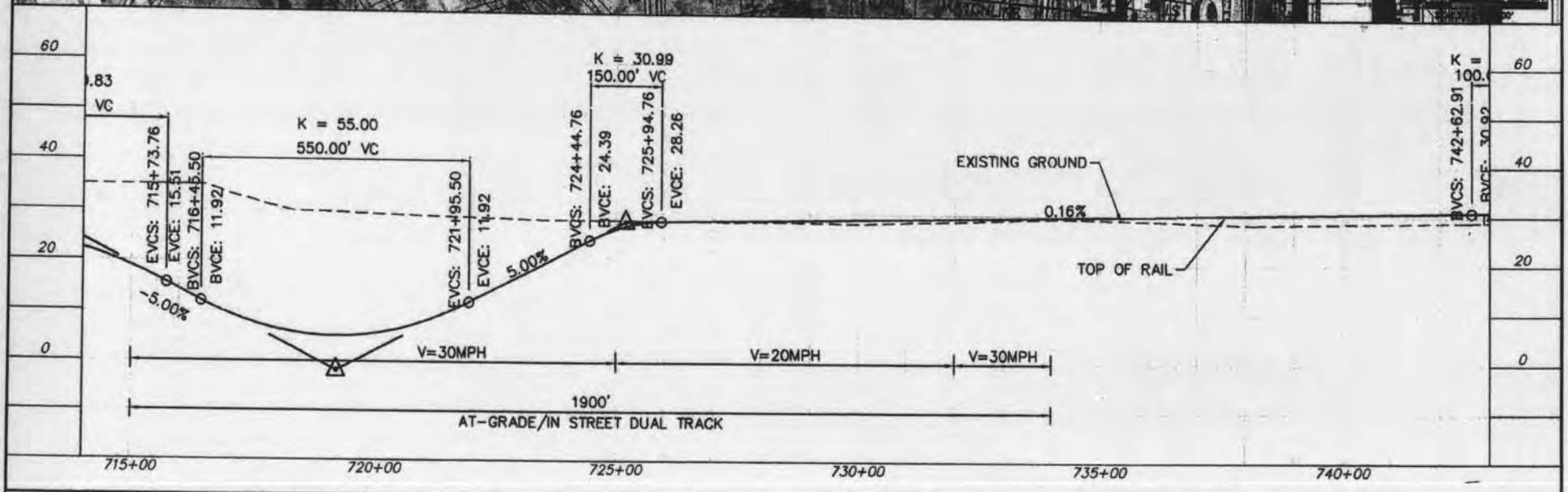




Downtown Natomas Airport	PB PARSONS BRINCKERHOFF 3840 ROSIN COURT, SUITE 200 SACRAMENTO, CALIFORNIA 95834 Tele: 916-567-2500 Fax 916-925-3517	DRAFT DEC 2004	DESIGNED BY: H. LI DRAWN BY: J. BURKE CHECKED BY: R. McFARLAND	DATE: 03-25-04 DATE: 03-25-04 DATE: 03-25-04	SACRAMENTO REGIONAL TRANSIT DISTRICT DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR ALTERNATIVE 3A STARTER LINE	376





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Downtown Natomas Airport

PB PARSONS BRINCKERHOFF
3840 ROSIN COURT, SUITE 200
SACRAMENTO, CALIFORNIA 95834
Tele: 916-567-2500 Fax 916-925-3517

DRAFT
DEC 2004

DESIGNED BY: H. LI	DATE: 03-25-04	SACRAMENTO REGIONAL TRANSIT DISTRICT DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR ALTERNATIVE 3A STARTER LINE	377
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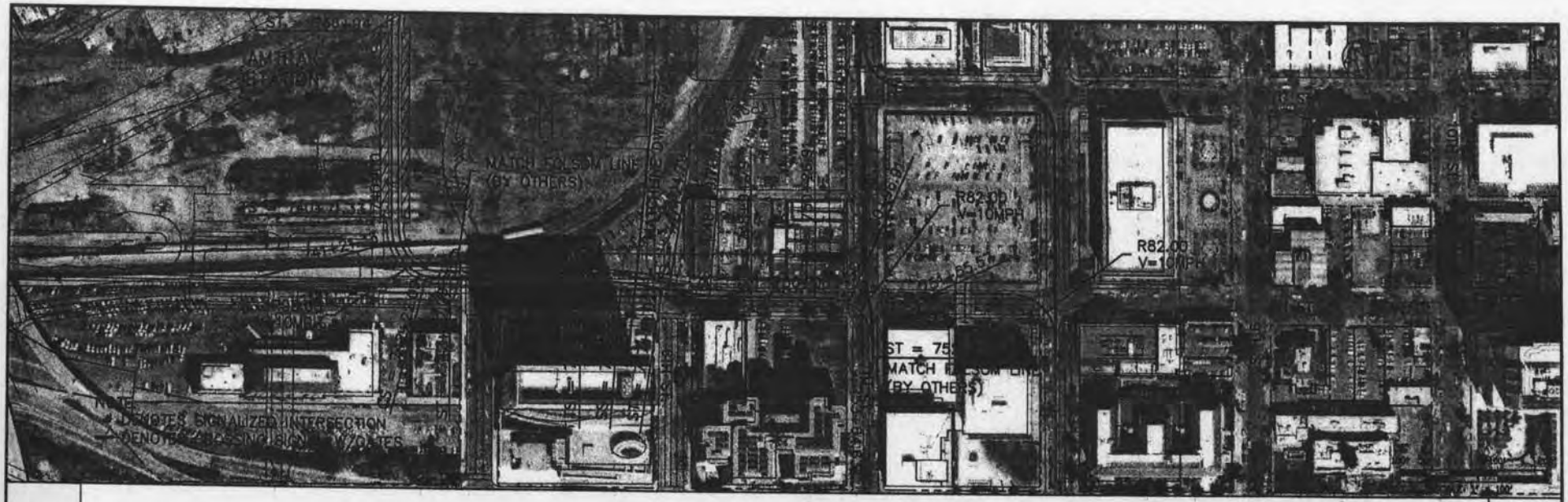

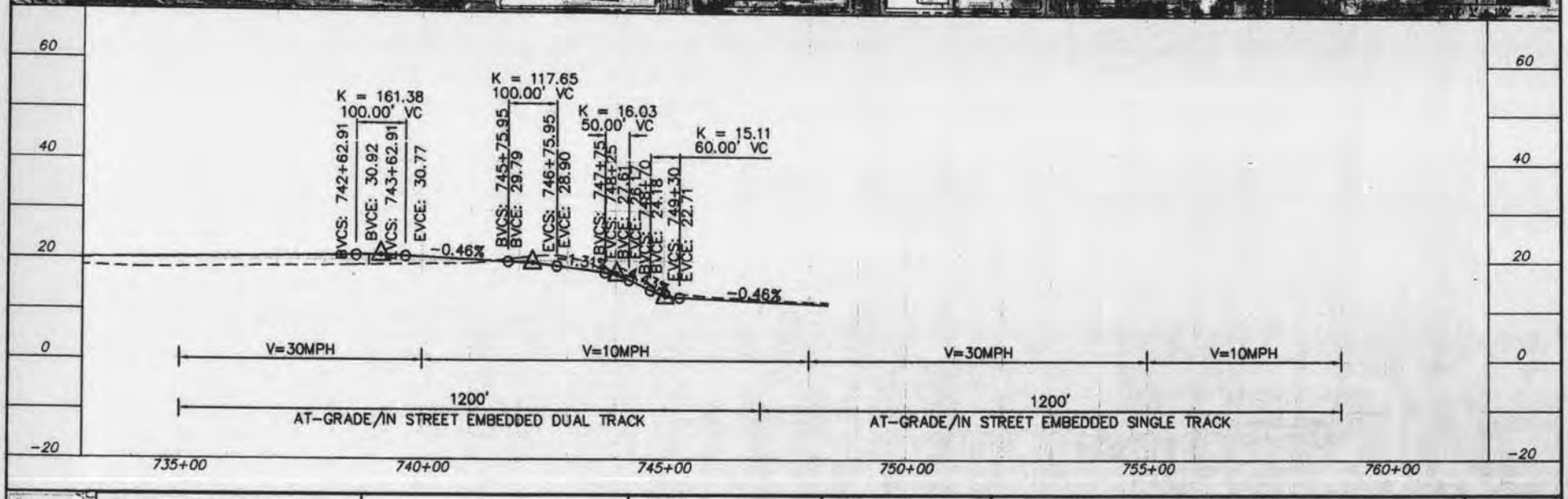

Downtown Natomas Airport

PB PARSONS BRINCKERHOFF
3940 ROSIN COURT, SUITE 200
SACRAMENTO, CALIFORNIA 95834
Tele: 916-567-2500 Fax 916-925-3517

DRAFT
DEC 2004

DESIGNED BY: H. LI	DATE: 03-25-04	SACRAMENTO REGIONAL TRANSIT DISTRICT DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR ALTERNATIVE 3A STARTER LINE	378
DRAWN BY: J. BURKE	DATE: 03-25-04		
CHECKED BY: R. McFARLAND	DATE: 03-25-04		

T:\12284 - Sac Rt DNA\Dwg\ C-378.dwg graham Tue Jan 11,2005 - 10:15 am

Downtown Natomas Airport

Transit Alternatives Analysis/ Draft Environmental Impact Statement and Report

SACRAMENTO REGIONAL TRANSIT DISTRICT

DOWNTOWN/ NATOMAS/ AIRPORT CORRIDOR

DEIS/R

Conceptual Designs for:

LIGHT RAIL TRANSIT (LRT) ALTERNATIVE

Drawing No.	Description
001 - 013	Typical Sections and Details
301 - 328	Alternative 3, Truxel LRT
351 - 378	Alternative 3A, Starter Line
379 - 394	Alternative 3B, Minimal Operable Segment
911 - 992	Design Options
998	Maintenance Yard

Prepared by:

December 2004

PB PARSONS BRINCKERHOFF
3840 ROSIN COURT, SUITE 200
SACRAMENTO, CALIFORNIA 95834
Tele: 916-567-2500 Fax 916-925-3517

SRCSD

April 10, 2006
E225.000

10545 Armstrong Avenue
Mather, CA 95655
Tele: [916] 876-6000
Fax: [916] 876-6160
Website: www.srcsd.com

Scott Johnson
City of Sacramento
Development Services Department
2101 Arena Boulevard, Suite 200
Sacramento, CA 95834

Subject: **Notice of Preparation of a Draft Environmental Impact Report and Scoping Meeting for the Railroads Specific Plan, Sacramento Intermodal Transportation Facility and Project Level Area Development**
APN: 002-0010-035, 037, 039, 041, 043; 001-0210-013, 016; 006-0023-006

Dear Mr. Johnson:

The subject property is outside the boundaries of CSD-1 but within the Urban Service Boundary and SRCSD shown on the Sacramento County General Plan. City Utilities Department approval will be required for sewage service.

If you have any questions regarding these comments, please call Stephen Moore at (916) 876-6296 or myself at (916) 876-6094.

Sincerely,

Wendy Haggard, P.E.
Department of Water Quality
Development Services

WH/JRO: cc

cc: Melenie Spahn
Amber Schalansky

johnson041006.ltr.doc

April 10, 2006

Mr. Scott Johnson
City of Sacramento
2101 Arena Boulevard, Second Floor
Sacramento, CA 95834

Via e-mail at: srjohnson@cityofsacramento.org

SUBJECT: PUBLIC COMMENT, RAILYARDS SPECIFIC PLAN: DEIR (CEQA) PROCESS

Dear Mr. Johnson:

The following are the comments of some residents and business persons in Alkali Flat regarding the DEIR of the Railyards Specific Plan:

1. A new development team is in place for the Railyards, Thomas Enterprises of Sacramento, LLC.

> Objection: The relationship between Thomas Enterprises and the Milennia group, the former development team for the Railyards, has not been disclosed. We request full disclosure.

2. This development team has submitted a Development Application to the City, followed by a Revised Application, dated March 9, 2006. While the Revised Application makes reference to changes made based on public input, the signers on this letter had no knowledge of any meetings scheduled regarding Thomas Enterprises's plans for the Railyards.

> Objection: Thomas Enterprises should disclose those with whom contact was made and when such contact was made. In addition, because the DEIR process is so well controlled, leaving little input for changes in the design of the different features of the Railyards, we request that the DEIR process be held in abeyance until members of the Alkali Flat community, residents, businesses, and nonprofits, have the opportunity to meet with Thomas Enterprises regarding the design of the Railyards. We make this request because, under CEQA, once a project EIR has been certified or a negative declaration adopted, no subsequent EIR or environmental review will be done unless new environmental effects have been discovered.

In addition, a Notice of Preparation, as required by CEQA, has been prepared by Thomas Enterprises. A "Scoping Meeting" related to that Notice of Preparation (NOP) was held at old City Council Chambers on March 29. At this point, no National Environmental Policy Act (NEPA) has been initiated.

> Objection: The developer and/or the City shall require a National Environmental Policy Act (NEPA) analysis of the project and the City shall request a full NEPA analysis of the project.

3. Transportation

North and South Streets

The NOP and the Supplemental Application indicate that Fifth Street will be a "meandering two-lane street" with wide sidewalks and Sixth Street will be a four-lane arterial street, connecting Richards Boulevard to the Depot District. Seventh Street's expansion is not mentioned in the NOP but is described in the Supplemental Application (page 3). However, the specific type of "widening" of Seventh Street is not discussed which raises a question because Fifth and Sixth Streets are described in some specificity.

Both Fifth and Sixth Streets will be raised to go over Union Pacific's main line tracks.

> Objection: We object to any widening of Seventh Street. Fully disclose the plans for widening Seventh.

East and West Streets

A major feature of the plan is the creation of a "Big Four Boulevard" that apparently connects to the new Gateway Project on North 12th Street and goes into the Railyards slightly to the north of the UP tracks and the Seventh Street underpass. The Big Four Boulevard crosses Seventh Street about halfway (more or less) from the underpass to North B Street.

> Objection: Fully disclose the connection, if any, between the Big Four Boulevard and the Gateway Project. Any route which would allow cut-through traffic in Alkali Flat is unacceptable.

Big Four Boulevard also is the location of a "Transit Village" at the point at which Big Four Boulevard crosses Seventh Street.

Objection: Disclose fully the route of RT light rail along Seventh Street. Any obstruction to pedestrian and bicycle traffic across Seventh at F Street is unacceptable, and any increase of traffic on F is unacceptable.

While neither narrative, i.e., that in the NOP or in the Supplemental Application, address it, the draft Land Use Plan (map) included in the NOP and the Supplemental Application show another arterial off Big Four Boulevard to the north, then going west.

Objection: Disclose fully the route and size of this second arterial. Any increased vehicular traffic is unacceptable.

4. Lack of Reference to Schools and Childcare Facilities

With the dramatic increase in residential units (10,000 mixed use, high density residential units are proposed, including town homes, apartments, condos, and affordable housing), there is a City requirement that schools and childcare facilities be built. Schools and childcare were included in the original ROMA plan.

Objection: Disclose the provisions for elementary and middle schools and childcare. Any increase in population without adequately planning for schools and childcare is unacceptable.

5. Lack of Definition/Specificity of the Canal

The defining feature apparently of the Canal District is the proposed "meandering canal". However, its length, depth, and width are not defined.

Objection: Disclose the length, depth, and width of the canal. Any feature which increases circulation on Seventh Street is unacceptable.

6. Lack of Pedestrian Connectivity between Alkali Flat and the Railyards

Given that Seventh Street will be widened and based on the assumption that part of this widening will involve light-rail tracks because of the Transit Village to the north of the underpass, it appears that Seventh and F Streets will not be the pedestrian-friendly Alkali Flat access to the Railyards that it might otherwise be.

Both the NOP and the Supplemental Application are replete with references to pedestrian connections to the Railyards from the Riverfront, Downtown, and Old Sacramento.

For example, one of the project objectives is to connect the Railyards to the Sacramento Riverfront by entitling open spaces and pedestrian linkages (Supplemental Application, page 4).

The NOP and the Supplemental Application provide some detail on how those connections will work. However, the Alkali Flat connection is not so specified.

> Objection: Raised pedestrian/bicycle"crossings" over Seventh Street at D and E Streets for better Alkali Flat connectivity with the Depot District, the Central Station District, and the Sports and Entertainment District *and* over the UP tracks to connect Alkali Flat with the Canal District is required.
>
> Objection: Fully disclose plans for pedestrian/bicycle connections, including the planned width of sidewalks and bicycle access in conjunction with sidewalks.

7. Public Use Area

The Land Use map indicates a triangular area in blue just to the north of Alkali Flat and just before the new railway bridge.

> Objection: Fully disclose the actual area involved in this "public use" space, indicate the ownership of the parcel, and define the use. We request pedestrian access from Alkali in this area.

Sincerely yours,

/S/

CATHLEEN WILLIAMS
CATHERINE CAMACHO
MARK E. MERIN
MARILYN K. PROSSER
ALKALI FLAT PROJECT AREA COMMITTEE

BOYDEN, COOLURIS, LIVINGSTON & SAXE PC

ATTORNEYS AT LAW
400 CAPITOL MALL, SUITE 1625
SACRAMENTO, CALIFORNIA 95814
TELEPHONE: (916) 930-9740 FAX: (916) 930-9745

FACSIMILE TRANSMITTAL COVER SHEET

TO:	COMPANY:	FAX NO.	PHONE NO.
Scott Johnson	City of Sac. Dev. Serv. Dept.	(916) 566-3968	

FROM: J. Cleve Livingston	DATE: 4-10-06

We are transmitting a total of 2 pages, including this cover sheet. If you have not received all of the pages, please call (916) 930-9740 as soon as possible. Thank you.

MESSAGE:

I am transmitting with this cover sheet comments regarding the appropriate scope of analysis with respect to the Railyards/Intermodal EIR.

BOYDEN, COOLURIS, LIVINGSTON & SAXE PC
ATTORNEYS AT LAW
400 CAPITOL MALL, SUITE 1625
SACRAMENTO, CALIFORNIA 95814
TELEPHONE: 916-930-9740 FAX: 916-930-9745
INTERNET: BCLSLAW.COM

BAY AREA OFFICE
300 TAMAL PLAZA
SUITE 180
CORTE MADERA, CALIFORNIA 94925
TELEPHONE: (415) 924-4612
FAX: (415) 924-4615

WRITERS EMAIL:
clivingston@bclslaw.com

April 10, 2006

L. E. Buford
Principal Planner
Development Services Department
City of Sacramento
North Permit Center
2101 Arena Boulevard, 2nd Floor
Sacramento, CA 95834

Dear Ms. Buford:

I am writing on behalf of Grove Investment Company ("Grove") to comment on the Notice of Preparation for the Railyards Specific Plan. Grove is in the process of developing two major projects on Richards Boulevard:

1. Continental Plaza -- a multi-phase office project consisting of approximately 287,500 square feet of building floor area already constructed and 810,000 square feet of additional building floor area that is approved for construction.

2. Discovery Centre -- a multi-phase office/hotel project consisting of approximately 150,000 square feet of building floor area already constructed and 840,000 square feet of additional building floor area that is approved for construction.

These two projects represent the future of business/professional development in the Richards Boulevard Plan Area.

We would respectfully request that, in evaluating the environmental impacts of development of the Railyards planning area, special attention be given to any negative impacts on the Continental Plaza and Discovery Centre projects and on the infrastructure (especially roadways, including in particular the Richards Boulevard/I-5 interchange) serving these two projects and the Richards Boulevard planning area.

Sincerely,

J. Cleve Livingston

{00026933:1}

REMY, THOMAS, MOOSE and MANLEY, LLP
ATTORNEYS AT LAW

455 CAPITOL MALL, SUITE 210
SACRAMENTO, CALIFORNIA 95814

Telephone: (916) 443-2745
Facsimile: (916) 443-9017
E-mail: info@rtmmlaw.com
http://www.rtmmlaw.com

MICHAEL H. REMY
1944 - 2003

TINA A. THOMAS
JAMES G. MOOSE
WHITMAN F. MANLEY
ANDREA K. LEISY

BRIAN J. PLANT
JOSEPH J. BRECHER
OF COUNSEL

JENNIFER S. HOLMAN
TIFFANY K. WRIGHT
ASHLE T. CROCKER
SABRINA V. TELLER
MICHELE A. TONG
MEGHAN M. HABERSACK
AMY R. HIGUERA
HOWARD F. WILKINS III
CARRIE A. ELLIS
CATRINA L. FOBIAN
MEGAN M. QUINN

April 10, 2006

Scott Johnson
Associate Planner
City of Sacramento
Development Services Department
2101 Area Boulevard, Suite 200
Sacramento, CA 95834

RE: **Notice of Preparation for the Railyards Specific Plan, Sacramento Intermodal Transportation Facility and Project Level Area Development.**

We appreciate the opportunity to review and comment on the Notice of Preparation ("NOP") for the Railyards Specific Plan, Sacramento Intermodal Transportation Facility ("SITF"), and Project Level Area Development. Our client Simsl Hugo Neu ("Sims") operates a metal recycling plant at 130 North 12th Street, at the corner of North 12th and "B" Streets. Sims is particularly concerned about the impacts the proposed development may have on its operations at this site. On behalf of Sims, we submit the following comments and concerns for your consideration during the preparation of the EIR.

Preliminary proposals for development of the Railyards Specific Plan showed an extension of Gateway Boulevard bisecting Sims' property. After reviewing Thomas Enterprises' revised proposal, however, it now appears that 10th Street is also planned to extend through Sims' property. With two new streets cutting through the site, Sims is concerned about the effect this will have on its ability to continue its operations at this facility. In fact, Sims suspects that these plans, if constructed as depicted, would render the site useless for Sims' purposes.

We have made several attempts in the last few days to contact City staff to obtain answers to the following questions, with no success:

- At what phase in the project are Gateway Boulevard and 10th Street planned for extension?

- When are the extensions of Gateway and 10th Street expected to occur?

- How does the City intend to acquire the property required for the extension of Gateway Boulevard and 10th Street?

- Does the City plan to initiate eminent domain proceedings to acquire the property? If so, when would these proceedings commence?

- If the City does take Sims' site by eminent domain, would the City compensate Sims for relocation site research and moving costs?

- If eminent domain proceedings are planned, we encourage the City to prepare an economic impact study to examine the effects on the surrounding business community, including Sims|Hugo Neu.

We also want to ensure that the EIR prepared for the project addresses the issue of land use compatibility, given the changing character of land uses in the project area.

Our final concern relates to flood control in the area. It is our understanding that the existing railroad embankments that currently separate the southern end of the Sims site and the Project area serve as flood protection for the area to the south and west of Sims' site. Is this an accurate description of their purpose? If so, what effect would multiple cuts through the embankments for the extensions of Gateway Boulevard and 10th Street have on flood control capability in the area? What additional measures, if any, does the City plan to utilize in order to ensure the integrity of the current flood control system? (e.g., are flood gates planned where Gateway and 10th Street will cut through the embankments?) Given Sacramento's current flood control challenges, we hope that the EIR will comprehensively address the planned flood control measures for the Project and surrounding areas.

In closing, I request that the City include me on all mailing lists for public notices (especially the EIR) relating to this or other future projects in Sacramento located within 1000 feet of Sims' facility at the corner of North 12th Street and "B"

Street in Sacramento. In fact, we previously submitted a written request for notice, and reiterated that request through various communications with city staff. (Copies of our October 2004 letter and emails with various City staff are attached.) Despite these previous requests, I did not receive a copy of the NOP from the City. I hope that my submission of these comments will ensure that I receive all relevant notices in the future.

Thank you for the opportunity to comment on the proposed project. My client also would appreciate an informal meeting with knowledgeable City staff and/or the project applicant in the near future to further discuss Sims' questions about the proposed Railyards project. At this point in time, Sims does not necessarily oppose the project. Rather, Sims merely seeks additional details and clarification of the proposed plans. I would be pleased to discuss these matters further at your convenience.

Sincerely,

Sabrina V. Teller
on behalf of
SimsHugo Neu

60413087 001 wpd

Catrina Fobian

Subject: Project Update

-----Original Message-----
From: Carol Shearly [mailto:CSHEARLY@cityofsacramento.org]
Sent: Tuesday, January 17, 2006 4:13 PM
To: Catrina Fobian
Cc: Hinda Chandler; Hawea Pedersen; Ted Davini
Subject: RE: Project Update

Catrina - Via this e-mail, I'll let folks know of your desire to be on public noticing lists for Railyards, SITF, and Westside Access projects. Thanks, Carol

Hawea - Please make sure Catrina Fobian at Remy Thomas Moose and Manley Law Offices is on any mailings related to the Downtown Railyards/ Thomas Enterprises project. Thanks, Carol

Ted - Please make sure Catrina at RTMM is on any mailings related to the Westside Access project. Thanks, Carol

Hinda - Please make sure Catrina at RTMM is on any mailings related to the SITF project. Thanks, Carol

Thanks all - Carol
>>> "Catrina Fobian" <CFobian@rtmmlaw.com> 01/17/06 2:55 PM >>>
Ms. Shearly,

Thank you again for your assistance. I have one more request if I may. I want to confirm that we (and/or Sims Metal) is on the City's notice list for the Millenia and SITF projects. Additionally, we want to ensure that we receive notice of ongoing activities relating to the Westside access project you reference in your email below. I believe we sent letters to City Staff with this request, but I would like to confirm that we are on notice for all three projects.

Thanks again,
Catrina Fobian

KENNETH A. STUBER,
Telecommunications
Engineer (Radio)

Kstuber@cityofsacramento.org

City of Sacramento
INFORMATION TECHNOLOGY DEPARTMENT

904 Eleventh Street
Sacramento, CA
95814
Tel: 916-808-8511
FAX: 916-808-8516

TECHNICAL SUPPORT SERVICES DIVISION

April 11, 2006

Nedzlene Ferrario, Senior Planner
Planning Division
City of Sacramento

Subject: Railyards Specific Plan (P05-097)

Dear Ms. Ferrario:

I have reviewed the project description for the Railyards Specific Plan (P05-097) related to the expected Public-Safety radio system coverage provided by the Sacramento Regional Radio Communications System (SRRCS). The SRRCS provides countywide coverage to most of the Public-Safety agencies within the Sacramento area including the City of Sacramento. As a Charter City, the City of Sacramento is charged with providing Police, Fire and EMS services within the city limits.

The SRRCS consists of a 49 channel dual backbone, multi-site, simulcast system with 25 channels principally serving County agencies commonly referred to as the County Backbone and 24 channels principally serving the City of Sacramento and the City of West Sacramento commonly referred to as the City Backbone.

The City Backbone consists of three simulcast sites located at the County Jail (6th & J Streets), Freeport Water Tank (I-5 near Freeport) and the Brighton Heights radio communications site (7399 San Joaquin Street). The Freeport site is in close alignment with the northerly southerly streets of the downtown area, the Brighton Heights site is in close alignment with the easterly westerly streets of the downtown area and the Jail site, located in the downtown area, is south of the proposed development. Because of the street alignments, the triad simulcast design configuration provides good street level coverage in spite of the signal attenuation caused by high-rise buildings. The County backbone does not have any coverage from either the Freeport or Brighton Heights sites; consequently, low level shadowing may occur in some of the project's area. The Sacramento Police Department and Sacramento Fire Department run all of the day to day operations utilizing the City backbone.

In order to provide adequate in-building public safety radio coverage, radio signal boosters may be required for some of the buildings and/or underground parking garages being proposed in the project. The City of Sacramento Police and Fire Departments also rely on cellular phone service for public safety operations. Therefore, provisions should be included to provide adequate coverage for cellular phones.

Further study by my Department will be required. Please keep me informed as more information about the project becomes available.

Sincerely,
Kenneth A. Stuber

STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, *Governor*

CALIFORNIA STATE LANDS COMMISSION
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

PAUL D. THAYER, *Executive Officer*
(916) 574-1800 FAX (916) 574-1810
Relay Service From TDD Phone **1-800-735-2929**
from Voice Phone **1-800-735-2922**

Contact Phone: **(916) 574-1890**
Contact FAX: **(916) 574-1885**

April 14, 2006

File Ref: G -21-01

Ms. Nadell Gayou
The Resources Agency
901 P Street
Sacramento, CA 95814

Mr. Scott Johnson
City of Sacramento Development Services Department
2101 Arena Blvd., Ste. 200
Sacramento, CA 95834

Dear Ms. Gayou and Mr. Johnson:

Subject: Railyards Specific Plan

Staff of the California State Lands Commission (CSLC) has received the above referenced Notice of Preparation (NOP). Under the California Environmental Quality Act (CEQA), City of Sacramento is the Lead Agency and the CSLC is a Responsible and/or Trustee Agency for any and all projects which could directly or indirectly affect sovereign lands, their accompanying Public Trust resources or uses, and the public easement in navigable waters.

The State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable waterways within the state upon its admission to the United States in 1850. The State holds these lands in trust for the benefit of all the people of the State for statewide Public Trust purposes, which include waterborne commerce, navigation, fisheries, water-related recreation and access, habitat preservation, and open space. The landward boundaries of the State's sovereign interests in areas that are subject to tidal action are generally based upon the ordinary high water marks of these waterways, except where artificial accretion or fill have modified that location. In non-tidal navigable waterways, the State holds a fee ownership in the bed of the waterway between the two ordinary low water marks. The entire non-tidal navigable waterway between the ordinary high water marks is subject to a Public Trust easement. The State's sovereign interests are under the jurisdiction of the State Lands Commission, unless granted by the Legislature to local governments.

The staff of the Commission has been involved in discussions with representatives of the City of Sacramento, the California Department of Parks and Recreation, Union Pacific Corporation, and Thomas Enterprises of Sacramento, LLC regarding resolution of title and boundary issues involved in the project area. In addition, the project, as proposed, includes the possible construction of a marina in the Sacramento River. Any activities involving State sovereign tide and submerged lands in the Sacramento River will require a lease from the Commission. Please contact Diane Jones, Public Land Manager, at (916) 574-1843, for information about our leasing jurisdiction.

Section 15082 (a)(1), State CEQA Guidelines, specifies the minimum information required within a NOP, the third item of which is "probable environmental effects of the project". Staff does not believe that the spirit or intent of the section is met by the listing of environmental topic areas provided in the NOP. At minimum, the NOP should have included a brief discussion of the types of environmental impacts that would result from the specific project in each of the topic areas.

Thank you for this opportunity to comment. Please contact me at (916) 574-1880 should you have any questions or desire additional elaboration in this regard.

Sincerely,

Dwight E. Sanders

Dwight E. Sanders, Chief
Division of Environmental Planning
and Management

cc: Grace Kato
Curtis Fossum
Diane Jones

Office of Planning and Research
State Clearinghouse
P.O. Box 3044
Sacramento, CA 95812-3044

Jeffrey Dorso
Diepenbrock-Harrison
400 Capitol Mall, Ste 1800
Sacramento, CA 95814

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Larry Greene
AIR POLLUTION CONTROL OFFICER

April 14, 2006

Nedzlene Ferrario, Senior Planner
City of Sacramento, Planning Division
915 I Street
Sacramento, CA, 95814

SUBJECT: Railyards Specific Plan #P05-097
SMAQMD # SAC200500788

Dear Ms. Ferrario:

Thank you for providing the project listed above to the Sacramento Metropolitan Air Quality Management District (District) for review. The Railyards Specific Plan presents an exciting vision of a dense, mixed use, infill project in Downtown Sacramento, the heart of the region. While the design has many compelling features, several elements of the plan warrant revision. The plan could be altered to improve connectivity and favor mass transit, actions that will positively affect regional air quality. Specific suggestions are outlined below.

Sensitive Receptors

To the extent possible, avoid locating residential uses and other sensitive receptors near the Interstate 5 freeway, to reduce potential toxic exposure.

Pedestrian Circulation and Complete Streets

Given this project's significance and location in the center of the regions urban core, it is vital that pedestrian and bicyclist transportation be anticipated and encouraged to the maximum extent possible. We encourage the proponent to conduct a pedestrian circulation audit to determine ways to maximize pedestrian mobility within the project, and to maximize the projects function as a pedestrian thoroughfare between Downtown, the Dos Rios/Richards Boulevard Area, West Sacramento, and the American River Parkway. To ensure that this project allows for and encourages a high level of pedestrian and bicycle transit the project should feature a network of "complete streets." We recommend that safe and well designed sidewalks and bike lanes be mandated on all streets within the project, and that these improvements extend to the roadways connecting the project to the rest of the city.

Re-routing Jibboom Street away from the I street bridge.

The planned re-routing of Jibboom Avenue away from the I street bridge has the potential to negatively impact bicyclists and pedestrians traveling between West Sacramento and the Richards Boulevard Area. Rerouting Jibboom severs the direct connection between Richards Boulevard and the I street bridge and negatively impacts connectivity from this neighborhood to West Sacramento. Both areas have significant existing uses and major redevelopment projects in various stages of the planning process. As these new projects are built and occupied pedestrian and bicycle trips

across the river between these two areas will likely increase. The I Street Bridge features a crosswalk and low speed limit, making it a functional (if very narrow) bicycle and pedestrian connection across the river. The removal of elevated section of Jibboom could create a significant barrier for bicyclists and pedestrians if alternative access of equal or greater quality, that closely follows the original route, is not implemented as part of this project.

Additionally the re-routing of Jibboom may adversely affect automobile circulation in the area, creating longer trips with more delays. This may lead to a corresponding increase in emissions.

We suggest that that the plan be adjusted to leave Jibboom Street intact along its current route. If this is unfeasible we recommend that Jibboom's function as pedestrian and bicycle connection between West Sacramento and Richards Boulevard be replaced with a bicycle and pedestrian access to the I Street Bridge that follows the original routing of Jibboom Street.

Connecting Big Four boulevard to the intersection of North 12th and North B Streets

The poor walkability at the intersection of North 12th Street and North B Street is currently a significant barrier along the primary pedestrian route between downtown Sacramento and the Dos Rios neighborhood. The crossing at North B Street has a high pedestrian volume throughout the day.

The Railyards Plan contains an East-West Arterial named "Big Four Boulevard" which will run from Jibboom Street to North 12th Street at the existing intersection of North 12th and North B streets. This new connection has the potential to increase the number of cars traveling through the existing intersection and negatively affect the pedestrians that will navigate it. The impact should be mitigated to maximum extent possible, and all feasible measures to improve the walkability of the intersection should be implemented. Specific improvements might include a pedestrian only phase that is long enough to accommodate pedestrians with limited mobility, in-roadway warning lights, and countdown Signals.

Connecting to Alkali Flats

We recommend the project increase the number bicycle and pedestrian connections to the Alkali Flats Neighborhood. Eighth Street should connect all the way to Big Four Boulevard, and F or E Street should connect through to 6th street.

Connecting to the Richards Boulevard Project

There is a major development planned for the PG & E property that is adjacent to this property on the north-west side. The current plan for the project includes hospitality, commercial, retail, and residential components. The Railyards project design should anticipate this development and ensure interconnectivity between the two projects.

Connecting to the American River Parkway

The American River Parkway comes in proximity to the Railyards project via two primary routes. The first route is the bike trail that runs from Old Town Sacramento, through the planned project area, and through Discovery Park where it connects to the American River Parkway near the confluence of the American and Sacramento River. The projects orientation to the frontage along the Sacramento River should provide sufficient connectivity for bicyclists and pedestrians using this route.

The second route comes to the Railyard project from the bike trail that runs along the east side of the American River. A former rail bridge that has been converted to bicycle/pedestrian use crosses the river (approximately) between Point West and North C Street. Bicyclists and pedestrians on the parkway would cross the aforementioned bridge, travel surface streets to North B, which they would follow into the project at Big Four Boulevard. Currently there are barriers to bicycle and pedestrian activity along this route. The barriers include the lack of a formal bike route and safety/ maintenance issues along the bike trail on the West side of the river. These barriers should be eliminated to help mitigate the traffic and air quality impact of this project of this project.

Transit connection to the proposed Sports and Entertainment District:

This proposed use will create a substantial amount of new trips and corresponding emissions. The design of this facility should highly encourage patrons that utilize public transit, walk, or bike. A direct, pedestrian only pathway should link the Sports/Entertainment facilities and plaza to the planned light rail station at the corner of Big Four Boulevard and 7th Street.

We look forward to working with city staff and the proponent. If you have any questions please contact me at 916-874-2694 or <jhurley@airquality.org>.

Sincerely,

Joseph James Hurley
Assistant Air Quality Analyst/Planner
Sacramento Metropolitan Air Quality District

Cc: Larry Robinson, SMAQMD
Taiwo Jaiyeoba, Sacramento Regional Transit
Suheil Totah, Thomas Enterprise

Regional Transit

Sacramento Regional Transit District
A Public Transit Agency
and Equal Opportunity Employer

Mailing Address:
P.O. Box 2110
Sacramento, CA 95812-2110

Administrative Office:
1400 29th Street
Sacramento, CA 95816
(916) 321-2800
(29th St. Light Rail Station/
Bus 36,38,50,67,68)

Light Rail Office:
2700 Academy Way
Sacramento, CA 95815
(916) 648-8400

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April 19, 2006

Scott Johnson
Associate Planner
City of Sacramento
Development Services Department
2101 Arena Blvd., Suite 200
Sacramento, CA 95834

NAME OF DEVELOPMENT: Railyards Specific Plan

CONTROL NUMBER: P05-097

The Railyards Project consists of various entitlements for the 238± acre mixed use master plan for the Union Pacific Railyards (revision to the June 17, 2005 plan). This plan proposes six neighborhood districts with a potential of 11,805 residential units, 1.37 million square feet of retail, 2.9 million square feet of office space, 1,000 hotel rooms, 43± acres of open space, 421,700 square feet of cultural and entertainment space including the Railroad Technology Museum, 20,000 seat sports/event facility and City sponsored Sacramento Valley (Intermodal Transportation) Station.

Many bus routes and light rail lines operate in the project area.

Sacramento Regional Transit District (RT) has submitted comments on the Notice of Preparation for the environmental document. Those comments, dated April 10, 2006 are attached for your review and shall be addressed to the satisfaction of RT's Planning Director prior to approval of the Development Agreement.

RT staff has reviewed the proposed project and recommends the following:

- Project proponents shall consider the impact of project design on transit accessibility. Physical barriers such as walls, cul-de-sacs, circuitous street patterns, and speed bumps all impede access to transit.
- Applicant shall join the Sacramento TMA, prior to issuance of any final map for the project.
- Employers should offer employees subsidized transit passes at 50% or greater discount.
- Develop a program to offer transit passes at a 50% or greater discount to new residential owners for a period of six months or more.

- Parking competes with transit usage. Therefore, parking should not exceed the required standards for the Central City.

- RT staff is interested in engaging the developer in a discussion pertaining to its efforts in developing a streetcar starter line in the downtown Sacramento area.
- The Development Agreement should include transit fees that will contribute to bus, light rail and possibly streetcar service. RT requires that the developer contribute a fair share to transit.
- The developer should meet with Greta Vohlers, RT Service Planning (916) 556-0510 to identify major transit routes, park and ride opportunities and bus stops.
- Project construction shall not impact transit service or pedestrian access to transit stops/stations.
- Bicycle parking facilities should be provided at commercial and office building entrances and in parking garage.
- An Irrevocable Offer of Dedication (IOD) shall be granted Regional Transit to accommodate light rail track and station area within the project boundaries.
- All conditions shall be met to the satisfaction of RT's Planning Director (Taiwo Jaiyeoba) prior to approval of the Development Agreement.

Thank you for the opportunity to comment. Please send any subsequent documents that pertain to this project as they become available.

If you have further questions regarding these recommendations, please contact me at (916) 556-0506 or dsmith@sacrt.com.

Sincerely,

Don Smith
Senior Planner

Enclosure

c: Taiwo Jaiyeoba, Director of Planning, RT
Greta Vohlers, Senior Planner, RT

APPENDIX C
RAILYARDS PROGRAMMATIC LEVEL LAND USE DISTRIBUTION AND DENSITIES

RAILYARDS

EIR Analysis Scenario — **April 5, 2007**

Parcel-by-Parcel Land Use Assumptions

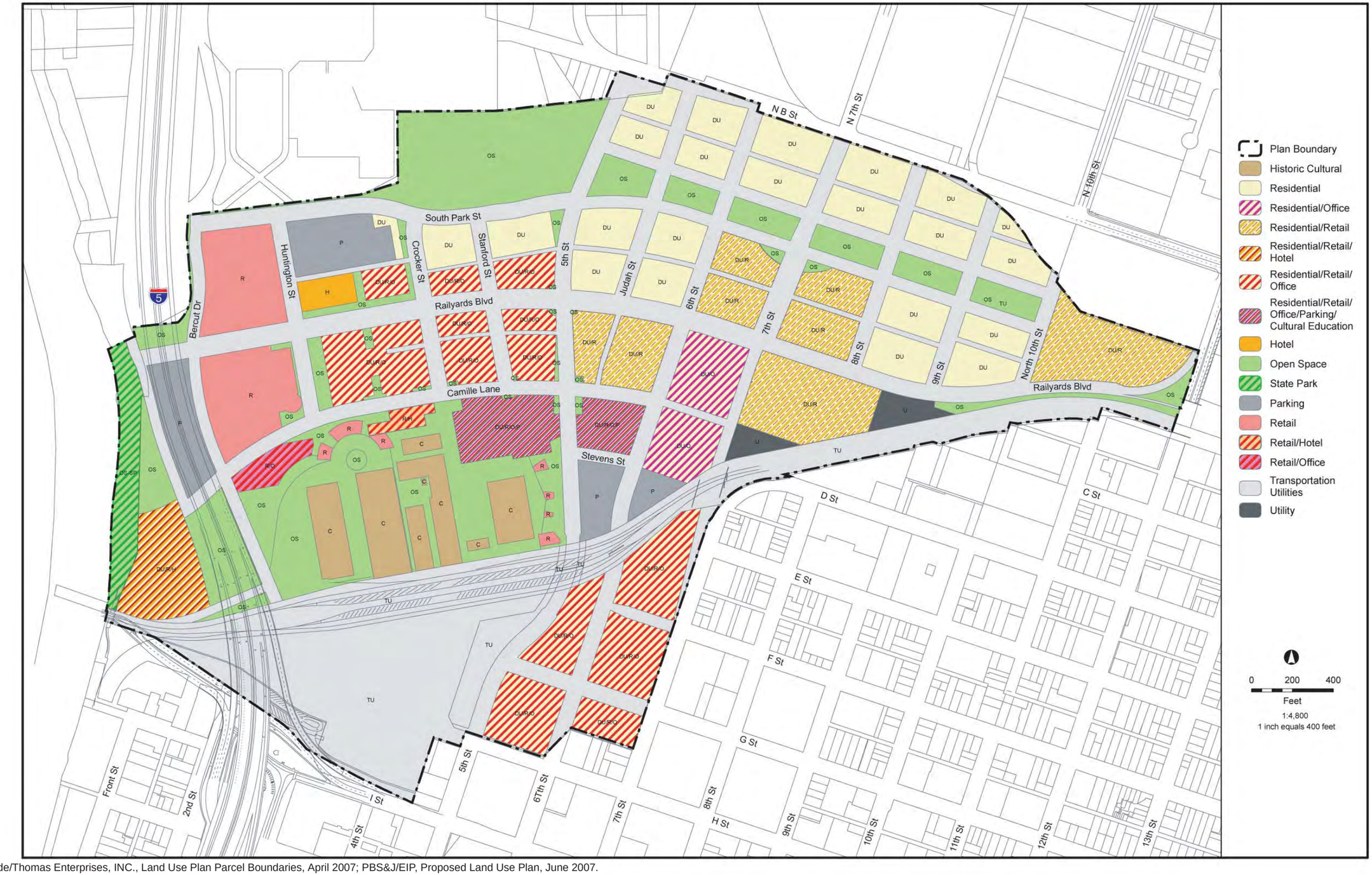
Parcel #			Land Use	Residential Density				Retail		Mixed-Use 2nd Level on Camille		Hotel		Office FAR			Hist./Cultural		Open Space	
1	0.75	AC	OS																0.75	AC
2	4.31	AC	RRMU					200,000	SF											
3a	2.84	AC	RRMU	49	DU/AC															
3b	0.13	AC	OS																0.13	AC
3c	0.93	AC	RRMU									500	Kys							
3d	0.73	AC	RRMU	230	DU/AC	168	DU	28,000	SF	32,000	SF									
3e	0.67	AC	OS																0.67	AC
3f	0.28	AC	RRMU			140	DU													
5a	1.14	AC	RRMU	91	DU/AC	104	DU													
5b	0.68	AC	RRMU	118	DU/AC	80	DU	27,000	SF	29,000	SF									
6a	1.28	AC	RRMU	189	DU/AC	242	DU													
6b	1.07	AC	RRMU	93	DU/AC	100	DU	43,000	SF	47,000	SF									
6c	0.15	AC	OS																0.15	AC
7a	2.06	AC	RRMU	90	DU/AC	186	DU	18,000	SF	18,000	SF									
7b	1.19	AC	RRMU	91	DU/AC	108	DU	54,000	SF	58,000	SF									
7c	0.03	AC	OS																0.03	AC
8a	0.61	AC	RRMU	36	DU/AC	22	DU	27,000	SF	27,000	SF									
8b	1.22	AC	RRMU	39	DU/AC	48	DU	33,000	SF	38,000	SF									
9a	0.60	AC	RRMU	73	DU/AC	44	DU	26,000	SF	26,000	SF									
9b	1.27	AC	RRMU	38	DU/AC	48	DU	34,000	SF	38,000	SF									
10a	3.88	AC	RRMU	27	DU/AC	106	DU	116,000	SF	65,000	SF									
10b	0.57	AC	OS																0.57	AC
11a	4.42	AC	RRMU					223,000	SF											
11b	0.27	AC	OS																0.27	AC
12	1.17	AC	RRMU					71,000	SF	43,000	SF									
13a	0.11	AC	RRMU					3,500	SF											
13b	0.23	AC	RRMU					8,000	SF											
13c	0.12	AC	RRMU					5,600	SF											
13d	0.60	AC	OS																0.60	AC
14	0.62	AC	RRMU					13,000	SF			100	Kys							
15a	3.33	AC	RRMU	22	DU/AC	72	DU	65,500	SF	40,000	SF						100,000	SF		
15b	0.05	AC	OS																0.05	AC
16a	1.67	AC	RRMU	141	DU/AC	236	DU	28,000	SF	30,000	SF									
16b	0.07	AC	OS																0.07	AC
17	1.48	AC	RRMU																	
18a	1.05	AC	OS																1.05	AC
18b	0.25	AC	RRMU					38,500	SF											
20	1.30	AC	RRMU														56,278	SF		
21	5.30	AC	OS																5.30	AC
22	0.15	AC	RRMU														6,500	SF		
23	0.34	AC	RRMU														22,500	SF		
24	0.73	AC	RRMU														42,028	SF		
25	0.53	AC	RRMU														38,711	SF		
26	0.33	AC	RRMU														28,500	SF		
27	0.65	AC	RRMU														28,043	SF		
28	2.24	AC	RRMU														93,134	SF		
29	1.67	AC	RRMU														69,696	SF		
30a	5.07	AC	OS																5.07	AC
30b	1.35	AC	OS																1.35	AC
31a	2.66	AC	OS																2.66	AC
31b	0.32	AC	OS																0.32	AC
33	2.62	AC	RRMU																	
34	1.26	AC	OS																1.26	AC
35	4.00	AC	RMU	225	DU/AC	900	DU	15,000	SF			500	Kys							
38	16.78	AC	TU																	
39	15.34	AC	TU																3.13	AC
40	1.93	AC	ORMU	50	DU/AC	***96***	DU*	38,000	SF					1.4	***115,200***	SF*				
41	2.43	AC	ORMU	66	DU/AC	***160***	DU*	85,000	SF					1.8	***192,000***	SF*				
42	1.19	AC	ORMU	229	DU/AC	***273***	DU*	6,200	SF					5.8	***300,000***	SF*				
43	2.56	AC	ORMU	178	DU/AC	***455***	DU*	12,000	SF					4.5	***500,000***	SF*				
44	1.96	AC	ORMU	116	DU/AC	***227***	DU*	16,500	SF					2.9	***250,000***	SF*				
45	0.33	AC	OS																0.33	AC
46	2.89	AC	ORMU	57	DU/AC	***164***	DU*							1.4	***180,000***	SF*				
47a	2.21	AC	ORMU	123	DU/AC	***273***	DU*							3.1	***300,000***	SF*				
47b	0.78	AC	RRMU																	
48	2.56	AC	ORMU	178	DU/AC	***455***	DU*							4.5	***500,000***	SF*				

RAILYARDS

EIR Analysis Scenario — **April 5, 2007**

Parcel-by-Parcel Land Use Assumptions

Parcel #			Land Use	Residential Density		Residential		Retail		Mixed-Use 2nd Level on Camille		Hotel		Office FAR			Hist./Cultural		Open Space	
49a	4.87	AC	RMU	133	DU/AC	650	DU	60,000	SF											
49b	0.73	AC	ORMU																	
49c	1.00	AC	ORMU																	
50	1.26	AC	OS																1.26	AC
51	4.70	AC	RMU	138	DU/AC	650	DU	40,000	SF											
52N	0.98	AC	RMU	107	DU/AC	105	DU													
52S	1.30	AC	RMU	300	DU/AC	390	DU													
53N	1.38	AC	RMU	109	DU/AC	150	DU													
53S	1.49	AC	RMU	299	DU/AC	445	DU													
54N	1.35	AC	RMU	204	DU/AC	275	DU	15,000	SF											
54S	1.68	AC	RMU	298	DU/AC	500	DU	10,000	SF											
54a	0.12	AC	OS																0.12	AC
57a	0.12	AC	OS																0.12	AC
57N	1.24	AC	RMU	202	DU/AC	250	DU	15,000	SF											
57S	1.38	AC	RMU	301	DU/AC	415	DU	10,000	SF											
58N	1.17	AC	RMU	107	DU/AC	125	DU													
58S	1.15	AC	RMU	300	DU/AC	345	DU													
59N	1.27	AC	RMU	106	DU/AC	135	DU													
59S	1.11	AC	RMU	300	DU/AC	333	DU													
60	1.12	AC	OS																1.12	AC
61	0.71	AC	OS																0.71	AC
62	0.92	AC	OS																0.92	AC
63	0.97	AC	OS																0.97	AC
64	0.89	AC	OS																0.89	AC
65	0.92	AC	OS																0.92	AC
66N	0.33	AC	RMU	106	DU/AC	35	DU													
66S	1.07	AC	RMU	107	DU/AC	115	DU													
67N	1.27	AC	RMU	303	DU/AC	385	DU													
67S	1.12	AC	RMU	159	DU/AC	178	DU													
68N	1.48	AC	RMU	291	DU/AC	430	DU													
68S	1.17	AC	RMU	111	DU/AC	130	DU													
69N	1.64	AC	RMU	293	DU/AC	480	DU													
69S	1.21	AC	RMU	112	DU/AC	135	DU													
70N	1.10	AC	RMU	300	DU/AC	330	DU													
70S	0.88	AC	RMU	125	DU/AC	110	DU													
71N	0.77	AC	RMU	260	DU/AC	200	DU													
71S	0.84	AC	RMU	119	DU/AC	100	DU													
72	10.37	AC	OS																10.37	AC
	Acres					**Residential**		**Retail**		**Mixed Use 2nd Level**		**Hotel**		**Office**			**Hist./Cultural**		**Open Space**	
TOTAL	**180.39**	**AC**			*Max.*	**12,101**	**DU**	**1,384,800**	**SF**	**491,000**	**SF**	**1,100**	**Kys**	*Max.*	**2,337,200**	**SF**	**485,390**	**SF**	**41.16**	**AC**
					Min.	**10,000**	**DU**							*Min.*	**0**	**SF**				
Roads	56.90	AC																		
Site Total	237.29	AC		* Indicates General Mixed Land Use. Either residential dwelling units OR office sf's OR hotel rooms apply,																
Devel Total	100.79	AC	42%	OR combinations fitting within the zoning envelope.																
RRMU	48.83	AC																		
RMU	41.95	AC																		
TU	28.99	AC																		
OS	41.16	AC																		
ORMU	19.46	AC																		
Total	180.39	AC																		



Source: Jerde/Thomas Enterprises, INC., Land Use Plan Parcel Boundaries, April 2007; PBS&J/EIP, Proposed Land Use Plan, June 2007.

EIP ASSOCIATES

A division of PBS&J

FIGURE **C-1**

Primary Planned Land Uses

APPENDIX D
AIR QUALITY CALCULATIONS

APPENDIX D1
CONSTRUCTION EMISSIONS
CALCULATION SHEETS

Railyards - NOx Emissions/Fee Calculations

Phase/ Equipment Type	Area (Acres)	Scaling Factor Grade	Scaling Factor Build	NOx Emission Factor (lbs/day)	NOx Emissions (lbs.) January		February				March		April	
					Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 1A (2010 - 2011)														
Grading/Site Prep														
Dozer	28.3	2.8		22.61	1408	64	704	64						
Grader	28.3	2.8		10.22	636	29	318	29						
Water Truck	28.3	2.8		20.89	1301	59	650	59						
Building Construction														
Other	27.6		13.8	12.84					1949	177	3898	177	3898	177
Other	27.6		13.8	12.84					1949	177	3898	177	3898	177
Other	27.6		13.8	12.84					1949	177	3898	177	3898	177
NOx Emissions (lbs.)					3345	152	1672	152	5847	532	11695	532	11695	532
NOx Emissions after SMAQMD Mandatory 20% Reduction*					2676	122	1338	122	4678	425	9356	425	9356	425
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold						37		37		340		340		340
NOx Emissions (Average Daily)			484											

Phase/ Equipment Type	May		June		July		August		September		October		November		December	
	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 1A (2010 - 2011)																
Other	3898	177	3898	177	3898	177	3898	177	3898	177	3898	177	3898	177	3898	177
Other	3898	177	3898	177	3898	177	3898	177	3898	177	3898	177	3898	177	3898	177
Other	3898	177	3898	177	3898	177	3898	177	3898	177	3898	177	3898	177	3898	177
NOx Emissions (lbs.)	11695	532	11695	532	11695	532	11695	532	11695	532	11695	532	11695	532	11695	532
NOx Emissions after SMAQMD Mandatory 20% Reduction*	9356	425	9356	425	9356	425	9356	425	9356	425	9356	425	9356	425	9356	425
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold		340		340		340		340		340		340		340		340

Notes:

Column Heading Definitions: Scaling Factor Grade - Equipment/emisions specified for 10-acre grading sites by SMAQMD must be scaled proportionally for larger/smaller sites.
Scaling Factor Build - Equipment/emisions specified for 10-acre, single-story construction sites by SMAQMD must be scaled proportionally for larger/smaller sites and for multi-story structures.
NOx Emission Factor - Equipment emission rates per 8-hour day for each piece of equipment as specified by the SMAQMD.

* The SMAQMD requires construction projects that would emit more than 85 lbs/day of NOx to use equipment that would attain at least a 20% reduction from that of the average existing equipment operating in the state.

** The SMAQMD requires that construction NOx emissions exceeding 85 lbs/day after the mandatory 20% reduction be subject to a mitigaton fee of $14,300 per ton on the excess emissions for every work day exceeding the threshold.

Phase/ Equipment Type	Area (Acres)	Scaling Factor Grade	Scaling Factor Build	NOx Emission Factor (lbs/day)	NOx Emissions (lbs.) January		February				March		April	
					Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 1B (2012 - 2013)														
Grading/Site Prep														
Dozer	50.0	5.0		22.61	2485	113	1242	113						
Grader	50.0	5.0		10.22	1123	51	562	51						
Water Truck	50.0	5.0		20.89	2296	104	1148	104						
Building Construction														
Other	32.4		16.2	12.84					2287	208	4573	208	4573	208
Other	32.4		16.2	12.84					2287	208	4573	208	4573	208
Other	32.4		16.2	12.84					2287	208	4573	208	4573	208
NOx Emissions (lbs.)					5903	268	2952	268	6860	624	13720	624	13720	624
NOx Emissions after SMAQMD Mandatory 20% Reduction*					4723	215	2361	215	5488	499	10976	499	10976	499
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold						130		130		414		414		414
NOx Emissions (Average Daily)			579											

Phase/ Equipment Type	May		June		July		August		September		October		November		December	
	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 1B (2012 - 2013)																
Other	4573	208	4573	208	4573	208	4573	208	4573	208	4573	208	4573	208	4573	208
Other	4573	208	4573	208	4573	208	4573	208	4573	208	4573	208	4573	208	4573	208
Other	4573	208	4573	208	4573	208	4573	208	4573	208	4573	208	4573	208	4573	208
NOx Emissions (lbs.)	13720	624	13720	624	13720	624	13720	624	13720	624	13720	624	13720	624	13720	624
NOx Emissions after SMAQMD Mandatory 20% Reduction*	10976	499	10976	499	10976	499	10976	499	10976	499	10976	499	10976	499	10976	499
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold		414		414		414		414		414		414		414		414

Notes:

Column Heading Definitions: Scaling Factor Grade - Equipment/emisions specified for 10-acre grading sites by SMAQMD must be scaled proportionally for larger/smaller sites.
Scaling Factor Build - Equipment/emisions specified for 10-acre, single-story construction sites by SMAQMD must be scaled proportionally for larger/smaller sites and for multi-story structures.
NOx Emission Factor - Equipment emission rates per 8-hour day for each piece of equipment as specified by the SMAQMD.

* The SMAQMD requires construction projects that would emit more than 85 lbs/day of NOx to use equipment that would attain at least a 20% reduction from that of the average existing equipment operating in the state.

** The SMAQMD requires that construction NOx emissions exceeding 85 lbs/day after the mandatory 20% reduction be subject to a mitigaton fee of $14,300 per ton on the excess emissions for every work day exceeding the threshold.

Phase/ Equipment Type	Area (Acres)	Scaling Factor Grade	Scaling Factor Build	NOx Emission Factor (lbs/day)	NOx Emissions (lbs.) January		February				March		April	
					Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 2 (2014 - 2018)														
Grading/Site Prep														
Dozer	21.4	2.1		22.61	1065	48	533	48						
Grader	21.4	2.1		10.22	482	22	241	22						
Water Truck	21.4	2.1		20.89	984	45	492	45						
Building Construction														
Other	20.4		10.2	12.84					1439	131	2877	131	2877	131
Other	20.4		10.2	12.84					1439	131	2877	131	2877	131
Other	20.4		10.2	12.84					1439	131	2877	131	2877	131
NOx Emissions (lbs.)					2532	115	1266	115	4316	392	8631	392	8631	392
NOx Emissions after SMAQMD Mandatory 20% Reduction*					2025	92	1013	92	3452	314	6905	314	6905	314
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold						7		7		229		229		229
NOx Emissions (Average Daily)			358											

Phase/ Equipment Type	May		June		July		August		September		October		November		December	
	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 2 (2014 - 2018)																
Other	2877	131	2877	131	2877	131	2877	131	2877	131	2877	131	2877	131	2877	131
Other	2877	131	2877	131	2877	131	2877	131	2877	131	2877	131	2877	131	2877	131
Other	2877	131	2877	131	2877	131	2877	131	2877	131	2877	131	2877	131	2877	131
NOx Emissions (lbs.)	8631	392	8631	392	8631	392	8631	392	8631	392	8631	392	8631	392	8631	392
NOx Emissions after SMAQMD Mandatory 20% Reduction*	6905	314	6905	314	6905	314	6905	314	6905	314	6905	314	6905	314	6905	314
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold		229		229		229		229		229		229		229		229

Notes:

Column Heading Definitions: Scaling Factor Grade - Equipment/emisions specified for 10-acre grading sites by SMAQMD must be scaled proportionally for larger/smaller sites.
Scaling Factor Build - Equipment/emisions specified for 10-acre, single-story construction sites by SMAQMD must be scaled proportionally for larger/smaller sites and for multi-story structures.
NOx Emission Factor - Equipment emission rates per 8-hour day for each piece of equipment as specified by the SMAQMD.

* The SMAQMD requires construction projects that would emit more than 85 lbs/day of NOx to use equipment that would attain at least a 20% reduction from that of the average existing equipment operating in the state.

** The SMAQMD requires that construction NOx emissions exceeding 85 lbs/day after the mandatory 20% reduction be subject to a mitigaton fee of $14,300 per ton on the excess emissions for every work day exceeding the threshold.

Phase/ Equipment Type	Area (Acres)	Scaling Factor Grade	Scaling Factor Build	NOx Emission Factor (lbs/day)	NOx Emissions (lbs.) January		February				March		April	
					Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 3 (2019 - 2023)														
Grading/Site Prep														
Dozer	53.6	5.4		22.61	2668	121	1334	121						
Grader	53.6	5.4		10.22	1206	55	603	55						
Water Truck	53.6	5.4		20.89	2465	112	1232	112						
Building Construction														
Other	34.7		17.4	12.84					2453	223	4907	223	4907	223
Other	34.7		17.4	12.84					2453	223	4907	223	4907	223
Other	34.7		17.4	12.84					2453	223	4907	223	4907	223
NOx Emissions (lbs.)					6338	288	3169	288	7360	669	14720	669	14720	669
NOx Emissions after SMAQMD Mandatory 20% Reduction*					5071	230	2535	230	5888	535	11776	535	11776	535
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold						145		145		450		450		450
NOx Emissions (Average Daily)			621											

Phase/ Equipment Type	May		June		July		August		September		October		November		December	
	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 3 (2019 - 2023)																
Other	4907	223	4907	223	4907	223	4907	223	4907	223	4907	223	4907	223	4907	223
Other	4907	223	4907	223	4907	223	4907	223	4907	223	4907	223	4907	223	4907	223
Other	4907	223	4907	223	4907	223	4907	223	4907	223	4907	223	4907	223	4907	223
NOx Emissions (lbs.)	14720	669	14720	669	14720	669	14720	669	14720	669	14720	669	14720	669	14720	669
NOx Emissions after SMAQMD Mandatory 20% Reduction*	11776	535	11776	535	11776	535	11776	535	11776	535	11776	535	11776	535	11776	535
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold		450		450		450		450		450		450		450		450

Notes:

Column Heading Definitions: Scaling Factor Grade - Equipment/emisions specified for 10-acre grading sites by SMAQMD must be scaled proportionally for larger/smaller sites.
Scaling Factor Build - Equipment/emisions specified for 10-acre, single-story construction sites by SMAQMD must be scaled proportionally for larger/smaller sites and for multi-story structures.
NOx Emission Factor - Equipment emission rates per 8-hour day for each piece of equipment as specified by the SMAQMD.

* The SMAQMD requires construction projects that would emit more than 85 lbs/day of NOx to use equipment that would attain at least a 20% reduction from that of the average existing equipment operating in the state.

** The SMAQMD requires that construction NOx emissions exceeding 85 lbs/day after the mandatory 20% reduction be subject to a mitigaton fee of $14,300 per ton on the excess emissions for every work day exceeding the threshold.

Phase/ Equipment Type	Area (Acres)	Scaling Factor Grade	Scaling Factor Build	NOx Emission Factor (lbs/day)	NOx Emissions (lbs.) January		February				March		April	
					Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 4 (2024 - 2029)														
Grading/Site Prep														
Dozer	27.1	2.7		22.61	1348	61	674	61						
Grader	27.1	2.7		10.22	609	28	305	28						
Water Truck	27.1	2.7		20.89	1245	57	623	57						
Building Construction														
Other	24.2		12.1	12.84					1708	155	3417	155	3417	155
Other	24.2		12.1	12.84					1708	155	3417	155	3417	155
Other	24.2		12.1	12.84					1708	155	3417	155	3417	155
NOx Emissions (lbs.)					3202	146	1601	146	5125	466	10250	466	10250	466
NOx Emissions after SMAQMD Mandatory 20% Reduction*					2561	116	1281	116	4100	373	8200	373	8200	373
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold						31		31		288		288		288
NOx Emissions (Average Daily)			426											

Phase/ Equipment Type	May		June		July		August		September		October		November		December	
	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day	Month	Day
Phase 4 (2024 - 2029)																
Other	3417	155	3417	155	3417	155	3417	155	3417	155	3417	155	3417	155	3417	155
Other	3417	155	3417	155	3417	155	3417	155	3417	155	3417	155	3417	155	3417	155
Other	3417	155	3417	155	3417	155	3417	155	3417	155	3417	155	3417	155	3417	155
NOx Emissions (lbs.)	10250	466	10250	466	10250	466	10250	466	10250	466	10250	466	10250	466	10250	466
NOx Emissions after SMAQMD Mandatory 20% Reduction*	8200	373	8200	373	8200	373	8200	373	8200	373	8200	373	8200	373	8200	373
Residual NOx Emissions over SMAQMD 85 lbs/day Threshold		288		288		288		288		288		288		288		288

Notes:

Column Heading Definitions: Scaling Factor Grade - Equipment/emisions specified for 10-acre grading sites by SMAQMD must be scaled proportionally for larger/smaller sites.
Scaling Factor Build - Equipment/emisions specified for 10-acre, single-story construction sites by SMAQMD must be scaled proportionally for larger/smaller sites and for multi-story structures.
NOx Emission Factor - Equipment emission rates per 8-hour day for each piece of equipment as specified by the SMAQMD.

* The SMAQMD requires construction projects that would emit more than 85 lbs/day of NOx to use equipment that would attain at least a 20% reduction from that of the average existing equipment operating in the state.

** The SMAQMD requires that construction NOx emissions exceeding 85 lbs/day after the mandatory 20% reduction be subject to a mitigaton fee of $14,300 per ton on the excess emissions for every work day exceeding the threshold.

APPENDIX D2
URBEMIS 2002 EMISSIONS
MODEL RUNS FOR OPERATIONAL EMISSIONS

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\21504\My Documents\D51234.00 Railyards\D51234.00 Railyards Operation.u
Project Name: D51234.00 Sacramento Railyards Operation
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	872.16	140.47	84.22	0.00	0.27

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	300.00	244.93	2,840.59	7.68	1,326.38

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	1,172.17	385.40	2,924.81	7.68	1,326.65

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\21504\My Documents\D51234.00 Railyards\D51234.00 Railyards Operation.u
Project Name: D51234.00 Sacramento Railyards Operation
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	871.53	140.40	79.81	0.00	0.26

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	273.11	363.69	3,093.34	7.54	1,326.38

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day,unmitigated)	1,144.64	504.10	3,173.15	7.54	1,326.64

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\21504\My Documents\D51234.00 Railyards\D51234.00 Railyards Operation.u
Project Name: D51234.00 Sacramento Railyards Operation
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	145.78	25.63	14.96	0.00	0.05

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	53.11	51.92	533.78	1.39	242.06

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (tpy, unmitigated)	198.89	77.55	548.75	1.39	242.11

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\21504\My Documents\D51234.00 Railyards\D51234.00 Railyards Operation.u
Project Name: D51234.00 Sacramento Railyards Operation
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Winter)

AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	10.62	140.40	79.81	0	0.26
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping - No winter emissions					
Consumer Prdcts	596.86	-	-	-	-
Architectural Coatings	264.05	-	-	-	-
TOTALS(lbs/day,unmitigated)	871.53	140.40	79.81	0.00	0.26

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Apartments mid rise	126.96	167.45	1,435.89	3.54	618.70
Museum	3.20	4.29	36.31	0.09	15.44
City park	0.10	0.13	1.08	0.00	0.46
Hotel	13.08	17.57	148.37	0.36	63.36
Regnl shop. center	86.05	115.37	975.47	2.34	414.82
Strip mall	30.18	40.46	342.11	0.82	145.48
General office building	13.54	18.42	154.11	0.39	68.11
TOTAL EMISSIONS (lbs/day)	273.11	363.69	3,093.34	7.54	1,326.38

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2030 Temperature (F): 40 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Apartments mid rise	321.05	5.76 trips/dwelling unit	12,200.00	70,272.00
Museum		4.61 trips/1000 sq. ft.	485.39	2,237.65
City park		1.59 trips/acres	41.16	65.44
Hotel		8.17 trips/rooms	1,100.00	8,987.00
Regnl shop. center		42.94 trips/1000 sq. ft.	1,400.00	60,116.00
Strip mall		42.94 trips/1000 sq. ft.	491.00	21,083.54
General office building		3.32 trips/1000 sq. ft.	2,400.00	7,968.00
		Sum of Total Trips		170,729.63
		Total Vehicle Miles Traveled		877,435.67

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	52.50	0.00	100.00	0.00
Light Truck < 3,750 lbs	15.90	0.00	100.00	0.00
Light Truck 3,751- 5,750	16.70	0.00	100.00	0.00
Med Truck 5,751- 8,500	7.60	0.00	100.00	0.00
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	0.90	0.00	22.20	77.80
Heavy-Heavy 33,001-60,000	0.70	0.00	0.00	100.00
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.50	33.30	66.70	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	2.60	0.00	92.30	7.70

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.7	3.8	4.6	7.8	4.5	4.5
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
Museum				2.0	1.0	97.0
City park				5.0	2.5	92.5
Hotel				5.0	2.5	92.5
Regnl shop. center				2.0	1.0	97.0
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Area

The hearth option switch changed from on to off.
The landscape year changed from 2005 to 2020.

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2030.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\21504\My Documents\D51234.00 Railyards\D51234.00 Railyards Operation.u
Project Name: D51234.00 Sacramento Railyards Operation
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Pounds/Day - Summer)

AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	10.62	140.40	79.81	0	0.26
Hearth - No summer emissions					
Landscaping	0.63	0.07	4.42	0.00	0.01
Consumer Prdcts	596.86	-	-	-	-
Architectural Coatings	264.05	-	-	-	-
TOTALS(lbs/day,unmitigated)	872.16	140.47	84.22	0.00	0.27

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Apartments mid rise	154.26	112.41	1,355.06	3.61	618.70
Museum	4.55	2.90	32.35	0.09	15.44
City park	0.24	0.09	0.97	0.00	0.46
Hotel	15.22	11.86	133.01	0.36	63.36
Regnl shop. center	77.85	77.96	869.01	2.38	414.82
Strip mall	27.30	27.34	304.77	0.84	145.48
General office building	20.58	12.37	145.42	0.39	68.11
TOTAL EMISSIONS (lbs/day)	300.00	244.93	2,840.59	7.68	1,326.38

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2030 Temperature (F): 85 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Apartments mid rise	321.05	5.76 trips/dwelling unit	12,200.00	70,272.00
Museum		4.61 trips/1000 sq. ft.	485.39	2,237.65
City park		1.59 trips/acres	41.16	65.44
Hotel		8.17 trips/rooms	1,100.00	8,987.00
Regnl shop. center		42.94 trips/1000 sq. ft.	1,400.00	60,116.00
Strip mall		42.94 trips/1000 sq. ft.	491.00	21,083.54
General office building		3.32 trips/1000 sq. ft.	2,400.00	7,968.00
		Sum of Total Trips		170,729.63
		Total Vehicle Miles Traveled		877,435.67

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	52.50	0.00	100.00	0.00
Light Truck < 3,750 lbs	15.90	0.00	100.00	0.00
Light Truck 3,751- 5,750	16.70	0.00	100.00	0.00
Med Truck 5,751- 8,500	7.60	0.00	100.00	0.00
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	0.90	0.00	22.20	77.80
Heavy-Heavy 33,001-60,000	0.70	0.00	0.00	100.00
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.50	33.30	66.70	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	2.60	0.00	92.30	7.70

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.7	3.8	4.6	7.8	4.5	4.5
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
Museum				2.0	1.0	97.0
City park				5.0	2.5	92.5
Hotel				5.0	2.5	92.5
Regnl shop. center				2.0	1.0	97.0
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Area

The hearth option switch changed from on to off.
The landscape year changed from 2005 to 2020.

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2030.

URBEMIS 2002 For Windows 8.7.0

File Name: C:\Documents and Settings\21504\My Documents\D51234.00 Railyards\D51234.00 Railyards Operation.u
Project Name: D51234.00 Sacramento Railyards Operation
Project Location: Lower Sacramento Valley Air Basin
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT
(Tons/Year)

AREA SOURCE EMISSION ESTIMATES (Tons per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	1.94	25.62	14.56	0.00	0.05
Hearth	0.00	0.00	0.00	0.00	0.00
Landscaping	0.06	0.01	0.40	0.00	0.00
Consumer Prdcts	108.93	-	-	-	-
Architectural Coatings	34.85	-	-	-	-
TOTALS (tpy, unmitigated)	145.78	25.63	14.96	0.00	0.05

UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Apartments mid rise	26.49	23.86	252.22	0.65	112.91
Museum	0.75	0.61	6.14	0.02	2.82
City park	0.03	0.02	0.18	0.00	0.08
Hotel	2.65	2.51	25.21	0.07	11.56
Regnl shop. center	14.71	16.50	165.07	0.43	75.70
Strip mall	5.16	5.79	57.89	0.15	26.55
General office building	3.33	2.63	27.07	0.07	12.43
TOTAL EMISSIONS (tons/yr)	53.11	51.92	533.78	1.39	242.06

Does not include correction for passby trips.
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2030 Season: Annual

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Apartments mid rise	321.05	5.76 trips/dwelling unit	12,200.00	70,272.00
Museum		4.61 trips/1000 sq. ft.	485.39	2,237.65
City park		1.59 trips/acres	41.16	65.44
Hotel		8.17 trips/rooms	1,100.00	8,987.00
Regnl shop. center		42.94 trips/1000 sq. ft.	1,400.00	60,116.00
Strip mall		42.94 trips/1000 sq. ft.	491.00	21,083.54
General office building		3.32 trips/1000 sq. ft.	2,400.00	7,968.00
		Sum of Total Trips		170,729.63
		Total Vehicle Miles Traveled		877,435.67

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	52.50	0.00	100.00	0.00
Light Truck < 3,750 lbs	15.90	0.00	100.00	0.00
Light Truck 3,751- 5,750	16.70	0.00	100.00	0.00
Med Truck 5,751- 8,500	7.60	0.00	100.00	0.00
Lite-Heavy 8,501-10,000	1.00	0.00	80.00	20.00
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	0.90	0.00	22.20	77.80
Heavy-Heavy 33,001-60,000	0.70	0.00	0.00	100.00
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.50	33.30	66.70	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	2.60	0.00	92.30	7.70

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	9.7	3.8	4.6	7.8	4.5	4.5
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	27.3	21.2	51.5			
% of Trips - Commercial (by land use)						
Museum				2.0	1.0	97.0
City park				5.0	2.5	92.5
Hotel				5.0	2.5	92.5
Regnl shop. center				2.0	1.0	97.0
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

Changes made to the default values for Land Use Trip Percentages

Changes made to the default values for Area

The hearth option switch changed from on to off.
The landscape year changed from 2005 to 2020.

Changes made to the default values for Operations

The operational emission year changed from 2005 to 2030.

APPENDIX E
AIR QUALITY MITIGATION PLAN

The Railyards –Draft Air Quality Mitigation Plan

For submittal to:
Sacramento Metropolitan Air Quality
Management District
777 12th St. 3rd Floor
Sacramento, California 95814-1908
Telephone: 916 874-4800

Submitted by:
Thomas Enterprises
Railway Express Annex
431 "I" Street, Suite 202
Sacramento, CA 95814
General # 916-329-4500
Contact: Elias Rashmawi
Phone: 916/329-4500

Prepared by:
Jones & Stokes
2600 V Street
Sacramento, CA 95814
Contact: Tim Rimpo
Phone: 916/737-3000

August 7, 2007

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Introduction

The Railyards is a master-planned, mixed-use development located on the western terminus of the 1869 Transcontinental Railroad located adjacent to the downtown core of Sacramento, California. Hotel, office, residential, entertainment, plazas, historic renovations and cultural attractions will complement specialty shops, dining and marketplace retailing in this historic revitalization project.

The project is subject to the California Environmental Quality Act (CEQA), which requires the preparation of an Environmental Impact Report (EIR). The project will cause both direct and indirect air quality impacts during its construction and operational phases. This Air Quality Mitigation Plan (AQMP) contains mitigation measures proposed to address operational emissions. These measures are necessary for the project to meet the requirements of CEQA and to meet regional air quality goals.

The Railyards is subject to CEQA and the Sacramento Metropolitan Air Quality Management District (SMAQMD), as a commenting agency, must assess whether this project has significant air quality impacts. If emissions are significant, then under the Sacramento Metropolitan Air Quality Management District's (SMAQMD's) CEQA guidelines, a mitigation plan must be prepared to address these significant impacts. This AQMP addresses those air quality impacts. The AQMD specifies the measures that will be applied to address the potentially significant impact of regional ozone precursor emissions.

Purpose of the Air Quality Mitigation Plan (AQMP)

CEQA requires that environmental impact reports (EIRs) identify and mitigate any significant environmental impacts of a proposed project. The analysis of significant effects must include both direct project impacts and indirect impacts. The analysis must then describe feasible mitigation measures that could minimize and mitigate significant adverse impacts. To assist in the evaluation of air quality impacts, the SMAQMD developed their Guide to Air Quality Assessment in Sacramento County (June 2004) ("CEQA Guide"). The CEQA Guide outlines a methodology for calculating project emissions whereby a project is divided into separate construction and operational phases. For each phase, the CEQA Guide establishes significance thresholds related to elevated regional ambient ozone concentrations, a cumulative impact. Project emissions are compared to these significance thresholds, and mitigation measures are required for projects with emissions exceeding these thresholds.

Pursuant to CEQA, the project's operational emissions are calculated and impacts are estimated in the draft EIR (DEIR). The CEQA Guide requires preparation of an AQMP that addresses mitigation of a project's operational emission impacts as reported in the DEIR. The AQMP requires that projects mitigate emissions by 15%, a number that historically came from the Sacramento General Plan, Policy AQ-15, but now has been extended to all significant projects within California. The Draft Plan is a condition to approval and a mitigation measure to ensure implementation. If mitigation measures do not reduce emissions by 15%, then the applicant may have to pay a mitigation fee.

As described below in the project description, The Railyards would be developed in four phases. Once built out, the project would include from 11,300 to 13,850 residential units, 1,384,800 square feet of retail, 491,000 square feet of mixed use, 1,100 motel rooms, from zero up to 2,828,200 square feet of office space, 485,390 square feet of historical/cultural land uses, and 41.16 acres of open space.

Operational emissions would include vehicle exhaust emissions related to commuter vehicles, delivery vehicles, and municipal service vehicles. The project would also generate area source emissions associated with fuel combustion used for space and water heating, landscape maintenance equipment, and from evaporative emissions associated with consumer products.

The County of Sacramento adopted a land use review requirement (Policy AQ-15) for the air quality element of the General Plan. Several incorporated areas within Sacramento County have adopted air quality elements to their general plans, and the City of Sacramento has proposed to do so as part of its current General Plan Update. The SMAQMD's land use review policy suggests that projects with significant operational air quality impacts reduce direct and indirect emissions by a minimum of 15% by selecting and implementing mitigation measures from a list of SMAQMD recommendations. The SMAQMD has further determined that this 15% emissions reduction satisfies the "all feasible measures" mitigation requirement under CEQA for operational impacts for all jurisdictions within Sacramento County.

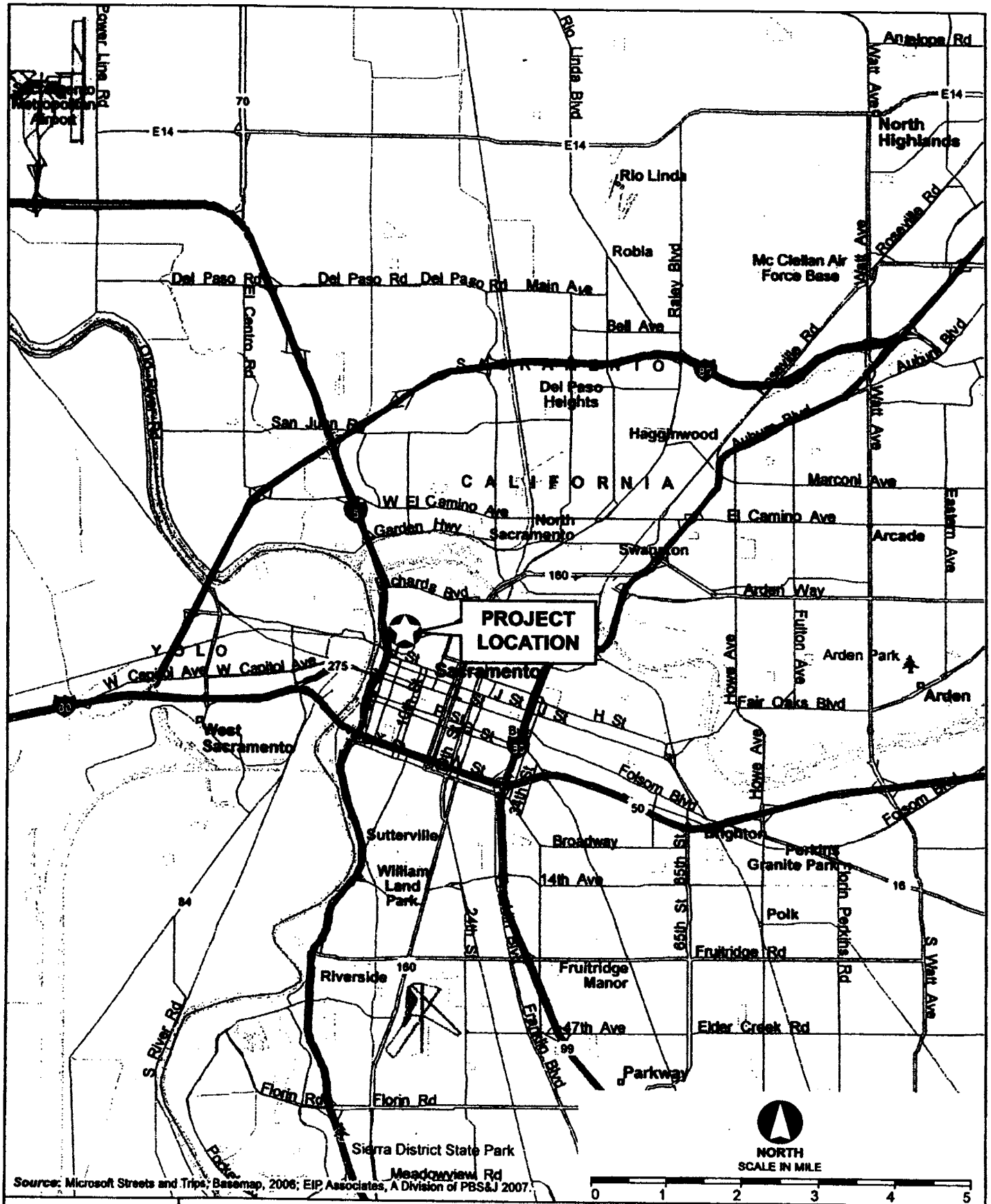
To assist in documenting, quantifying, and monitoring the mitigation measures selected by the project proponent, the SMAQMD has prescribed that the selected operational mitigation measures be explained in the context of the AQMP. The AQMP is a standalone document separate from any other documents or plans required by CEQA or other laws, ordinances, or regulations. During the environmental review process, and before certification of the DEIR by the lead agency, the SMAQMD independently endorses the AQMP by letter. The endorsed AQMP is then referenced in the DEIR as an air quality mitigation measure, appended to the DEIR, and at the discretion of the lead agency, may be referenced as a separate condition of approval.

Project Description

The project is fully described in the Introduction and Project Description chapters of the DEIR. The following serves as a summary of pertinent information relevant to the AQMP.

PROJECT LOCATION

The Railyards Specific Plan Area (project site) is located in Sacramento County within the existing downtown area of the City of Sacramento, near the confluence of the American and Sacramento Rivers, as depicted in Figure 1, Regional Location Map. The approximately 237-acre Specific Plan Area is immediately north of the Central Business District, east of the Sacramento River and Interstate 5 (I-5) south of North B Street and the Richards Boulevard area, and north of the Alkali Flat Neighborhood, as depicted in



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Regional Location Map

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Railyards Specific Plan EIR

Figure 1. Regional Location Map

Figure 2, (Local Vicinity Map). and is roughly bounded by the Sacramento River Water Treatment Plant and industrial and commercial uses along Richards Boulevard to the north; the Alkali Flats neighborhood to the southeast; the Central Business District to the south; Old Sacramento to the southwest; and I-5 and the Sacramento River to the west.

The Specific Plan Area is located in the Central City Community Plan (CCCP) area and Downtown area of the City of Sacramento. The CCCP includes the area bounded by the American River to the north, Broadway to the south, the Sacramento River to the west, and Alhambra Boulevard to the east. I-5, which runs along the western edge of the project site near the Sacramento River, is elevated above the existing Amtrak rail line and vacant lands of the project site. The project site is comprised of 12 Assessor's Parcel Numbers (APN), including 001-0210-013, -016; and 002-0010-018, -019, - 025, -035, -036, -037, -038, -039, -041, -043.

PROJECT OBJECTIVES

The overall goal of the Specific Plan is the orderly and systematic development of an integrated mixed-use component of the downtown community that is compatible with site characteristics and consistent with the City's goals and policies. The following objectives are intended to support this goal:

- Create a dynamic 24-hour mixed use urban village that provides a range of complementary uses—including cultural, office, hospitality, entertainment, retail, residential and open space---and a mixture of housing products, including affordable housing.
- Connect the Railyards area with Sacramento's downtown office, retail, government center areas, Old Sacramento, the Richards Boulevard area, and the Alkali Flat neighborhood with pedestrian and bicycle facilities, roadways, and public transportation options.
- Connect the Railyards area to the Sacramento River waterfront, and allow for hotel, waterfront and recreational uses consistent with the Riverfront Master Plan that will result in a vibrant waterfront, valuable to the region and the City.
- Transform the Railyards from an under-utilized and environmentally contaminated industrial site into a transit-oriented, attractive, and nationally renowned mixed-use urban village.
- Utilize the historic Central Shops buildings for uses that are consistent with and complement a culturally vibrant, urban mixed-use community.

Create a development that is a regional draw for the City of Sacramento due to its geographic location downtown near the Sacramento River waterfront and its unique mix of transportation, residential, cultural, office, hospitality, entertainment, retail and open space uses.

- Provide a mixture of uses that compliment and support the City's planned Sacramento Intermodal Transit Facility (SITF), connecting the Central City to the region, the state and beyond.
- Integrate the Railyards area into the fabric of the existing Central City.

The Specific Plan Area would be comprised of five land use designations, which are described below. Each of these designations allows for some combination of typical land uses, such as office, retail, residential, and open space.

In order to provide as much flexibility as possible, the RSP sets maximum densities for each use allowed within the three mixed use land use designations--RRMU, ORMU and RMU---but does not specify how much of the development must occur in a particular use. Consequently, the amount of each use that is developed will depend at least in part on the amount of other uses developed. For example, the maximum amount of residential development that could occur would be 13,850. However, if the maximum amount of allowed office space were developed, only 11,300 residential units would be built.

Table 1 summarizes the maximum amount of allowed development, by land use, within each of the proposed land use designations. As noted above, these designations are intended to provide a mix of uses. Although Table 1 shows development maximums, each parcel identified as RRMU, ORMU, and RMU may develop some combination of these uses, with some limitations (discussed below).

Maximum development amounts in the TU designation would be determined through the final planning for the Sacramento Intermodal Transportation Facility and its associated facilities and uses. Open Space (OS) designated areas would generally not be developed with major buildings or structures of any significant size, therefore, no development amounts is specified for these areas. Figure 3, Allowable Land Uses, shows which land uses would be allowed on each parcel.

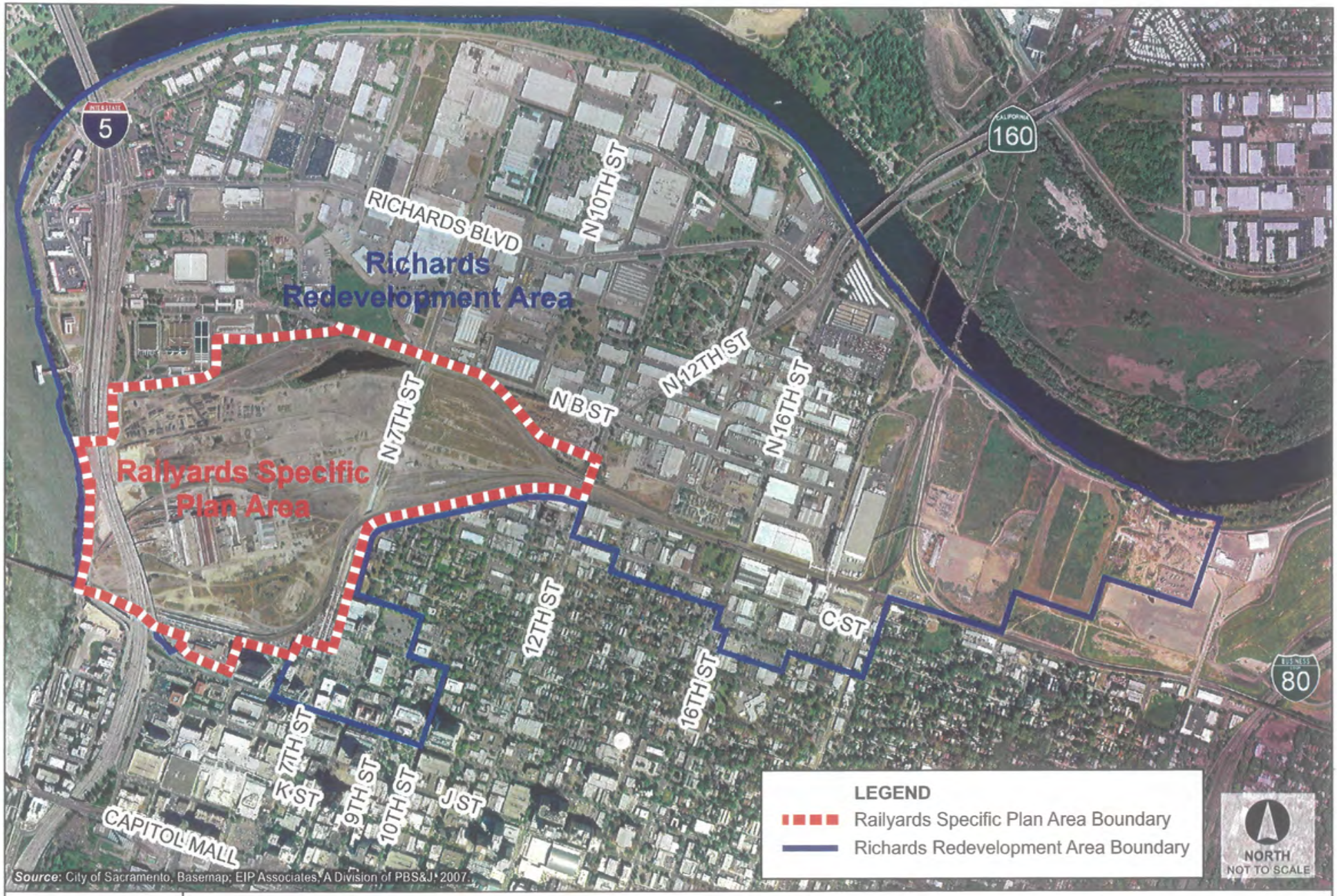

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FIGURE 3-2
Local Vicinity Map

Figure 2. Local Vicinity Map

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Railyards Specific Plan EIR

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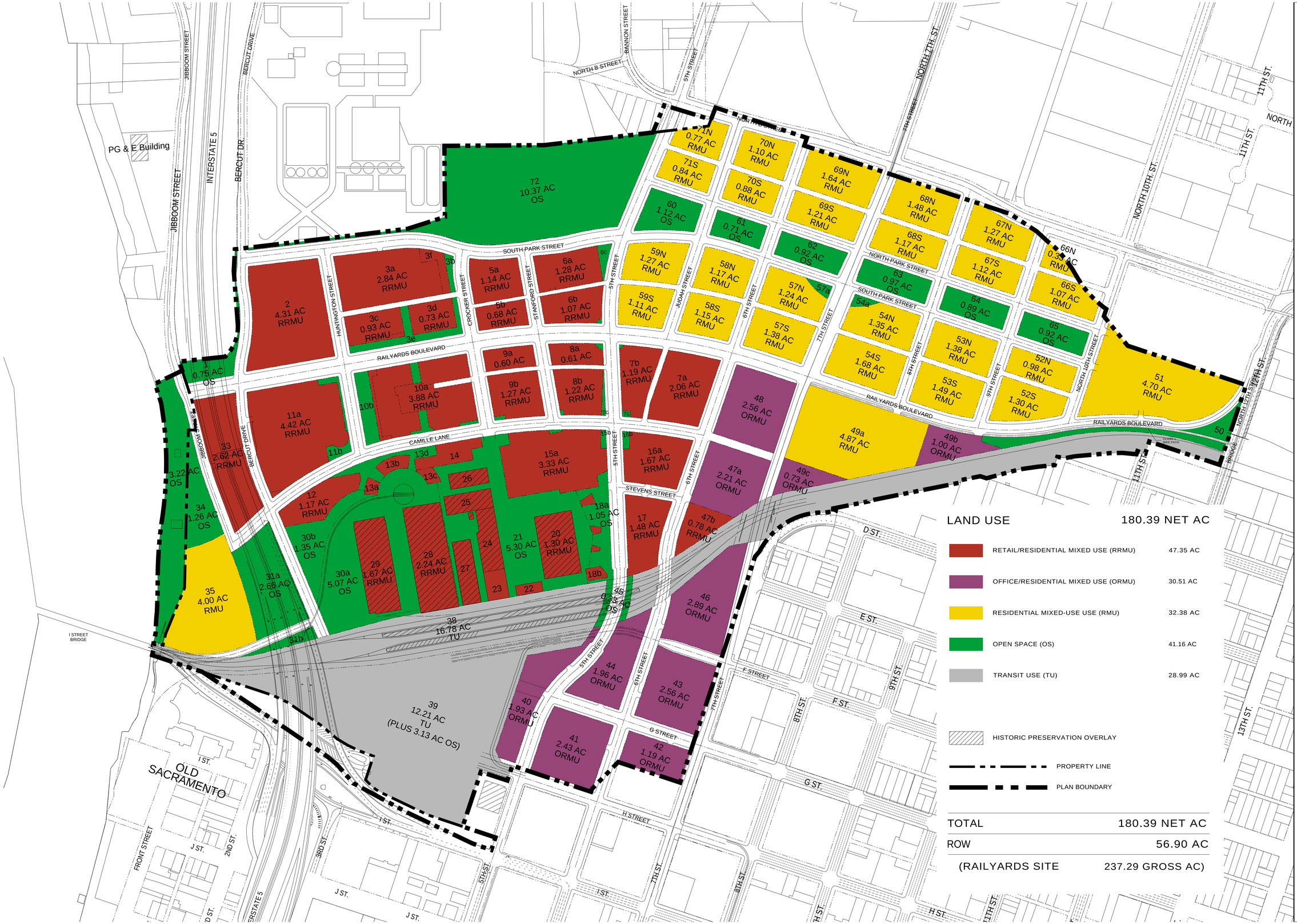

LAND USE — 180.39 NET AC

RETAIL/RESIDENTIAL MIXED USE (RRMU)	47.35 AC
OFFICE/RESIDENTIAL MIXED USE (ORMU)	30.51 AC
RESIDENTIAL MIXED-USE USE (RMU)	32.38 AC
OPEN SPACE (OS)	41.16 AC
TRANSIT USE (TU)	28.99 AC

HISTORIC PRESERVATION OVERLAY

PROPERTY LINE

PLAN BOUNDARY

TOTAL	180.39 NET AC
ROW	56.90 AC
(RAILYARDS SITE	237.29 GROSS AC)

RAILYARDS

THOMAS ENTERPRISES INC.

JERDE
Architecture Urban Design
Jon A. Jerde, F.A.I.A.

913 Ocean Front Walk
Venice, California 90291
(310) 399-1987

PRELIMINARY

REVISIONS:

NO.	DATE	DESCRIPTION
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

DATE:
APRIL 5, 2007

TITLE:
LAND USE PLAN

PROJECT NO.: 5225.34

SCALE 1"=200'
0 100' 200' 400'
N

P-1.01

TABLE 1. SPECIFIC PLAN LAND USE DEVELOPMENT LEVELS BY DESIGNATION AREAS

	CRMU	ORMU	RMU	OS	TU	Total
Acreage	48.83	19.46	41.95	38.03	32.12	180.39
Residential Units	1,704 to 2,104	2,101	8,296	-	-	11,300 to 13,850
Retail (sf)	1,062,100	157,700	165,000	-	-	1,384,000
Mixed Use (sf)	491,000	-	-	-	-	491,000
*Hotel (Rooms)	600	0	500	-	-	1,100
Office (sf)	0 to 491,000	2,337,200	-	-	-	0 to 2,828,200
Historic/Cultural (sf)	485,390	-	-	-	-	485,390
Open Space (acres)	-	-	-	38.03	3.13	41.16
Utilities (acres)	-	1.73	-	-	-	1.73
Parking (spaces)	7,425	2,275	-	-	-	-

Notes:
CRMU (commercial/residential mixed-use) - mixed use residential, destination retail, restaurant, entertainment historical and cultural, and public facility uses.
ORMU (office/residential mixed-use) - office, residential, hotel, supporting retail, and educational uses.
RMU (residential mixed-use) - high density residential, neighborhood serving retail, and educational uses.
TU (transportation use) – land uses that serve intercity passengers, such as retail, office, hotel, residential, and other uses
OS (open space) – parks, pedestrian trails, plazas, playfields, bike trails, and related public open space

Residential Retail Mixed-Use

The Residential Retail Mixed-Use (RRMU) designation allows for a broad range of retail and residential uses, such as multifamily residential, destination retail, office, hotel, restaurant and entertainment uses, including but not limited to theaters, health clubs and nightclubs. The emphasis in the RRMU designation is on residential and retail uses. Public facilities and quasi-public uses, such as historic and cultural uses, educational facilities, museums, theaters, hospitals, churches and other similar public uses are also allowed in this land use designation. The majority of the RRMU uses would be located in the western portion of the Railyards, generally north of the relocated rail line, east of I-5 and west of 6th Street. A net maximum floor area ratio (FAR) of 5.0:1, exclusive of streets, would apply to all development types on each site within this designation with the exception of residential units. Approximately 600 hotel rooms would be developed as a part of the proposed project.

The RRMU land uses located within and adjacent to the Central Shops District and the majority of are proposed to develop with "historic/cultural" uses, such as a performing arts theatre complex with 1,200 and 600-seat theatres, exhibit space (which could include an extension of the Railroad Museum), a large open market, food and beverage services, and a relatively small amount of retail and office development.

The RRMU designation includes 491,000 square feet of mixed-uses, which could be any combination of retail, office, residential, and educational uses. The maximum residential density would be 230 units per acre on parcels where office uses are not maximized. Assuming all mixed-use areas are developed as residential, up to 2,104 dwelling units could be constructed within this designation.

The majority of the RRMU uses would be located in the western portion of the Railyards, generally north of the relocated rail line, east of I-5 and west of 6th Street.

Although generally allowed within the RRMU designation, residential development would be prohibited on a number of parcels, including Parcel 33 under the freeway, the two large parcels east of the I-5 and north of Camille Lane (Parcels 2 and 11a), Parcel 12, and the historic buildings in the Central Shops area.

Office/Residential Mixed-Use

The Office/Residential Mixed-Use (ORMU) land use designation allows for a broad range of mixed uses, including office, residential, hotel, supporting retail and other uses. The majority of office space, up to 2.34 million square feet (msf), would be located within this designation, which is concentrated in proximity to the City's existing Central Business District. The ORMU designation is shown along 5th, 6th, and 7th Streets south of Railyards Boulevard. Schools, museums, hospitals, churches and other public and quasi-public uses are also allowed in this land use designation. The two parcels east of 7th Street that are designated ORMU are intended for a substation and a pump station, so they would not have any office or other developed uses. The majority of the ORMU uses are located in the southern and central portions of the Railyard Specific Plan Area

A net maximum FAR of 8.0 would apply to all development types on each site within this designation with the exception of residential units. A maximum of 2,337,200 sf of office and 157,700 sf of retail could be constructed within the ORMU designation. Residential uses would be allowed at a maximum density of 230 du/acre, which would allow for the construction of up to 2,101 units.

Residential Mixed-Use

The Residential Mixed-Use (RMU) designation is intended to include primarily residential and supporting retail uses, such as restaurants, cafes, and a hotel. No office is allowed within this designation. Incidental cultural and civic uses are allowed, as are public and quasi-public uses such as schools, museums, hospitals and churches. The RMU designation occurs primarily in the northeastern portion of the project site, generally east of 5th Street and north of Railyards Boulevard. A four-acre RMU parcel also exists in the western portion of the project area within the Riverfront District, which would include a proposed 500 room hotel.

A net maximum FAR of 1.0 would be applied to retail uses within the RMU designation. A maximum of 165,000 sf of non-residential uses could be developed within the RMU

land use area. The maximum residential density would be 310 du/acre. The total number of residential units in this designation would not exceed 8,296 units.

Open Space

The Open Space (OS) designation would allow parks, pedestrian trails, plazas, playfields, bicycle paths, and incidental cultural, institutional and retail uses. Grass open spaces would be prohibited on Parcels 1 and 31 due to their location below I-5. OS-designated areas generally would not be developed with major buildings or structures of any significant size; accordingly, no development amounts are specified for these areas.

Transportation Use

The Transportation Use (TU) designation applies to the Sacramento Intermodal Transit Facility (SIFT) and the realigned tracks. This designation would allow uses that serve rail and other transit users, such as retail, office, hotel, and other uses.

Districts

The Specific Plan is divided into five neighborhood districts, each with its own character, dominant uses and regulations. For example, each district has its own set of Design Guidelines.

Depot District

The Depot District would encompass the general area south of the Central Shops, including the relocated tracks. The Depot District would include the intermodal facility, including the existing depot building and a planned expanded terminal facility. Although a specific design has not yet been determined, it is expected that the Sacramento Intermodal Transportation Facility (SITF) would provide the City with a single transfer point between regional, local, and interstate transit and transportation modes. The SITF, as currently envisioned, would accommodate inter-city passenger train, light rail, bus, and freight services, all within close proximity to local bicycle and pedestrian ways, and accessibility to the interstate highway system, including I-5 and I-80. It also would provide an opportunity to include the proposed statewide high-speed rail service.

Outside of the SITF, the Depot District is designated ORMU, which provides for a high concentration of office uses, mixed with residential and retail development.

Central Shops District

The Central Shops District is located north of the Depot District, bordered on south by the relocated mainline rail tracks, on the west by I-5, and on the east and north by 5th Street. This district is intended to provide close connectivity to Old Sacramento, and, within the Railyards, the Riverfront, West End and East End Districts.

The existing Central Shops would be the focus of this district. The existing historic Central Shop buildings are brick structures, some dating from as early as 1868. Seven of

the original buildings would be structurally-stabilized, renovated, and adaptively-reused to accommodate a mixture of cultural and entertainment uses. Specific uses are anticipated to include a public marketplace with specialty food shops and restaurants, museums and exhibit space, cafes and restaurants, art galleries, clubs and other entertainment-supporting uses.

West End District

The West End District would extend from the Central Shops District to South Park Street on the north, 7th Street to the east and Jibboom Street to the west. The West End District would be made up entirely of RRMU and Open Space designations. The western portion of the West End District would be dominated by two large retail parcels adjacent to the freeway, including a new Bass Pro on Parcel 2 bounded by Bercut Drive, Huntington Street, Railyards Boulevard and South Park Street. Camille Lane, which would run east-west through the district, would connect the center of the Railyards to the Riverfront District. Buildings along Camille Lane would be scaled down to provide a transition to the Central Shops to the south. A variety of pedestrian paths are expected to connect the Camille Lane area to the Central Shops. The proposed Performing Arts Center would be located in the West End District, at the southwest corner of Camille Lane and 5th Street.

East End District

The East End District comprises all of the Railyards Specific Plan Area east of 7th Street except the tracks and, west of 7th Street, the areas north of the West End District. Development in the East End is intended to replicate the traditional grid system from the neighborhoods to the east of the Railyards. Mid-block alleys are planned. The majority of the land use would be residential, with some retail. Two ORMU parcels are located within the East End District, between 6th and 7th Streets, south of Railyards Boulevard. In addition to the approximately six-acre "boxcar" parks between North Park and South Park Streets, the 10-acre park would be located in the northwestern corner of this district.

Riverfront District

The Riverfront District is located between the Sacramento River, I-5 and the tracks. Development in this area is planned to include a hotel, residential uses, restaurants, parks and open space. An approximately 30-story building is proposed to house a 500-room hotel and up to 900 residential units.

The Specific Plan proposes to remove the elevated portion of Jibboom Street that connects to the I Street Bridge and replace the connection with a link from I Street to Bercut Drive. The removal of Jibboom Street and the creation of the new I Street connection is intended to provide better vehicle access to West Sacramento, improved pedestrian access to the river, and create developable parcels along the riverfront, west of I-5.

No development or project features are proposed to extend into the river. For example, there will be no marina and no boat access to the project site.

Proposed Circulation

Roadway Network

The existing project site has no interior roadways, except for 7th Street, which connects downtown Sacramento to the Richards Area. The RSP proposes to extend existing streets through the Railyards and to create new streets to provide a circulation grid. Roadways with direct access to the site include 5th Street, 6th Street, 7th Street/North 7th Street, North 10th Street, North 12th Street, F Street, G Street, H Street, Bercut Drive, and Jibboom Street. These streets would be extended into the Railyards Specific Plan Area, and some would extend across the Specific Plan Area and connect again with existing streets. Streets within the Railyards Specific Plan Area would organized in a hierarchy consisting of Boulevards, Major streets, Minor streets, a Main Street, and Residential streets, each with specific objectives for use and physical characteristics to satisfy those objectives. Figure 4 provides a circulation plan for the entire Specific Plan Area.

Pedestrian and Bicycle Circulation

Pedestrian features would be integrated throughout the Specific Plan Area. Pedestrian activity and safety would be addressed through relatively narrow street widths, street trees, and broad sidewalks. Pedestrian pathways would be separated from vehicular streets and when the two meet at intersections there would be a change in grade and materials to improve visibility and safety. Lighting would be provided for safety and visual access.

The Plan also calls for a network of on- and off-street bicycle paths. Class I (off-street) bikepaths would be provided on 7th Street between F Street and the underpass. Class II bikepaths (minimum five-foot-wide minimum with painted lane striping) would be constructed along major streets including Railyards Boulevard, 5th Street, 6th Street, portions of 7th Street, South Park Street, North 10th Street, North B Street, Bercut Drive and Jibboom Street, allowing bicyclists to travel across the entire Railyards area from north to south and east to west. Bicycle parking would be located close to all residential buildings and commercial amenities. Figure 5 provides an overview of the bicycle network in the Specific Plan Area.

Transit Systems

Sacramento Intermodal Transportation Facility

The Specific Plan recognizes and is intended to coordinate with the City's planned Sacramento Intermodal Facility (SITF). The SITF is expected to be a regional intermodal terminal that can support increased commuter and intercity rail service, as well as an expanded LRT system. The intermodal terminal would provide a direct connection between these systems, bringing together Amtrak, the Capitol Corridor and the San Joaquin Corridor intercity rail services, intercity bus service, Regional Transit and other local fixed route bus services, regional bus and local shuttle services serving the area. The proposed SITF is a 15.34-acre trapezoidal site north of I Street bounded by 2nd and

the riverfront on the west, 5th on the east, and the proposed main rail line to the north. The SITF site contains the existing Depot, the relocated rail lines, and the intervening lands and structures. A concept for the SITF was developed for the City of Sacramento following a series of public outreach forums conducted in 2003. The City gathered input from the public and project stakeholders and identified the following four alternatives for evaluation:[1]

The alternative plans contained many of the same essential facility components, but were designed with different configurations and slight changes in the types of structural amenities. After analyzing the advantages and disadvantages of each objective, the project consulting team determined that Alternative's A and B best fulfilled the goals and objectives for the intermodal facility as determined by the project stakeholders. The City Council ultimately determined that Alternative B-Sacramento Northern should be considered the preferred alternative.[2] The "Sacramento Northern" alternative would relocate the Historic Depot approximately 400' north along the historic 4th Street axis and integrate it into a new Terminal Building. This alignment would accommodate planned rail service growth and would improve rail operations. Despite the presence of the preferred alternative, no formal proposed project has been approved and no project level designs of the Intermodal Transportation Facility have been developed for use in environmental analysis.

Any future SITF would incorporate a terminal facility consisting of the Historic Depot and a proposed terminal extension. The current Historic Depot is a two-story facility with 48,772 sf of capacity. While multiple designs have been submitted for the SITT, no final design has been determined. However, all of the alternatives would incorporate the following uses within the proposed terminal and the historic depot:[3]

- A ticketing area for Amtrak and Greyhound
- Baggage for Amtrak and Greyhound
- Waiting Area for Amtrak and Greyhound
- Passenger Amenities for Amtrak, Greyhound and RT (restrooms, phones, food service, vending service, telephone, internal circulatory system, custodial service)
- Administrative and employee uses
- On-site parking for 350 spaces
- Joint Uses with Specific Plan Area

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1 City of Sacramento, *Sacramento Intermodal Transportation Facility- Draft for Public Review Working Paper #8- S SITF Alternatives,* February 6, 2004.

2 City of Sacramento, *Sacramento Intermodal Transportation Facility- Draft for Public Review Working Paper #9- S SITF Alternatives,* September 29, 2004.

3 City of Sacramento, *Sacramento Intermodal Transportation Facility- Draft for Public Review Working Paper #9- S SITF Alternatives,* September 29, 2004.

Source: City of Sacramento, , 2007.

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FIGURE **3-8**

Circulation Plan

Figure 4. Circulation Plan (Figure 3-8 from DEIR))

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Railyards Specific Plan EIR

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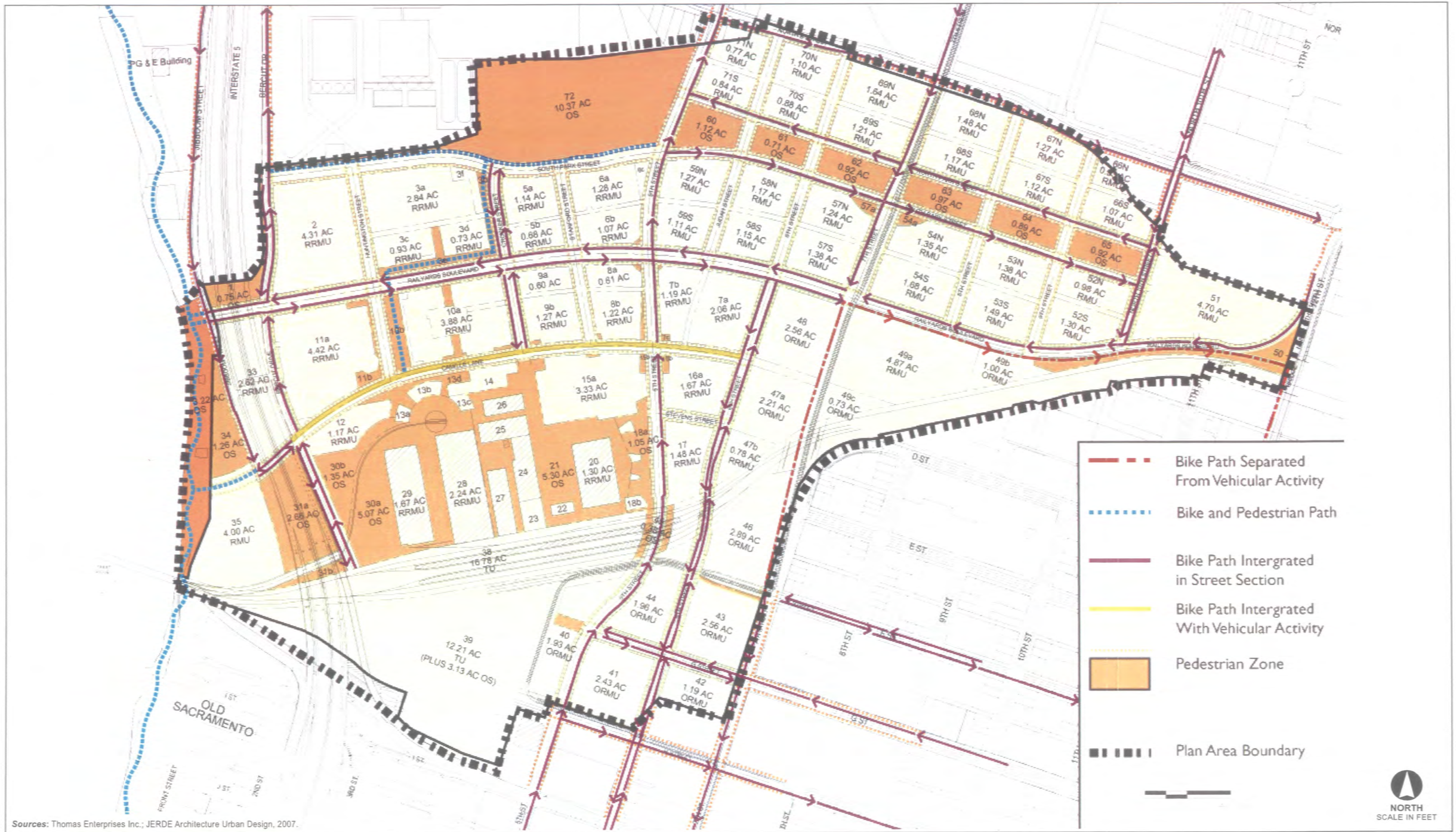

Sources: Thomas Enterprises Inc.; JERDE Architecture Urban Design, 2007.

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FIGURE **3-9**
Bicycle Plan

Figure 5. Bike and Pedestrian Network (Figure 3-9 from DEIR)

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Railyards Specific Plan EIR

Passenger Rail

Sacramento continues to experience an increasing demand for transportation services. The Capitol Corridor intercity train service experienced a 172 percent increase in ridership between 1998 and 2005 and is expected to expand its train service from 24 trains per day to 32 trains per day by the year 2010. Amtrak's long distance inter-city service is also expected to increase its ridership, which will necessitate an increase in the number of trains serving the region.

Light Rail

Light rail service would be available in the Specific Plan Area. Existing light rail lines would be extended to the Specific Plan Area in an east-west direction along H Street. The Plan identifies a light rail station immediately behind the Historic Depot. Plans are underway to continue that route as the Downtown-Natomas-Airport (DNA) route. In 2003, Regional Transit developed a Locally Preferred Alternative for the DNA line, showing light rail traversing the Specific Plan Area along 7th Street, traveling west along Richards Boulevard towards the I-5 freeway, and crossing the American River into the Natomas area.

Local and Regional Bus Service

The ultimate bus system serving the Specific Plan Area would consist of a Regional Transit operation facility at the Intermodal facility and extensions to future downtown service provided by Regional Transit and other municipal operators in the region serving downtown Sacramento. 7th Street would be designated as a transit-priority street connecting downtown with Richards Boulevard.

Freight Rail

Union Pacific trains would continue to operate through the Railyards Specific Plan Area along the realigned tracks south of the Central Shops.

High Speed Rail

The California High-Speed Rail Authority has been evaluating a high-speed rail line beginning in Sacramento, serving the Central Valley and terminating in Los Angeles and San Diego. Although high-speed rail is still in the initial stage of the planning process, the Specific Plan allows for future expansion of the SVS Intermodal Transit Facility to accommodate high-speed rail passengers and provide for the required 1,300 feet of straight platform on elevated track at the SITF location.

Phasing

Development of the RSP is anticipated to occur over approximately 20 years, with the first phase beginning in 2011. The RSP identifies four phases of development. Initially, the tracks would be realigned and the Bass Pro and southeastern-most ORMU parcels

would be developed. The first phase would last four years and would subsequently include development within the Central Shops and the West End District, primarily between I-5 and 5th Street, the tracks and Railyards Boulevard. 5th Street would be extended to North B Street in this phase. In subsequent phases, development would extend east to 7th Street and west to the Sacramento River. The area east of 7th Street is anticipated to develop in the fourth and final phase.

Methodology

The SMAQMD guidelines include a list of potential mitigation measures approved by the SMAQMD. These measures are related to bicycle/pedestrian use, transit, parking, commercial and residential development design, building design, and commuting. Each of the measures has been assigned a land use type for which credit may be claimed for that measure, and a point value. Each point corresponds to a one percent reduction in emissions. The SMAQMD requires a total of 15% emissions reductions.

The land use types include residential (R), commercial (C), and mixed-use (M). Each point or fraction thereof associated with a particular measure corresponds to an equal percentage of emission reductions. Residential and commercial projects may only claim credit for measures identified as "R" or "C" respectively, while mixed-use residential and commercial projects may claim credit for any measure. Mixed-use projects claiming credit for a strictly commercial or residential measure must scale the credit claimed to that fraction of project that is commercial or residential.

Tables 2 and 3 list land use types by gross square footage and by trip generation. Table 2 shows land uses under the maximum residential scenario, which assumes that 12,501 residences are built and that only a minimal amount of office space is constructed. At the other extreme, Table 3 shows the land uses for the maximum office scenario, which assumes that 11,300residences and 2,993,000 square feet of office space would be constructed. Both scenarios assume the same square footage and trip generation for retail and hotel/historic/cultural land uses.

TABLE 2. SQUARE FOOTAGE ASSUMING MAXIMUM RESIDENTIAL

Land Use Type	Gross Square Footage	% of Total Gross Sq. Footage	Trip Generation	% of Total Trip Generation
Residential (R)	15,401,200	87%	61,761	33%
Retail (C)	1,566,000	8%	116,989	63%
Hotel/Historic/Cultural (C)	595,390	3%	4,819	3%
Office (C)	164,000	1%	2,246	1%
Total (M)	18,716,590	100%	185,815	100%

Residential assumes 1,112 square feet per residence for 13,850 residences. Hotels assume 1,100 rooms at 100 square feet per room.

TABLE 3. SQUARE FOOTAGE ASSUMING MAXIMUM OFFICE

Land Use Type	Gross Square Footage	% of Total Gross Sq. Footage	Trip Generation	% of Total Trip Generation
Residential (R)	12,565,600	71%	50,780	25%
Retail (C)	1,566,000	9%	116,989	57%
Hotel/Historic/Cultural (C)	595,390	9%	4,819	2%
Office (C)	2,993,000	3%	31,175	16%
Total (M)	18,709,990	92.00%	203,762	100%

Residential assumes 1,112 square feet per residence for 11,300 residences. Motels assume 1,100 rooms at 100 square feet per motel room.

Mitigation Measures/Project Design Features

The following headings contain the mitigation measures that have been selected from the SMAQMD list to reduce operational air pollutant emissions, and the point value (percent reduction) associated with each measure.

Several of the mitigation measures apply to mixed-use projects, that is, to both commercial and residential land uses. However, some of the mitigation measures apply only to residential or commercial measures. The mitigation credit for these land uses is scaled based on either trip generation rates or square footage.

For the purposes of this analysis, mitigation measures associated with trip generation are scaled using the trip generation rates. These include several of the applicable mitigation measures 1 through 24.

Mitigation measures associated with energy use are adjusted based on building square footage. These consist of the building component measures 25 through 32. These measures are scaled based on total residential versus non-residential square footage.

Tables 2 and 3 above show the scaled credit claimed for each measure based on SMAQMD guidance. This analysis is conservative. For example, when a residential only mitigation measure is analyzed below, the credit applied to this mitigation measure is assumed to be the lower percentage for residential land uses found in Tables 2 and 3. A concise explanation of each mitigation measure follows each heading.

Table 4 summarizes the total points for each measure and the sum of all measures included in the Railyards AQMP. As Table 4 shows, the total mitigation credit for the project equals 25.51 points, or 25.51 percent reduction in emissions. This value substantially exceeds the SMAQMD's requirement of 15 points.

TABLE 4. SUMMARY OF RAILYARDS MITIGATION MEASURES

Mitigation Measure	Points	Adjustment	Adjusted Points
1. Bike parking	0.625	100%	0.625
4. Proximity to bike path/bike lanes	0.625	100%	0.625
5. Pedestrian network	1	100%	1.0
6. Pedestrian barriers minimized	1	100%	1.0
7. Bus shelter for existing transit service	1	100%	1.0
9. Traffic calming	1	100%	1.0
10a. Employee and/or customer parking	7.2	67%	4.82
14. Off street parking	1.5	100%	1.5
15. Office/Mixed use density	2	100%	2.0
18. Residential density	11	25%	2.75
19. Street grid	1	100%	1.0
21. Affordable housing component	.4	10%	0.4
22. Urban mixed-use	4.9	100%	4.9
24. No fireplace	1	71%	0.71
27. Energy star roof	1	12%	0.12
29. Exceed Title 24 requirements	1	71%	0.71
30. Solar orientation	0.5	71%	0.35
31. Non-roof surfaces	1	100%	1.0
		Totals	**25.51**

1. Bike Parking: Non-Residential Projects Provide Plentiful Short-Term and Long-Term Bicycle Parking Facilities to Meet Peak Season Maximum Demand (0.625 points maximum x 1 [100% Mixed Use] = 0.625 points)

The availability of permanent, secure bicycle parking encourages employees and business patrons to use bicycles for commuting. Bicycle storage systems are classified as either Class I (fully enclosed and locked); Class II (frame/both wheel locking where only a bicyclist-supplied padlock is needed); or Class III (stationary rack which provides for frame and single-wheel locking with a bicyclist supplied cable and padlock).

The project will supply one bicycle parking facility for every ten (10) off-street vehicle parking spaces as required by Sacramento Municipal Code 17.64.050. At least fifty (50) percent of the required bicycle parking facilities will be Class I and the remaining facilities will be Class I, Class II or Class III.

4. Proximity to bike path/bike lanes: Entire project is located within ½ mile of an existing Class 1 or Class 2 bike lane and project design includes internal network that connects the project to the existing project (0.625 points maximum x 1 [100% Mixed Use] = 0.625 points)

Figure 5 shows bike paths for the Railyards project site and how those bike paths will integrate into Sacramento's adjacent bike path network. The Railyards project will include both Class 1 and Class 2 bike paths/lanes. The project will include Class 1 bike trails (denoted in blue) and Class 2 bike paths (denoted in red) that run through the entire project and connect with existing Sacramento bike paths.

The entire project will lie within ½ mile of existing Class 1 and 2 bike lanes. All of the Railyards area west of 5th Street is within ½ mile of the existing Class 1 bike path that parallels the Sacramento River. The portion of the Railyards project east of 5th Street and north of F Street is within ½ mile of the existing North B bike path. Similarly, the portion of the Railyards project east of 5th Street and south of F Street is within ½ mile of the existing H Street bike lane. The proximity of these Class 1 and 2 bike trails located on the western and eastern sides of the project results in the entire project being within ½ mile of existing Class 1 and 2 bike lanes.

5. Pedestrian Network: The project provides pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site (1 point maximum x 1[100% Mixed Use] = 1 point).

The project will include a street grid that allows for easy pedestrian movement. Figure 5 shows the pedestrian zones of the project (orange and orange dots). The Railyard's gridded street pattern allows for pedestrian movement throughout the project. Access to the Railyards from downtown Sacramento will be along 5th and 6th Avenues. These paths will include bridges over the train tracks. From within the Depot District, there will also be a pedestrian tunnel under the train tracks that connects to the Central Shops area.

The Central Shops represents a pedestrian friendly zone where pedestrians rather than autos will have preferential access. The most direct pedestrian access to Old Sacramento from the Railyards will be from Camille Lane to the pedestrian path adjacent to the Sacramento River.

All streets will have wide sidewalks on both sides and will be a minimum of 5 feet wide. All sidewalks will have vertical curbs.

6. Pedestrian Barriers Minimized: Site design and building placement minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between residential and non-residential uses that impede bicycle or pedestrian circulation are eliminated (1 point maximum x 1[100% Mixed Use] = 1 point)

The proposed Railyards project is designed to be pedestrian friendly. As discussed previously, the project will have few if any barriers to pedestrian access. The only barriers will be those designed to protect pedestrian safety by preventing access to railroad tracks. Pedestrians will have full access on east-west streets except for that portion of the project south of Railyards Boulevard and east of 6th Street due to the railroad tracks. Also, pedestrians will have full access on north-west streets within the Railyards project area. The only exception to this is for the area between the Central Shops and the Depot District. However, a pedestrian tunnel between these two areas will provide interconnectivity.

7. Bus Shelter for Existing Transit Service: Bus or streetcar service provides headways of one hour or less for stops with ¼ mile; project provides safe and convenient bicycle/pedestrian access to transit stop(s) and provides essential transit stop improvements (i.e., shelters, route information, benches, and lighting) (1.0 points maximum x 1[100% Mixed Use] = 1 point).

The Railyards Project is designated as a transit oriented development. Due to its proximity to downtown Sacramento and its projected residential density, bus accessibility is intended for all residences. In addition, the project will have access to the light rail station in the Depot District and along 7th Avenue. Although future bus and transit schedules within the project's boundaries are unknown, existing light rail headways are 15 minutes at the Sacramento Regional Transit Light Rail Station located adjacent to the Amtrak Station. Also, several RT bus routes provide service to the Amtrak station and along 7th Avenue adjacent to the Railyards project. Although currently, exact bus routes and stops are unknown, given the Railyards' proposed residential densities exceeding 150 units per acre, future headways of 15 minutes would be expected. In addition, a future light rail station is proposed for 7th Avenue and Railyards Boulevard. As stated in the traffic section of the EIR, this light rail stop is projected to have 15 minute headway during peak periods.

9. Traffic Calming. Project design includes pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways are designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic-calming measures (1 point maximum x 1[100% Mixed Use] = 1 point).

The Railyards project has been designed to accommodate pedestrians, bicycles and transit. It contains several pedestrian safety/traffic calming design measures including marked crosswalks, sidewalks of 5 feet or more in width, separation of sidewalks from

roads by bike lanes, on-street parking, and/or planter boxes. The appendix to this AQMP contains cross sections of all street types within the project area.

10a. Employee and/or Customer Paid Parking System: (7.2 points maximum x .67% [Commercial] = 4.8 points).

All daily parking will be charged at rates that are equal to or greater than the cost of Sacramento Regional Transit day passes plus 20%. Monthly charges for parking will be equal to or greater than the cost of an RT monthly pass plus 20%. There will be no customer or employee validations for parking.

Since all parking lots will be within an urban area and within ¼ mile of transit stops, the maximum credit for this measure is 7.2 points. However, this value has been adjusted by 67% to account for commercial land uses, which constitute 67% of total trip generation (under the maximum residential scenario).

14. Off Street Parking: Parking facilities are not adjacent to street frontage. (1.0 points x 1 [100% Mixed Use]= 1 point).

The Railyards project will include several parking structures. Most, though not all of the parking garages will be located behind buildings in relation to street frontage, in areas that are proximate to high density/mixed land uses. With two exceptions, all parking garages with street frontage will have commercial/retail on the first floor. The two exceptions include a parking garage proposed for under Interstate 5 and one that will be adjacent to the proposed Bass Pro store (see Figure 6).

Figure 6 shows the Railyards parking plan only through Phase 2. Parking has not been determined for phases beyond Phase 2, although a similar approach to parking will be used for future phases. One point, instead of 1.5 points has been credited for this measure because two parking garages will be designated entirely for parking and will be adjacent to streets. The majority of parking garages will be off-street. Those that are adjacent to streets will have commercial or retail on the first floor.

15. Office/Mixed Use Density: Project provides high density or mixed-use proximate to transit. (2 points maximum x 1 [100% Mixed Use]= 2 points).

The proposed project will provide safe and convenient pedestrian and bicycle access to all transit stops. This description needs more documentation showing ¼ mile radius arc from transit and planned pathways and linkages to transit stop.

18. Residential Density: Project provides high-density residential development (11 points x 0.25 [25% Residential] = 2.75 points).

Residential density could vary depending on market conditions. Some areas proposed for residential could be developed as office space or vice versa. The total number of residences would vary from a minimum of 11,300 to a maximum of 13,850. Residential development would occur on acreage ranging from 63 to 81 acres. This would result in a residential density ranging from a minimum of 139 units per acre (11,300 units/81 acres) to a maximum of 220 units per acre (13,850 units/63 acres).

This residential density falls within the 50+ dwelling units per acre in the SMAQMD's recommended guidance document and therefore qualifies for 10 points. Additional points are available if the developments are in close proximity to transit (1/4 mile to existing or planned light rail or bus transit). Currently, the Railyards area south of Camille Lane is located within ¼ mile of the existing light rail station at the Amtrak Station (Sacramento Valley Station). The proposed Downtown-Natomas-Airport Corridor would extend light rail through the center of the Railyards project along 7th Avenue, with a planned light rail stop near the intersection of 7th Avenue and Railyards Boulevard. This proposed extension is projected to reach Richards Boulevard by 2014 (Sacramento Regional Transit's Short Range Transit Plan (FY2000-2010).

Due to the Railyard project's projected high housing densities, bus service would be expected throughout the project area. As described in the DEIR, there would be 15 minute light rail headways at the nearest light rail stops at the Amtrak station and at the 7th Avenue/Railyards Boulevard station. In addition, mitigation measure 6.12-6 requires that the project applicant coordinate with Sacramento Regional Transit to provide modifications to both bus and light rail services and to fund necessary improvements to serve transit demand generated by the project. Given the high residential densities of the project, 15-minute headways are also likely for the bus routes that would serve the project.

In addition to the 10 points for the project's density, an additional 1 point has been included because approximately ½ of the project's residential units will be within ¼ mile of light rail stops.

19. Street Grid: Multiple and direct street routing (grid style) (1 point maximum x 1 [100% Mixed Use] = 1 point)

Figure 4 illustrates the Railyard's gridded street pattern, along with pedestrian and bike paths. The Railyard project's proposed street grid pattern includes no cul-de-sacs. Consequently, it will have an internal connectivity factor of 1.0. The project will connect directly to the adjacent portions of Sacramento in a similar grid pattern. Consequently, block perimeters will all be less than 1,350 feet, except for a few of the blocks in the northwest corner than will include the Bass Pro retail store.

Figure 6. Parking Plan

THOMAS ENTERPRISES INC.

SCALE (H): 1"=400'
SCALE (V): NA
DESIGNED BY: HMS
DRAWN BY: HMS
CHECKED BY: DRC
DATE: JULY 30, 2007

SACRAMENTO RAILYARDS
ROADWAY & PARKING PHASING
PHASE 2

PROJECT NO. 097922000
DRAWING NAME 922000PHASE..dwg

21. Affordable Housing Component: (4 points maximum) (0.04 x 0.25 [25% residential]] x .15 [15% residential units deed-restricted below market housing rate] = 0.1 points

The affordable housing trip reduction credit is based on the fact that household income is one of the most important predictors of household trip generation characteristics. Under the maximum office alternative, 11,300 residential units would be constructed, which represents the minimum number of residential units. The percentage reduction in trips and emissions is based on the following equation: % reduction = 0.15 (15% units deed-restricted below marketing rate housing) x .25 (25% of project trips are residential for the maximum office alternative) x 0.04.

22. Urban Mixed Use: Development of projects predominately characterized by properties on which various uses, such as office, commercial, institutional, and residential, are combined in a single building or in a single site in an integrated development project with functional interrelationships and a coherent physical design (4.9 points maximum x 1.0 [100% mixed use] = 4.91 points).

The following employment/housing balance formula was used to estimate the maximum number of mitigation points:

Mitigation points = (1-ABS(1.5*h-e)/(1.5*h+e))-0.25)/0.25*.03, where
h = study area housing units,
e = study area employment, and
ABS = absolute value.

Based on the formula above, the project would result in a maximum credit of 4.9 points. The credit would equal 4.9 if the minimum commercial office space of 2,325,390 square feet were built, along with the maximum residential of 13,850 units. The estimate assumes total employment of 6,008 based on 387 square feet per commercial office space employee (2,325,390 square feet commercial/387 square feet per employee). The square feet per worker estimates are based on data compiled by the Energy Information Administration:

http://www.eia.doe.gov/emeu/consumptionbriefs/cbecs/pbawebsite/office/office_howmanyempl.htm

To calculate the equation listed above, the Railyards specific values for employment and dwelling units have been combined with existing employment and dwelling unit information within ½ mile. That data was based on information contained in the following web site for zip code 95814:

http://ssl.sacbee.com/onboard/community.html

Within zip code 95814, there are a total of 66,123 employees, which when combined with 6,008 employees from the Railyards project, results in a total of 72,121 employees.

Within zip code 95814, there are a total of 9,535 dwelling units, which when combined with 13,850 dwelling units from the Railyards project, results in a total of 23,385 dwelling units.

The calculation of the credit for measure 22 is based on the combined existing plus projected employment and dwelling unit estimates for zip code 95814.

Credits for the remaining mitigation measures have been adjusted based on the percentage of residential versus commercial building square footage.

24. No Fireplace: Project does not feature fireplaces or wood burning stoves. (1 point maximum x 0.71 [71% residential] = 0.71 points)

Fireplaces and wood burning stoves will be prohibited in all Railyards residential units, based on communication from Richard Rich with Thomas Enterprises.

27. Energy Star Roof: Install energy star roof materials (1 point maximum x 0.12 [12% commercial] = 0.12 points)

All roofing materials used in commercial/retail buildings will be Energy Star certified. All roof products will also be certified to meet ATSM high emissivity requirements.

28. Onsite Renewable Energy System: Project Provides Onsite Renewable Energy Systems

The project would include both solar photovoltaic systems on individual buildings and landfill gas combustion from the district co-generation system. However, no points are being included in this AQMP because these energy systems have not yet been specified in enough detail.

29. Exceed Title 24 Requirements: Project exceeds Title 24 requirements by 20% (1 point maximum x 0.71 [71% residential] = 0.71 points)

The overall project will be submitted for LEED-ND (Leadership in Environmental and Energy Design - Neighborhood Development) and the intent is for buildings to be LEED-ND qualified[4]. The Railyard target is to exceed Title 24 requirements by 20%.

[4] LEED for Neighborhood Development is a rating system that integrates the principles of smart growth, new urbanism, and green building into the first national standard for neighborhood design. More information is available at: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=148

30. Solar Orientation: Orient 75 or more percent of homes and/or buildings to face either north or south (within 30 degrees of N/S) (0.5 points maximum x 0.71 [71% residential] = 0.35 points)

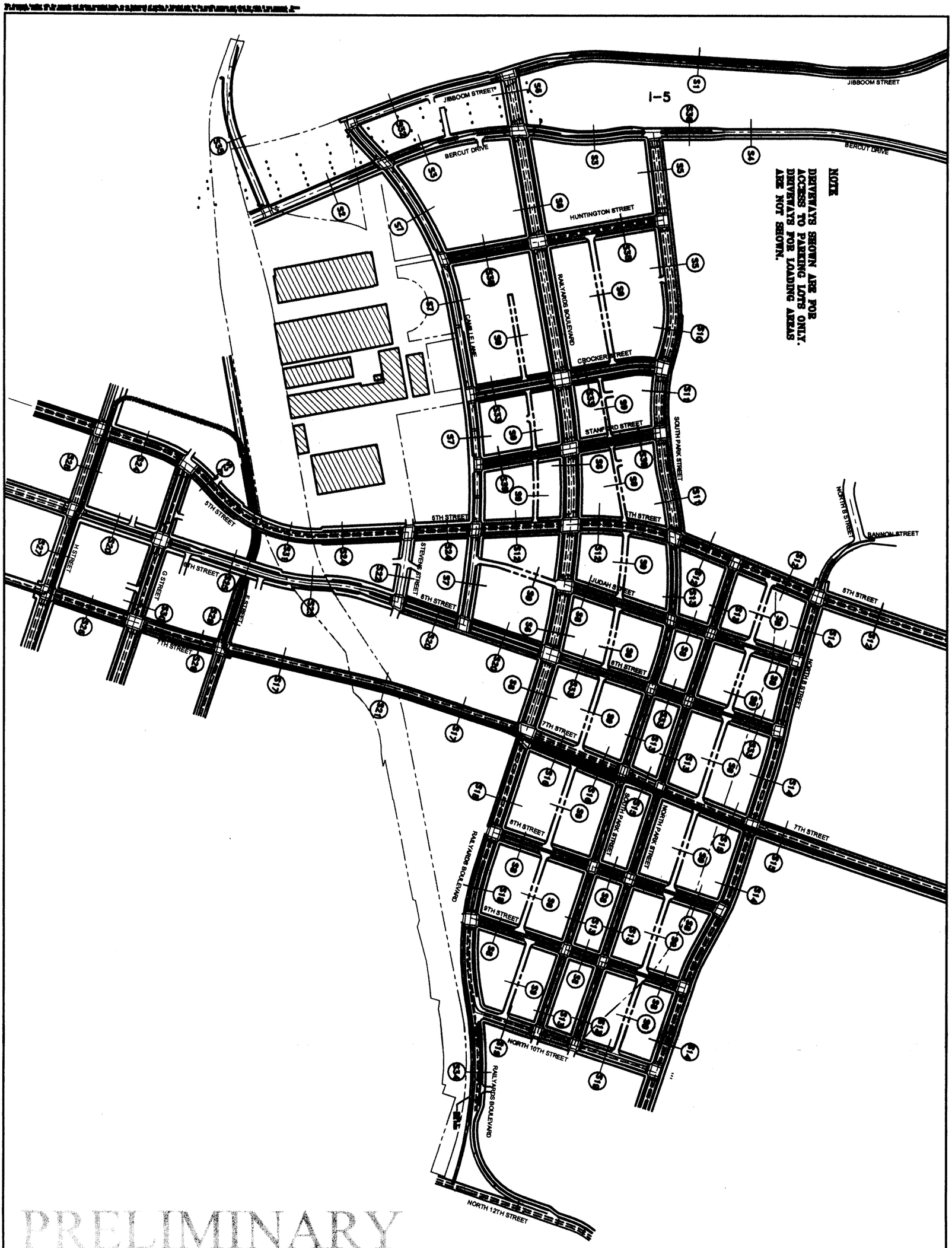
The proposed Railyards project is laid out in a north south grid that does not vary by 30 degrees from N/S. At least one face of every building will face south. Buildings will have passive solar design features that include roof overhangs or canopies that block summer shade, but that allow winter sun, from penetrating south facing windows. Trees and other shade structures will be incorporated into residential development to maximum summer shade and to minimize summer shade.

31. Non-Roof Surfaces: This mitigation measures reduces heat islands by incorporating strategies so that 50% of the site's hardscape had shade coverage within 15 years of occupancy, at least 50% of the site's paving materials have a solar reflectance index of at least 29 and/or the site's hardscape is comprised of an open grid pavement system (1.0 points maximum x 1[100% mixed use] = 1 point).

A goal of the proposed Railyards project is to meet the non-roofing surfaces requirement through a combination of shade coverage, open grid pavement, and paving materials that meet the solar reflectance index requirements (based on e-mail from Richard Rich at Thomas Enterprises)

Appendix A

Pedestrian Friendly Street Standards



PRELIMINARY

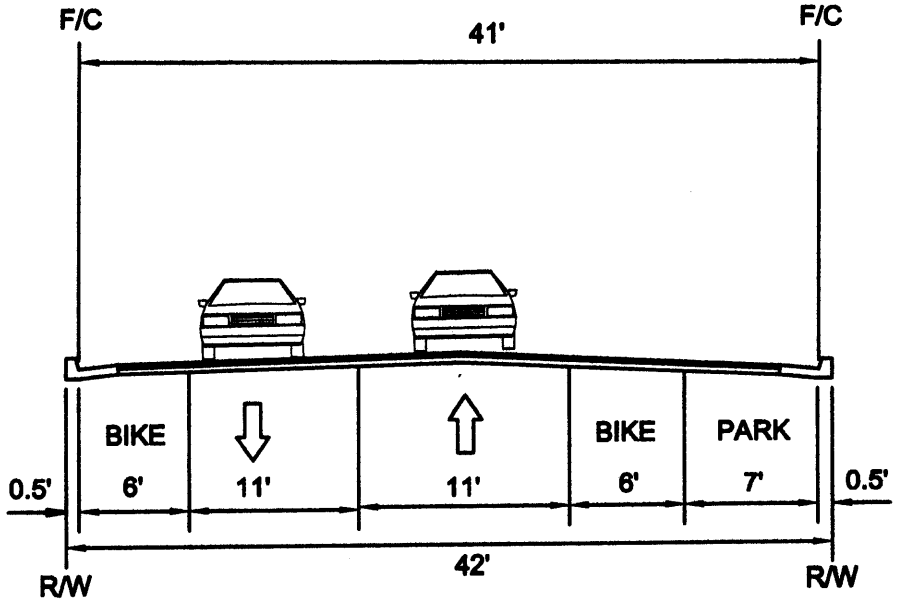
1 of 1	SACRAMENTO RAILYARDS STREET CROSS SECTION KEY CITY OF SACRAMENTO	SCALE (H): 1"=60' SCALE (V): N/A DESIGNED: BRMS DRAWN: BRJ/MJ CHECKED: BRS/DS DATE: JULY 23, 2007	THOMAS ENTERPRISES INC.	Kimley-Horn and Associates, Inc.	NO. REVISION BY DATE

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street **S1**

Collector Street - Minor

Bike Lane	Yes
Parking	Yes



DESIGNATED STREETS:

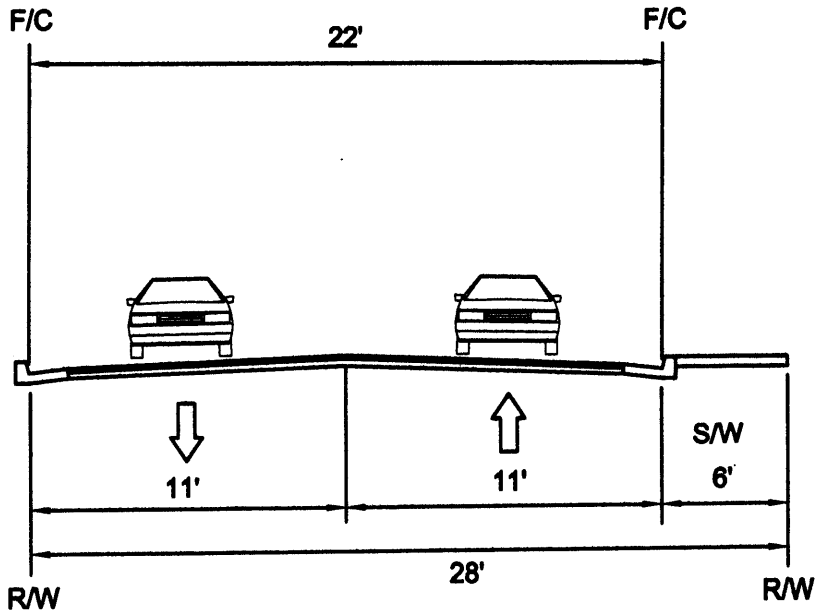
JIBBOOM STREET (B/T RICHARDS BLVD & RAILYARDS BLVD.) - LOOKING SOUTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S2

Collector Street - Minor

Bike Lane	No
Parking	No



DESIGNATED STREETS:

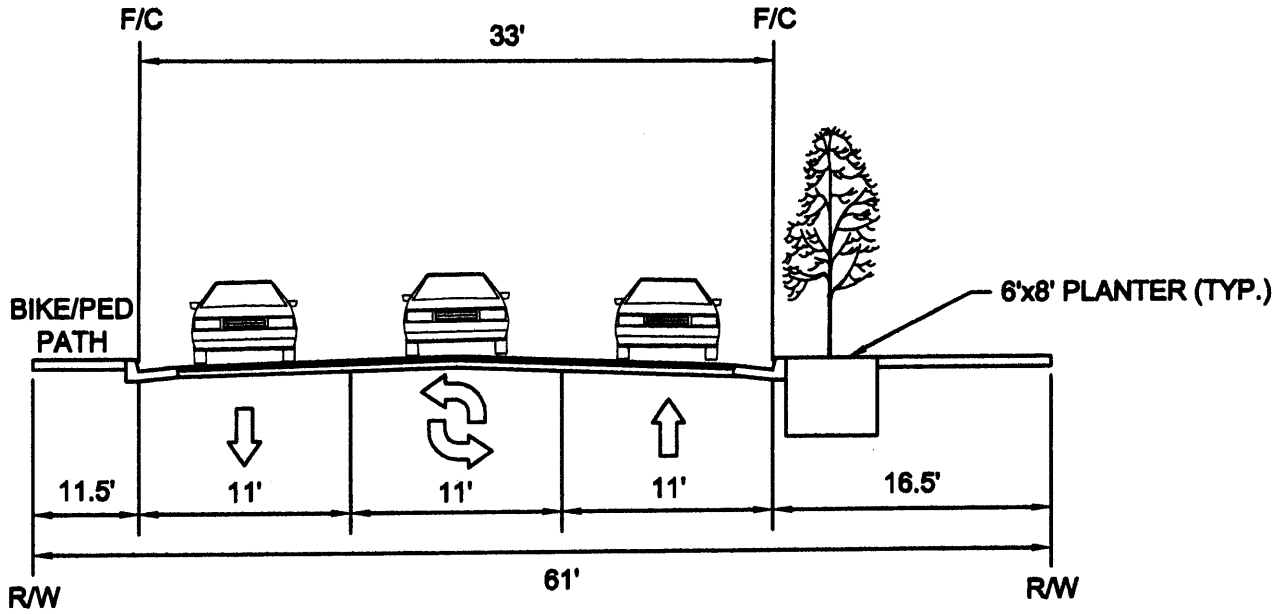
BERCUT DRIVE (SOUTH OF CAMILLE LANE) - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S3

Collector Street - Minor

Bike Lane	No
Parking	No



DESIGNATED STREETS:

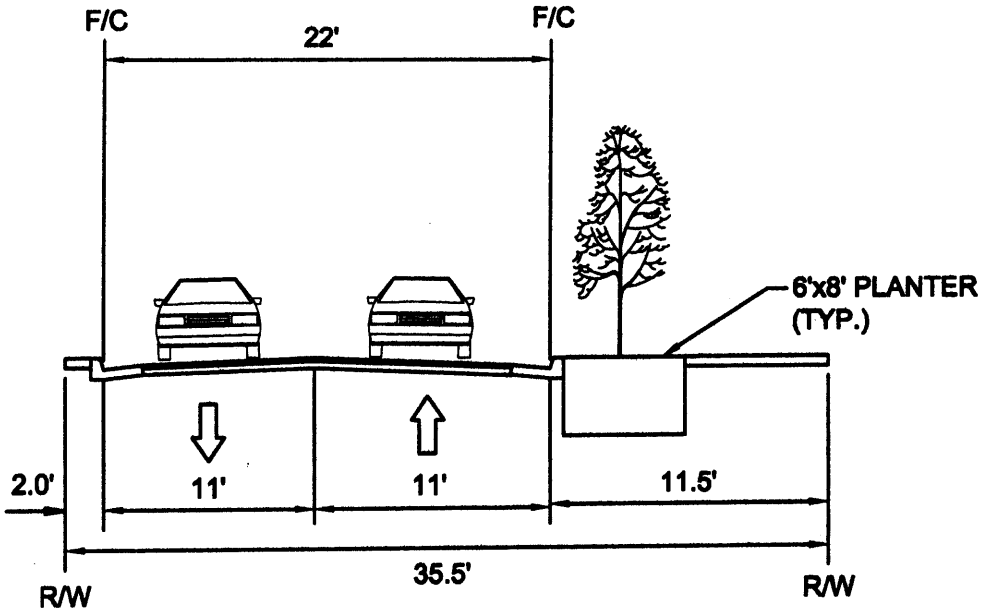
BERCUT DRIVE (B/T CAMILLE LANE & SOUTH PARK STREET) - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S4

Collector Street - Minor

Bike Lane	No
Parking	No



DESIGNATED STREETS:

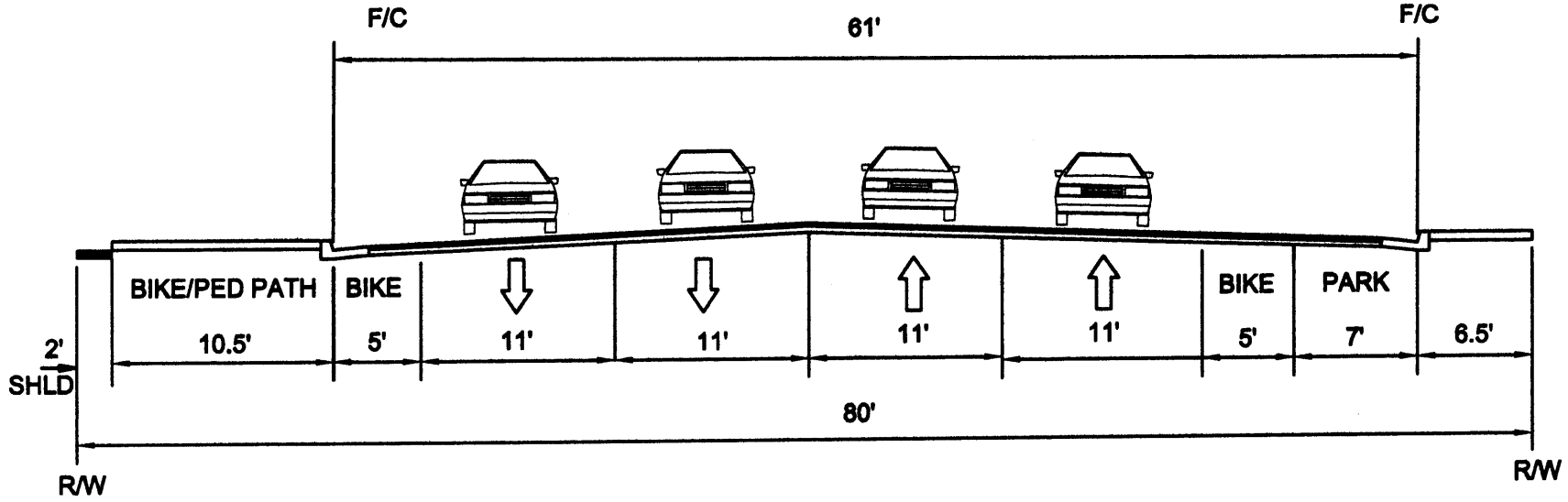
BERCUT DRIVE (NORTH OF SOUTH PARK STREET) - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S5

Collector Street-Major

Bike Lane	Yes + Ped/Bike
Parking	Yes - south side only



DESIGNATED STREET(S):

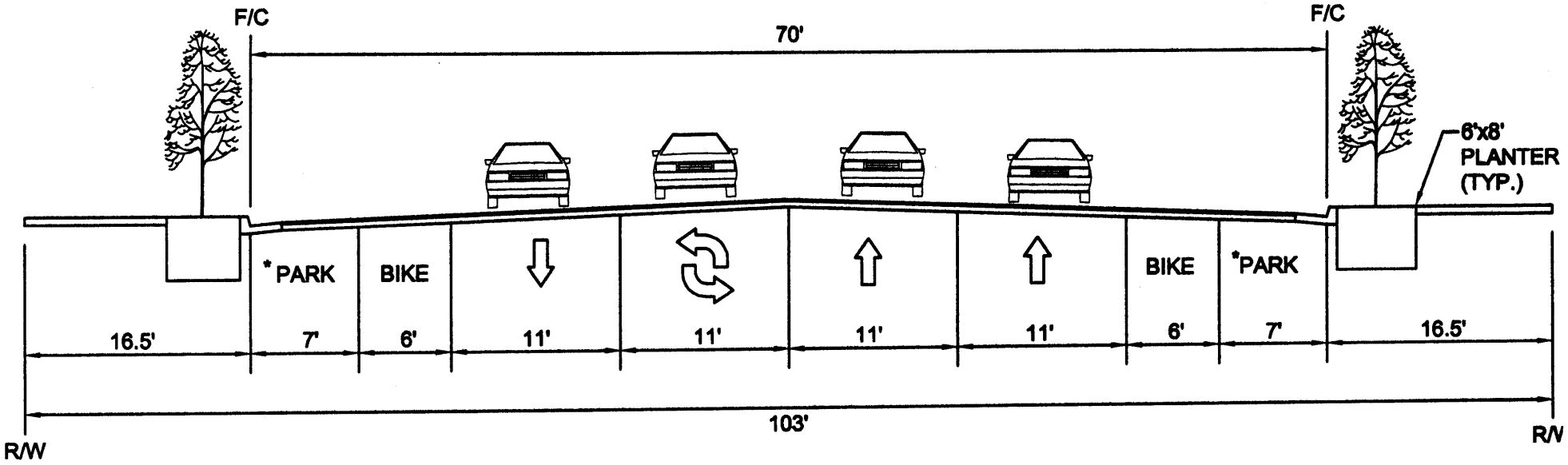
SOUTH PARK STREET (B/T BERCUT DRIVE & CROCKER STREET) - LOOKING EAST

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S6

Four-Lane Arterial

Bike Lane	Yes
Parking	Yes



DESIGNATED STREETS:

RAILYARDS BOULEVARD (B/T JIBBOOM & 7TH STREET) - LOOKING WEST

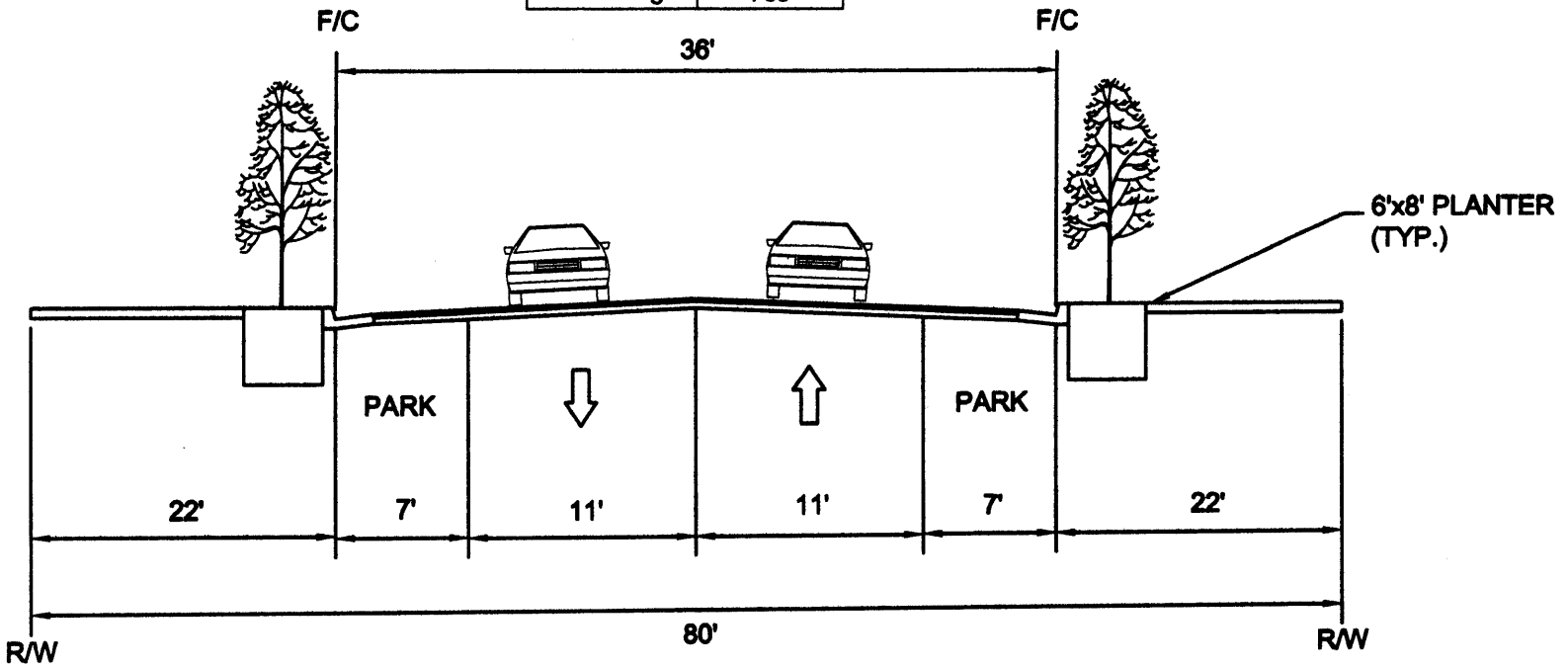
* NO PARKING B/T BERCUT & JIBBOOM.

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S7

Local - Commercial Street

Bike Lane	No
Parking	Yes



DESIGNATED STREET(S):

CAMILLE LANE

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORZ. N/A VERT. N/A
DATE: JULY 20, 2007
PROJECT NO. 097922000

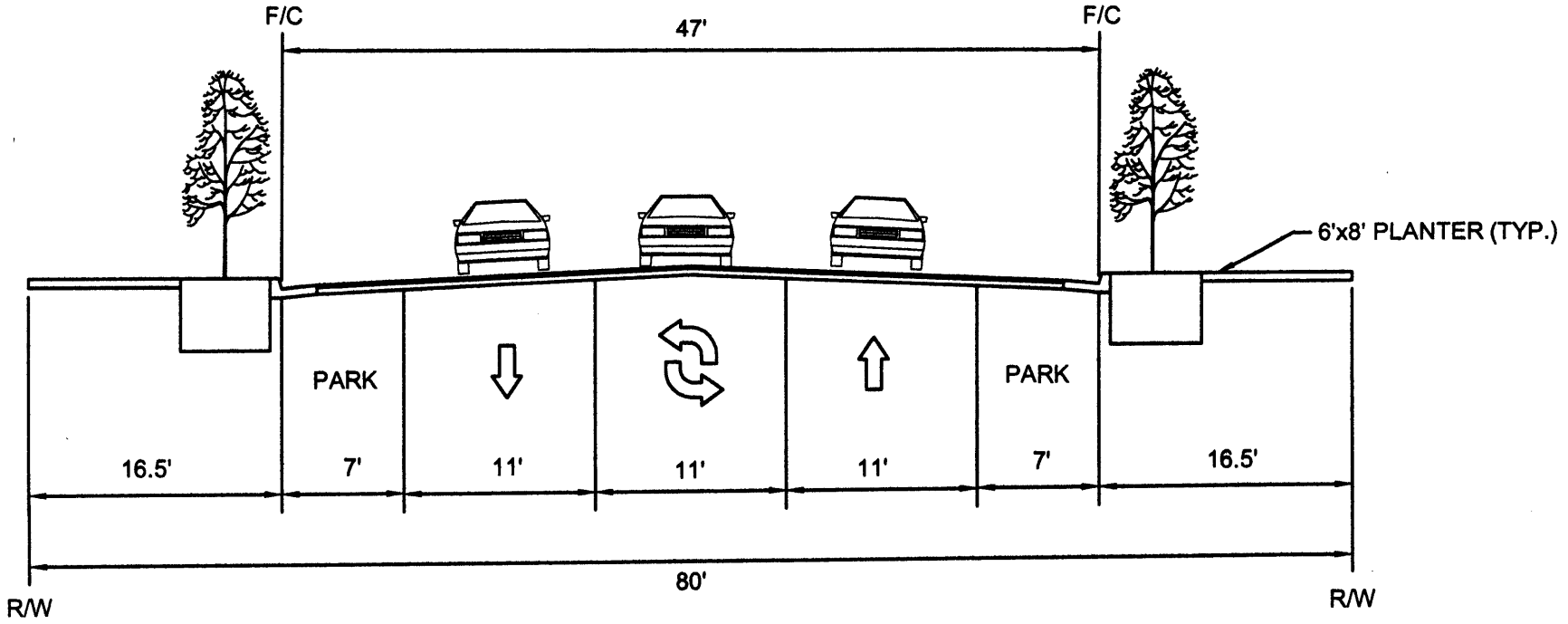
SHEET 7 OF 39

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S8

Local - Residential Street

Bike Lane	No
Parking	Yes



DESIGNATED STREET(S):

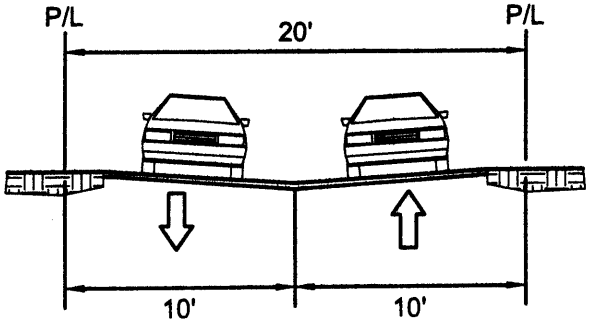
JUDAH STREET (B/T RAILYARDS BLVD & NORTH B)
8TH STREET
9TH STREET

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S9

Alley Way

Bike Lane	No
Parking	No



DESIGNATED STREETS:

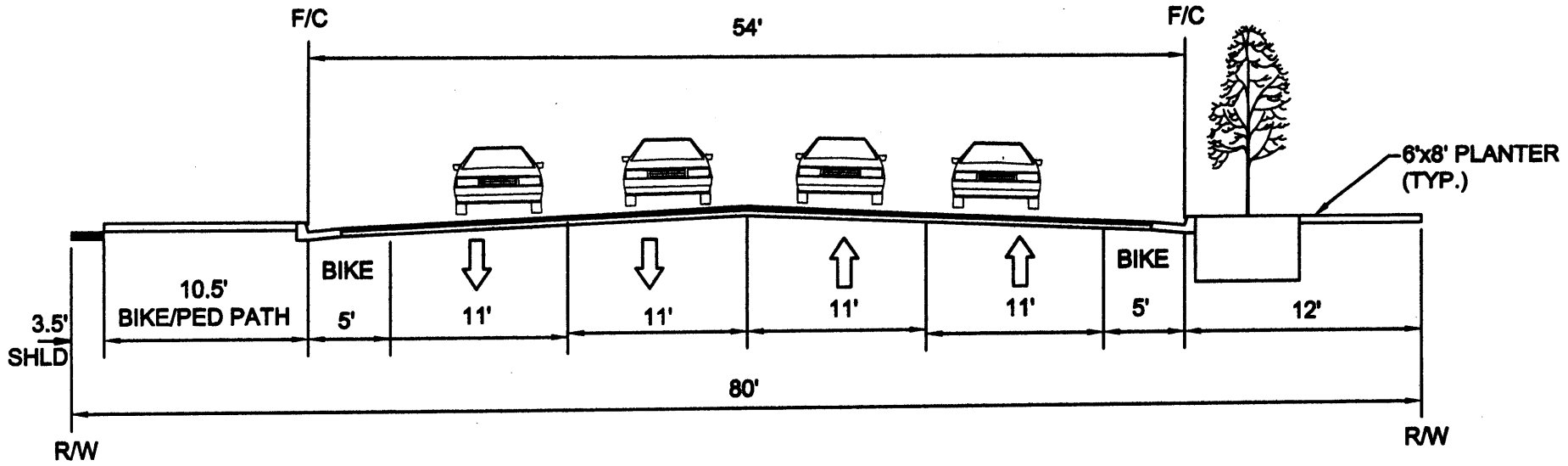
COMMERCIAL & RESIDENTIAL ALLEY

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street **S10**

Collector Street-Major

Bike Lane	Yes
Parking	No



DESIGNATED STREET(S):

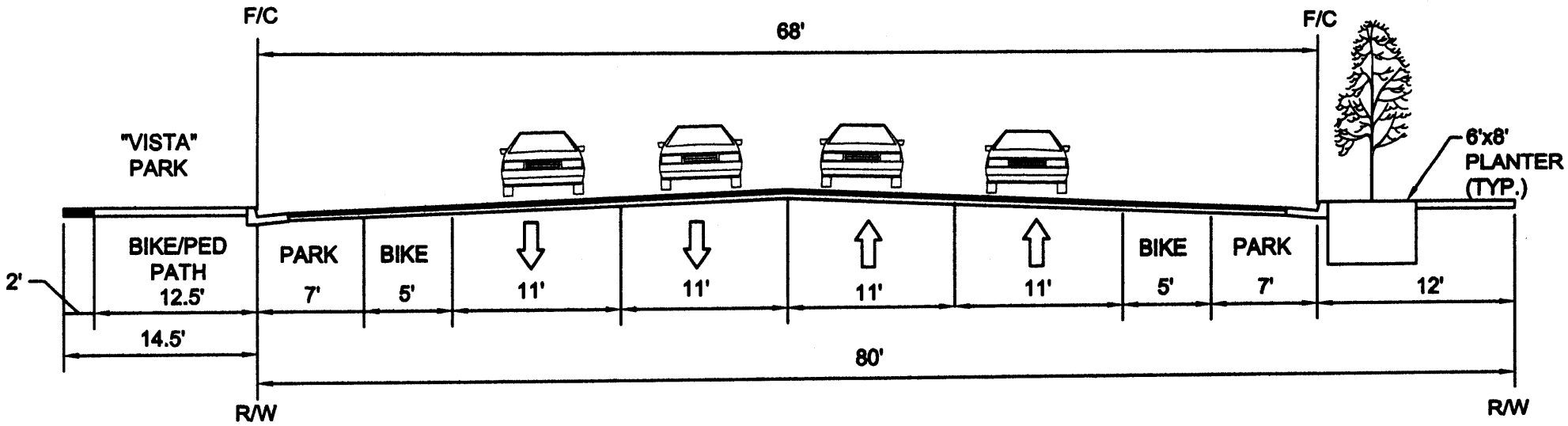
SOUTH PARK STREET (B/T CROCKER STREET & STANFORD STREET) - LOOKING EAST

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S11

Collector Street-Major

Bike Lane	Separate
Parking	Yes (both sides)



DESIGNATED STREET(S):

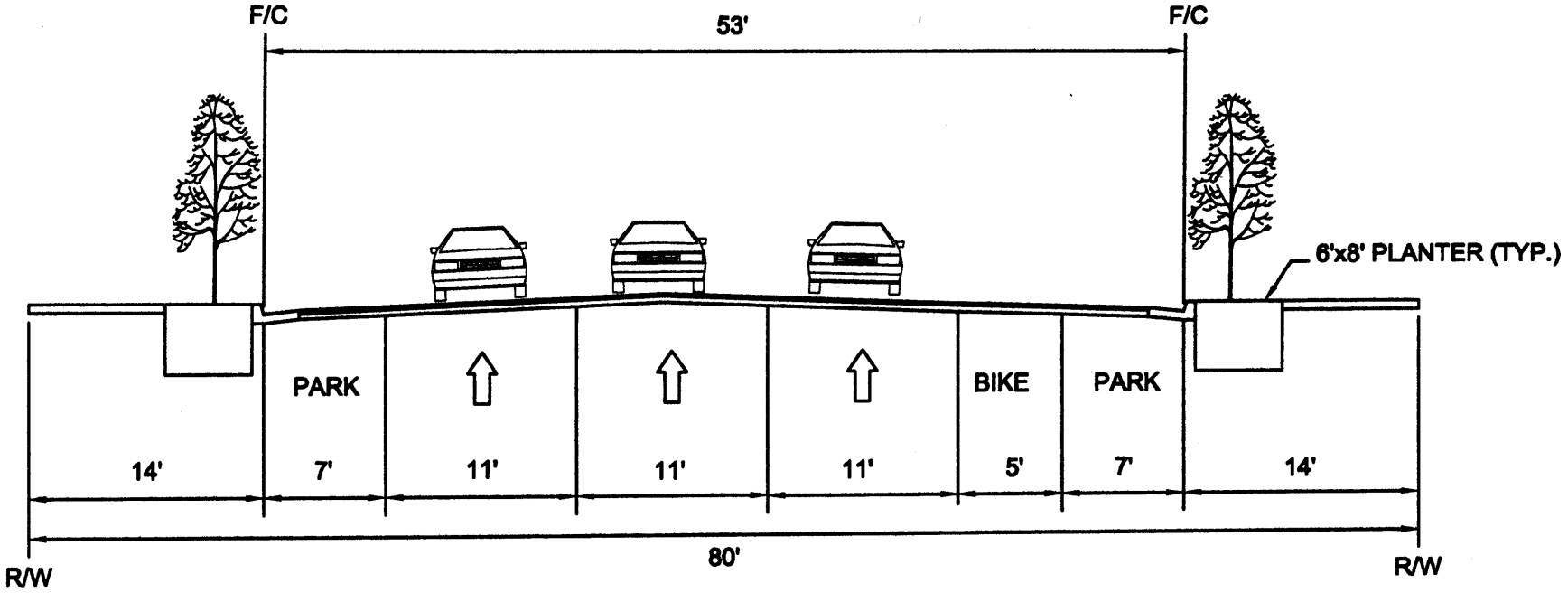
SOUTH PARK STREET (B/T STANFORD STREET& 5TH STREET) - LOOKING EAST

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S12

Three-Lane Arterial

Bike Lane	Yes
Parking	Yes



DESIGNATED STREET(S):

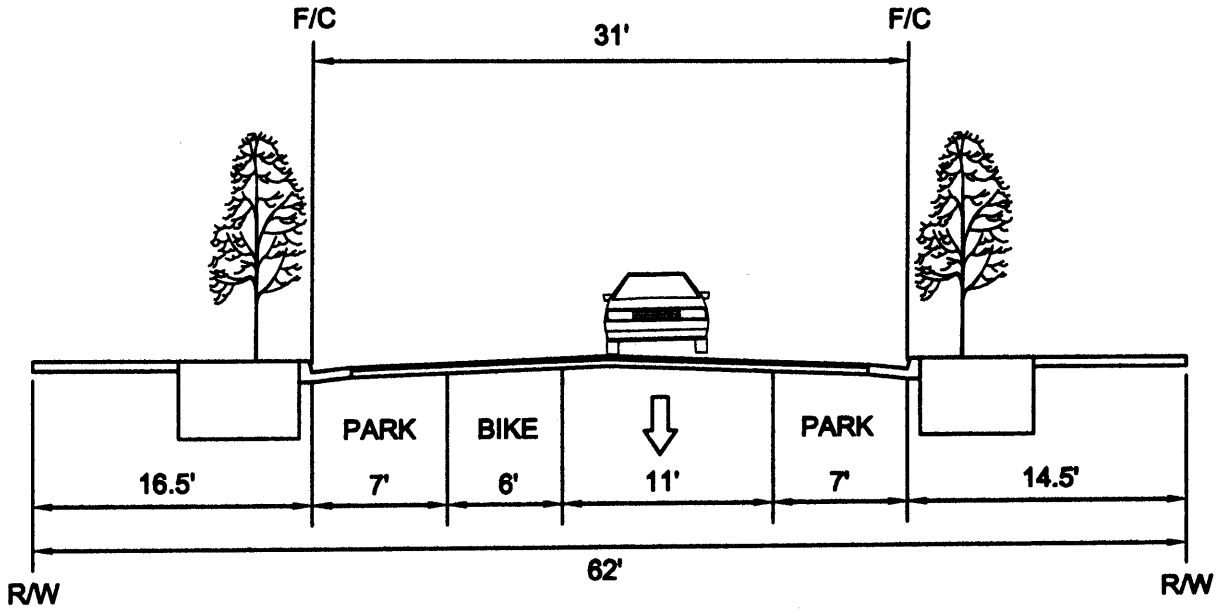
5TH STREET (NORTH OF CAMILLE LANE) - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S13

Collector Street - Minor

Bike Lane	Yes
Parking	Yes



DESIGNATED STREETS:

NORTH PARK STREET (B/T 5TH & NORTH 10TH STREETS) - LOOKING EAST
SOUTH PARK STREEET (B/T 5TH & NORTH 10TH STREETS) - LOOKING WEST

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORZ. N/A VERT. N/A
DATE: JULY 23, 2007
PROJECT NO. 097922000

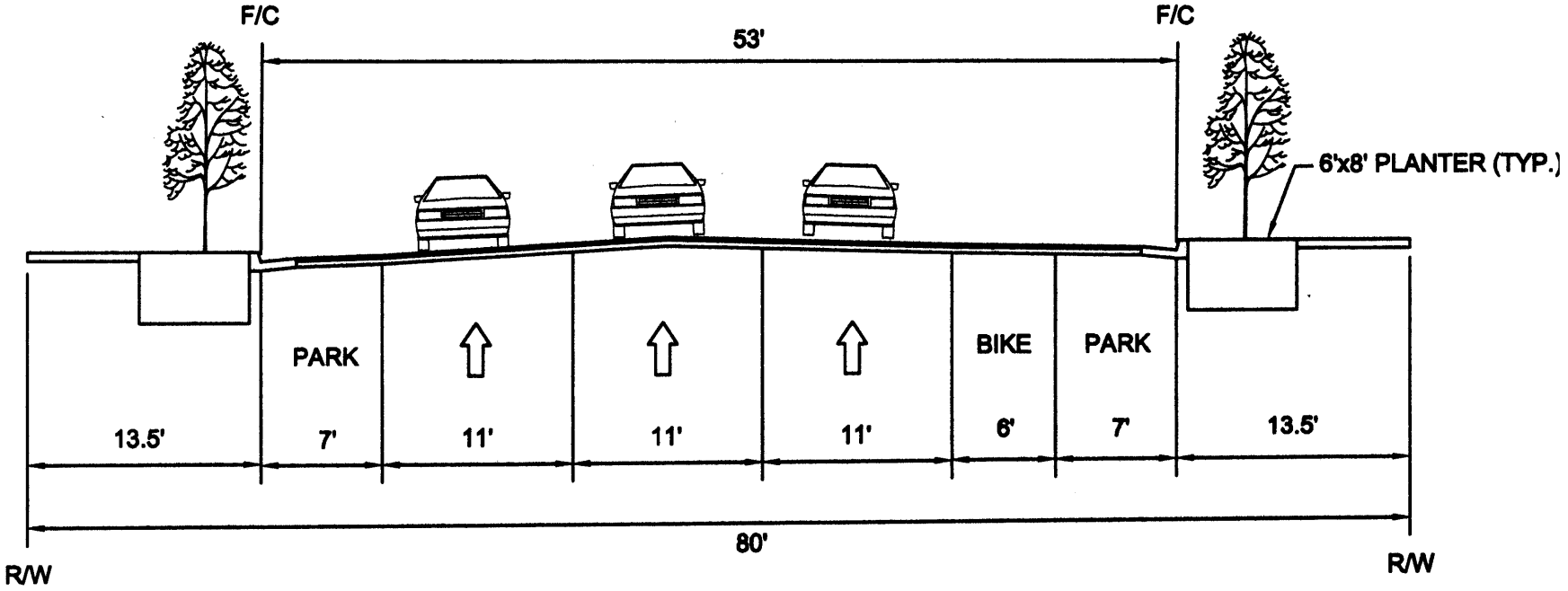
SHEET 13 OF 39

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S14

Three-Lane Arterial

Bike Lane	Yes
Parking	Yes



DESIGNATED STREET(S):

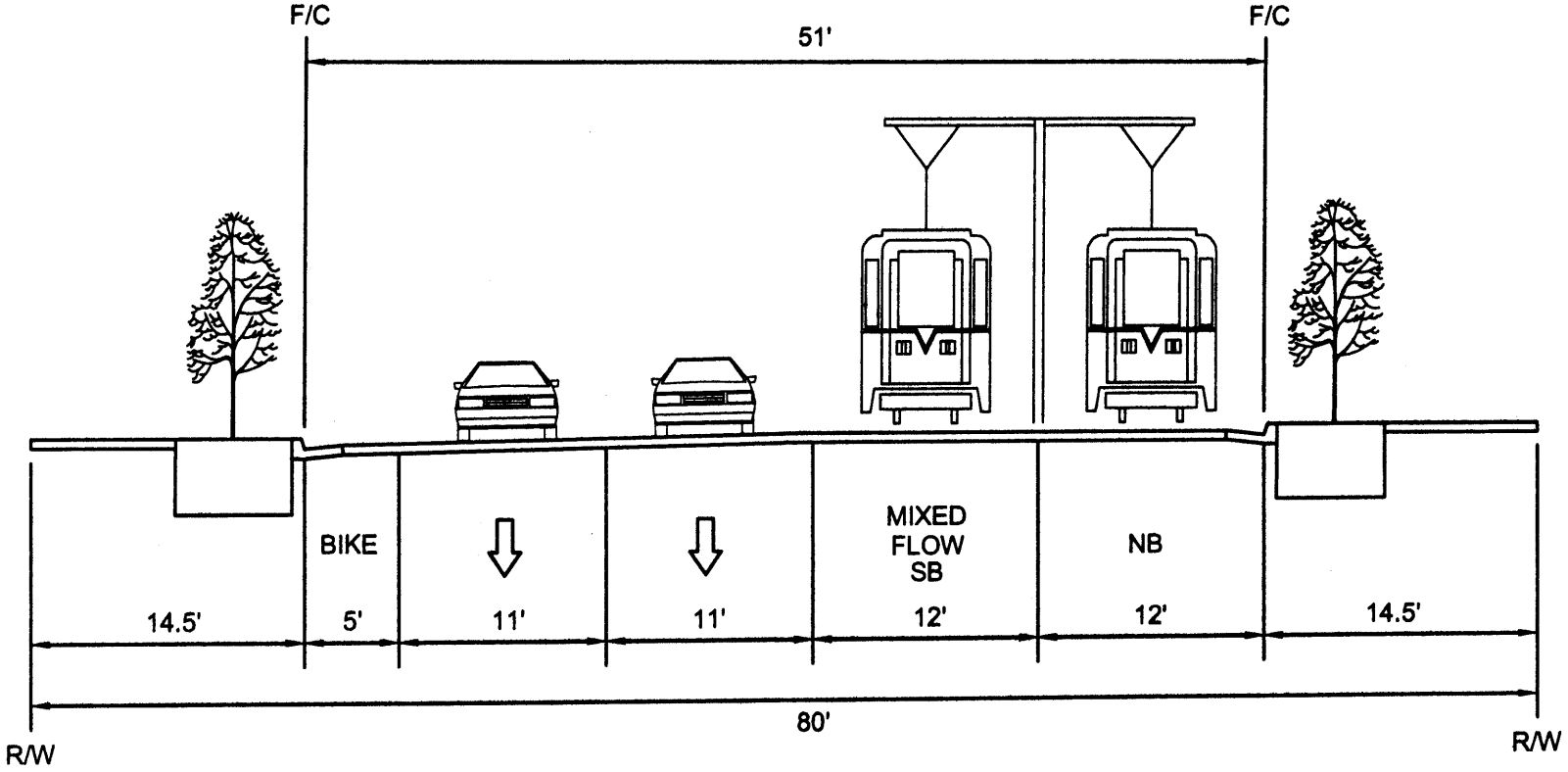
NORTH B STREET - LOOKING EAST

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S15

Three-Lane Arterial w/LRT

Bike Lane	Yes
Parking	No



DESIGNATED STREET(S):

7TH STREET (NORTH OF SOUTH PARK STREET) - LOOKING NORTH

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORIZ. N/A VERT. N/A
DATE: JULY 23, 2007
PROJECT NO. 097922000

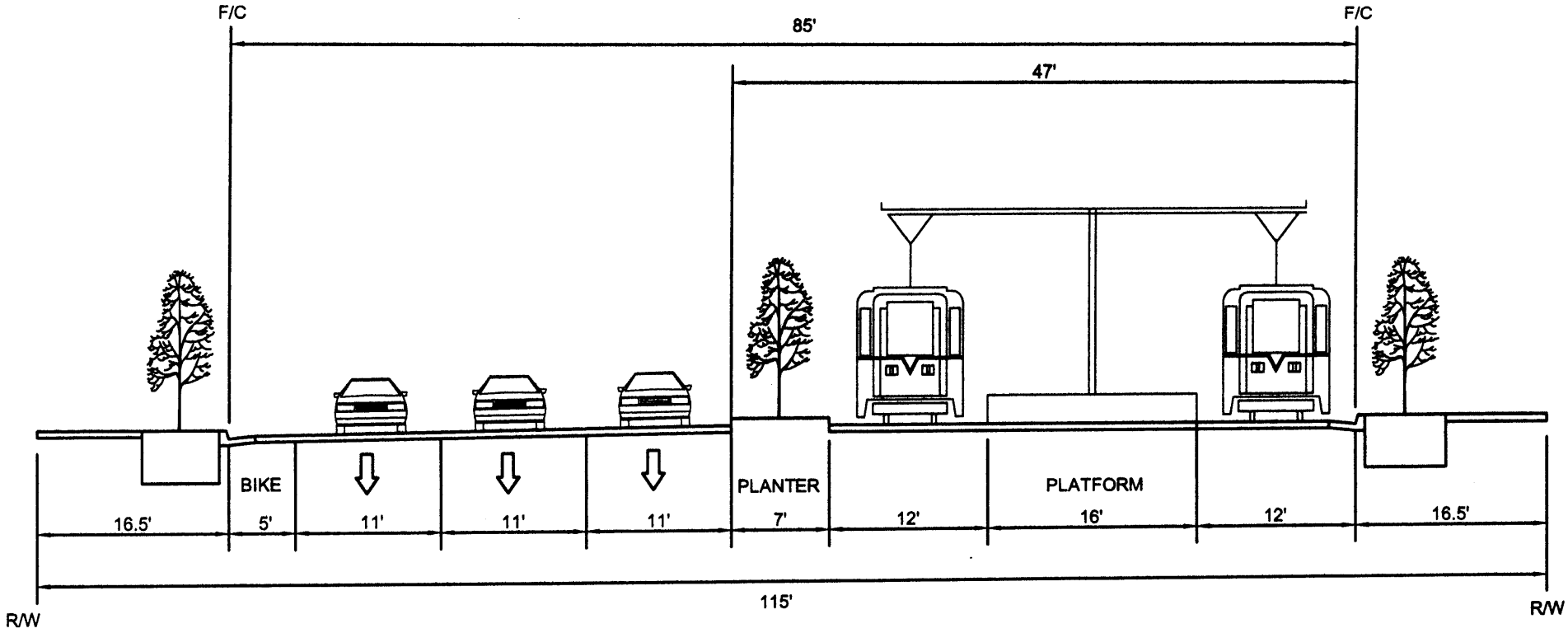
SHEET 15 OF 39

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street **S16**

Three-Lane Arterial w/LRT

Bike Lane	Yes
Parking	No



DESIGNATED STREET(S):

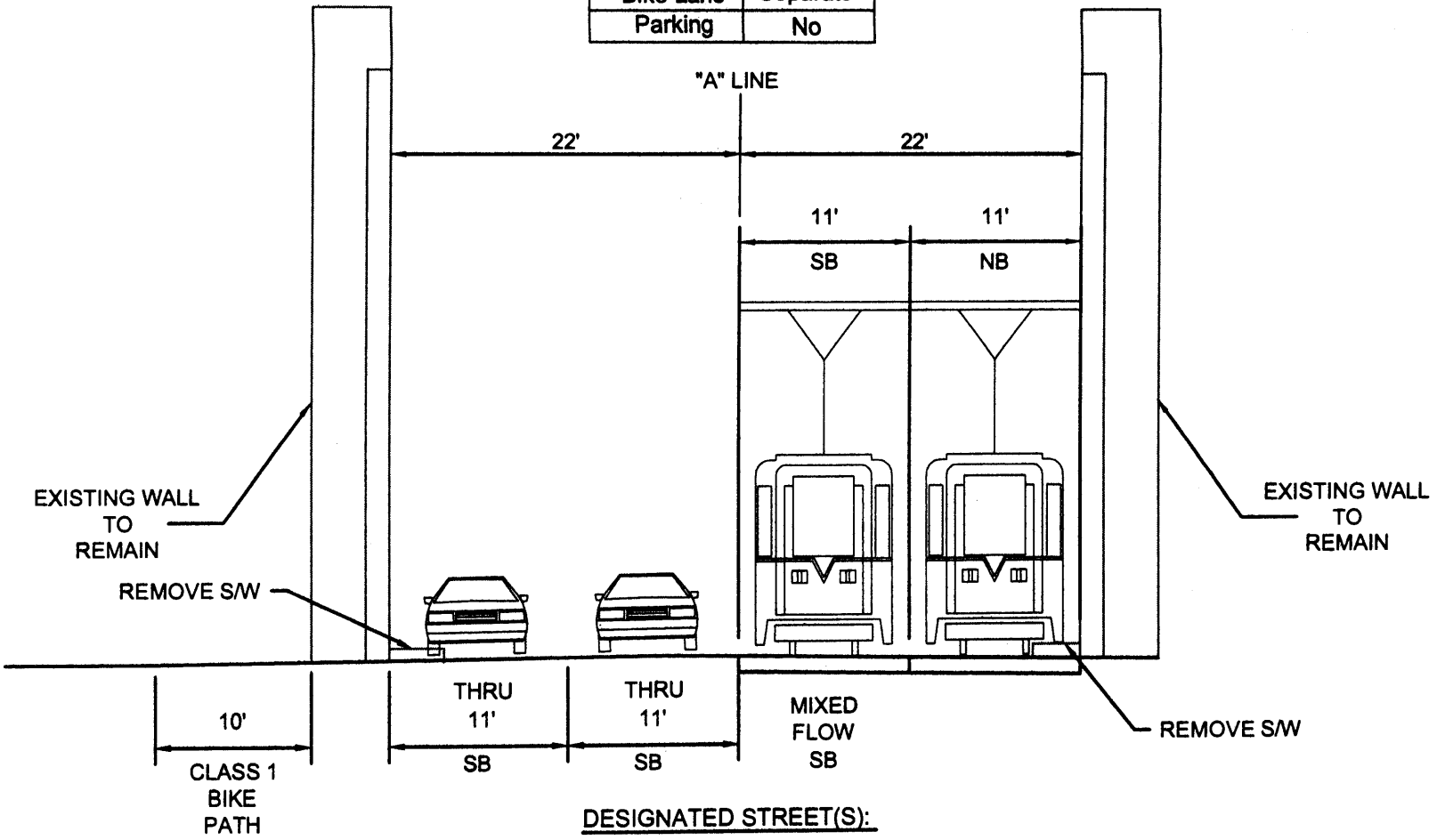
7TH STREET (B/T RAILYARDS BLVD. & SOUTH PARK ST.) - LOOKING NORTH

TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S17

Three-Lane Arterial w/ LRT

Bike Lane	Separate
Parking	No



DESIGNATED STREET(S):

7TH STREET (B/T F STREET & UPPR CROSSING) - LOOKING NORTH
7TH STREET (B/T UPPR CROSSING & RAILYARDS BLVD.) - LOOKING NORTH

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORIZ. N/A VERT. N/A
DATE: JULY 23, 2007
PROJECT NO. 097922000

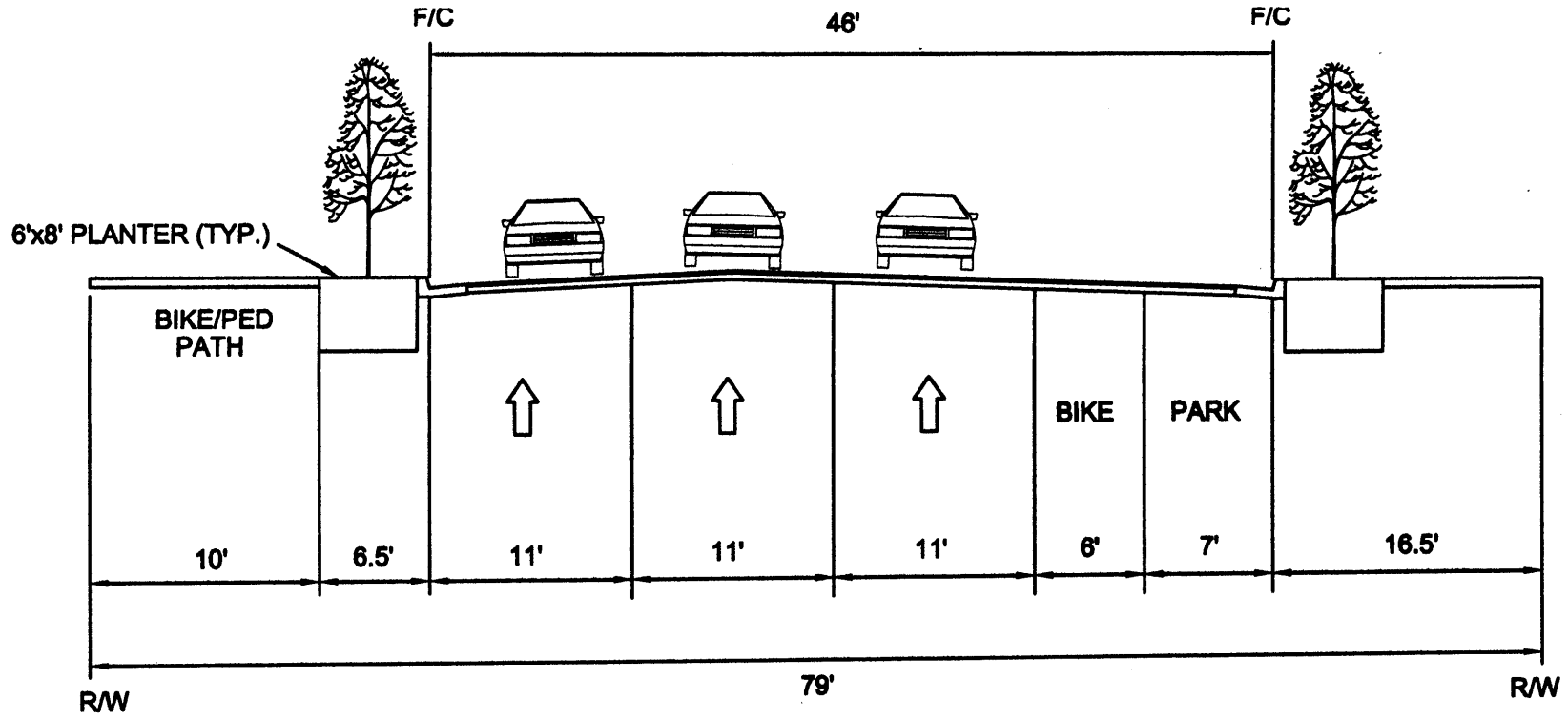
SHEET 17 OF 39

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S18

Three-Lane Arterial

Bike Lane	Yes
Parking	Yes



DESIGNATED STREET(S):

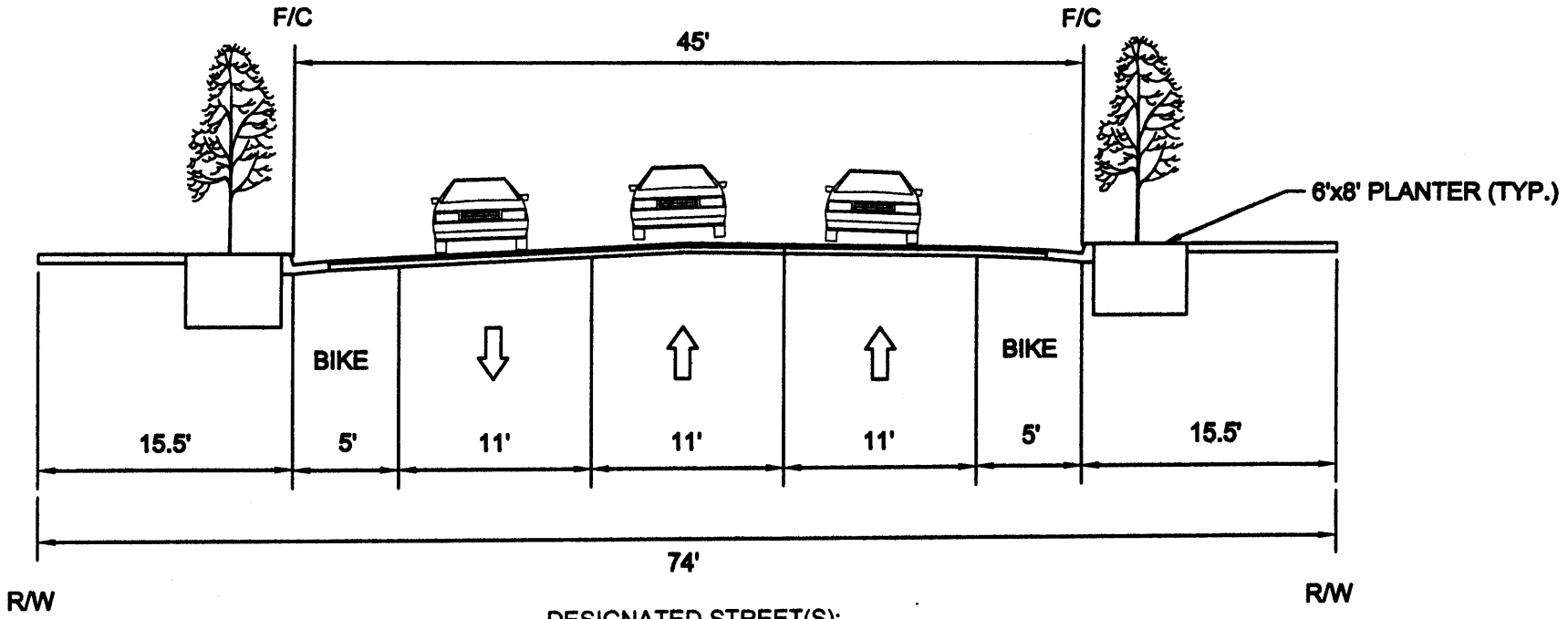
RAILYARDS BOULEVARD (B/T 7TH STREET & NORTH 10TH STREET) - LOOKING WEST

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S19

Collector Street - Major

Bike Lane	Yes
Parking	No



DESIGNATED STREET(S):

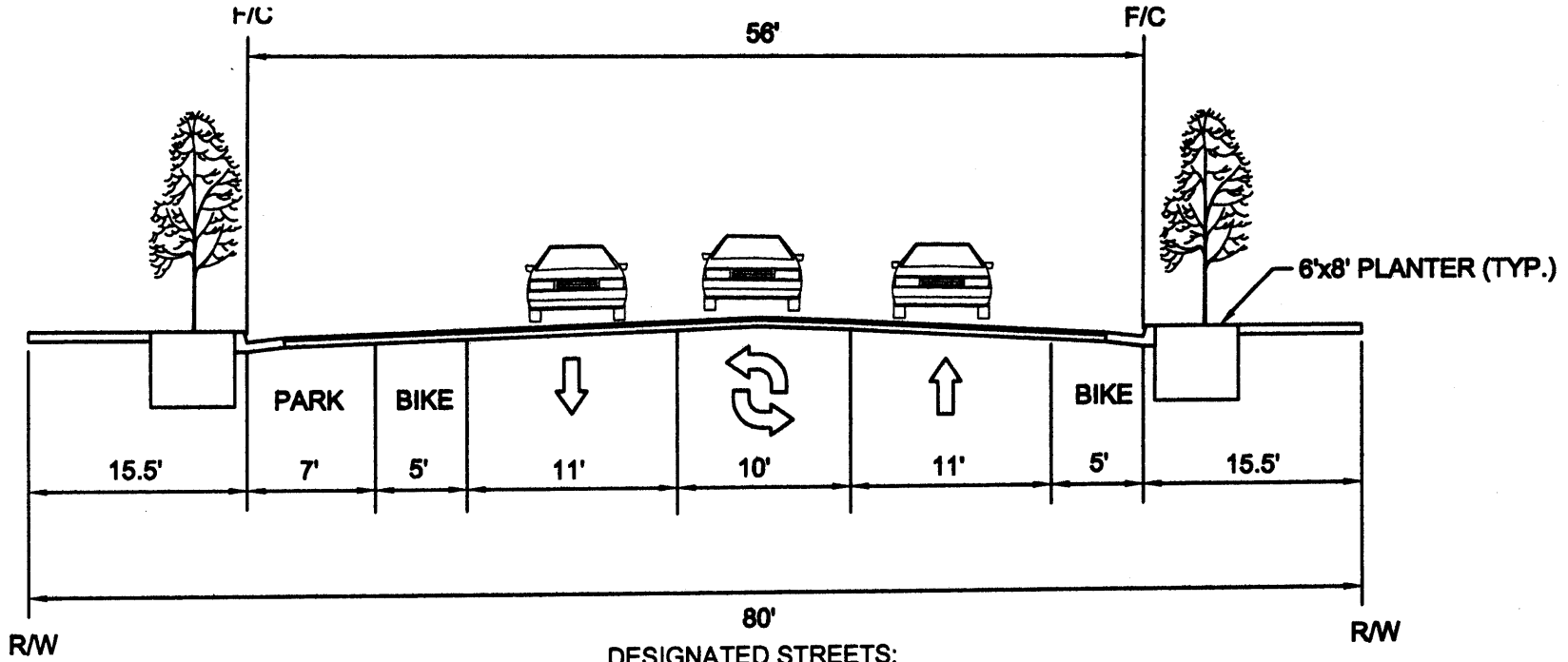
NORTH 10TH STREET - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S20

Collector Street - Minor

Bike Lane	Yes
Parking	Yes



DESIGNATED STREETS:

6TH STREET (UPRR TO RAILYARDS BLVD.) - LOOKING NORTH
6TH STREET (H STREET TO G STREET)

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORIZ. N/A VERT. N/A
DATE: JULY 23, 2007
PROJECT NO. 097922000

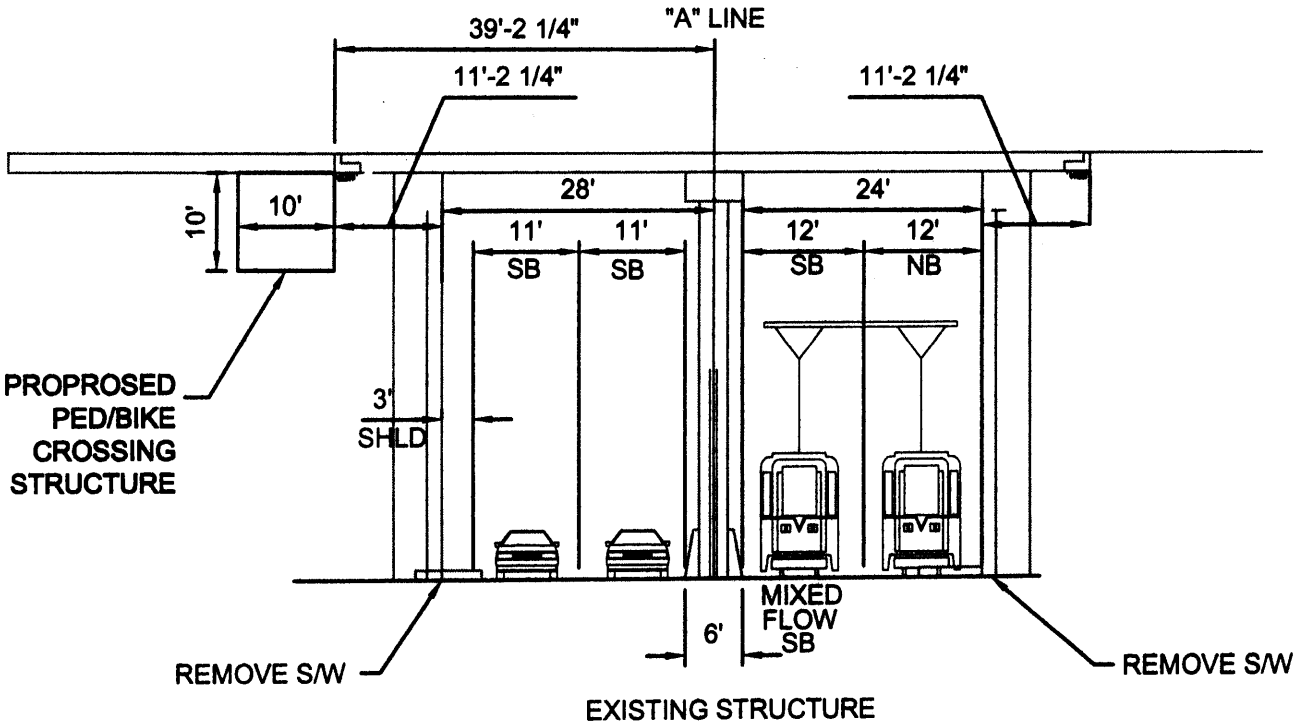
SHEET 20 OF 39

TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S21

Three-Lane Arterial w/ LRT

Bike Lane	Separate
Parking	No



EXISTING STRUCTURE

DESIGNATED STREET(S):

7TH STREET @ UPRR CROSSING - LOOKING NORTH

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORIZ. N/A VERT. N/A
DATE: JULY 23, 2007
PROJECT NO. 097922000

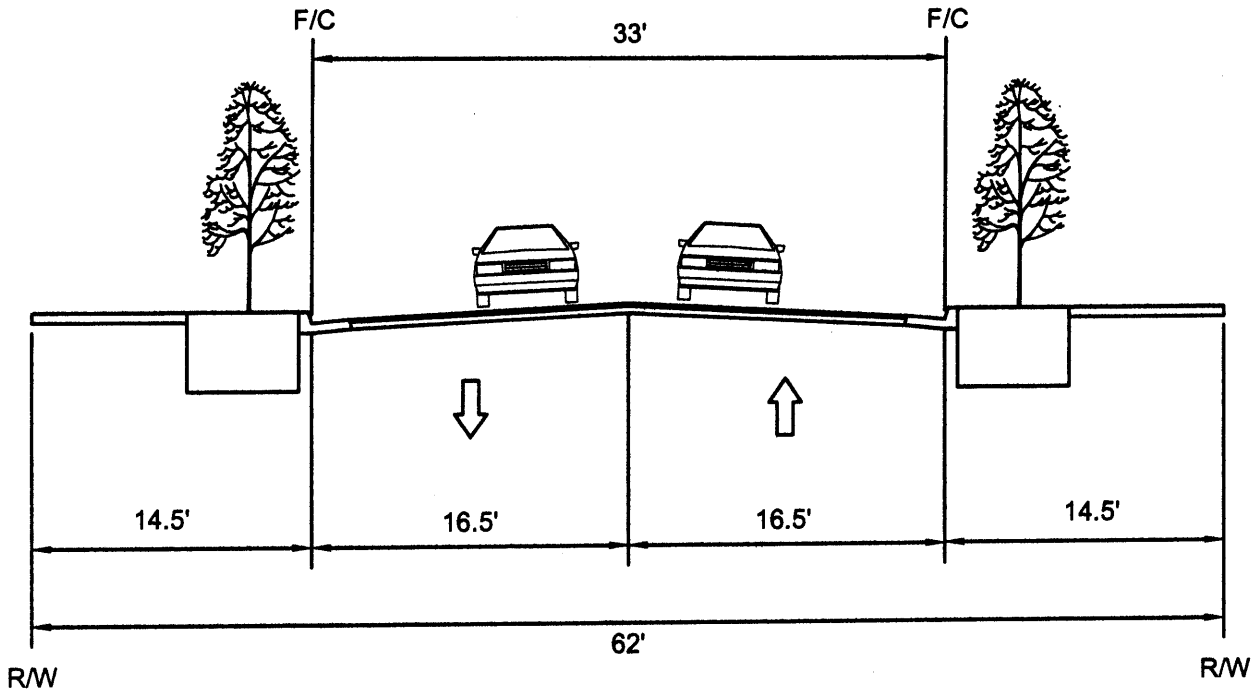
SHEET 21 OF 39

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S22

Local - Commercial Street

Bike Lane	No
Parking	No



DESIGNATED STREET(S):

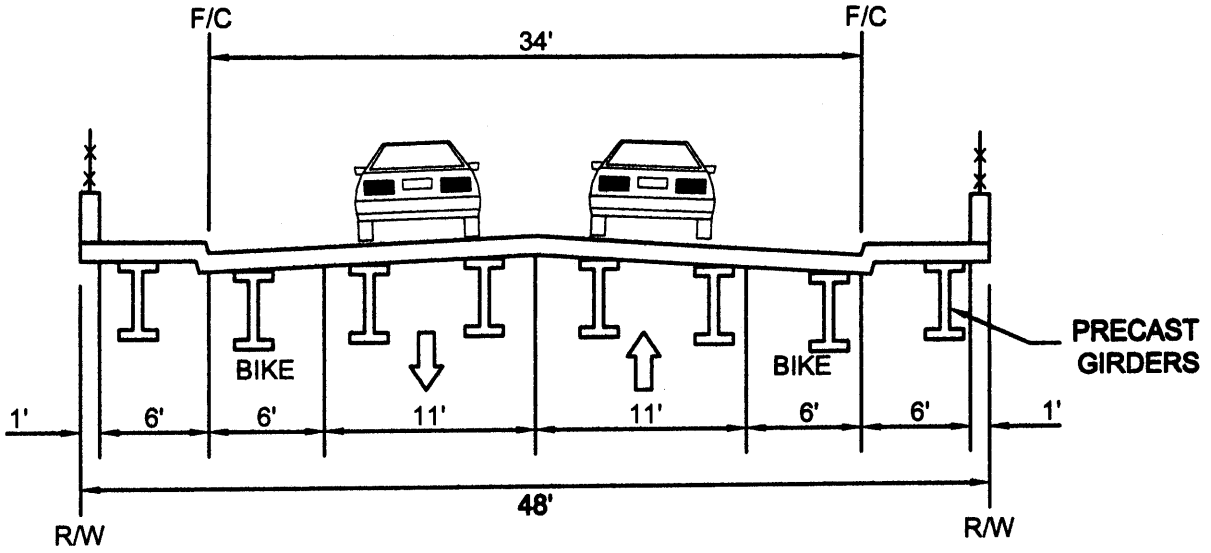
STEVENS STREET

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S23

Collector Street - Minor

Bike Lane	Yes
Parking	No



DESIGNATED STREET(S):

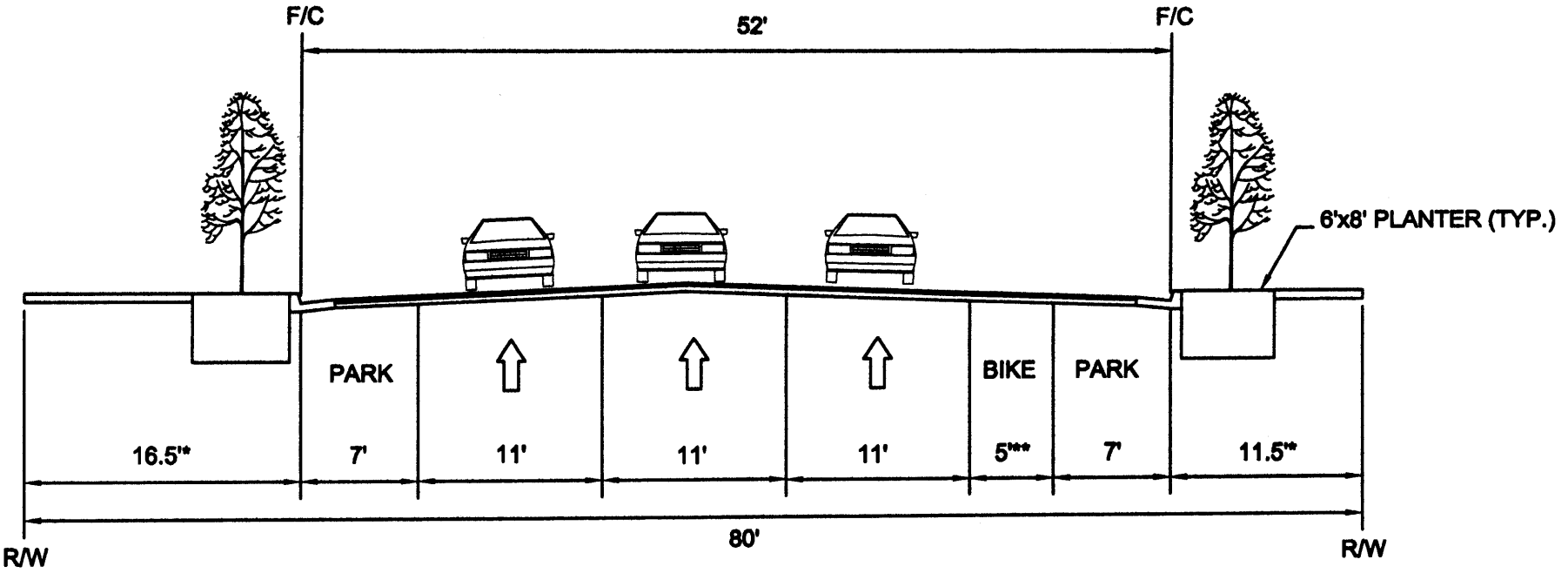
6TH STREET @ UPRR CROSSING - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S24

Three-Lane Arterial

Bike Lane	Yes
Parking	Yes



DESIGNATED STREET(S):

5th STREET (SOUTH OF CAMILLE LANE) - LOOKING NORTH

* WEST SW = 8.5' SOUTH OF H STREET
EAST SW = 8.5' SOUTH OF H STREET

** BIKE LANE = 6' SOUTH OF H STREET

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORIZ. N/A VERT. N/A
DATE: APRIL 6, 2007
PROJECT NO. 097922000

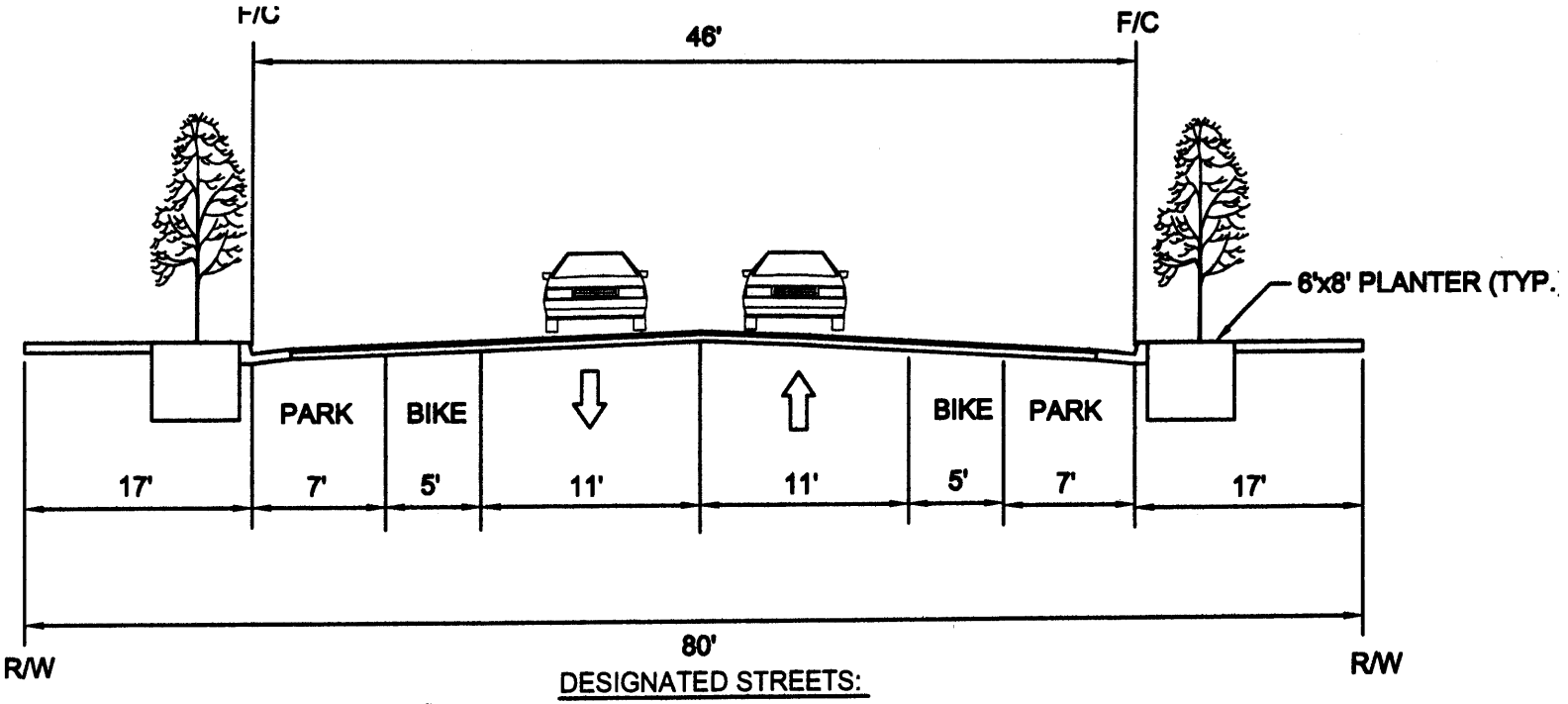
SHEET 24 OF 39

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S25

Collector Street - Minor

Bike Lane	Yes
Parking	Yes



DESIGNATED STREETS:

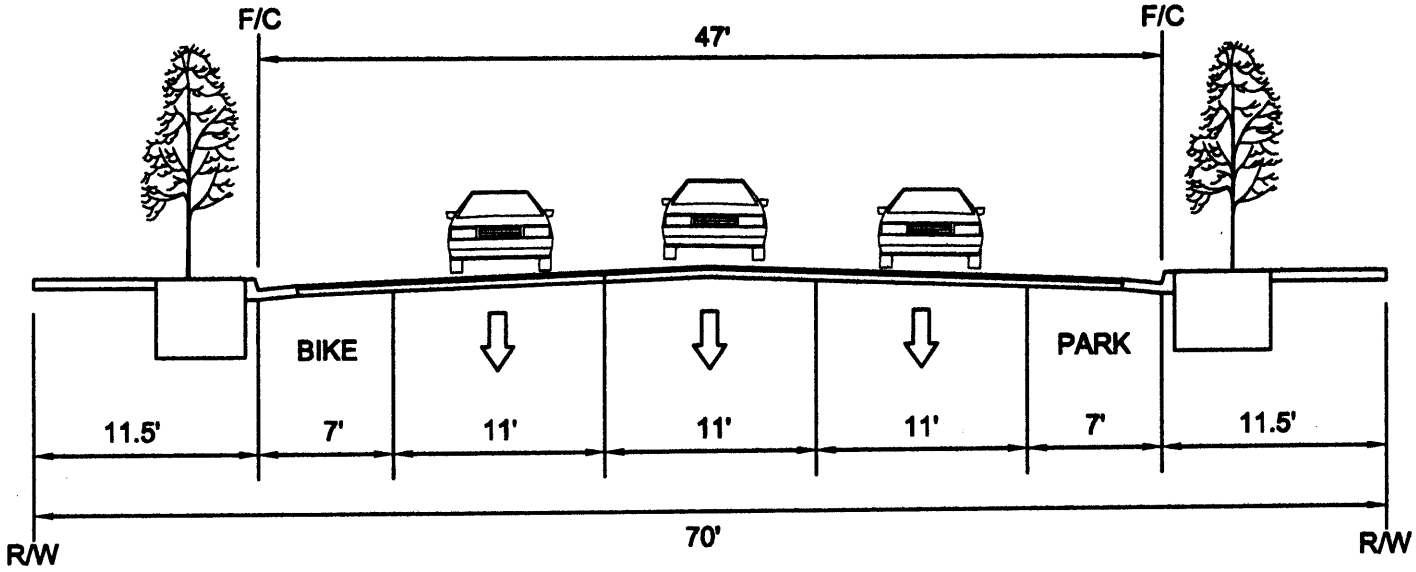
6TH STREET (G STREET TO UPRR) - LOOKING NORTH
6TH STREET (UPRR TO STEVENS)

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S26

Three-Lane Arterial

Bike Lane	Yes
Parking	Yes



DESIGNATED STREETS:

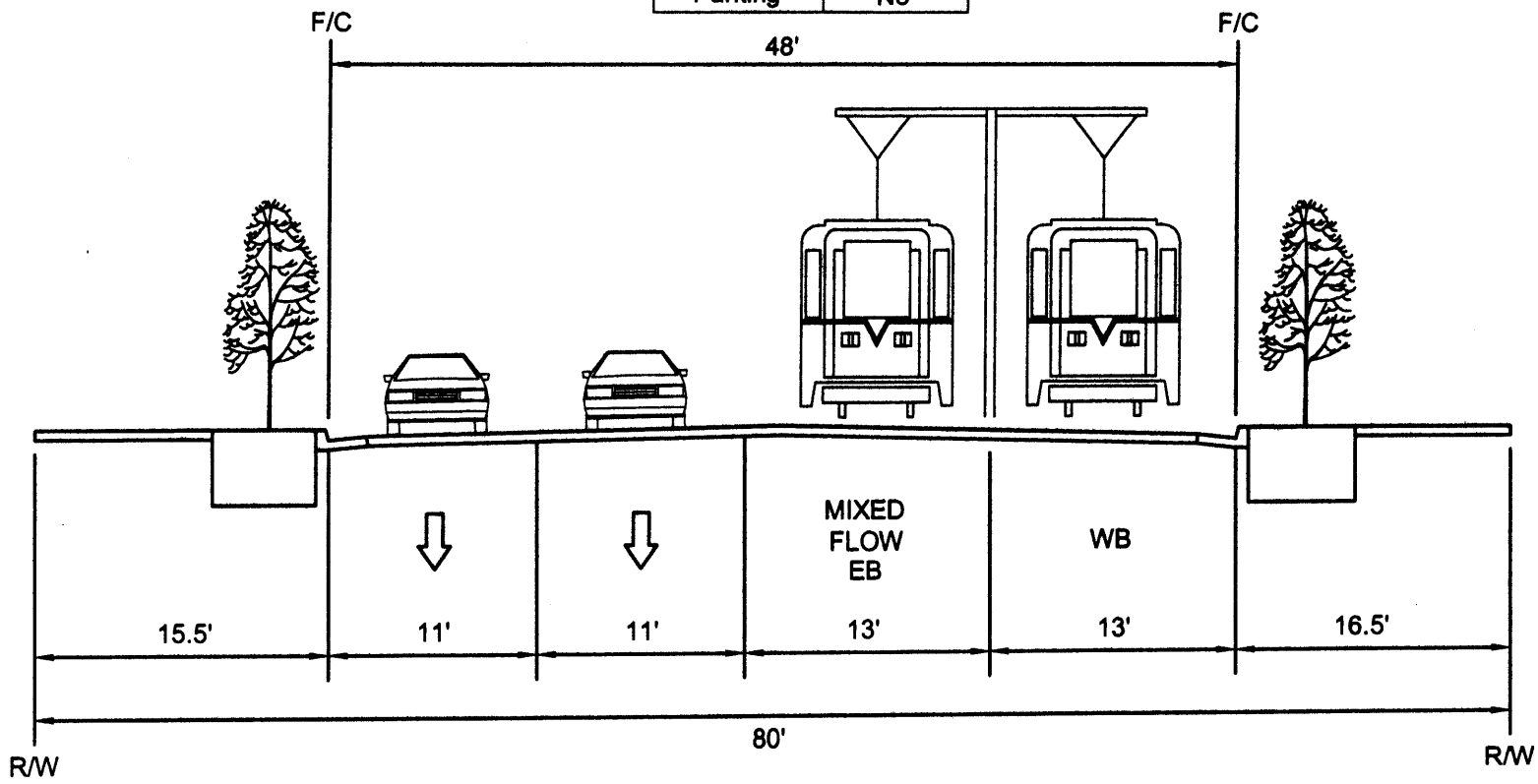
7TH STREET (B/T H STREET & F STREET) - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S27

Collector Street - Major

Bike Lane	No
Parking	No



DESIGNATED STREET(S):

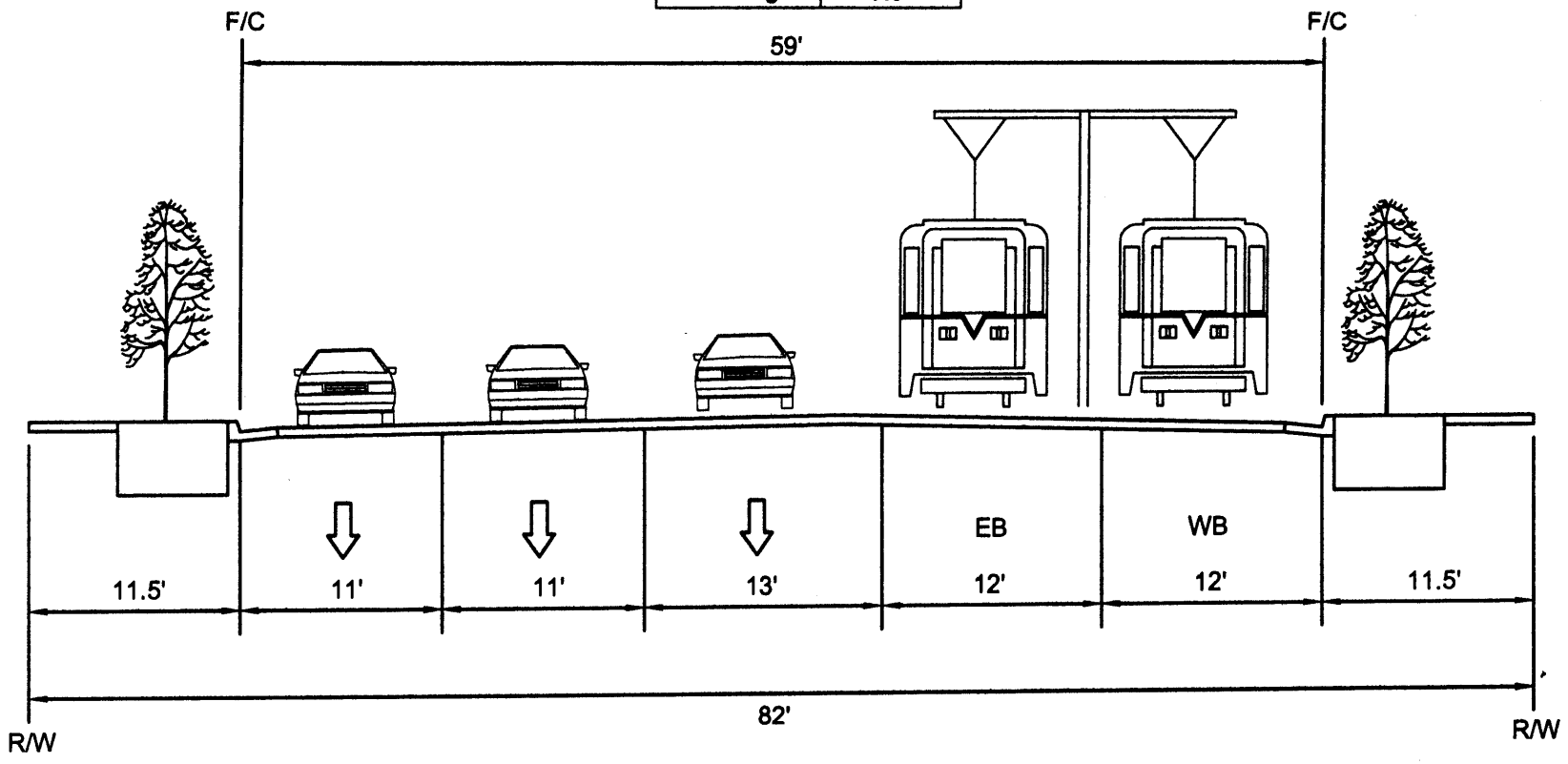
H STREET (B/T 6TH & 7TH STREET) - LOOKING WEST

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S28

Collector Street - Major

Bike Lane	No
Parking	No



DESIGNATED STREET(S):

H STREET (B/T 5TH & 6TH STREET) - LOOKING WEST

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORIZ. N/A VERT. N/A
DATE: APRIL 6, 2007
PROJECT NO. 097922000

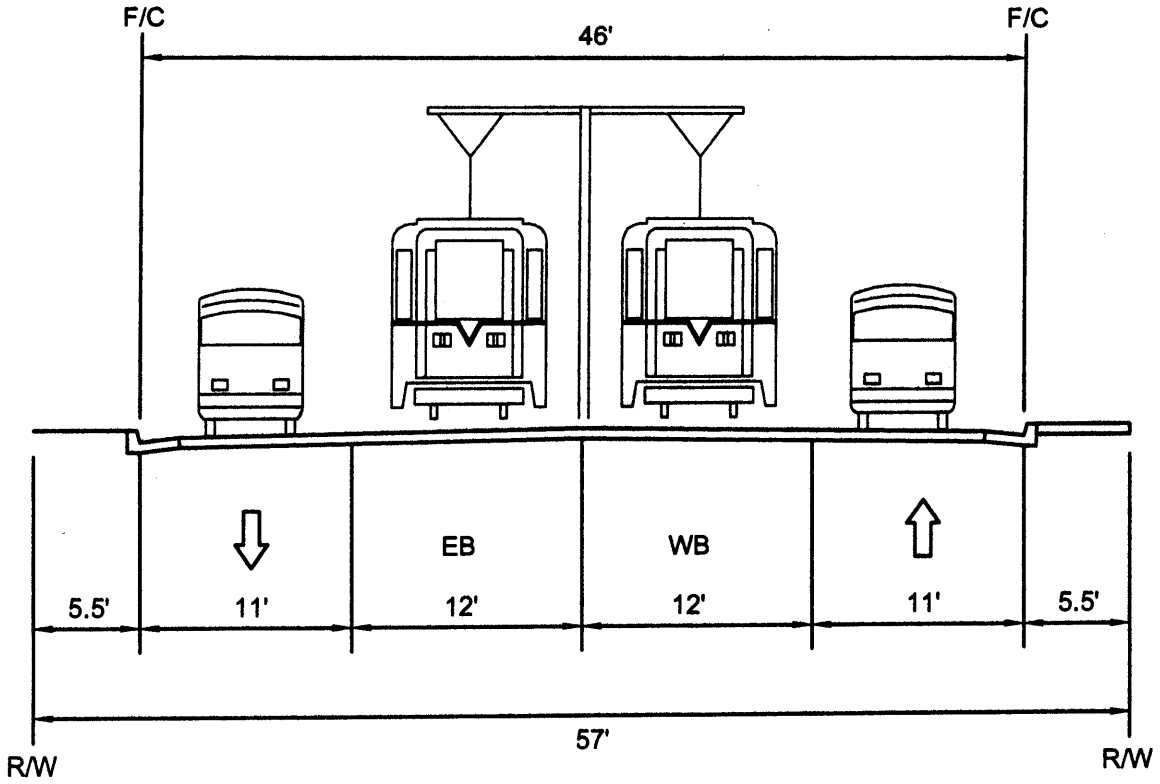
SHEET 28 OF 39

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S29

Local-Industrial Street

Bike Lane	No
Parking	No



DESIGNATED STREET(S):

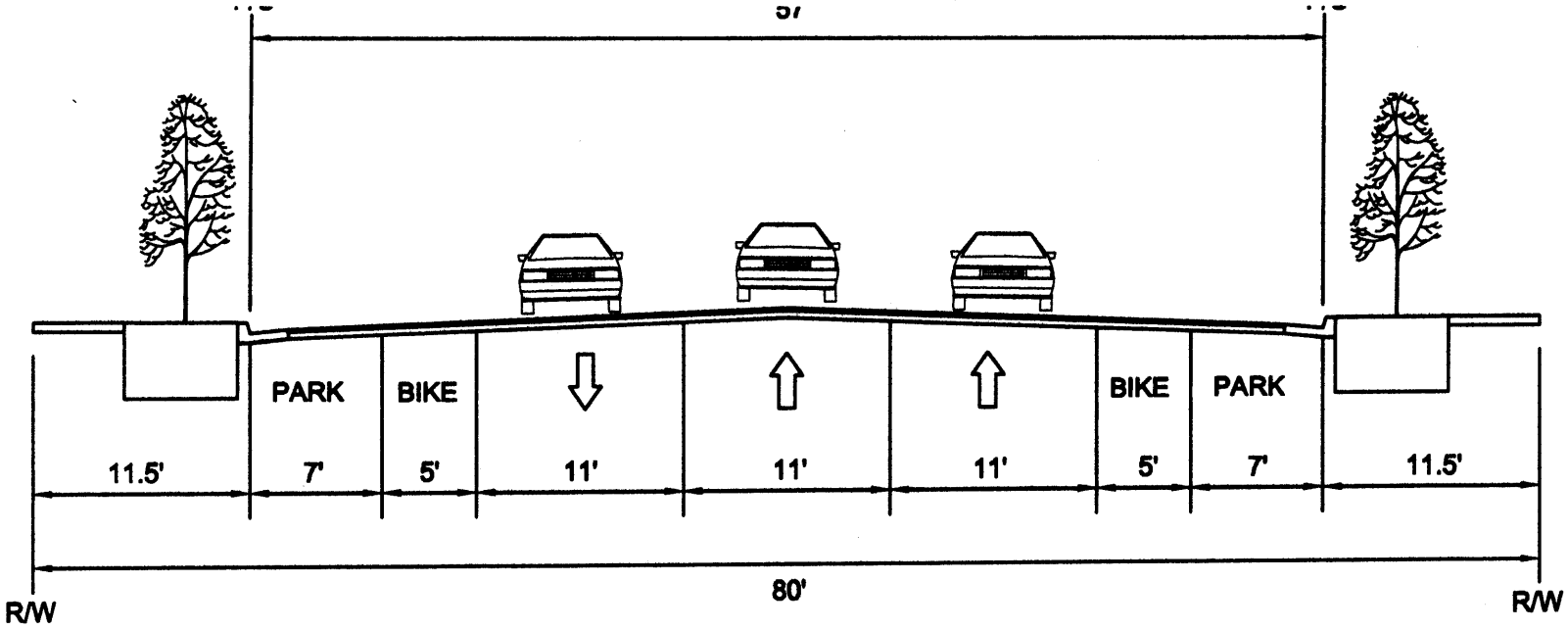
F STREET (B/T 6TH & 7TH STREET) - LOOKING WEST

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S30

Collector Street - Major

Bike Lane	Yes
Parking	Yes



DESIGNATED STREETS:

G STREET (B/T 7TH STREET & 5TH STREET) - LOOKING WEST

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORIZ. N/A VERT. N/A
DATE: JULY 10, 2007
PROJECT NO. 097922000

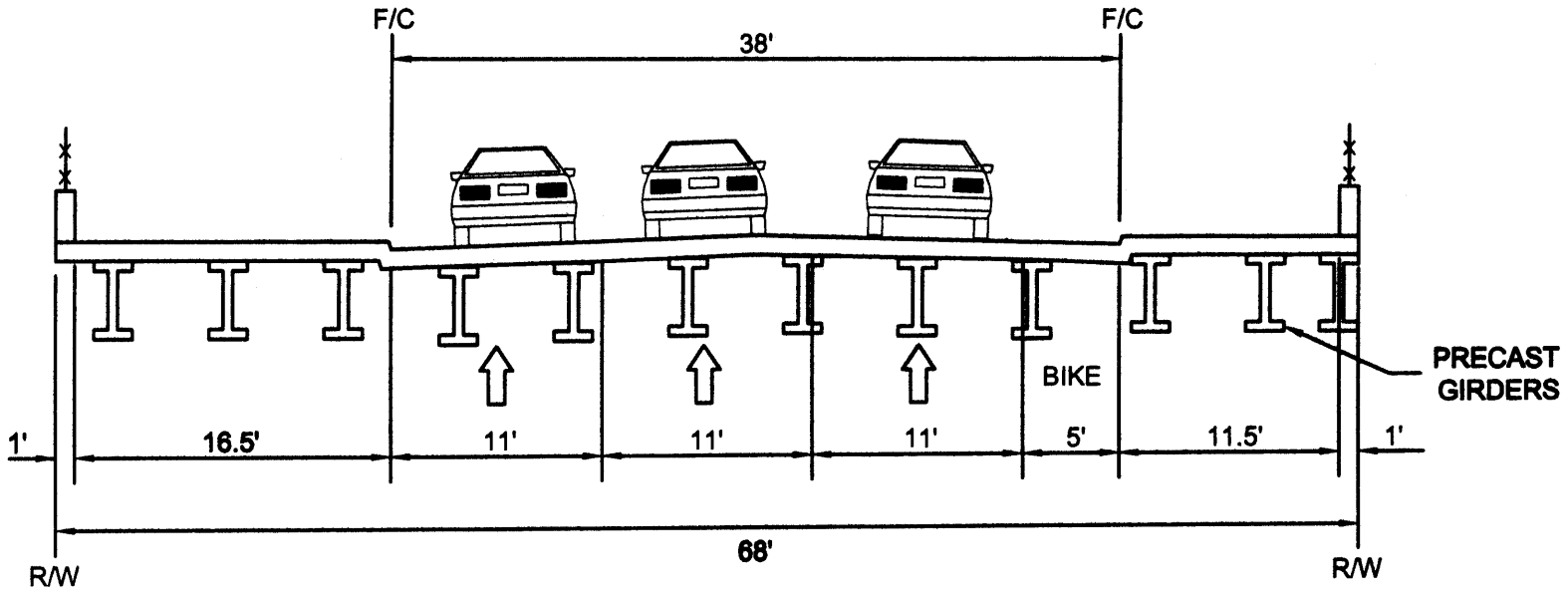
SHEET 30 OF 39

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S31

Three-Lane Arterial

Bike Lane	Yes
Parking	No



DESIGNATED STREET(S):

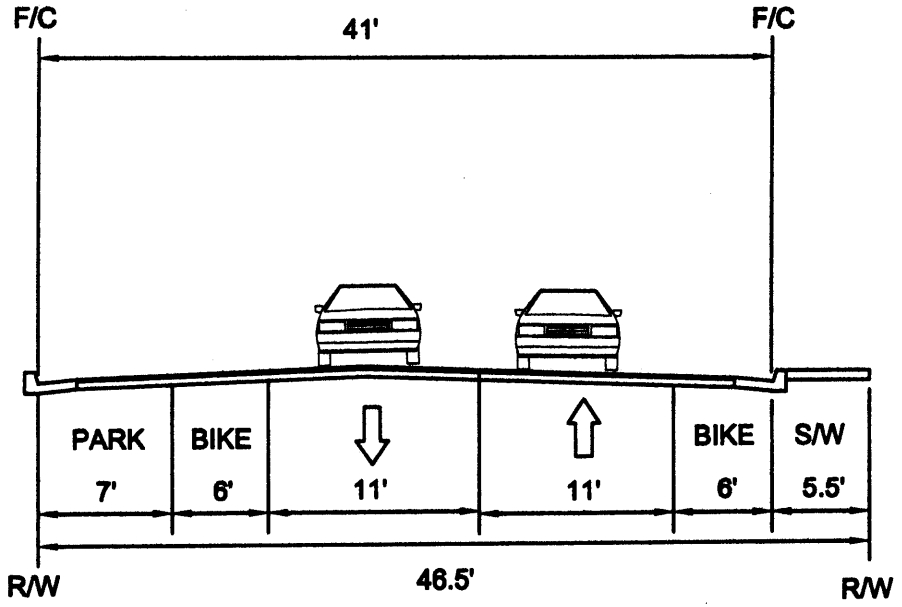
5TH STREET @ UPRR CROSSING - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S32

Collector Street - Minor

Bike Lane	Yes
Parking	Yes



DESIGNATED STREETS:

JIBBOOM (B/T CAMILLE AND RAILYARDS) - LOOKING NORTH

Kimley-Horn and Associates, Inc.
Engineering, Planning, and Environmental Consultants

THOMAS ENTERPRISES INC.

THE RAILYARDS
TYPICAL STREET SECTIONS
SACRAMENTO, CALIFORNIA

SCALE: HORIZ. N/A VERT. N/A
DATE: JULY 20, 2007
PROJECT NO. 097922000

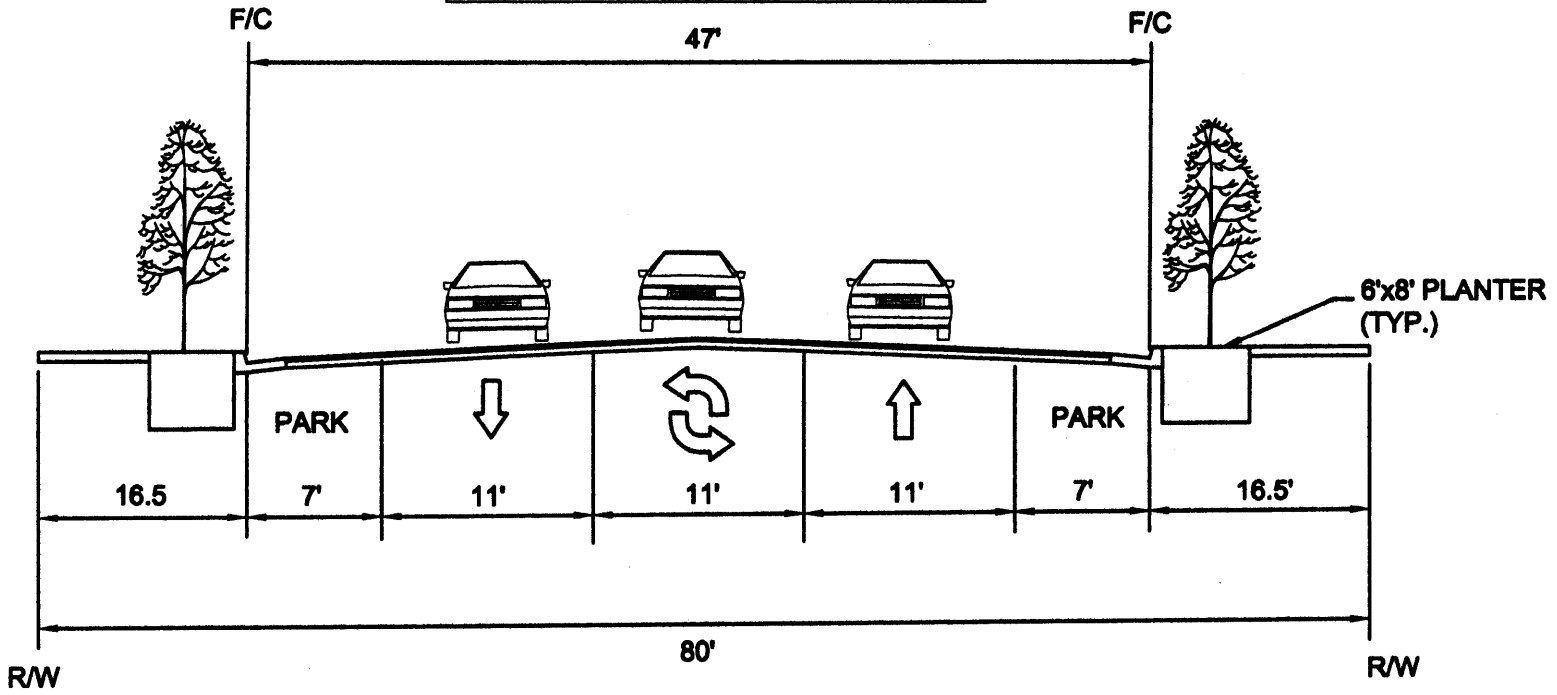
SHEET 32 OF 39

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S33

Local - Commercial Street

Bike Lane	Shared Bike/Car Travel Lane
Parking	Yes



DESIGNATED STREETS:

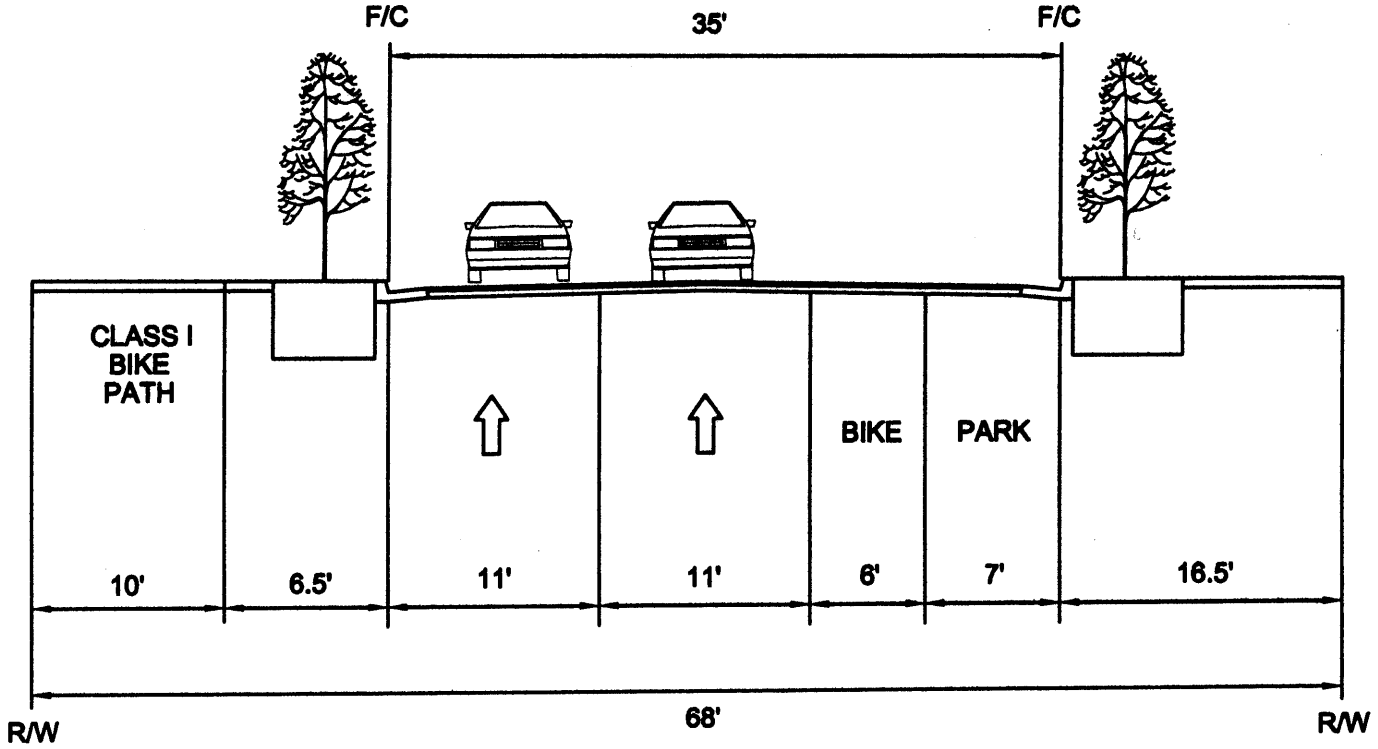
CROCKER STREET
6TH STREET (RAILYARDS TO NORTH B STREET)

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S34

Two-Lane Arterial

Bike Lane	Yes
Parking	Yes



DESIGNATED STREET(S):

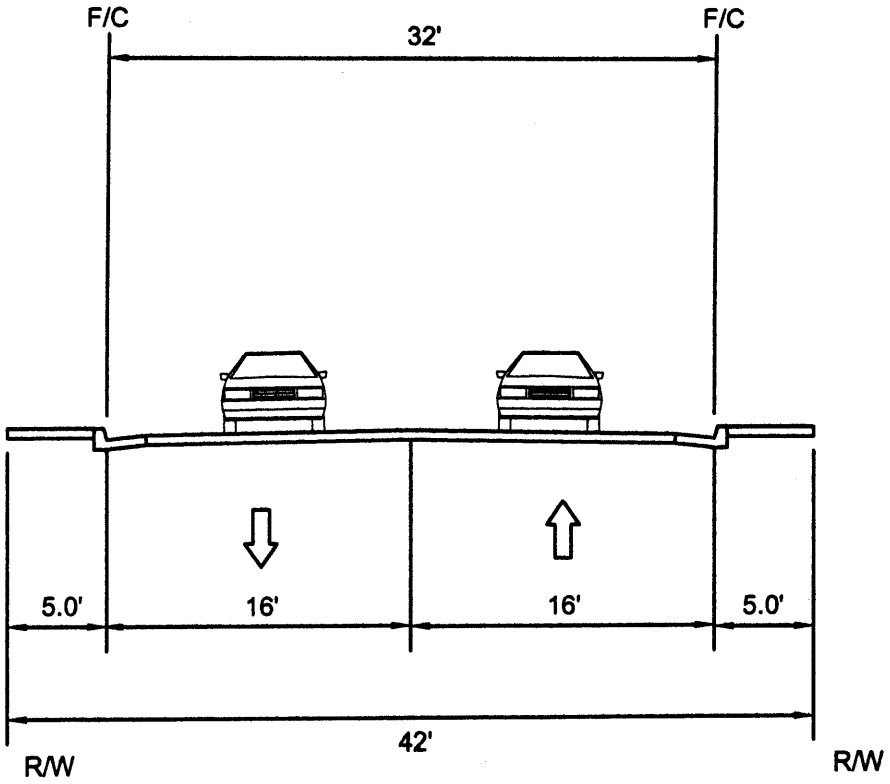
RAILYARDS BOULEVARD (B/T NORTH 12TH STREET & NORTH 10TH STREET) - LOOKING WEST

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S35

Local-Industrial Street

Bike Lane	No
Parking	No



DESIGNATED STREET(S):

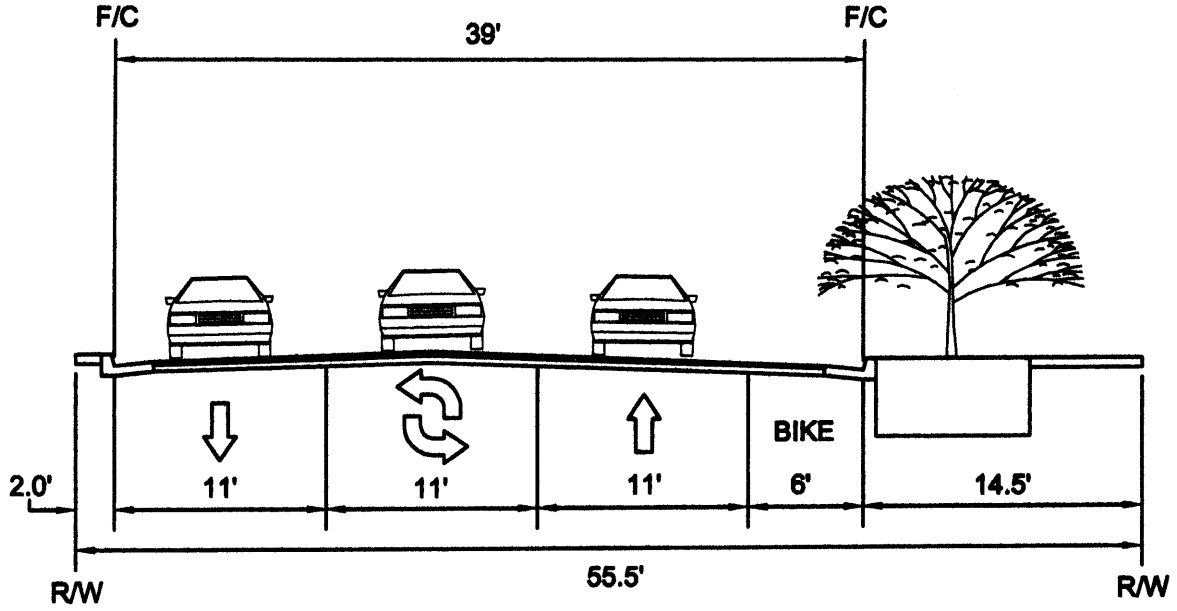
I STREET (CONNECTS TO I STREET BRIDGE) - LOOKING WEST

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S36

Collector Street - Minor

Bike Lane	Yes
Parking	No



DESIGNATED STREETS:

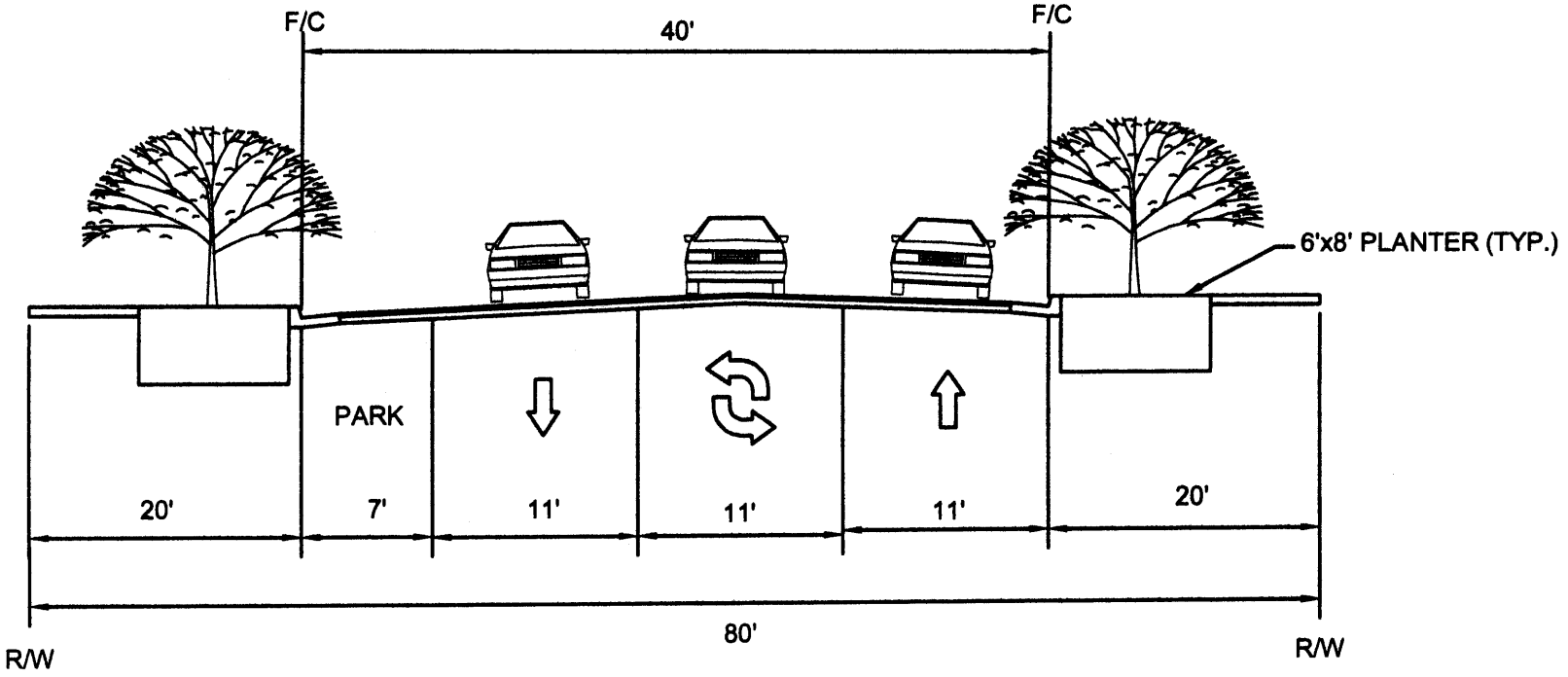
BERCUT DRIVE (NORTH OF SOUTH PARK STREET) - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S38

Local - Commercial Street

Bike Lane	No
Parking	Yes (west side only)



DESIGNATED STREET(S):

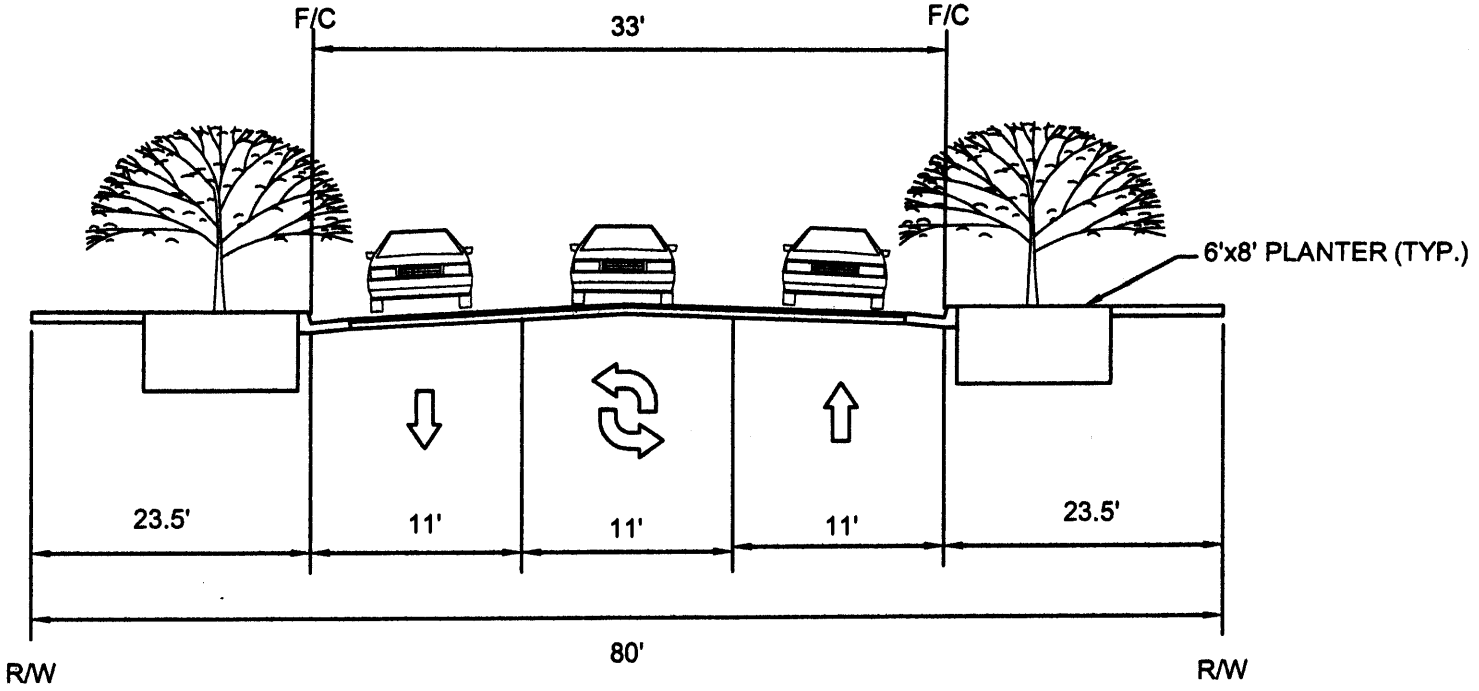
HUNTINGTON STREET (LOCAL-COMMERICAL STREET) - LOOKING NORTH

PEDESTRIAN FRIENDLY STREET STANDARDS
TYPICAL CROSS-SECTIONS
CITY OF SACRAMENTO

Street S39

Local - Commercial Street

Bike Lane	No
Parking	No



DESIGNATED STREET(S):

STANFORD STREET (LOCAL-COMMERICAL STREET)

APPENDIX F
SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE SPECIFIC PLAN AREA

APPENDIX TABLE F-1

SPECIAL STATUS SPECIES AND HABITATS POTENTIALLY OCCURRING WITHIN THE RAILYARDS SPECIFIC PLAN AREA

Common Name	Scientific Name	Status Fed/CA/CNPS	Habitat	Likelihood of Occurrence Within the Project Site
Plants				
Alkali milk-vetch	*Astragalus tener* var. *tener*	none/none/1B	Alkali playas, vernal pools and adjacent grasslands.	**None.** No suitable habitat exists on the project site.
Heartscale	*Atriplex cordulata*	none/none/1B	Shadscale scrub and Valley grasslands, usually on wet alkali soils.	**None.** No suitable habitat exists on the project site.
Brittlescale	*Atriplex depressa*	none/none/1B	Shadscale scrub, alkali sinks and Valley grasslands on alkali soils.	**None.** No suitable habitat exists on the project site.
San Joaquin saltbush	*Atriplex joaquiniana*	none/none/1B	Shadscale scrub and Valley grasslands on alkali soils.	**None.** No suitable habitat exists on the project site.
Palmate-bracted bird's-beak	*Cordylanthus palmatus*	none/none/1B	Alkali or saline wetlands. Requires presence of salt grass (*Distichlis spicata*) as a host plant.	**None.** No suitable habitat exists on the project site.
Rose-mallow	*Hibiscus lasiocarpus*	none/none/2	Margins of ponds and marshes and riparian areas.	**Low** The river bank is covered by concrete chunks. No vegetation, except for trees and willows is found in this area.
Heckard's peppergrass	*Lepidium latipes* var. *heckardi*	none/none/1B	Wet grasslands on alkali soils.	**None.** No suitable habitat exists on the project site.
Sanford's Arrowhead	*Sagittaria sanfordii*	none/none/1B	Marshes, swamps and shallow margins of other waters throughout the Central Valley	**Low** The river bank is covered by concrete chunks. No vegetation, except for trees and willows is found in this area.
Invertebrates				
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT/none/none	Vernal pools and other seasonal wetlands in open grassland habitat.	**None.** No vernal pools exist on the project site. Seasonal wetlands are controlled by vector control and contain insectivorous fish which would prevent colonization.
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE/none/none	Vernal pools and other seasonal wetlands in open grassland habitat.	**None.** No vernal pools exist on the project site. Seasonal wetlands are controlled by vector control and contain insectivorous fish which would prevent colonization.
California linderiella	*Linderiella occidentalis*	FSC/none/none	Vernal pools and other seasonal wetlands in open grassland habitat.	**None.** No vernal pools exist on the project site. Seasonal wetlands are controlled by vector control and contain insectivorous fish which would prevent colonization.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT/none/none	Associated only with elderberry shrubs (*Sambucus* sp.), usually in or near riparian areas.	**High.** Elderberry shrubs are present in the project site.
Reptiles				
Western pond turtle	*Actinemys marmorata*	FSC/CSC/none	Streams, rivers, ponds, marshes and other aquatic habitats. Requires secure basking area where they can easily escape to water. Upland nesting sites can be as much as 300 feet from aquatic habitat, but are usually closer.	**Moderate**. Sacramento River and seasonal wetlands would be suitable habitat for this species.

APPENDIX TABLE F-1

SPECIAL STATUS SPECIES AND HABITATS POTENTIALLY OCCURRING WITHIN THE RAILYARDS SPECIFIC PLAN AREA

Common Name	Scientific Name	Status Fed/CA/CNPS	Habitat	Likelihood of Occurrence Within the Project Site
Giant garter snake	*Thamnophis gigas*	FT/CSC/none	Historically occurred in tule and cattail marshes on the Valley floor and Sacramento-San Joaquin Delta. Now uses well vegetated marshes, streams and agricultural ditches in low elevation areas.	**None.** No suitable habitat exists within the project boundaries.
Fish				
Sacramento Perch	*Archoplites interruptus*	--/ CSC/none	Historically found in the sloughs, slow moving rivers, and lakes of the central valley. Prefer warm water. Aquatic vegetation is essential for young.	**None**. Extirpated from the Sacramento River. Populations may exist in farm ponds and reservoirs, but no instream populations remain.
Central Valley spring run Chinook salmon	*Oncorhynchus tshawytscha*	FT/ST/none	Occurs in the Pacific Ocean for most of its life. Travels to clean gravel beds in the upper Sacramento and portions of the American River for spawning.	**High**. Suitable habitat exists within the Sacramento River. No spawning habitat exists.
Central Valley Winter run Chinook salmon	*Oncorhynchus tshawytscha*	FE/SE/none	Occurs in the Pacific Ocean for most of its life. Travels to clean gravel beds in the upper Sacramento and portions of the American River for spawning.	**High**. Suitable habitat exists within the Sacramento River. No spawning habitat exists.
Central Valley steelhead	*Oncorhynchus mykiss*	FT/--/none	Occurs in the Pacific Ocean for most of its life. Travels to clean gravel beds in the upper Sacramento and portions of the American River for spawning.	**High**. Suitable habitat exists within the Sacramento River. No spawning habitat exists.
Delta smelt	*Hypomesus transpacificus*	FT/ST/none	Euryhaline (tolerant of a wide salinity range) species that spawns in freshwater dead-end sloughs and shallow edge-waters of channels of the Delta (59 FR 65256). Occurs in Sacramento-San Joaquin Delta most of the year. Spawns in tidally influenced freshwater wetlands and seasonally submerged uplands along the Sacramento River, downstream from its confluence with the American River.	**High**. Adult Delta smelt are known to occur in the Sacramento River as far upstream as its confluence with the American River. As of 1993, Delta smelt were known to spawn in the Sacramento River as far upstream as the City of Sacramento (59 FR 65258). Spawning habitat for Delta smelt is thought to consist of substrates such as cattails and tules, tree roots, and submerged branches (Moyle 1976, Wang 1991 in 59 FR 65256). These substrates would be absent or scattered and of low quality within the Sacramento River in and adjacent to the project area due to levee maintenance.

APPENDIX TABLE F-1

SPECIAL STATUS SPECIES AND HABITATS POTENTIALLY OCCURRING WITHIN THE RAILYARDS SPECIFIC PLAN AREA

Common Name	Scientific Name	Status Fed/CA/CNPS	Habitat	Likelihood of Occurrence Within the Project Site
Sacramento splittail	*Pogonichthys macrolepidotus*	FSC/CSC/none	Endemic to the lakes and rivers of the central valley, but now confined to the Delta, Suisun Bay & associated marshes. Prefers slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning & foraging for young.	**High**. Suitable habitat exists within the Sacramento River. No spawning habitat exists.
Birds				
Tricolored blackbird	Agelaius tricolor	-/CSC/none	Nest in dense stands of cattails, thickets of willows, blackberries, or tall herbs adjacent to open grasslands	**None.** No suitable habitat exists on the project site.
Burrowing owl	*Athene cunicularia*	FSC/CSC/CDFG fully protected	Grasslands, open areas near human habitation; nests in old burrows of ground squirrels or other small mammals.	**Moderate .** The site provides potential foraging habitat for this species, and ground squirrel burrows a provide suitable nesting habitat.
Cooper's hawk	*Accipiter cooperii*	--/CSC (Nesting)	Nests and forages in woodland habitats.	**Low.** The site does not support relatively dense stands of mature trees typically used for nesting.
Swainson's hawk	*Buteo swainsoni*	none/ST/none	Grasslands and cultivated lands with scattered trees; nests in large trees or open riparian forest.	**Moderate (nesting)**. Suitable nest trees are present along the river. Open areas of the project site and patchy ruderal vegetation does not provide suitable foraging habitat for this species
White-tailed kite	*Elanus leucurus*	None/None/CDFG fully protected	Forages in grasslands and croplands. Nests in large trees adjacent to foraging habitat.	**Moderate.** Suitable nest trees are present along the river. Open areas of the project site and patchy ruderal vegetation provides marginal foraging habitat for this species.
Purple martin	*Progne subis*	--/CSC/none	Nest in cavities in trees, under bridges and other human-made structures	**Observed**. Colony exists under I street Bridge.
Mammals				
Pallid bat	*Antrozous pallida*	none/CSC/ none	Roosts in crevices in caves, mines, large rock outcrops, under bridges and in abandoned buildings. Forages on or near the ground in a wide variety of open habitats.	**High.** Roosting bats were observed under the I Street Bridge**.**
Pacific western big eared bat	*Corynorhinus townsendii townsendii*	none/CSC/none	Roosts in the open in large caves, abandoned mines and buildings. Very sensitive to roost disturbance.	**High.** Roosting bats were observed under the I Street Bridge.
Small-footed myotis bat	*Myotis ciliolabrum*	none/none/none	Occurs in most of California except the coastal redwood region; roosts in buildings, trees, and crevices in cliffs.	**High.** Roosting bats were observed under the I Street Bridge.

APPENDIX TABLE F-1

SPECIAL STATUS SPECIES AND HABITATS POTENTIALLY OCCURRING WITHIN THE RAILYARDS SPECIFIC PLAN AREA

Common Name	Scientific Name	Status Fed/CA/CNPS	Habitat	Likelihood of Occurrence Within the Project Site
Long-legged myotis bat	*Myotis volans*	none/none/none	Roosts in crevices in caves, mines, large rock outcrops, under bridges and in abandoned buildings. Forages in a wide variety of open habitats, frequently over water.	**High.** Roosting bats were observed under the I Street Bridge.
Yuma myotis bat	*Myotis yumanensis*	none/none/none	Common along wooded canyon bottoms throughout California; roosts in buildings, large trees with hollows, and crevices in cliffs.	**High.** Roosting bats were observed under the I Street Bridge.
Habitats				
Great Valley Cottonwood Riparian Forest		S2.1– Very Threatened	Riparian community of which cottonwoods are the primary species.	**Low quality.** The riparian habitat is too degraded and fragmented to be considered cottonwood forest.
Elderberry Savanna		S2.1 – Very Threatened	Combination of elderberry bushes, in grassland mosaic with some overstory trees.	**Low.** Site supports elderberry bushes, but the savanna complex is not present.

Notes:
Status:
Federal
FE Federally listed as Endangered
FT Federally listed as Threatened
FSC Federally listed as Species of Concern
State
ST State-listed as Threatened
CSC California Department of Fish and Game designated “Species of Special Concern”
CNPS
1B Rare or Endangered in California and elsewhere
2 Rare or Endangered in California, more common elsewhere
Source: CDFG Natural Diversity Database (CNDDB, 2006), and the CNPS Electronic Inventory 2003.

APPENDIX TABLE F-2

SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE INITIAL PHASE AREA

Common Name	Scientific Name	Status Fed/CA/other	Habitat	Likelihood of Occurrence Within the Project Site
Plants				
Alkali milk-vetch	*Astragalus tener* var. *tener*	none/none/1B	Alkali playas, vernal pools and adjacent grasslands.	**None.** No suitable habitat exists on the project site.
Heartscale	*Atriplex cordulata*	none/none/1B	Shadscale scrub and Valley grasslands, usually on wet alkali soils.	**None.** No suitable habitat exists on the project site.
Brittlescale	*Atriplex depressa*	none/none/1B	Shadscale scrub, alkali sinks and Valley grasslands on alkali soils.	**None.** No suitable habitat exists on the project site.
San Joaquin saltbush	*Atriplex joaquiniana*	none/none/1B	Shadscale scrub and Valley grasslands on alkali soils.	**None.** No suitable habitat exists on the project site.
Palmate-bracted bird's-beak	*Cordylanthus palmatus*	none/none/1B	Alkali or saline wetlands. Requires presence of salt grass (*Distichlis spicata*) as a host plant.	**None.** No suitable habitat exists on the project site.
Rose-mallow	*Hibiscus lasiocarpus*	none/none/2	Margins of ponds and marshes and riparian areas.	**Low** The river bank is covered by concrete chunks. No vegetation, except for trees and willows is found in this area.
Heckard's peppergrass	*Lepidium latipes* var. *heckardi*	none/none/1B	Wet grasslands on alkali soils.	**None.** No suitable habitat exists on the project site.
Stanford's Arrowhead	*Sagittaria sanfordii*	none/none/1B	Marshes, swamps and shallow margins of other waters throughout the Central Valley	**Low** The river bank is covered by concrete chunks. No vegetation, except for trees and willows is found in this area.
Invertebrates				
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT/none/none	Vernal pools and other seasonal wetlands in open grassland habitat.	**None.** No vernal pools exist on the project site. Seasonal wetlands are controlled by vector control and contain insectivorous fish which would prevent colonization.
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE/none/none	Vernal pools and other seasonal wetlands in open grassland habitat.	**None.** No vernal pools exist on the project site. Seasonal wetlands are controlled by vector control and contain insectivorous fish which would prevent colonization.
California linderiella	*Linderiella occidentalis*	SC/none/none	Vernal pools and other seasonal wetlands in open grassland habitat.	**None.** No vernal pools exist on the project site. Seasonal wetlands are controlled by vector control and contain insectivorous fish which would prevent colonization.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	T/none/none	Associated only with elderberry shrubs (*Sambucus* sp.), usually in or near riparian areas.	**High.** Elderberry shrubs are present in the project site.

APPENDIX TABLE F-2

SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE INITIAL PHASE AREA

Common Name	Scientific Name	Status Fed/CA/other	Habitat	Likelihood of Occurrence Within the Project Site
Reptiles				
Western pond turtle	*Actinemys marmorata*	SC/CSC/none	Streams, rivers, ponds, marshes and other aquatic habitats. Requires secure basking area where they can easily escape to water. Upland nesting sites can be as much as 300 feet from aquatic habitat, but are usually closer.	**Moderate.** Seasonal wetlands would be suitable habitat for this species.
Giant garter snake	*Thamnophis gigas*	T/CSC/none	Historically occurred in tule and cattail marshes on the Valley floor and Sacramento-San Joaquin Delta. Now uses well vegetated marshes, streams and agricultural ditches in low elevation areas.	**None.** No suitable habitat exists within the project boundaries.
Fish				
Sacramento Perch	*Archoplites interruptus*	--/ CSC/none	Historically found in the sloughs, slow moving rivers, and lakes of the central valley. Prefer warm water. Aquatic vegetation is essential for young.	**None.** No suitable habitat exists on the project site.
Central Valley spring run Chinook salmon	*Oncorhynchus tshawytscha*	T/T/none	Occurs in the Pacific Ocean for most of its life. Travels to clean gravel beds in the upper Sacramento and portions of the American River for spawning.	**None.** No suitable habitat exists within the project boundaries.
Central Valley Winter run Chinook salmon	*Oncorhynchus tshawytscha*	E/E	Occurs in the Pacific Ocean for most of its life. Travels to clean gravel beds in the upper Sacramento and portions of the American River for spawning.	**None.** No suitable habitat exists within the project boundaries.
Central Valley steelhead	*Oncorhynchus mykiss*	T/--	Occurs in the Pacific Ocean for most of its life. Travels to clean gravel beds in the upper Sacramento and portions of the American River for spawning.	**None.** No suitable habitat exists within the project boundaries.
Delta smelt	*Hypomesus transpacificus*	T/T	Occurs in Sacramento-San Joaquin Delta most of the year. Spawns in tidally influenced freshwater wetlands and seasonally submerged uplands along the Sacramento River, downstream from its confluence with the American River.	**None.** No suitable habitat exists within the project boundaries.

APPENDIX TABLE F-2

SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE INITIAL PHASE AREA

Common Name	Scientific Name	Status Fed/CA/other	Habitat	Likelihood of Occurrence Within the Project Site
Sacramento splittail	*Pogonichthys macrolepidotus*	SC/CSC/one	Endemic to the lakes and rivers of the central valley, but now confined to the Delta, Suisun Bay & associated marshes. Prefers slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning & foraging for young.	**None.** No suitable habitat exists within the project boundaries.
Birds				
Tricolored blackbird (	Agelaius tricolor)	-/CSC/none	Nest in dense stands of cattails, thickets of willows, blackberries, or tall herbs adjacent to open grasslands	**None.** No suitable habitat exists on the project site.
Burrowing owl	*Athene cunicularia*	FSC/CSC/CDFG fully protected	Grasslands, open areas near human habitation; nests in old burrows of ground squirrels or other small mammals.	**Moderate .** The site provides potential foraging habitat for this species, and ground squirrel burrows a provide suitable nesting habitat.
Copper's hawk	*Accipiter cooperii*	--/CSC (Nesting)	Nests and forages in woodland habitats.	**Low.** The site does not support relatively dense stands of mature trees typically used for nesting.
Swainson's hawk	*Buteo swainsoni*	none/ST/none	Grasslands and cultivated lands with scattered trees; nests in large trees or open riparian forest.	**Moderate (nesting)**. Suitable nest trees are present adjacent to the PLA along the river. Open areas of the project site and patchy ruderal vegetation does not provide suitable foraging habitat for this species.
White-tailed kite	*Elanus leucurus*	None/None/CDFG fully protected	Forages in grasslands and croplands. Nests in large trees adjacent to foraging habitat.	**Moderate.** Suitable nest trees are present adjacent to the PLA along the river. Open areas of the project site and patchy ruderal vegetation provides marginal foraging habitat for this species.
Purple Martin	*Progne subis*	--/CSC	Nest in cavities in trees, under bridges and other human-made structures	**Observerd**. Colony exists under I Street Bridge, adjacent to the southwestern portion of the PLA.
Mammals				
Pallid bat	*Antrozous pallida*	FSC/CSC/ none	Roosts in crevices in caves, mines, large rock outcrops, under bridges and in abandoned buildings. Forages on or near the ground in a wide variety of open habitats.	**High.** Roosting bats were observed under the I Street Bridge.
Pacific western big eared bat	*Corynorhinus townsendii townsendii*	FSC/CSC/none	Roosts in the open in large caves, abandoned mines and buildings. Very sensitive to roost disturbance.	**High.** Roosting bats were observed under the I Street Bridge.
Small-footed myotis bat	*Myotis ciliolabrum*	none/none/none	Occurs in most of California except the coastal redwood region; roosts in buildings, trees, and crevices in cliffs.	**High.** Roosting bats were observed under the I Street Bridge.

APPENDIX TABLE F-2

SPECIAL STATUS SPECIES POTENTIALLY OCCURRING WITHIN THE INITIAL PHASE AREA

Common Name	Scientific Name	Status Fed/CA/other	Habitat	Likelihood of Occurrence Within the Project Site
Long-legged myotis bat	*Myotis volans*	none/none/none	Roosts in crevices in caves, mines, large rock outcrops, under bridges and in abandoned buildings. Forages in a wide variety of open habitats, frequently over water.	**High.** Roosting bats were observed under the I Street Bridge.
Yuma myotis bat	*Myotis yumanensis*	none/none/none	Common along wooded canyon bottoms throughout California; roosts in buildings, large trees with hollows, and crevices in cliffs.	**High.** Roosting bats were observed under the I Street Bridge.

Notes:
Status:
Federal
FE Federally listed as Endangered
FT Federally listed as Threatened
FSC Federally listed as Species of Concern
State
ST State-listed as Threatened
CSC California Department of Fish and Game designated "Species of Special Concern"
CNPS
1B Rare or Endangered in California and elsewhere
2 Rare or Endangered in California, more common elsewhere
Source: CDFG Natural Diversity Database (CNDDB, 2006), and the CNPS Electronic Inventory 2003.

APPENDIX G
SACRAMENTO RAILYARDS, PROGRAM-LEVEL ASSESSMENT ARCHAEOLOGY AND INITIAL PHASE ARCHAEOLOGY

Sacramento Railyards, Program-Level Assessment: Archaeology

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5 JULY 2006

6.X SACRAMENTO RAILYARDS, PROGRAM-LEVEL ASSESSMENT: ARCHAEOLOGY

INTRODUCTION

This section assesses the archaeological sensitivity of the Railyards site, presenting the characteristics and general locations of potentially significant archaeological resources. The information presented here is based upon review of previous studies conducted in the railyard area, a records search at the North Central Information Center of the California Historical Resources Information System (NCIC), and review of historical maps and other sources on file at the Anthropological Studies Center, Sonoma State University.

ENVIRONMENTAL SETTING

Sacramento is located in the upper Central Valley of California at the confluence of the Sacramento and American rivers. Prior to being filled, the Railyards area contained two bodies of water. The northern body was known as Willow Lake, the southern as Sutter Lake, Sutter Slough, or China Lake. These lakes, their banks, and adjacent marshlands made up what is now the Railyards site. Both lakes were attached to the Sacramento River by narrow channels through which floodwater flowed, creating lakes during periods of high water and a marsh the remainder of the time. Low-lying marshes bordered Sutter Lake to the north, while woodlands encompassed the lakes on all other sides.[1] An area of high ground, which in the early historic period became Slater's or the American Fork Addition, projected into the west side of Sutter Lake. Rendering the area suitable for the railyard and its buildings entailed a considerable amount of filling of both Willow and Sutter Lake and of the surrounding marshland. The Railyards site appears to have been filled to a depth of at least 10 to 15 feet on the south side (where it is contiguous to I Street), six to eight feet along the east side, adjacent to 7th Street, and to an undetermined depth elsewhere[2].

[1] Praetzellis, Adrian, Grace H. Ziesing, and Michael D. Newland, *Historic Property Survey Report and Finding of Effect for the 7th Street Extension Project, Sacramento, California,* submitted to EIP Associates, Sacramento, by the Anthropological Studies Center, Sonoma State University, Rohnert Park, California, 2000.

[2] Praetzellis, Adrian, and Mary Praetzellis, *Southern Pacific Railyards, Existing Conditions: Archaeology,* submitted to ROMA Design Group, San Francisco, by the Anthropological Studies Center, Sonoma State University, Rohnert Park, California, 1990b, p. 6.

REGULATORY SETTING

The following goals and policies from the *California Environmental Quality Act* (CEQA)[3] and the *Guidelines for the Implementation of CEQA*[4] are applicable to the proposed project.

CEQA states that a "project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment".[5] Archaeological resources are included within the definition of "historical resource".[6]

A resource is considered to be historically significant if it meets the criteria for listing on the California Register of Historical Resources (CRHR).[7] The CRHR criteria are based on those of the National Register of Historic Places (NRHP). A resource is eligible for CRHR listing if it:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history.[8]

If, after identification and evaluation, an archaeological resource is deemed not to meet the criteria for listing in the CRHR, both the resource and the effect on it should be noted but need not be considered further in the CEQA process.[9] If an archaeological resource is determined eligible to CRHR it is considered to be a historical resource and the effects of the proposed undertaking on it must be assessed. A historical resource is considered to be adversely affected if the proposed undertaking will diminish the integrity of its location, design, setting, materials, workmanship, feeling, association, or the quality of data suitable for scientific analysis. Typically, development-related effects result from ground disturbance caused by the demolition, removal or alteration of buildings and structures to make way for new construction and/or the general changes in land use that may affect the integrity of the setting of historical resources. CEQA also protects potential historical resources discovered during construction. If an unanticipated discovery is made, ground disturbance

[3] California Public Resources Code (PRC), *The California Environmental Quality Act*. § 21000 et seq. 1970, as amended.
[4] California Code of Regulations (CCR), *Guidelines for the Implementation of CEQA.* Title 14 § 15000 et seq., 1999, as amended.
[5] 14 CCR § 21084.1
[6] 14 CCR § 15064.5 [b] and [c]
[7] CEQA § 21084.1
[8] 14 CCR § 15064.5 [a]
[9] 14 CCR § 15064.5 [c]

must halt in the vicinity of the resource until the situation has been assessed and the resource has been evaluated. [10]

Under CEQA, impacts to most archaeological sites can be reduced to an acceptable level by recovering and reporting on the archaeological data that are to be damaged or destroyed. An exception to this general rule is the case of religious or ceremonial sites. The treatment of human remains is controlled by California Health and Safety Code, Section 7050.5; PRC Section 5097.98; Title 14. CCR, 15064.5(d); and the guidelines of the State Native American Heritage Commission.

ARCHAEOLOGICAL SENSITIVITY

Prehistoric Summary

Archaeological evidence supports substantial human occupation of Sacramento and adjacent localities beginning about 4,000 to 5,000 years ago.[11] The balance of the prehistoric period, from ca. 5,000 years ago to Euroamerican contact, has been divided into several eras on the basis of observed differences in archaeological remains,[12] which are believed to represent individual cultures or sociopolitical groups.[13] The ethnographic period started with European exploration in the late 18th century and the advent of written descriptions of native life. Early accounts of native people in the Sacramento vicinity describe villages on knolls near rivers and wetlands. Later Euroamerican scholars concluded that local Native people were speakers of the Nisenan language of the Penutian language family.[14] These divisions are strictly linguistic, and do not represent social or political units. Ethnographers have recorded two Nisenan villages, *Pushuni* and *Seku-mni*, as being about 5 miles north-northeast and 10 miles east of Old Sacramento, respectively, on the opposite side of the Sacramento River[15].

[10] 14 CCR § 15064.5 [f]

[11] Brienes, West, & Schultz, *Overview of Cultural Resources,* 1981.

[12] Beardsley, Richard K., *Temporal and Areal Relationships in Central California Archaeology*. University of California Archaeological Survey Reports 24 and 25. Berkeley, 1954; Fredrickson, David A., Early Cultures of the North Coast Ranges, California. Doctoral dissertation, University of California, Davis, 1973; Lillard, Jeremiah B., Robert H. Heizer, and Franklin Fenenga, *An Introduction to the Archaeology of Central California.* Sacramento Junior College, Department of Anthropology Bulletin 2. Sacramento, 1939.

[13] Moratto, Michael J., *California Archaeology*. Academic Press, Orlando, Florida, 1984.

[14] Kroeber, Alfred L., *Handbook of the Indians of California.* Smithsonian Institution, Bureau of American Ethnology, Bulletin 78. Dover edition reprint, 1978. Dover Publication, Inc., New York, 1925; Wilson, Norman L., and Arlean H. Towne, Nisenan, In *California*, edited by R.F. Heizer, vol. 8, Handbook of North American Indians, Smithsonian Institution, Washington, D.C., 1978.

[15] Kroeber, Alfred L., *Handbook of the Indians of California.* Smithsonian Institution, Bureau of American Ethnology, Bulletin 78. Dover edition reprint, 1978. Dover Publication, Inc., New York, 1925; Russo, Marianne, and Dorothea Theodoratus, Discover Park Construction Site Examination for Archeological Resources in the Area of CA-SAC-26. On file, North Central Information Center of the California Archaeological Inventory, California State University, Sacramento, 1981.

Neighboring regions were occupied by speakers of other Penutian languages—Patwin to the west and Plains Miwok to the south. All of these peoples visited Sacramento-area rivers and wetlands during the winter months to gather resources, as well as to trade and interact socially with neighboring villages; in the summer, village groups relocated to the foothills of the valley's edge. European contact brought epidemics of introduced diseases, hostile encounters between native and non-native groups, and missionization, all of which combined to leave a substantially reduced Native population in the Central Valley.[16]

Historical Summary

Prior to the railyard construction in the 1860s, the project area consisted of two small bodies of water—Sutter Lake and Willow Lake—and associated marshland. It is unlikely there was permanent prehistoric settlement in the project area due to its low-lying, seasonally flooded environment. [17]

The earliest recorded historical activity within the project area was a possible dock at 4th and I streets[18] and the construction of a levee—Sacramento's first—along I Street in the 1850s.[19] These areas are within the proposed Depot District.

The first permanent railyard buildings were built in 1864; the yards gradually expanded into and filled the low-lying area north of D Street. Other than a lumberyard and a 20th-century incinerator, there is little evidence of historical development north of D Street prior to its incorporation into the railyard.[20]

There was also a largely Chinese settlement on the south edge along I Street, and extending up the western and eastern edges of the lake[21]. This residential area is within the proposed Depot District. There was also a residential neighborhood along the east side of Depot District, on the west side of 7th Street. Another 19th-century residential neighborhood lay at intersection of the historical 1st Street west and Sycamore Street, which is on the west edge of the proposed West End District.

Early maps show a promontory extending into Sutter Lake from the west. There are buildings on the promontory that may have been Chinese-occupied laundries and/or fishing stations. In 1870 two

[16] Cook, Sherburne F., *The Conflict Between the California Indian and White Civilization.* University of California Press, Berkeley, 1976; Moratto 1984.

[17] Praetzellis, Adrian, and Mary Praetzellis, *Southern Pacific Railyards, Preliminary Issues and Findings: Archaeology,* Submitted to ROMA Design Group, San Francisco, by the Anthropological Studies Center, Sonoma State University, Rohnert Park, California, 1990a, p. 7.

[18] Joslyn, D. L., *The Sacramento General Shops: Southern Pacific Company--Pacific Lines*. Online document available at the Central Pacific Railroad Photographic History Museum web site, http://cprr.org/Museum/Sacramento_Shops.html , (accessed June 19th, 2006), p. 8.

[19] Praetzellis and Praetzellis 1990b, p. 4.

[20] Praetzellis, Ziesing and Newland 2000, p. 23-26.

[21] Praetzellis and Praetzellis 1990b, p. 4-5

bridges connected the promontory's tip with I Street to the south and the railyard shops to the north.[22] This passage, by which railroad employees crossed the lake, was dubbed the "Bridge of Sighs" because of the smell from the lake.[23]

While the most substantial buildings are located in the proposed Central Shops District, the rest of the railyard contained numerous other structures and buildings, including storage facilities, a car shop complex, and a scrap dock.[24] At least two industrial facilities unrelated to the railyard lay along the Sacramento River waterfront: the Sacramento Gas Works and the Pioneer/Sperry grain mill and warehouse.[25] Remnants of these two facilities have been identified in subsequent archaeological work.

Sutter Lake was gradually filled from the north and west; the filling was completed in the first decade of the 20th century. While Sutter Lake was still open it was used as a dump by the railyard.[26]

Previous Work

The records search at NCIC revealed no previously recorded prehistoric archaeological sites within the study area. A prehistoric site was discovered, however, adjacent to the study area on the northwest corner of H and 6th streets. In 2005 Tremaine & Associates, Inc., uncovered three burials, six cremations, and one housepit during monitoring for the construction of light rail trackway along H Street.[27] The site is likely to extend beneath H and 6th streets and into the proposed Depot District. Another site, prehistoric cemetery CA-SAC-38, is located several blocks to the southeast, in and adjacent to Cesar Chavez Park, on the blocks bounded by 9th, 10th, H, I, and J streets.

The records search at NCIC revealed two historic-period archaeological resources within the study area. Remnants of the 1855–1878 Sacramento Gas Works were identified during construction monitoring.[28] The partial remains of two circular brick structures, designated CA-SAC-689H, supported gas storage tanks. Coal slag, glass, and ceramic fragments were also uncovered in the vicinity. Along the waterline of the Sacramento River are the remains of 518 pilings (CA-SAC-658H)

[22] Koch, Augustus, *Bird's-Eye View of the City of Sacramento*, Britton and Rey, Sacramento.
[23] Praetzellis and Praetzellis 1990a, p. 7.
[24] Office Division Engineer Sacramento, *Sacramento Shops Showing Buildings*, 1920.
[25] Praetzellis and Praetzellis 1990b, p. 7.
[26] Joslyn 1948, p. 50.
[27] Carper, Mark A., Letter Report for Archaeological Work Related to the West Side of the Union Pacific Railyard Stand-Pipe System Relocation. Tremaine & Associates, Inc., Dixon, California. Submitted to Ron Perkins, Sacramento Regional Transit District, 8 February 2006; Kim Tremaine, Principal Archaeologist, Tremaine & Associates, Inc., personal communication to Mark Walker, 9 August 2006.
[28] Gross, C., *Site Record for CA-SAC-689.,* On file, North Central Information Center of the California Historical Resources Information System, Sacramento (NCIC), 2003.

that once supported the wharf of the Pioneer Flouring Mills. The mill began operations at that location in 1853.[29] In addition China Slough (Sutter Lake) is listed as a State Historic Landmark.

Several historic-period resources were identified near the study area, including a segment of the route of the First Transcontinental Railroad (CA-SAC-478H).

An archaeological survey report and historic study report was prepared for the extension of 7th Street across the Union Pacific Railyards.[30] The report determined that the 7th Street project APE may contain important historic-period archaeological deposits and materials. Archaeological testing prior to earth-moving activities and construction monitoring was recommended.

Several studies have been conducted within or adjacent to the study area, including historical research and overviews, archaeological and architectural evaluations, intensive and reconnaissance project surveys, and construction monitoring. Reports of these studies include the Institute of Western Maritime Archaeology[31], Brienes, West & Schulz[32], County of Sacramento[33], Gross[34], Henley[35], Lindstrom[36], McGuire et al.[37], O'Connor and Wiant[38], Page & Associates[39], and Peak.[40]

The Railyards themselves have been studied on several occasions. The archaeological potential of the "Sacramento Station Site"—a wedge-shaped parcel extending along I Street from Front Street to 6th Street and along 6th Street from I to E streets—was studied by ASC in 1989.[41] The study concluded

[29] Allan, James M., *Site Record for CA-SAC-658H*, On file, NCIC, 2002.

[30] Praetzellis, Adrian, Grace Ziesing, and Michael Newland, 2000.

[31] Institute for Western Maritime Marine Archaeology, *Evaluation of Navigation Hazards in the Sacramento River, Sacramento and Yolo Counties*, Prepared for California State Lands Commission, On file, NCIC, 2002.

[32] Brienes, West & Schulz, *Overview of Cultural Resources in the Central Business District, Sacramento, California.* Prepared for City of Sacramento Museum and History Department, 1981.

[33] County of Sacramento, *Draft Environmental Impact Report for 8th and G Streets County Multi-Purpose Building.* Department of Environmental Review and Assessment, Sacramento, 1991.

[34] Gross, C., *Site Record for CA-SAC-689.,* NCIC, 2003.

[35] Henley, James E., *Letter report to Alcides Freitas, Environmental Coordinator, Community Development and Environmental Protection Agency regarding five blocks under consideration as potential sites for a County jail.* On file, NCIC, Sacramento, 1980.

[36] Lindstrom, Susan, *Preliminary Literature Review, Prehistoric and Historic Archaeological Resources, Richards Boulevard Area Master Plan, Environmental Impact Report, City of Sacramento, Sacramento County.* Prepared for EIP Associates, Sacramento, 1991.

[37] McGuire, Pamela, Kenneth N. Owens, Susan Searcy, and Jim West, *Alkali Flat Redevelopment Area, Determination of Eligibility for Inclusion in the National Register of Historic Places.* Prepared for the City of Sacramento. Sacramento, 1979.

[38] O'Connor, Denise, and Wayne C. Wiant, *Archaeological Reconnaissance of the Proposed Sacramento Light Rail Transit Project.* California Department of Transportation, District 3, Marysville, 1982.

[39] Page & Associates, *Sacramento Old City Residential Building Survey.* Charles Hall Page & Associates, Inc., San Francisco. Prepared for the City of Sacramento, 1976.

[40] Peak, Ann S., *Archeological Assessment of the Sacramento City Filtration System Expansion—Sacramento County, California.* Prepared for Environmental Assessment and Resource Planning, Sacramento, 1974.

[41] Praetzellis, Adrian, and Mary Praetzellis, *The Archaeological Potential of the Sacramento Station Site,*

that the area was unlikely to contain prehistoric period deposits, but that it was "probable that legally important, historic-period deposits are present".[42] The entire Railyards property was studied by ASC in 1990.[43] Although the senior author of the present study surveyed the property and found no evidence of archaeological remains, the report noted that "the entire SP Railyards property has the potential to contain legally important historic-period archaeological deposits and materials".[44] An architectural inventory and evaluation of the Railyards site was conducted in 1998 and resulted in a proposed National Register district—the Shops Historic District—encompassing the Central Shops area.[45]

Prehistoric Archaeological Sensitivity

Research for this study shows that there is a high potential that the study area contains legally important prehistoric remains. Ethnographic sources reviewed by Brienes, West & Schulz[46] and archaeological site records consulted during the record search phase indicate that prehistoric sites to the south of the American River in the area of downtown Sacramento are restricted to topographic rises. The presence of the site found by Tremaine & Associates in 2005 at H and 6th streets indicates that the adjacent portion of the Depot District has a high sensitivity for prehistoric archaeology. This is in the vicinity of the former northeastern shore of Sutter Lake, which would have been one such area of relatively high ground. In the southwestern portion of the study area, the original Slater's Addition, now comprising parts of the proposed Depot, Central Shops, Riverfront, and West End districts, was originally another area of elevated topography. Accordingly, sensitivity for prehistoric archaeological resources there is also high. The East End District has low to moderate sensitivity for prehistoric archaeological resources. This was low-lying land before being filled, but there may localized areas of prehistoric occupation.

Historical Archaeological Sensitivity

Research to date indicates that the entire Railyards area has the potential to contain legally important historical archaeological deposits. The areas of highest archaeological sensitivity are:

- **The Depot District.** This district has high historic-period archaeological sensitivity. This was the location of residential neighborhoods around Sutter Lake, (including the Chinese

Sacramento, California. Anthropological Studies Center, Sonoma State University, Rohnert Park, California. Prepared for AKT Development, Sacramento, 1989.

[42] Ibid., p. 7.

[43] Praetzellis and Praetzellis 1990a, 1990b.

[44] Praetzellis, Adrian, and Mary Praetzellis, *Preliminary Issues and Findings: Archaeology*, 1990, p. 7.

[45] Historic Environment Consultants, *Central Pacific/Southern Pacific Railroad Railyards: Historic Property Inventory and Evaluation Report.* Historic Environment Consultants, Carmichael, California. Prepared for Union Pacific Railroad Company, 1998.

[46] Brienes, West & Schulz, 1981.

neighborhood along I Street, the promontory, and 7th Street), the early levee, possible wharfs, and a large portion of Sutter Lake itself. Potential archaeological resources include the early docks and levee; deposits and features associated with the residential neighborhoods, and artifacts within Sutter Lake. The latter may contain remains associated with the Chinese neighborhood and other occupants, unique artifacts from the railyard operations, as well as historic environmental information. The west end of the Depot District may also have been the location of the 1850s flood control sluice gate.

- **The Central Shops District.** This district has high historic-period archaeological sensitivity. This was the historical core of Southern Pacific's Sacramento Railyards, and may contain features and deposits associated with the early operation of the railyard. It also contains portions of Sutter Lake and the island. The location may contain unique artifacts within the lake, material from the residential occupation of the promontory, as well as historic environmental information.

- **West End.** This district has high to moderate historic-period archaeological sensitivity. The western edge of this district was probably the location of a small residential neighborhood, presumably housing for railyard workers. It was also the location of railyard industrial buildings. Potential archaeological resources include deposits and features associated with the residential neighborhood, and the industrial features and deposits associated with the railyard. Other potential resources include Willow Lake, which may contain unique artifacts from the early railyard and historic environmental information. There are numerous structures and buildings associated with the functioning of the railyard throughout these areas.

- **The Riverfront District.** This district has high historic-period archaeological sensitivity. This district may include deposits and features associated with the small residential neighborhood in 5th Street Emporium District, and also with the railyard. The south end of the district may also contain remnants of the early flood control sluice gate. In addition to railyard industrial facilities, this district also contains remains associated with the Sacramento Gas Works[47] and the Pioneer/Sperry grain mill and warehouse[48].

- The **East End District** has low archaeological sensitivity for historical archaeological resources. This was low-lying land and was used primarily for track after it was filled by the railyard.

[47] Gross 2003
[48] Allen 2002

IMPACTS

The Railyards site may contain a variety of legally important, prehistoric and historic-period, archaeological features whose general locations are predictable on the basis of archaeological records and historical research.[49] The site also has the potential to contain a wide variety of isolated historic artifacts throughout the portion of the study area that was a slough in the 19th century. Many artifacts were abandoned within these bodies of water, including at the most significant, Chinese fishing boats, obsolete railroad cars, and even human remains. Environmental remains such as pollen, phytoliths, and plant macrofossils, may also survive within the anaerobic conditions of the filled sloughs.

As all archaeological features within the study area are presently covered by fill or pavement, it is not possible to identify specific impacts without a detailed development plan, further archival research, and an archaeological testing program. Some archaeological resources may be so deeply buried that they would not be physically disturbed by construction. Deep filling during development may adversely affect some resources' research potential. Construction in most areas, however, can be expected to destroy all archaeological strata and features encountered. Removal of contaminated soils may also impact archaeological resources.

Plans that include preservation of historic buildings and open space will have less of an impact on archaeological resources than plans that emphasize high density uses.

[49] Praetzellis and Praetzellis 1990a, 1990b.

Sacramento Railyards, Initial Phase: Archaeology

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SACRAMENTO RAILYARDS, INITIAL PHASE

INTRODUCTION

This section assesses the archaeological sensitivity of the Initial Phase portion of the 240-acre Sacramento Railyards Site (project area; Figures 1 and 2), describing the characteristics and general locations of potentially significant archaeological resources. The information presented here is based on review of previous studies conducted in the initial phase, a preliminary assessment of primary and secondary documentary sources, and examination of historical maps and other sources on file at the Anthropological Studies Center, Sonoma State University.

ENVIRONMENTAL SETTING

The initial phase occupies the southern edge of a large expanse of low-lying land south of the confluence of the American and Sacramento rivers. Before filling and development of the area, the American River flowed through the northern part of the initial phase, emptying into the Sacramento River at a point roughly aligned with modern E Street (Figure 3). The American River was rechanneled into its current course after devastating floods in 1862.[1]

There were two small lakes within or adjacent to the initial phase: Willow Lake just east of the project-area boundary, and Sutter Lake, portions of which were within the southern part of the initial phase (Figure 3). Sutter Lake was also called Lake Sutter, China Lake, and China Slough.

Sutter Lake was divided into two branches at its western end. The south branch connected it to the Sacramento River, and the north to the American. Higher ground between the branches created a northwest- to southeast-oriented promontory. This promontory is shown subdivided on the 1854 Coast Survey map and labeled the "American Fork Addition," but was more commonly known as "Slater's Addition." It was laid out in lots on the map, and the Sacramento Gas Works was shown at the northwest end of Slater's Addition on the bank of the Sacramento River.

There was also higher land along the north edge of Sutter Lake, although it was not developed until the railyard was constructed, and in the southeastern part of the initial phase, comprising city blocks GH67 to DE67. Settlement had begun in this area in the 1850s, with a fair amount of development between H and F streets by 1854.

[1] McGowan, Joseph A., *History of the Sacramento Valley*, Lewis Historic Publishing Co., New York, 1961, p. 188.

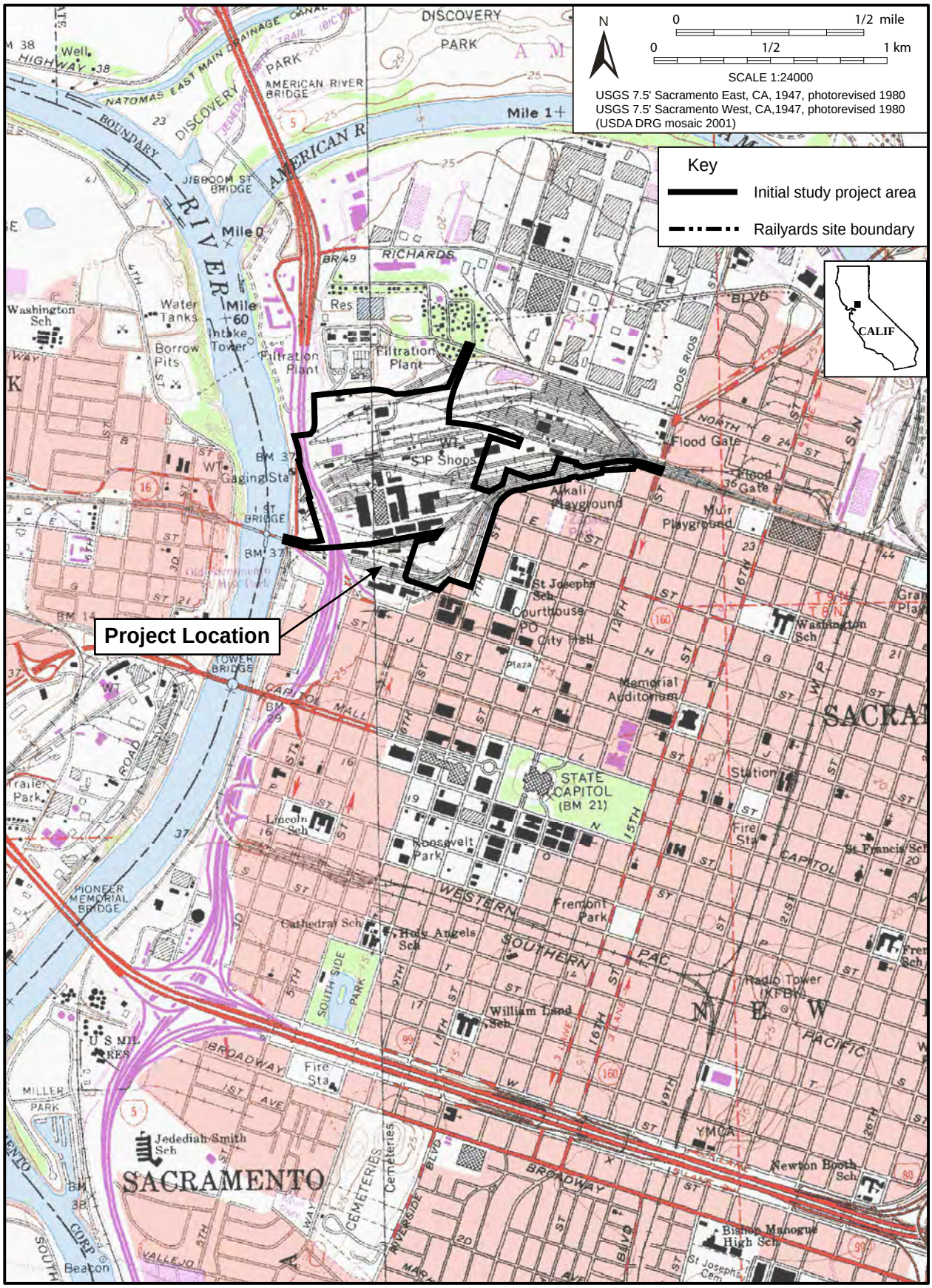

Figure 1. Project locaton

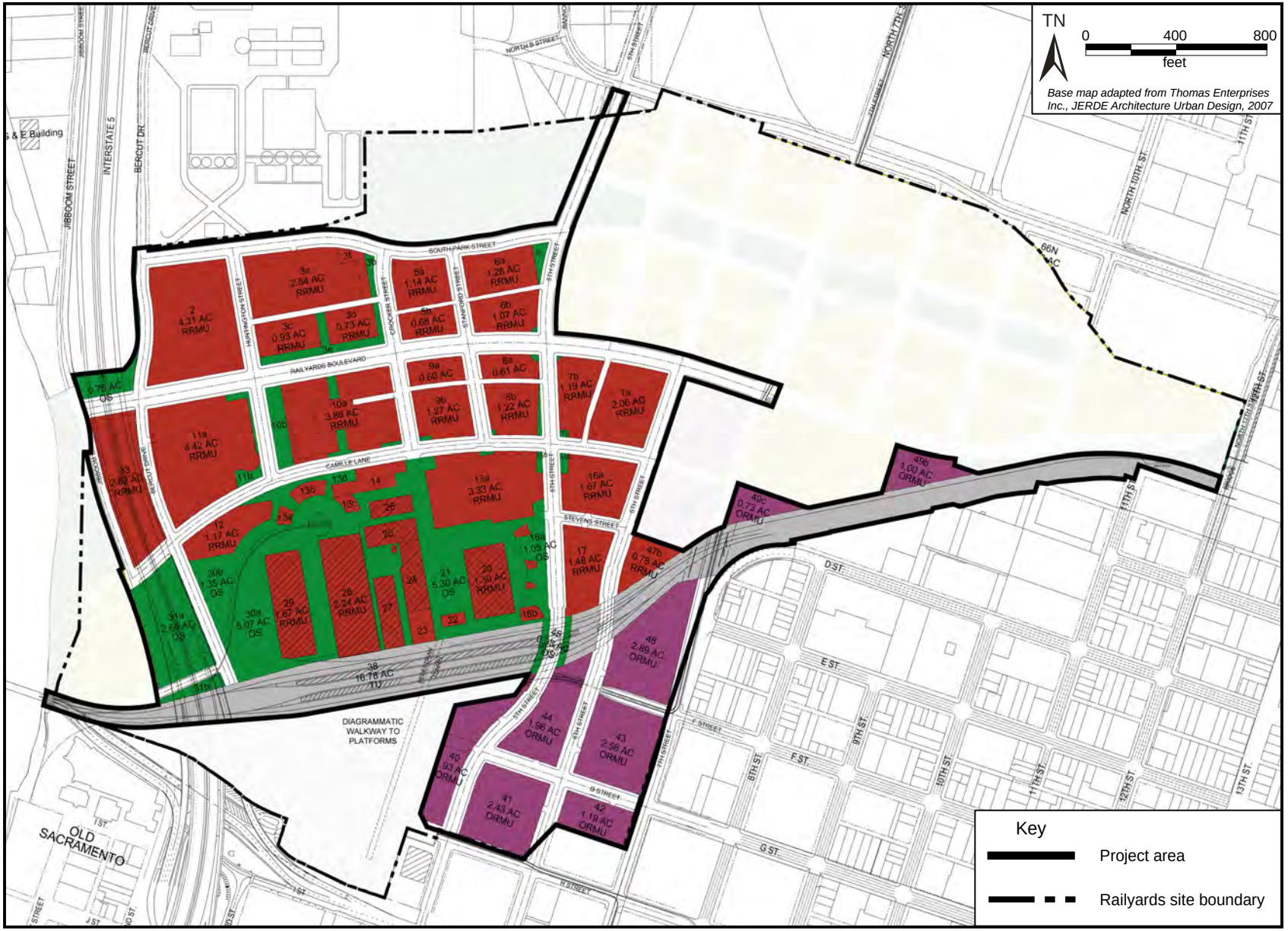

Figure 2. Initial study project area and Railyards site boundary

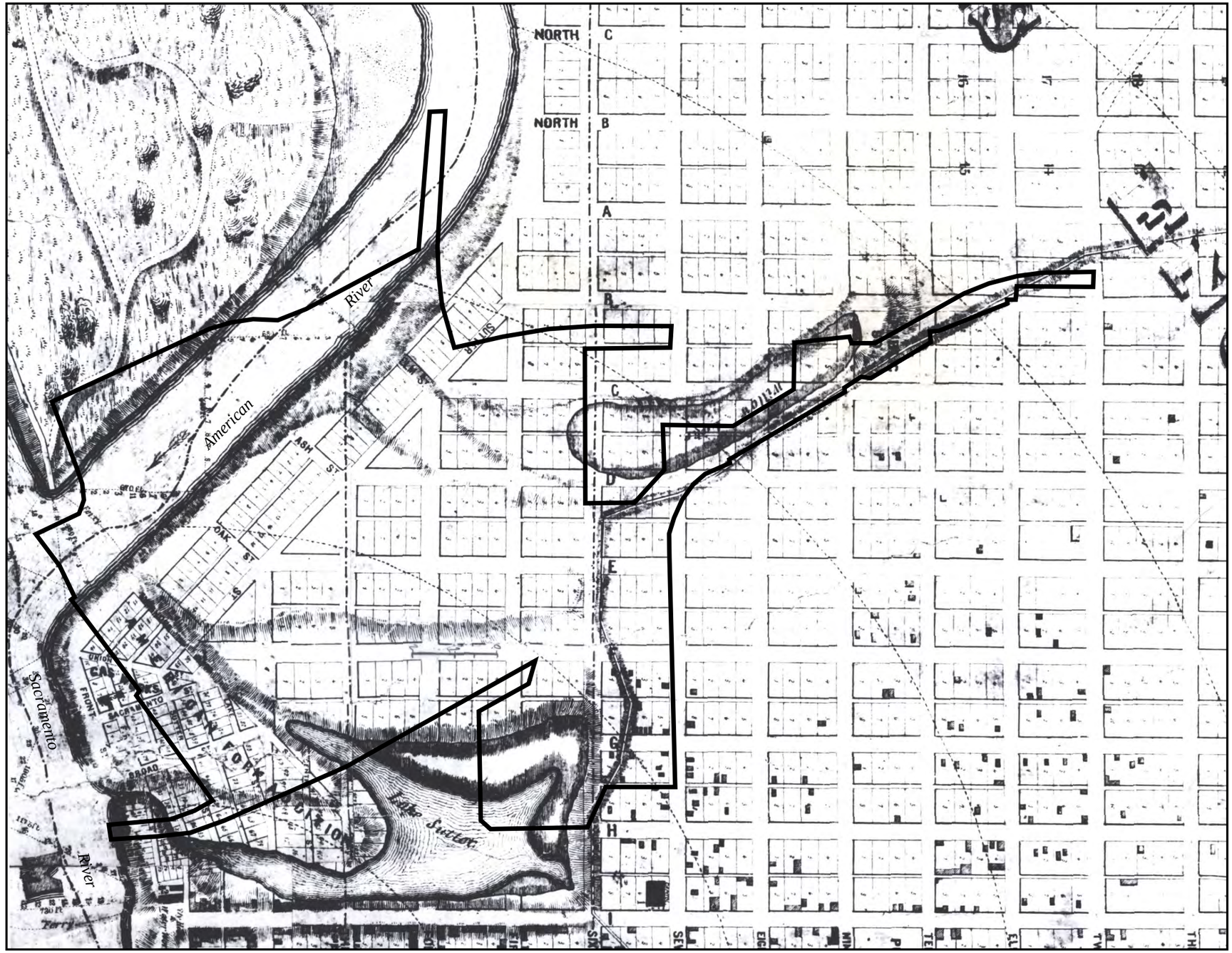

Figure 3. 1854 U.S. Coast Survey map detailing approximate location of project area (Baker 1854)

Historically, vegetation within the initial phase would have consisted of riparian woodland on the higher ground around the edges of Sutter Lake and extending to Willow Lake, in the eastern part of the initial phase, and the natural levees of the Sacramento and American rivers. The remainder of the site was probably freshwater marshland. [2]

There is no visible evidence of the early-19th-century topography in the initial phase today. The entire area is approximately 25 feet (ft.) above mean sea level, the product of intensive filling programs in the 19th and early 20th centuries to create land for flood control and the expansion of the railyard, and, in the case of Sutter Lake, to alleviate sanitation concerns. Between 1863 and 1910, the lake appears to have been filled to a depth of at least 10 to 15 ft. on the south side (where it is contiguous to I Street); 6 to 8 feet along the east side, adjacent to 7th Street; and to an undetermined depth elsewhere.[3]

REGULATORY SETTING

The following goals and policies from the *California Environmental Quality Act* (CEQA)[4] and the *Guidelines for the Implementation of CEQA*[5] are applicable to the proposed project.

A resource is considered to be historically significant if it meets the criteria for listing on the California Register of Historical Resources (CRHR).[6] The CRHR criteria are based on those of the National Register of Historic Places (NRHP). A resource is eligible for CRHR listing if it:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
(2) Is associated with the lives of persons important in our past.
(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
(4) Has yielded, or may be likely to yield, information important in prehistory or history.[7]

CEQA states that a "project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the

[2] Brienes, West & Schulz, *Overview of Cultural Resources in the Central Business District, Sacramento, California.* Manuscript on file, Sacramento Archives Museum and Collection Center (SAMCC), Sacramento, 1981.
[3] Praetzellis, Adrian, and Mary Praetzellis, *Southern Pacific Railyards, Existing Conditions: Archaeology,* Anthropological Studies Center, Sonoma State University, Rohnert Park, California. *S*ubmitted to ROMA Design Group, San Francisco, 1990, p. 6.
[4] California Public Resources Code (PRC), *The California Environmental Quality Act*. § 21000 et seq. 1970, as amended.
[5] California Code of Regulations (CCR), *Guidelines for the Implementation of CEQA.* Title 14 § 15000 et seq., 1999, as amended.
[6] CEQA § 21084.1
[7] 14 CCR § 15064.5 [a]

environment."[8] Potentially eligible archaeological resources are included under the definition of "historical resource."[9]

If, after identification and evaluation, an archaeological resource is deemed not to meet the criteria for listing in the CRHR, both the resource and the effect on it should be noted but need not be considered further in the CEQA process.[10] If an archaeological resource is determined eligible to the CRHR, it is considered to be a historical resource and the effects of the proposed undertaking on it must be assessed. A historical resource is considered to be adversely affected if the proposed undertaking will diminish the integrity of its location, design, setting, materials, workmanship, feeling, or association, or the quality of data suitable for scientific analysis. Typically, development-related effects result from ground disturbance (caused by site preparation as well as the demolition, removal, or alteration of buildings and structures to make way for new construction) and/or from the general changes in land use that may affect the integrity of the setting of historical resources. CEQA also considers potential historical resources discovered during construction. If an unanticipated discovery is made, ground disturbance must halt in the vicinity of the resource until the situation has been assessed and the resource has been evaluated. [11]

Under CEQA, impacts to most archaeological sites can be reduced to an acceptable level by recovering and reporting on the archaeological data that are to be damaged or destroyed. An exception to this general rule is the case of religious or ceremonial sites. The treatment of human remains is directed by California Health and Safety Code, Section 7050.5; PRC Section 5097.98; Title 14. CCR, 15064.5(d); and the guidelines of the State Native American Heritage Commission.

IMPACTS AND MITIGATION MEASURES

Methods of Analysis

According to federal guidelines, archaeological sites in urban areas “are likely to be more or less invisible, buried under modern created land surfaces.” Here, the identification of archaeological sites “consists of field checking predictions made on the basis of archival research”.[12] Because the initial phase is almost entirely covered by buildings and fill, predictions of the location, nature, and

[8] 14 CCR § 21084.1
[9] 14 CCR § 15064.5 [b] and [c]
[10] 14 CCR § 15064.5 [c]
[11] 14 CCR § 15064.5 [f]
[12] National Park Service, Guidelines *for Local Surveys, National Register Bulletin No. 24*, U.S. Department of the Interior, 1985, p. 36).

significance of archaeological resources have been made on the basis of the archival record and previous experience with similar deposits in Sacramento and other urban settings.[13]

Historical archaeological sensitivity was assessed in three stages:

1. Prediction of potential archaeological resources based on review of previous work, primary and secondary historical sources, and modern geologic and soil maps;

2. Development of a preliminary research framework to aid in assessing the significance of the predicted archaeological resources;

3. Designation of Archaeologically Sensitive Areas (ASAs)—areas that likely contain significant archaeological resources.

Archives Consulted

Historical research was conducted at the Sacramento Archives and Museum Collection Center (SAMCC), the Sacramento State Library, and the Sacramento Public Library. In addition a record search was carried out the North Central Information Center (NCIC) to identify previous archaeological research both within the initial phase and the surrounding vicinity.

At the **Sacramento Archives and Museum Collection Center** (SAMCC), the tax-assessment rolls and corresponding block books from each five-year period between 1850 and 1930 were examined. SAMCC maintains an extensive set of Sacramento County public records; a private collection that includes many primary documents, maps, and photographs; Sacramento city directories; a complete set of *Golden Notes*–a publication of the Sacramento County Historical Society; and the three boxes of documents prepared for the Sacramento Housing and Redevelopment Agency and the Sacramento Museum and History Department that detail the historical development of 16 Sacramento blocks.[14] SAMCC also has a searchable online database that includes digitized reproductions of much of its image collection.[15]

At the **Sacramento State Library**, research focused on the California Information File, a database of California newspapers, books, periodicals, primary documents, and more. The State

[13] Waghorn, Annita, Jack Meyer, and Grace Ziesing, with contributions by Mary Praetzellis and Adrian Praetzellis, *Archaeological Investigation Plan for the City Hall Expansion Project, Sacramento California*, Anthropological Studies Center, Sonoma State University, Rohnert Park, California.. Prepared for the City of Sacramento, 2002.

[14] McGowan, Joseph A., Julie Dominguez, Chester D. Grant, Edith Pitti, Susan Searcy, Cynthia St. Louis, *Report on the Historical Development of Sixteen Blocks in the City of Sacramento*, Sacramento Housing and Redevelopment Agency and the Sacramento Museum and History Department of the City of Sacramento 1978–1979, on file, SAMCC.

[15] http://www.sacramenities.com/history

Library also has a large photograph, map, and illustration collection as well as historic newspapers, which were reviewed for information pertaining to the initial phase.

Sacramento city directories were also viewed at the **Sacramento Public Library** on microfiche (1852–1860), microfilm (1861–1881), and bound (1882–present). The Sacramento History Room at the public library houses a collection of books, maps, and histories, as well as subject vertical files.

The **California State Railroad Museum** has a collection that includes maps, periodicals, photographs, and timetables concentrating on all aspects of railroading, especially in California and the West.

The **North Central Information Center** (NCIC) of the California Historical Resources Information System is the official State repository for records and reports on prehistoric and historical archaeology and the historical built environment for six central California counties, including Sacramento County. The records search consisted of an examination of NCIC base maps (USGS 7.5-minute topographic maps) to identify recorded archaeological sites and surveys within or near the initial phase and to examine historic-period maps (*diseños*, General Land Office maps, and 19th- and early-20th-century USGS 15- and 7.5-minute topographic maps) to identify unrecorded historic-period buildings, structures, objects, and areas of archaeological sensitivity located within or near the initial phase.

Analysis

The initial phase was, where feasible, overlaid on a series of historic maps in order to (1) identify historic landforms and topography and assess the potential for prehistoric and early historical occupation, (2) identify and locate street plans, buildings, and structures present in the initial phase, and (3) assess landscape and settlement changes through time. Oblique birds-eye views of the Sacramento also provided data on the development of the initial phase, although by their nature, an overlay of the initial phase was not possible.

The main maps and birds-eye views consulted were:

- The 1852 chart of the Sacramento River[16]
- The 1854 Coast Survey (Figure 3) [17]

[16] Ringgold, Cadwalader, *Chart of the Sacramento River from Suisun City to the American River, California*. On file, David Rumsey Historical Map Collection, http://www.davidrumsey.com, 1852.

- Birds-eye views of Sacramento from 1857 (Figure 4),[18] 1870 (Figure 5),[19] and the 1890s (Figure 6)[20]
- An 1870 map of the Railyards[21]
- Sanborn fire insurance maps from 1895 (Figures 7, 8, and 9), [22] 1915 (Figures 10 and 11)[23] and 1930[24]
- Maps of the Railyards from 1902,[25] 1906,[26] 1909,[27] 1917,[28] and 1920 (Figure 12)[29]

The initial phase boundary was overlaid based on modern and historical street alignments. Inaccuracies and distortion on some of the early maps entailed some judgment and correction in order to make the overlays useful.

The tax assessment block books consulted at SAMCC provided a detailed picture of landownership of individual lots through time. Using the names obtained from the block books and the addresses obtained from the map research, Sacramento city directories and federal censuses were searched to obtain additional information on the occupants, including their occupations, family, place of origin, etc. Newspapers and secondary sources were consulted for background on the residential neighborhoods, railyard history, and for information on landscape modifications, such as the filling of Sutter Lake.

With this information in hand, areas that likely contained archaeological remains were defined. The archaeological resources were then assessed for their potential to yield important information. Based

[17] Baker, George, *Official Map of the City of Sacramento*, on file, California State Library, Sacramento, 1854.

[18] Fire Department of the City of Sacramento, *A birds-eye view of Sacramento, Capitol of the State of California*, on file California State Library, Sacramento, 1857.

[19] Koch, Augustus, *Birds-eye View of the City of Sacramento*, on file California State Library, Sacramento, 1870.

[20] Elliott, W.W., *Sacramento around 1890*, Daily Record Union, Sacramento, on file Library of Congress, Geography and Maps Division, Washington DC, ca. 1890.

[21] Britton and Rey, *Map showing land owned by the Central Pacific Railroad Company in the city of Sacramento with the tracks, buildings, and other improvements thereon*, on file, Sacramento Archives and Museum Collection Center, Sacramento.

[22] Sanborn Map Company, *Sacramento, California*, 1895.

[23] Sanborn Map Company, *Sacramento, California*, 1915.

[24] Sanborn Map Company, *Sacramento, California*, 1930.

[25] Southern Pacific, *Sacramento [shops and yard], showing contours between yard and north levee*, on file, California State Railroad Museum Library, 1902.

[26] Southern Pacific, *Plan of Sacramento shops and yards and waterfront of the Southern Pacific Company*, on file, California State Railroad Museum Library, 1906.

[27] Southern Pacific, *Sacramento [shops] proposed rearrangement and line change of Sacramento yard*, on file, California State Railroad Museum Library, 1909.

[28] Southern Pacific, *Sacramento Shops, showing buildings*, on file, California State Railroad Museum Library, 1917.

[29] Southern Pacific, *Sacramento Shops, showing buildings*, on file, California State Railroad Museum Library, 1920.

Figure 4. 1857 Bird's Eye view of Sacramento showing part of the project area and surrounding city (Fire Department 1857)

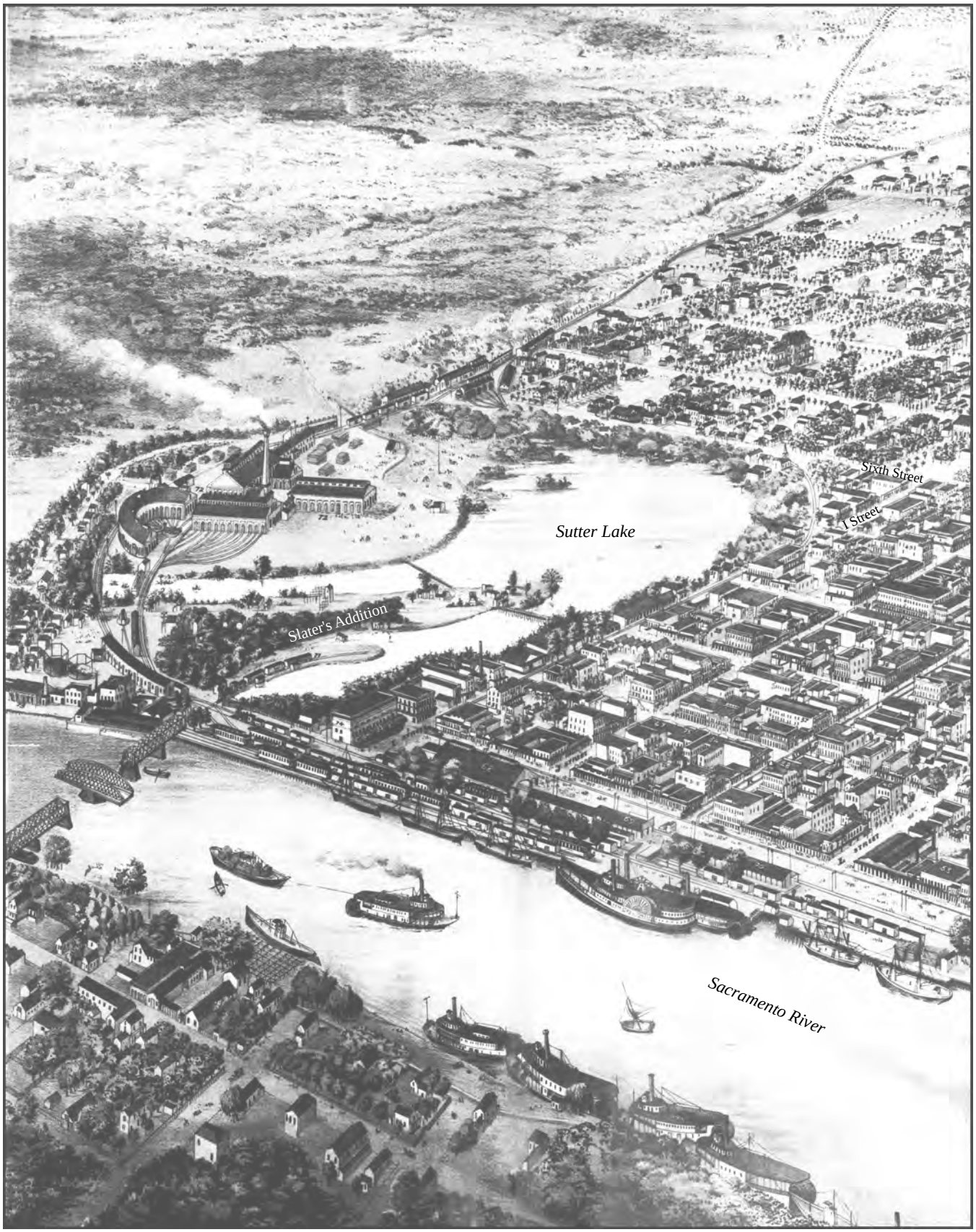

Figure 5. 1870 Bird's Eye view of Sacramento showing part of the project area and surrounding city (Koch 1870)

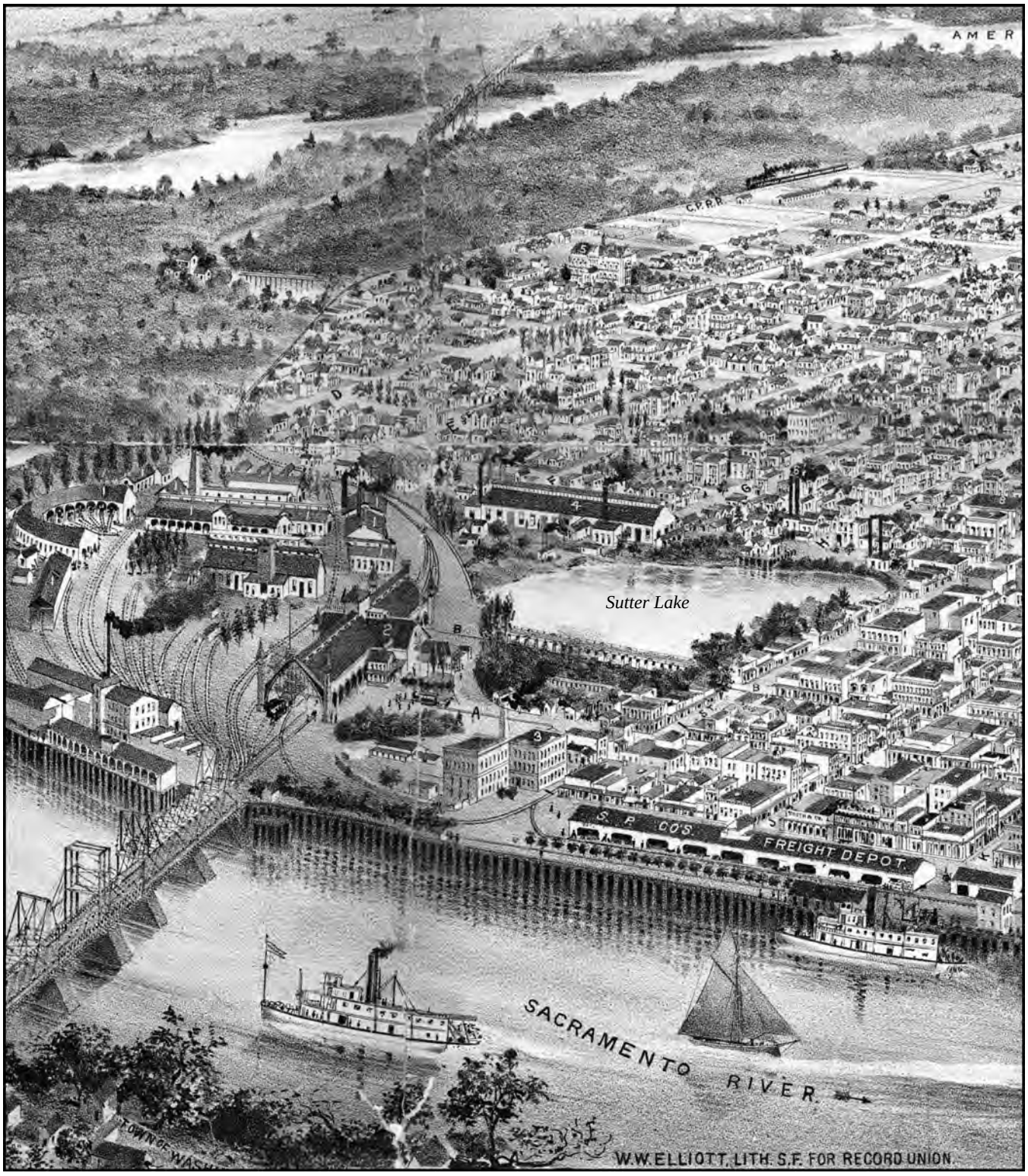

Figure 6. 1890 Bird's Eye view of Sacramento showing part of the project area and surrounding city (Elliott 1890)

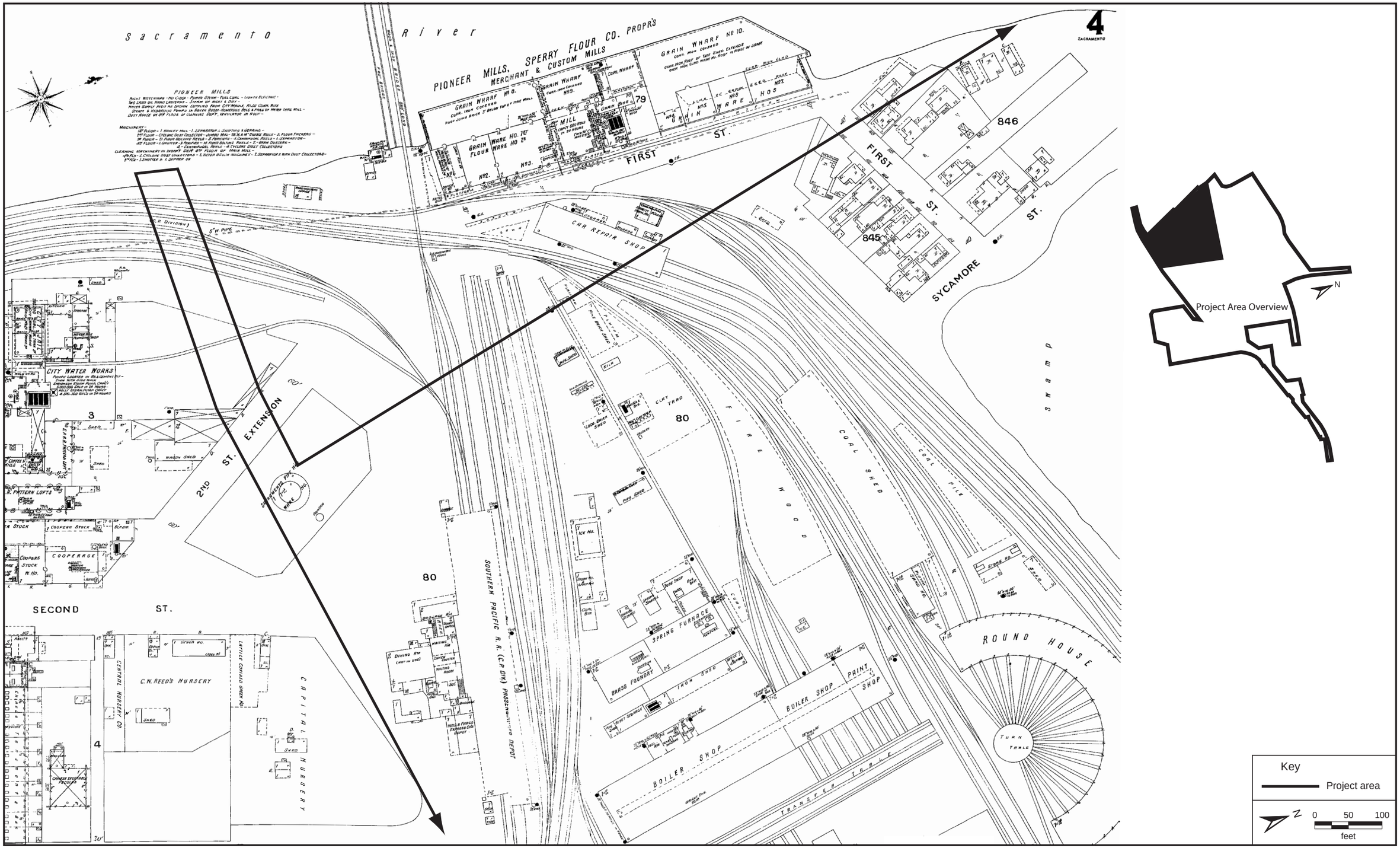

Figure 7. 1895 Sanborn fire insurance map showing the Sycamore neighborhood, the Pioneer Flour Mill, and the western section of the Sacramento Shops

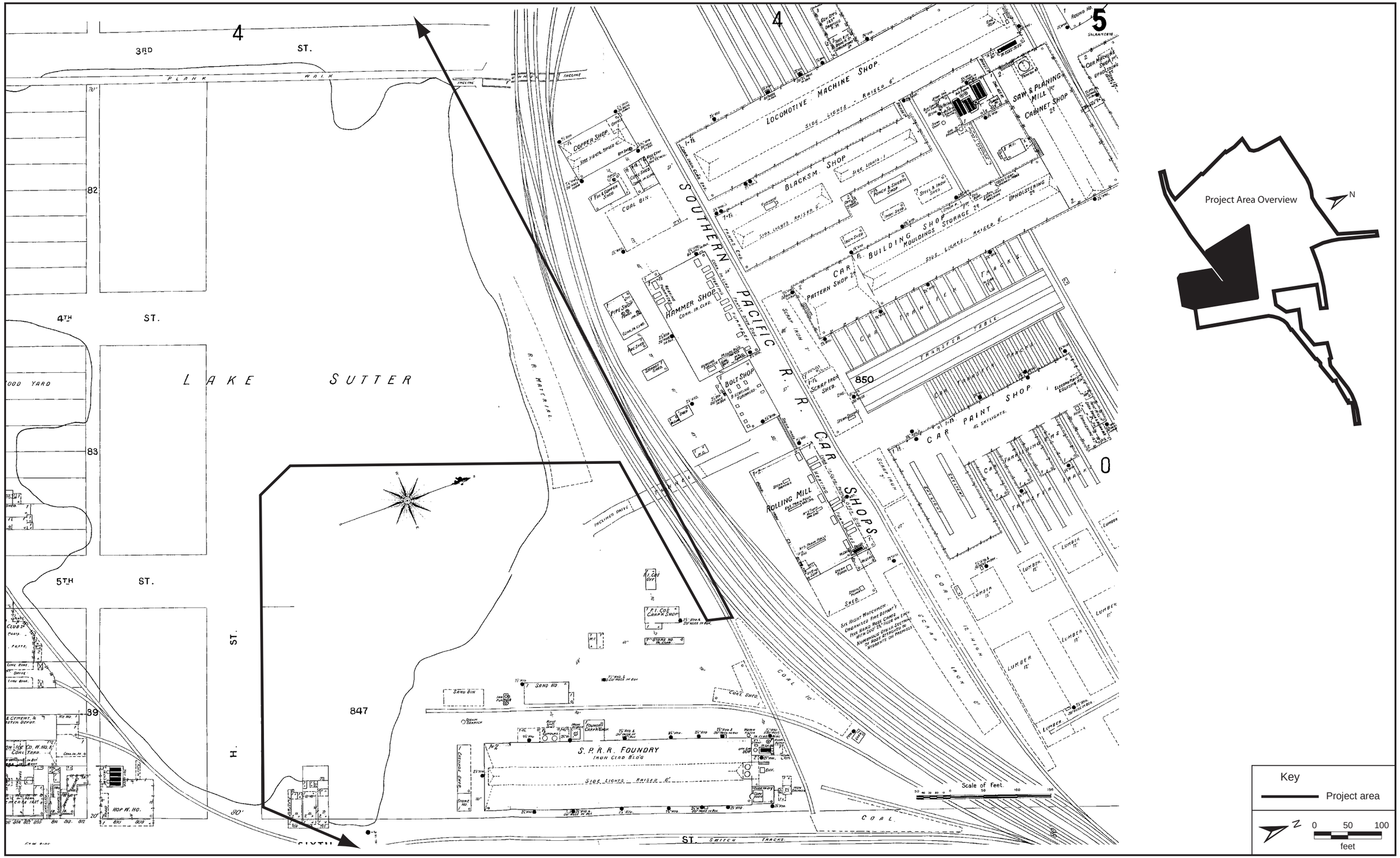

Figure 8. 1895 Sanborn fire insurance map showing the eastern section of the Sacramento Shops including the foundry

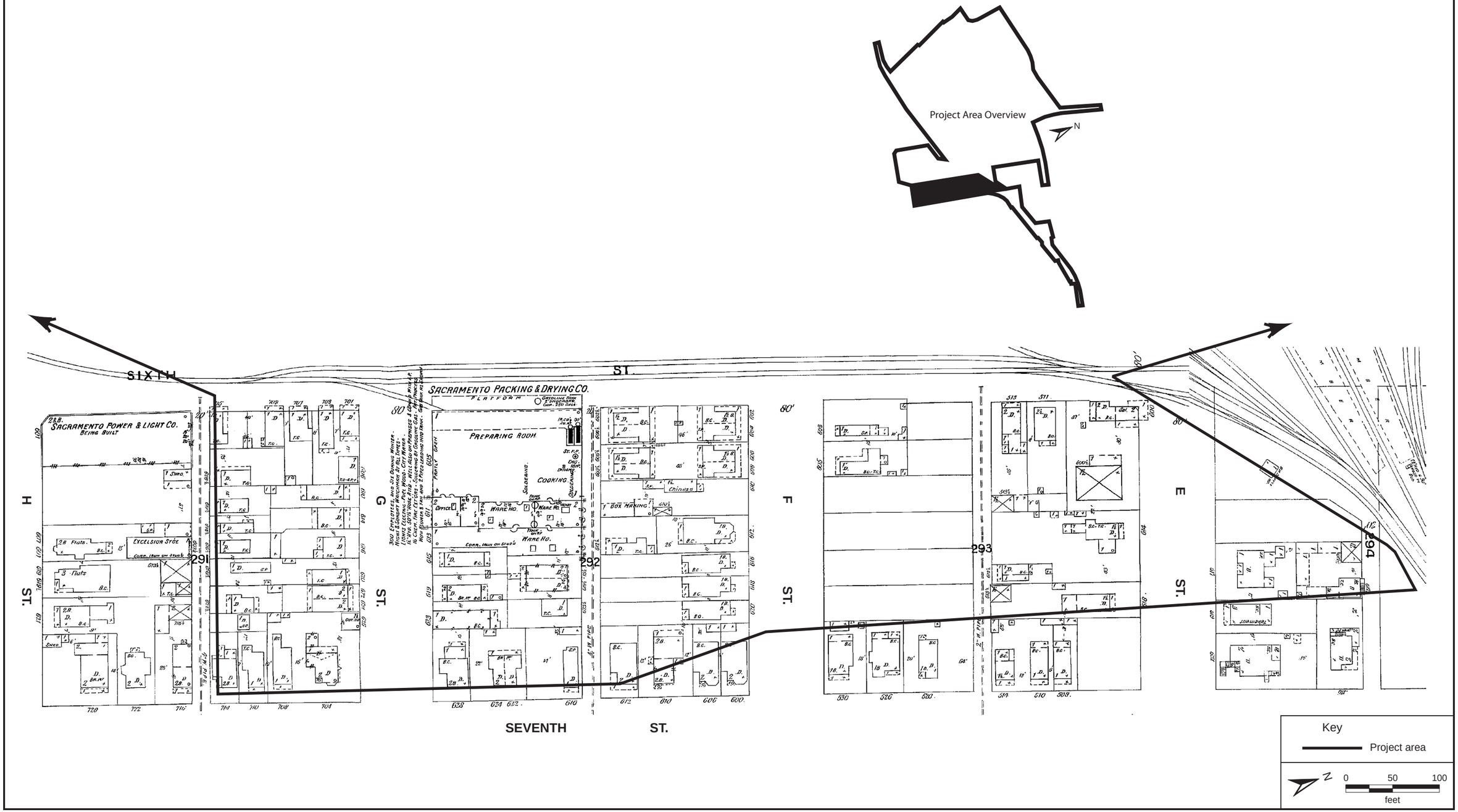

Figure 9. 1895 Sanborn fire insurance map showing the 6th and 7th Street Corridor

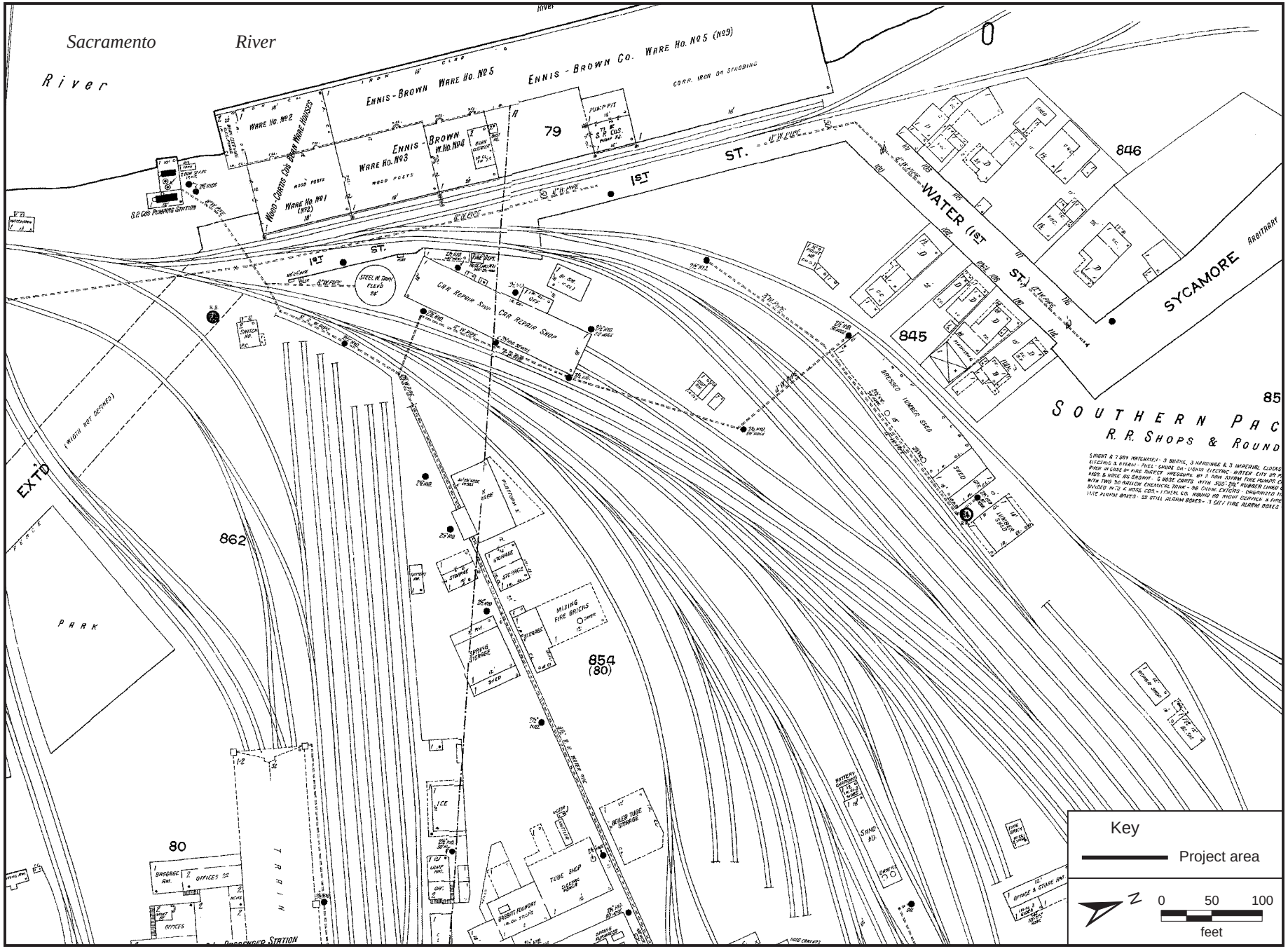

Figure 10. 1915 Sanborn fire insurance map showing the Sycamore neighborhood and the Sacramento riverfront

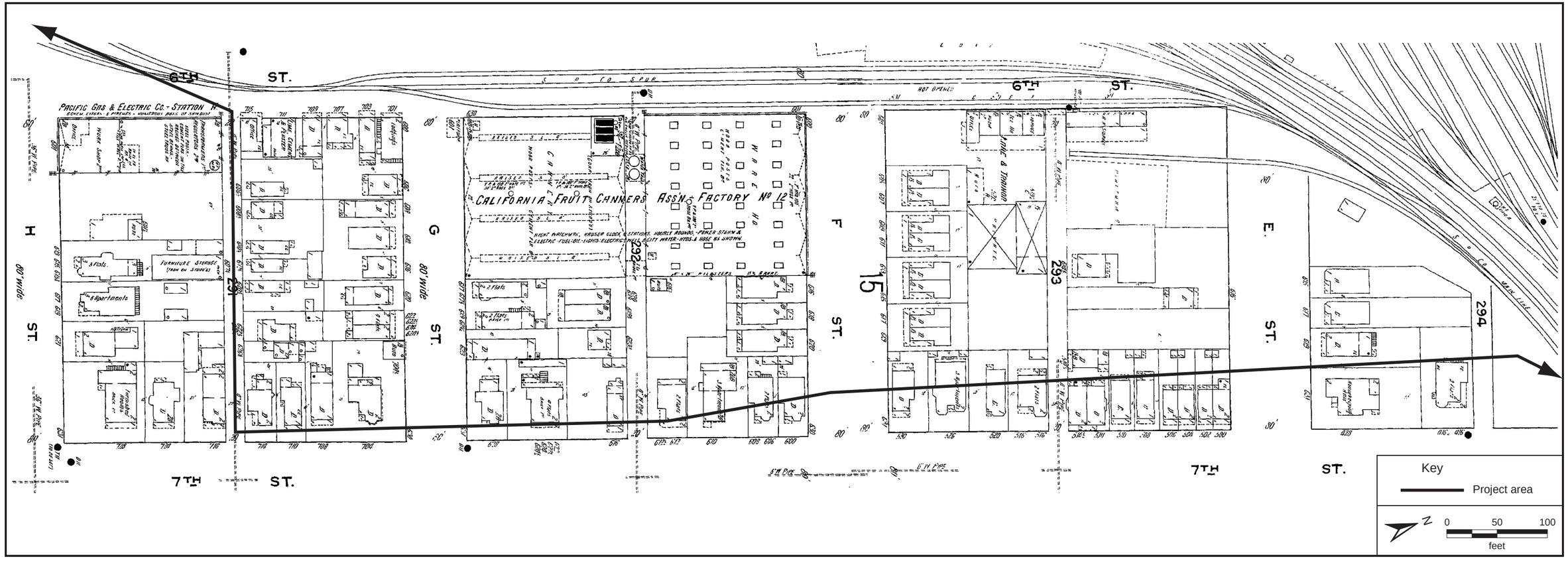

Figure 11. 1915 Sanborn fire insurance map showing the 6th and 7th Street corridor

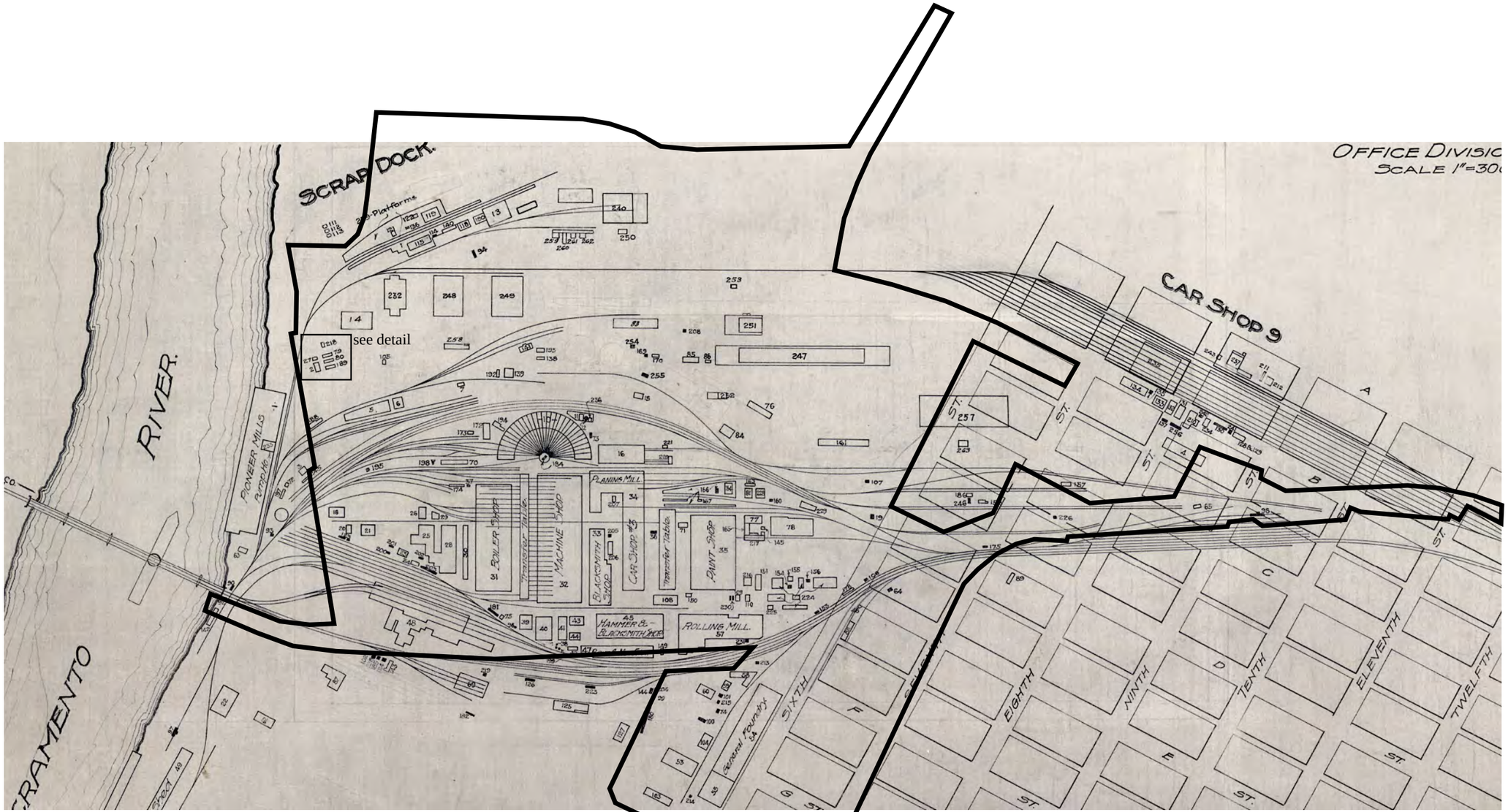

Figure 12. 1920 map of Sacramento Railyards with approximate project area location

on previous work in Sacramento, a preliminary research framework was developed, and the significance of the resources assessed with this framework.

Archaeologically Sensitive Areas (ASAs), those portions of the initial phase that contain potentially significant archaeological resources, were defined and mapped (Figures 13 and 14).

Previous Archaeological Work

The records search at NCIC revealed that no prehistoric archaeological sites have been recorded in the immediate initial phase. A prehistoric site was discovered, however, adjacent to the initial phase on the northwest corner of H and 6th streets. During monitoring for the construction of light rail trackway along H Street, Tremaine & Associates, Inc., uncovered three burials, six cremations, and one housepit.[30] The site likely extends beneath H and 6th streets and into the current initial phase. Another site, prehistoric cemetery CA-SAC-38 located several blocks to the southeast, was identified in and adjacent to Cesar Chavez Park, on the blocks bounded by 9th, 10th, H, I, and J streets.

The archaeological potential of the Sacramento Railyards was studied by ASC in 1989[31] and 1990.[32] Although the senior author of that study surveyed the property and found no evidence of archaeological remains, the report noted that "the entire SP [Southern Pacific] Railyards property has the potential to contain legally important historic-period archaeological deposits and materials".[33] An architectural inventory and evaluation of the Railyards was conducted by Historic Environment Consultants in 1998 and resulted in a proposed National Register district—the Shops Historic District—encompassing the Central Shops area.[34]

Additional studies have been conducted within or adjacent to the initial phase, including historical research and overviews, archaeological and architectural evaluations, intensive and reconnaissance

[30] Carper, Mark A., Letter Report for Archaeological Work Related to the West Side of the Union Pacific Railyard Stand-Pipe System Relocation. Tremaine & Associates, Inc., Dixon, California. Submitted to Ron Perkins, Sacramento Regional Transit District, 8 February 2006; Kim Tremaine, Principal Archaeologist, Tremaine & Associates, Inc., personal communication to Mark Walker, 9 August 2006.

[31] Praetzellis, Adrian, and Mary Praetzellis, *The Archaeological Potential of the Sacramento Station Site, Sacramento, California,* Anthropological Studies Center, Sonoma State University, Rohnert Park, California. Prepared for AKT Development, Sacramento, 1989.

[32] Praetzellis and Praetzellis, *Southern Pacific Railyards,* 1990; Praetzellis, Adrian, and Mary Praetzellis, *Preliminary Issues and Findings: Archaeology*, 1990.

[33] Praetzellis and Praetzellis, *Preliminary Issues,* 1990, p. 7.

[34] Historic Environment Consultants, *Central Pacific/Southern Pacific Railroad Railyards: Historic Property Inventory and Evaluation Report.* Historic Environment Consultants, Carmichael, California. Prepared for Union Pacific Railroad Company, 1998.

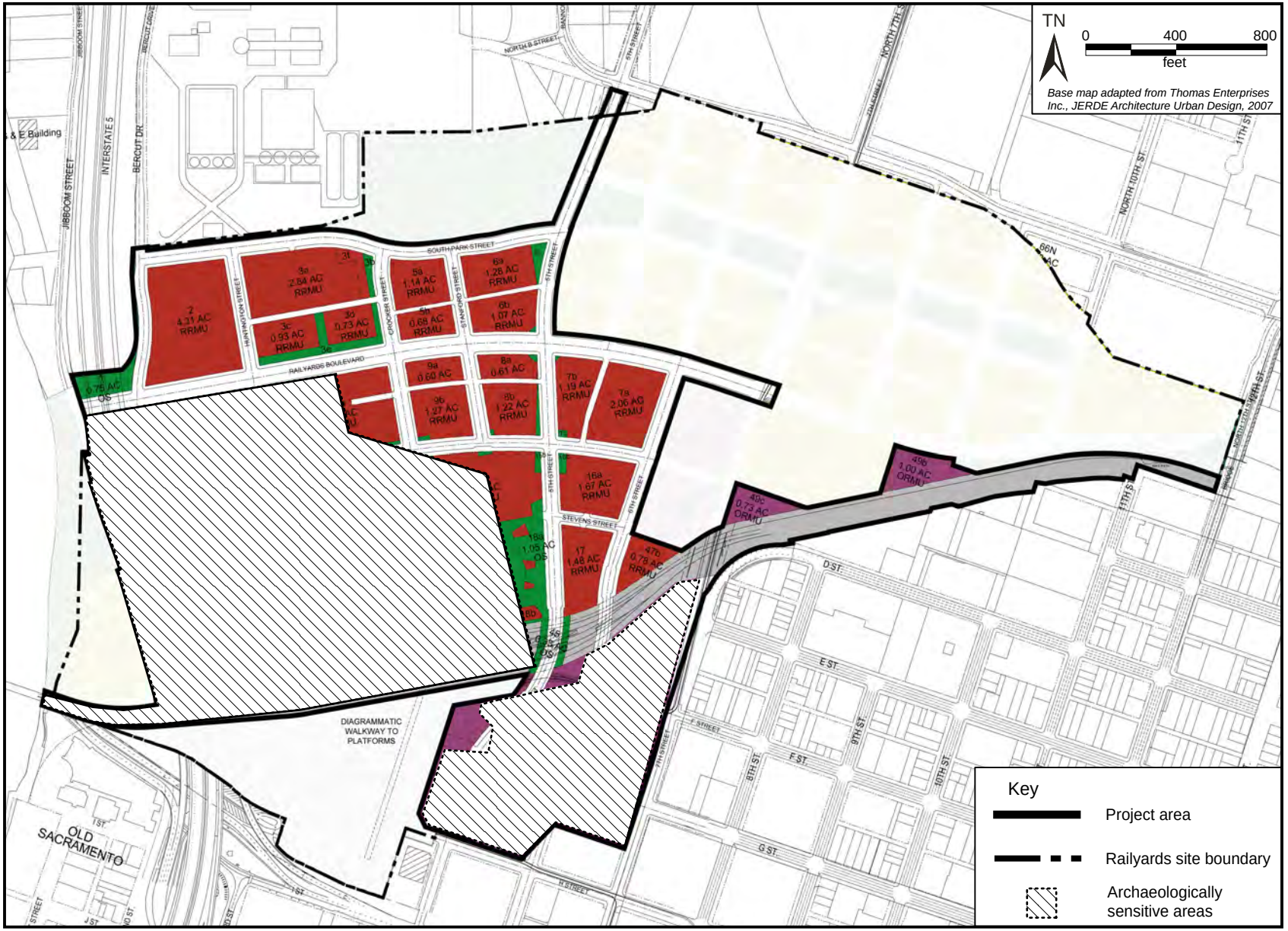

Figure 13. Archaeologically sensitive areas (ASAs)

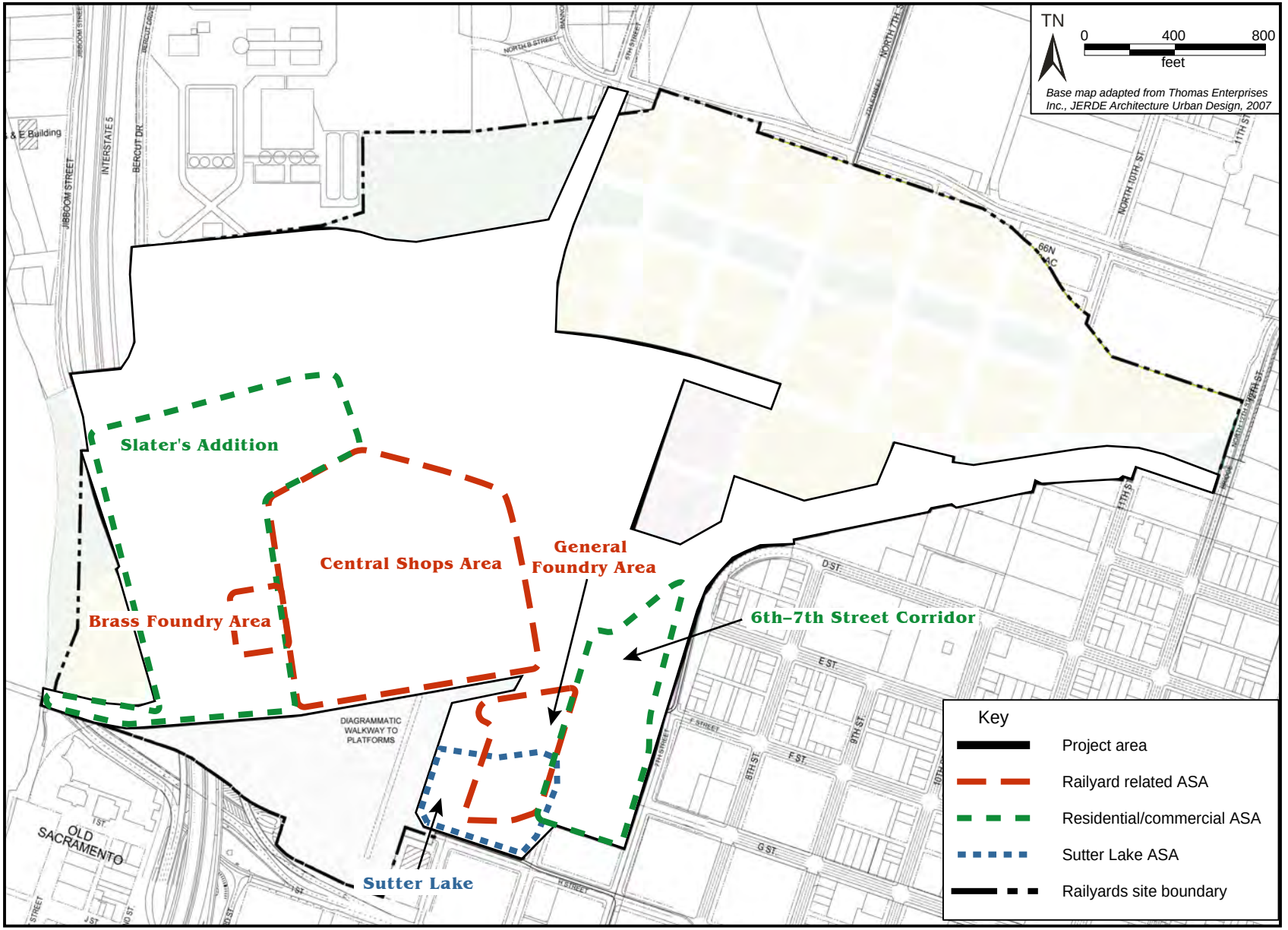

Figure 14. Archaeologically Sensitive Areas (ASAs) within the project area

project surveys, and construction monitoring. Several individuals and firms have prepared reports on these studies, including the Institute of Western Maritime Archaeology,[35] Brienes, West & Schulz,[36] County of Sacramento,[37] Gross,[38] Henley,[39] Lindstrom,[40] McGuire et al.,[41] O'Connor and Wiant,[42] Page & Associates,[43] and Peak.[44]

Several historic-period archaeological resources have been excavated in the initial phase. In 2000 an archaeological survey and historic study report were prepared for the extension of 7th Street across the Railyards property.[45] The report determined that the 7th Street initial phase may contain important historic-period archaeological deposits and materials. While that initial phase's boundaries encroached into the front yards of the former houses shown on historic maps, these would not likely contain archaeological deposits. An exception was one house on the corner of E and 7th streets, whose backyard was located in the initial phase; a location that may have backfilled privies or wells that could contain eligible archaeological deposits. Further archaeological remains were predicted for an area at the junction of D and 7th streets, where evidence of the 6th Street levee and railyard-related tracks and structures could be present. Archaeological testing was recommended for those locations. Tremaine & Associates, Inc., excavated within the 7th Street initial phase and uncovered remains of the 6th Street levee; two trestle bents from the earliest years of the railroad; a historic-

[35] Institute for Western Maritime Marine Archaeology, *Evaluation of Navigation Hazards in the Sacramento River, Sacramento and Yolo Counties*, prepared for California State Lands Commission, On file, North Central Information Center (NCIC), Sacramento, 2002.

[36] Brienes, West & Schulz, *Overview of Cultural Resources* , 1981.

[37] County of Sacramento, *Draft Environmental Impact Report for 8th and G Streets County Multi-Purpose Building,* Department of Environmental Review and Assessment, Sacramento, 1991.

[38] Gross, C., *Site Record for CA-SAC-689.* On file, NCIC, Sacramento, 2003.

[39] Henley, James E., *Letter report to Alcides Freitas, Environmental Coordinator, Community Development and Environmental Protection Agency regarding five blocks under consideration as potential sites for a County jail.* On file, NCIC, Sacramento, 1980.

[40] Lindstrom, Susan, *Preliminary Literature Review, Prehistoric and Historic Archaeological Resources, Richards Boulevard Area Master Plan, Environmental Impact Report, City of Sacramento, Sacramento County.* Prepared for EIP Associates, Sacramento, 1991.

[41] McGuire, Pamela, Kenneth N. Owens, Susan Searcy, and Jim West, *Alkali Flat Redevelopment Area, Determination of Eligibility for Inclusion in the National Register of Historic Places.* Prepared for the City of Sacramento. Sacramento, 1979.

[42] O'Connor, Denise, and Wayne C. Wiant, *Archaeological Reconnaissance of the Proposed Sacramento Light Rail Transit Project.* California Department of Transportation, District 3, Marysville, 1982.

[43] Page & Associates, *Sacramento Old City Residential Building Survey.* Charles Hall Page & Associates, Inc., San Francisco. Prepared for the City of Sacramento, 1976.

[44] Peak, Ann S., *Archeological Assessment of the Sacramento City Filtration System Expansion—Sacramento County, California,* Ann S. Peak and Associates, Sacramento. Prepared for Environmental Assessment and Resource Planning, Sacramento, 1974.

[45] [45] Praetzellis, Adrian, Grace Ziesing, and Michael Newland, *Archaeological Survey Report and Historic Study Report for the 7th Street Extension Project, Sacramento, California,* Anthropological Studies Center, Sonoma State University, Rohnert Park California. Prepared for EIP Associates, Sacramento, 2000.

period community refuse deposit with materials dating from the 1860s through the 1910s; and features representing water reclamation from the 1870s through the 1910s.[46]

Tremaine & Associates, Inc. also conducted two archaeological investigations within the Railyards that uncovered several Chinese gaming pieces in an area concluded to be the tip of the former Slater's Addition promontory.[47] Debris associated with the filling of Sutter Lake (wood, brick, glass, and ferrous nodules) was also observed. A single prehistoric artifact, a basalt core, was uncovered approximately nine feet below the surface and it was concluded that the area was sensitive for additional prehistoric remains.

Additional historic-period resources in the current initial phase include the remains of the 1855–1878 Sacramento Gas Works, identified during archeological monitoring for the Sacramento Railyards 2003 soil remediation.[48] Archaeologists uncovered the partial remains of two circular brick structures, designated as CA-SAC-689H, that historically supported gas storage tanks. Each was approximately 80 ft. in diameter with 3-ft.-thick walls. Coal slag and glass and ceramic artifact fragments were also uncovered in the vicinity.

During an evaluation of navigation hazards in the Sacramento River, the remains of 518 pilings (CA-SAC-658H) that once supported the wharf of the Pioneer Flour Mill were recorded.[49] Three wooden platforms, deeply buried in the riverbank rip-rap, were also recorded as relating to the former milling operation.

Other resources include the former site of Sutter Lake or China Slough, listed as State Historic Landmark No. 594, and a segment of the route of the first transcontinental railroad, designated as CA-SAC-478H.[50]

Research Context: Prehistoric Archaeology

Although human activity in parts of California's Central Valley has been documented as far back as 9,000 to 12,000 years before the present, claims of similar antiquity for the Sacramento locality have

[46] Tremaine, Kim J., and Wendy J. Nelson, *Final Report of Archaeological Testing and Monitoring for the City of Sacramento's 7th Street Extension Project, Sacramento, California*. Tremaine & Associates, Dixon, California. Prepared for Nadar Kamal, Department of Public Works, City of Sacramento, 2006.

[47] Carper, Mark A., Letter Report for Archaeological Work Related to the West Side of the Union Pacific Railyard, Submitted to Ron Perkins, Sacramento Regional Transit District, Tremaine & Associates, Inc., Dixon California, 6 November 2005; Carper, letter report, 2006; Tremaine, personal communication, 9 August 2006.

[48] Gross, C., *Site Record for CA-SAC-689.* On file, NCIC, Sacramento, 2003.

[49] Allan, James M., *Site Record for CA-SAC-658H*, On file, NCIC, 2002.

[50] Roard, Gabriel, and Maggie Craw, *Site Record for CA-SAC-478H*, On file, NCIC, 2001.

not been supported.[51] This absence of evidence might be due to geomorphological processes such as sedimentation rates, or might result from land-use practices and social/technological organization of early peoples, or a combination of these factors. Archaeological evidence of Paleoindian and Early Archaic period use of the region has been identified at several sites in the Sierra foothills within 60 miles of Sacramento in the form of temporally diagnostic tools, radiocarbon dates, and obsidian-hydration rim values.[52] Far more evidence exists for substantial human occupation of the Sacramento locality and environs beginning about 4,000 to 5,000 years ago.[53] The period from ca. 5,000 years ago to Euroamerican contact has been divided into several eras on the basis of observed differences in archaeological remains

The first published prehistoric cultural sequence for central California,[54] ultimately known as the Central California Taxonomic System, or CCTS, had its inception in the Sacramento–San Joaquin Delta and environs. The sequence, based in large part on changes in burial position and grave goods within large, stratified sites, identified three distinctive culture horizons: Early, Middle, and Late. The scheme has undergone much revision,[55] but the labels for these three distinctive periods remain in general use. One of the most enduring revisions was the introduction of the term *pattern,* which is a way of life—including different technological, economic, and ceremonial traits—shared by a number of different peoples residing in a particular geographic space.[56] The sequence begins with the Windmiller pattern, followed by the Berkeley pattern, and the Augustine pattern. These three patterns—which equate with the Early, Middle, and Late periods of the CCTS—are briefly outlined below, Dating of the patterns would have differed geographically, and the ranges given should be seen as flexible. In areas of more intensive archaeological investigations, some archaeologists have developed specific subdivisions, detailing archaeological assemblages that are

[51] Moratto, Michael J., *California Archaeology*. Academic Press, Orlando, Florida, 1984.

[52] Moratto 1984; Peak, Ann S., and Harvey L. Crew, An Archaeological Data Recovery Project at CA-CAL-S342, Clarks Flat, Calaveras County, California. In *Cultural Resources Studies, North Fork Stanislaus River, Hydroelectric Development Project, Volume 2*. Sacramento, 1990; Pryor, John, and Russell Weismann, Archaeological Investigations at the Skyrocket Site, CA-CAL-629/630, *the Royal Mountain King Mine Project. Proceedings of the Society for California Archaeology 4*. San Diego, 1991.

[53] Brienes, West, & Schultz, *Overview of Cultural Resources,* 1981.

[54] Lillard, Heizer, and Fenenga, *An Introduction to the Archaeology of Central California.* Sacramento Junior College, Department of Anthropology, Bulletin 2, Sacramento, 1939; Lillard, J.B., and W.K. Purves, *The Archaeology of the Deer Creek–Cosumnes Area, Sacramento County, California.* 1936

[55] Beardsley, Richard K., *Temporal and Areal Relationships in Central California Archaeology*. University of California Archaeological Survey Reports 24 and 25. Berkeley, 1954; Bennyhoff and Fredrickson 1994; Bennyhoff and Hughes 1987; Fredrickson, David A., Early Cultures of the North Coast Ranges, California. Doctoral dissertation, University of California, Davis, 1973; Ragir 1972

[56] Fredrickson 1973:40.

believed to represent individual cultures or indigenous people or, on a finer scale, distinct sociopolitical groups (e.g., Bennyhoff's graphic sequences in Elsasser 1978).[57]

Early Period/Windmiller pattern (ca. 3000 – 500 B.C.). The pattern is named for the Windmiller site (CA-SAC-107), a mound in the Deer Creek–Cosumnes River area. The artifact assemblage of the pattern consists of heavy stemmed and leaf-shaped projectile points of chert and obsidian and relatively rare milling equipment; objects found as grave goods, including charmstones and abalone ornaments, were highly stylized and well-made. The rigid mortuary complex of the Windmiller pattern—with its ventrally extended burials (i.e., lying face down) with head oriented to the west—suggests a tightly controlled social organization. Although an emphasis on hunting has been inferred, dependence on anadromous fish may account for such early organization.[58] In other respects, Windmiller sites appear to represent the Millingstone complex found throughout California at this time period, associated with a relatively dry climate.[59] Several Windmiller sites are known in the Stockton locality, but none have been identified in Sacramento.

Middle Period/Berkeley pattern (500 B.C. – A.D. 900). The onset of the Middle period was marked by the Berkeley pattern, with its abrupt shift in burial mode (from prescribed extension to flexed) and a milling-tool kit dominated by the mortar and pestle. Projectile points were concave-base or side-notched forms, with a shift away from Napa obsidian to western Great Basin sources. These large projectile point forms were used with the dart and dart thrower, or atlatl, a tool also in use in the earlier period. Shell beads, imported from the coast and fashioned into elaborately varying forms, became common in this period, with some human burials accompanied by thousands of beads and other grave goods. An emphasis on bone tools during this period reflects a resourceful adaptation to the generally stone-poor Delta region. Based on linguistic evidence, the beginning of this period is believed to represent the arrival of Miwokan-speaking people into the Delta region, at a time of improved climatic conditions.[60] Despite the indications of prosperity and increased sedentism, there is also considerable flux during this period, with a continuation of various Windmiller traits in the south that suggests retention of earlier traits by a displaced group. Middle-period sites are relatively common in lower Sacramento valley, including site CA-SAC-43, an

[57] Elsasser, Albert B., Development of Regional Prehistoric Cultures. In *California,* edited by R.F. Heizer, pp. 37-57. Handbook of North American Indians, Smithsonian Institution, Washington, D.C., 1978.
[58] Schulz, P. D., *Osteoarchaeology and Subsistence Change in Prehistoric Central California.* Doctoral dissertation, Department of Anthropology, University of California, Davis, 1981.
[59] Wallace, William J., Post-Pleistocene Archeology, 9000 to 2000 B.C. In *California,* edited by R.F. Heizer, pp. 25-36. Handbook of North American Indians, Smithsonian Institution, Washington, D.C., 1978.
[60] Moratto 1984:210.

intensively investigated site on the Sacramento River to the south.[61]

Late Period/Augustine Pattern (A.D. 900 – Historic). The influx of new groups entering the Central Valley from the north (the related Nisenan and Patwin in the Sacramento area), beginning as early as A.D. 700, is marked by a shift in artifact assemblage, exchange networks, and ceremonial affiliation (e.g., appearance of the banjo-shaped abalone ornaments of the Kuksu cult). Among the stylistic changes in the valley was a greater elaboration of utilitarian forms, such as dressed mortars. An important change in technology—the introduction of the bow and arrow replacing the dart and atlatl—is represented in the smaller side-notched projectile points of Napa obsidian. During the early phase of the Augustine pattern, some social disorganization associated with more stressful environmental conditions is suggested.

The later part of the Late period marks a return to stability and increased sedentism in the area. Social stratification and elaborate ceremonialism are evidenced among grave goods, while wide-ranging exchange networks can be inferred from shell beads and other exotic items. The ethnographic distribution of cultural groups is assumed to have been in place by this time throughout much of central California, and the lifeways from the onset of this period were probably very similar to those encountered at first Euroamerican contact.

Historic period. During the time of European exploration in the late 18th century, native people were encountered in the Sacramento vicinity and surrounding area living atop habitable knolls in villages along the edges of rivers and wetlands. Later Euroamerican scholars concluded that the people occupying the area of the lower American and Sacramento river basins east of the Sacramento River were speakers of the Nisenan, or Southern Maidu, language of the Penutian language family.[62] These appellations, however, are strictly linguistic and have no relationship to social or political units. The Nisenan village of *Momol* was reported by one source[63] just south of the American River and west of the Sacramento River, within or immediately north of the current initial phase; other sources do not show any ethnographic sites in or near the initial phase.

[61] Bouey, Paul D., *Final Report on the Archaeological Analysis of CA-SAC-43.* Far Western Anthropological Research Group, Davis, California, prepared for Department of the Army, Corps of Engineers, Sacramento, 1995.

[62]Beals, Ralph L., Ethnology of the Nisenan, *University of California Publications in American Archaeology and Ethnology* 31(6):pp. 335-414. Berkeley, 1933; Kroeber, Alfred L., *Handbook of the Indians of California.* Smithsonian Institution, Bureau of American Ethnology, Bulletin 78. Dover edition reprint, 1978. Dover Publication, Inc., New York, 1925; Wilson, Norman L., and Arlean H. Towne, Nisenan, In *California*, edited by R.F. Heizer, vol. 8, Handbook of North American Indians, Smithsonian Institution, Washington, D.C., 1978.

[63] Wilson and Towne 1978:388.

The Sacramento locality is situated near the somewhat arbitrary boundary delineating regions occupied by speakers of other languages of the Penutian language family—Patwin, either 7 miles to the west or on the western bank of the Sacramento River, and Plains Miwok about 7 miles to the south. All of these peoples visited the rivers and wetlands in the Sacramento area during the winter months to gather certain plants, hunt and fish, and interact with neighboring villages to obtain items through trade and form social and political alliances. Weather conditions in the summer made the plains and marshes inhospitable, and village groups regularly relocated to the eastern or western foothills. Within half a century of European contact, several epidemics attributed to malaria, smallpox, and a variety of introduced diseases; overt hostilities between native and non-native groups; and the recruitment of neophytes for San Francisco Bay Area missions decimated native groups throughout the Central Valley, leaving a substantially reduced population.[64] In Sacramento, the first primary effects occurred when the efforts at obtaining neophytes for the San Francisco Bay area missions reached into the Central Valley and Delta regions.

Prehistoric-era Archaeological Resource Types

In contrast to historic-era resource types, which are discussed in terms of archaeological features (below), potential prehistoric resource types are discussed as sites; an archaeological site is the location of past activities evidenced by material remains. Unlike historic-era resources whose characteristics and locations can often be pinpointed from archival documents, the nature and location of prehistoric sites must be predicted, based on a combination of environmental and sociocultural factors. These factors include the distribution of known prehistoric sites in the locality or region, archaeological and environmental information recovered from known sites regarding site occupants' activities and the use of the environs over time, detailed accounts of contact-period settlement, along with an understanding of the prehistoric environmental setting of the initial phase. The Railyards site—with its confluence of two major rivers (providing excellent resources as well as travel routes), an oxbow lake with associated marshland, and elevated locations suitable for habitation—has the necessary environmental attributes to have supported a wide range of prehistoric resource types, from long-term occupation sites to locations of isolated artifacts or features representing limited activity. The resource types that may be present, along with the cultural materials that might be expected within each site type, are described below.

- Occupation site
- Other multiconstituent site

[64] Cook, Sherburne F., *The Conflict Between the California Indian and White Civilization.* University of California Press, Berkeley, 1976; Moratto 1984.

- Lithic site
- Sparse lithic scatter
- Isolated artifact or feature
- Contact site
- Mortuary complex

Occupation Site

Occupation sites may include some or all of the following features and artifacts: diverse stone tool types representing different stages in their use life (production, use, discard); milling equipment (bowl and hopper mortars and pestles, millingstones and handstones); bone and shell tools and groundstone artifacts indicating a wide range of activities; extensive midden soils (may be absent due to leaching at earlier sites); heat-altered rock; floral and faunal dietary remains (may not preserve at earlier sites); features (including storage facilities, hearths, ovens; building remains including housepits, postholes, daub and other building remains); activity areas representing within-site diversity; human burials and cremations; ceremonial objects.

Most occupation sites were the focus of activity for groups of people over long periods of time; thus they have the potential to address the full spectrum of research issues identified for the area's prehistory and contact-period Native American history, with a special ability to yield information on social structure, demography, and ceremonial activities.

Other Multiconstituent Site

These sites have evidence of repeated use and diverse activity, including use of portable milling tools, but without midden soils, food remains, ceremonial objects, or features attributable to occupation. These may be occupation sites that no longer retain midden soils or floral or faunal remains, although other features may be present to make them identifiable as occupation sites; if not, they are classed under the Other multiconstituent site resource type.

Because multiconstituent sites were focal points of human activity, they can be used to address a wide range of research issues, especially those relating to settlement and subsistence. In contrast to intensively used Occupation sites, these sites have a greater potential for containing single-component deposits that are essential for clear temporal assignment and for separating out functionally distinctive activities.

Task-specific Site

These sites consist of flaking debris and tools associated with flaked-stone tool manufacturing or maintenance/repair (debitage, cores, and assays; hammerstones; worn-out or broken tool remains); may include sparse evidence of more varied use, such as short-term camping represented by fire hearths, heat-affected rock, and limited faunal remains. Another kind of resource processing that results in lithic tool debris would have been common at the Railyards site—plant and other resource collection and processing. These activities may leave deposits of expedient flake tools exhibiting evidence of cutting and scraping, and battered core and cobble tools exhibiting battering.

This resource type can be used to address questions regarding resource procurement and exchange, technology, and hunting and plant-collecting strategies. While lithic scatters usually occur throughout occupation sites, the lithic site—because of its more limited function—has the potential to contain single-component assemblages that can reflect changes in these research domains over time.

Sparse Lithic Scatter

Similar to above, but quantities of materials are low; only flaked-stone artifacts may be present; and the deposit restricted to the surface or a shallow depth.

Due to the low frequencies and limited diversity of materials in sparse lithic scatters, information from these sites cannot be directly used to address important research questions. These sites' locations, however, are valuable for settlement studies, while data regarding the lithic elements of the sites can be useful in the aggregate to address the range of issues noted for lithic sites above (particularly when obsidian materials, which can provide relative dates, are present).

Isolated Artifact or Feature

This resource type consists of less than three discarded, lost, or cached flaked-stone or groundstone artifacts; other artifacts; or isolated ovens or hearths.

In situations where temporally diagnostic artifacts or datable materials are recovered, the isolated artifacts and features can provide information regarding prehistoric subsistence and settlement practices. Otherwise, isolated phenomena have limited information potential.

Contact Site

A contact site is an example of any of the above property types that was created, occupied, or used by Native Americans after contact with non-Indian travelers or settlers but prior to major alteration of

traditional lifeways. While not a property type in itself, such sites are sufficiently important that they require their own category.

This property type can yield important information on the effects of intergroup interaction, such as ethnic boundary maintenance, social-structure adjustments, subsistence and technological adaptations, and other human approaches to dealing with radical culture change. Information from contact sites can also enhance understanding of local history, as Native Americans were poorly represented in the early documentary record.

Mortuary Complex

While prehistoric cemeteries can be found in many regions of California, the mortuary complexes of the Sacramento–San Joaquin Delta region form a relatively distinctive site type that was the focus of archaeological excavations by amateurs and professionals in the first half of the 20th century. The often-stratified deposits, coupled with numerous stylistically distinctive artifacts associated with the human remains, formed the database for the regional chronology of the Delta and lower Central Valley, and by extension throughout central California. The sites have been typically found on indurated sand mounds and natural levees along rivers and sloughs.

This property type has yielded significant information about regional chronology, social structure, role specialization, gender inequalities, and the biological condition of human populations over time. Because many Native American groups today consider burials remains sacred, they constitute an extremely sensitive site type.

Research Context: Historical Archaeology

This section presents the historical background of the Railyards Initial Phase, focusing on those processes and events that would have left archaeological remains. The initial phase landscape is discussed here as the result of the main historical processes, consisting of (1) a need on the part of the City of Sacramento to control the floods that emanated from Sutter Lake and the American River, (2) the development of the Sacramento Railyards themselves, and (3) the development of the surrounding residential neighborhoods.

Flood control and Potential Archaeological Resources

During the 1850s and 1860s, a central concern in the development of Sacramento was flood control. The presence of the American River and Sutter Lake in the low-lying Sacramento area constituted a significant problem for the city. Sutter Lake's channels to the Sacramento and American rivers were breaches in the natural levees along the rivers' banks. Consequently it was from Sutter Lake that

Sacramento would flood when the rivers were sufficiently high. The serpentine channel of the American River through the marshland was another important factor in the disastrous flooding Sacramento suffered in the 1850s and 1860s.

Sacramento's first serious flood was in January 1850. This flood led to the construction of approximately 9 miles of levees, including a temporary one along the south side of Sutter Lake along I Street, and the construction of a sluice gate at the mouth of Sutter Lake on the Sacramento riverfront.[65] Flooding occurred again in 1852, 1853, and 1854, followed by more levee construction: the I Street levee was extended and made permanent; and a levee was in place by 1854 along 6th Street, running to Willow Lake and then northeast (see Figure 3). I, J, and K streets were raised from 1 to 5 feet.

A relatively dry period ensued from 1855 until December 1861, when Sacramento, along with much of California, was largely underwater until February 1862. This series of floods led to a concerted program of municipal flood control. The American River was rechanneled to meet the Sacramento River north of the initial phase, the levees were strengthened, and, in the roughly 4- by 10-block area south and west of Sutter Lake, a decade-long effort of street-raising commenced. In some places the streets were raised as much as 10 feet.

In December 1862 the Sacramento Board of Supervisors granted Sutter Lake and the adjacent lowlands to the Central Pacific Railroad (CPRR),[66] which had the resources and finances to fill and develop this land. By 1910 the CPRR had completely filled Sutter Lake and the old American River channel.

The filing of Sutter Lake was not a single concerted effort. Through much of its history, the CPRR filled the lake as it needed land. The bulk of the railyard expansion was through gradual filling of Sutter Lake from the north and west and, in the 20th century, the slough and low-lying marshland to the north of the railyard. Sutter Lake was not completely filled until 1910 after a concerted effort in response to concerns over the health risk posed by the lake. The main problem was that the lake essentially served as a large cesspool for the surrounding residences and the CPRR Railyards.

> For years and years the company used to use Lake Sutter as a dumping place for sweepings from the shops, and when the old locomotives were being broken up prior to 1899, as there was no sale for scrap, such things as old boilers, scrap from shearings in the boiler shop, old castings, etc. were dumped into the lake, . . . And when the contractors started to drive piles for the present station they ran into some of

[65] Brienes, West, & Schultz, 1981, p. 63.
[66] Yee, Alfred, "What Happened to China Slough," *Golden Notes*, vol. 40, no. 2, 1994, p. 2.

> those old boilers and ironwork in the bottom of the lake, smashing piles when they would hit some of that old junk under the sand.[67]

Residential waste from the houses bordering the lake along I Street, 6th Street, and Slater's Addition also contributed to the lake's decline. As early as 1877, Sutter Lake was referred to as "The Plague Spot of Sacramento."[68] A *Sacramento Bee* article in 1880 noted "About the waters may be seen all descriptions of decaying garbage, kitchen refuse, etc., and the stench arising from the green and slimy water is simply sickening."[69] The fact that many of the residences along the edge of the lake, especially on I Street, were Chinese increased the vituperation in the press, but also probably contributed to the City's overall lack of urgency about addressing the problem.[70]

The Railyards had been reclaiming portions of the lake as the need arose, gradually nibbling away at it from the north and west until, by the 1890s, it was half its former size (Figure 6). The City finally prevailed upon the Southern Pacific Railroad (SPRR), which owned the Railyards at the time, to fill the remainder of the lake in 1904. The project was completed in 1907.[71] The site of the lake remained an open sandlot until 1925 with the construction of SPRR's new passenger station.

The Railyards' landscape is largely a product of land reclamation and efforts at flood control. Some of the incidental or ad hoc filling, such as the dumping of scrap from the Shops, may have resulted in significant archaeological deposits. The main archaeological feature resulting from these efforts is the 6th Street levee, one of the earliest flood control efforts in Sacramento.

Development of the Railyards and Potential Archaeological Resources

The first CPRR buildings, built in 1863, were frame buildings on the east bank of Sutter Lake, along 6th Street near H and I streets.[72] After some filling, this area became the location of the General Foundry and associated structures. After a land dispute with the City, these buildings were moved to the current Central Shop location north of Sutter Lake (see below). The principal function of the Sacramento Railyards' shops was the maintenance and repair of the railroad's locomotives, but there were also periods when locomotives were designed and constructed on site, as were commissions for outside clients. The increasing scale of the CPRR/SPRR operations entailed

[67] Joslyn, D. L., *Sacramento General Shops, Southern Pacific Company Pacific Lines*, 1948, p. 50. Available online at http://www.cprr.org/Museum/Sacramento_Shops.pdf (accessed July 18, 2006).
[68] Jenkins, John C., "Sutter Lake or China Slough," *Golden Notes*, vol. 13, no. 1, 1966, p. 3.
[69] Ibid., p. 4.
[70] Yee, , "What Happened to China Slough," 1994, pp. 7–8.
[71] Ibid., p. 19.
[72] Joslyn, *Sacramento General Shops,* 1948, p. 12; Watkins, D.S., "Boy, Get a Plumber—Our Locomotive Has a Leak," *The Bulletin*, 1 May 1917, p. 6.

periodic expansions of the Railyards. From its initial 20-acre site, the Railyards expanded in fits and starts, growing to 40 acres by 1878, 145 acres by 1922, and to its current approximate 240 acres by the 1930s.[73]

The CPRR owned all but a few lots of the Slater's Addition by 1915. It owned about half of Block DE67 in 1870 and had finally acquired the entire block by 1910. The next block south, EF67, was purchased in stages by CPRR from 1900 to 1920, although there were still individual property owners along 7th Street as late as 1920. The entirety of Block FG67 and the north half of Block GH67 were acquired by the CPRR in 1924.[74]

Dougherty[75] notes that, probably due to the extensive acreage the Railyards had available for expansion, it always maintained its basic 1860s layout. The old buildings were not demolished and rebuilt to accommodate new technologies or management practices. Instead, they were redesigned, or new facilities were constructed in vacant areas or on new land created through filling. Buildings that could not be readapted were, however, generally torn down. The railyard expansion tended to take a modular form, with buildings and structures serving specific aspects of the railyard operations being clustered together. These groupings of buildings often shifted in function through time as technologies changed and railyard itself changed in function.

Within the Initial Phase boundaries, there are six main areas where different railyards functions clustered. These are the Central Shops, The Brass Foundry, the Brickyard, the Passenger Depot, the General Foundry, and the Scrap Yard, Other facilities in the initial phase, such as a lumberyard and various storage buildings, consisted of operations that would leave little in the way of archaeological remains. It should be noted that there were numerous railyard facilities outside the Initial Phase area, and that this discussion only treats those operations that were within the area.

Central Shops Area

Beginning in 1867, the first permanent railyard buildings were constructed. These were the Central Shops and formed the nucleus of the railyard operations. These buildings included the Roundhouse, Car Shop and Planing Mill, Machine Shop, Blacksmith Shop, and Paint Shop. Their location on the bank of Sutter Lake entailed substantial and deeply dug foundations. Joslyn describes the 1867 Car Shop and Planing Mill's foundation as "1500 cedar piles, sawed 12" square, 30 ft long" driven down

[73] Dougherty, Carolyn, *Draft Historic American Engineering Record for Central Pacific Railroad Company, Sacramento Shops (Southern Pacific Locomotive Works)* 2002. Available on-line at http://cprr.org/Museum/Sacramento_Shops_HAER.html (accessed July 2006).

[74] McGowan, et al., *Report on . . . Sixteen Blocks,* 1978– 1979, FG67 and GH67.

[75] Dougherty, *Draft HAER report for CPRR,* 2002.

to the bedrock with solid granite masonry on top, over which the actual building's brickwork was laid.[76] Other than the Roundhouse, which was demolished in the 1950s, the early Central Shops buildings still stand.

The Central Shops expanded to the south in a strip along the north side of the tracks. Between 1875 and 1895, a foundry and the Engine Car Repair Shop in this area were replaced by a shifting complex of buildings. The 1895 Sanborn map shows a copper shop, hammer shop, bolt shop and rolling mill. Twenty years later in 1915, the hammer shop and rolling mill were still there, but there was a new copper shop, along a with a number of other shops, including an air brake shop, electrical shop and a bearing shop. The hammer shop and rolling mill buildings were still operational in 1951, although the latter was labeled on the Sanborn Map as a "BLSM Shop."

The Central Shops area may contain legally important archaeological resources relating to the development and expansion of the Railyards' manufacturing operations that may provide information on 19th-century technological processes. Due to the presence of these resources, the Central Shops is designated as an Archaeologically Sensitive Area (Figure 14).

Brass Foundry Area

Between 1888 and 1892, the old Boiler Shop was moved to an area just west of the current Central Shops' Boiler Shop (Figures 7, 12, and 13) and was converted to a Brass Foundry and Spring Shop.[77] Other buildings in the Brass Foundry area included associated storage houses, an icehouse, a coal bin, and other storage sheds (for rivets, iron, and pipe). A babbit foundry was added by 1902. By 1920 the Brass Foundry and Spring Shop building, located just south of the Scrap Dock, was a "Cab and Fire Pan Shop" (Figure 12).

The Brass Foundry area may contain legally important archaeological remains relating to the expansion of the Railyards' manufacturing operations that may provide information on 19th-century technological processes. Due to the presence of these resources, the Brass Foundry is designated as an Archaeologically Sensitive Area (Figure 14).

The Brickyard Area

West of the brass foundry buildings was a brickyard. In 1895, this complex consisted of a clay yard with an associated crusher and clay mills, a kiln, a tar-dipping trough, a locomotive brick shed, a

[76] Joslyn, D.L., "The Southern Pacific Shops," *Golden Notes*, vol. 19, no. 4, 1973, pp. 6– 8.
[77] Joslyn, *Sacramento General Shops,* 1948, p. 48; Sanborn Map Company, Sacramento, 1895.

firebrick shed, and a pipe shed. By 1915 most of these buildings had been converted to storage facilities, although the clay yard was apparently still manufacturing fire brick.

The brickyard area may contain important archaeological remains relating to the expansion of the railyards manufacturing operations, particularly the development of subsidiary industrial facilities. This area lies within the Slater's Addition Archaeologically Sensitive Area. In addition to the resources associated with the brickyard operations, there may be archaeological deposits from earlier occupations.

Passenger Depot

The Passenger Depot, also known as Arcade Station, was constructed in 1879, to replace an earlier and overburdened depot that was near Front and L streets. The depot was hailed as "impressive and beautiful" and was touted as being capable of accommodating "all the passenger business likely to come to Sacramento for all time."[78] This was ultimately untrue and although the structure served for the remainder of the 19th century, it was outdated by the early 20th century, and, with the filling of Sutter Lake Arcade was replaced by the new depot in 1925, and the building was removed.

The Passenger Depot Arcade Station was an important part of the railyard operations but is unlikely to yield informative archaeological remains. Any information it may yield would be more efficiently recovered through documentary research. While the Passenger Depot is itself not a legally important archaeological resource, it lies within the Slater's Addition Archaeologically Sensitive Area, and there may be historical resources from earlier occupations.

The General Foundry Area

The General Foundry area is on the west side of Sixth Street (Figures 8, 12, and 13). The General Foundry was built between 1883 and 1895 on fill in the northeast part of Sutter Lake. It consisted of the Wheel Foundry in the north part of the building and the Iron Foundry in the south.[79] In addition to the foundry's ancillary constructions (coke shed, castings shed, sand house, and sand bin), the Car Pattern Shop was also located here. The General Foundry was located in the vicinity of the earliest railyard buildings, on the west side of 6th Street.

[78] Thompson & West, History of Sacramento County, California, with illustrations. With introduction by Allan R. Ottley, Howell-North, Berkeley, California, 1960. Originally printed in 1860.
[79] Joslyn, ibid., p. 40.

The General Foundry area may contain legally important archaeological resources relating to the earliest Railyards' operations and to 19th-century technological processes. Due to the presence of these resources, the General Foundry is designated as an Archaeologically Sensitive Area (Figure 14).

The Scrap Yard Area

The Scrap Yard Area, on land created by the filling of the old American River channel slough and surrounding marshland (Figure 12), was added between 1909 and 1917. Due to the difficulty of obtaining raw material on the West Coast, scrap recycling was a distinctive feature of the Sacramento Railyards operation from early on, and during the World Wars this operation received considerable attention. The Scrap Docks served as the main accumulation and sorting facility for the Southern Pacific line. During World War II up to 77 cars of scrap per week were deposited at the Scrap Dock. This material was then sorted into five main categories: (1) objects that could be immediately restored to service without any work (track bolts, spikes, etc.); (2) material and objects needing repair; (3) objects that could no longer serve their original purpose, but could be converted to another use; (4) objects that could be melted down and recast; and (5) scrap of no use to the railroad, but that could be diverted to other industries.[80]

In 1917 the Scrap Dock consisted of two platforms and a complex of small buildings, including a "Scrap Piler Shed," a "Reclamation Shed," and a "Reclaiming Plant for Steam Hose Joints."[81] By 1920 a steel foundry had been added at the east end of the complex, along with oxyacetylene plants and additional storage buildings; the Brass Foundry, Spring House, and Frog and Switch Shop had been relocated to the south of the Scrap Dock (Figure 12).

While the Scrap Dock area was a significant part of the Railyards' operations, it would leave little in the way of informative archaeological remains. The ca. 1917 Brass Foundry and other buildings to the south were also important, but given their late date, it is unlikely that archaeology would provide information that is not available through documentary sources. Therefore, the Scrap Dock was not designated as an Archaeologically Sensitive Area.

<u>Development of the 6th and 7th Street Corridor and Potential Archaeological Resources</u>

The 6th and 7th street corridor between D and H streets, like most of Sacramento in the early 1850s, was owned largely by speculators. John Sutter Jr., P.B. Reading, Jacob R. Snyder, Samuel Hensley, and Robert Merrill bought most of the lots in this four-block area, along with parcels throughout

[80] Dougherty, *Draft HAER for CPRR*, 2002; *Southern Pacific Bulletin*, "Out of the Scrap Pile," April 1942, pp. 3–7.
[81] Southern Pacific, *Sacramento Shops, showing buildings*, 1917.

Sacramento. Some construction began in the 6th and 7th street corridor in the early 1850s, especially on FG67 and GH67. The 1854 Coast Survey map shows that approximately 10 buildings had been constructed on FG67 and 11 on GH67 (Figure 3). In a comprehensive set of reports on the historical development of 16 blocks in Sacramento, McGowan et al. note that most of the buildings on FG67 were likely small houses, since all had a low valuation in 1854 (between $100 and $300).[82] At least 4 of the 9 households listed for both blocks in the 1854 city directory owned their residences.[83] The first industry on these blocks was the Union Brewery, located on the corner of 6th and G streets. The brewery became known as the Ohio Brewery in 1857 and remained at that location for the next 30 years. The 1851 and 1854, city directories list an "African Church" on 7th Street between F and G streets, which was cited in the McGowan et al. report. The church was, however, located on the east side of the street, which is outside of the initial phase.[84]

In the 1850s the 6th Street levee, which protected the city from the overflow of Lake Sutter, angled northeast from 6th Street through the FG67 and GH67 blocks and then southeast back onto 6th Street. The 1857 bird's-eye view of the city shows Sutter Lake, at the high-water line, and the 6th Street levee (Figure 4). It is probable that the levee was simply following a rise in the natural landscape. The 1854 U.S. Coast Survey map (Figure 3) shows at least two buildings unwisely located on the west side of the protective levee.

By 1860 Block EF67 was being developed, especially the northern half. CPRR purchased its first lots on the northeast corner of the block, a prelude to the railroad tracks that would cover the blocks by the 1930s. Residents of the corridor in the 1860s appeared to have been mostly of the working class or lower middle class. Listed occupations included two coopers, a barber, a painter, and a saddler. Although the upper-class Alkali Flat neighborhood was located on the east side of 7th Street, the D67–H67 neighborhood developed a working-class character, with residents living on more modest means in smaller residences. Reasons for the area's lower valuation likely include the neighborhood's proximity to the low-lying land along Sutter Lake and, after 1863, to the neighboring CPRR tracks and shops.

The only building identified on Block DE56 was owned by a P. Hollfelder, who operated a coal yard on I Street between 6th and 7th. Hollfelder purchased the northeast corner lot of DE56 sometime

[82] McGowan, Joseph A. et al., *Report on . . . Sixteen Blocks,* 1978–1979, FG67, p. 26.

[83] Colville, Samuel, *Sacramento Directory for the Year, 1853–1854.* California State Library Foundation, Sacramento, originally printed 853, reprinted 1997.

[84] St. Andrew's African Methodist Episcopal Church. Online at http://www.standrewsame.org/history (accessed July 22, 2006).

before 1860 and lived there until at least 1870.[85] No buildings are shown at this location any of the historic maps.

The 1870 bird's-eye view shows D67–H67 fully developed, with the exception of the southern half of EF67, owned by R.H. McDonald. Most of the buildings were small one- or two-story houses, with the exception of the Ohio Brewery and a three-story tenement building on the north side of E Street. Two buildings were located along the lakeshore on the west side of 6th Street at the junction of F street. A cluster of buildings, including what appears to be a church, is also depicted along the lakeshore on the west side of 6th Street at its junction with H Street. The church-like building is the "Chinese Chapel" listed in the 1869 city directory at the corner of 6th and H streets.[86] The 1890s bird's eye view shows three houses at this location, partially supported by stilts in the waters of Sutter Lake (Figure 6). These houses are again shown on the 1895 Sanborn map (Figure 8).

Residents through the late 1860s into the 1880s continued to be skilled as well as unskilled working-class households. Of at least 60 people listed in the 1869 city directory for D67–H67, approximately half worked as laborers, car makers, machinists, and carpenters for the railroad. A railroad foreman and an engineer also lived in the neighborhood. Other occupations included carpenters, blacksmiths, and plasterers, many of whom may also have worked for the railroad although their employers were not specifically indicated. Most residents were of U.S. origin, born in California and the eastern United States, or were European immigrants from Germany, Holland, Switzerland, and Ireland.

The 1895 Sanborn map (Figure 9) shows that, as in earlier decades, most of the buildings on D67–H67 continued to be modest one- or two-story dwellings, with the exception of the Sacramento Packing and Drying Company buildings, the three-story tenement building on E Street, a house-converted saloon on the corner of E and 6th streets, and a large stable behind the saloon. The Sacramento Packing and Drying Company had purchased the Ohio Brewery property in 1886 and owned lots on the northwest corner of the block where several dwellings were located that housed Chinese employees and a small box making operation.

The 1900 census provides a snapshot of the 6th and 7th street corridor at the turn of the century. Of 72 residences, 20 were owner-occupied. Most adults were born in either California or other western states (56) and the eastern U.S. (43). Most European immigrants were from Ireland (14) and England (10), although there were a few Germans and Italians as well. Twenty Chinese immigrants lived in the dwellings on the northwest corner of FG67 and worked at the neighboring Sacramento

[85] Draper, Robert E., *Sacramento City and County Directory for 1869*, H.S. Crocker & Co., Sacramento, 1869.
[86] Draper, Ibid., p. 211.

Packing and Drying Company. Five Euroamericans were also employed canning fruit at the factory. Most working adults were employed by the railroad (34) or were carpenters (5) and blacksmiths (7), possibly employed by the railroad. A policeman, a cigarmaker, and two bookbinders lived in the neighborhood.

Although there were still many small residences in 1915, the character of the blocks was becoming more industrial and residences were becoming more compact (Figure 11). In 1899 the Sacramento Packing and Drying Company had been incorporated by the California Fruit Canners Association and became the largest canning operation in Sacramento. The company used several trademarks, most notably "Del Monte." The dwellings on the northwest quarter of Block FG67 in 1900 had been replaced with a large warehouse. The company also owned most of the southern half of Block EF67, where they constructed four duplexes and several warehouses, railroad platforms, and offices. Throughout the blocks, several single-family dwellings had been replaced with apartments or duplexes, while others had been converted to flats. By 1915 CPRR owned all of Block DE67 and most of EF67.

The 1910 census shows some demographic changes in the neighborhood, the result of increasing immigration from southern Europe. Ten of the 52 families living here in that year were Italian. At this time, Italians accounted for the largest group of unskilled laborers working for the railroads.[87] There were several Portuguese families as well. Most employed people were working at the Railyards. Several residents worked at the railroad's foundry and 11 people worked at the cannery. There was a decline in home-ownership, with only 7 homes owner-occupied.

Ten years later Italian families continued to live in the neighborhood (11 out of 61 households) and 8 Mexican families had moved in. The housing remained dominated by rental properties. Over 50 working adults were employed by the railroad and 13 worked at the cannery. The railroad took over the cannery property in 1924 and the remaining lots on Block FG67 the following year. By 1930 all of the lots in the corridor were owned by the railroad.

The 1951 Sanborn map shows the railroad development that had occurred over the next decades. Railroad tracks cover Blocks FG67 and GH67. One small house on Block EF67 and three on DE67 are shown on the map, although a notation states that "all buildings removed, streets vacated, and blocks full of railroad tracks." No information on the occupants of these dwellings was found in the city directories or census schedules.

[87] Pierini, Bruce, "The Italians of Sacramento," *Golden Notes*, vol. 37, no. 2, 1991, p. 22.

Because the 6th-7th Street Corridor may contain legally important archaeological remains relating to early settlement, levee construction, and the development of working-class neighborhoods in 19th-century Sacramento, it is designated as an Archaeologically Sensitive Area (Figure 14).

Development of Slater's Addition and Potential Archaeological Resources

When the city of Sacramento was first surveyed, its northern boundary was Sutter Lake. A promontory jutted into the lake from the northwest and was easily accessible by a short bridge across the lake's inlet to the Sacramento River. An 1850 chart of the Sacramento River shows this bridge and the notation "Child's Ferry."[88] By October 1852 the promontory had been surveyed, divided into blocks and streets, and named Slater's Addition.[89] The neighborhood, also called the American Fork Addition, was named after Peter Slater, a Sacramento Commissioner in 1849. Speculators Jacob R. Snyder and Pierre B. Cornwall purchased most of the lots.

The only permanent construction shown on the 1854 Coast Survey map in Slater's Addition was the Sacramento Gas Works building, which was at the corner of Front and Sacramento streets. A flour mill and an ice house were also operating along the riverfront during the early 1850s.[90] An early occupation of Slater's Addition was noted in an 1852 newspaper, which reported that "several extremely bad boys . . . have erected themselves a shanty on the island of Sutter Lake, where they reside and maintain themselves by committing such depredations as the one here specified [shooting and stealing chickens]."[91] Offended, the boys requested a retraction, which was granted the following day.

The 1857 bird's-eye view of Sacramento (Figure 4) shows scattered houses and what may be agricultural fields or gardens.[92] The view cuts out all but the southernmost portion of the neighborhood, so it is unclear how far the settlement continued to the north.

By 1860 Snyder and Cornwall had sold many lots in Slater's Addition, especially in the area closest to the riverfront, between Sycamore and Broad streets. Several of the new landowners lived on their property, as indicated by the 1860 U.S. census and 1860 tax-assessment block books. Value of improvements on property ranged from $300 to $2,500. The residents included laborers, engineers, merchants, and a policeman. Most were from the eastern United States or Europe, although

[88] Ringold, Cadwalader, Chart of the Sacramento River, 1852.
[89] City of Sacramento, Tax Assessment Block Book, on file, SAMCC, various dates 1850–1930.
[90] Samora, Joseph P., "From Millstones to Rollers: A History of Sacramento's Flour Mill Industry," *Golden Notes*, vol. 44, no. 2, 2000, pp. 1–36.
[91] *Sacramento Union*, 22 Nov 1852, p. 2, col. 4.
[92] Baker, Bird's-eye view of Sacramento, 1857.

Mexicans and Chileans were also present. Women accounted for approximately one-third of the neighborhood's population. Many households were families, while many others were comprised solely of single young men.

After the establishment of the Railyards in 1863, CPRR began to purchase lots in the neighborhood. By 1870 the CPRR owned almost all of the property on the promontory, with the exception of two parcels on Lake Street, lots along Water Street (the Pioneer Flour Mills), the Gas Works property, and several lots in the Sycamore Street neighborhood north of the Gas Works. The Sycamore neighborhood is clearly depicted on the 1870 bird's-eye view (Figure 5), along with a scatter of small houses along the promontory. Two bridges connected I Street to the Railyards via the tip of the promontory. In later years, when pedestrians had to pass over an increasingly polluted lake, this route was referred to as the "Bridge of Sighs."[93]

Residents in Slater's Addition during the late 1860s and early 1870s included two Pioneer Flour Mill employees and at least four Sacramento Gas Works employees. There were also some smaller commercial enterprises in the area: a grocery owned by Robert Young was in operation from ca.1853 until at least 1866, and the American Laundry was here from the late 1860s through the early 1880s. The American Laundry was owned by a Connecticut man named S.B. Cooley and employed both Euroamerican and Chinese men. A Chinese "Joss House" was located somewhere in Slater's Addition.[94] Similar to the previous decade, residents originated from a variety of countries, including Ireland, Mexico, Prussia, the eastern United States, and China. Nearly half of the inhabitants were women, and nearly all households were families.

By 1880 First Street had been renamed Jibboom Street and CPRR had filled in Sutter Lake up to Third Street. Second Street had been extended through the Railyards to connect the main part of Sacramento with areas to the north—like the now tiny Sycamore Street neighborhood, the last residential remnant of Slater's Addition. The two blocks bounded by First, Sycamore, and Union streets was an economically mixed neighborhood that included at least six railyard employees, a furniture dealer, a shoemaker, and a locksmith. Many women held positions as dressmakers and "housekeepers," although it is unclear whether housekeeper referred to at-home work (the term "keeping house" was also used by the same census taker). All of the households in the Sycamore neighborhood consisted of either families or single or widowed women. Residents were mostly American-born, as well as a few Germans, Italians, and Swedes.

[93] Praetzellis and Praetzellis, 1990, p. 7.
[94] Draper, *Sacramento Directory,* 1869.

The 1890s bird's-eye view of Sacramento and the Railyards area (Figure 6) shows the CPRR Shops dominating the area, the inlet to Sutter Lake closed off, and the lake itself approximately half its original size. The Sycamore neighborhood is shown as a small cluster of houses on the riverfront just north of the train tracks. These same houses, approximately 20 with various outbuildings, are also shown on the 1895 Sanborn map (Figure 7). The 1900 census lists several fishermen, railroad employees, and a few saloonkeepers. There were several German and Swedish immigrants, although most of the residents were from California and other U.S. states.

Although most houses changed residents between census-taking years, a few families were long-term residents. These included the Ing, Wilson, and Daniels families. The Ing family is listed on the 1870 and 1880 census. John C. Ing was an engineer at the Pioneer Flour Mill. Originally from Ohio, he and his wife, Anna, were likely the most financially successful people in the neighborhood—his real-estate value was $15,000 in 1870. By 1880 the couple had five children. The Wilson family lived in the Sycamore neighborhood from at least 1860 through at least 1880. John Wilson and his wife Ellen owned the lot at the corner of Sycamore and Front streets. Wilson, originally from Sweden, began as an upholsterer and built up his career to a furniture dealer. Ellen was from Ireland and worked as a housekeeper. James Daniels and his wife or sister, Nancy, began living in Slater's Addition by at least 1860. James, an African American from Kentucky, worked as a laborer and had a real-estate value of $150. Nancy, born in North Carolina, continued to live in the area through the 1870s and 1880s working as a housekeeper.

By 1910 the Southern Pacific had taken over about half of the remnant Sycamore neighborhood lots. Ten households were recorded in the 1910 census that included three railroad employees, two fishermen, two steamboat engineers, three laborers, a nurse, a waitress, and a bartender. Three homes were owner-occupied. The residents were German, Spanish, Portuguese, English, and American-born.

Only 12 houses—three of them vacant—remained in 1915 (Figure 10). Although the SPRR purchased the remaining lots five years later, the area retained a residential character. A 1920 map of the Sacramento Shops shows a small cluster of buildings in the location of the former Sycamore Street neighborhood (Figure 12). It is not clear whether these buildings are reused older residences or newly constructed buildings, but the map does indicate that they were used to house Chinese railroad employees. The buildings included three "Chinese Bunk Ho.," a "Toilet & Shower for Chinese," a "Cook Ho. for Chinese," and a "Chinese Eating Ho." Interestingly, only one other building located at the other end of the railyard was labeled "Bunk Ho." It was presumably used for non-

Chinese railyard workers. The remaining non-Chinese employees lived in private residences off railroad property.

During the Great Depression of the 1930s, another population lived in the area to the north of the Railyards. A ramshackle settlement known as "Shooksville" was occupied by a group of mostly African Americans, Mexicans, and other minorities on the bank of the American River. Shooksville was named for its "mayor," an African American man named Samuel Shooks. Prior to the economic ruin of the 1930s, Samuel Shooks had been a carpet cleaner and rented a small, single-family, one-story house on E St. between 15th and 16th streets.[95]

The Sacramento Riverfront portion of Slater's Addition was the site of fairly substantial commercial and light industrial development. George Wilson constructed the first flour mill in Sacramento—the Eureka Flour Mills—in the spring of 1850 at the junction of the Sacramento and American rivers.[96] George and his son James also operated a ferry across the American River. The mill offered fresh ground flour, corn meal, and ground barley. Hog feed was also available. Seth Garfield and Aleck Dyer purchased the mill in 1855. It burned down the following year.

South of the Eureka Mills, the Boston Ice House operated along the Sacramento riverfront between Broad and Sacramento streets. In 1853 R.D. Carey remodeled the ice house into the Levee Flour Mill. Two years later the business failed and Carey sold the mills to Edward P. Figg, a New York merchant. Figg, in turn, sold the mills to Garfield and Dyer, following the destruction of their Eureka Mill. The partners renamed the Levee Mills to the Pioneer Mills, and it became one of the most successful milling operations in Sacramento. In 1863 it reportedly produced up to 200 barrels of flour per day.[97] Unfortunately a fire burned the mill to the ground that October.

A new partnership was formed between Garfield and Ansone Bidwill. They shipped the Sunnyside Mill from Auburn to Sacramento and erected it at the razed Pioneer Mill site. Production resumed and by the second half of the 1860s, the mill was producing up to 500 barrels per day.

Ownership changed several times over the next few decades and by the early 1890s the Pioneer Mills was one of the oldest, continuously operating mills in northern California. A depressed flour market in the 1890s forced many milling operations to consolidate. Sperry Flour Company

[95] Reis, Milton, "Hoovervilles: Depression Settlements of Sacramento, 1931–1935," *Golden Notes*, vol. 39, no. 1–2, 1993, pp. 1–47.

[96] [96] Colville, *Sacramento Directory, 1853– 1854,* 1997, p. 177.

[97] Samora, *From Millstones to Rollers,* 2000, p. 11.

incorporated Pioneer Mills in August 1892. The hub of production was at the Pioneer Mill, where business continued until March 1936.[98]

Other businesses that operated in Slater's Addition included the Sacramento Gas Works located between Union, Sacramento, Sutter, and Water streets. The gas company operated at that location during the 1850s, 1860s, and 1870s. The Chambers Quartz Milling Company, owned several lots between Lake, Sutter, Broad, and Sacramento streets in 1860, although it is not certain whether they operated a business at that location.

Because Slater's Addition may contain legally important archaeological remains relating to early settlement, commercial development, and the development of working-class neighborhoods in 19th-century Sacramento, it is designated as an Archaeologically Sensitive Area (Figure 14).

Historic-era Archaeological Resource Types[99]

Historical research indicates the potential for eight resource types within the Initial Phase area.

- Discrete, refuse-filled domestic features
- Diffuse domestic deposits
- Domestic architecture
- Industrial and commercial architecture
- Industrial features
- Isolated industrial artifacts
- Flood Control and land reclamation features
- Environmental remains

These are described below, along with a listing of potential example properties in the Sacramento Railyards site.

Discrete, Domestic, Refuse-filled Features

Under this category are a variety of archaeological features that share the common characteristic of being hollow features that, before the days of organized refuse collection, were used as receptacles for the by-products of everyday living: discarded ceramics, food bones, glass containers, broken

[98] Ibid., 2000, p. 24.
[99] Adapted from Praetzellis, Ziesing, and Newland, *Archaeological Survey Report* 2001; Waghorn, Meyer, and Ziesing, *Archaeological Investigation Plan*, 2002.

personal items, etc. These hollow features include wells, cisterns, basements, outhouse pits, and lined, reusable garbage pits, and are all sources of assemblages of historic artifacts. These kinds of features and their contents have legal significance stemming from their research potential; they may constitute historical resources for the purposes of CEQA.

These types of features generally occur in association with dwellings, it is anticipated that many such features would have been created by the residents of the D–H67 Street blocks and Slater's Addition. In these residential areas, such features would occur in the backyard areas of house-lots and would be relatively easy to locate. The 1920 map of the Railyards also depicts a number of small buildings labeled as "toilets" associated with various operational areas, such as the Scrap Docks. It is possible that by the 1920s these toilets were being cleaned out and would thus have little information potential. It is possible, however, that the use of outdoor privies adjacent to work areas extended back into the 19th century. Because of the common use of privies as places of discreet disposal, the railyard-worker privies would have research potential into undocumented or covert workplace behavior.

Diffuse Domestic Deposits

The main body of Sutter Lake and its two connecting channels were the site of ad hoc dumping from both the Railyards and residential neighborhoods, to the extent that the lake became a notorious health hazard. There was light residential occupation along the eastern edge of the lake, west of 6th Street, including a cluster of buildings that appear to have been constructed out over the lake. This occupation may have left archaeological deposits long the eastern edge of the lake. The northern boundary of Slater's Addition was the northern channel of Sutter Lake, which originally connected the lake to the old course of the American River. This channel would also have served as a convenient place for refuse disposal for Slater's Addition residents.

Previous archaeological research has documented that the process of ad hoc refuse disposal into the lake has left a residue of artifacts associated with the early development of Sacramento neighborhoods and with working-class and immigrant life in 19th- and early-20th-century Sacramento. These kinds of features and their contents may have legal significance stemming from their research potential. Most significantly, it is likely that the wet conditions of the lake setting would have preserved perishable items—such as cloth, leather, basketry, seeds, and wood—that only rarely survive on non-waterlogged sites. Such materials would have great interpretive and research potential, and may constitute historical resources.

Domestic and Religious Architecture

These are the architectural remains of religious buildings, residences, and domestic outbuildings. For substantial brick and wood buildings, the remains would take the form of footings. Many smaller wooden buildings would leave few remains except, perhaps, for pilings that supported the building on soft ground or along the edge of the lake.

The remains of buildings whose characteristics are known from the historic record would generally not be considered legally important. The surviving portion of a stilt house, however, would likely qualify as a historical resource for the purposes of CEQA because of its rarity.

Two Chinese religious buildings were within the Railyards area. One was a “Joss House” in Slater's Addition and the other was recorded as a "Chinese chapel," located on the eastern edge of Sutter Lake at the northwest corner of 6th and H streets. Architectural remains from these buildings may constitute historical resources.

There is also the possibility of at least one Chinese cemetery on the margins of Sutter Lake or in an area known as “Sand Hill” [100] which may lie within Slater’s Addition; historical research has neither confirmed nor conclusively refuted the existence of these sites. If there are cemeteries they may be associated with the Chinese religious buildings.

Industrial and Commercial Architecture

This type consists of the archaeological remains of buildings and structures that housed the various industrial elements that were part of the Railyards operations; other, smaller enterprises along the riverfront, in the Slater's Addition, and in the 6th and 7th Street neighborhoods may also have left remains. Potential archaeological remains in these areas include those related to the Pioneer/Sperry grain mill and warehouse, and the Sacramento Gas Works along the riverfront; at least one grocery store in Slater's Addition; and the Sacramento Packing and Drying Company (later the California Fruit Canners Association Factory No. 12) on Block FG67.

The bulk of the industrial architecture archaeological resources within the Railyards are obviously the remains of buildings and structures associated with the functioning of the Railyards themselves. These include manufacturing facilities, such as the General Foundry, and the earlier and later Brass Foundry and Spring Shops; support facilities, such as the Pattern Storage building; and the Scrap Dock.

[100] Yee, Stephen, Digging up the Past: History of the Railyard Tied to Chinese Contribution. *Sacramento Bee*, p. E4, March 4, 2007; Yee. Personal communication, 6/11/2007

The legal status of this type of resource hinges on the degree to which the architectural details of the buildings are a matter of record and the degree to which the archaeological remains can provide information on the processes and work that took place within the building. The operations, processes, and techniques of the Pattern Storage Building and the Scrap Dock are unlikely to have left remains that would be archaeologically informative. Operations such as the roundhouse, foundries, grain mills, or Gas Works have the potential to yield important technological information. If the remains can yield important, previously undocumented information, they may constitute historical resources.

Industrial Features

This term refers to the remains of industrial processes themselves, as distinct from the buildings in which these processes were housed. The range of industrial processes carried out within the Railyards site has not been fully defined but was clearly considerable. Some processes, such as those within the foundries, are likely to have created archaeological features, while others, such as sorting scrap, could have been carried out for many years and yet have left little or no evidence.

The foundry buildings—such as the General Foundry along 6th Street, the Brass Foundries, and the Steel Foundry in the Scrap Dock area—are likely to have left industrial features. The Scrap Docks proper, on the other hand, would leave little in the way of significant industrial features. Outside of the Railyards operations, the Pioneer Flour Mill, the Sacramento Packing and Drying Company, and City Gas Works properties have the potential for industrial features.

The legal significance of these types of deposits hinges on their potential to yield information about the processes that are represented that are not available from other sources. To the degree to which a particular process is not reliably documented, these archaeological features may be important as the only surviving source of information. It should be noted that many of these process also left contaminated soils that would have to be considered before undertaking any fieldwork. If the remains can yield important, previously undocumented information they may constitute historical resources.

Isolated Industrial Artifacts

The process of filling Sutter Lake, the old American River channel slough, and the low-lying land to the north continued for over 40 years. During this period, sweepings and refuse from the Shops were

dumped into both bodies of water, with Sutter Lake apparently receiving parts of old locomotives and obsolete railroad equipment.[101]

Individual pieces of equipment may constitute historical resources if they are rare, represent undocumented forms, or can provide information on undocumented railyard processes. Some of these items may also have interpretive value.

Flood Control and Land Reclamation Features

The topography of the current initial phase is the product of land reclamation and early efforts to control flooding from Sutter Lake and the American River. Some areas of fill along the edges of Sutter Lake and the American River channel slough may be significant in that they contain industrial artifacts and diffuse domestic deposits or may seal environmental remains. However, 19th- and 20th-century fill is generally not in itself a significant archaeological resource.

Levees may constitute historical resources on two counts: they were instrumental in the establishment of the site of Sacramento and they can provide information on the engineering of flood control programs in Sacramento.

Environmental Remains

Sutter Lake was one of many oxbow lakes attached to the Sacramento River. Seasonally flooding lakes such as this are important sources of information about long-term vegetative change because they are sediment traps for pollen, phytoliths, and plant macrofossils. These remains are trapped in anaerobic conditions that are ideal for preservation. Sutter and Willow lakes are highly unusual contexts because of their geographic location close to a population center that was occupied from the beginning of the American period.

The environmental record in the lake sediments could be a unique source of information to expand the poorly known spectrum of pre-contact vegetation in the Great Valley. In addition, the data could help to chart the dramatic vegetation change that occurred in the mid-19th century as native species were replaced by exotics. These materials could have considerable research potential, and may constitute historical resources.

Preliminary Research Framework: Prehistoric Archaeology

This section presents some preliminary research issues for prehistoric resources to aid in assessing the research potential and hence the significance of these resources.

[101] Joslyn, *Sacramento General Shops,* 1948, pp. 43, 51.

Research issues for potential prehistoric sites within the initial phase are presented here under the following broad themes: (A) Local and Regional Chronology; (B) Environmental Change and Human Land Use; (C) Settlement, Subsistence, and Technology; and (D) Social Interaction and Exchange. The topics are discussed below, followed by a sampling of related questions that might be addressed by data from prehistoric archaeological sites, and a list of data requirements for addressing them.

Theme A. Local and Regional Chronology

Firm control of the dating of archaeological phenomena is fundamental to archaeological investigations. This requires not only the appropriate application of various dating techniques, but also the use of excavation strategies that lead to the identification of distinct temporal components. With accurate dating, information from the site deposits can be used to address data gaps or contradictions in the prevailing local and regional chronology. Information from obsidian-hydration and radiocarbon dating at a site can also contribute to the refinement of ongoing research on these dating techniques.

Potential Questions. How do the dates of prehistoric deposits in the Railyards site compare with other archaeological deposits in the Central Valley? If early sites are present, can sites in the initial phase help to elucidate the cultural and natural conditions of early occupation? Can single components be identified whose assemblages will aid in refining regional cross-dating techniques?

Data Requirements

- Discrete assemblages of temporally diagnostic artifacts or materials that are stylistically or technologically distinctive
- Archaeological associations of radiocarbon samples, stylistic artifacts, and obsidian specimens
- Artifacts from multiple obsidian sources recovered from spatially or temporally discrete contexts
- Single-component archaeological sites or loci with diverse, datable tool assemblages
- Well-stratified, multi-component archaeological deposits with diverse tool assemblages

Theme B. Environmental Change and Human Land Use

The interrelationship between human behavior and the natural environment forms a central research domain of prehistoric archaeology. As subsistence, settlement systems, social structure, and

technology are, to a great extent, efforts to adapt to, and to modify, the environment, an understanding of the timing and extent of landscape changes is critical for understanding human occupation and the nature and completeness of the archaeological record in the region. If sediment deposits are available from Sutter Lake or from Sacramento-American river alluvium, their analysis would contribute to the ongoing study of paleoenvironmental change in the Central Valley. Correlation of prehistoric archaeological data from the Railyards site with the paleoenvironmental data, if contemporaneous materials are available, might elucidate human responses to climate and landscape change in the Sacramento area.

Potential Questions. In what ways are shifts in subsistence strategies evidenced in the site assemblages, especially when compared with nearby archaeological sites? Do changes in subsistence strategies co-occur with other shifts (e.g., projectile point styles, stone-tool material preferences, evidence of exchange)?

Data Requirements

- Horizontally or vertically stratified natural and cultural deposits;
- Natural landform deposits of sufficient variability and integrity to contribute to landscape reconstruction
- Micro- and macrobotanical materials for paleoenvironmental reconstruction
- Discrete artifact assemblages consisting of a range of functional categories in datable contexts for reconstruction of economic strategies
- Comparative studies of nearby archaeological sites with datable natural/cultural associations

<u>Theme C. Settlement, Subsistence, and Technology</u>

Settlement and subsistence can be thought of as a single, overlapping concept. Subsistence refers to the suite of technological and cultural practices that supports a group's basic nutritional needs. Settlement is defined as the way people occupy the land through a subsistence cycle, and includes the locations of subsistence activities and social events. Technology includes a logical series of actions: the activity sets involved in the procurement of raw materials; the preparation, modification, and alteration of those materials to create tools and tool kits; the techniques and combination of

activities involved in the use of those tools to perform economic tasks; and the maintenance and discard of those tools.[102]

As archaeologists have moved away from the analysis of large burial mounds and focused more on both large and small site constituents, they have turned their focus on subsistence strategies. With this new focus, a greater heterogeneity of settlement types has been recognized for all time periods.[103] For the early period, small specialized camps have been proposed as contemporaneous with the mortuary complexes. Sites have been found to be concentrated on natural levees, stream banks, and old Riverbank Formation loci. If broadly distributed prehistoric sites are identified, the diverse resources and topographic variation within the Railyards site may provide interesting contrasts in prehistoric settlement and subsistence.

Potential Questions. Based on environmental reconstruction of the locale, what were the resource and landscape attractions of the initial phase over time? What were its limitations? What subsistence strategies are evident in the assemblages? Can they be taken as evidence of fundamental subsistence shifts, or of settlement reorganization? Is resource intensification suggested in the floral and faunal remains or the food-processing tool kit?

The changes in Native American societies as a result of European and Euroamerican contact are poorly understood. What documentary evidence there is tends to represent Euroamerican interpretations. Archaeology can provide insight into the demographic, social and subsistence changes that occurred in Native American societies as a result of contact, and also how Native American groups actively changed their practices to resist and adapt to the social, technological, and environmental changes that followed in the wake of European incursions.

Potential Questions. Is there evidence in Contact-period sites of changes in native subsistence strategies and adoption of new materials and tool forms to attain traditional products? Are some categories of new tools more readily accepted than others? How do faunal remains reflect the changed conditions?

Data Requirements

[102] Jackson, Robert, Archaeological Background. Unit I: The Framework and its Context. In *Framework for Archaeological Research and Management: National Forests of the North-central Sierra Nevada.* BioSystems Analysis, Sacramento, prepared for USDA Forest Service, El Dorado National Forest, 1994, pp. 13–2.

[103] Bouey, Paul D., *Final Report on Archaeological Analysis of CA-SAC-43, Cultural Resources Mitigation for the Sacramento Urban Area Levee Reconstruction Project, Sacramento County, California*, Far Western Anthropological Research Group, Davis, California, prepared for Department of the Army Corps of Engineers, Sacramento, 1995, pp. 33.

- Basic environmental reconstruction of the Railyards area and environs
- Datable assemblages of functional artifacts and floral and faunal remains
- Analysis of intersite assemblages from similarly dated contexts
- Flaked-stone assemblages of sufficient size and integrity for technological analyses
- Analysis of artifact discard practices

Theme D. Social Interaction and Exchange.

A complex exchange network throughout central California has been identified as one of the mechanisms that allowed sociopolitical complexity among native Californians in the absence of agriculture. In the past decades exchange has become an important research topic, in part due to the development of obsidian studies. Obsidian has been a favored commodity in exchange research, given its broad distribution and the ease with which it can be dated and assigned to a geographic source. Archaeological exploration of other aspects of intergroup interaction is often dependent on assemblages that reflect the sociocultural make-up of the site occupants, allowing assessment of the ethnic affiliation of the group, the complexity of their sociopolitical structure, and the degree to which status is ascribed and social and economic life is stratified. To assess responses of influxes of new groups into an area requires some control of ethnic signatures in the form of stylistically distinctive artifacts.

Potential Questions. How does the rise and fall of obsidian use compare with the appearance of other exotic materials? How do these fluctuations fit with known environmental events or Inferred population movements? Can changes in site function, reflecting more organized settlement and interaction, be identified at project sites? In what way do changes in site use articulate with the presence or absence of exchange items? Can shifts in sociopolitical organization as a result of Contact be inferred from changes in site structure, ceremonial building remains, evidence of exchanged goods, and symbols of status, or from other evidence?

Data Requirements

- Assemblages of obsidian artifacts over time
- Obsidian debitage assemblages of sufficient size and integrity for technological analyses; good-sized debitage assemblages of other toolstones for comparative purposes
- Datable associations of exotic exchange goods

- Archaeological features indicative of greater sedentism, such as living surfaces, house floors, domestic and external work areas, refuse piles, and pits.
- Archaeological features and assemblages that reflect sociopolitical organization and ethnic affiliation

Preliminary Research Framework: Historical Archaeology[104]

This section presents some preliminary research issues for historic-era resources to aid in assessing the research potential and hence the significance of these resources.

While Sacramento has no city-wide research design for historical archaeology, the series of research designs for 18 city blocks prepared by Peter Schulz[105] and the general goals set for historical archaeology in Sacramento by Praetzellis, Praetzellis, and Brown[106] have provided direction for archaeological investigations over the past two decades. Both sources have emphasized that comparative studies will only be possible with the stratigraphic excavation of discrete archaeological features that can be associated with documented activities and social units. Recently, in connection with a proposed development on Sacramento's Front Street, Ziesing[107] revised the themes offered in earlier research designs. This revision, done in response to changes in both California State law and the field at large, resulted in the definition of the following major research themes for historical archaeology in Sacramento. Within each theme are questions against which the potential significance of the resource can be assessed. These questions are discussed in relation to the Railyards resources in particular.

The two residential neighborhoods within the initial phase were largely working-class neighborhoods from the 1860s onwards. The Sycamore Street neighborhood, which persisted long after the Railyards had incorporated the rest of Slater's Addition, appears to have been mainly single-family homes, whereas the 6th Street corridor developed into tenements. While many of the inhabitants were railyard workers, a number also worked at other nearby enterprises.

While predominantly European or Euroamerican, the residents of Slater's Addition also included at least one household of African Americans, who lived there from the 1860s into the 1880s. For much

[104] Adapted from Praetzellis, Ziesing, and Newland, *Archaeological Survey Report,* 2000.

[105] Brienes, West & Schulz, *Overview of Cultural Resources,* 1981.

[106] Praetzellis, Mary, Adrian Praetzellis, and Marley R. Brown III, *Historical Archaeology at the Golden Eagle Site,* Anthropological Studies Center, Sonoma State University, Rohnert Park, California, 1980.

[107] Ziesing, Grace, *Archaeological Research Design and Treatment Plan for the Embassy Suites Hotel Site, Sacramento, California*, Anthropological Studies Center, Sonoma State University, Rohnert Park, California. Prepared for the City of Sacramento, 1999.

of the 20th century, the employees of the Railyards were primarily white men, and were either U.S.-born or western European immigrants. By the 1950s southern and eastern Europeans were employed in the shops, and Hispanics worked there by the 1960s, with some Mexicans in the shops during the Bracero program of World War II. There are some isolated references to Chinese and African American workers.[108] Women also worked in the Shops during World War II.

While the railyard workforce appears to have been unusually homogeneous when compared to other railway operations, it is nonetheless likely that minorities may have been present in greater numbers, as is suggested by the small cluster of bunkhouses and facilities for Chinese workers shown on Railyards plans for 1917 and 1920 in the vicinity of the former Slater's Addition Sycamore Street neighborhood.

Theme A: Consumer Behavior/Strategies

Question 1. Does this resource enable us to describe the consumer practices and disposal behavior of a household or business with specific social, occupational, economic, and/or ethnic characteristics?

This question identifies archaeological deposits created by the disposal of refuse. As in the present day, refuse includes the remains of food preparation and consumption (containers, leftovers, bones, seeds, spoiled food, etc.), as well as broken and unwanted household paraphernalia. Archaeologists study refuse deposits associated with specific households to understand the way of life of people in the past at a level that could never be achieved through the written record: What did they eat? How did they allocate their money? Where did they shop? How was food prepared and served? Was dining formal or informal? How were they influenced by fashion, mass marketing, or social movements? What household items did they consider disposable or unwanted? What medicines did they use and how do these correlate with gender-specific, age-specific, or occupation-specific epidemiology?

Home life is private and enables individual variation—even deviance—to exist behind public facades that appear similar. Strategies for living vary from family to family; they often adhere to tenets of regional or ethnic cultures but may vary markedly, depending upon the upward social and economic aspirations of particular households and their place within the family developmental cycle. Both familial and individual behavior, however, is constrained by community values and access to

[108] Dougherty, *Draft HAER for CPRR,* 2002, pp. 8–9.

resources, as well as by other influences, including personal choices, individual psychology, and historical change.[109]

Question 2. Does this resource add to our knowledge of the availability of various classes of consumer goods at a specific place and point in time (i.e., material remains associated with a particular mercantile establishment)?

The domestic archaeological resources at the Railyards site have the potential to provide information on the mercantile economy of early Sacramento, as both Slater's Addition and the Sixth Street corridor were settled in the 1850s. Deposits associated with these early occupations can provide information on the goods available during this period of Sacramento's history.

The Railyards themselves are a significant part of the integration of Sacramento into a nationwide commercial network through the transcontinental railroad. The comparison of deposits predating and postdating the completion of the transcontinental railroad would potentially provide important information on the changing availability of goods with the coming of the railroad. The volume of material, the kinds of material, and its places of manufacture may provide evidence as to the impact of the railroad on commercial and everyday life in California. The fact that these neighborhoods within the initial phase were consistently working-class communities would provide some element of analytic control for factors such as purchasing power.

Question 3. Does this resource add to our knowledge of adaptive behavior in urban settings associated with the acquisition and consumption of foodstuffs or the organization and use of space?

Garden features, particularly in Slater's Addition but also in the early residences of the Sixth Street corridor, may, through the recovery and analysis of pollen and plant remains,[110] provide information on gardening and other practices intended to supplement diet or income. Such practices can include poultry-raising or vegetable growing. A Sacramento family in around 1900, for example, developed a poultry sideline with limited capital outlay for poultry-raising equipment by reusing household items, such as saucers and Mason jars for feeding and kerosene lamps for heating. Although apparently financially secure, the multigenerational family was large and growing. At the time of their poultry venture, the elder members may have passed their peak income years, while the younger members

[109] Entsch, Ann Elizabeth, "Working with Fill in San Francisco," in *Tar Flat, Rincon Hill and the Shore of Mission Bay: Archaeological Research Design and Treatment Plan for SF-480 Termination Separation Rebuild*, edited by Mary Praetzellis and Adrian Praetzellis, Anthropological Studies Center, Sonoma State University, Rohnert Park, California. Prepared for the California Department of Transportation, District 4, Oakland, 1993, p. 278.

[110] Kelso, Gerald, and Mary C. Beaudry, "Pollen Analysis and Urban Land Use: The Environs of Scottow's Dock in 17th, 18th, and Early 19th Century Boston," *Historical Archaeology*, vol. 24, no. 1, 1990, pp. 61–81.

had yet to become established. The available labor within such a large household may have been considerable and was evidently used to undertake a small-scale agricultural endeavor. The backyard raising of chickens in urban settings may be a transitional activity, associated with large, multigenerational families in times of financial insecurity.[111]

How did working-class households of Sacramento balance their economic strategies? Did all available family members work outside the home or did some members contribute to the family livelihood by working at home (e.g., taking in laundry) or through backyard agriculture? What can be learned about the daily diet from the assemblages recovered from various backlots? Did residents fish in the nearby Sacramento River or hunt? Were any animals butchered on site? Did the use of backyards change through time? How do the patterns observed in Sacramento compare to those identified in San Francisco and Oakland for the same time period?

Question 4. Does this resource, in combination with other classes of data, aid in the understanding of landscape alteration, water and waste management, outbuilding construction, and dwelling renovation as these relate to changes in household composition?

For some years, archaeologists have recognized that household demographic events and processes affect the architectural and archaeological records.[112] These transitions are regarded as useful phenomena in that they often result in the creation of refuse-filled pits, drains, cisterns, and cellar holes that contain tightly dated, reliably associated assemblages of artifacts. By looking at the features themselves, however, one might ask how the use of space and facilities changed in response to documented changes in household composition or employment status. Was the conversion of a portion of a recreational garden to a vegetable patch a response to economic necessity due to unemployment? Or was it done because the resident family had become larger? Archaeology has the potential to examine various issues in relation to family change. Abandoned features themselves, in addition to the artifacts they contain, may have interpretive value as the actual products of transition.

Data Requirements

- *Archaeological*: feature and/or layer interfaces, broad exposure
- *Historical*: associated with specific household/business

[111] Praetzellis, Adrian, and Mary Praetzellis, "Faces and Facades: Victorian Ideology in Early Sacramento," in *The Art and Mystery of Historical Archaeology: Essays in Honor of James Deetz*, edited by Anne E. Yentsch and Mary C. Beaudry, Florida: CRC Press, Boca Raton, 1992.

[112] Brown, Marley R., III, *"Among Weighty Friends": The Archaeology and Social History of the Jacob Mott Family,* Doctoral dissertation, Brown University. University Microfilms, Ann Arbor, Michigan, 1987.

- *Oral history*: interviews with representatives of various ethnic groups to establish relevance of foodways and yard use in traditional behavior
- *Faunal remains*: economic scaling and ranking of butchering cuts[113]; frequencies of types—domestic/wild; presence/absence of types
- *Botanical remains*: frequencies of types—domestic/wild; presence/absence of types
- *Ceramic and glass function*: MNI frequency/proportion
- *Social science*: explicit social, economic, and status categories
- *Household demography*: size, composition, life-course
- *Documentary*: Mail-order catalogs, advertisements, commercial inventories, merchants' and householders' accounts

Theme B: Ethnicity/Urban Subcultures

Question 1. Does this resource reflect the rise in or relative influence of Victorianism as a class-based ideology? Does this resource reflect resistance to Victorian or post-Victorian tastes and mores?

Victorian values essentially defined the culture of middle-class commercial and professional interests during much of the 19th century. Others have suggested that these characteristics included (in no particular order and with some redundancy): piety, purity, submissiveness, and domesticity in women[114]; rectitude, thrift, sobriety, and hard work in men[115]; self discipline, temperance, and respect for authority[116]; and steady work, punctuality, and compulsive behavior in general.[117] Apparent inconsistencies—such as hardheaded rationality along with mawkish sentimentality—pervade the system. These inconsistencies emphasize the transitional quality of Victorianism, which sought to "soften the hard edges of modernization" as America underwent its dramatic industrialization after the Civil War. Victorianism combined glances back to a bucolic, pre-industrial past with visions of a better future through science, education, and progress.[118] But for many workers, efficiency, productivity, and modernization simply meant mechanization and

[113] Schultz, Peter D., and Sherri M. Gust, Faunal Remains and Social Status in 19th Century Sacramento. *Historical Archaeology* 17(1), 1983, pp. 44-53.)

[114] Welter, Barbara, "The Cult of True Womanhood," *American Quarterly*, vol. 18, no. 2, 1966, p. 152.

[115] Wiebe, Robert H., *The Search for Order, 1877–1920*, Hill and Wang, New York, 1967, p. 4.

[116] Mann, Ralph, *After the Gold Rush: Society in Grass Valley and Nevada City, California, 1849–1870*, Stanford University Press, Stanford, California, 1982, p. 210.

[117] Howe, Daniel W., *Victorian America*, University of Pennsylvania Press, Philadelphia, 1976, p. 10.

[118] Brown, Richard D., "Modernization: A Victorian Climax," in *Victorian America*, University of Pennsylvania Press, Philadelphia, edited by Daniel Howe, 1976, p. 31, pp. 29–46.

depersonalization of the work place and of the worker in spite of assimilative pressures from domestic reformers and from society at large, distinctive working-class consumer practices can be viewed as resistance to middle-class values or the reinterpretation of these values to make sense within the worker's own experiences of life in Victorian America.

As a multifaceted set of values that influenced the lives of its predominantly middle-class participants in many ways, Victorianism (and post-Victorianism) found its way into artifacts, behavioral patterns, and specific historical events and processes on many levels—from municipal public works, to children's toys and decorations in ordinary families' homes, to archaeological site structure and content.

Question 2. Can this resource help us to understand the dynamics of cultural pluralism and social stratification during the 19th and early 20th centuries? Does this resource possess artifacts and/or faunal remains that could be used to elucidate the role of symbols in defining and maintaining boundaries between groups?

Below the management and supervisory level, industrial operations such as those at the Railyards generally had a stratified workforce. The upper stratum consisted of skilled, usually white and male, workers who were unionized and held relatively secure positions, while the lower stratum consisted of more temporary workers who performed unskilled work. Unskilled workers were often from groups that were socially categorized as being either not-white or not-fully-white, such as Chinese, Mexicans, or southern and eastern Europeans. For example, Chinese appear to have played a significant role in the initial settlement around Sutter Lake, as a labor force in the Cannery, and—in the 20th century at least—in the Railyards. The presence of a "Joss House" in Slater's Addition provides evidence of Chinese occupation there, while a Chinese Temple was on the eastern shore of Sutter Lake, on Sixth Street.

Given this economic and ethnic mix, the domestic archaeological resources within the Railyards site have the potential to provide important information on the divisions within the workforce, and how these divisions were reflected in and negotiated through the material culture of working-class households. Two important and intertwined research issues address working-class standards of living and the ways in which workers used material culture to create or recreate group identities. Little is known about the working-class standards of living in the 19th- and early-20th-century United States. There have been important historical studies of working-class household budgets and living standards,[119] but the documentary data are scanty and often biased due to the manner in which it

[119] Byington, Margaret F., *Homestead: The Households of a Mill Town*. Arno and the New York Times, New York,

was collected. A major primary source was the questionnaire, tabulated by reformers going into working-class and immigrant homes. Archaeology can provide insight into this important historical question.

Material culture also plays an important symbolic role in creating group identity. Today, for example, our automobiles, houses, and clothing all make statements about who we are, or who we want to be. The United States in the late-19th and early-20th century was a time of open social tensions. The nation was shifting from an agricultural and extractive economy to one based on industrial manufacture. This led to massive labor upheavals, such as the 1877 railroad strike and the 1890 American Railway Union strike.

This industrial revolution could not have been accomplished without waves of immigrant labor, from China, Ireland, and eastern and southern Europe. These immigrants faced complex choices over their national identity. Likewise Americans who perceived themselves as native-born also faced questions as to what it meant to "be American." The material culture of these people--their diet, their clothing, their ornamental bric-a-brac--all convey information about the way they perceived themselves and their place in the United States.

Data Requirements

(This theme builds on an understanding of the data analyzed for Theme A.)

- *Archaeological*: period interface composed of feature and layer interfaces; many households
- *Historical*: specific historical associations for each stratum
- *Documentary*: understanding of ethnic foodways, style-bearing artifacts, etiquette books, fashion magazines
- *Archival*: ethnic identification, historical background
- *Oral history*: interviews with representatives of various ethnic groups to explore the relevance of traditional material culture, foodways, and community life
- *Ceramic, glass, metal containers*: MNI frequency/proportion
- *Faunal Remains*: frequencies of types/domesticates/wild; presence/absence of types; butchering cuts

originally printed 1910, reprinted 1969); Shergold, Peter R., *Working Class Life: The "American Standard" in Comparative Perspective, 1899–1913.* University of Pittsburgh Press, Pittsburgh, 1982.

- *Botanical remains*: frequencies of types —domestic/wild; presence/absence of types

Theme C: Industrialization/Technology

Question 1. Does this resource contain evidence of undocumented or poorly documented industrial processes that could add significantly to our knowledge of the development of a specific industry? Does the resource contain evidence of local innovation or "appropriate technology" as opposed to the adoption of standardized tools and materials? Is there evidence for extensive reuse of equipment, sites, buildings, or artifacts?

In the reconstructionist tradition of industrial archaeology, archaeologists have tended to concentrate on exposing and recording remains for the purpose of preservation and public interpretation.[120] Representative excavations include work in the late 1940s and early 1950s at the 17th-century Saugus Ironworks in Massachusetts[121] and at the early-18th-century blast furnaces and founding floors used to produce iron for cannons in Pippingford, England.[122] The principal goal of these investigations was to record the structure and function of the foundries.

The reconstructionist approach is appropriate for the current project. Scrap from the shops, including train elements ranging from small parts or fragments to entire boilers, may survive in the fill of Sutter Lake. These parts or fragments could contain information that would help answer questions regarding train construction and operation at the Sacramento Railyards. Because of the harsh environmental conditions on many of the CPRR lines, such as those through the Sierra Nevada, and due to the isolation of California from the industrial centers of the northeast, the Sacramento Railyards was a site of considerable technological improvisation and experimentation. The General Master Mechanic here from 1877–1888, Andrew Jackson Stevens, was a significant figure in railroad technology.[123] After his death in 1888, his co-workers erected a commemorative statue; it still stands in Plaza Park in Sacramento. Several train engine and car models are known only from drawings or photos; in many instances, scale diagrams depicting individual parts do not exist and the parts cannot be accurately reconstructed from existing documentation, such as parts catalogs. Up until the early years of the 20th century, before dismantling techniques were improved, train parts tended to be discarded whole. Whole parts are likely to contain the information needed to reconstruct historic train replicas as well as to give train historians a more accurate understanding of

[120] Teague, George Allen, *The Archeology of Industry in North America,* Doctoral dissertation, Department of Anthropology, University of Arizona. University Microfilms, Ann Arbor, Michigan, 1987, p. 130.
[121] Robbins, Roland, and Evan Jones, *Hidden America*, Knopf, New York, 1959.
[122] Crossley, David, Cannon-Manufacture at Pippingford, Sussex. *Post Medieval Archaeology,* 1975, vol. 9, pp. 1–37.
[123] Dougherty, Draft HAER report for CPRR, 2002.

the construction and operation of these trains and the improvisations that were necessary during the early years of the Railyards operations.[124]

Remains of railroad-related buildings such as the foundries may also be very useful for understanding railroad operations. Few floor plans exist, and physical remains may help in the interpretation of historic photographs. Information about shop layout, organization of space, and production techniques may be gleaned from the structure, composition, and spatial organization of intact industrial and architectural features.

Question 2. Does this resource demonstrate the impact of industrialization on landscape, environment, or public health?

Industries commonly took advantage of the process of filling land or covering “miasmas” to use the area as dump sites for what are now known as hazardous wastes. “Out of sight, out of mind” was the watchword of these early polluters, who were either ignorant of the inherent dangers or callous regarding the consequences of their actions. The entire central and northern sections of the Railyards site contain fill placed there to reclaim low-lying land Its proximity to the Railyards and the gradual filling of the lake during the historic period suggest that there may be toxic substances produced by local railroad industries in the fill.

Deposits in the location of Sutter Lake have the potential to show changing attitudes towards what was "safe" to dispose of, as well as what was considered scrap or waste. In addition, a distinctive feature of the Sacramento Railyards operations was an unusually thorough recycling program. The material disposed in the lake may provide some insight into what was considered worth recycling or, more precisely, what was not. The Sutter Lake deposits may be particularly important due to the gradual nature of its filling before 1906. The western and northern portions of the lake may be "horizontally stratified," with fill deposits being later the farther east or south into the lake one goes. This temporal sequencing of fills in Sutter Lake could provide a chronology of industrial, as well as domestic, waste disposal in the lake and enable us to assess change through time.

Data Requirements

- *Archaeological*: feature and/or layer interface
- *Historical*: associated with industrial activity

[124] Wyatt, Kyle K. William, Railroad historian, California State Railroad Museum, Sacramento. Interview with Michael D. Newland, 15 March 2000. Notes on file, Anthropological Studies Center, Sonoma State University Academic Foundation, Inc., Rohnert Park, California, 2000.

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- *Archival*: company records and accounts of various industrial processes
- *Ceramics and glass function*: MNI frequency/proportion
- *Faunal remains*: economic scaling and ranking of butchering cuts
- *Industrial artifacts:* functional analysis and manufacture techniques

Theme D: Urban Geography

Question 1. Does this resource help us to understand the characteristics of the natural environment and the landscape modifications made during the historic period? Does this resource aid in our understanding of the beginnings of urban planning and infrastructure—water supply and storage, trash and sewage disposal, fire protection, drainage—in Sacramento?

Sutter Lake has the potential to provide important information on the changes to the natural environment and the landscape modifications that accompanied the establishment and growth of Sacramento and the Railyards. Sutter Lake may possess horizontal stratigraphy from the sequential filling of the lake. Pollen and other environmental information may be sealed by datable deposits of fill, thus providing a record of environmental change in the 19th century.

The residential areas of Slater's Addition and 6th Street also have the potential to yield information on urban improvements in working-class neighborhoods. An important question is the scale and timing of programs such as street-raising and infrastructure improvements compared to those in more affluent neighborhoods. Another issue is the extent to which residents of these neighborhoods ignored or complied with urban sanitation regulations, since residents often lacked the resources to make the required improvements. Many of the buildings were also occupied by renters, and landlords may have been unwilling to invest in bringing their properties up to code.

Question 2. What information about neighborhood formation (i.e., residential differentiation and the emergence of homogeneous neighborhoods along social and economic lines) is available from this resource?

This theme directs research away from the household and asks what processes differentiated neighborhoods from each other. The features examined in Question 1 may form the basis for comparisons between historically defined neighborhoods—as these data become available—to search for distinct patterns of behavior. Slater's Addition and 6th Street may have developed along different lines. Slater's Addition was largely cut off from the city by the development of the Railyards and was located on property that the Railyards desired. The limited future of this neighborhood

would have affected the way it developed and the improvements that the owners were wiling to invest in. In contrast, 6th Street was part of the city, and appears to have been largely rental and temporary residences for workers, along with some industrial operations.

Data Requirements

- *Archaeological*: period interface composed of feature and layer interfaces
- *Historical*: land-use study, patterning identified from archival sources
- *Archival*: photographs and accounts of industrialization; information on legal statutes
- *Environmental*: reconstruction of local vegetation based on pollen record
- *Faunal/Botanical remains*: frequency of types; domesticates/wild; presence/absence of types; paleoscatological remains

Theme E: Interpretive Potential

Question 1. Does the resource have public interpretive potential? For example, could the site provide information about the lifeways of a poorly documented ethnic or occupational group that can be used to better explain the group's position in the city's history to visitors and residents?

The value of archaeologically derived materials for use in exhibits is beyond question. A carefully planned display of artifacts, text, and photographs can move and educate an audience. Archaeological research could provide material for the public interpretation of the day-to-day lives of the workers in the Sacramento Railyards. In addition, industrial features and artifacts also have interpretive potential. For example the roundhouse, which was demolished in the 1950s, is an important and evocative aspect of the early Sacramento Railyards operations. Some of the artifacts deposited in Sutter Lake as scrap from the Shops may also have interpretive value, showing, for example, aspects of early railroad technology. The CRHR does not recognize Interpretive Potential as a standalone eligibility criterion. However, it may be considered in the evaluation as a public amenity of a particularly evocative archaeological resource.

Data Requirements

- *Archaeological*: unusually evocative artifacts or features and their historical associations in which the public has a demonstrable interest
- *Oral history*: interviews to document the lifeways of poorly documented ethnic or occupational groups

Archaeologically Sensitive Areas

This research has identified Archaeologically Sensitive Areas (ASAs) within the Initial Phase area of the Railyards site (Figures 13 and 14). These areas possess the potential for prehistoric and historic-era archaeological resources that are eligible to the CRHR.

- Slater's Addition
- The 6th–7th Street Corridor
- Sutter Lake
- The Central Shops Area
- The Brass Foundry Area
- The General Foundry Area

Slater's Addition and the 6th–7th Street Corridor have high potential for historic-era residential remains, pre-railyard and railyard industrial and commercial remains, and high potential for prehistoric resources. The Central Shops, Brass Foundry, and General Foundry areas have potential for archaeological resources associated with the Railyards operations. Sutter Lake, which is overlain by the General Foundry Area and Arcade Station, has the potential for remains associated with both the Railyards and residential use.

Slater's Addition

Slater's Addition has high sensitivity for both prehistoric and historic-era archaeological resources. Prehistoric sites, consisting of occupation sites (possibly containing human remains) or other multiconstituent resources, can be anticipated along high ground adjoining the former banks of the American River, at the northern edge of the Slater's Addition ASA. Other property types that may occur in this area include lithic sites and sparse lithic scatters and isolated artifacts or features, representing stone-tool manufacture, resource procurement, or other activities associated with this riverine setting.

Historically, as an early-1850s-1920 working-class neighborhood, the Slater's Addition area may contain the remains of residential (Sycamore neighborhood), commercial (Young's grocery), and industrial (Gas Works and Railyards) complexes, as well as deposits relating to the Chinese-occupied railroad housing of the 1920s after the last lots were purchased by the CPRR. The Sacramento riverfront likely contains structural remnants and archaeological deposits associated

with the flour-milling operations that existed from the 1850s through the 1930s. Potential historical resource types include discrete, refuse-filled, domestic features; diffuse domestic deposits; domestic and religious architectural remains; industrial and commercial architectural remains; and industrial features.

Pilings for Interstate Highway 5, constructed in the 1960s, have probably disturbed deposits associated with the western half of the Sycamore neighborhood, although undisturbed archaeological remains may still be located beneath the elevated freeway.

The 6th–7th Street Corridor

The 6th and 7th street corridor has high sensitivity for prehistoric and historic-era archaeological resources.

Prehistoric resources have been encountered at the intersection of 6th and H streets[125]; it is likely that this important and highly sensitive archaeological resource extends into the initial phase. Additional prehistoric sites can be anticipated in this ASA near the northeastern shores of Sutter Lake, including occupation sites (possibly with burial remains). The lake would have been a valuable resource for residential use, marshland plant procurement, and fishing and fowling.

This ASA may contain residential, commercial (6th and E street saloon), and industrial (brewery/cannery) remains dating from the early 1850s to the early 20th century. Potential historic-era resource types include discrete, refuse-filled, domestic features; diffuse domestic deposits; domestic and religious architectural remains; industrial and commercial architectural remains; and industrial features. Archaeological materials in the 6th and 7th street corridor probably remain undisturbed beneath fill and pavement.

Sutter Lake

This ASA has sensitivity for prehistoric resources and sensitivity for historic-era resources.

The northeastern corner of Sutter Lake extends into the initial phase on the west side of 6th Street. This area of Sutter Lake was not completely filled until the 20th century, but was likely the site of domestic refuse disposal from the 6th–7th street residences. There was residential occupation along the edge of the lake, as well as a cluster of buildings on stilts, including a Chinese temple, that extended into it. The General Foundry extends into Sutter Lake as it was partially built on fill, but is discussed separately (below). The two earliest Railyards buildings may also be located within the

[125] Tremaine, personal communication, 2006.

Sutter Lake ASA. Potential historic-era resource types include diffuse domestic deposits; domestic and religious architectural remains; industrial architectural remains; industrial features; and environmental remains. The possibility of significant isolated industrial artifacts from the Railyards in this portion of the lake is slight due to the distance from the Shops, although there may be scrap from the General Foundry or objects from the early railyard buildings. Archaeological resources are probably intact beneath fill.

The Central Shops

The Central Shops ASA has high potential for historic archaeological resources. The potential for buried prehistoric sites will require field-testing before the sensitivity of this area can be assessed. Deeply buried sites (under alluvium from American River flooding) may have survived in this area, while any near-surface archaeological deposits would likely have been destroyed by CPRR Railyards construction.

The first permanent railyard buildings were constructed here in 1867. This area formed the nucleus of the Railyards operations. The main archaeological resources in this area are industrial architectural remains and industrial features associated with the Roundhouse, which was demolished in the 1950s, and the complex of demolished industrial buildings along the south side of the Central Shops.

The Brass Foundry Area

The Brass Foundry area has high potential for historical industrial resources and moderate to high potential for prehistoric.

This location at the point where the northeastern arm of Sutter Lake constricts to form the inlet to the American River has excellent potential for a lithic site or isolated artifacts related to resource-procurement activities. Areas of sufficient size elevated above the marshland setting would have been good candidates for occupation sites or other multiconstituent sites. The potential for buried prehistoric sites will require testing before the sensitivity of this area can be assessed. Deeply buried sites (under alluvium from American River flooding) may have survived in this area, while any near-surface archaeological deposits would likely have been destroyed by CPRR Railyards construction.

This was the location of later 19th-century expansion of the Central Shops. Potential resources in this area consist of industrial architecture and industrial features. The Brass Foundry and other operations in this location were moved north in the early-20th century.

The General Foundry

The General Foundry area has a low to moderate potential for prehistoric sites and a high potential for historic-era sites.

Prehistoric sites, both for occupation and resource procurement, could be anticipated on elevated land adjacent to the northern and eastern side of the lake. The far northern area, however, was likely a part of the American River floodplain; sites are unlikely to be present here.

The General Foundry was built between 1888 and 1892 along the east edge of Sutter Lake. This area has high potential for historical resources. It was probably the location of the earliest railyard buildings before the Central Shops were built in 1867 and after. There may also have been early residences located along the lakeshore. This ASA overlaps Sutter Lake to the south as it is partially built on fill in the lake. Potential archaeological resources include discrete, refuse-filled, domestic features; diffuse domestic deposits; domestic architectural remains; industrial architectural remains; and industrial features.

Standards of Significance

For the purposes of CEQA, impacts on archaeological resources are considered significant if the proposed project may

(1) demolish or materially alter in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA,[126]

(2) affect Native American human remains .[127]

Impacts and Mitigation Measures

Disturbance of CRHR-eligible archaeological properties and Native American human remains

Significant impacts will result from activities that affect the physical integrity of the archaeological resource or its suitability for scientific research or expose Native American human remains. Such impacts include

[126] Title 14. California Code of Regulations (CCR) 15064.5. Determining the Significance of Impacts to Archeological and Historical Resources.
[127] California Health and Safety Code, Section 7050.5; PRC Section 5097.98; Title 14. CCR, 15064.5(d).

- activities that physically destroy the resource or portions thereof. These may include pile-driving, grading, soil remediation, subsurface construction (such as basements and underground utilities), and the alteration of conditions such that the resource's future integrity is at risk, through, for example, increased potential for erosion or looting.

- activities that do not directly destroy the resource or portions thereof, but that adversely affect those physical characteristics that convey its historical significance and justify its eligibility for inclusion in the CRHR. These consist of activities such as very deep filling or the use of construction techniques that remove the potential for research by effectively rendering the resource permanently inaccessible.

Implementation of the following suite of mitigation measures will ensure that (1) CRHR-eligible resources are identified and (2) that the important information these remains contain is recovered, as well as (3) ensuring that Native American human remains are treated appropriately. These actions will reduce these impacts to a ***less-than-significant level****.*

Mitigation Measures

(1) Prior to any ground-disturbing activity in Archaeologically Sensitive Areas (ASAs), a focused Archaeological Testing Plan shall be prepared and implemented to determine the presence/absence of archaeological resources and to assess their eligibility to the CRHR.

(2) If the testing program identifies CRHR-eligible archaeological resources, an Archaeological Mitigation Plan shall be prepared and implemented.

(3) With respect to portions of ASAs where ground-disturbing activities will take place but that are not subject to the archaeological test investigation referred to above, a Construction Monitoring Plan shall be prepared and implemented to identify, assess, and mitigate impacts on important unanticipated discoveries.

(4) As many Native American tribes consider the remains of their ancestors to be sacred, impacts to these remains cannot be entirely mitigated by scientific excavation. Prior the commencement of any ground disturbance in the 6th-7th Street Corridor ASA, consultation shall be initiated between the landowner or his representative and the appropriate Native American group having traditional authority over the initial phase. The goal of the consultation shall be to formulate procedures for the treatment of Native American human remains, should any be uncovered during project activities.

(5) Should human remains be encountered, the following protocol shall be observed in addition to any procedures developed during consultation:

a. There shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the Coroner has been informed and has determined that no investigation of the cause of death is required.

b. A qualified archaeologist shall be contacted to assess the situation and offer recommendations.

c. If the remains are of Native American origin, the landowner or his representative shall contact the Native American Heritage Commission to identify the Most Likely Descendant. That individual shall be asked to make a recommendation to the landowner for treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.983

d. If the Most Likely Descendant fails to make a recommendation or the landowner or his authorized representative rejects the recommendation of the descendant, and if mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner, then the landowner or his authorized representative shall rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further subsurface disturbance.

TESTING PROGRAM AND TREATMENT PLAN

Introduction

Under CEQA the significance of cultural resources is evaluated by assessing their potential eligibility to the CHRH. This process treats these resources through several distinct stages, including identification, evaluation, assessment of effect, and—where appropriate—treatment, which may include data recovery. At each stage, reports are prepared that provide more information about the properties and the effect of the proposed action on them, and make recommendations for additional work necessary to complete the CEQA process.

With urban sites such as this, where deep excavation is often necessary to expose the archaeological deposits, it is usually most efficient to collapse the identification, evaluation, and, if necessary, data-recovery phases into a single operation, especially if construction schedules are tight. This will be accomplished by applying the preliminary research design presented in the EIR during the identification phase. Employing specific thresholds of significance to the application of the CEQA significance criteria, evaluations will be made during a combined identification/evaluation stage. In short, the CRHR-eligibility potential of historic-period objects and archaeological features will be evaluated as they are uncovered.

Project Restrictions

Although plans are not yet finalized at the time of writing, ground disturbance during the Railyards construction is expected to be extensive. Even in areas where no grading is anticipated, disturbance related to building construction may well extend below the historical ground surface and impact archaeological features.

Recommendations for limited testing and active cultural resources monitoring presented in this Treatment Plan are designed to mitigate the cumulative effects of the construction project on buried archaeological resources, since specific impacts cannot be reliably ascertained at this stage of planning. Contractors may not conduct earthmoving or ground-disturbing staging in sensitive areas that have not already been investigated without consulting the archaeologists first regarding proposed depths of excavation and the need for monitoring or data recovery.

Toxic soils, Health, and Safety

Prior to fieldwork, a health-and-safety plan specific to the archaeological investigations will be developed. The plan will stipulate precautions to be taken to avoid exposure to contaminated soils and other potentially dangerous conditions. The archaeological field director will be responsible for

ascertaining and mandating any safety precautions necessitated by the presence of contaminated soils and other hazardous conditions on the site. Where the archaeological field director has reason to believe that hazards exist on a site, the director will cease archaeological investigations until and unless it is demonstrated that no hazards exist, or proceed with appropriate safeguards and personal protective equipment as the situation requires.

Identification Plan

Testing Program

The purpose of test investigations will be to determine the presence or absence of remains representing legally important property types. It should be noted that there are some potentially important property types whose locations are simply unpredictable. This leaves the possibility that important properties, including the remains of unrecorded buildings and structures, may be disturbed in locations that are not tested.

Testing Strategy and Logistics

Prior to archaeological testing in a sensitive area, the area will be surveyed by a professional survey team. Where feasible, points that can be tied into historical maps and plats will be located on the ground to allow the archaeologists to easily and accurately pinpoint areas of potential historical significance.

Archaeological testing will occur prior to construction activities; fencing and site security will need to be provided. Arrangements will also need to be made for security during off-work hours to prevent souvenir hunting.

Test scraping or trenching will be done with a hydraulic backhoe/loader or excavator with a 36-inch bucket, depending on the depth of fill. In some locations the fill may be sufficiently deep to necessitate 1:1 battered trench wall slopes, an excavated safety zone, or shoring, in accordance with CCR Title 8.

The speed with which the work is accomplished is entirely dependent upon the depth of fill encountered and the complexity and/or extent of the potentially significant archaeological remains uncovered, neither of which is knowable until testing commences. Initially at least one test trench will be excavated by a backhoe in order to establish the depth of the historic ground surface. This phase of testing may occur in advance of the full-scale archaeological program. Once the historic ground surface has been identified, the remainder of the area can be cleared to that interface, where it is most likely that important features and/or layers will be found. The extent of excavation will be determined by the archaeological field director. All test areas will be confined to the footprint of the proposed ground-disturbing activities, as indicated on site plans, one they are drawn up. Should project plans change

such that areas outside the original footprint be subject to subsurface disturbance, then further testing and/or construction monitoring in those areas may become necessary.

Field Exposure Procedures

Historical Archaeology

As cultural features and stratification are identified during the test investigation, they will be exposed in plan by hand, photographed, and mapped in relation to a permanent datum. The evaluation phase involves determining a feature's structure and stratigraphic integrity, its approximate date of deposition, and range and quantity of artifacts. To assess each feature's content and integrity, an appropriate portion of each will be hand excavated. In the case of a refuse-filled privy, for example, the feature will be cross-sectioned and part of each layer excavated. The proper level of effort for each feature will be determined by the archaeological field director as it is investigated.

Excavated soil will be passed through 1/8- or 1/4-inch screen, as appropriate, to document the presence of all classes of artifacts. Artifacts will be initially identified and, when possible, dated in the field. Those belonging to features potentially eligible for the CRHR will then be returned to the consultant's archaeological laboratory for verification of the initial description and subsequent cataloging. Materials from features determined to be ineligible for the CRHR need not be returned to the laboratory. At the discretion of the consultant's field director, they may be disposed of in the field, as appropriate. There is also the potential for proto-historic remains. Any proto-historic assemblage would meet the CRHR criteria and thus not be subject to the discard policy

Wells may be encountered in ASAs with residential occupations. These features may present particular excavation problems. A well is a narrow, confined space. To excavate a well safely, a large trench must be excavated around it by backhoe so that the well structure can be exposed as a pedestal and excavated from the outside. Depending on the depth to which the well has been sunk, safety trenches can be up to 30 feet wide. In the event of discovery of a well of high sensitivity—such as a Gold Rush-period well—where safety-trench excavation is not feasible, alternative means of excavation will be explored in the field by the consultant's historical archaeologist.

It is possible to shore inside a well and excavate it from within. This makes the confined space even smaller and the excavation more difficult to achieve with the required degree of stratigraphic accuracy. Such a procedure will only be undertaken where a well is considered to be of the highest potential importance. In this project, a Gold Rush-period well would normally meet that definition. Otherwise, the definition of exceptional will be determined by the consultant's historical archaeologist on a case-by-

case basis. Where a well is not excavated, it will be photographed and planned, and its location and top depth will be recorded.

If human remains are encountered the archaeological field director will immediately notify a City of Sacramento representative, who will in turn inform the County Coroner (see "Treatment of Human Remains, Burial Goods, and Items of Cultural Patrimony," below).

Prehistoric Archaeology

A Native American Monitor will be brought into oversee work in areas where prehistoric deposits are anticipated. If unanticipated prehistoric deposits are identified during testing, a Native American monitor will be brought in to oversee subsequent work. It may be necessary to extend exploration trenches either vertically or horizontally to determine the nature and/or extent of a buried paleosol or archaeological deposit. If a concentration of archaeological remains is found, an area exposure will be created by manually and/or mechanically removing the overburden from the location of the find. The physical extent of the exposure will depend on logistical constraints and the amount of area that can be safely secured with shoring or by excavating a benched exposure as directed by a Certified Competent Person according to OSHA standards.

The maximum depth that can be reached with a backhoe or excavator will limit the investigator's ability to explore and sample deeply buried deposits. Exploration will be further limited in those areas with high ground water conditions due to the physical difficulties of recovering and sampling saturated deposits, and the potential problem of caving trench walls. For these reasons, a subsurface coring device may be used to more safely and effectively explore deeply buried deposits that are suspected of containing archaeological remains. Soil and sediment samples may be collected from selected locations so that detailed analysis and description can be performed in the laboratory. This analysis may assist investigators in identifying depositional environments, assessing the degree of pedogenesis, and facilitating the correlation of depositional units. The absolute age of certain deposits may be determined by submitting selected samples for radiocarbon dating.

Relative dating provides a means of assessing temporal integrity when carbon samples are not present, and provides archaeologists with additional information regarding the age of the deposit. As much as possible, relative dating will be accomplished using obsidian hydration. All obsidian projectile points and bifaces and a representative sample of obsidian debitage (up to 10 pieces) will be taken from each identifiable stratum or at arbitrary increments (no greater than 50 cm intervals) throughout the deposit and submitted for visual sourcing and obsidian hydration. In some instances, X-ray fluorescence may be required to verify the obsidian source.

Archaeological remains will be collected so that cleaning, cataloging, and analysis can be conducted in the laboratory. If human remains are identified, the remains will be treated according to a burial agreement to be developed between the City of Sacramento and the Most Likely Descendants (see "Treatment of Human Remains, Burial Goods, and Items of Cultural Patrimony," below).

With the conclusion of the testing, a brief field summary report of the testing phase will be prepared. This summary will review the excavation methodology, summarize the cultural constituents of the site, present preliminary findings, and describe the final data recovery plan based on the initial treatment plan and the results in hand.

Evaluation

The project's research context will permit informed decisions regarding the significance of archaeological property types to be made in the field. Archival data will be used in the field to associate archaeological deposits with businesses, households, or industries. It is possible, however, that some remains will be found during testing that have not been identified by the archival research already compiled. In this situation, the properties' legal significance may hinge upon the degree to which they are documented in the written record. To allow a "fast track" evaluation to proceed under these circumstances, project historians will remain available to perform location-specific research as needed.

Evaluation Procedures and Criteria

Archaeological properties, and historic-period structures and objects that are discovered during testing or construction monitoring will be evaluated for their eligibility for the CHRH. A resource is considered to be historically significant if it meets the criteria for listing on the California Register of Historical Resources (CRHR).[128] The CRHR criteria are based on those of the National Register of Historic Places (NRHP). As previously stated above in the Regulatory Setting section, a resource is eligible for CRHR listing if it:

> (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
> (2) Is associated with the lives of persons important in our past.
> (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
> (4) Has yielded, or may be likely to yield, information important in prehistory or history.[129]

[128] CEQA § 21084.1
[129] 14 CCR § 15064.5 [a]

Integrity is an essential prerequisite for eligibility. For most archaeological properties, integrity is a matter of the property's research potential. This dictum, however, begs the question of the property's physical condition. Most of the research questions in the project research design require, in addition to portable artifacts, an adequate archaeological context in the form of archaeological strata, interfaces, and features. To possess research potential, archaeological phenomena must have adequate physical integrity in the form of what James Deetz[130] has called archaeological "focus." By focus, Deetz refers to the level of clarity with which the archaeological remains can be seen to represent a particular phenomenon. Remains that represent a number of activities or other characteristics that cannot be separated out from one another are said to lack focus. Where focus is lacking as the result of disturbance, a property also lacks integrity.

The following criteria will be used to assess integrity:

Does the property have focus? That is, is it possible to interpret the behaviors that are represented by it?

Does the property have integrity of location and setting with respect to the arrangement of remains? That is, does the property retain a significant portion of its original contents and condition, and is it in its original location?

Properties that retain integrity will be evaluated in relation to the CRHR criteria for evaluation (Section 4852 [d]). For historic-period archaeological sites, this involves assessing the property's historical associations and information potential under Criterion 4. For prehistoric archaeological sites, evaluation involves an assessment of whether the property is likely to contain suitable types and quantities of materials to address the issues identified in the research design or if it contains human remains. Significance evaluations will be made through discussion between appropriately qualified archaeologists: one of the project's co-principal investigators and the field director, either a prehistoric or historical archaeologist, as appropriate, and an archaeologist from the Office of Historic Preservation.

Assessing Relative Archaeological Research Potential

While archaeological test excavation has been recommended, it is seldom necessary, or appropriate, to collect and record all possible data. Investigation strategies should consider the following factors: 1) specific data needs; 2) time and funds available to secure the data; and 3) relative cost efficiency of various strategies.

[130] Deetz, James, *In Small Things Forgotten. Anchor Books*, Doubleday, New York, 1977.

The approach suggested here involves employing a set of general principles that would aid in determining which archaeological remains will be excavated and analyzed and which will not. The principles are not criteria, in that they should not be applied directly as a "test." Rather, they are intended to guide the thoughtful consideration of a difficult issue. They will not substitute for the best judgment of a team of experienced professionals, but they may help to direct it. In this scheme, archaeological research potential is defined as the ability of a deposit to contribute to the questions identified in the research design. The principles are as follows:

Association. All else being equal, the research potential of an archaeological deposit that has reliable cultural, historical, or chronological associations will be higher than one whose associations are less certain.

Integrity. All else being equal, an archaeological phenomenon that retains good integrity will have more research potential than one whose integrity has been compromised.

Materials. All else being equal, the research potential of a cache of archaeological materials from a domestic context will increase with the number of items and the variety of types present.

Stratigraphy. All else being equal, remains from a feature or site with vertically or horizontally discrete stratification meeting the criteria herein retain importance. However, remains from an archaeological feature with a complex stratigraphic sequence representative of different events over time can have the added advantage of providing an independent chronological check on artifact diagnosis, and the interpretation of the sequence of environmental or sociocultural events. Stratigraphic integrity may not be as important in the case of redeposited prehistoric material.

Relative Rarity. All else being equal, remains from a group that is poorly represented in the sample universe will be more important, because of their rarity, than remains that relate to a well-represented entity.

The initial letters from the above principles of Association, Integrity, Materials, Stratigraphy and Rarity provide a simple mnemonic for use in the field and laboratory: "AIMS-R." That is, archaeologists in the field can make an initial assessment of the property type encountered on the basis of what the assessment "aims are," as represented in the mnemonic. Of course, all remains that will be encountered in the course of project activities will have the characteristics of some degree of relative association, integrity, materials, and rarity, and all will be found in some form of stratigraphic context. Should it become necessary, the process of evaluation would consist of comparing individual properties on the basis of these characteristics. But this evaluation cannot be done in a mechanistic fashion. A

feature or site with poor physical integrity might still have research potential if its relative rarity is high. If necessary due to tight construction schedules or other project constraints, historic-period features can be evaluated in the laboratory, where dates and associations can be more readily ascertained. Human remains will require appropriate treatment regardless of their condition or context. See "Treatment of Human Remains, Burial Goods, and Items of Cultural Patrimony," below.

Treatment Plan

This section describes the treatment of those archaeological properties that have been determined to be potentially eligible to the CRHR. The present treatment plan is generic in that it addresses the treatment of property types rather than specific, identified historic properties. This unusual approach is implicit in the strategy of consolidating the identification, evaluation, and data-recovery phases into a single operation. As discussed previously, properties that are discovered during testing will be evaluated for their CRHR-eligibility through discussions between two appropriately qualified archaeologists: the project's principal investigator and the archaeological field director. The mitigation strategy and level of effort that is appropriate to treat individual properties will be determined by consultation between the same parties.

Treatment Options

The EIR specifies a number of archaeological property types that may be affected by construction on the Railyards site. All of the expected property types may be CRHR-eligible under Criterion 4 alone. For this reason and assuming the nature of the project is such that construction plans, once finalized, cannot be altered, the treatment plan emphasizes data recovery as the most appropriate mitigation measure in all cases.

Field Excavation Strategies

Since no properties that will be subjected to data recovery have been identified—let alone archaeologically examined—the strategies outlined in this section will emphasize the extraction of classes of data from types of archaeological contexts that are anticipated by the research design. While certain areas have been recommended for archaeological testing, the number, size, and configuration of actual archaeological excavation units cannot be predicted since archaeological materials and features will not be evenly distributed. Ultimately, these issues will have to be resolved by the field director as the individual phenomena are defined in the field.

Nevertheless, the discussion of property types gives a good indication of the types of archaeological phenomena that may be present. Furthermore, the research design specifies the types of data these phenomena may contain that may be used to address the research questions. Thus it is possible to

develop general field strategies directed toward specific property types, by which the needed archaeological data can be extracted in the most effective manner.

Historic Archaeological Sites

For historic sites, the EIR specifies several types of archaeological resources that may contain the types of data that are necessary to address the research questions. The preliminary research questions fall into two general classes that have some correspondence with these types of archaeological phenomena: questions that require primary deposits and landscape features that are arranged horizontally (such as sheet refuse and gardens, and industrial and structural remains such as building footings) and questions that require secondarily deposited assemblages of artifacts that are often arranged vertically (such as are often found in hollow/filled features such as backfilled wells, refuse pits, and privies). Refuse pits, privies, and wells are usually encountered in the backyards of building lots.

The questions specified in the EIR can be addressed by both types of archaeological phenomena. Hollow/filled features are potentially important sources of discrete refuse caches. These features, their contents, and deposition dates can often be accurately dated and assigned to a historically documented household or business. The contents often include household ceramics, glass containers, food bone, and personal accoutrements. Features that have documented associations and a range and quantity of artifacts are among the most important potential sources of data that can be used to address the research questions. These features will be excavated in a strictly stratigraphic manner, that is, according to the physical layers of deposition. The strata will be used as the primary provenience for artifacts contained in them.

The second expected resource type includes primary deposits arranged horizontally, such as landscaping, structural remains, and sheet refuse. Primary deposits of these types, which often have the potential to address research questions concerning the spatial organization of activities, will be investigated horizontally in as broad exposures as engineering constraints permit. This may entail the enlargement of smaller exposure areas. Special care will be taken in recording the spatial relationships of artifacts and structural remains. Sheet refuse accumulates on living surfaces and may actually be the product of either primary or secondary deposition, or a catastrophic event. Such deposits may appear as either a relatively thin layer of debris located at an archaeological layer interface or as a series of superimposed layers of substantial thickness. Conversely, secondary depositions of sheet refuse tend to be relatively thick, reflecting their historic function as fill to raise low ground. Since primary deposits often occur at the interfaces of these layers, care is always taken when exposing these surfaces in areas such as domestic backlots. To the degree that the artifacts contained in a secondary deposition of this kind can be assigned to an identifiable historical unit at an interpretively useful scale, they are of

potential value as sources of important data and will be retained. Artifacts will not, however, be recovered simply "because they are there," since the important information in such a deposit may often be recovered by simply recording its structure.

Several kinds of data must be recovered from every property in order to realize its research potential. These include information on the deposit's structure, including stratification and features areal extent and depth, and content including the nature and quantity of artifacts. In addition, the phenomenon must be placed in its temporal and cultural/historical contexts. The field techniques described in the identification plan above are, in general, applicable to data-recovery level work Additional detail is provided below.

Where physical layers of deposition are not present, excavation of historic-period deposits will be controlled by means of arbitrary levels. The material will be excavated using hand tools and wet-screened through one of two mesh sizes (three-quarters of a level ¼" wet-screened, one-quarter of a level 1/8" wet-screened) so that smaller artifacts can be recovered. Soil samples will be collected as deemed necessary by the field director for special studies such as archaeobotanical, parasitological, and entomological analysis of primary and secondary deposits. Each unit of excavation will be recorded on detailed forms on which the excavator and/or supervisor will note site structure and content. Artifacts will be bagged according to provenience; the bags will be marked with the provenience designation, screen size, excavator's name, and the date. In general, artifacts whose archaeological context is uncertain (i.e., unstratified finds) will not be collected unless they are of potential value for public interpretation. Excavations will be mapped in relation to permanent datum points. Excavations will be recorded on plan and cross-section drawings drawn to scale, as well as by digital camera.

Prehistoric Archaeological Sites

If a prehistoric site is identified, non-cultural deposits may be removed using a mechanical backhoe or excavator to expose the cultural deposit. Once exposed, the cultural deposit will be hand excavated using mattocks, shovels, and trowels by teams that consist of an excavator and one or more screeners. Depending upon the research goals and nature of a deposit, one of three methods will be used to screen materials: 1/4-inch (6-mm) control (dry and/or wet), 1/8-inch (3-mm) control (wet), 1/4-inch (6-mm) selective (dry). The vertical and horizontal location of each excavation unit will be recorded from a primary datum point established in the field. Cultural materials recovered during excavation or screening will be recorded on level records, and placed in bags labeled with the site and unit designation, depth, date, contents and excavators' and screeners' names.

Standard practice is 1x1 meter square units, either singly, a series or a partial unit, however units are sized and excavated using metrical measurements. Given the soils and potential for the initial phase to further our understanding of prehistory in Sacramento, the Sacramento Valley, and northern California, all matrix should be screen in the following manner: Three-fourths of each arbitrary 10-cm level of soil from a 1x1 meter unit will be wet-screened through ¼" mesh, and one-fourth (one 50x50 cm quadrant) wet-screened through 1/8" mesh. Units smaller than 1x1 square meter shall have one 50x50 cm quadrant of matrix wet-screened through 1/8" mesh. The only exception to this is excavation of features (including burials) and the removal of overburden.

When intact cultural features are encountered, they will be exposed, mapped in plan view, photographed, and where appropriate, cut in cross-section and drawn in profile. All features will be recorded with reference to a primary or secondary datum, assigned a feature number, and described on a feature record. All feature matrix will be wet-screened through 1/8" mesh. If carbon is present, samples will be collected for radiometric dating. Flotation samples will be collected from non-burial features. In the unlikely event that Native American human remains are discovered, these materials will be treated according to a burial agreement developed between the City of Sacramento and the Most Likely Descendants.

Flotation samples will be collected, as appropriate, from features, sidewalls, and columns. Column samples will be excavated in arbitrary 10-cm levels below a unit or primary datum. These samples will function as contexts for retrieving archaeobotanical remains and as a method of obtaining samples of fine-grained constituents. Due to the stratigraphic and associational integrity of features, they should be the first choice for flotation samples. Flotation samples will be placed in double-walled plastic bags, labeled, and taken to the lab for processing.

Laboratory Work

Historic-Period Artifact Cataloging and Analysis Procedures

A provenience-based cataloging system will be used to inventory artifacts. Artifacts are cataloged according to archaeological provenience and material. The catalog number, which is marked on each object, is made up of three elements: the accession number, the provenience reference, and the lot number. The intent of the system will be to integrate the material specialist's information with that of the catalogers to form a detailed catalog. Basic catalog information will be written onto the catalog sheets by the cataloger, entered into a database program (Microsoft Access), printed out, added to and edited by the specialists, revised, and printed out as an appendix to the final report. Specialists also will divide materials into appropriate categories for presentation in their analyses. For interpretation and synthesis, the catalog of historic period artifacts is reorganized according to the general function categories

devised by South[131] as modified and expanded for other researchers for later periods and western U.S. contexts[132]. These categories include activities, domestic, indefinite, industrial, personal, storage, structural, and unidentified use. Artifacts that are cataloged in this way are stored according to material and provenience[133].

Historic-period artifacts recovered from the Sacramento Railyards archaeological excavations will be analyzed with two goals in mind: to allow the investigators to address questions identified in the research design, and to generate comparative data for other researchers to use. The utility of the data to be obtained and the cost of analysis will be the determining factors in the decision to initiate a particular form of analysis. Furthermore, some data recovered from the field may not be fully analyzed.

In historical archaeology, the "site" is often an artificial construct that consists of the totality of archaeological remains in a defined location, regardless of their period of deposition or historical association. Defined in this way, the "site" is meaningless as an analytical unit. Unless historical documentation or archaeological evidence indicates a single archaeological component, analysis of each excavation site will be geared toward the interpretation of individual proveniences or a number of proveniences that have demonstrable historical associations. Intra-site comparisons will be made between proveniences.

The enormous range of consumer goods available in late 19th-century California makes it impractical to specify the analytical procedures that may be carried out on all types of material that may occur. Rather, four of the most common classes will be described here. These pertain to ceramics, glass containers, buttons, and ferrous metal artifacts. Although particularistic issues can be tackled by the examination of individual classes of artifacts, it is emphasized that many of the identified research questions require insights that are obtained from a synthesis using data from several classes.

Ceramics will be sorted and tabulated by functional type, fabric, form, decorative treatment, and, where possible, place of origin. The minimum number of items (MNI) represented will be calculated as will the proportion of each type of the total class represented. Ceramic analysis can contribute to the determination of the date of deposition by using a variant on South's mean dating method that employs pieces that bear dated makers' marks. The relative cost of the collection may be estimated using price

[131] South, Stanley, *Method and Theory in Historical Archaeology*. Academic Press, New York. 1977

[132] E.g., Hardesty, Donald L. *The Archaeology of Mining and Miners: A View from the Silver State*. The Society for Historical Archaeology Special Publication Series No. 6., 1988; Praetzellis, Adrian, and Mary Praetzellis, *Junk! Archaeology of the Pioneer Junk Store, 1877-1908*. Anthropological Studies Center, Sonoma State University, Rohnert Park, California. 1990;

[133] Gibson, Erica S., Laboratory Manual. In *Cypress Replacement Project How-To Manual*, by Jack McIlroy, Erica S. Gibson, Sherri Gust, Elaine-Maryse Solari, and Karana Hattersley-Drayton. Anthropological Studies Center, Sonoma State University, Rohnert Park, California, 1995

and availability data, such as G. Miller's (1980) economic scale.[134] In the case of domestic table and decorative ceramics, the estimated dates of purchase and deposition may be used to estimate how the purchasers/users of the material responded to changes in taste and fashion, and their participation in certain culturally significant social rituals.

Glass will be sorted by functional category, color, and type. The definitions and methods developed by Parks Canada[135] will be employed. Design elements and makers' marks will also be noted. The material for each provenience will be described by vessel part, body form, possible function or contents, technological characteristics, size, and decorative detailing.

The MNI will be calculated, as will the proportion of each type of the total class represented. Chronologically sensitive aspects of glassware, such as the use of the Rickett's mold or the automatic bottle-making machine, will be noted. Chronological information will be combined with ceramic and other artifact data to determine deposition dates. As with ceramics, the proportion of the various functional types of glassware in each provenience will be tabulated to help estimate the nature of the domestic or commercial entity that created the deposit.

Buttons will be sorted by size (in British lines and in inches), form, construction, and material type. Design elements and patent and makers' marks will also be noted. The marks provide useful information to help date archaeological deposits, while material, attachment type, form, and size are good indicators of garment type and function. Buttons may be associated with articles of gender- and age-specific clothing. The numbers and relative frequencies of button types can suggest site function.

Metal artifacts are often the most problematic archaeological finds since they are generally fragmentary, in poor condition, and bulky. These materials are sorted by function and material. It is anticipated that most will be of ferrous metal and a minority of copper alloy. Food containers (tin canisters) tend not to survive in some urban archaeological contexts. Should tin canisters survive in archaeological deposits, they will be identified and described according to the recording system developed by J. Rock.[136] Along with glass and ceramics, tin canisters provide information on dating, foodways, and consumer behavior, and contribute to the reconstruction of past ways of life.

[134] Miller, George L., Classification and Economic Scaling of 19th Century Ceramics. *Historical Archaeology* 14:1-40., 1980

[135] Jones, Olive, Catherine Sullivan, George L. Miller, E. Ann Smith, Jane E. Harris, and Kevin Lunn *The Parks Canada Glass Glossary*. Parks Canada, Ottawa. 1985

[136] Rock, Jim, *A Brief Commentary on Cans*. Cultural Resource Management, Yreka, California, 1987.

Analysis of Historic-Period Zooarchaeological Remains

Data on provenience, taxon, element, portion, side, epiphyseal fusion status, butchering cuts, tool marks, taphonomic factors, and evidence of heat alteration will be recorded for each specimen using a computerized data-entry system developed by Sherri Gust (1995) for the Cypress Freeway project.[137] Comparative collections such as those of the California Academy of Sciences in San Francisco will be used for identification. The butchering units and pounds of meat weight will be calculated as specified in Gust.[138] Economic ranking of meat cuts according to late 19th-century retail values will follow Schulz and Gust.[139]

Prehistoric-Period Artifact Cataloging and Analysis Procedures

All cultural materials and natural specimens recovered from the investigations will be taken to the laboratory for processing. Cultural materials will be washed in wet screens and cleaned using a soft brush and/or spray bottle. After drying, the materials will be separated by class (e.g., faunal bone, shell, milling tools) while maintaining provenience information. Collected materials found to be non-cultural will be discarded. A distinctive catalog number, preceded by the appropriate site designation will be given to each artifact or lot of similar artifacts or natural specimens from the same provenience.

Following initial cataloging and descriptive analysis, selective data sets (obsidian, faunal remains, archaeobotanical remains, flaked and ground stone, etc.) will be provided to specialists for more detailed study. All cultural remains will be cataloged and accessioned as part of the permanent collection.

The count, weight, provenience, and description of all the cultural materials recovered from the initial phase will be entered into a computer program for the purpose of data manipulation and management. Separate, more detailed, databases were created for specific data sets such as the attributes of particular artifact types, obsidian hydration results, radiocarbon dating results, and ontological metric and nonnumeric measurements, etc. In the unlikely event that human remains are encountered, all formal artifacts—such as beads, bone tools, groundstone, and projectile points—that were found with or near human burials will be classified as “associations” in the catalog so that they can be easily identified for repatriation purposes. The remaining materials will be sealed in new 4-mm-thick plastic bags, labeled, and crated in archive-quality boxes.

[137] Gust, Sherri, Guide to BABAS: Bone and Butchering Analysis System. In *Cypress Replacement Project How-To Manual*, by Jack McIlroy, Erica S. Gibson, Sherri Gust, Elaine-Maryse Solari, and Karana Hattersley-Drayton. Anthropological Studies Center, Sonoma State University, Rohnert Park, California, 1995

[138] Gust, Sherri, Cypress Project Methodology and Analysis of Animal Bones. Draft. On file, Anthropological Studies Center, Sonoma State University Academic Foundation, Inc., Rohnert Park, California, 1996

[139] Schulz, Peter D., and Sherri M. Gust, Faunal Remains and Social Status in 19th Century Sacramento. *Historical Archaeology* 17(1):44-53, 1983.

Historical and Oral-History Research

Historical research is an essential part of data recovery. Archaeological data gain in importance as their context is refined and enlarged by information from the documentary record. Data requirements needed to answer the research questions are not all archaeological. In order to understand deposits from the Sacramento Railyards site, a more precise understanding of the social and economic correlates of the various categories of residents needs to be developed. Further research with city directories, tax assessments, voter records, and legal documents may be needed. There is also much additional site-specific and contextual data that should be collected once testing results are known. Depending on the results of the archaeological testing, a focused oral history program may be initiated.

Treatment of Human Remains, Burial Goods, and Items of Cultural Patrimony

The City of Sacramento will ensure that the treatment of human remains, both Native American and non-Native American, will comply with all applicable State and Federal laws and regulations. In the unlikely event that human remains are discovered, the archaeological field director will immediately notify a City of Sacramento representative, who will in turn inform the County Coroner and, in the case of Native American remains, the California State Native American Heritage Commission. If human remains are discovered during demolition or construction, all work will cease in the immediate vicinity of the discovery until the required studies have been completed.

If a prehistoric burial is discovered, a separate burial treatment plan will be developed by the City of Sacramento in consultation with the appointed Most Likely Descendants.

Treatment of Archaeological Properties Discovered During Construction

Although the identification plan has attempted to provide for the identification and examination of the most archaeologically sensitive locations within the study area, the filled condition of the initial phase and the fact that there may not be time to investigate all sensitive areas makes it possible that CRHR-eligible properties will be uncovered in the course of construction.

If archaeological properties are discovered, all ground disturbing activities in the vicinity of the find will cease until the find has been evaluated by a qualified archaeologist. If the phenomenon appears to be CRHR-eligible and data recovery is determined to be appropriate, this will be accomplished with dispatch so that construction is not unnecessarily delayed.

Ownership and Curation of Archaeological Materials

All archaeological material shall remain the property of the City of Sacramento. Upon the completion of the final report on the archaeological investigations, however, the collection will be transferred to an

appropriate facility for permanent curation, where it will be available for study by researchers in the future. This facility will meet the standards set forth in the Office of Historic Preservation's Guidelines for the Curation of Archeological Collections.[140] In addition to the artifacts, soil samples, etc., the facility will also receive copies of field notes, drawings, photographs, special studies, and the final report.

Construction Monitoring

Archaeological monitoring during construction is a solution to the problem of encountering unexpected remains. Monitoring consists of an archaeologist being present on-site and observing earth-moving work that may encounter important archaeological phenomena. The monitor is present until it is determined that excavation has reached the maximum depth at which important remains could be expected to occur. Should potentially important remains be found, the monitor is empowered to temporarily redirect demolition, construction workers, and heavy equipment until the discovery is evaluated. The archaeological monitor should meet the Secretary of Interior's Standards for a professional archaeologist.

Report and Dissemination of Results

When all fieldwork is concluded, the consultant will prepare a comprehensive technical report that will describe the archaeological project's goals and methods, and present its findings and interpretations. The report will synthesize the important archaeological data recovered through excavation with the information from archival research in order to address the questions identified in the research design. Depending on the nature of the findings, it may be appropriate to produce separate reports on prehistoric and historic resources. Or, it may even be appropriate to produce several stand-alone reports on individual prehistoric sites or on particular topics that reflect the various components of the research design. Past experience has shown that this format enhances the circulation and availability of these technical reports. The final report(s) will include the following elements:

1. executive summary
2. statement of scope
3. project location and setting
4. previous research summary

[140] State Historical Resources Commission, *State of California Guidelines for the Curation of Archeological Collections*. State Historical Resources Commission, Department of Parks and Recreation, Resources Agency, State of California, Sacramento, 1993

5. research goals and the strategies that guided research, testing, and data recovery
6. field and lab methods
7. archival research (for historic-period resources only)
8. archaeological context
9. findings—site/feature content, structure, and cultural/historical associations
10. artifact descriptions
11. consideration of research problems and questions
12. conclusions
13. references cited
14. appendices: reports of technical analyses

Report Distribution

The archaeological consultant will provide copies of the final report(s) to the NCIC, public libraries, research libraries, and other interested parties. The client may authorize the consultant to distribute the report. In addition, it is possible that articles will be prepared for publication in professional and lay journals that will address the findings of the archaeological and historical components of the Railyards site.

Public Outreach

The Railyards archaeological project may be a highly visible activity. The archaeological studies that have been and will be produced in connection with archaeological data recovery provide an excellent source of material for a range of public outreach efforts. Depending upon the results of fieldwork, the client may authorize a product specifically designed for the public.

The benefits of public outreach are becoming more widely acknowledged among professional archaeologists, government agencies, and the public itself. Public interpretation can range in form from academic courses to museum exhibits, popularized publications, video presentations, lectures, site tours, pamphlets, and even Web pages.

The benefits of eliciting the interest of local communities appear to outweigh the costs involved. Among the public outreach options that the client might consider for the Railyards archaeological project are the following.

- Design a mobile exhibit that could be installed in various local public facilities to showcase the cultural studies.
- Create a permanent exhibit to be housed in an appropriate public location near the initial phase, such as the Sacramento Public Library or City Hall.
- Sponsor the creation, by a local public school or college, of a video documenting local prehistory, history, oral history interviews, and archaeological remains.
- Engage a local historical or cultural group to create a public interpretive product.
- Recast the technical report(s) on the archaeological investigation into a monograph designed for the general public. The volume should be well illustrated and highlight the prehistory, history, and archaeology of the Sacramento Railyards. This monograph would be distributed to local schools, libraries, and interested parties.
- Produce a Web page with an overview of the cultural development of the initial phase and a synopsis of the archaeological findings.

APPENDIX H
HISTORICAL RESOURCES IMPACT ANALYSIS REPORT FOR THE RAILYARDS PROJECT

DRAFT

Historical Resources Impact Analysis Report

for the

Railyards Project

Sacramento, California

Prepared for:
EIP Associates, a Division of PBS&J
1200 Second Street, Suite 200
Sacramento, California 95814

Prepared by:
JRP Historical Consulting, LLC
1490 Drew Avenue, Suite 110
Davis, California 95618

July 2007

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PHOTOGRAPHS

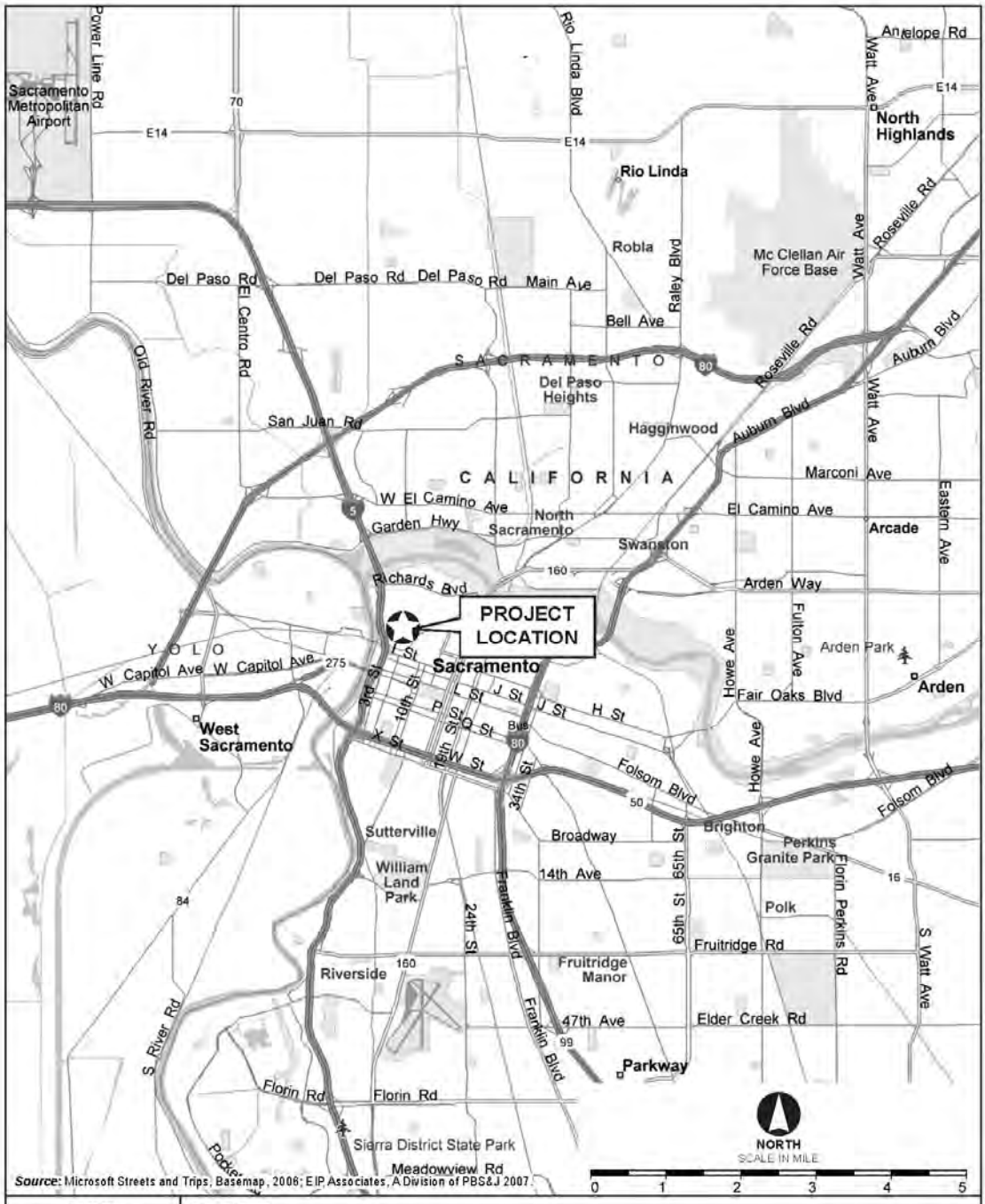
[Photographs by JRP Historical Consulting, LLC, unless noted.]

1. EXECUTIVE SUMMARY

This Historical Resources Impact Analysis report is for the Railyards project in former Southern Pacific Railroad yards in Sacramento, California. Thomas Enterprises, Inc. (Applicant) proposes a mixed-use development for the property that includes residential, commercial, recreational, and cultural uses. EIP Associates, a division of PBS&J, (EIP) is contracted with the City of Sacramento to prepare the environmental compliance documentation for this project under the California Environmental Quality Act (CEQA), including identification of historical resources and the impacts the project may have on historical resources. EIP hired JRP Historical Consulting, LLC (JRP) to assist in project's CEQA compliance as it pertains to historical resources. The study area for this report is the approximately 237-acre Railyards project area located just north of downtown Sacramento in the former Southern Pacific Railroad yard. The project location is depicted in **Figure 1**, the project vicinity map is shown in **Figure 2**, and the project study area map is shown in **Figure 3**.

This report identifies the historical resources in the study area, assesses the potential impact the Railyards project may have on historical resources, and suggests mitigation measures to reduce the project impacts on historical resources. This report identifies historic architectural resources in the study area that are considered historical resources under CEQA, in accordance with Section 15064.5(a)(2)-(3) of the CEQA Guidelines using the criteria outlined in Section 5024.1 of the California Public Resources Code. The historical resources are those properties that are properties listed in, determined eligible for listing in, or that appear eligible for listing in the California Register of Historical Resources (CRHR). Properties listed in or eligible for listing in the National Register of Historic Places (NRHP) are automatically eligible for listing in the CRHR. The historical resources also include properties that are listed in or are eligible for listing on the Sacramento Register of Historic and Cultural Resources (Sacramento Register), under the City of Sacramento Municipal Code, Chapter 17.134. These resources are identified on **Figure 3**.

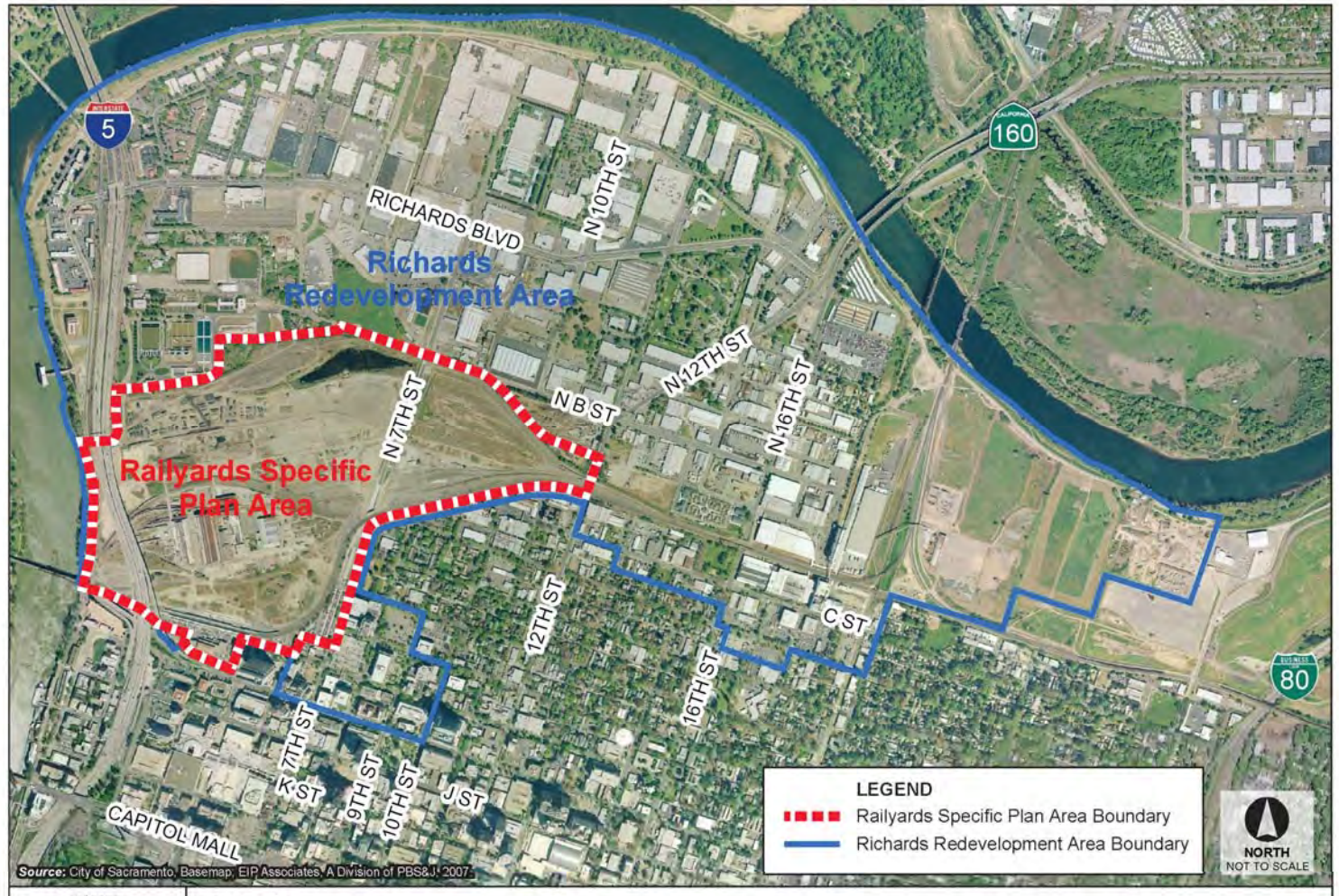
The conclusions of the report are that the Railyards project has the potential to cause a substantial adverse change in the significance of historical resources. Such a change could be considered a significant impact on the environment. The report further concludes that the project impacts could be mitigated to a level that is less than significant if the City of Sacramento, as lead agency, can ensure that mitigation measures employed to reduce those impacts are sufficiently implemented. JRP prepared this report as a technical document that will be an appendix to the Draft Environmental Impact Report (DEIR) for the Railyards Project. Because of the current level of detail available regarding the project, the impacts analysis herein is of the project at the program, or general, level. Additional review may be required of individual projects on the Railyards property to assess impacts to historical resources and mitigation measures to reduce impacts.



EIP ASSOCIATES
A division of PBSJ

FIGURE 1
Regional Location Map

D51234.00 Railyards Specific Plan EIR



EIP ASSOCIATES
A division of PBSJ

FIGURE 2
Local Vicinity Map

D51234.00 Railyards Specific Plan EIR


5
Levee
N/B ST
N 7TH ST
Levee
Southern Pacific Company
Sacramento Shops
Historic District
Water
Tower
Pioneer/Sperry
Mill Pumphouse
Tibboom Street Overhead
I Street Bridge
Sacramento
Depot
12TH ST
LEGEND
Railyards Specific Plan Area Boundary
NORTH
NOT TO SCALE
Source: City of Sacramento, Basemap; EIP Associates, A Division of PBS&J, 2007.
EIP
ASSOCIATES
A division of PBSJ
FIGURE 3
Existing Railyards Area
Historical Resources Study Area
D51234.00
Railyards Specific Plan EIR

2. PROJECT INFORMATION FOR THE RAILYARDS

The Railyards Project is described and explained in several documents. The DEIR, for which this document is a technical appendix, provides a project description based on the Applicant's Railyards Specific Plan (June 2007). The Applicant also prepared the Railyards Design Guidelines (June 2007) for the project and is completing the Railyards Special Planning District Ordinance (SPD). The SPD was not available for review during the preparation of this document. **Figure 4** shows the Railyards Land Use Plan. **Figure 5** shows the Railyards district boundaries, and **Figure 6** shows the location of proposed Railyards parks.

The Specific Plan lays out the general description for the project, including principles, goals, and policies to accomplish the project. The Design Guidelines set forth specific standards that should be met in building the Railyards project. The SPD is intended to become a City of Sacramento ordinance that will officially govern the manner in which the Railyards project is constructed. Elements of the Specific Plan and Design Guidelines include both general elements and some identifiable elements that relate to, or could impact, known or potential historical resources.

The major components of the Railyards project that may impact historical resources include:

- Rehabilitation of the former Southern Pacific Railroad shops, that comprise the historic district in the Central Shops District, in a manner that meets the Secretary of Interior's Standards for Treatment of Historic Properties and that conforms with the City of Sacramento Municipal Code (Historic Preservation ordinance) Chapter 17.134;

- Relocation of the Water Tower to the Central Shops District;

- Construction of tenant improvements in or adjacent to the historic district located in the Central Shops District;

- Construction of new buildings, open space / parks, and other facilities next to, around, and near the historic district in the Central Shops District;

- Construction of roadways around the Central Shops District including 5th Street to the east, with a overpass located over the adjacent railroad track, Camille Lane to the north, and an extension of Bercut Drive to the west;

- Removal of the elevated portion of Jibboom Street, which is one of the eastern approaches to the I Street Bridge; and

- City of Sacramento's project for the Sacramento Intermodal Transportation Facility (SITF) and the realignment of the mainline Union Pacific Railroad (UPRR) tracks adjacent to the Central Shops. This includes construction of a new intermodal facility and the potential

relocation of the former Southern Pacific Railroad Sacramento Depot, now Amtrak Station near the relocated tracks. **Figure 7** shows the city's alternatives for the SITF.

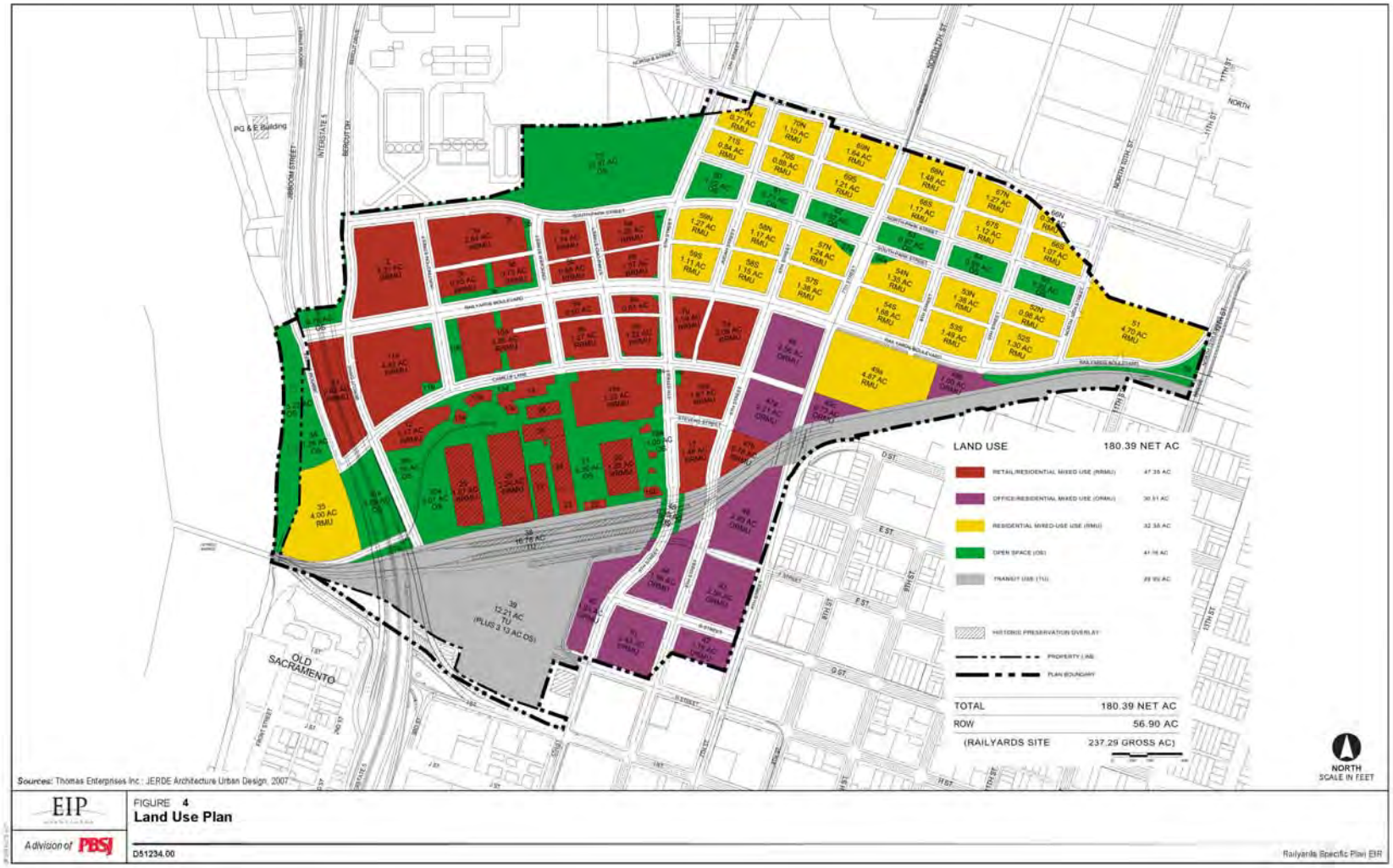
- Removal of a portion of the levee along the north edge of the project.

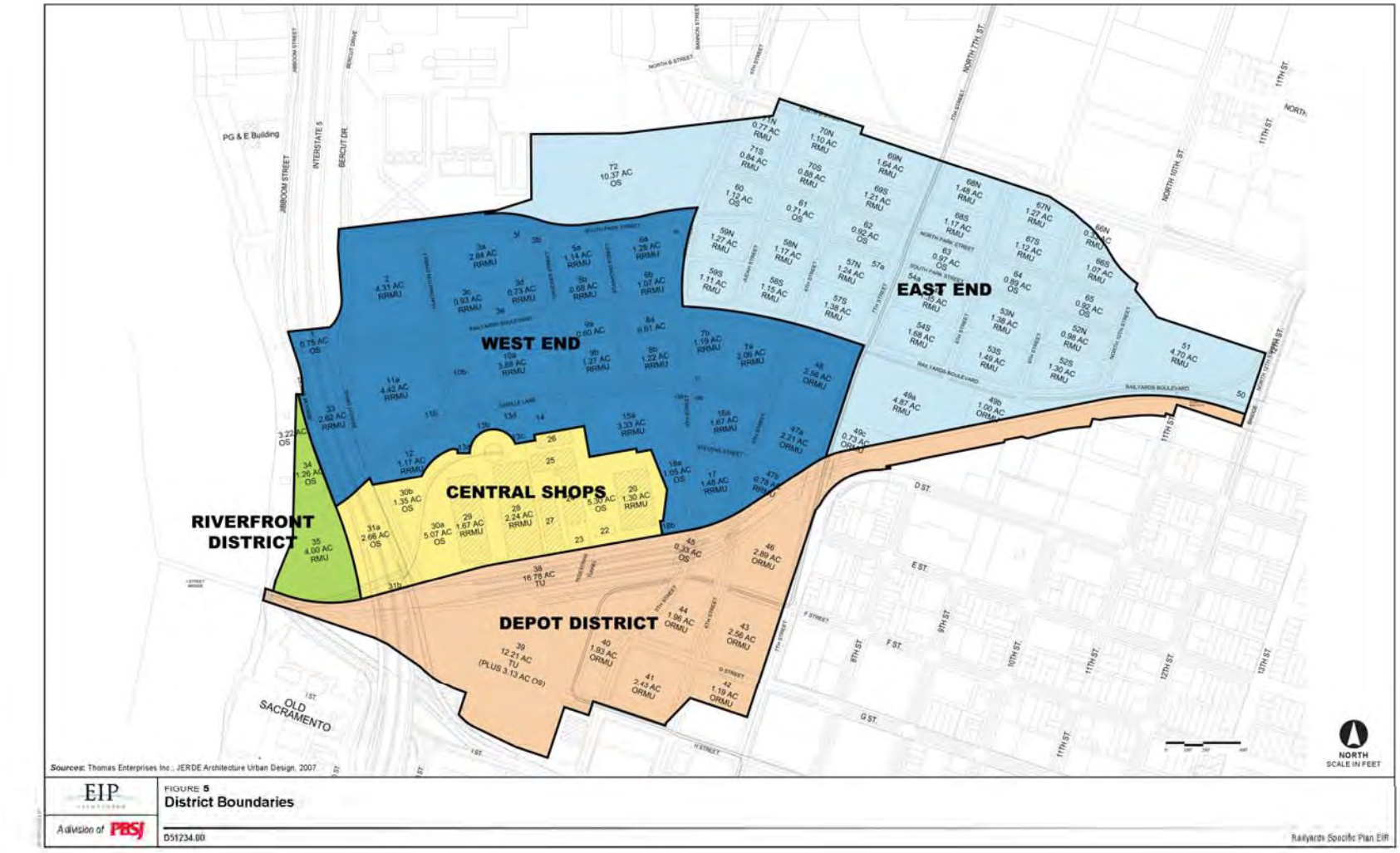
The Railyards project does not yet include specific plans or tenants for the Central Shop buildings or detailed plans for the buildings, parks/open spaces, and other facilities to be located around or near the Central Shops and the Sacramento Depot. Therefore, the analysis in this report regarding the impacts the project may have on historical resources is at a program-level and assumes that additional studies may occur as the Railyards project proceeds and specific projects are planned, developed, and processed through the City of Sacramento approval process.

Please note that various surveys and documentation of the Railyards property have identified buildings in the Central Shops differently. For this report, JRP uses names given to the buildings in the Historic American Engineering Record documentation of the property. The table on the following page provides a summary of names used in the most relevant historic resources reports prepared for this property.

Building Names in the Central Shops District

Railyards Specific Plan June 2007		Architectural Resources Group – August 2006	Historic Environment Consultants 1998	HAER 2001-2003
Parcel 20	Building 06 Electric Shop, Traction Motor Shop	Building 5 Paint Shop	Building 1 Paint Shop/Car Shop 3/Electric Shop, Traction Motor Shop	Paint Shop
Parcel 26	Building 09 Locomotive Wheel Shop Annex	Building 1 Car Machine Shop	Building 3 Locomotive Wheel Shop Annex/ Car Machine Shop	Car Machine Shop
Parcel 25	Building 05 Locomotive Wheel Shop Building 02 Masonry Water Closet	Building 2 Planing Mill Building 2A Privy	Building 4 Locomotive Wheel Shop/ Planing Mill Building 5 Water Closet	Planing Mill Privy
Parcel 24	Building 04 Car Shop 3	Building 3 Car Shop No. 3	Building 4 Governor/Injector Shop (Paint/Car Shop), Rotating Equipment Shop Air Room (Car Shop)	Car Shop No. 3
Parcel 27	Building 03 Repair Gang/ Machine Shop	Building 4 Blacksmith Shop	Building 6 Blacksmith Shop/ Repair Gang, Machine Shop	Blacksmith Shop
Parcel 28	Building 01 Erecting Shops	Erecting Shop	Building 7 Locomotive Machine Shop/ Erecting Shop	Erecting Shop
Parcel 29	Building 07 Locomotive Truck/Fabrication Shop	Boiler Shop	Building 10 Locomotive Truck Shop / Fabrication Shop/ Tank & Boiler Shop	Boiler Shop
North of Parcel 28		Turntable	Building 8 Turntable	Turntable
Between Parcel 29 and Parcel 28			Building 9 Locomotive Transfer Table	Flat Transfer Table


LAND USE 180.39 NET AC
TOTAL 180.39 NET AC
ROW 56.90 AC
(RAILYARDS SITE 237.29 GROSS AC)
NORTH
SCALE IN FEET
OLD SACRAMENTO
Sources: Thomas Enterprises Inc.; JERDE Architecture Urban Design, 2007
EIP
A division of PBSJ
FIGURE 4
Land Use Plan
D51234.00
Railyards Specific Plan EIR


WEST END
EAST END
CENTRAL SHOPS
RIVERFRONT DISTRICT
DEPOT DISTRICT
PG & E Building
JIBBOOM STREET
INTERSTATE 5
BERCUT DR.
NORTH 10TH ST.
11TH ST.
D ST.
E ST.
F ST.
G ST.
9TH ST.
10TH ST.
11TH ST.
12TH ST.
13TH ST.
OLD SACRAMENTO
1ST.
NORTH
SCALE IN FEET
Sources: Thomas Enterprises Inc.; JERDE Architecture Urban Design, 2007
EIP
A division of PBSJ
FIGURE 5
District Boundaries
D51234.00
Railyards Specific Plan EIR

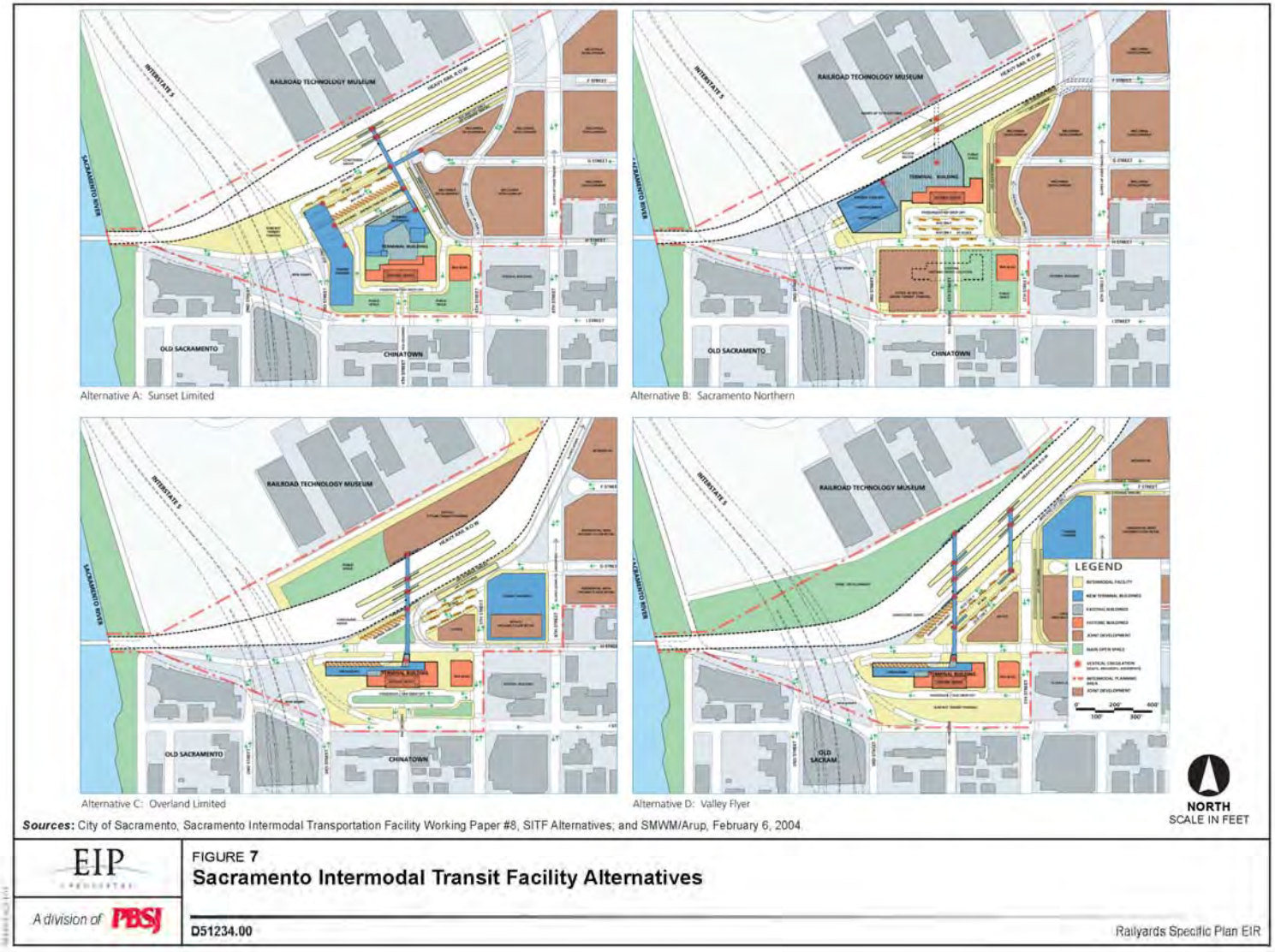
Source: City of Sacramento, Railyards Specific Plan, 2007.

EIP
A division of PBSJ

FIGURE 6
Parks

D51234.00

Railyards Specific Plan EIR



Sources: City of Sacramento, Sacramento Intermodal Transportation Facility Working Paper #8, SITF Alternatives; and SMWM/Arup, February 6, 2004.

EIP ASSOCIATES
A division of PBS&J

FIGURE 7
Sacramento Intermodal Transit Facility Alternatives

D51234.00

Railyards Specific Plan EIR

3. IDENTIFICATION OF HISTORICAL RESOURCES

The built environment in the study area has been previously inventoried and evaluated in multiple studies. EIP and JRP collected information regarding historic architectural / built environment resources in the study area, including previous inventory and evaluation reports, National Register nominations, conditions assessment reports, and Historic American Engineering Record (HAER) documentation of buildings on the property. The Anthropological Studies Center (ASC) at Sonoma State University conducted records searches at the North Central Information Center of the California Historical Resources Information System and shared the results of the records searches from 1999 and 2006 with JRP, as they pertained to historic architectural resources. No additional inventory and evaluation studies were required for the Railyards project.

The following section provides information on the identification of buildings, structures, objects, and districts in the study area that are considered to be historical resources for the purposes of CEQA. This section also provides information on the identification of resources in the study area that are not considered historical resources for the purposes of CEQA. The following subsections provide a summary of the steps that JRP and EIP took to identify historical resources in the study area and provide information on the significance and character-defining features of historical resources in the study area. This information is essential for the analysis of impacts the project may have on historical resources, which is presented in Section 4.

3.1. Historic District in the Central Shops

The Railyards Central Shops District includes the former shop buildings and remaining railyard facilities extant on the 237 acre Railyards property. These buildings and structures were previously inventoried and evaluated for their historical significance, and identified as a historic district. This historic district is therefore a historical resource for the purposes of CEQA compliance. The buildings and structures in the historic district have also been the subject of intensive recordation and assessment. These buildings and structures, and the historic district as a whole, have been referred to in several ways. Sometimes they are named using variations of their historic reference, such as the Central Pacific Railroad and Southern Pacific Railroad Shops or the Southern Pacific Company Sacramento Shops. The buildings and structures that comprise the historic district are also more generally referred to as the Central Shops in the Railyards project. Please note, it is important to distinguish between the Railyards planning district called the Central Shops and the historic district in the Central Shops, the boundaries of which are not clearly defined.

3.1.1.1. Inventory, Evaluation, and Recordation

The Southern Pacific Railroad shops and railyards were studied extensively in the early 1990s as part of the city's earlier planning efforts to develop this property. In 1990 Nolte & Associates conducted a visual survey and qualitative engineering study of the primary historic building on the railyards property. A survey was conducted at this time to assess the potential historic significance of buildings and structures found there.[1] The survey identified approximately 39 of the 85 buildings and structures had potential historic significance and were built during the property's proposed period of significance, 1868-1937. Of the 39 buildings and structures, five were considered to be non-contributing features of the property because they did not retain sufficient historic integrity and at least two other buildings or structures on the property required additional research to determine whether they were contributors. At least 30 more buildings and structures on the property at that time were considered non-historic because they were built after the potential period of significance. The Nolte & Associates report and historic survey report became part of ROMA Design Group's "Existing Conditions" report on the Railyards and Richards Boulevard. The conclusions regarding the potential NRHP eligibility of the Southern Pacific Railroad shops were incorporated into the EIR that EIP prepared for the city for the Railyards Specific Plan and Richards Boulevard Area Plan, completed between 1992 and 1994. The EIR identified historically significant buildings and structures that represented a core group of resources. The EIR identified the need for additional work to identify a historic district comprising the core buildings and structures on the property and the impact the development project in the railyards would have on them.[2]

Historic Environment Consultants (HEC) prepared the "Central Pacific/Southern Pacific Railroad Railyards Historic Property Inventory and Evaluation Report" in March 1998 for the Union Pacific Railroad Company, which by that time had acquired the Southern Pacific Railroad and owned the railyards property. HEC inventoried and evaluated the central core of the former railyards property and assessed the potential historic significance of the other remaining buildings on the property at that time. The report concluded that there was a historic district on the railyards property that appeared to meet the criteria for listing in the NRHP. This evaluation also indicated that the historic district was also eligible under the city's historic preservation ordinance. HEC summarized the significance of the railyards property central core buildings stating that "due to their outstanding historic importance, unique visual character, and invaluable potential, they have special importance within the railyards property."[3] The report included DPR

[1] Nolte & Associates, Preliminary Visual Survey and Qualitative Engineering Study on the Southern Pacific Railyard Buildings, March 1990; and "Historic Property Inventory" in Linda Peirce Associates, "Southern Pacific Railyards Master Plan Existing Conditions, Volume 1," September 1990.

[2] EIP Associates, *Environmental Impact Report Railyards Specific Plan/Richards Boulevard Area Plan*, prepared for the City of Sacramento, 1992-1994. See Section 4.6.

[3] Historic Environment Consultants, *Central Pacific/Southern Pacific Railroad Railyards Historic Property Inventory and Evaluation Report*, prepared for Union Pacific Railroad Company, March 1998, 12.

523 forms for buildings and structures in the historic district and a map of the proposed historic district. The report provided sufficiently supported conclusions for the city to use the evaluation for the identification of a Special Planning Area for the Railyards Special Planning District that it adopted in 1999. HEC provided descriptions of contributing buildings and structures and identified non-contributing elements in the historic district. The report did not, however, provide detail regarding the character-defining features of the historic district's contributors, nor did it provide a verbal description and justification for the boundaries of the historic district.[4]

In 1999, Carey & Company evaluated the water tower on the former Southern Pacific Railyard property as part of the historic resources inventory for the 7th Street Extension Project. Carey & Company concluded that the water tower, which is situated northeast of the Paint Shop and Car-Machine Shop, appeared to meet the criteria for listing in the NRHP. The evaluation did not state under what NRHP / CRHR criteria the water tower was significant, but stated the following regarding the structure's significance and its relationship with the core Southern Pacific Railyard shops that were identified as a historic district the previous year:

> The Water Tower could be considered a "related structure" to this complex (the historic district) due to its association with it as a structure integral to the functioning of the railyard complex. Although it is physically separated from the historic central core and the railroad company has demolish many related railroad structures in its vicinity, the Water Tower is a significant railyard landmark and could be eligible for inclusion in the potential central core district as a contributing structure. Because of its height, the Water Tower is a significant visual landmark of the railyards.[5]

Between 2001 and 2003 the National Park Service (NPS) recorded the buildings and structures in the historic district on the Railyards property for the Historic American Engineering Record (HAER), resulting in HAER CA303, entitled the "Southern Pacific Company Sacramento Shops." The California State Railroad Museum sponsored the HAER recordation. NPS completed this record in 2006 and sent a copy of the final documentation to the California State Railroad Museum, the only local repository at which it is currently available. The City of Sacramento and EIP provided a draft copy of the HAER documentation to JRP for the preparation of this report. JRP examined the final HAER document at the railroad museum in June 2007.

[4] Historic Environment Consultants, *Central Pacific/Southern Pacific Railroad Railyards Historic Property Inventory and Evaluation Report*, 1998; City of Sacramento, Sacramento Municipal Code, Title 17 Zoning, Division V Special Districts, Chapter 17.124 Railyards Special Planning District, 1999.

[5] Nancy Goldenberg and Hisashi Sugaya, Carey & Co., "Water Tower, Southern Pacific Railyards, 501 I Street, Sacramento, CA 95814," DPR 523 forms, prepared for the 7th Street Extension Project, Sacramento, California, 1999. The DPR 523 forms are included in: Carey & Co., "Historic Architectural Survey Report, 7th Street Extension Project, Sacramento, California," prepared for Caltrans District 3, January 2001.

The Southern Pacific Company Shops HAER includes over fifty measured drawings including a site plan, graphic illustrations of the history and development of the railyards, elevations, sections, and floor plan drawings for the Erecting Shop, Boiler Shop, Blacksmith Shop, Car Shop No. 3, Planing Mill, and isometric drawings and details of the Boiler Shop, Erecting Shop, and Car Shop No. 3. The HAER document also includes a historic narrative and large format archival photographs of the exterior and interior of the nine buildings and structures that HEC identified as contributors to the historic district. HAER CA303 is well documented and very thorough. The Railyards project should rely on the historical data provided in the HAER recordation for information related to the history of the property and its buildings and structures. The Southern Pacific Company Sacramento Shops HAER documentation has been transmitted to the Library of Congress and will eventually be available on the Library of Congress' "Built in America" website.[6]

As part of the proposed Railyards project, the Applicant had Architectural Resources Group (ARG) prepare a conceptual design and report for the rehabilitation of the buildings in the former Southern Pacific railyard shops historic district. ARG completed their document in August 2006 during the initial iteration of the Railyards project. It included annotated architectural drawings of existing conditions and proposed rehabilitation, plus a two volume set with information regarding the history and character-defining features of the buildings. The set also included information regarding the scope of rehabilitation, conservation assessments regarding historic materials on the buildings, information regarding the structural, mechanical, and electrical components proposed for the buildings, along with information regarding hazardous material abatement, building codes, and a green building rating system. The ARG plans and report addressed the Car Machine Shop, Planing Mill, Privy, Car Shop No. 3, Blacksmith Shop, and Paint Shop. It did not including information on the Erecting Shop or Boiler Shop because they were not included in the Railyards Specific Plan at the time. The ARG report also did not address the specific history and character-defining features of the turntable or the transfer table between the Boiler Shop and Erecting Shop.

3.1.1.2. Identification of Character-Defining Features and Boundaries

ARG's report for the Applicant provided historical background information and assessment of the historic district's period of significance. The report described the construction and alterations chronology for each of the six buildings it analyzed and provided a list of character-defining features for each of the buildings. They classified specific building systems, ornamentation, construction details, massing, materials, craftsmanship, site characteristics, and landscaping as

[6] National Park Service, *Southern Pacific Company Sacramento Shops Historic American Engineering Record*, CA-303; Richard O'Conner, Acting Manager, Heritage Documentation Programs, National Park Service, Washington DC, transmittal letter for HAER 303, to Kyle Wyatt, Curator of History and Technology, California State Railroad Museum, Sacramento, October 11, 2006. The Library of Congress' "Built in America" website is at: http://memory.loc.gov/ammem/collections/habs_haer/.

character-defining features. ARG's listed of character-defining features, with representative photographs, are as follows:

Car Machine Shop – Exterior (**Photograph 1**)

- Free-standing building with four principal elevations
- Gabled roof form with gabled clerestory running length of the ridge line
- Masonry wall structure, common bond brick, with articulated brick piers
- Arched door and window openings
- Brick sills
- Wood-framed, multi-lite, sash windows, operable on second story
- Wood door, hardware and strap hinges (south elevations)
- Corrugated metal roof
- Roof vents, conical caps
- Tracks
- Vent grilles
- Cast iron tie ends, anchors and anchor plates, and bolts
- Remnant cast iron hardware, pintles (upright pivot hinge), other hinges and hooks
- Attached ladder
- Gabled wood bridge connection to Planing Mill

Photograph 1: Car Machine Shop, camera facing southwest, June 2006.

Car Machine Shop – First Floor Interior

- Masonry walls brick, painted white
- Engaged masonry (brick) pilasters, painted white
- Exposed second floor framing
- Wood posts and brackets
- Concrete floor

Tracks
Cast iron wheels, mobile, on tracks (2 sets)

Car Machine Shop – Second Floor Interior
Masonry walls brick, painted white
Engaged masonry (brick) pilasters, painted white
Roof framing and long span truss system
Wood posts and brackets
Wood floor
Wood wall sheathing
Wood casework
Partition walls, wood, inset with multi-lite glazing
Attic truss system and wood floor/framing
Corrugated metal roof decking

Planing Mill – Exterior (**Photograph 2**)
Free-standing building
Gabled roof form with gabled clerestory running length of the ridge line
Masonry wall structure, common bond brick, with articulated brick piers
Arched door and window openings
Corbelled brick arches over door and window openings
Brick sills
Wood-framed, multi-lite, sash windows, with fixed upper sash, operable lower sash, on first story
Wood-framed, multi-lite, sash windows, operable on second story
Corrugated metal roof
Roof vents, conical
Tracks
Vent grilles
Cast iron tie ends, enchors and anchor plates, and bolts
Remnant cast iron hardware, pintles (upright pivot hinge), other hinges and hooks
Attached ladder
Gabled wood bridge connection to Car Machine Shop

Planing Mill Interior – First Floor
Masonry walls brick, painted white
Engaged masonry (brick) pilasters, painted white
Long span trusses
Exposed second floor framing
Wood posts and brackets
Suspended, gravity-operated steel fire door
Concrete floor
Tracks, two sets

Photograph 2: Planing Mill, camera facing southeast, June 2006

Planing Mill Interior – Second Floor

- Masonry walls, brick, painted white
- Engaged masonry (brick) pilasters, painted white
- Corrugated metal roof decking above ceiling
- Roof framing and long span truss system
- Wood posts and brackets, decking
- Second floor ceiling, tongue-and-groove
- Wood flooring
- Wood wall sheathing painted white and green
- Wood-framed partition walls and office paritions
- Wood-framed casework and closets
- Suspended, gravity-operated steel fire doors
- Swinging doors, half-glazed, pair
- Cast iron fire protection threshold
- Attic truss system and wood floor/framing

Privy – Exterior (**Photograph 3**)

- Free-standing building with four symmetrical elevations
- Gabled roof form
- Boxed metal eaves
- Masonry wall structure, common bond brick, with articulated brick piers
- Stucco finish
- Corbelled brickwork at cornice
- Arched door and window openings
- Recessed door and window openings

Projecting sills
Wood-framed, multi-lite, sash windows, operable
Connection to Planing Mill, wood-framed decking
Louvered vents in gable ends
Cast iron tie ends, bolts

Privy – Interior
Masonry walls brick, painted white
Wood door and window surrounds
Exposed wood framing/rafters at ceiling

Photograph 3: Privy, camera facing northeast, June 2006.

Car Shop No.3 – Exterior (**Photograph 4**)
Double clerestory with low-pitched gabled roof and parapet
Lower level masonry wall structure, common bond brick, with articulated brick piers
Arched door and window openings
Tower, hipped (pyramidal) roof, with corrugated sheet metal siding

Wood "keystones" with painted numbers at each bay
Corbelled brick arches over door openings
Brick sills (west elevation)
Narrow lancet windows
Protective cast iron plates over sills
Wood-framed, multi-lite, sash windows, two-over-two, double-hung
Wood-framed, multi-lite, clerestory windows
Wood sash windows, multi-lite (west elevation)
Wood doors, large, squared openings, with diagonal construction and inset doors (west elevation)
Concrete lintels (west elevation)
Corrugated metal roof and wall sheathing at elevator tower
Roof vents, conical caps
Exterior metal wall sheathing at second floor
Projecting fire walls, brick
Freestanding, gabled south wall, brick, with ghosted features and infilled arched door and window openings
Suspended, gravity-operated steel fire doors (south elevation)
Tracks
Attached ladder
Cast iron tie ends, anchors and anchor plates, and bolts
Remnant cast iron hardware, pintels (upright pivot hinge), other hinges and hooks

Photograph 4: Car Shop No. 3, camera facing north, June 2006.

Car Shop No.3 Interior – First Floor

Masonry walls brick, painted white and green
Engaged masonry (brick) pilasters, painted white

Roof framing and tension rod truss system
Ceiling framing/rafters
Wood posts and brackets
Crane overhead with tracks
Concrete floor
Office partition walls with multi-lite glazing
Tracks

Car Shop No.3 Interior – Second Floor
Masonry walls brick, painted white and green
Engaged masonry (brick) pilasters, painted white
Wood deck roof sheathing
Roof framing and long span truss system
Wood posts and brackets, decking
Wood flooring
Wood-framed partition walls and office partitions
Wood-framed casework and closets

Blacksmith Shop – Exterior (**Photograph 5**)
Concrete walls with articulated piers, formwork markings
Steel industrial sash windows, multi-lite, with horizontal pivot, operable
Concrete sills
Gabled roof with gabled clerestory
Corrugated metal siding in gabled end
Roof vents, conical
Original door, wood, hardware and strap hinges
Roof vents
Attached ladder
Remnant signage

Blacksmith Shop – Interior
Concrete walls, painted white
Concrete floor
Crane, overhead
Steel framed roof (northeast addition)
Wood trusses, wood framing
Wood columns
Hewn wood beams
Corrugated transite roofing
Mechanisms to operate clerestory windows

Photograph 5: Blacksmith Shop, west side, camera facing north, June 2006.

Paint Shop – Exterior (**Photograph 6**)

Free-standing building with four principal elevations
Masonry wall structure, common bond brick, with articulated brick piers
Arched door and window openings
Arched original door with hardware and strap hinge (west elevation, southernmost bay)
Corbelled brick arches over door and window openings
"Keystones" with painted numbers at each bay
Brick sills
Roof, multi-planed, gabled hipped and flat
Wood-framed, multi-lite, sash windows
Vent grilles
Cast iron tie ends, anchors and anchor plates, and bolts
Remnant cast iron hardware, pintles (upright pivot hinge), hinges / hooks
Tracks

Photograph 6: Paint Shop, west side, camera facing southeast, June 2006.

Paint Shop Interior – First Floor
- Brick walls, painted white
- Corbelled brickwork below infilled openings
- Engaged masonry (brick) pilasters, painted white
- Interior "passage" with arched openings, infilled and/or glazed
- Interior masonry (brick) partition wall of arches (former south elevations until 1890), painted white
- Industrial sash windows (east elevation)
- Wood and steel trusses
- Wood posts and brackets
- Concrete floor
- Skylights

Paint Shop Interior – Second Floor
- Wood and brick walls, painted white and green
- Wood wall sheathing and ceiling
- Wood floor
- Wood partition walls
- Wood casework
- Wood posts and brackets
- Corrugated metal roof decking
- Remnant historic signage (fire escape sign)

In addition to the building specific special features, ARG also noted site features that it suggested should be retained for interpretive value or contributing elements to the historic district. These features included the following:

Shed-firing line north of the Boiler Shop
Roundhouse brick foundation remnant
Line of poles along the east side of the Erecting Shop
Turntable with associated pit and tracks (**Photograph 7**)
Water tank (**Photograph 8**)
Re-used tank car east of the Paint Shop
Air reservoir

ARG listed additional structures and objects that could be retained to help maintain the character of the property, but were not considered as historically significant as those listed above. ARG did not provide character-defining features for the Boiler Shop or Erecting Shop, shown in **Photograph 9**, because those buildings were not included in the Railyards project at the time they conducted their analysis.

Photograph 7: Turntable, camera facing southwest, June 2006.

Photograph 8: Water Tower, camera facing north, June 2006.

Photograph 9: Boiler House and Erecting Shop, camera facing northeast, June 2006.

3.2. Sacramento Depot

The facility that now houses Sacramento's Amtrak train station, located at 401 I Street, was listed in the NRHP as the "Southern Pacific Railroad Company's Sacramento Depot" in 1975. The Southern Pacific Railroad constructed the Sacramento Depot in 1925. **Photograph 10** shows the facility soon after its construction. The San Francisco architectural firm of Bliss and Faville designed the building, and Davison and Nicholsen of San Francisco were the general contractors. The property is significant under NRHP Criterion A for its role in the development of Sacramento and under NRHP Criterion C for its architectural design. The contributing features of the Sacramento Depot include the train station building and the Railway Express Agency (REA) Building situated on the east side of the station, determined eligible for listing in the NRHP as part of the Sacramento Depot in 1994. The REA Building is located outside the boundaries of the Railyards project and will not be directly impacted by the project. This property, including both the station and REA Building, are listed on the Sacramento Register.

Photograph 10: Southern Pacific Railroad Sacramento Depot, 1927.
[*Courtesy of California State Library*]

The railroad station is comprised of a rectangular, 370 foot by 125 foot, three story central block with a hipped / flat tile roof, flanked on either side by shorter flat roofed wings. The building's structural steel framework is faced with brick, trimmed with architectural terra cotta. The eclectic style building combines Mediterranean architectural influences and Renaissance Revival forms with Classical and Romanesque ornament. Tall arched openings with corbelled keystones, a projecting belt cornice above a course of stylize arched corbels, and applied pilasters decorate the central block. Flanking wings contain rectangular, multi-pane steel sash windows with keystones and brick patterned surrounds, and a parapet with balustrade inserts. An extension of

the main block stands a the rear and replicates the height and roof treatment of the wings. The building has a small one story brick addition, a metal shed, and canopies.[7] Its interior includes a mural by John A. MacQauarrie depicting the 1863 Sacramento ground-breaking for the first transcontinental railroad.

The Sacramento Depot has been inventoried several times for various projects, including by Historic Environmental Consultants which surveyed the property in 1981 as part of the City of Sacramento historic resources survey. JRP Historical Consulting Services surveyed the property in 1998 for the Sacramento Regional Transit's light rail extension project from K Street to the depot, and Carey & Co., with EIP, surveyed the property in 2003 for the environmental compliance documentation regarding the rehabilitation of the REA Building.[8]

Several other structures and features are located on this property, some of which are considered eligible as contributing elements of the NRHP listed property. These include the platforms and platform amenities located north of the station building, along with the newly completed Sacramento Regional Transit Light Rail line and station that is parallel to, and south of, older platforms. There is also a steel frame shelter structure adjacent to the west end of the station that covers the bus station at the Sacramento Depot. In addition, there are parking lots to the west and south of the station building and iron fences surrounding portions of the property.

JRP inventoried structures to the north of the station, identifying them "platform amenities" in 1998 and concluded that they appeared to meet the criteria for listing in the NRHP as contributing elements to the Sacramento Depot property. The State Historic Preservation Officer (SHPO) concurred with this conclusion as part of the NHPA Section 106 compliance for the Sacramento Light Rail extension project.[9] The platform amenities include the umbrella sheds, as shown in **Photograph 11**, passenger subway ramps with iron railings / fences, and passenger subway connecting the platforms with the station. These structures are original to the Sacramento Depot.

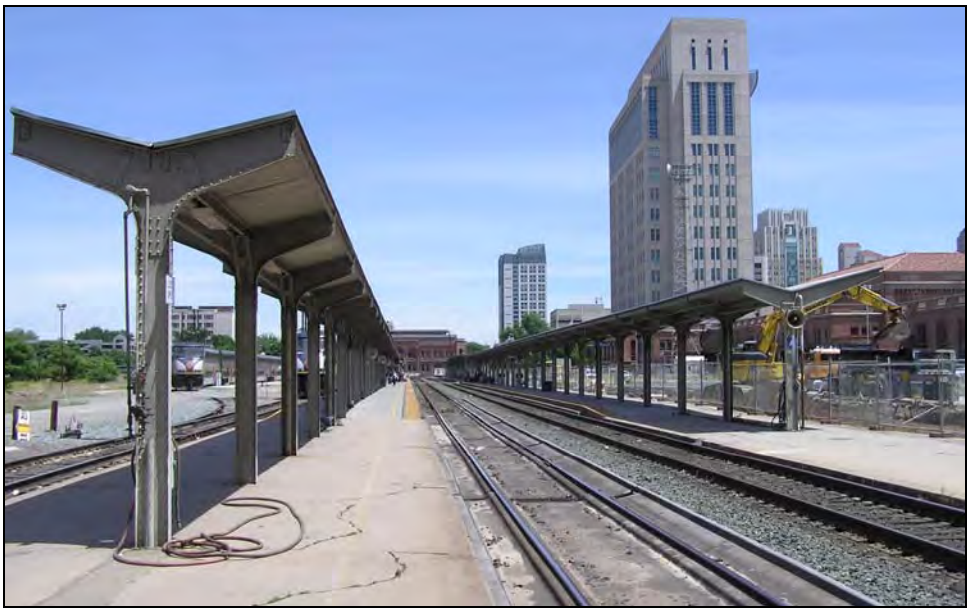
There are two sets of umbrella sheds, or canopies, that extend approximately 1000 feet along the train platforms. They are built mostly with single steel beam posts and tapered steel beams that cantilever out to carry the roof of the passenger waiting structures. The roofs are formed with two-part wooden slats. There are two steel beam posts with additional roof coverage near the

[7] This is based on the description that Paula Boghosian, Historic Environmental Consultants, prepared for the inventory of the property during the City of Sacramento's 1981 historic resources survey.

[8] The Sacramento Depot site is also recognized as California State Landmark 594 as the location of China Slough.

[9] David Byrd, State Historian II, OHP, personal communications with Christopher McMorris, JRP, July 13, 2007. Please note, OHP's Directory of Properties in the Historic Property Files for Sacramento County (August 8, 2005) lists the platforms amenities with a NRHP status code of 6Y, determined not eligible for listing in the NRHP through consensus determination in the Section 106 process. This status code appears to be an error in the OHP California Historical Resources Information System database. The concurrence letter regarding the eligibility of the platform amenities is available at OHP.

openings from the subway ramps. Three of the four cantilevered roofs were cut-off during the mid-twentieth century. The four subway ramps sit beneath the umbrella sheds and each has an iron railing / fence at the subterranean opening. The railings sit on a concrete base and are decorated with a circular pattern in the upper balustrade and orbs on the posts. The concrete tunnel connecting the platforms with the station is approximately 25 feet wide and 118 feet long. It is lined with recessed panel walls and has contemporary florescent lighting. The underground subway was built to provide passengers shelter from the train to the main terminal and was designed to separate incoming and outgoing pedestrian traffic. The Sacramento Depot originally had three platforms with one sitting approximately where the light rail line runs parallel to the Amtrak / UPRR trains. When JRP recorded the platform amenities in 1998 this third platform and its umbrella sheds had been removed, leaving only the railings for the subway ramps, which had been in-filled. The third set of railings were considered non-contributing elements of the Sacramento Depot property because they lacked sufficient historic integrity to convey their significance.[10]



Photograph 11: Umbrella Sheds and Platforms, Sacramento Depot, camera facing east, June 2006.

To summarize, the contributing features of the Sacramento Depot are the station building, the REA Building, and the platform amenities, including the platforms, umbrella sheds, subway entrance ramps with iron railings, and the subway linking the terminal with the platforms. Fencing along portions of the Sacramento Depot property, such as the fence near the I-5 onramp, is similar to the railing / fences that surround the pedestrian ramps at the platforms which are

[10] JRP Historical Consulting Services, "Historic Architectural and Archaeological Survey Report for the Downtown Sacramento Amtrak and Folsom Corridor Light Rail Transit Extensions and Double Tracking Project," prepared for De Leuw Cather & Company for Sacramento Regional Transit, 1999.

considered contributing elements of the property. Fencing that matches the railings at the pedestrian ramps found elsewhere on the property would likely also be considered to be contributing to the property, although additional research may be required to assess whether such fencing has been moved from its original location. Portions of the decorative railing were stored at the west end station property. The light rail line, bus station, parking lots, and contemporary fencing, signage, and hardscape features (including street furniture) are non-contributing features to the Sacramento Depot.

3.3. I Street Bridge

The I Street Bridge's east side approach is carried on three bridges, none of which are contributing features of the National Register-listed I Street Bridge. Caltrans has assigned these approaches, plus the approach on the west end of the bridge, different bridge numbers than the historic I Street Bridge (Bridge 22C0153) which is the double-deck steel truss swing bridge over the Sacramento River, shown in **Photograph 12**.

Photograph 12: I Street Bridge over Sacramento River, camera facing north, 2003.

The structure has three steel, rigid-connected truss spans: a Swing, through truss mainspan, 167 feet long, and two Warren deck truss secondary spans with vertical supports, each 110 feet long. It is a double-deck bridge, with a vehicle roadway on the upper deck and railroad tracks on the lower deck. The evaluation for the bridge concluded that it was eligible for listing in the NRHP under Criterion C as it embodied the distinctive characteristics of a type, period, and method of construction, including its design as a double-deck vehicle and railroad structure. Built in 1911

by the American Bridge Company, a significant bridge builder, the bridge is oldest of the remaining swing bridges in California and one of the existing three constructed by this builder.[11]

Caltrans Architectural Historian John Snyder prepared the nomination form for the I Street Bridge's listing in the NRHP in 1982, wherein he described the structure over the Sacramento River and the approaches to the bridge. He indicated that the approaches are not contributing elements of the historic I Street bridge, stating that they diminish the historic integrity of the I Street Bridge. Paula Boghosian, of Historic Environmental Consultants, prepared a DPR 523 form of the I Street Bridge for the City of Sacramento's historic resources survey in 1998. She did not clarify whether the approaches to the I Street Bridge were contributing or non-contributing elements to the NRHP listed structure.[12]

Caltrans Architectural Historian Andrew Hope re-evaluated the approach structures for the I Street Bridge, shown in **Photograph 13,** as part of Caltrans' state-wide historic bridge inventory update. The I Street bridge east side approach structure are:

- The Jibboom Street Overhead (Bridge 24C0006), built in 1937, carries Jibboom Street on a steel girder viaduct structure from grade on the north, running parallel to the river, and merging with the I Street Viaduct just east of the I Street Bridge.

- The I Street Viaduct (Bridge 24C0364L), built in 1936, carries west bound I Street traffic on a steel girder structure from grade near the Sacramento Depot parking lot west to the I Street Bridge.

- The J Street Viaduct (Bridge 24C0364R), built in 1969, carries east bound traffic off the I Street Bridge on a concrete box girder structure down to J Street. This structure is completely located between the I Street Bridge and I-5.[13]

Andrew Hope concluded that the Jibboom Street Viaduct and I Street Viaduct do not appear to meet the criteria for listing in the NRHP. He did not evaluate the J Street Viaduct because it is less than fifty years old and did not appear to have the exceptional importance that would be required for it to be eligible for listing in the NRHP.[14]

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[11] JRP Historical Consulting, "Statewide Historic Context and Inventory and Evaluation of all pre-1960 Concrete Arch, Timber Truss, Concrete Truss, and Suspension Bridges and Evaluation of Los Angeles Monumental Bridges," prepare for Caltrans state-wide historic bridge inventory update, 2002-2004.

[12] John Snyder, National Register of Historic Places Nomination Form: I Street Bridge, Sacramento, California, February 2, 1981; and Historic Environment Consultants, "I Street Bridge, DPR 523 forms," prepared for the Richards Boulevard Special Planning District Survey for the City of Sacramento, March 1998.

[13] Caltrans, Local Agency Bridge List for Sacramento County, available online at: http://www.dot.ca.gov/hq/structur/strmaint/ (accessed June 2007). Caltrans' state-owned bridge log lists the I-5 viaduct structures as bridges 24 0069L and 24 0069R, both of which were built in 1969.

[14] Andrew Hope, Caltrans, "Caltrans Statewide Historic Bridge Inventory Update: Survey and Evaluation of Common Bridge Types," 2004; and Andrew Hope, Caltrans Architectural Historian, personal communications with Christopher McMorris, JRP, June 26, 2007.

Photograph 13: I Street Bridge Eastern Approaches – I Street Viaduct and Jibboom Street Overhead, camera facing west, July 2007.

The character-defining features of the NRHP listed I Street Bridge are the structural elements of the 1911 structure and do not include the bridge's east approaches. The Jibboom Street Viaduct and I Street Viaduct are not contributing elements to the historic I Street Bridge.

3.4. Other Resources

Several other built environment resources are located in the study area for the Railyards project. They are the remnant portion of the Pioneer / Sperry Grain Mill adjacent to the Sacramento River, route of the first transcontinental railroad, and levees.

3.4.1. Pioneer / Sperry Grain Mill (remnant)

A remnant portion of the former Pioneer / Sperry mill and warehouse is located west of the Jibboom Street Viaduct adjacent to the Sacramento River. The remaining building on this property, shown in **Photograph 14**, was once part of a much larger building, as shown in **Photograph 15**. The extant building may have housed the mill's pumphouse.[15] The State of California Department of Parks and Recreation (DPR) owns this parcel, and although it is within the project boundaries shown on some Railyards project maps and graphics, the project does not encompass this parcel and, as the project is currently proposed, will not impact this parcel.

[15] Southern Pacific, *Sacramento Shops, showing buildings*, on file, California State Railroad Museum Library, 1917; and Sanborn Fire Insurance Company, "Sacramento," 1915 updated through 1952, 3-4.

Photograph 14: Remnant (pumphouse) of former Pioneer / Sperry Mill, south side, camera facing northwest, July 2007.

Photograph 15: Pioneer / Sperry Mill, Sacramento, 1894. [*Courtesy SAMCC, www.sacramentohistory.org*]

The records search for this project did not provide any information on this property, and JRP did not identify a previous survey under which this building was inventoried and evaluated.[16]

Based on the information available collected for this report, including information provided by ASC and DPR, it appears unlikely that this building retains sufficient historic integrity to convey historical significance, if any. Therefore, for the purposes of this program-level analysis JRP concludes that the remnant portion of the Pioneer / Sperry Mill does not appear to be a historical resource for the purposes of CEQA. If the Railyards project will impact this building, further research should be conducted to assess what, if any, historical significance this building has and whether it is eligible for listing in the NRHP, CRHR, or Sacramento Register and should be considered a historical resource for the purposes of CEQA.

3.4.2. First Transcontinental Railroad (route)

California State Historic Landmark 780 celebrates the First Transcontinental Railroad, indicating where the Central Pacific Railroad began construction of the route in 1863. The landmark is located at the California State Railroad Museum in Old Sacramento, outside the Railyards study area boundaries.[17] The route over the Sierra Nevada originally began by traversing the railyards that the Central Pacific Railroad constructed in the late 1860s, passing in an arc to the north of where the roundhouse once stood and where the Car Machine Shop is located. It is unclear whether portions of the original structure are extant (on the surface) within the Railyards study area.

Various segments of the First Transcontinental Railroad route have been recorded, along with tunnels near Donner Pass in the Sierra Nevada. The records search conducted for the Railyards project identified several recorded points of the route of the First Transcontinental Railroad located east of the Railyards (CA-SAC-478-H), but no points in the railyards were previously recorded.[18] There is also a HAER recordation of the route that John Snyder (PS Preservation Services) prepared in 1997-1998 as HAER CA196, "Central Pacific Transcontinental Railroad (Southern Pacific Overland Route) (Southern Pacific Donner Pass Route)." This document

[16] JRP contacted the City of Sacramento Planning Department's historic preservation staff, California Office of Historic Preservation (OHP), California State Lands Commission, and Caltrans to identify whether this building has been previously inventoried and evaluated. None of these agencies could confirm whether the building had been previously inventoried and evaluated. Colin Conner, State Lands Commission, confirmed to JRP that the Department of Parks and Recreation (DPR) owns this property. Robert Baxter, Department of Parks and Recreation, Sacramento History and Railroad Sector, confirmed to JRP that the building is a former pump house and that DPR has not inventoried or evaluated the building. Furthermore, the building is not listed in the OHP, *Directory of Properties in the Historic Property Files for Sacramento County* (8/8/05).

[17] State of California. Office of Historic Preservation, *California Historical Landmarks* (Sacramento, California State Department of Parks and Recreation, 1990), 170.

[18] Jones and Stokes Associates, "Cultural Resources Inventory for the Williams Fiber Optic Cable. Sacramento to the California / Nevada Border," 1999.

focused on the recordation of route's tunnels near Donner Pass in the Sierra Nevada. Snyder noted that technological changes made to the railroad over time have left few extant remnant features along the route. He did not provide description or details of remaining elements that might be located in the Railyards study area.[19]

The First Transcontinental Railroad is not a previously identified a historical resource, for the purposes of CEQA compliance, located in the Railyards study area. Further steps should be take to identify any extant surface structures associated with this resource that retain sufficient historic integrity to convey the route's significance.

3.4.3. Levees

There are levees in the Railyards study area that run along the Sacramento River and along the north edge of the project from a point east of I-5 to 12th Street. Historically, railroad track ran on top of much of this the north edge levee. The only portion of the railroad track on levee is now to the east of where North 7th Street was built through the berm. It appears that neither levee in the study area has been previously inventoried and evaluated as potential historical resources, although portions of the Sacramento River levee to the north of the Railyards study area were evaluated. The levees were not inventoried and evaluated during the 1990s surveys of the railyards property, prepared for the previous proposed development. The levee that runs along the northern boundary was also not evaluated during the project that extended 7th Street north through the eastern portion of the railyards.

JRP previously inventoried and evaluated a portion of the levee along the Sacramento River situated north of the Railyards study area, in the vicinity of the Sacramento Water Treatment Plant. The levee was recorded in 1998 (CA-SAC-463-H) as part of the project to construct the new intake tower for the Sacramento River Water Treatment Plant. Although levees along this portion of the Sacramento River were originally built in the 1860s, JRP identified that the levee by the water treatment plant effectively dated to the 1940s and was built as part of the US Army Corps of Engineers' Sacramento River Flood Control Project. The Corps of Engineers further upgraded the levee in 1956 as part of a levee improvement project associated with the Folsom Dam project of that period, which included improvements of levees along the Sacramento River from the junction with the American River south to the Tower Bridge. Although recognized for its potential historical associations, JRP concluded that the levee did not appear to meet the criteria for listing in the NRHP because it lacked sufficient significance within its context and it

[19] John W. Snyder, PS Preservation Services, "Central Pacific Transcontinental Railroad, HAER No. CA-196," 1997-1998, 4 and 31-35.

did not retain historic integrity from its potential period of significance during the early twentieth century.[20]

The levee on the western edge of the Railyards project is immediately adjacent to the portion of levee that JRP evaluated in 1998. Thus, it is likely that this levee shares a similar history, particularly as it relates to the Sacramento River Flood Control Project and improvements that the Army Corps of Engineers made to the levees in the vicinity. Therefore, for the purposes of this program-level analysis, JRP concludes that the Sacramento River levee in the Railyards project is likely not a historical resource for the purposes of CEQA.

The Corps of Engineers has recognized flood control project levees on the Sacramento River as eligible for listing in the NRHP in their recent emergency work to upgrade levees around the city. This conclusion was meant to facilitate the environmental process for the levee improvement projects, wherein SHPO accepts a presumed eligibility and reviews the potential effects that the project might have on the various project levees. It is understood that this presumed eligibility is only used for consideration under the emergency levee improvement projects. The Railyards project, as it is currently proposed, will not impact the Sacramento River levee. Additional inventory and evaluation of this structure would be necessary if the Railyards project were to potentially impact this resource.

The levee that runs along the north edge of the Railyards study area from I-5 to 12th Street appears to have been mostly constructed in the early twentieth century, prior to the late 1920s, although a portion of it may have its origins in the 1860s before the American River channel was moved northward. The railroad had built earlier levees on the north side of the railyards, constructed immediately north of the tracks adjacent to the roundhouse and adjacent buildings. It is likely that Southern Pacific built the berm at the north edge of the Railyards project as a secondary protection measure in addition to the levees built along the American River by Reclamation District 1 in the 1910s.[21]

As noted, the levee along the north edge of the Railyards project has been altered. The City of Sacramento and Caltrans completed the extension of 7th Street in 2002, which removed a portion

[20] JRP Historical Consulting Services and Far Western Anthropological Research Group, "Cultural Resources Element for the City of Sacramento's Fish Screen Improvement Project Environmental Assessment / Initial Study, Sacramento and American Rivers," prepared for Surface Water Resources, Inc., March 1999, 5-7.

[21] JRP Historical Consulting Services and Far Western Anthropological Research Group, "Cultural Resources Element for the City of Sacramento's Fish Screen Improvement Project Environmental Assessment / Initial Study, Sacramento and American Rivers," prepared for Surface Water Resources, Inc., March 1999, 5-7; A.M. Barton, *Report to the Directors of American River Flood Control District on Flood Control of the American River*, (Sacramento: State Printing Office, 1929), 42-60; National Park Service, "Site Evolution drawing" in HAER CA-303 "Southern Pacific Sacramento Shops," 2001-2003; United States Geological Survey (USGS), Fair Oaks Quadrangle, 15 minute series, 1902; USGS, Sacramento West Quadrangle, 7.5 minute series, 1949; and USGS Sacramento East Quadrangle, 7.5 minute series, 1948.

of the berm and included the installation of mechanical flood gates. Furthermore, the north edge levee may have been altered during soil remediation on the property, during 2001-2005.[22] The Railyards project may impact the levee along the north edge of the study area. Therefore, the Applicant should have additional research conducted about the history of this levee and an evaluation of the structure prepared by a qualified architectural historian.

[22] Anthropological Studies Center, Sonoma State University, *Historic Property Survey Report and Finding of Effect for the 7th Street Extension Project, Sacramento, California,* prepared for EIP Associates, March 2001; and EDAW, *Cultural Resources Monitoring for the Sacramento Railyards 2004 Soil Remediation Activities*, prepared for Environmental Resources Management, 2004, see Figure 3.

4. DETERMINATION OF SIGNIFICANCE OF IMPACTS TO HISTORICAL RESOURCES

4.1. Criteria

The guidelines for determining significant impacts to historical resources are in the CEQA Guidelines Section 15064.5(b). The following guidelines pertain to historic architectural and engineering resources:

> (b) A project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.
>
> (1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
>
> (2) The significance of an historical resource is materially impaired when a project:
>
> (A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
>
> (B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
>
> (C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.
>
> (3) Generally, a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995), Weeks and Grimmer, shall be considered as mitigated to a level of less than a significant impact on the historical resource.
>
> (4) A lead agency shall identify potentially feasible measures to mitigate significant adverse changes in the significance of an historical resource. The lead agency shall

> ensure that any adopted measures to mitigate or avoid significant adverse changes are fully enforceable through permit conditions, agreements, or other measures. [23]

CEQA Guidelines Section 15126.4 is for the "Consideration and Discussion of Mitigation Measures Proposed to Minimize Significant Effects." The following sub section relates to historic architectural resources that are considered historical resources:

> (b) Mitigation Measures Related to Impacts on Historical Resources.
>
> (1) Where maintenance, repair, stabilization, rehabilitation, restoration, preservation, conservation or reconstruction of the historical resource will be conducted in a manner consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (1995), Weeks and Grimmer, the project's impact on the historical resource shall generally be considered mitigated below a level of significance and thus is not significant.
>
> (2) In some circumstances, documentation of an historical resource, by way of historic narrative, photographs or architectural drawings, as mitigation for the effects of demolition of the resource will not mitigate the effects to a point where clearly no significant effect on the environment would occur.

4.2. Impact Analysis

The Railyard project has the potential to cause a substantial adverse change to historical resources through alteration of those resources and their immediate surroundings. As described in Section 2, the Railyards project is largely conceptual, with flexibility in how the goals of the project are executed. The analysis in this section examines the impacts the project may have on historical resources at the program level and assess the potential impacts the project may have on historical resources at the (future) project level. **Figure 4** shows the Railyards land use plan. **Figure 5** shows the Railyards district boundaries. **Figure 6** shows the Railyards proposed open space / parks, and **Figure 7** shows the city's alternatives for the SITF. These figures are in Section 2.

4.2.1. Historic District in the Central Shops

The Railyards project has the potential to cause substantial adverse change to the former Southern Pacific railyards historic district. This change could be a significant effect on the environment if the significance of the historical resource would be materially impaired as a result of this project. The historical resource could be materially impaired through the demolition,

[23] CEQA Guidelines 15064.5(b)(1)-(4). Section 15064.5(b)(5) is regarding projects that will affect state-owned historical resources and is not applicable for this project.

destruction, relocation, or alteration of the historical resource's physical characteristics that convey its historical significance and that justify its inclusion in the CRHR and Sacramento Register.

The Applicant's stated intention for the Railyards project is that the historical resource that comprises the Central Shops be treated in a manner that follows the Secretary of Interior's Standards for the Treatment of Historic Properties. The central treatment for the Central Shops would be rehabilitation, which is defined as "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values."[24] Many aspects of the project, as presented in the Railyards Specific Plan and Design Guidelines, illustrate principles, goals, and policies that should fulfill the stated intention. The Applicant has proceeded with its project with the rehabilitated Central Shops as a dominant and crucial feature of the planned development, and has produced documentation to support the rehabilitation of the Central Shops to the Secretary of Interior's Standards. The project, as proposed, and the documentation developed for the project greatly support the ability for the project to be mitigated to a level that is less than a significant impact on the historical resource.

Issues that require resolution remain so that the Railyards project does not cause a substantial adverse change in the significance of the Central Shops. These issues are as follows:

- The property's historic status, boundaries, and character-defining features need to be further defined and clarified;

- More specific planning, description, direction, and instruction is needed, and in a more readily available form, to ensure that tenant improvements, signage, and open space / parks development do not diminish the historic integrity of the historical resource; and

- The location, height, and massing of buildings and structures adjacent to the Central Shops may create a setting that diminishes the historic integrity of the historical resource.

4.2.1.1. Impact of the Central Shops' Historic Status, Historic District Boundaries, and Definition of Character-Defining Features

The Railyards project has the potential to cause a substantial adverse change to the former Southern Pacific Railroad Shops because the status of this historical resource under the City of Sacramento Municipal Code, along with the historic district boundaries and the district's character-defining features, are not sufficiently defined so that the city can adequately ensure that

[24] Secretary of Interior's Standards for Rehabilitation , available online at: http://www.nps.gov/history/hps/tps/standguide/index.htm

the contributing features of the historic district will not be materially impaired. Without this information, alterations made to the buildings and structures in the historic district, along with the relocation of structures in and around the Central Shops and construction of new buildings and structures in the vicinity of the Central Shops, could diminish the historic integrity of the historical resource.

As noted in Section 3, HRC concluded in 1998 that nine buildings and structures in the former Southern Pacific railyard appears to meet the criteria for listing in the NRHP as a historic district, and the City of Sacramento subsequently adopted those findings for the previous Railyards Special Planning District. The Central Shops have not been designated as a historic district under City of Sacramento Municipal Code Chapter 17.134. The Railyards Specific Plan indicates that the Applicant intends to designate the Central Shops as a historic district, but no specific policy is stated to ensure this will be completed.[25] The HRC 1998 evaluation did not provide a justification for the boundaries shown on the map provided with that report, nor did the report discuss the character-defining features of the historic district and it contributors. The previous Railyards Special Planning District only defined the boundaries of the historic district generally and did not provide the character-defining features of the historic district and its contributors. The ARG 2006 report prepared for the Applicant provides the most detailed description of character-defining features of the property to date. It is highly detailed and provides a substantial basis for defining the character-defining features of the historical resource. The ARG report does not include information on the Boiler Shop and Erecting Shop. Furthermore, the character-defining features are not officially part of the evaluation of the property.

The Applicant's policy statement in the Specific Plan states that work conducted on the buildings of the Central Shops would conform with Chapter 17.134. The project, however, could cause a substantial adverse change to the historical resource because the city (including the City of Sacramento Preservation Director and Preservation Commission) lacks sufficient information to ensure the adequate protection of the historical resource and the current status of the property could cause unnecessary confusion and disagreement as the Railyards project proceeds. Although Chapter 17.134 provides protections to buildings, structures, objects, sites, and districts that are considered historical resources for the purposes of CEQA, the chapter is intended to protect city- designated landmarks / historic districts and provides the clearest legal authority to the protection of city landmarks / historic districts. Furthermore, because of insufficient definition of the historic district boundary and character-defining features, alterations to the contributing features of the historic district could be materially impair physical characteristics of the historical resource that convey its historical significance and justify its inclusion, or eligibility for inclusion, in the CRHR and Sacramento Register. Therefore, to ensure adequate

[25] See Railyards Specific Plan, Chapter 4, Policy HR-1.3 and Chapter 9, Section B, 1.

preservation of this historical resource, and to prevent ambiguity regarding the historic district boundary as well as contributing and non-contributing elements, the former Southern Pacific Railroad yard historic district should be designated under the city's historic preservation code. The designation of the historic district would result in a clear definition and justification of the historic district's boundaries and character-defining features. This would help clarify the potential impacts on the historical resource of future components of the Railyards project.

4.2.1.2. Potential Impact of Building Rehabilitation, Tenant Improvements, Signage, and Open Space / Parks Development

The Railyards project has the potential to cause a substantial adverse change to the former Southern Pacific Railyard historic district through alteration and demolition of character-defining features of contributing elements of the historic district. These changes could occur during the rehabilitation of the buildings in the Central Shops and during the subsequent, project-level, portions of the project when the Applicant (or others) will make tenant improvements, place signage on and around the historic district, and create the open space and parks in and around the historic district and its immediate surroundings. These activities have the potential to materially impair the physical characteristics that convey their significance and justify the district's inclusion in the NRHP, CRHR, and Sacramento Register.

The project currently includes plans to rehabilitate the buildings in the Central Shops District to prepare them for habitation and use by tenants, including seismic retrofitting the buildings. The Applicant's Specific Plan and Design Guidelines include goals, policies, and guidelines for the rehabilitation of the buildings in the Central Shops, tenant improvements, signage, and the open space / parks improvements. While the plans, goals, policies, and guidelines address many of issues that are relevant for the historic district's preservation, project planning for historical resources is incomplete and there is a lack of cohesiveness illustrating how character-defining features of the historic district would be preserved and protected.

The Applicant had ARG prepare plans to assess how this rehabilitation could be accomplished meeting the Secretary of Interior's Standards for Rehabilitation. ARG's "core and shell" plans did not included the Boiler House, Erecting Shop, turntable, and the transfer table between the two buildings because they prepared the plans when the Railyards project did not include those buildings and feature. While the ARG report and plans provided direction regarding specific and appropriate treatment to buildings in the historic district and the materials found on those buildings, they did not include information on methods for signage and open space / parks development that would minimize impact to the historic district and its contributors. Furthermore, the Applicant does not yet have specific tenants for specific locations so it is unclear what potential impacts the improvements made for those tenants may have on the historic district.

One of the project's seven principles presented in the Specific Plan is to "Preserve the Historic and Cultural Resources of the Area," which includes rehabilitating the buildings and structures in the Central Shops' historic district. At least two of the goals presented in the Specific Plan relate to this principle, and these goals include policies to be used in the decision-making process. (See Chapter 4.) Actions taken to carry out these goals and policies would be directed by the Design Guidelines which include specific information regarding historic preservation and adaptive reuse as well as guidelines expressly defined for the Central Shops District that focus on preservation and appropriate reuse of buildings and structures in the historic district.

Assuming that issues related to the historic district's status, boundaries, and character-defining features noted above are addressed, Railyards is also faced with ensuring that the project principles, goals, and policies to preserve and protect historical resources are carried out in an effective manner and in a way that adaptively reuses the buildings and structures in the historic district successfully. Sufficient readily-available and specific information is needed for the Applicant, Preservation Director, and Preservation Commission regarding appropriate treatments and alterations that can be made in, on, and around the contributing buildings and structures in the historic district so that they can make informed decisions. Having this information can enhance the approval process for project components. It should also diminish disagreements regarding the appropriateness of treatment and whether a portion of the project will cause a substantial adverse change to a contributing element of the historic district. It should also enhance the interpretation of the property to convey its historic significance to residents and visitors.

4.2.1.3. Potential Impact of Buildings and Structures Adjacent to the Central Shops

The Railyards project could potentially cause a substantial adverse change to the former Southern Pacific railyards historic district by construction of buildings and structures in the immediate surroundings of contributing elements of the historic district. Project components that may impact the historic district include the proposed 5th Street Overpass, which will rise to 61 feet above the realigned railroad tracks to roughly the height of the adjacent building (Paint Shop), the proposed northern extension of 5th Street, and the new construction proposed west of 5th Street and south of Camille Lane, such as the extension of Car Shop No. 3 on parcel 23, performing arts building on parcel 15, and hotel parcel 14 adjacent to the Car Machine Shop. These, and other elements of the Railyards project including the design of and construction in open spaces and the relocation of the Water Tower, could materially impair the physical characteristics of the historic district that convey its significance.

Although the historic district's setting, i.e. the physical environment that surrounds the historical resource, has been vastly altered since the end of the district's period of significance (1937), the location, height, and massing of new construction has the potential to create a setting that

diminishes historic district's historic integrity. Integrity of setting helps convey a property's relationship with surrounding features and open space. It also illustrates the physical conditions within which the property functioned and includes the relationship between buildings and its surroundings. Overly tall or massive buildings immediately adjacent to a contributing building or structure in the historic district could reduce the comprehension of the complex.

The historic district in the Central Shops District is significant for its historical association with railroad development in Sacramento and as an important example of railroad building and architecture from the late nineteenth century and early twentieth century. HEC noted, among the district's important qualities, that the historic district possesses a "unique visual quality" and that it is a "cohesive architectural and historic complex." This visual quality was further described as follows:

> The character and ambience of the structures and their juxtaposition create a particularly strong visual statement as an historic district. The pedestrian quality of the spaces between buildings is unusual for the size of the buildings involved, and creates a truly unique spatial experience. The placement of structures and their interactions is an important attribute of the district.[26]

Historical maps and photographs of the Southern Pacific railyards during the early twentieth century, such as **Photograph 16**, reveal that buildings on the Railyards property were closely surrounded by other buildings and structures. It is also evident that buildings that now comprise the historic district also dominated the property and were a focal point of the property.

Like the impact discussed above regarding project effects from tenant improvements and open space / parks development, at least three of the goals presented in the Specific Plan relate to the issue of the historic district's setting. These goals include policies to be used in the decision making process (see Chapter 4) and actions taken to carry out these goals and policies would be directed by the Design Guidelines which include clear information regarding historic preservation and adaptive reuse as well as guidelines expressly defined for the Central Shops District that focuses on addition of new construction in and around the historic district. Most specifically, the Design Guidelines state that new buildings will be at least 20 feet away from the historic buildings.

As with the impact discussed above, the addition of new construction around the historic district presents Railyards with issues related to ensuring that the project principles, goals, and policies to preserve and protect historical resources are carried out in an effective manner and in a way that allows for the successful use of the immediate area surrounding the historic district. Sufficient readily-available and specific information is needed for the Applicant, Preservation

[26] Historic Environment Consultants, *Central Pacific/Southern Pacific Railroad Railyards Historic Property Inventory and Evaluation Report*, 12 and 14.

Director, and Preservation Commission regarding appropriate scale and massing of new construction around the contributing buildings and structures in the historic district so that informed decisions can be made. Having this information can enhance the approval process for project components. It should also diminish disagreements regarding the appropriateness of such construction and whether a portion of the project will cause a substantial adverse change to a contributing element of the historic district. The information provided regarding scale and massing of adjacent buildings will also be enhanced by clear definition of the historic district's boundaries and the roles that the city's Preservation Commission has in the approval process as opposed to the role had by the Design Review Commission.

Photograph 16: Fourth Street, Sacramento Depot, and Southern Pacific Railyards, 1929. [*Courtesy California State Library*]. The red arrows indicate the location of extant buildings in the Central Shops District.

4.2.2. Sacramento Depot

The Railyards Specific Plan presents three components of the project in the Depot District that will either be constructed as part of the Railyards project or adjacent to and in coordination with the Railyards project. These components are the relocation and realignment of the UPRR main line tracks 573 feet to the north of their current location, the creation of the Sacramento Intermodal Transportation Facility (SITF), and mixed use office, residential, and retail development.

The mixed used development is the only one of the three that are specifically planned by the Applicant. This development would occur northeast of the Sacramento Depot on blocks that will

be of similar size to adjacent city blocks. The adjacent blocks include the 16 story, 350 foot tall, Federal Courthouse, completed in 1999.[27] The Railyards development on the blocks northeast of the Sacramento Depot in its current location is intended to be scaled to extend the central city and stepped back to respect the architectural qualities of the Sacramento Depot. The Specific Plan and Design Guidelines include defined parameters for this development that appear to be sufficient so that the Applicant's proposed development in the Depot District would not cause a substantial adverse change in the significance of the Sacramento Depot and its contributing structures. Development on these adjacent parcels (parcel 40, 41 and 44) is not anticipated to cause the demolition, relocation, or alteration of this historical resource or its immediate surroundings. Portions of the city at a similar distance from the Sacramento Depot have dramatically changed since the station's construction in 1925.

The Sacramento Depot, including its contributing structures, will be impacted by the relocation of the UPRR main line tracks 573 feet to the north of their current location and by the SITF that the City of Sacramento proposed, with which the Railyards project would coordinate. The track realignment and SITF projects are separate from the Railyards and will require further analysis to assess their impacts on historical resources under CEQA. These projects will also likely require separate analysis for compliance with Section 106 of the National Historic Preservation Act. Although neither is fully designed, these projects will likely cause a substantial adverse change to the Sacramento Depot because they will require the demolition of the platform amenities. The SITF project also has the potential to cause a substantial adverse change in the process of relocating the station building and by substantially altering the Sacramento Depot's immediate surroundings. It is possible that many of the impacts can be reduced through mitigation measures, however, it may not be possible to mitigate these projects to a level that is less than significant because of the demolition of structures that are contributing elements of the Sacramento Depot historical resource.

The track realignment plan calls for the existing two mainline UPRR tracks to be relocated northward, just south of the Central Shops. A third freight track may be added. The SITF is intended to ultimately include two to three dedicated through-mainline-freight tracks that will provide access to four dedicated passenger tracks within the SITF. SITF is intended to provide a single transfer point between regional, local, and interstate transit and transportation modes. As currently envisioned, it would accommodate inter-city passenger train, light rail, bus, and freight services, all within close proximity to local bicycle and pedestrian ways, and accessibility to the interstate highway system, including I-5 and I-80. It also would provide an opportunity to include the proposed statewide high-speed rail service. The Specific Plan states that the passenger rail platforms will be "grade-separated from all roadways and bicycle and pedestrian

[27] City of Sacramento, Office Development, Downtown Development website (accessed July 2007): http://www.cityofsacramento.org/econdev/down/1211_office_development.html#3.

corridors" and that "connections to the Depot building and light rail platforms will be provided by walkways, stairs and ramps, and possibly escalators and elevators."[28]

Following consideration of the public's input and various alternatives, the Sacramento City Council concluded that "Alternative B-Sacramento Northern" should be considered the preferred alternative.[29] (See **Figure 7** in Section 2.) The "Sacramento Northern" alternative would relocate the historic Sacramento Depot approximately 400 feet north along the axis of 4th Street and integrate it into a new terminal building. This alignment would accommodate planned rail service growth and would improve rail operations. Despite the presence of the preferred alternative, no formal proposed project has been approved and no project level designs for SITF have been developed for use in environmental analysis. Many issues related to the technical and financial feasibility of this project remain. These issues, including impacts to historical resources, will need to be examined and a more detailed plan developed prior to a final determination of feasibility of any one alternative can be made.

4.2.3. I Street Bridge

The Railyards project will not cause a substantial adverse change to the NRHP listed I Street Bridge (Bridge 22C0153). As noted in Section 3, the eastern approaches to the I Street Bridge over the Sacramento River are not contributing structures to the NRHP listed property. These approaches include Jibboom Street Overhead (Bridge 24C0006), built in 1937, I Street Viaduct (Bridge 24C0364L), built in 1936, and the J Street Viaduct (Bridge 24C0364R), built in 1969. The Specific Plan's principle to "Reconnect Downtown and the Central City with the Rivers" (in Chapter 4) would be accomplished through the lowering Jibboom Street to ground level. The Specific Plan's Circulation Plan (Chapter 7) shows that the Jibboom Street Overhead, which carries Jibboom Street on a steel girder viaduct structure from grade on the north, running parallel to the river, and merging with the I Street Viaduct just east of the I Street Bridge, would be demolished and a replacement ramp would be constructed from the southern extension of Bercut Drive to the I Street Bridge. The I Street Viaduct and its west bound lanes remain in place, and the J Street Viaduct, which carries east bound traffic off the I Street Bridge on a concrete box girder structure down to J Street, would not be impacted. **Photograph 17** illustrates the connection point between the I Street Bridge, I Street Viaduct, and J Street Viaduct.

In this view, the rusted truss structure on the left is the I Street Bridge, the character-defining features of which include the structural elements and the sidewalk railing. On the right side of the photo, the concrete J Street Viaduct is in the forefront as it diagonally merges with the green

[28] Railyards Specific Plan, June 2007, Chapter 4.

[29] City of Sacramento, *Sacramento Intermodal Transportation Facility- Draft for Public Review Working Paper #9 S SITF Alternatives*, September 29, 2004.

steel girder I Street Viaduct, the supports of which are visible. The Jibboom Street Viaduct is in the background. It intersects with the I Street Viaduct approximately 75 feet east of I Street Bridge. Thus, removal of the Jibboom Street Overhead will not alter or otherwise materially impair the I Street Bridge and will not diminish the historic integrity of the I Street bridge, which will continue to be able to convey its historic significance.

Photograph 17: I Street Bridge meets I Street Viaduct and J Street Viaduct, camera facing north, July 2007.

4.2.4. Other Resources

As discussed in Section 3, several other built environment resources are located in the study area for the Railyards project. They are the remnant portion of the Pioneer / Sperry Grain Mill adjacent to the Sacramento River, route of the first transcontinental railroad, and levees. The Railyards project, as it is currently proposed, will not impact these resources except the levee / berm situated along the north edge of the project from I-5 to 12th Street.

The remnant portion of the Pioneer / Sperry Grain Mill is located on a parcel to the west of the Jibboom Street Viaduct on property owned by the State of California Department of Parks and Recreation. The building has not been fully inventoried and evaluated. If the Railyards project were to acquire the parcel on which this building sits, a full evaluation will need to be conducted to identify its potential historical significance and whether the building should be considered as a historical resource for the purposes of CEQA compliance.

The Railyards project may not impact to California State Landmark 780, the First Transcontinental Railroad, and its route, portions of which were recorded outside of the

Railyards project. It is unclear whether physical structures remain on the surface in the Railyards study area that would retain sufficient historic integrity to convey the significance of this resource. The Railyards project's Camille Lane is proposed to be constructed in an arc-shaped footprint that generally follows the path of the first transcontinental railroad route as it passed through the railyards property in Sacramento. Further research and analysis would identify where extant elements of the original route's structure may be located and what, if any, significance the route itself might have as a historical resource within the Railyards study area. The Applicant should have this resource inventoried and evaluated by a qualified architectural historian for its potential historic significance and eligibility as a historical resource.

The Railyards project study area includes levees along the Sacramento River and along the north edge boundary of the project from I-5 to 12th Street. The Sacramento River levee is on property that is not owned by the Applicant, and the Railyards project, as it is currently proposed, will not impact this levee. As discussed in Section 3, it is unlikely that this levee would be considered a historical resource for the purposes of CEQA, but if the project changes and thereafter impacts this resource, the Applicant should have the levee inventoried and evaluated by a qualified architectural historian. The levee along the north edge of the project, portions of which were removed for the 7th Street extension project, may be impacted by the Railyards project. Portions of it may be removed in the construction of streets, parks, and residential units. As noted above, this levee has not been previously inventoried and evaluated. The Applicant should have this resource inventoried and evaluated by a qualified architectural historian for its potential historic significance and eligibility as a historical resource.

5. MITIGATION MEASURES

Based on the impacts analysis presented in Section 4, the Railyards project has the potential to cause a substantial adverse change to two identified historical resources: the historic district in the Central Shops District and the Sacramento Depot in the Depot District. The following discussion provides information regarding mitigation measures that would reduce those impacts. The intention of these mitigation measures is to reduce project impacts to a level that is less than significant. JRP is proposing possible mitigation measures that should be implemented. Mitigation measures are not required for impacts that have not been found to be significant, i.e. impacts that do not cause a substantial adverse change to a historical resource. These proposed mitigation measures are in support of the responsibility that the City of Sacramento, as the lead agency under CEQA, has for identifying potentially feasible measures to mitigate the significant adverse change that the project may have on the historical resource, in accordance with CEQA Guidelines Section 15126.4. The city may propose additional mitigation measures. All mitigation measures must be vetted for feasibility and applicability, and be roughly proportional to the impacts of the project. The city must also consider ways to enforce mitigation measures. Enforcement can occur through use of permit conditions, agreements, or legally-binding instructions. Mitigation measures presented in the DEIR will be required and enforceable.[30]

5.1. Historic District in the Central Shops

5.1.1. Historical Designation of the Property

As noted in Section 4, the Railyards project has the potential to cause a substantial adverse change to the historic district in the Central Shops because the status of this historical resource under the City of Sacramento Municipal Code, Chapter 17.134, along with its boundaries and character-defining features, are not sufficiently defined so that the city can adequately ensure that the contributing features of the historic district will not be materially impaired. Without this information, alterations made to the buildings and structures in the historic district, along with the relocation of structures in and around the Central Shops and construction of new buildings and structures in the vicinity of the Central Shops could diminish the historic integrity of the historical resource. Therefore, to ensure adequate preservation of this historical resource, and to prevent ambiguity regarding the historic district boundary as well as contributing and non-contributing elements, the Applicant should designate the former Southern Pacific Railroad yard historic district under the city Municipal Code Chapter 17.134. The designation should include a clear definition and justification of the historic district's boundaries, its contributing and non-contributing elements, and the character-defining features, as a whole and its contributing

[30] CEQA Guidelines, Section 15126.4(a)(2)-(4).

elements.[31] Properties designated under Chapter 17.134 are qualified to use the California State Historic Building Code.

The nomination process under Chapter 17.134 includes the following steps:

- Preservation Director files a statement of nomination with the Preservation Commission.
- Preservation Director holds at least one public hearing on the nomination filing.
- Preservation Director issues a written decision on the proposed listing of the historic district on the Sacramento Register. Both the Preservation Commission and property owner are notified of the decision.
- Preservation Commission holds at least one public hearing on the nomination.
- Preservation Commission makes its recommendation regarding the nomination to the City Council.
- City Council votes on whether to adopt the nomination for listing on the Sacramento Register.

The Applicant should also nominate the former Southern Pacific railyards shops historic district for listing in the NRHP. This measure would mitigate further any ambiguity regarding the historic status of this property. Listing the historic district in the NRHP would not alter the steps, procedures, and approvals that are already required of the Applicant because the property was previously identified as eligible for listing in the NRHP, which under state and federal historic preservation and environmental regulations provides the same level of protection as properties that are listed in the NRHP. The essential difference between properties that have been evaluated as eligible for listing in the NRHP and those that the Keeper of the National Register has listed in the NRHP is that the former are not publicly recognized for their NRHP eligibility. Listing the property in the NRHP would clarify its historic status and allow the Applicant to use the NRHP listing, and the company's efforts to appropriately rehabilitate the historic buildings, in its marketing of the property. The Applicant could also apply for the 20% Federal Rehabilitation Tax Credit Program that is administered by the California Office of Historic Preservation (OHP) in partnership with NPS pursuant to federal regulations, 36 CFR Part 67. This tax credit is available for NRHP-listed properties (certified historic buildings) that are rehabilitated following the Secretary of Interior's Standards for Rehabilitation.

[31] The delineation and justification of the historic district boundaries should account for the historical setting of the buildings and structures in the district. The boundaries could include the location, for example, where the Roundhouse once stood, which would support and allow for the reconstruction of this building if such an action was desired. The historic district designation should also clarify if any landscape features, such as the palm trees near the Blacksmith Shop, are contributing elements to the district.

5.1.2. Dissemination of the HAER Recordation

As stated in Section 3, NPS recorded the historic district buildings and structures resulting in HAER CA303, entitled the "Southern Pacific Company Sacramento Shops." The California State Railroad Museum sponsored the HAER recordation. NPS completed this record in 2006 and sent a copy of the final documentation to the California State Railroad Museum, which is currently the only local repository at which it is available. The NPS plans to eventually digitize the HAER recordation and place it on the Library of Congress' "Built in America" website.

As mitigation for the Railyards project, the Applicant should acquire a copy of the full HAER report, including the historic narrative, architectural drawings, and photographs, for dissemination of the document to appropriate state, regional, and local repositories. This measure would help in providing information to the public about this important historical resource and conveying its history and significance. The Applicant should disseminate the final Southern Pacific Company Sacramento Shops HAER document (HAER CA303) to the following repositories: the California Historical Resources Information System Northeast Information Center at California State University, Sacramento; California State Library in Sacramento; Sacramento Archives and Museum Collection Center (SAMCC); the Sacramento County Historical Society; and the Sacramento Public Library's Sacramento Room. Copies can be acquired either through the California State Railroad Museum or through NPS in Washington DC. The document is not protected by copyright and is in the public domain. These copies should include the narrative and photograph log reproduced on 8.5x11 inch paper. The copies should include the drawings reproduced on 11x17 inch paper, and the photographs should be reproduced in high quality photocopies on 8.5x11 inch paper.

5.1.3. Historic Preservation Master Plan

As noted in Section 4, the project has the potential to cause a substantial adverse change to the former Southern Pacific railyard historic district through alteration and demolition of character-defining features of contributing elements. These changes could occur during the rehabilitation of the buildings in the Central Shops and during the subsequent, project-level, portions of the project when the Applicant (or others) will make tenant improvements, place signage on and around the historic district, create the open space and parks in and around the historic district and its immediate surroundings, and construct buildings and structures in the immediate surroundings of the contributing elements of the historic district. These activities have the potential to materially impair the physical characteristics that convey the significance of the historic district and justify the district's inclusion in the NRHP, CRHR, and Sacramento Register.

Although the Railyards plans, goals, policies, and guidelines address many of issues that are relevant for the historic district's preservation and rehabilitation, the project planning for historical resources is incomplete, and there is a lack of cohesiveness illustrating how character-

defining features of the historic district would be preserved and protected. The project must also ensure that the project principles, goals, and policies to preserve and protect historical resources are carried out in an effective manner and in a way that adaptively reuses the buildings and structures in the historic district successfully. This requires sufficient readily-available and specific information for the Applicant, Preservation Director, and Preservation Commission regarding appropriate treatments and alterations that can be made in, on, and around the contributing buildings and structures in the historic district, so that they can make informed decisions.

Therefore, the Applicant, in coordination and consultation with the Preservation Director, should prepare a historic preservation master plan that is specifically focused on the historic district in the Central Shops. The intention of the master plan is to provide standards of treatment for the historic district that should not require additional CEQA review and that project-level work conducted on the Railyards property could be processed through the Preservation Director and the Preservation Commission. This plan would include the following components:

- A Historic Structures Report (HSR);
- Interpretation Plan; and
- Signage and Landscape Plan.

The ARG report prepared for the Applicant in 2006, along with the final HAER recordation of the Southern Pacific Company Sacramento Shops and other previously completed historic resources reports for this property, represent a substantial basis for completing a HSR for the historic district. The HSR would include all technical data related to contributing features of the historic district, the character-defining features of the buildings and structures, and would include the most appropriate treatment options for the project to comply with the Secretary of Interior's Standards for Rehabilitation (the most appropriate treatment for this project). The HSR should serve as the historic district plan that is required under the city municipal code Chapter 17.134. See NPS Preservation Brief 43 regarding the preparation and use of historic structures report for additional detail on the possible content of the Railyards HSR.[32]

The master plan should provide information that can enhance the approval process for project components. It should diminish the potential for disagreements regarding the appropriateness of treatment and appropriateness regarding construction surrounding the historic district's contributing elements. The information provided in the plan regarding scale and massing of adjacent buildings should be enhanced by the clear definition of the historic district's boundaries and the role that the city's Preservation Commission has in the approval process versus the role had by the Design Review Commission. The master plan should provide information to help the

[32] NPS Preservation Brief 43 is available online at: www.nps.gov/history/hps/tps/briefs/brief43.htm.

Preservation Director and the Preservation Commission assess whether a portion of the project will cause a substantial adverse change to a contributing element of the historic district. It should also enhance the interpretation of the property to convey its historic significance to residents and visitors.

In addition to the HSR, the master plan should include a section regarding planning and implementation of on-site interpretation of the property's history and significance and a section regarding planning and implementation of signage and landscape features. Elements of the Railyards project presented thus far need to be further defined, refined, and clarified so that the resulting components of the project are constructed meeting the Secretary of Interior's Standards for the Treatment of Historic Properties. The master plan should examine the appropriate types, number, and location of interpretive signage, plaques, and displays, which should be integrated into the design of the open spaces, parks, and public areas of the Central Shops and installed in highly visible locations. The displays should include historical data taken from the HAER documentation or other cited archival source and some should also include photographs, maps, and other graphics. Displayed photographs should include information about the subject, the date of the photograph, and photo credit / photo collection credit. Some display should include physical remnants of architectural elements that will be salvaged from the shop buildings.

The master plan should provide information and specific guidelines for the property and tenant signage program and the open space / parks / landscaping program so that the contributing elements of the historic district are not materially impaired and their historic integrity diminished. The master plan's section on signage should take into account the typical requirements of potential tenants that the Applicant may secure for the buildings in the Central Shops. A balance is necessary providing sufficient flexibility for tenants, including national chains with specific signage requirements, and the protection of the historical resource. Signage must not obscure character-defining features of the historic buildings whenever feasible, and sufficient methods should be put in place to ensure protection of the historic materials on exterior and interior of these buildings, including brick, concrete, and wood. The master plan should review signage policies and programs in similar historic properties elsewhere in California and in the nation that have been rehabilitated and used for similar commercial purposes as proposed in the Railyards. Sections related to open space / parks development should include more specific guidelines and how the contributing structures and features, other than the buildings, can be preserved, protected, and integrated. These sections should include information on hardscape issues, including types of paving and street furniture.

The master plan should provide detailed information that can be used in preparing scopes of work for specific contractors, designers, and consultants who may work on the Railyards project and whose work might impact the historic district in the Central Shops. The master plan should also establish a method to record and document work that has been performed, setting up

documentation standards and examining how planning studies, technical studies, investigations, and construction activities were carried out so that the Applicant, Preservation Director, Preservation Commission, and the public can learn ways to improve on the treatments that have been performed on contributing buildings and structures in the historic district.

The Applicant should prepare the master plan in coordination and consultation with the Preservation Director. The Preservation Director may also hold a public hearing and/or have the master plan presented to the Preservation Commission and the Design Review Commission to ensure that the content is sufficiently comprehensive and complete. The Preservation Director should, with input from the Preservation Commission, certify the adequacy of the document prior to the city's issuance of building permits. The master plan would likely be prepared in phases and could be certified in a stepped approach allowing, for example, the rehabilitation efforts to begin once the HSR is completed.

5.2. Sacramento Depot

As discussed in Section 4, the projects to relocate the UPRR main line tracks and the City of Sacramento's SITF project will likely cause a substantial adverse change to the Sacramento Depot. The following is a list of the types of mitigation measures that would reduce the impact those projects may have on the historical resource. These are presented for information purposes. The Applicant (for the Railyards project) would not be directly responsible for carrying out these mitigation measures.

5.2.1. Documentation and Treatment

The mitigation measures for Sacramento Depot should include recordation of the property to Historic American Building Survey (HABS) / HAER standards. The City of Sacramento should coordinate with the NPS Western Regional Office to determine what level of HABS / HAER would be appropriate. A Level II HABS / HAER recordation may be sufficient. Such a document would include a historical narrative, large format archival quality photographs, reproductions of original plans and plans of alterations, and reproduction of historical photographs.

The city should require that the HABS / HAER documentation for the Sacramento Depot be disseminated to multiple repositories, including (but not limited to) the California State Railroad Museum, City of Sacramento Library's Sacramento Room, Sacramento Archives and Museum Collection Center (SAMCC), and Sacramento Historical Society.

Mitigation measures for the Sacramento Depot should also include the preparation of a HSR for the property and a plan for the on-site interpretation of the history and significance of the

property. The HSR would include information on the property's history, its contributing elements / character-defining features, and appropriate treatment recommendations.

It may also be appropriate for an educational exhibit to be prepared about the Sacramento Depot that could be displayed at public libraries, in public buildings, and in public areas of the station property. This exhibit could also be published on a website. Additional measures could include the de-construction, salvage, and reuse of materials and features that would be demolished as a result of these projects. Such salvaged materials could be used in interpretative displays to help convey the history and significance of the property.

5.2.2. Project Design and Protection Measures

The mitigation measures for the SITF project at the Sacramento Depot should include design guidelines or design controls that minimize the impact the project would have on the station. There should also be specific measures imposed to ensure the protection of the historic station's character-defining features during construction and alteration of the property. Such protection measures, defined in the treatment plan that contributes to the HSR, would be particularly important if the alternative to move the station is chosen.

5.2.3. Re-Evaluation

It is possible that under CEQA the Sacramento Depot may remain listed in the CRHR even after it is moved. This would be possible if moving the building is done to otherwise prevent its demolition and if the new location is sufficiently "compatible with the original character and use." The historical resources features, orientation, setting, and general environment would need to be sufficiently similar to its current location and setting.[33]

It is also possible that the moved station could also remain listed in the NRHP. This would require the property to be re-evaluated once the project is completed. SHPO may require the property to be re-nominated for listing in the NRHP. The re-evaluation would included analysis of the property's historic significance under the NRHP criteria, including assessment of its historic integrity, plus evaluation of the property under Criteria Consideration B for moved properties.

5.3. Other Resources

As noted in Section 4, the Railyards project, as it is currently proposed, will not impact other known historical resources besides the historic district in the Central Shops and the Sacramento Depot. The historical status of several properties that could be impacted by this project is

[33] California Register of Historical Resources, California Code of Regulation, Title 14, Chapter 11.5, 4852(d)(1).

unknown at this time. Currently, the project is not anticipated to impact the remnant portion of the former Pioneer / Sperry Mill located west of the Jibboom Street Viaduct on a DPR-owned parcel, nor the adjacent Sacramento Levee. If the Applicant were to acquire this property, or alter the project in a manner that might impact that parcel, a full inventory and evaluation should be prepared for that property by a qualified architectural historian. Similarly, the project is anticipated to impact the levee situated on the north side of the project between I-5 and 12th Street and could impact remaining elements extant on the surface that are related to the first transcontinental route. The Applicant should have a qualified architectural historian inventory and evaluate the latter two resources to assess their historical significance and their potential to be considered as historical resources for the purposes of CEQA compliance.

If either of the levees, discussed above, the remnant portion of the Pioneer / Sperry Mill, or extant structures related to the first transcontinental railroad route are historically significance, retain sufficient historic integrity, and are considered historical resources for the purposes of CEQA, additional mitigation measures will be necessary. These steps should include recordation of the resource to HABS / HAER standards, dissemination of the recordation to appropriate repositories, and historical information about the resource integrated into the interpretation displays and signage on the property.

6. CONCLUSIONS

JRP prepared this Historical Resources Impact Analysis report in accordance with Section 15064.5(a)-(b) of the CEQA Guidelines. It identified the historical resources in the study area, assessed the potential impact the Railyards project may have on historical resources, and suggested mitigation measures to reduce the project impacts on historical resources. JRP prepared this report as a technical document that will be an appendix to the DEIR for the Railyards Project.

This report concludes that the Railyards project has the potential to cause a substantial adverse change in the significance of historical resources. Such a change could be considered a significant impact on the environment. The project impacts could be mitigated to a level that is less than significant if the City of Sacramento, as lead agency, can ensure that mitigation measures employed to reduce those impacts are sufficiently implemented. As noted, the impacts analysis presented in this report is at the program level. The intention of the mitigation measures proposed in this document is provide standards of treatment for the historic district in the Central Shops District that should not require additional CEQA review for project components and that project-level work conducted on the Railyards property could be processed through the Preservation Director and the Preservation Commission. Depending on the successful implementation of the mitigation measures to reduce potential impacts the Railyards project may have on historical resources, additional review may be required of individual projects on the Railyards property to assess impacts to historical resources and mitigation measures to reduce impacts.

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8. PREPARERS' QUALIFICATIONS

JRP Partner, Christopher McMorris (MS in Historic Preservation, Columbia University) conducted the field reconnaissance survey, impacts analysis, and prepared this report. Mr. McMorris closely coordinated with EIP, the City of Sacramento, and Thomas Enterprises in preparation of this document. Mr. McMorris has been with JRP since 1998 and based on his education and experience qualifies as a historian/architectural historian under the United States Secretary of the Interior's Professional Qualification Standards (as defined in 36 CFR Part 61).

JRP Principal, Rand F. Herbert (MAT in History, University of California Davis), provided assistance with the project, including review of this report. Mr. Herbert has more than twenty-five years experience working as a consulting historian and architectural historian on a wide variety of historical research and cultural resources management projects, as a researcher, writer, and project manager. Mr. Herbert qualifies as a historian/architectural historian under the United States Secretary of the Interior's Professional Qualification Standards (as defined in 36 CFR Part 61).

Jarma Jones (MA in History, University of New Mexico), JRP research assistant, helped coordinate the project documentation and assisted in the preparation of this document.

APPENDIX I
SITE INVESTIGATION AND CLEANUP BIBLIOGRAPHY

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21. **"Operation and Maintenance Manual, South Plume Source Remediation System, Appendix F,"** ERM-West, Inc., November 1996.

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29. **"Health Risk Assessment Report, Central Shops Study Area – Soil, and South Plume Study Area – Ground Water,"** ERM, December 2004.

APPENDIX J
NOISE MONITORING AND MODELING DATA

PBSJ 26 July 2007
NI TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Sacramento Railyards
RUN: Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
517 7th Street	1	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
619 12th Street	2	1	0.0	69.9	66	69.9	10	Snd Lvl	69.9	0.0	8	-8.0
EconoLodge 16th Street	3	1	0.0	71.1	66	71.1	10	Snd Lvl	71.1	0.0	8	-8.0
Richard Blvd Housing	4	1	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	8	-8.0
B Street Residence	5	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
Project Site at 7th Street	6	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

PBSJ 26 July 2007
NI TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Sacramento Railyards
RUN: Baseline
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
517 7th Street	1	1	0.0	67.9	66	67.9	10	Snd Lvl	67.9	0.0	8	-8.0
619 12th Street	2	1	0.0	69.9	66	69.9	10	Snd Lvl	69.9	0.0	8	-8.0
EconoLodge 16th Street	3	1	0.0	71.2	66	71.2	10	Snd Lvl	71.2	0.0	8	-8.0
Richard Blvd Housing	4	1	0.0	68.2	66	68.2	10	Snd Lvl	68.2	0.0	8	-8.0
B Street Residence	5	1	0.0	64.7	66	64.7	10	----	64.7	0.0	8	-8.0
Project Site at 7th Street	6	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

PBSJ 26 July 2007
NI TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Sacramento Railyards
RUN: Baseline plus Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
517 7th Street	1	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	8	-8.0
619 12th Street	2	1	0.0	70.4	66	70.4	10	Snd Lvl	70.4	0.0	8	-8.0
EconoLodge 16th Street	3	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
Richard Blvd Housing	4	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
B Street Residence	5	1	0.0	67.2	66	67.2	10	Snd Lvl	67.2	0.0	8	-8.0
Project Site at 7th Street	6	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	6	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

PBSJ 26 July 2007
NI TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Sacramento Railyards
RUN: Year 2030 No Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
517 7th Street	1	1	0.0	71.5	66	71.5	10	Snd Lvl	71.5	0.0	8	-8.0
619 12th Street	2	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
EconoLodge 16th Street	3	1	0.0	71.6	66	71.6	10	Snd Lvl	71.6	0.0	8	-8.0
Richard Blvd Housing	4	1	0.0	71.1	66	71.1	10	Snd Lvl	71.1	0.0	8	-8.0
B Street Residence	5	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
Project Site at 7th Street	6	1	0.0	73.2	66	73.2	10	Snd Lvl	73.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	5	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

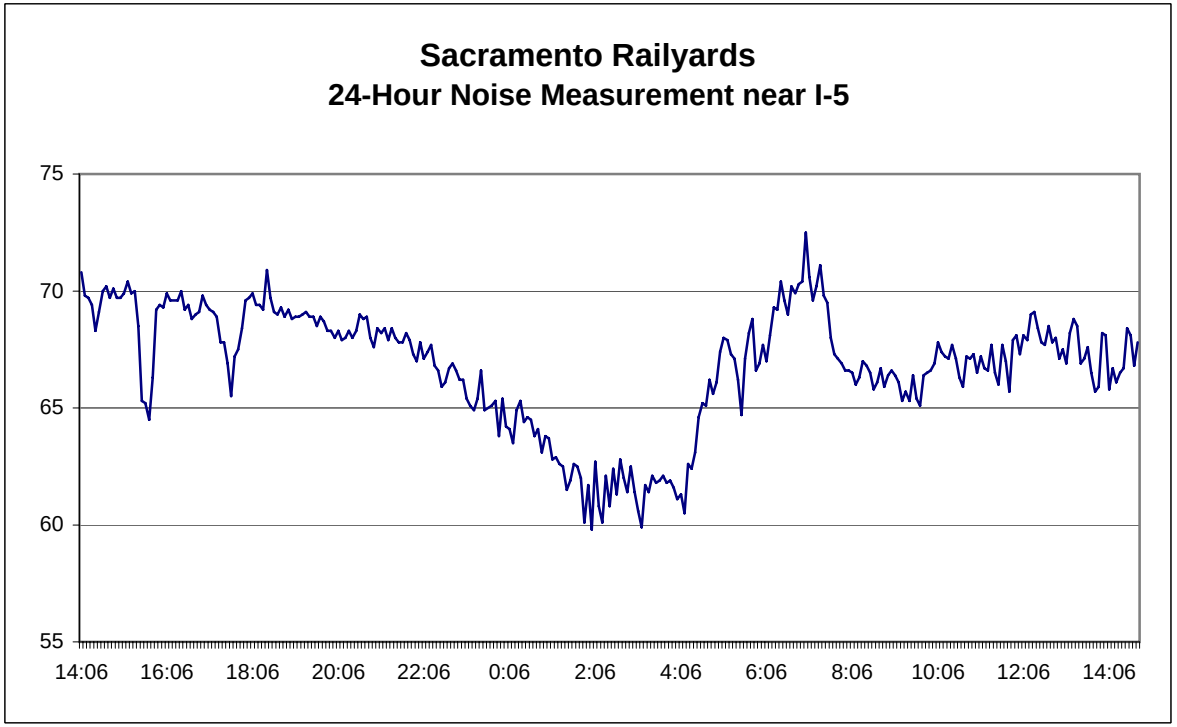
PBSJ 26 July 2007
NI TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: Sacramento Railyards
RUN: Year 2030 plus Project
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
517 7th Street	1	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0
619 12th Street	2	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
EconoLodge 16th Street	3	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
Richard Blvd Housing	4	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
B Street Residence	5	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0
Project Site at 7th Street	6	1	0.0	69.5	66	69.5	10	Snd Lvl	69.5	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	6	0.0	0.0	0.0
All Impacted	6	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0



289 # of Data Points
67.4 Leq (24 hour)
72.4 Ldn
49.0 Lmin
88.7 Lmax

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Date		Time	Duration	Leq	Leq for Ldn	Lmax	Lmin	Uwpk	10^(Li/10)/Ntot	10^(Li/10)/I for Ldn
28-Mar	7	14:06	300	70.8	70.8	88.7	65.9	114.4	41601	41601
28-Mar	7	14:11	300	69.8	69.8	75.1	65.6	111.5	33045	33045
28-Mar	7	14:16	300	69.7	69.7	74.7	65.9	104.9	32293	32293
28-Mar	7	14:21	300	69.4	69.4	73.9	65.6	110.3	30137	30137
28-Mar	7	14:26	300	68.3	68.3	72.6	64.1	117.2	23394	23394
28-Mar	7	14:31	300	69.1	69.1	72.4	64.9	110.3	28126	28126
28-Mar	7	14:36	300	70	70	74.5	65.8	110.9	34602	34602

28-Mar	7	14:41	300	70.2	70.2	75.5	66.8	112.1	36233	36233
28-Mar	7	14:46	300	69.7	69.7	73.9	65.7	111.8	32293	32293
28-Mar	7	14:51	300	70.1	70.1	79	65.3	108.8	35408	35408
28-Mar	7	14:56	300	69.7	69.7	74.4	65.8	110.9	32293	32293
28-Mar	7	15:01	300	69.7	69.7	73.2	66	112.1	32293	32293
28-Mar	7	15:06	300	69.9	69.9	75.9	66.3	110.9	33814	33814
28-Mar	7	15:11	300	70.4	70.4	77.1	66.4	110.3	37940	37940
28-Mar	7	15:16	300	69.9	69.9	73.8	66.6	115.9	33814	33814
28-Mar	7	15:21	300	70	70	75.3	64.3	110.9	34602	34602
28-Mar	7	15:26	300	68.5	68.5	75.8	63.2	113.6	24496	24496
28-Mar	7	15:31	300	65.3	65.3	72.4	60.2	120	11725	11725
28-Mar	7	15:36	300	65.2	65.2	73.1	59.6	113.6	11458	11458
28-Mar	7	15:41	300	64.5	64.5	70.4	59.6	113.1	9752	9752
28-Mar	7	15:46	300	66.3	66.3	74.7	61.6	110.9	14761	14761
28-Mar	7	15:51	300	69.2	69.2	73.7	64.3	108	28781	28781
28-Mar	7	15:56	300	69.4	69.4	73.5	65.8	110.9	30137	30137
28-Mar	7	16:01	300	69.3	69.3	73.1	65.4	110.3	29451	29451
28-Mar	7	16:06	300	69.9	69.9	75.4	66.1	111.5	33814	33814
28-Mar	7	16:11	300	69.6	69.6	77.4	65.4	111.5	31557	31557
28-Mar	7	16:16	300	69.6	69.6	74.3	64.6	111.5	31557	31557
28-Mar	7	16:21	300	69.6	69.6	73.9	66	114.8	31557	31557
28-Mar	7	16:26	300	70	70	83.3	66.6	111.5	34602	34602
28-Mar	7	16:31	300	69.2	69.2	72.3	65.9	107.1	28781	28781
28-Mar	7	16:36	300	69.4	69.4	73.9	66.2	111.5	30137	30137
28-Mar	7	16:41	300	68.8	68.8	73.6	65.4	108.8	26248	26248
28-Mar	7	16:46	300	69	69	73.3	66.2	112.1	27485	27485
28-Mar	7	16:51	300	69.1	69.1	72.3	66.1	104.9	28126	28126
28-Mar	7	16:56	300	69.8	69.8	78.2	66.2	111.5	33045	33045
28-Mar	7	17:01	300	69.4	69.4	74.7	66.3	110.3	30137	30137
28-Mar	7	17:06	300	69.2	69.2	73.8	66.1	111.5	28781	28781
28-Mar	7	17:11	300	69.1	69.1	74.1	65.4	109.6	28126	28126
28-Mar	7	17:16	300	68.9	68.9	74.2	65.3	108.8	26860	26860
28-Mar	7	17:21	300	67.8	67.8	71.3	64.6	113.6	20850	20850
28-Mar	7	17:26	300	67.8	67.8	74.4	64.4	120.1	20850	20850
28-Mar	7	17:31	300	66.9	66.9	72.4	62.7	110.6	16947	16947
28-Mar	7	17:36	300	65.5	65.5	70.7	61.8	107.1	12277	12277
28-Mar	7	17:41	300	67.2	67.2	72.9	63.8	109.6	18159	18159
28-Mar	7	17:46	300	67.5	67.5	77.1	63.3	112.1	19458	19458

28-Mar	7	17:51	300	68.4	68.4	74.6	65.4	112.1	23939	23939
28-Mar	7	17:56	300	69.6	69.6	79.8	66.2	112.1	31557	31557
28-Mar	7	18:01	300	69.7	69.7	73.3	66.2	110.3	32293	32293
28-Mar	7	18:06	300	69.9	69.9	77.2	65.7	111.5	33814	33814
28-Mar	7	18:11	300	69.4	69.4	72.9	66.3	110.3	30137	30137
28-Mar	7	18:16	300	69.4	69.4	72.9	64.7	107.1	30137	30137
28-Mar	7	18:21	300	69.2	69.2	73.7	65.5	112.1	28781	28781
28-Mar	7	18:26	300	70.9	70.9	85.2	66.2	110.3	42570	42570
28-Mar	7	18:31	300	69.7	69.7	72.9	66.8	106.1	32293	32293
28-Mar	7	18:36	300	69.1	69.1	72.1	65.4	112.6	28126	28126
28-Mar	7	18:41	300	69	69	72.1	65.3	108	27485	27485
28-Mar	7	18:46	300	69.3	69.3	72.4	65.5	106.1	29451	29451
28-Mar	7	18:51	300	68.9	68.9	72	65.8	97.5	26860	26860
28-Mar	7	18:56	300	69.2	69.2	73.8	65.6	110.9	28781	28781
28-Mar	7	19:01	300	68.8	68.8	73.7	64.7	102	26248	26248
28-Mar	7	19:06	300	68.9	68.9	72.8	65.8	97.5	26860	26860
28-Mar	7	19:11	300	68.9	68.9	72.2	65.9	97.5	26860	26860
28-Mar	7	19:16	300	69	69	72.8	64.9	102	27485	27485
28-Mar	7	19:21	300	69.1	69.1	74.2	65.9	103.6	28126	28126
28-Mar	7	19:26	300	68.9	68.9	73.5	64.6	103.6	26860	26860
28-Mar	7	19:31	300	68.9	68.9	72.3	65.1	106.1	26860	26860
28-Mar	7	19:36	300	68.5	68.5	71.7	64.7	102	24496	24496
28-Mar	7	19:41	300	68.9	68.9	75.1	65.3	97.5	26860	26860
28-Mar	7	19:46	300	68.7	68.7	72.8	65.4	102	25651	25651
28-Mar	7	19:51	300	68.3	68.3	72.3	63.6	102	23394	23394
28-Mar	7	19:56	300	68.3	68.3	71.8	64.5	100	23394	23394
28-Mar	7	20:01	300	68	68	72.2	63.1	97.5	21832	21832
28-Mar	7	20:06	300	68.3	68.3	72.4	65.4	97.5	23394	23394
28-Mar	7	20:11	300	67.9	67.9	71.6	64.5	107.1	21335	21335
28-Mar	7	20:16	300	68	68	76.2	63	100	21832	21832
28-Mar	7	20:21	300	68.3	68.3	72.3	64	103.6	23394	23394
28-Mar	7	20:26	300	68	68	71.5	63.6	100	21832	21832
28-Mar	7	20:31	300	68.3	68.3	72.7	64.3	103.6	23394	23394
28-Mar	7	20:36	300	69	69	73.4	65.6	106.1	27485	27485
28-Mar	7	20:41	300	68.8	68.8	75.8	65.1	103.6	26248	26248
28-Mar	7	20:46	300	68.9	68.9	72.2	65.7	108	26860	26860
28-Mar	7	20:51	300	68	68	73.2	63.1	102	21832	21832
28-Mar	7	20:56	300	67.6	67.6	72.1	62.8	103.6	19911	19911

28-Mar	7	21:01	300	68.4	68.4	71.9	65.2	100	23939	23939
28-Mar	7	21:06	300	68.2	68.2	71.7	64	103.6	22861	22861
28-Mar	7	21:11	300	68.4	68.4	73.8	64	100	23939	23939
28-Mar	7	21:16	300	67.9	67.9	72.2	63.5	100	21335	21335
28-Mar	7	21:21	300	68.4	68.4	74.3	62.4	100	23939	23939
28-Mar	7	21:26	300	68	68	72.5	63.3	102	21832	21832
28-Mar	7	21:31	300	67.8	67.8	72.4	63	100	20850	20850
28-Mar	7	21:36	300	67.8	67.8	72.5	61.9	97.5	20850	20850
28-Mar	7	21:41	300	68.2	68.2	72.3	63.3	100	22861	22861
28-Mar	7	21:46	300	67.9	67.9	73.3	63.5	97.5	21335	21335
28-Mar	7	21:51	300	67.3	67.3	71.3	63.1	97.5	18582	18582
28-Mar	7	21:56	300	67	67	71	62.4	102	17342	17342
28-Mar	7	22:01	300	67.8	77.8	72.3	62.5	97.5	20850	208498
28-Mar	7	22:06	300	67.1	77.1	73.4	61.6	100	17746	177461
28-Mar	7	22:11	300	67.4	77.4	71.1	62.2	102	19015	190153
28-Mar	7	22:16	300	67.7	77.7	72	63.4	97.5	20375	203752
28-Mar	7	22:21	300	66.8	76.8	70.8	63	97.5	16562	165616
28-Mar	7	22:26	300	66.6	76.6	70.9	61.9	97.5	15816	158162
28-Mar	7	22:31	300	65.9	75.9	71	61.3	97.5	13462	134618
28-Mar	7	22:36	300	66.1	76.1	69.7	61.3	97.5	14096	140962
28-Mar	7	22:41	300	66.7	76.7	71	62.3	97.5	16185	161846
28-Mar	7	22:46	300	66.9	76.9	70.8	61.6	97.5	16947	169474
28-Mar	7	22:51	300	66.6	76.6	71.2	61.3	97.5	15816	158162
28-Mar	7	22:56	300	66.2	76.2	69.9	61.9	97.5	14425	144245
28-Mar	7	23:01	300	66.2	76.2	70.6	61.4	0	14425	144245
28-Mar	7	23:06	300	65.4	75.4	69.4	60.7	97.5	11998	119978
28-Mar	7	23:11	300	65.1	75.1	69.3	58.6	97.5	11197	111970
28-Mar	7	23:16	300	64.9	74.9	69.5	60.6	0	10693	106931
28-Mar	7	23:21	300	65.4	75.4	70.5	60.2	97.5	11998	119978
28-Mar	7	23:26	300	66.6	76.6	69.9	62	97.5	15816	158162
28-Mar	7	23:31	300	64.9	74.9	69.9	58.5	97.5	10693	106931
28-Mar	7	23:36	300	65	75	69.7	57.9	97.5	10942	109421
28-Mar	7	23:41	300	65.1	75.1	68.8	59.9	97.5	11197	111970
28-Mar	7	23:46	300	65.3	75.3	70.6	60.3	97.5	11725	117247
28-Mar	7	23:51	300	63.8	73.8	68.4	59.5	100	8300	83005
28-Mar	7	23:56	300	65.4	75.4	69.9	57.3	100	11998	119978
29-Mar	7	0:01	300	64.2	74.2	68.9	57.6	0	9101	91013
29-Mar	7	0:06	300	64.1	74.1	68.8	58.5	97.5	8894	88941

29-Mar	7	0:11	300	63.5	73.5	69.4	58	97.5	7746	77464
29-Mar	7	0:16	300	64.9	74.9	69.9	58	97.5	10693	106931
29-Mar	7	0:21	300	65.3	75.3	70	58.1	97.5	11725	117247
29-Mar	7	0:26	300	64.4	74.4	73.1	56.6	102	9530	95302
29-Mar	7	0:31	300	64.6	74.6	70.4	54.6	97.5	9979	99793
29-Mar	7	0:36	300	64.5	74.5	70.5	57.4	97.5	9752	97522
29-Mar	7	0:41	300	63.8	73.8	70.4	57.5	0	8300	83005
29-Mar	7	0:46	300	64.1	74.1	69.4	54.6	97.5	8894	88941
29-Mar	7	0:51	300	63.1	73.1	70.3	55.1	97.5	7065	70648
29-Mar	7	0:56	300	63.8	73.8	72	54.6	100	8300	83005
29-Mar	7	1:01	300	63.7	73.7	73	56.6	97.5	8112	81115
29-Mar	7	1:06	300	62.8	72.8	68.7	55.5	0	6593	65933
29-Mar	7	1:11	300	62.9	72.9	70	55.7	97.5	6747	67469
29-Mar	7	1:16	300	62.6	72.6	68.9	53.9	97.5	6297	62965
29-Mar	7	1:21	300	62.5	72.5	71	54.4	97.5	6153	61532
29-Mar	7	1:26	300	61.5	71.5	69.7	53.7	0	4888	48877
29-Mar	7	1:31	300	61.9	71.9	67.9	55.7	0	5359	53592
29-Mar	7	1:36	300	62.6	72.6	69.5	55.2	0	6297	62965
29-Mar	7	1:41	300	62.5	72.5	68.2	54.7	97.5	6153	61532
29-Mar	7	1:46	300	62	72	69	55	97.5	5484	54841
29-Mar	7	1:51	300	60.1	70.1	68.4	52.6	97.5	3541	35408
29-Mar	7	1:56	300	61.7	71.7	67.7	54.2	0	5118	51180
29-Mar	7	2:01	300	59.8	69.8	66.4	52.8	0	3304	33045
29-Mar	7	2:06	300	62.7	72.7	68.7	54.1	97.5	6443	64432
29-Mar	7	2:11	300	60.8	70.8	69.7	49	97.5	4160	41601
29-Mar	7	2:16	300	60.1	70.1	66.8	50.7	97.5	3541	35408
29-Mar	7	2:21	300	62.1	72.1	68	54.2	97.5	5612	56118
29-Mar	7	2:26	300	60.8	70.8	66.3	50.1	0	4160	41601
29-Mar	7	2:31	300	62.4	72.4	69.3	53.3	97.5	6013	60132
29-Mar	7	2:36	300	61.3	71.3	66.9	55.1	0	4668	46677
29-Mar	7	2:41	300	62.8	72.8	68.1	53.3	97.5	6593	65933
29-Mar	7	2:46	300	62	72	68.2	56.1	0	5484	54841
29-Mar	7	2:51	300	61.4	71.4	67.3	54.6	97.5	4776	47764
29-Mar	7	2:56	300	62.5	72.5	68.6	55.4	97.5	6153	61532
29-Mar	7	3:01	300	61.4	71.4	68.6	54.4	0	4776	47764
29-Mar	7	3:06	300	60.6	70.6	66	52.7	97.5	3973	39728
29-Mar	7	3:11	300	59.9	69.9	65.7	52.6	97.5	3381	33814
29-Mar	7	3:16	300	61.7	71.7	68.4	53.9	0	5118	51180

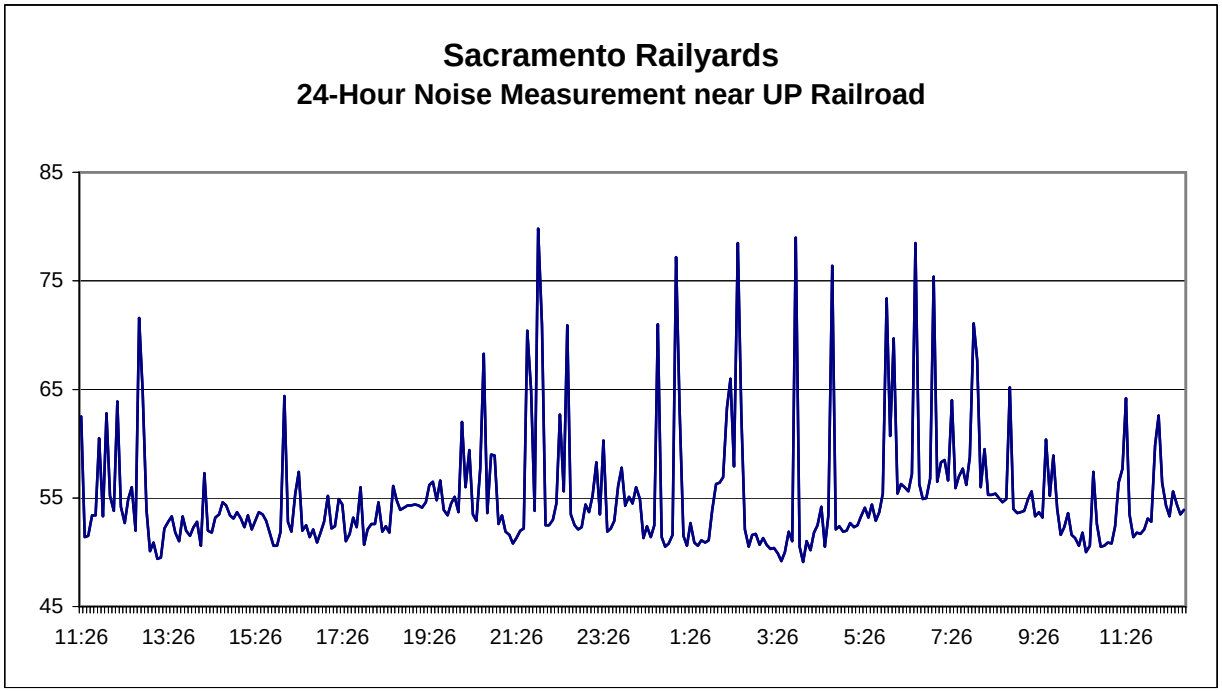
29-Mar	7	3:21	300	61.4	71.4	66.2	50.2	97.5	4776	47764
29-Mar	7	3:26	300	62.1	72.1	68.8	54.9	97.5	5612	56118
29-Mar	7	3:31	300	61.8	71.8	66.8	52.4	97.5	5237	52372
29-Mar	7	3:36	300	61.9	71.9	66	57.3	0	5359	53592
29-Mar	7	3:41	300	62.1	72.1	68.4	55.9	97.5	5612	56118
29-Mar	7	3:46	300	61.8	71.8	67	57.4	0	5237	52372
29-Mar	7	3:51	300	61.9	71.9	69.7	56	97.5	5359	53592
29-Mar	7	3:56	300	61.6	71.6	67.9	54	0	5002	50015
29-Mar	7	4:01	300	61.1	71.1	66.2	54	97.5	4458	44576
29-Mar	7	4:06	300	61.3	71.3	67	55.4	97.5	4668	46677
29-Mar	7	4:11	300	60.5	70.5	67.5	53.3	100	3882	38824
29-Mar	7	4:16	300	62.6	72.6	68.4	55.3	97.5	6297	62965
29-Mar	7	4:21	300	62.4	72.4	67.4	57.4	97.5	6013	60132
29-Mar	7	4:26	300	63.1	73.1	68.7	57.2	97.5	7065	70648
29-Mar	7	4:31	300	64.6	74.6	68.7	60.3	96	9979	99793
29-Mar	7	4:36	300	65.2	75.2	71.5	59.9	97.5	11458	114578
29-Mar	7	4:41	300	65.1	75.1	69.3	61.1	0	11197	111970
29-Mar	7	4:46	300	66.2	76.2	70	60.2	97.5	14425	144245
29-Mar	7	4:51	300	65.6	75.6	70.8	61.3	97.5	12563	125633
29-Mar	7	4:56	300	66.1	76.1	74.1	59.9	97.5	14096	140962
29-Mar	7	5:01	300	67.4	77.4	72.3	62.8	97.5	19015	190153
29-Mar	7	5:06	300	68	78	71.6	63.7	97.5	21832	218324
29-Mar	7	5:11	300	67.9	77.9	72.9	63.9	97.5	21335	213355
29-Mar	7	5:16	300	67.3	77.3	71.7	60.6	97.5	18582	185824
29-Mar	7	5:21	300	67.1	77.1	74.6	61.3	100	17746	177461
29-Mar	7	5:26	300	66.2	76.2	70.8	59.9	97.5	14425	144245
29-Mar	7	5:31	300	64.7	74.7	70.6	59.3	97.5	10212	102118
29-Mar	7	5:36	300	67.1	77.1	70.6	62.2	97.5	17746	177461
29-Mar	7	5:41	300	68.2	78.2	72.4	65.3	97.5	22861	228614
29-Mar	7	5:46	300	68.8	78.8	77.6	65.6	103.6	26248	262484
29-Mar	7	5:51	300	66.6	76.6	69.9	62.8	97.5	15816	158162
29-Mar	7	5:56	300	66.9	76.9	70.7	63.4	97.5	16947	169474
29-Mar	7	6:01	300	67.7	77.7	72.5	64.5	97.5	20375	203752
29-Mar	7	6:06	300	67	77	70.4	62.7	97.5	17342	173421
29-Mar	7	6:11	300	68.1	78.1	71.2	65.4	97.5	22341	223410
29-Mar	7	6:16	300	69.3	79.3	72.9	66.4	97.5	29451	294511
29-Mar	7	6:21	300	69.2	79.2	72.5	67.1	97.5	28781	287808
29-Mar	7	6:26	300	70.4	80.4	74.9	66.6	100	37940	379404

29-Mar	7	6:31	300	69.6	79.6	74	66.2	97.5	31557	315575
29-Mar	7	6:36	300	69	79	72.5	66.5	97.5	27485	274854
29-Mar	7	6:41	300	70.2	80.2	73.1	67.3	100	36233	362328
29-Mar	7	6:46	300	69.9	79.9	72.9	67.4	97.5	33814	338144
29-Mar	7	6:51	300	70.3	80.3	72.7	67.6	100	37077	370768
29-Mar	7	6:56	300	70.4	80.4	73	67.6	97.5	37940	379404
29-Mar	7	7:01	300	72.5	72.5	75.2	69.5	97.5	61532	61532
29-Mar	7	7:06	300	70.6	70.6	73.1	68.2	97.5	39728	39728
29-Mar	7	7:11	300	69.6	69.6	72.4	66.1	100	31557	31557
29-Mar	7	7:16	300	70.2	70.2	75	66.5	100	36233	36233
29-Mar	7	7:21	300	71.1	71.1	73.6	68.6	100	44576	44576
29-Mar	7	7:26	300	69.8	69.8	72.6	68	100	33045	33045
29-Mar	7	7:31	300	69.5	69.5	74.9	66.9	97.5	30839	30839
29-Mar	7	7:36	300	68	68	73.4	65.1	97.5	21832	21832
29-Mar	7	7:41	300	67.3	67.3	70.2	65	97.5	18582	18582
29-Mar	7	7:46	300	67.1	67.1	72.4	64.5	97.5	17746	17746
29-Mar	7	7:51	300	66.9	66.9	71.2	64.3	97.5	16947	16947
29-Mar	7	7:56	300	66.6	66.6	70.6	63.7	97.5	15816	15816
29-Mar	7	8:01	300	66.6	66.6	71.8	64.1	97.5	15816	15816
29-Mar	7	8:06	300	66.5	66.5	72.8	63.4	97.5	15456	15456
29-Mar	7	8:11	300	66	66	70.3	62.6	97.5	13775	13775
29-Mar	7	8:16	300	66.3	66.3	72	63.2	97.5	14761	14761
29-Mar	7	8:21	300	67	67	71.6	63.9	97.5	17342	17342
29-Mar	7	8:26	300	66.8	66.8	70.2	64.4	100	16562	16562
29-Mar	7	8:31	300	66.5	66.5	70.2	63.9	97.5	15456	15456
29-Mar	7	8:36	300	65.8	65.8	70.9	61.5	97.5	13155	13155
29-Mar	7	8:41	300	66.1	66.1	71.5	63.1	97.5	14096	14096
29-Mar	7	8:46	300	66.7	66.7	69.3	64	97.5	16185	16185
29-Mar	7	8:51	300	65.9	65.9	70.3	62.1	97.5	13462	13462
29-Mar	7	8:56	300	66.4	66.4	69.8	63.6	97.5	15104	15104
29-Mar	7	9:01	300	66.6	66.6	76.4	63	102	15816	15816
29-Mar	7	9:06	300	66.4	66.4	71.2	62.1	100	15104	15104
29-Mar	7	9:11	300	66.1	66.1	72.5	61.9	97.5	14096	14096
29-Mar	7	9:16	300	65.3	65.3	68.7	61.5	97.5	11725	11725
29-Mar	7	9:21	300	65.7	65.7	69.1	61.5	97.5	12856	12856
29-Mar	7	9:26	300	65.3	65.3	71.8	61.8	97.5	11725	11725
29-Mar	7	9:31	300	66.4	66.4	70.5	62.5	97.5	15104	15104
29-Mar	7	9:36	300	65.4	65.4	69.6	60.5	97.5	11998	11998

29-Mar	7	9:41	300	65.1	65.1	69.1	61.2	97.5	11197	11197
29-Mar	7	9:46	300	66.4	66.4	70.3	63.2	97.5	15104	15104
29-Mar	7	9:51	300	66.5	66.5	70.1	61.4	98.9	15456	15456
29-Mar	7	9:56	300	66.6	66.6	70.3	61.6	97.5	15816	15816
29-Mar	7	10:01	300	66.9	66.9	71	63.2	97.5	16947	16947
29-Mar	7	10:06	300	67.8	67.8	71	63.7	100	20850	20850
29-Mar	7	10:11	300	67.4	67.4	71	64.2	97.5	19015	19015
29-Mar	7	10:16	300	67.2	67.2	71.3	63.9	97.5	18159	18159
29-Mar	7	10:21	300	67.1	67.1	73.8	61.7	100	17746	17746
29-Mar	7	10:26	300	67.7	67.7	79.5	64	104.2	20375	20375
29-Mar	7	10:31	300	67.1	67.1	70.1	59.6	97.5	17746	17746
29-Mar	7	10:36	300	66.3	66.3	72.9	61.4	97.5	14761	14761
29-Mar	7	10:41	300	65.9	65.9	69.9	61.2	97.5	13462	13462
29-Mar	7	10:46	300	67.2	67.2	71.6	63.3	100	18159	18159
29-Mar	7	10:51	300	67.1	67.1	70.6	62.8	97.5	17746	17746
29-Mar	7	10:56	300	67.3	67.3	70.2	63.8	97.5	18582	18582
29-Mar	7	11:01	300	66.5	66.5	69.7	62.7	97.5	15456	15456
29-Mar	7	11:06	300	67.2	67.2	72.1	63.2	97.5	18159	18159
29-Mar	7	11:11	300	66.7	66.7	71.7	63.3	97.5	16185	16185
29-Mar	7	11:16	300	66.6	66.6	76.9	61.2	102	15816	15816
29-Mar	7	11:21	300	67.7	67.7	74.2	63.9	100	20375	20375
29-Mar	7	11:26	300	66.5	66.5	69.7	63	97.5	15456	15456
29-Mar	7	11:31	300	66	66	69.8	61.6	97.5	13775	13775
29-Mar	7	11:36	300	67.7	67.7	71.5	63.4	97.5	20375	20375
29-Mar	7	11:41	300	67	67	71.3	61.5	97.5	17342	17342
29-Mar	7	11:46	300	65.7	65.7	69.2	62.2	97.5	12856	12856
29-Mar	7	11:51	300	67.9	67.9	71.8	62.9	97.5	21335	21335
29-Mar	7	11:56	300	68.1	68.1	74	64.6	97.5	22341	22341
29-Mar	7	12:01	300	67.3	67.3	75.2	64.2	97.5	18582	18582
29-Mar	7	12:06	300	68.1	68.1	71.6	65.1	97.5	22341	22341
29-Mar	7	12:11	300	67.9	67.9	77.8	64	108	21335	21335
29-Mar	7	12:16	300	69	69	73	66	100	27485	27485
29-Mar	7	12:21	300	69.1	69.1	76.5	66	100	28126	28126
29-Mar	7	12:26	300	68.4	68.4	73.6	63.7	97.5	23939	23939
29-Mar	7	12:31	300	67.8	67.8	72.1	64	100	20850	20850
29-Mar	7	12:36	300	67.7	67.7	71	64.1	97.5	20375	20375
29-Mar	7	12:41	300	68.5	68.5	73.1	64.6	97.5	24496	24496
29-Mar	7	12:46	300	67.8	67.8	71.8	64.6	97.5	20850	20850

29-Mar	7	12:51	300	68	68	70.8	64.8	100	21832	21832
29-Mar	7	12:56	300	67.1	67.1	71.1	62.2	97.5	17746	17746
29-Mar	7	13:01	300	67.5	67.5	71.2	63.2	97.5	19458	19458
29-Mar	7	13:06	300	66.9	66.9	71.5	63.1	97.5	16947	16947
29-Mar	7	13:11	300	68.2	68.2	72.9	63.6	98.9	22861	22861
29-Mar	7	13:16	300	68.8	68.8	73.4	65.2	97.5	26248	26248
29-Mar	7	13:21	300	68.5	68.5	74.9	65.6	97.5	24496	24496
29-Mar	7	13:26	300	66.9	66.9	72.9	62.6	103.6	16947	16947
29-Mar	7	13:31	300	67.1	67.1	70.8	63.1	97.5	17746	17746
29-Mar	7	13:36	300	67.6	67.6	72.9	61.9	97.5	19911	19911
29-Mar	7	13:41	300	66.5	66.5	70.3	61.8	100	15456	15456
29-Mar	7	13:46	300	65.7	65.7	69.8	62.2	104.9	12856	12856
29-Mar	7	13:51	300	65.9	65.9	72	61.2	97.5	13462	13462
29-Mar	7	13:56	300	68.2	68.2	72.4	63.9	100	22861	22861
29-Mar	7	14:01	300	68.1	68.1	75.7	64.5	102	22341	22341
29-Mar	7	14:06	300	65.8	65.8	72.4	60.7	103.6	13155	13155
29-Mar	7	14:11	300	66.7	66.7	69.9	63.4	97.5	16185	16185
29-Mar	7	14:16	300	66.1	66.1	71.2	62.1	104.9	14096	14096
29-Mar	7	14:21	300	66.5	66.5	74.8	60	103.6	15456	15456
29-Mar	7	14:26	300	66.7	66.7	76.1	62	107.1	16185	16185
29-Mar	7	14:31	300	68.4	68.4	75.3	64.1	102	23939	23939
29-Mar	7	14:36	300	68.1	68.1	72.1	63.8	97.5	22341	22341
29-Mar	7	14:41	300	66.8	66.8	71.5	62.6	97.5	16562	16562
29-Mar	7	14:46	182.5	67.8	67.8	78.8	65	104.9	20850	20850
									5508611	17501614

289		**# of Data Points**
67.4		**Leq Total**
	72.4	**Ldn**
49.0		**Lmin**
88.7		**Lmax**



289 # of Data Points
63.7 Leq (24 Hour)
71.8 Ldn
46.4 Lmin
100.1 Lmax

C:\LARD AV\ SLMUTIL\(3APR_10.l in Interv al Dat a

Date		Time	Duration	Leq	Leq for Ldn	Lmax	Lmin	Uwpk	10^(Li/10)/I	10^(Li/10)/Ntot for Ldn
3-Apr	7	11:26	300	62.5	62.5	85.2	47.6	109	6153	6153
3-Apr	7	11:31	300	51.4	51.4	54.9	48.9	0	478	478
3-Apr	7	11:36	300	51.5	51.5	55.3	49.1	0	489	489
3-Apr	7	11:41	300	53.4	53.4	58.5	50.9	0	757	757
3-Apr	7	11:46	300	53.4	53.4	62.2	49.9	97	757	757
3-Apr	7	11:51	300	60.5	60.5	79.2	49.5	97	3882	3882
3-Apr	7	11:56	300	53.3	53.3	76.2	48	97	740	740
3-Apr	7	12:01	300	62.8	62.8	80.2	47.7	103	6593	6593
3-Apr	7	12:06	300	55.2	55.2	71.6	47.5	0	1146	1146
3-Apr	7	12:11	300	53.8	53.8	66.6	47.1	0	830	830

3-Apr	7	12:16	300	63.9	63.9	88.9	46.9	103	8494	8494
3-Apr	7	12:21	300	54.2	54.2	73.6	48	0	910	910
3-Apr	7	12:26	300	52.7	52.7	61.2	49.5	0	644	644
3-Apr	7	12:31	300	54.9	54.9	68	49.8	0	1069	1069
3-Apr	7	12:36	300	56	56	72.4	49.7	0	1378	1378
3-Apr	7	12:41	300	52	52	65.4	48.4	0	548	548
3-Apr	7	12:46	300	71.6	71.6	89.4	48.4	104.3	50015	50015
3-Apr	7	12:51	300	64.9	64.9	77.8	49.2	99.5	10693	10693
3-Apr	7	12:56	300	53.9	53.9	70.2	48.6	0	849	849
3-Apr	7	13:01	300	50.1	50.1	55.3	47	0	354	354
3-Apr	7	13:06	300	50.9	50.9	58.7	48	0	426	426
3-Apr	7	13:11	300	49.4	49.4	53.5	47.3	0	301	301
3-Apr	7	13:16	300	49.5	49.5	52.4	46.8	0	308	308
3-Apr	7	13:21	300	52.2	52.2	66	47.2	0	574	574
3-Apr	7	13:26	300	52.8	52.8	65.6	49	0	659	659
3-Apr	7	13:31	300	53.3	53.3	63.7	48.7	0	740	740
3-Apr	7	13:36	300	51.8	51.8	61	46.4	0	524	524
3-Apr	7	13:41	300	51	51	57.5	47.6	0	436	436
3-Apr	7	13:46	300	53.3	53.3	62.8	49.3	99.5	740	740
3-Apr	7	13:51	300	52	52	57.6	48.4	0	548	548
3-Apr	7	13:56	300	51.5	51.5	56.2	49.4	97	489	489
3-Apr	7	14:01	300	52.3	52.3	57.5	49.8	0	588	588
3-Apr	7	14:06	300	52.8	52.8	65.9	49.1	0	659	659
3-Apr	7	14:11	300	50.6	50.6	59.8	47.5	97	397	397
3-Apr	7	14:16	300	57.3	57.3	73.2	48.7	97	1858	1858
3-Apr	7	14:21	300	52	52	58.2	49	0	548	548
3-Apr	7	14:26	300	51.8	51.8	62.3	49.1	0	524	524
3-Apr	7	14:31	300	53.2	53.2	57.5	50.8	0	723	723
3-Apr	7	14:36	300	53.5	53.5	57.1	50.5	0	775	775
3-Apr	7	14:41	300	54.6	54.6	65.8	50.7	97	998	998
3-Apr	7	14:46	300	54.3	54.3	62.3	51.2	0	931	931
3-Apr	7	14:51	300	53.4	53.4	58.7	50.7	0	757	757
3-Apr	7	14:56	300	53.1	53.1	56.8	51	97	706	706
3-Apr	7	15:01	300	53.7	53.7	59	50.8	97	811	811
3-Apr	7	15:06	300	53.1	53.1	60	49.5	97	706	706
3-Apr	7	15:11	300	52.3	52.3	58.6	49.6	0	588	588
3-Apr	7	15:16	300	53.4	53.4	68.5	50	97	757	757

3-Apr	7	15:21	300	52.1	52.1	55.9	49.4	0	561	561
3-Apr	7	15:26	300	52.9	52.9	58.9	49.4	0	675	675
3-Apr	7	15:31	300	53.7	53.7	69.4	50.9	0	811	811
3-Apr	7	15:36	300	53.5	53.5	69	49.5	0	775	775
3-Apr	7	15:41	300	52.9	52.9	65.4	48.7	0	675	675
3-Apr	7	15:46	300	51.8	51.8	58.9	48.5	0	524	524
3-Apr	7	15:51	300	50.6	50.6	56.9	48.2	0	397	397
3-Apr	7	15:56	300	50.6	50.6	56	48	0	397	397
3-Apr	7	16:01	300	51.9	51.9	59	47.6	0	536	536
3-Apr	7	16:06	300	64.4	64.4	84.8	50.7	101.5	9530	9530
3-Apr	7	16:11	300	52.8	52.8	58.6	49.4	0	659	659
3-Apr	7	16:16	300	51.9	51.9	56.3	49.6	0	536	536
3-Apr	7	16:21	300	55.4	55.4	65.4	51.7	0	1200	1200
3-Apr	7	16:26	300	57.4	57.4	68.7	50.3	97	1902	1902
3-Apr	7	16:31	300	52	52	65.2	49.7	101.5	548	548
3-Apr	7	16:36	300	52.5	52.5	69.5	48.8	0	615	615
3-Apr	7	16:41	300	51.4	51.4	59.1	48.4	0	478	478
3-Apr	7	16:46	300	52.1	52.1	58.7	47.8	0	561	561
3-Apr	7	16:51	300	50.9	50.9	54	48.1	0	426	426
3-Apr	7	16:56	300	51.8	51.8	61.6	49.2	0	524	524
3-Apr	7	17:01	300	52.8	52.8	61.1	50.3	0	659	659
3-Apr	7	17:06	300	55.2	55.2	67.8	51	0	1146	1146
3-Apr	7	17:11	300	52.2	52.2	58.1	48.9	0	574	574
3-Apr	7	17:16	300	52.4	52.4	60.1	48	0	601	601
3-Apr	7	17:21	300	54.9	54.9	68.8	49.5	99.5	1069	1069
3-Apr	7	17:26	300	54.4	54.4	68.1	48.4	99.5	953	953
3-Apr	7	17:31	300	51	51	56	48.4	0	436	436
3-Apr	7	17:36	300	51.7	51.7	61.8	47.8	0	512	512
3-Apr	7	17:41	300	53.2	53.2	62.7	49.4	0	723	723
3-Apr	7	17:46	300	52.3	52.3	61.5	47.6	0	588	588
3-Apr	7	17:51	300	56	56	74.4	47.6	0	1378	1378
3-Apr	7	17:56	300	50.7	50.7	59	47.4	0	407	407
3-Apr	7	18:01	300	52.1	52.1	62.6	48.2	0	561	561
3-Apr	7	18:06	300	52.6	52.6	61.2	50	99.5	630	630
3-Apr	7	18:11	300	52.6	52.6	61.4	49.5	0	630	630
3-Apr	7	18:16	300	54.6	54.6	65.2	50.1	0	998	998
3-Apr	7	18:21	300	51.9	51.9	57.6	49.8	0	536	536

3-Apr	7	18:26	300	52.4	52.4	58.7	49	0	601	601
3-Apr	7	18:31	300	51.8	51.8	60.2	48.5	0	524	524
3-Apr	7	18:36	300	56.1	56.1	76.3	50.4	0	1410	1410
3-Apr	7	18:41	300	54.8	54.8	69.9	49.8	97	1045	1045
3-Apr	7	18:46	300	53.9	53.9	61	51.4	0	849	849
3-Apr	7	18:51	300	54.1	54.1	57.2	51.1	97	889	889
3-Apr	7	18:56	300	54.3	54.3	60.5	51.6	0	931	931
3-Apr	7	19:01	300	54.3	54.3	59.7	52	0	931	931
3-Apr	7	19:06	300	54.4	54.4	65.2	51.4	0	953	953
3-Apr	7	19:11	300	54.3	54.3	58.9	51.6	97	931	931
3-Apr	7	19:16	300	54.1	54.1	57	51.6	0	889	889
3-Apr	7	19:21	300	54.6	54.6	61	51.7	101.5	998	998
3-Apr	7	19:26	300	56.2	56.2	70.8	52.3	99.5	1442	1442
3-Apr	7	19:31	300	56.5	56.5	71.9	52.4	98.3	1546	1546
3-Apr	7	19:36	300	54.8	54.8	60.3	52	97	1045	1045
3-Apr	7	19:41	300	56.6	56.6	71.5	51.5	95.4	1582	1582
3-Apr	7	19:46	300	53.9	53.9	70.2	51	0	849	849
3-Apr	7	19:51	300	53.4	53.4	57.5	50.3	0	757	757
3-Apr	7	19:56	300	54.5	54.5	58.4	52.6	0	975	975
3-Apr	7	20:01	300	55.1	55.1	60.4	52.9	0	1120	1120
3-Apr	7	20:06	300	53.7	53.7	56.4	51.3	97	811	811
3-Apr	7	20:11	300	62	62	73.5	53	103	5484	5484
3-Apr	7	20:16	300	56	56	67.3	52.9	0	1378	1378
3-Apr	7	20:21	300	59.4	59.4	79.8	53	97	3014	3014
3-Apr	7	20:26	300	53.5	53.5	60.1	50.6	0	775	775
3-Apr	7	20:31	300	52.9	52.9	62.7	50.6	0	675	675
3-Apr	7	20:36	300	57.7	57.7	76.3	50.9	97	2038	2038
3-Apr	7	20:41	300	68.3	68.3	79.5	52.6	107.5	23394	23394
3-Apr	7	20:46	300	53.6	53.6	58.8	50.5	0	793	793
3-Apr	7	20:51	300	59	59	80.1	50.7	99.5	2749	2749
3-Apr	7	20:56	300	58.9	58.9	71.1	51.1	101.5	2686	2686
3-Apr	7	21:01	300	52.6	52.6	56.3	50.6	0	630	630
3-Apr	7	21:06	300	53.4	53.4	74.5	49.9	0	757	757
3-Apr	7	21:11	300	51.9	51.9	55.9	50.4	0	536	536
3-Apr	7	21:16	300	51.6	51.6	56.7	49.4	0	500	500
3-Apr	7	21:21	300	50.8	50.8	53.7	49	0	416	416
3-Apr	7	21:26	300	51.3	51.3	56.8	48.8	0	467	467

3-Apr	7	21:31	300	52	52	59	49.5	0	548	548
3-Apr	7	21:36	300	52.2	52.2	60.7	50	0	574	574
3-Apr	7	21:41	300	70.4	70.4	87	50.9	109	37940	37940
3-Apr	7	21:46	300	64.9	64.9	80.4	51.6	101.5	10693	10693
3-Apr	7	21:51	300	53.8	53.8	61.7	51.6	0	830	830
3-Apr	7	21:56	300	79.8	79.8	100	51.5	111	330447	330447
3-Apr	7	22:01	300	70.9	70.9	85.8	51.2	104.3	42570	42570
3-Apr	7	22:06	300	52.5	62.5	58.2	50.5	0	615	6153
3-Apr	7	22:11	300	52.5	62.5	62.3	50.1	0	615	6153
3-Apr	7	22:16	300	53	63	56.1	51.1	0	690	6904
3-Apr	7	22:21	300	54.5	64.5	74.6	51.2	97	975	9752
3-Apr	7	22:26	300	62.7	72.7	69.8	52.4	99.5	6443	64432
3-Apr	7	22:31	300	55.6	65.6	67.1	51.9	0	1256	12563
3-Apr	7	22:36	300	70.9	80.9	82.7	52.6	105.5	42570	425699
3-Apr	7	22:41	300	53.5	63.5	59.7	51.2	0	775	7746
3-Apr	7	22:46	300	52.5	62.5	57.8	50.7	0	615	6153
3-Apr	7	22:51	300	52.1	62.1	56.1	49.9	0	561	5612
3-Apr	7	22:56	300	52.3	62.3	56.7	50.2	0	588	5876
3-Apr	7	23:01	300	54.4	64.4	65.3	50	0	953	9530
3-Apr	7	23:06	300	53.7	63.7	68	50.4	0	811	8112
3-Apr	7	23:11	300	55.2	65.2	68.9	50.7	0	1146	11458
3-Apr	7	23:16	300	58.3	68.3	76.6	51	101.5	2339	23394
3-Apr	7	23:21	300	53.5	63.5	60.7	50.8	0	775	7746
3-Apr	7	23:26	300	60.3	70.3	74	50.7	99.5	3708	37077
3-Apr	7	23:31	300	51.9	61.9	55.5	49.9	0	536	5359
3-Apr	7	23:36	300	52.2	62.2	55.6	50.2	0	574	5743
3-Apr	7	23:41	300	52.9	62.9	66.1	50.3	0	675	6747
3-Apr	7	23:46	300	56.1	66.1	68.5	49.6	99.5	1410	14096
3-Apr	7	23:51	300	57.8	67.8	69.5	49.8	101.5	2085	20850
3-Apr	7	23:56	300	54.3	64.3	64.4	49.7	0	931	9313
4-Apr	7	0:01	300	55.1	65.1	79.1	50.6	0	1120	11197
4-Apr	7	0:06	300	54.5	64.5	69.6	49.9	0	975	9752
4-Apr	7	0:11	300	56	66	68.4	50.4	0	1378	13775
4-Apr	7	0:16	300	54.9	64.9	66.9	50.4	0	1069	10693
4-Apr	7	0:21	300	51.3	61.3	54.7	49	0	467	4668
4-Apr	7	0:26	300	52.4	62.4	64.7	49	0	601	6013
4-Apr	7	0:31	300	51.4	61.4	54.2	49.4	0	478	4776

4-Apr	7	0:36	300	52.5	62.5	66.1	49.5	97	615	6153
4-Apr	7	0:41	300	71	81	85	51.5	108.3	43561	435614
4-Apr	7	0:46	300	51.4	61.4	58.6	49.2	0	478	4776
4-Apr	7	0:51	300	50.5	60.5	54.1	47.8	0	388	3882
4-Apr	7	0:56	300	50.8	60.8	53.2	48.7	0	416	4160
4-Apr	7	1:01	300	51.6	61.6	55.7	49.3	0	500	5002
4-Apr	7	1:06	300	77.2	87.2	98.5	49.1	109.7	181594	1815943
4-Apr	7	1:11	300	63.2	73.2	79.1	49.1	104.3	7229	72294
4-Apr	7	1:16	300	51.5	61.5	54.8	49	0	489	4888
4-Apr	7	1:21	300	50.6	60.6	52.8	48.6	0	397	3973
4-Apr	7	1:26	300	52.7	62.7	65.6	48	0	644	6443
4-Apr	7	1:31	300	50.9	60.9	64.1	48.1	0	426	4257
4-Apr	7	1:36	300	50.6	60.6	63	47.8	0	397	3973
4-Apr	7	1:41	300	51.1	61.1	59	48.7	0	446	4458
4-Apr	7	1:46	300	50.9	60.9	54.1	48.5	0	426	4257
4-Apr	7	1:51	300	51.1	61.1	55.2	48.6	0	446	4458
4-Apr	7	1:56	300	53.9	63.9	62.5	48.6	0	849	8494
4-Apr	7	2:01	300	56.3	66.3	59.4	53.6	0	1476	14761
4-Apr	7	2:06	300	56.4	66.4	60.9	53.4	0	1510	15104
4-Apr	7	2:11	300	56.9	66.9	59.9	53.8	97	1695	16947
4-Apr	7	2:16	300	63.3	73.3	75.7	54.4	105.5	7398	73978
4-Apr	7	2:21	300	66	76	76.2	55.4	105.5	13775	137753
4-Apr	7	2:26	300	57.9	67.9	60.2	55.1	97	2134	21335
4-Apr	7	2:31	300	78.5	88.5	100.1	55.6	109.7	244964	2449639
4-Apr	7	2:36	300	62.6	72.6	80.6	48.8	104.3	6297	62965
4-Apr	7	2:41	300	52.1	62.1	56.6	49.6	97	561	5612
4-Apr	7	2:46	300	50.5	60.5	53.9	48.3	0	388	3882
4-Apr	7	2:51	300	51.6	61.6	55.2	48.9	0	500	5002
4-Apr	7	2:56	300	51.7	61.7	62.7	48.9	0	512	5118
4-Apr	7	3:01	300	50.7	60.7	52.9	48.8	0	407	4065
4-Apr	7	3:06	300	51.3	61.3	54.6	48.8	0	467	4668
4-Apr	7	3:11	300	50.7	60.7	54.7	48.7	0	407	4065
4-Apr	7	3:16	300	50.3	60.3	53.1	48.4	0	371	3708
4-Apr	7	3:21	300	50.4	60.4	52.7	48.6	0	379	3794
4-Apr	7	3:26	300	49.9	59.9	54.8	47.1	0	338	3381
4-Apr	7	3:31	300	49.2	59.2	51.3	47.2	0	288	2878
4-Apr	7	3:36	300	50	60	53	47.7	0	346	3460

4-Apr	7	3:41	300	51.9	61.9	67.9	47.2	0	536	5359
4-Apr	7	3:46	300	51	61	59.8	46.9	0	436	4356
4-Apr	7	3:51	300	79	89	98.5	48.6	109	274854	2748541
4-Apr	7	3:56	300	50.5	60.5	53.7	47.8	0	388	3882
4-Apr	7	4:01	300	49.1	59.1	51.6	46.7	0	281	2813
4-Apr	7	4:06	300	51	61	54.7	48.5	0	436	4356
4-Apr	7	4:11	300	50.2	60.2	53.3	47.6	0	362	3623
4-Apr	7	4:16	300	51.8	61.8	61.1	48.6	0	524	5237
4-Apr	7	4:21	300	52.5	62.5	55.9	50.1	97	615	6153
4-Apr	7	4:26	300	54.2	64.2	75	50.1	0	910	9101
4-Apr	7	4:31	300	50.5	60.5	53.3	48.6	0	388	3882
4-Apr	7	4:36	300	53.4	63.4	68.4	48.7	97	757	7570
4-Apr	7	4:41	300	76.4	86.4	94.7	50.8	109	151044	1510435
4-Apr	7	4:46	300	52.1	62.1	57.6	49.4	0	561	5612
4-Apr	7	4:51	300	52.4	62.4	56.4	50.4	0	601	6013
4-Apr	7	4:56	300	51.9	61.9	53.9	50.2	0	536	5359
4-Apr	7	5:01	300	52	62	58.9	49.8	97	548	5484
4-Apr	7	5:06	300	52.7	62.7	60.5	50.2	0	644	6443
4-Apr	7	5:11	300	52.3	62.3	58.9	50.2	0	588	5876
4-Apr	7	5:16	300	52.5	62.5	55.9	50.3	0	615	6153
4-Apr	7	5:21	300	53.3	63.3	56.5	50.9	0	740	7398
4-Apr	7	5:26	300	54.1	64.1	60.3	51.9	0	889	8894
4-Apr	7	5:31	300	53.2	63.2	57	51.7	0	723	7229
4-Apr	7	5:36	300	54.4	64.4	61.2	51.8	0	953	9530
4-Apr	7	5:41	300	52.9	62.9	56.3	50.9	0	675	6747
4-Apr	7	5:46	300	53.7	63.7	56.5	51.9	0	811	8112
4-Apr	7	5:51	300	55.4	65.4	61	53	0	1200	11998
4-Apr	7	5:56	300	73.4	83.4	85.2	53.5	107.5	75701	757011
4-Apr	7	6:01	300	60.7	70.7	74.9	52.4	99.5	4065	40654
4-Apr	7	6:06	300	69.7	79.7	86.6	53	99.5	32293	322925
4-Apr	7	6:11	300	55.4	65.4	61.9	52.8	0	1200	11998
4-Apr	7	6:16	300	56.3	66.3	66	52.6	0	1476	14761
4-Apr	7	6:21	300	56	66	64.9	52.8	0	1378	13775
4-Apr	7	6:26	300	55.6	65.6	69.9	53	0	1256	12563
4-Apr	7	6:31	300	57.2	67.2	70.8	53.8	97	1816	18159
4-Apr	7	6:36	300	78.5	88.5	98.3	53.9	109	244964	2449639
4-Apr	7	6:41	300	56.3	66.3	61.5	53.8	0	1476	14761

4-Apr	7	6:46	300	54.9	64.9	59.6	52.9	0	1069	10693
4-Apr	7	6:51	300	55	65	63.1	52.5	0	1094	10942
4-Apr	7	6:56	300	56.8	66.8	70.1	52.6	97	1656	16562
4-Apr	7	7:01	300	75.4	75.4	95.5	54.6	108.3	119978	119978
4-Apr	7	7:06	300	56.5	56.5	61.1	54	0	1546	1546
4-Apr	7	7:11	300	58.3	58.3	67.8	53.8	97	2339	2339
4-Apr	7	7:16	300	58.5	58.5	67.6	55	0	2450	2450
4-Apr	7	7:21	300	56.6	56.6	63	54.8	0	1582	1582
4-Apr	7	7:26	300	64	64	83.6	54.3	99.5	8692	8692
4-Apr	7	7:31	300	55.9	55.9	60.4	54.2	0	1346	1346
4-Apr	7	7:36	300	57	57	61.4	54.1	0	1734	1734
4-Apr	7	7:41	300	57.7	57.7	68.5	54.3	0	2038	2038
4-Apr	7	7:46	300	56.2	56.2	65.4	54	0	1442	1442
4-Apr	7	7:51	300	58.8	58.8	75.2	54.3	99.5	2625	2625
4-Apr	7	7:56	300	71.1	71.1	83.5	61.7	104.3	44576	44576
4-Apr	7	8:01	300	67.7	67.7	79	54.7	101.5	20375	20375
4-Apr	7	8:06	300	56	56	64.2	53.9	0	1378	1378
4-Apr	7	8:11	300	59.5	59.5	77.6	53.7	0	3084	3084
4-Apr	7	8:16	300	55.3	55.3	62.8	52.8	0	1172	1172
4-Apr	7	8:21	300	55.3	55.3	60.5	53.1	0	1172	1172
4-Apr	7	8:26	300	55.4	55.4	66	52.9	0	1200	1200
4-Apr	7	8:31	300	55	55	58.7	52.9	0	1094	1094
4-Apr	7	8:36	300	54.6	54.6	65.3	52.2	0	998	998
4-Apr	7	8:41	300	54.9	54.9	64	52.4	0	1069	1069
4-Apr	7	8:46	300	65.2	65.2	86.3	52.2	97	11458	11458
4-Apr	7	8:51	300	54	54	64.9	51.7	0	869	869
4-Apr	7	8:56	300	53.6	53.6	60.2	51.4	0	793	793
4-Apr	7	9:01	300	53.7	53.7	60.2	50.8	0	811	811
4-Apr	7	9:06	300	53.8	53.8	60.8	51.5	0	830	830
4-Apr	7	9:11	300	54.9	54.9	60.2	52	0	1069	1069
4-Apr	7	9:16	300	55.6	55.6	75.1	52.2	0	1256	1256
4-Apr	7	9:21	300	53.3	53.3	57.3	51.3	0	740	740
4-Apr	7	9:26	300	53.7	53.7	56.6	51.6	0	811	811
4-Apr	7	9:31	300	53.2	53.2	57.6	50.7	0	723	723
4-Apr	7	9:36	300	60.4	60.4	77	51.2	0	3794	3794
4-Apr	7	9:41	300	55.2	55.2	71.8	50.9	101.5	1146	1146
4-Apr	7	9:46	300	58.9	58.9	71.6	50.9	99.5	2686	2686

4-Apr	7	9:51	300	54	54	64.3	50.7	0	869	869
4-Apr	7	9:56	300	51.6	51.6	57.8	49.5	0	500	500
4-Apr	7	10:01	300	52.3	52.3	57.1	49.2	0	588	588
4-Apr	7	10:06	300	53.6	53.6	63.7	50	0	793	793
4-Apr	7	10:11	300	51.6	51.6	57	49.3	0	500	500
4-Apr	7	10:16	300	51.3	51.3	55.5	48.7	0	467	467
4-Apr	7	10:21	300	50.6	50.6	55.7	48	0	397	397
4-Apr	7	10:26	300	51.8	51.8	58	47.2	0	524	524
4-Apr	7	10:31	300	50	50	55	47.6	0	346	346
4-Apr	7	10:36	300	50.6	50.6	56.5	48.4	0	397	397
4-Apr	7	10:41	300	57.4	57.4	83.5	47.7	97	1902	1902
4-Apr	7	10:46	300	52.6	52.6	66.6	48.3	0	630	630
4-Apr	7	10:51	300	50.5	50.5	54.3	48.3	0	388	388
4-Apr	7	10:56	300	50.6	50.6	55	48.2	0	397	397
4-Apr	7	11:01	300	50.9	50.9	62.7	48	0	426	426
4-Apr	7	11:06	300	50.8	50.8	54.9	47.9	0	416	416
4-Apr	7	11:11	300	52.4	52.4	63.3	47.7	0	601	601
4-Apr	7	11:16	300	56.4	56.4	69.1	51.7	0	1510	1510
4-Apr	7	11:21	300	57.7	57.7	69.5	52	97	2038	2038
4-Apr	7	11:26	300	64.2	64.2	79.1	48.1	105.5	9101	9101
4-Apr	7	11:31	300	53.5	53.5	63.2	48.9	97	775	775
4-Apr	7	11:36	300	51.4	51.4	60.2	48.8	99.5	478	478
4-Apr	7	11:41	300	51.8	51.8	59.5	48.9	0	524	524
4-Apr	7	11:46	300	51.7	51.7	57.5	49.5	97	512	512
4-Apr	7	11:51	300	52.1	52.1	55.3	49.7	0	561	561
4-Apr	7	11:56	300	53.1	53.1	59.3	50.2	0	706	706
4-Apr	7	12:01	300	52.8	52.8	61.1	50.5	0	659	659
4-Apr	7	12:06	300	59.9	59.9	76.5	51.2	97	3381	3381
4-Apr	7	12:11	300	62.6	62.6	82.6	50.2	99.5	6297	6297
4-Apr	7	12:16	300	56.4	56.4	75	49.5	109	1510	1510
4-Apr	7	12:21	300	54.3	54.3	68.1	50.1	0	931	931
4-Apr	7	12:26	300	53.3	53.3	69.9	49	0	740	740
4-Apr	7	12:31	300	55.6	55.6	72	50.6	0	1256	1256
4-Apr	7	12:36	300	54.4	54.4	65.1	50.3	97	953	953
4-Apr	7	12:41	300	53.5	53.5	63.8	49.9	97	775	775
4-Apr	7	12:46	278.5	53.9	53.9	71.4	50.2	99.5	849	849
									2319150	15029928

289	# of Data Points
63.7	Leq (24 Hour)
71.8	Ldn
46.4	Lmin
100.1	Lmax

APPENDIX K
VIBRATION STUDY

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Sacramento Railyards Specific Plan

Environmental Vibration Impact Assessment Technical Report (Draft)

June 2007

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1.0 Executive Summary

This report by Wilson, Ihrig & Associates, Inc (WIA) presents the results of the environmental evaluation of vibration impacts for the Railyards Specific Plan project at a programmatic level. The environmental analysis to assess vibration impact presented herein has been performed following the procedure described in the FTA guidance manual "Transit Noise and Vibration Impact Assessment" [Ref 1]. The Railyards project proposes to relocate of the UPRR tracks and to develop the former rail yard for commercial, residential and entertainment uses. The analysis contained herein evaluates the potential impact from ground vibration to new sensitive land uses proposed within the Railyards Specific Plan project area. The analyses herein were conducted at Screening Level as defined by FTA. However, example cases are presented to illustrate ground-borne vibration and ground-brone noise levels as well as the level of impact expected due to implementing the Railyards project.

Vibration measurements were conducted at the Project site to supplement the general information presented in the FTA guidance manual. Ground surface vibration data for freight and passenger train passbys were obtained at three locations along the existing UPRR alignment. A measurement to assess vibration from vehicle traffic on Interstate 5 was also performed at one location. Additionally, measurements of the soil vibration propagation characteristic were performed at two sites near of the existing UP Yard buildings to better quantify the soil conditions at the Railyards site.

Information used to prepare this draft report was obtained from EIP drawings of the proposed layout as contained in the land use plan, project level boundary, and districts plan drawings [Refs 2- 4], the proposed re-aligned UPRR track drawings [Ref 5], height of the proposed buildings [Ref 6], and other documents presented in reference. The relocated UPRR tracks are assumed for the sake of the analysis to be at-grade with ballast and tie. The tracks for the light rail extension were assumed to be at-grade and embedded. Operational train speeds used in vibration predictions were 30 mph for freight trains [Ref. 7], 10 mph for passenger trains (Amtrak and future High Speed Rail), 35 mph for the light rail train (LRT) along Seventh Street, and 15 to 25 mph for the LRT along the Depot District.

Land uses sensitive to vibration, such as FTA Category 2 residences, are proposed to be built close to both the UPRR and LRT tracks. The distance from the relocated UPRR tracks to buildings varies between 45 and 200 feet. Along Seventh Street the distance to the LRT track is about 25 to 70 feet. For the Downtown area (Depot District), the receptor distance to the LRT alignment is about 20 feet.

Results of the program level analysis or screening as described by FTA, shows that residential buildings in the Railyards Specific Plan have the potential of being impacted due to freight (within 300 feet), passenger (within 300 feet), and light rail train operations (within 225 feet). Vibration from vehicle traffic on Interstate 5 is projected to generate a less than significant impact to the proposed retail/residential mixed-use in the neighborhoods of the Depot District and the East End District. However, there might be a potential for vibration impact to the residential mixed-use at the Riverfront District depending upon the final distance from the building foundation to the support columns of the Interstate 5 elevated roadway.

The area of impact presented in this report, corresponds to sensitive land use within the distance for potential vibration impact as presented by FTA in the guidance manual (Vibration Screening

Procedure, Chapter 9, Table 9.2). However, results of the preliminary analysis using site-specific data have shown that the soil in the area of the Railyards would likely transmit significant levels of vibration to substantially greater distances than those presented in Table 9.2 of the FTA document. As a consequence, the distances for the program level analysis were adjusted by a factor of 1.5 times (as recommended by the FTA guidance manual) to account for efficient soil propagation. The applicable distances for the screening analysis are presented in Table 4-1.

To illustrate ground-borne vibration and ground-borne noise levels expected at the Railyards project, vibration projections were performed for specific proposed parcels. The methodology to assess ground-borne vibration and ground-borne noise levels and impact followed the General Assessment procedures defined by the FTA guidance manual. Vibration projections were made independently for each source of potential vibration (i.e. freight, passenger, light rail, and highway traffic) and results presented in this report. A vibration attenuation curve was developed for each source based on either measured data or standard curve (FTA generalized curve; Figure 10-1 in the FTA guidance manual). Source vibration data used to project groundborne vibration from the LRT were obtained from measurements performed by WIA on transit vehicles with similar characteristics to those currently used by Sacramento Regional Transit District light rail system.

Results of the General Assessment of the Railyards Specific Plan show that vibration sensitive land uses in the vicinity of the UPRR tracks would be impacted by freight and passenger train operations at vibration levels that would be in excess of the applicable FTA criteria. Consequently, there would be a significant impact to certain receptors. Vibration levels for freight trains are projected to be as much as 19 dB over the criterion for the closest proposed residential use (FTA Category 2). Vibration from passenger trains is projected to be as much as 12 dB in excess of the criterion.

Vibration projections for the light rail extension Downtown/Natomas/Airport (DNA) show that the vibration sensitive receptors along Seventh Street would be exposed to levels in excess of the FTA criteria and therefore would result in significant vibration impacts. Vibration levels from LRT operations are projected to be as much 6 dB over the criterion for Category 2 receptors. In the area of the Depot District impact from DNA LRT operations would result in significant impact, exceeding the 72 VdB criterion by 2 VdB on "normal" tracks and by 9 VdB in the proximity of the special trackwork (i.e., crossovers).

Vibration mitigation measures are recommended in this report to reduce vibration impact. However, due to soil conditions in the area of the Railyards and the proximity of vibration sensitive receptors to the rail alignment, it is likely that even with mitigation the Project Category 2 receptors would experience vibration levels in excess of the FTA criteria. In which case, the Railyards project would result in significant and unavoidable vibration impacts.

In addition to incorporating vibration mitigation into the trackwork design, relocating vibration sensitive buildings further from the tracks would reduce vibration levels at the receptor. Initial recommendations for setback distances are presented in this report. However, they are based on extrapolation from the measured vibration obtained at the Railyards site and they might not accurately represent the soil propagation characteristics at distances beyond 300 feet. A more detailed study of the potential distance at which vibration impact would become less than significant should be performed during preliminary design of actual buildings and should be based on a detailed soil investigation as well as a study of the proposed building structural design.

2.0 Environmental Vibration Concepts

Ground vibration is an oscillatory motion of the soil particles with respect to the equilibrium position that can be described in terms of displacement, velocity or acceleration. Vibration can be described by its peak and root mean square (r.m.s.) amplitudes. The r.m.s amplitude is useful for assessing human annoyance, while peak vibration is most often used for assessing the potential for damage to buildings structures, but it has also been used for assessing annoyance. In this report, groundborne vibration will be addressed in terms of the rms amplitude of the vibration.

Although vibration velocity is can be quantified in units of inches per second, the decibel notation is commonly used to describe vibration so as to cover the wide range of magnitudes that can be encountered. The vibration can be expressed in terms of the velocity level, in decibels, defined as:

$$L_v = 20\log_{10}(v/v_{ref}), \text{ VdB}$$

Where, v = r.m.s velocity (in/sec) and v_{ref} = 1 micro-inch/sec

Thus, the descriptor used in this report to assess ground-borne vibration is L_v referred to 1 micro-inch per second. Vibration is a function of the frequency of motion measured in cycles/second or Hz. Ground vibration of concern for transportation sources generally spans from 4 Hz to 60 Hz. A graph of the level L_v vs. frequency is a spectral plot. For the level of analysis contained herein, the "overall" vibration is used. The overall vibration is the combined energy of ground motion at all frequencies.

Vibration attenuates as a function of the distance between the source and the receiver due to geometric spreading and inherent damping in the soil that absorbs energy of the ground motion. Groundborne vibration from rapid transit systems is caused by dynamic forces at the wheel/rail interface. It is influenced by many factors, which include the rail and wheel roughness, out-of-round wheel conditions, the mass and stiffness characteristics of the track support system, and the local soil conditions.

Vibration caused by the transit structure, such as at-grade ballast and tie track, radiates energy into the adjacent soil in the form of shear and Rayleigh surface waves that propagate though the various soil and rock strata to the foundation of nearby buildings. Buildings respond differently to ground vibration depending on the type of foundation, the mass of the building and the building interaction with the soil. Once inside the building, vibration propagates throughout the building with some attenuation with distance from the foundation, but often with amplification due to floor resonances. The basic concepts for rail system generated, ground vibration are illustrated in Figure 2-1.

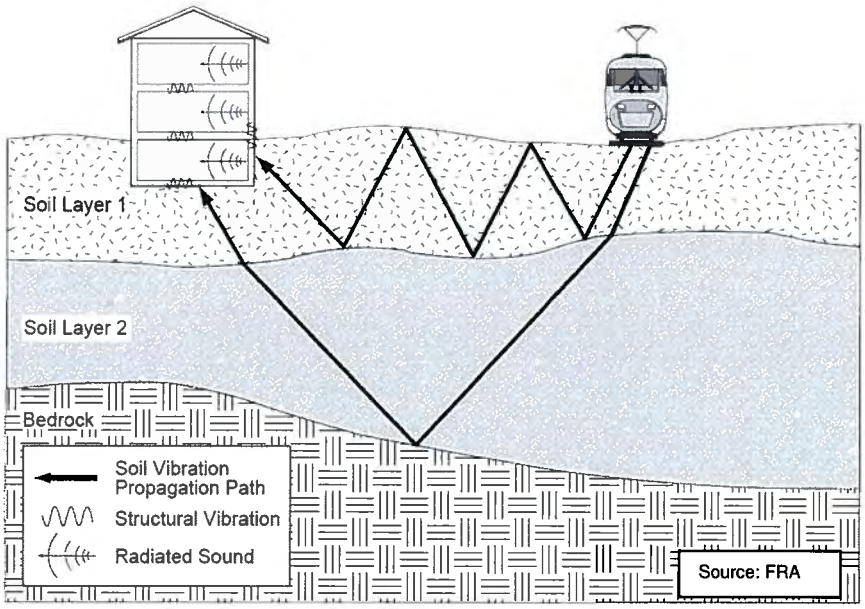

Figure 2-1 Propagation of ground-borne vibration into buildings

Figure 2-2 illustrates the typical levels of human and, at much higher levels, the structural response to ground-borne vibration. The figure shows that the threshold of human perception is about 65 VdB, while the threshold for "cosmetic" structural damage is about 100 VdB (re: 1 micro-in/sec). However, the latter threshold, building damage is directly related to the condition of the structure. It is very rare that transportation-related ground vibration approaches building damage levels.

Ground-borne noise is the radiate noise generated by vibrating building surfaces such as floors, walls, and ceilings. Ground-borne noise is proportional to the vibration level and the absorption characteristics of the room. The following relation is used for converting vibration velocity levels to noise levels:

$$L_p = L_v + K_{rad} + K_{A\text{-}W} \quad \text{,dBA}$$

Where, L_v= vibration velocity level (dB re: 1 micro-inch/sec), K_{rad} is the adjustment factor to account vibration to noise conversion, and K_{AW} is the 1/3 octave band A-weighting adjustment.

Thus, the descriptor used in this report to assess ground-borne noise is L_p referred to 20 micro-Pascal.

The FTA guidance manual recommends a value of zero for the K_{rad} coefficient on typical residential spaces. This value for K_{rad} implies an average sound absorption coefficient of 0.4 (equals 80% absorptive surfaces). However, to account for spaces with lower sound absorption coefficient such as new residential with hardwood floors, painted walls and glazing, an absorption coefficient of 0.25 would result in a net correction of +2 dB or higher. For the analysis presented in this evaluation an adjustment of +2 dB was accounted for converting ground-borne vibration to ground-borne noise.

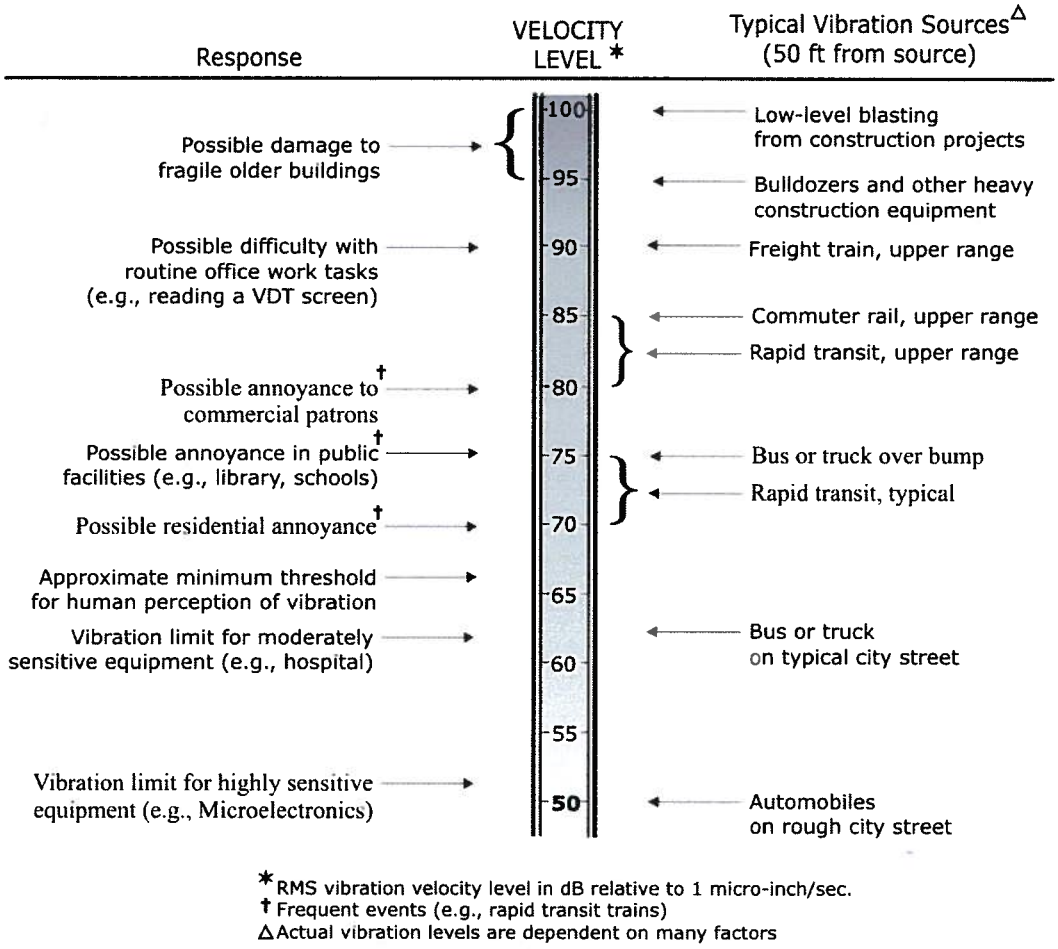

Figure 2-2 Typical levels of groundborne vibration and response to vibration

3.0 Site Description

The Railyards Specific Plan project area is an approximately 240 acre mixed-use development north of downtown Sacramento, California. The proposed site evaluated is located in the former UPRR Railyards, which extends north to Richards Boulevard, west to Interstate 5 and the Sacramento River, south to the existing central business district, and east to 12th Street. The Railyards Specific Plan has been divided into five districts: Depot District, Central Shops District, East End District, West End District, and Riverfront District. Figure 5-1 shows the proposed plan layout for the districts.

This report is focused on the evaluation for potential vibration impacts within the area of the Railyards Specific Plan, specifically as a Program Level analysis including all five districts.

The Depot District is the most southern neighborhood of the Railyards Specific Plan. The extent of the district is from Interstate 5 to Seventh Street including the area of the current and relocated

UPRR track alignments. The Depot District would include the Sacramento Intermodal Transportation Facility (SITF) and approximately 13 acres of office/residential mixed use (ORMU), distributed over six parcels from Fifth Street to Seventh Street. The SITF would accommodate the exiting Amtrak Sacramento Valley Station, freight tracks, a new Sacramento Regional Transit (RT) Light Rail station, inter-city and local buses, taxis, and possible a future high speed rail facility serving as the northernmost terminus of a statewide system. Along with the new train facilities, the existing UP alignment will be relocated about 500 feet to the north of its current location.

The Central Shops District would consist of the area north of the Depot District from Interstate 5 (including the area under the aerial freeway) on the west to Fifth Street on the East. This district would have several historic brick buildings that after renovation would accommodate cultural and entertainment activities. Nine buildings are proposed in the Central Shops District that would include exhibits, retail, market and office. The analysis presented herein focused on buildings with vibration sensitive land use. Thus, retail and office buildings in the Central Shops District would not qualify as vibration sensitive land use according to the FTA manual. In contrast, those buildings accommodating exhibits at the potentially new Museum of Railroad Technology are included in the vibration analysis presented herein. Based on the layout reviewed [Ref. 2] and the land use table provided by EIP [Ref. 8], vibration sensitive land use would be those buildings 27, 28 and 29. The typical distance from the building façade to the closest track would be about 45 feet.

The proposed West End District would be a 24-hour pedestrian-oriented neighborhood with buildings combining retail/residential mixed-use (RRMU) and office/residential (ORMU) mixed-use. The limits for the neighborhood would be the Riverfront District, Jibboom Street and Interstate 5 on the west, Seventh Street and Fifth Street on the East, South Park Street and Railyards Boulevard on the north, and Central Shops and Depot Districts on the south. Additionally, the West End District contemplates a performing arts facility in a retail/residential mixed use building (RRMU). The location of the performing arts facility is proposed to be on the southwest corner of Fifth Street and Camille Lane, about 520 feet from the relocated UPRR tracks.

The East End District would consist of the northeast area of the Project Specific Plan. The proposed land use would be primarily residential mixed-use (RMU). Other areas in the East District would include open space (OS) and mixed office/residential (ORMU) land uses. The ORMU area would be of approximately 1.73 acres adjacent to the UPPR alignment, and it would potentially accommodate rail operations utilities such as sub-station. The southern boundary of the East End district is located next to the UPRR tracks. The closest parcels would be located in the area from Fifth to Seventh Street at a distance of 50 to 160 feet from the northern most UPRR track.

The final neighborhood would be the Riverfront District, located between the Sacramento River and Interstate 5. The proposed land use would consist of open space (OS) and residential mixed-use (RMU) including hospitality housing. The distance from the closest parcel (35) to the northern most UPRR track is estimated to be about 40 feet and 60 feet to the aerial structure of Interstate 5.

3.1 Vibration Sources

For the areas contained within the Railyards Specific Plan, the dominant sources of vibration are transportation related. The analysis presented herein includes the assessment for vibration related impacts from three different sources: 1) freight, commuter trains and possibly high speed rail

passenger trains along the proposed re-located UPRR tracks; 2) the light rail extension project; 3) vehicle traffic along the elevated Interstate 5.

The UPRR relocation project would include moving the existing tracks to the north, eliminating the double curve near Seventh Street. The realignment of the tracks would also accommodate the existing station platforms to the north. The new right-of-way would be shared by Union Pacific freight trains and Amtrak trains. Three Amtrak routes are using the current right of way: the Capitol Corridor with a projected 32 trips per day, the California Zephyr with four trips, and the San Joaquin Route with four trips. The analysis herein also includes the potential impacts from the proposed future California High Speed Rail trains. When completed, the relocated UPRR alignment is expected to accommodate, starting September of 2006, [Ref 7] a total of 40 passenger trains per day.

Another vibration source, one not currently in operation, is the proposed California High Speed Rail project (CHSR). When completed, the segment between Sacramento-Merced-Bakesfield will presumably be serviced by steel-wheeled, electric-traction power trains. The proposed schedule for the CHSR would include a total of 67 trips daily between Sacramento and Merced [Ref. 9].

The current number of freight trains is 25 per day. The increase associated with future freight demand is about two to three percent annual growth [Ref 7]. However, as per information provided by City of Sacramento staff [Ref 7], UPRR generally absorbs the growth by adding rail cars to the existing trains. Therefore, the analysis presented herein for assessment of the future condition, will use the existing number of freight trains per day as a basis.

The current operational speed of trains within the area of the Railyards is 10 mph. Due to the re-alignment of the tracks, the train speed would be increased to 30 mph. For the vibration analysis, freight trains were assumed to operate at 30 mph throughout the project area and passenger trains are assumed to operate at speeds between 10 and 30 mph depending on their proximity to the platforms of the Sacramento Amtrak Station. It is assumed that all passenger trains would stop at the Amtrak Station.

The operation of the proposed DNA LRT extension, as defined by Alternative 3 of that proposed project, is assumed to be approximately 80 daily roundtrip trains between downtown and Sacramento International Airport [Ref 10]. The LRT operating hours are expected to be between 5 a.m. and Midnight, with six trains in each direction during peak-hour conditions (7 a.m. to 9 a.m. and 4 p.m. to 6 p.m.) and four trains per hour in each direction during the off-peak periods. The operational plan for the LRT is not available in the draft EIS/EIR document [Ref 10]. Consequently for this analysis the LRV speed was assumed to be 35 mph along Seventh Street and 15 to 25 mph in the Downtown area.

3.2 Sensitive Receptors

New vibration receptors proposed within the area of the Project would be a mix of multi-family residential, office, retail and commercial land uses. Buildings in the proximity of the relocated UPRR tracks are expected to be mid-rise to high-rise, which are 12 to 30 stories high. Lower floor levels are planned to be mainly for parking, retail and office. Residential units are planed for higher levels above commercial and office uses. The screening analysis presented herein includes areas for potential vibration impact including residential mixed-use (RMU), office/residential mixed use

ORMU and retail/residential mixed use (RRMU), except as note below for the Central Shop District and the Performing Arts Facility proposed at the West End District.

In the area of the Central Shops, new and existing buildings are proposed for commercial and entertainment use such as the planned Museum of Railroad Technology. Even though the most of the remaining buildings in the Central Shops District are considered to have historical interest, none of them but those buildings including The Museum of Railroad Technology (FTA Category 3) were determined to be FTA vibration sensitive.

Another building with a special requirement for vibration would be the Performing Arts Facility located in the West End District. For the screening analysis presented herein it was assumed to be an FTA Category 1 land use.

Information concerning the location of vibration sensitive receptors (i.e., their layout and building footprints), the proposed re-alignment for UPRR tracks, and the alignment for the DNA LRT extension were provided by EIP [Ref. 2 to 6]. The distance from the relocated UPRR tracks to the closest sensitive land uses varies between 45 and 200 feet. Along Seventh Street the potentially affected land use would be primarily residential at distances ranging from 25 to 75 feet from the DNA LRT alignment. In the Downtown area, the distance from receptors to the alignment is assumed to be about 20 to 30 feet.

3.3 Local Soil Conditions

The preliminary geotechnical evaluation [Ref. 11] performed within the Project area shows that the upper layers of soil in the area of the Railyards Specific Plan are composed of a sequence of siltstone, claystone and sandstone. The sedimentary layer of rock is found at a depth of approximately 3,000 feet below ground level, over which two fluvial-deposited sediments named the Victor and Laguna formations consisting of channel sand and gravels, and an overbank deposit of silt, clay, and gravel extend down to a depth of approximately 300 feet.

In general, the soil in the area of the Railyards Specific Plan is relative soft, and therefore easier to excite with surface vibration than consolidated soils would be. Based on the data available, it is also likely that low frequency vibration would travel longer distances without substantial attenuation. Therefore, it is likely that vibration from rail sources would cause significant impact beyond typical distances for stiffer, more consolidated soils.

A critical factor to investigate and analyze during preliminary engineering design for the project are the local soil conditions where residence and other sensitive receptors are to be located. This can best be accomplished by additional measurements of the vibration propagation characteristics of the local soil at critical locations.

4.0 Applicable Plan and Policies

This section describes the plan and policies applicable to the Railyards Specific Plan. The principal criteria used for assessing potential ground-borne vibration and ground-borne noise impacts from transportation-related sources are provided by the Federal Transit Administration FTA [Ref 1]. These criteria address vibration for rail vehicles and rubber-tired vehicles. In addition, we have

evaluated the information presented in the Caltrans' Transportation- and Construction-induced Vibration Guidance Manual [Ref 12] to assess vibration from traffic-related sources such as Interstate 5.

Other policies also evaluated in preparing this report are those of the Federal Railroad Administration (FRA), whose criteria and methodology are similar to the FTA, but focused on high-speed ground transportation [Ref. 13]. Also considered were local ordinances and planning policies such the Sacramento Municipal Code and the City of Sacramento General Plan. However none of these documents provide criteria, regulation or guidelines for assessing vibration impacts. Therefore, local ordinances have not been presented in this report.

4.1 Federal Transit Administration Guidelines FTA Criteria

The Federal Transit Administration guidance manual "Transit Noise and Vibration Impact Assessment" provides methods of impact assessment and characterizes project performance in terms of ground-borne vibration and ground-borne noise criteria that are absolute (i.e., they apply to single events and not to vibration exposure over time such as with airborne noise). The criteria for acceptable ground-borne vibration are expressed in terms of the r.m.s. velocity levels in decibels relative to 1 micro-inch per second. The criteria for ground-borne noise are expressed in term of the A-weighted sound level in decibels relative to 20 micro-Pascals.

The FTA guidance manual provides three levels of assessment, which can be used to evaluate impacts from rail transit projects. They are Screening, General Assessment and Detailed Analysis. For this report, Screening analysis will be primarily used to assess potential impact at the Program Level. However, special cases to illustrate the expected level of impact will be presented later in the report. The evaluation for these special cases will follow the methodology for the FTA General Assessment. A Detailed Analysis is generally appropriate once the preliminary engineering phase of a project has been reached and when most of project details are known and specified.

The Screening Level analysis is based on a basic procedure using specified distances from the rail alignment to determine whether there is a likelihood ground-borne vibration from the project could affect receptors within the screened area. The implication is that receptors beyond the relevant screening distance would not be impacted. Five categories for different types of transit projects are provided, four of which are for steel rail vehicles and the fifth is for rubber-tired vehicles.

Screening distances as presented in the FTA guidance manual (Table 9-2 in Ref 1) are based on results of the vibration prediction procedure described as General Assessment where "normal" soil propagation characteristic exist. However, "when there is evidence of efficient propagation" on the soil, the FTA guidance manual considers appropriate to extent the critical distance far beyond to those recommended for normal vibration propagation conditions. Specifically, an increase by a factor of 1.5 times is suggested.

WIA has performed a series of ground-borne vibration measurements for train passbys and ground-borne vibration propagation measurements at the site of the Railyards Specific Plan to conclude, at this stage of the analysis that vibration propagates efficiently in the area of the Project. Detailed results of the measurements are presented later in Section 5.2. Nevertheless, WIA has found that measured ground-borne vibration passby levels from commuter trains at three locations fitted well with the FTA generalized curve adjusted by +10 VdB for high efficiency soil (see upper curve in

Figure 5-8). In addition, applying a vibration propagation model for freight trains with the obtained line source mobilities, again the projected vibration levels match those measured at the site of the Railyards (see red curve in Figure 5-7).

As a result of the ground-borne vibration propagation and train passby ground-borne vibration measurements performed at the site, Table 4-1 (which corresponds to Table 9-2 in Ref 1, adjusted for soil with efficient vibration propagation) shows the critical distance for the screening analysis with "efficient" soil propagation applicable to the Railyards Specific Plan.

Table 4-1 FTA Screening Distances for Vibration Assessment

Type of Project	**Critical Distance† for Land Use Categories * Distance from Right-of-Way or Property Line (Feet)**		
	Category 1	**Category 2**	**Category 3**
Conventional Commuter Railroad	900	300	180
Rail Rapid Transit	900	300	180
Light Rail Transit	675	225	150
Intermediate Capacity Transit	300	150	75
Bus Projects	150	75	---

† For soil with efficient vibration propagation.
* Land Use Category as defined below. Some vibration-sensitive land uses are not included in these categories.
Source: FTA

Land Use Category: FTA defines three land use categories for which the criteria are applicable: Category 1 or high sensitive, Category 2 (Residential), and Category 3 (Institutional). Table 4-2 present a brief description of each land use category as presented in the FTA guidance manual.

Table 4-2 FTA Land use categories for transit vibration impact criteria

Vibration Category	**Description of Land Use Category**
Category 1 - High Sensitive	"Included in Category 1 are buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance." "Typical land uses covered by Category 1 are: vibration-sensitive research and manufacturing, hospital with vibration-sensitive equipment, and university research operations."
Category 2 - Residential	"This category covers all residential land uses and any buildings where people sleep, such hotels and hospitals. No differentiation is made between different types of residential areas."
Category 3 - Institutional	"Vibration Category 3 includes schools, churches, other institutions, and quiet offices that do not have vibration-sensitive equipment, but still have the potential for activity interference. Although it is generally appropriate to include office buildings in this category, it is not appropriate to include all buildings that have any office space."

Source: FTA

The ground-borne vibration and ground-borne noise criteria for the FTA General Assessment analysis accounts for the frequency of events, where *Frequent Events* are defined as more than 70

events per day, *Occasional Events* are for between 30 and 70 events per day, and *Infrequent Events* for less than 30 events per day. Additionally, FTA provides criteria for buildings that are especially sensitive to vibration (e.g., research laboratories), but do not fit into any of the three land uses categories presented above. The performing arts facility would be the only building in the Railyards Specific Plan under the *special building* category. The criteria to use would be similar to that specified in Table 4-4 for Concert Hall.

Even though it is too early at this stage, normally similar type of state-of-the-art venues are designed for interior noise levels equivalent to the threshold of audibility or Noise Criteria (NC) NC-1 curve and therefore the 25 dBA criteria as recommended in the FTA guidance manual might not be adequate. Nonetheless, for the analysis herein, 25 dBA would be the applicable interior noise criteria for the Performing Arts Facility.

Table 4-3 and Table 4-4 (which correspond to Tables 8-1 and 8-2 in the FTA guidance manual) present the maximum ground-borne vibration and ground-borne noise impact criteria for General Assessment "normal" and special buildings respectively.

Table 4-3 FTA ground-borne vibration impact criteria for General Assessment

Land Use Category	**GBV Impact Levels (VdB re 1 micro-inch/sec)**			**GBN Impact Levels (dB re 20 micro-Pascals)**		
	Frequent Events	**Occasional Events**	**Infrequent Events**	**Frequent Events**	**Occasional Events**	**Infrequent Events**
Category 1	65 VdB	65 VdB	65 VdB	N/A	N/A	N/A
Category 2	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Table 4-4 FTA ground-borne vibration and ground-borne noise impact criteria for Special Buildings

Type of Building or Room	**GBV Impact Levels (VdB re 1 micro-inch/sec)**		**GBN Impact Level (dB re 20 micro-Pascals)**	
	Frequent Event	**Occasional or Infrequent Event**	**Frequent Event**	**Occasional or Infrequent Event**
Concert Hall	65 VdB	65 VdB	25 dBA	25 dBA
TV Studio	65 VdB	65 VdB	25 dBA	25 dBA
Recording Studios	65 VdB	65 VdB	25 dBA	25 dBA
Auditoriums	72 VdB	80 VdB	30 dBA	38 dBA
Theaters	72 VdB	80 VdB	35 dBA	43 dBA

4.2 Transportation-induced Vibration Guidance

There are no Caltrans or Federal Highway Administration standards officially adopted for ground-borne vibration from traffic related projects, however some studies have been presented that address the potential for ground-borne vibration impacts from highway traffic. In general, rubber-tired sources pose no significant potential for vibration impacts unless the road has pavement discontinuities or joints that cause very short duration transient levels to occur (i.e., "tire thump"). The following Table 4-5 and Table 4-6 show the vibration levels presented in the guidance manual of the California Department of Transportation [Ref. 12] for the human response to continuous and transient sources of vibration. Vibration levels are presented in terms of the Peak Particle Velocity (PPV) which represents the peak value of the vibration velocity. A simplified approximation of the PPV value to the corresponding r.m.s magnitude is times the square root of two.

Table 4-5 Human response to continuous vibration from traffic.

Vibration Level (Peak Particle Velocity, inc/sec)	**Human Response**
0.4-0.6	Unpleasant
0.20	Annoying
0.10	Begins to annoy
0.08	Readily perceptible
0.006-0.019	Threshold of perception

Source: CALTRANS Transportation- and Construction-Induced Vibration, Guidance Manual, June 2004.

Table 4-6 Human response to transient vibration

Vibration Level (Peak Particle Velocity, inc/sec)	**Human Response**
2.0	Severe
0.9	Strongly perceptible
0.24	Distinctly perceptible
0.035	Barely perceptible

Source: CALTRANS Transportation- and Construction-Induced Vibration, Guidance Manual, June 2004.

From Table 4-5, typical recommended level for which adverse reaction in the community for continuous vibration started to occur is about 0.08 in/sec PPV, or approximately 89 VdB r.m.s. Vibration from transient sources need to be higher, because of their short duration to cause the same effect in the community as longer duration events (i.e., those lasting for seconds).

This analysis indicates that the Caltrans criteria guidelines are consistently higher than the criteria recommended by FTA to assess vibration impacts to residential buildings. Therefore, to evaluate vibration impacts from highway traffic it is conservative to use the criteria presented in the FTA guidance manual.

4.3 Threshold of Significance for Vibration

The Railyards Site Specific Plan is presumed to cause a significant impact, if the projected ground-vibration levels and/or ground-borne noise levels exceed the maximum levels presented in Table 4-3 or Table 4-4. Otherwise, the project vibration impacts are considered to be less than significant. These criteria are implicit in the FTA screening distances.

5.0 Vibration Impact Assessment

5.1 Program Level (Screening)

To assess significance for vibration impact at a Program Level, the procedure described in the FTA guidance manual for screening was applied separately to each source of vibration (rail, LRT and highway). The screening distances for potential vibration impacts are those contained in Table 4-1.

Graphical results of the screening process are presented in Figure 5-2 for each individual source of vibration (i.e. Freight/commuter trains, Light-Rail trains, and highway). These buffer zones were constructed according to the land use category specific to proposed project land uses in the vicinity of the vibration sources. For example, for the freight/commuter trains track relocation project, two distances were evaluated; 180 feet for Category 3 receptors or buildings with daytime usage, and 300 feet for Category 2 or buildings with nighttime occupancy (residential).

The following discussion is focused on preliminary results obtained with the FTA screening procedure by district.

The Depot District:

A total of four buildings located east of the proposed SITF and Seventh Street have the potential to be impacted by vibration due to freight/commuter trains operations. Building with potential vibration impact would be those located in Parcels 40, 43, 44 and 46. Additionally, residence buildings with ORMU land use located in Parcels 40, 41, 42, 43, 44 and 46 next to the light rail alignment are within the screening distance for potential vibration impact.

Central Shops District:

All buildings in this area would have daytime usage. The assigned project land use for all buildings is anticipated to be cultural/entertainment mixed-use. Potential vibration impact would be from UPRR and commuter train operations. Results of the screening evaluation show that vibration impact is expected to be less than significant at all buildings in the Central Shop District except for those buildings containing the Museum of Railroad Technology. Buildings for the Museum of Railroad Technology are proposed to be about 45 feet to 75 feet from the closest relocated rail track and therefore, they would be located within the zone for potential vibration impact due to freight and

commuter trains operations. Based on the screening distance, all buildings in the Central Shops District would be exposed to less than significant impact due to LRT and highway operations.

West End District:

Four parcels located just north of the realigned UPRR rail tracks would be within the area for potential vibration impact. Based on the reviewed layout [Ref. 2] Parcels 17 and 47b which are expected to have a retail/residential mixed land use, and 47a and 48 which are expected to be office/residential mixed use would warrant an additional vibration study.

Land uses located along Seventh Street are within the screening distance for potential vibration impact due to the DNA LRT extension. The initial screening analysis assumed the tracks to be in the middle of Seventh Street. Buildings along Seventh Street are proposed from low-rise to high-rise with office/residential and residential mixed use. Parcels number 47b, 47a and 48 located adjacent to Seventh Street would fall within the critical distance for potential vibration impact due to the LRT extension.

Four parcels are expected within the area for potential vibration impact due to train operations on the relocated freight/commuter rail alignment. Potential vibration impact would be expected over Parcels 17, 47a, 47b and 48.

For the purpose of the initial assessment, the Performing Arts Facility was assumed to be an FTA Category 1 land use. The applicable critical distance to assess initial vibration impact to the performing arts facility is 900 feet for freight and commuter trains, and 675 feet for light rail trains. The building containing the performing arts is planned to be at a distance of approximately 550 feet from the closest realigned UPRR track and 800 feet from the DNA LRT alignment. The building would be located at the Parcel 15a of the West End District, which is expected to have a retail/residential mixed use (RRMU) land use. Due to the distance from the relocated UPRR alignment, potential for vibration impact would be expected only over the performing arts facility and not to the residential land use above. Moreover, potential vibration impact would be only due to UPRR and commuter train operations and not LRT trains. Even though at this early stage it is difficult to accurately predict a vibration impact, it is likely that the main issue would be ground-borne noise rather than ground-borne vibration.

The most western part of the district is located adjacent to Interstate 5. The distance from the closest retail/residential mixed use land use was estimated to be 90 feet. This distance is far enough to result in a less than significant impact from motor vehicles on Interstate 5. Furthermore, based on vibration measurements performed by WIA for the I-5 freeway, the expected vibration velocity on the soil surface at the location of the land use is 70 VdB. A more detailed analysis using the I-5 vibration measurement data is presented in Section 5.2.1.

The critical area for potential impact due to traffic vibration from I-5 has been estimated to be within 75 feet of any support column. The closest residential buildings in this area would be located at least 90 feet from the columns supporting the aerial freeway. Results of the screening assessment have shown less than significant vibration impact due to vehicle traffic on I-5.

East End District:

Land uses in the East End District are primarily residential mixed use. Result of the screening analysis shows that five parcels would be located within the area of 300 feet from freight/commuter

train tracks. Residence buildings located in Parcels 49a, 53S, 52S, 52N and 51 have the potential for vibration impact and therefore warrant a more detailed analysis. Additionally, Parcel 49a would be inside the 225 feet curve and therefore potential vibration impact due to LRT operations.

Along Seventh Street and north of Railyards Boulevard, buildings located on Parcels 54 S, 54a, 68S, 68N, 57S, 57N, 69S and 69N would have the potential for vibration impact due to LRT operations.

Riverfront District:

Results of the program level analysis have shown that any FTA Category 2 building within 300 feet of the UPRR alignment would have potential for vibration impact. Parcel 35 on the Riverfront District would include a hotel building that would potentially fall within the area of vibration impact.

Vibration from the Interstate 5 would potentially generate vibration impact over Parcel 35, if the proposed distance to the building foundation is closer or equal to 75 feet. The proposed land use layout for Parcel 35 as reviewed in Reference 2, would be approximately 70 to 75 feet from the closest support column of the aerial I-5 southbound off-ramp. However, based on ground vibration measurement performed by WIA at the site of the Railyards Project, the expected vibration level at 75 feet from a support column would be 71 VdB which would not exceed the FTA criteria for residential land use.

Even though ground vibration from rubber-tired sources are unlikely to cause vibration impact at distances such those planed for Parcel 35, until the location of the building foundation is known, we will include Parcel 35 as potential for vibration impact due to traffic operation on Interstate 5. Further study would be required in later stage to assess vibration impact to the Riverfront District.

In conclusion, vibration impact is expected at the site of the Railyards Specific Plan due to freight, passenger, light rail and vehicle traffic operations. The total amount of land with potential vibration impact would be estimated in 51.81 acres of retail/residential mixed-use (RRMU), residential mixed-use (RMU) or office/residential mixed-use (ORMU). The extent of vibration sensitive land use with potential for vibration impact by district was estimated in 12.96 acres for the Depot District, 4.56 acres for the Central Shops, 7 acres for the West End, 23.26 acres for the East End District, and 4 acres for the Riverfront District.

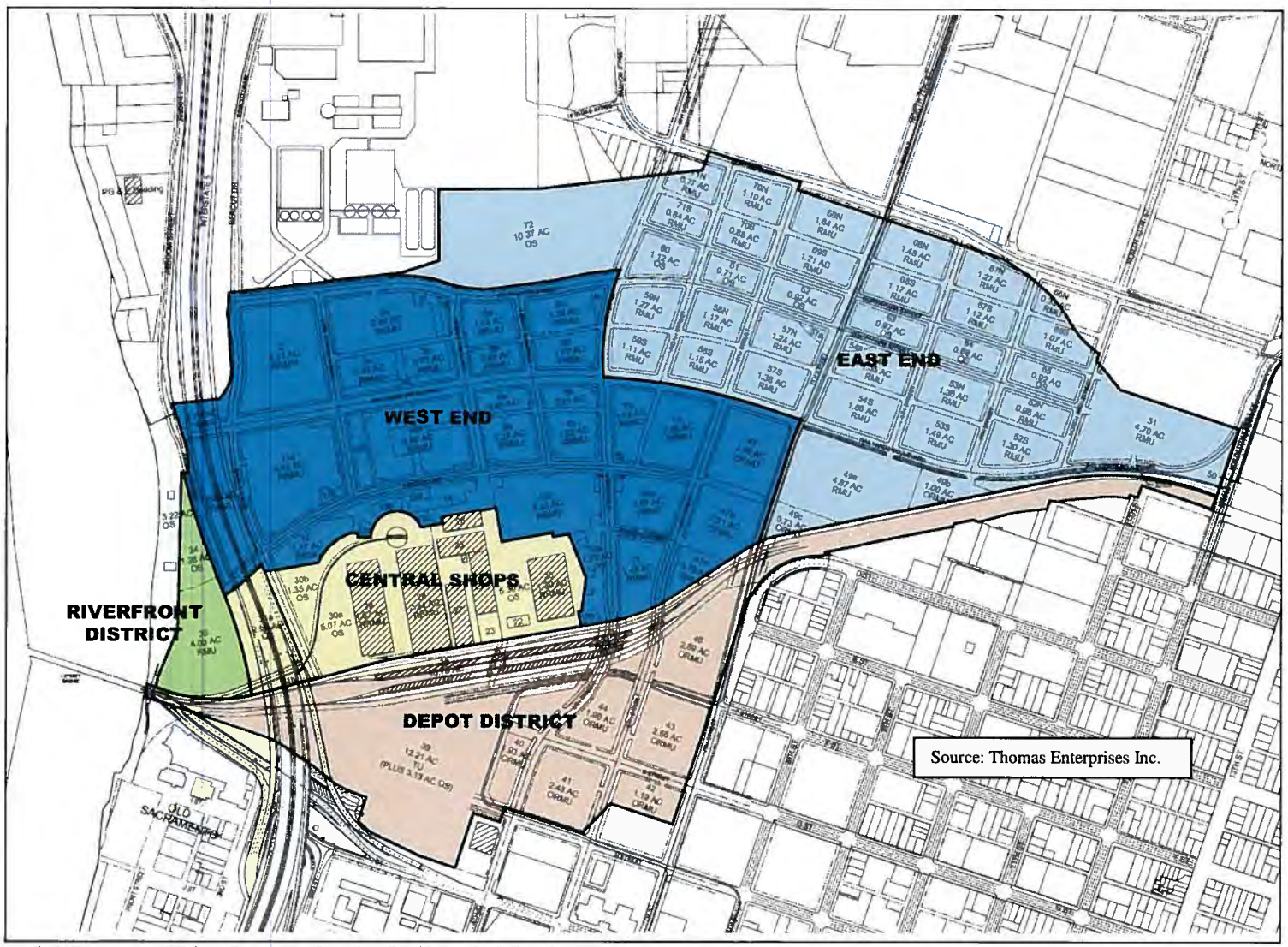

Figure 5-1 Proposed Plan Layout for the Railyards Districts

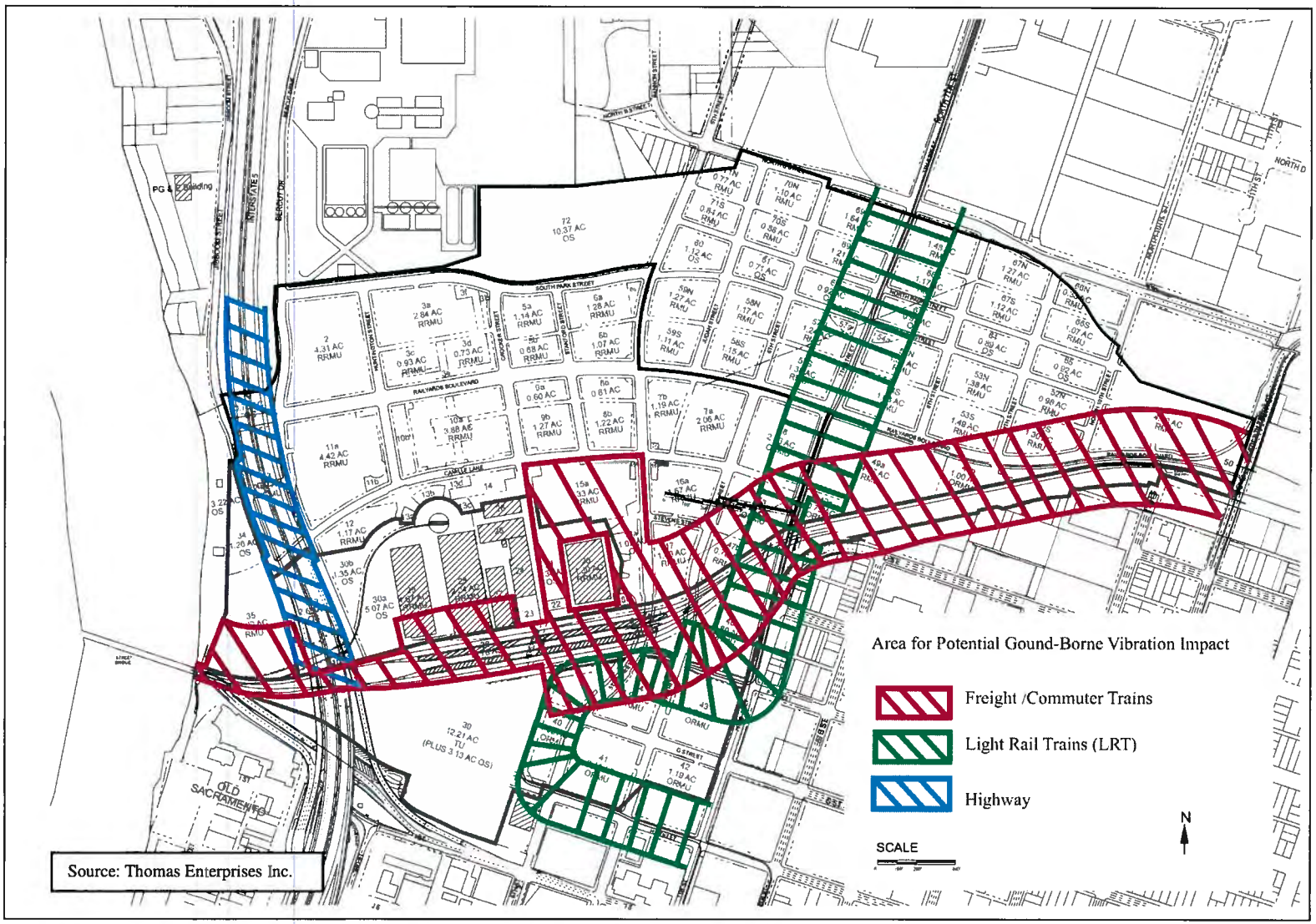

Figure 5-2 Screening Analysis for the Sacramento Railyards Specific Plan

Environmental Vibration Impact Assessment Technical Report (Draft)

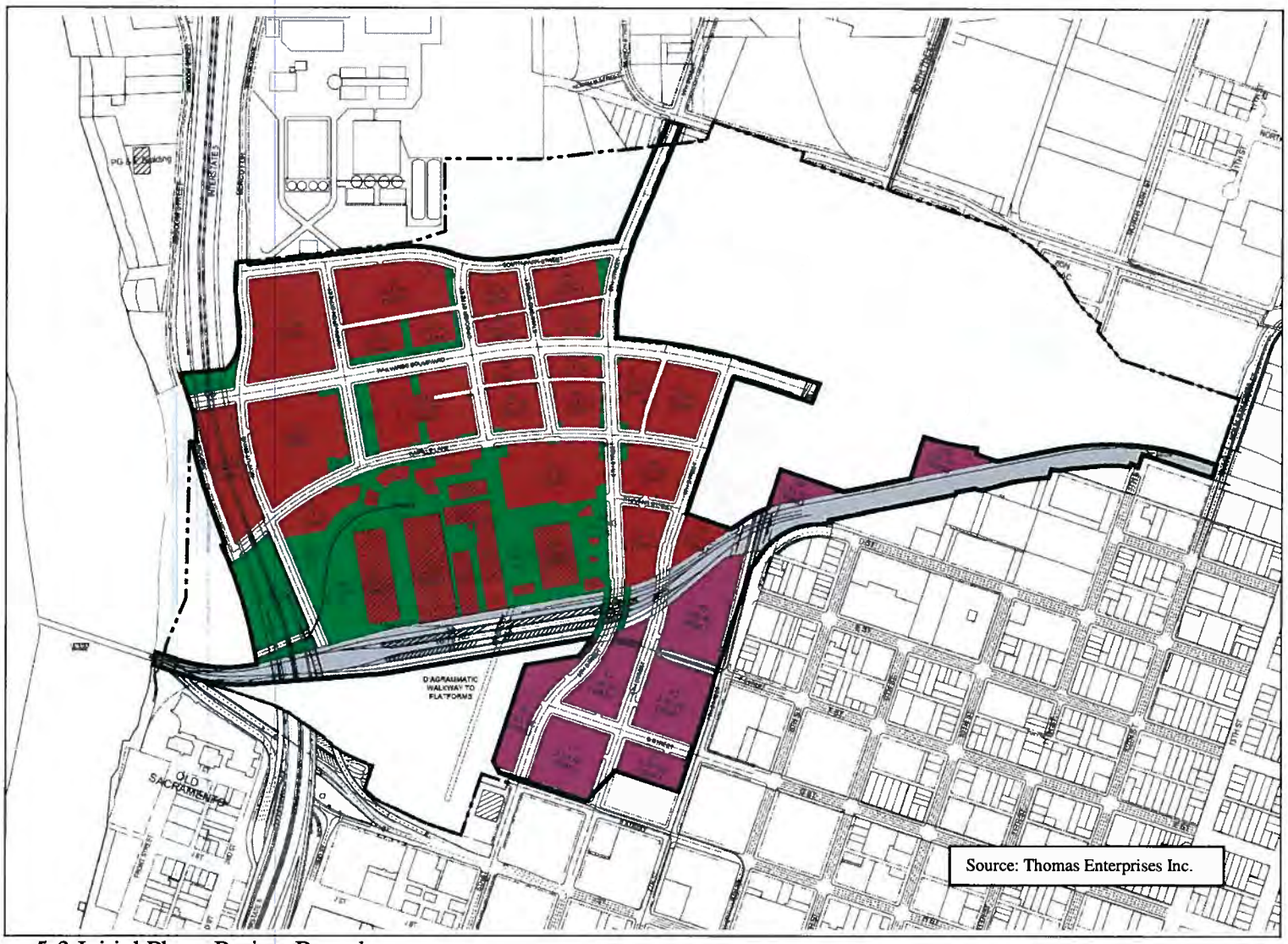

Figure 5-3 Initial Phase Project Boundary

5.2 Initial Phase (General Assessment Analysis)

The following discussion is focused on the analysis performed for the initial phase of the Railyards Project for specific parcels to illustrate the vibration level and the level of impact expected at the project location. At least one representative parcel was evaluated at each of the three proposed districts. The proposed Initial Phase of the Railyards Project is shown in Figure 5-2 and it would include the Depot District (excluding the Sacramento Intermodal Transportation Facility), the Central Shops District, and the West End District excluding parcels 47a and 48. Two parcels on the East End District would be part of the Initial Phase; however, both would accommodate utilities for the UPRR rail alignment.

5.2.1 Methodology

The methodology used for General Assessment is described in the FTA guidance manual and it is based on reference curves for generalized ground surface vibration from locomotive powered passenger or freight, and from light or heavy rail rapid transit vehicles. The general assessment uses only an overall level and applies adjustments to account for vehicle speed, track support, and type of building among other factors. Figure 5-4 shows the generalized curves proposed by FTA for a train speed of 50 mph.

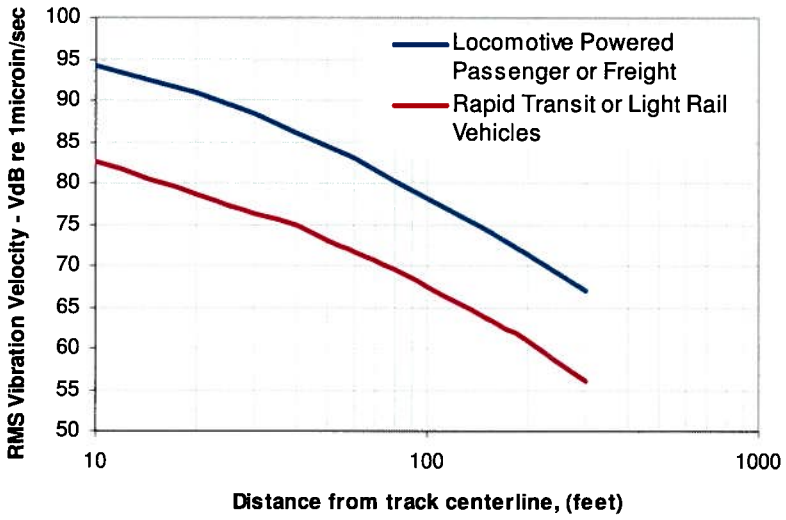

Figure 5-4 Generalized Ground Surface Vibration Curves at 50 mph.

To supplement and validate the data presented in the FTA manual for the Railyards Specific Plan, WIA obtained train vibration passby measurements adjacent to the existing UPRR tracks for both freight and passenger trains at three measurement sites. A total of five passenger trains and three freight trains were recorded at distances of 30, 60, 100, 200, 300 and 400 feet from the most northern track centerline. The speed measured for all train passbys was 10 mph, with a train consist ranging from 1 and 2 locomotives for freight and passenger trains, 4 to 5 coaches for the passenger trains,

and 50 to 63 mixed rail cars for freight trains. Figure 5-5 show the locations where vibration passby measurements were obtained.

To supplement results of the Screening analysis for rubber-tired vehicles on Interstate 5, additional ground-borne vibration measurements were performed to characterize the specific vibration levels and propagation characteristics from Interstate 5 specifically in the area of West End District, and Riverfront Districts. A set of geophones were installed at distances of 20, 70, 100, 200, 300 and 400 feet from one of the aerial structure's columns, to continuously record vibration velocity from traffic on Interstate 5. Recording was carried out for about one hour. The data analysis of the tape recording was performed at 5-minute intervals over the duration of the recording.

Background information used to conduct the general vibration analyses such train speed, track type and building structure, building uses, location of special trackwork (i.e, crossovers) was obtained from drawings and information provided by EIP.

The track structure assumed in the vibration assessment for the UPRR relocation project was at-grade ballast and tie. The operational speed assumed for the initial phase analysis was 30 mph for freight trains and 10 mph for passenger trains. Furthermore, based on the assumption that freight trains are not required to pass through any station platforms, it was assumed they would not slow down. The maximum operation speed for freight train was assumed to be 30 mph at all locations [Ref. 7].

The methodology for general assessment described in the FTA guidance manual was also used to assess vibration impacts from the light-rail DNA extension. In this case, the lower ground surface curve in Figure 5-4 was use as a baseline for the analysis. The LRT alignment was assumed to be at-grade with embedded tracks. The operational speed in the vibration analysis for the LRT Project was assumed to be 35 mph for the area along Seventh Street. A lower speed was used in the area of the Depot District. Close to curves the LRV were assumed to travel at 15 mph and in areas with straight tracks the speed was assumed to be 20 mph.

UPRR Relocation

Results of the train passby vibration measurements performed at all locations were compared with the generalized curve presented in Figure 5-4. Corrections were made to the generalized curve to account for the measured speed of 10 mph. The speed correction was 15 times the logarithm of the ratio between the operating speed and the reference speed of 50 mph, instead of 20 times as is normally used. FTA addresses the variation in vibration with speed by 20 times the logarithm of the speed, but it also states that "sometimes the variation with speed has been observed to be as low as 10 to 15 log(speed/speed$_{ref}$)". Based on WIA's experience with vibration from rail transportation related sources, we have decided to apply a speed correction of 15 so as to better characterize vibration levels in a very low speed regime.

Comparing the measured vibration data with the "standard" curve, (i.e. with no adjustments others than speed), it was found that the measured vibration levels were higher at all locations than those proposed by generalized curve. One explanation for the difference can be attributed to the quality or condition of the existing tracks. However, except for measurements at Site 2 (West of the Station platform) where the tracks are jointed, the existing tracks are welded and in good condition from what could be observed during WIA's site visit to make measurements. Another possible explanation could be, and more likely is, the efficiency of vibration propagation in the soil at the site

of the Railyards Project. To address this second issue, WIA performed "line source response" (LSR) measurements at two sites in the area of the proposed relocated UPRR tracks (Sites 5 and 6 in Figure 5-5).

The LSR characterizes the dynamic response of the soil strata and the attenuation of the vibration energy as a function of distance. In conducting the test, the ground surface is impacted with a dropped weight in areas where the alignment will be located. The vertical force imparted to the ground is measured with a load cell while geophones are used to simultaneously measure the vertical vibration velocity of the ground surface at several distances from the impact location. For the Railyards tests, the ground was impacted 20 to 30 times at each site to provide a statistically acceptable average of the response. To simulate a "line source" of vibration from a train, the ground was impacted at locations every 15 feet over a distance of 300 feet. The measured response functions (in terms of 1/3 octave bands in dB re: 10^{-6} (inch/sec)/lb) were then integrated over the length of the impact area to derive the LSR (1/3 octave band dB re: 10^{-6} (inch/sec)/(lb/ft$^{1/2}$)) at each test location. A schematic representation of the surface vibration propagation test is presented in Figure 5-6.

Figure 5-5 Location for vibration measurements

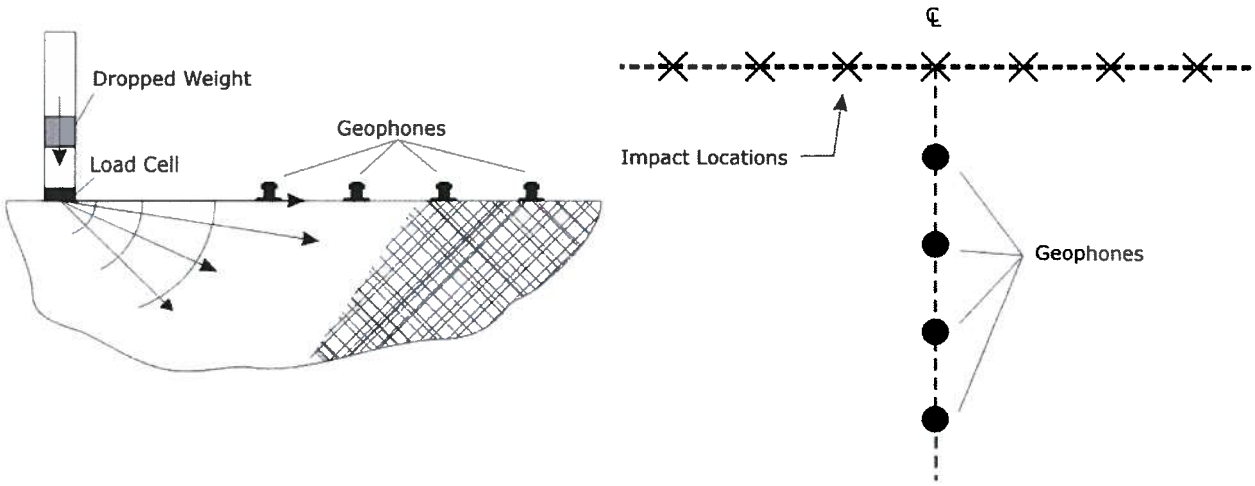

Figure 5-6 Surface vibration propagation test – cross section and plan view

Results of the LSR measurements are plotted and the line source transfer mobilities coefficients derived from curve fits to the data are presented in Appendix A. Line source transfer mobilities obtained at the site of the Railyards Specific Plan have higher levels than those expected from "standard" mobilities. Additionally, the attenuation versus distance for 1/3 octave band frequencies lower than 20 Hz is not higher than 10 dB for distances as far as 300 feet, which increases the chances of potential vibration impact up to further distances than would normally be expected. As presented in Section 3.3, the soil in the area of the Railyards Specific Plan consists of a layer of soft sediments up to a depth of 300 feet from ground elevation. Additionally, the rock layer is located very deep at about 3,000 feet. As shown in Appendix A, line source responses measured at sites 5 and 6 are remarkable similar, even though they were obtained about 500 feet apart from each other. Consequently, similar vibration propagation characteristics would be expected in other locations within the project site.

The basic projection model for transit generated vibration, normally applied during detailed vibration analysis, employs the following equation:

$$L_v = FDL + LSR + BVR + AF$$

where: L_v = average expected velocity level in a building - dB Re: 10^{-6} inch/sec (VdB),
FDL = "Force Density Level" - dB Re: 1 $lb/ft^{1/2}$,
LSR = "Line Source Response" - dB Re: 10^{-6} $(inch/sec)/(lb/ft^{1/2})$,
BVR = "Building Vibration Response" - dB (relative level),
AF = "Adjustment Factor" - dB (relative level)

Momentarily, putting aside the last two components of the prediction model, that is BVR and AF, the simplified model can be used to project vibration levels on the ground surface based on the LSR data measured. For the Force Density Level component of the model, data obtained by WIA in previous measurements for freight and intercity passenger locomotives and coaches were used.

Results of the projected vibration levels (using the vibration model presented above) were plotted against the measured train passby vibration data and the FTA generalized vibration curves with and

without the +10 VdB adjustment (efficient soil propagation). Figure 5-7 and Figure 5-8 shows results for freight and passenger trains, respectively.

Velocity levels projected for freight trains are within the range of the vibration measured on the existing UPRR tracks. However, as shown in Figure 5-7 the projected levels are in the lower range of the measured data, for distance of 100 feet and closer to the rail tracks. On the other hand, there is a clear indication that the generalized FTA curve adjusted for efficient soil propagation (green curve in Figure 5-7) fits better the measured data. However, the FTA curve shows a rapid attenuation over distance 50 feet or further than what obtained with on site-specific measured vibration propagation at the location of the Railyards project.

For passenger trains as presented in Figure 5-8, we noted similar pattern than for freight trains. The FTA generalized curve without any correction was clearly lower than the measured data (dotted curve in Figure 5-8). However, The FTA curve with the adjustment for efficient soil propagation fits better the vibration data measured at the site of the Railyards project. Furthermore, on passenger trains the FTA curve also fits better at all distances in contrast to the projected curve that fits only at distances of 200 feet and greater.

This analysis has demonstrated that, as clearly illustrated in the measurement data in the vicinity of the Railyards, the soil behaves very efficiently in propagating vibration. Therefore, applying a correction in this manner to the design curve for the Railyards project is appropriate. In addition, it would be appropriate to apply in the analysis for the Initial Phase, a different vibration curve for freight trains than that for passenger trains. For freight trains, the projected curve, based on the site-specific, measured LSR and FDL from WIA's database fits well with the measured data. On the other hand, the FTA generalized curve was found to be representative of the passenger train vibration at the site only after the adjustment for efficiency of vibration propagation was applied to the projections.

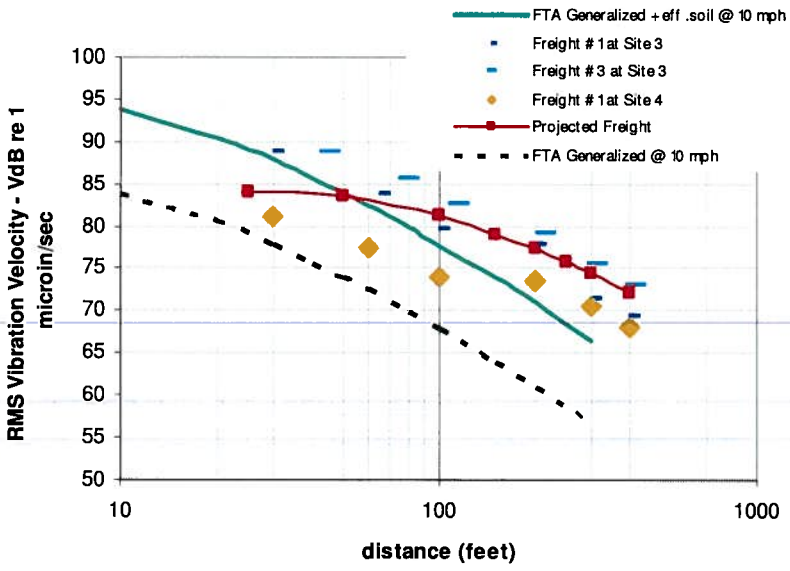

Figure 5-7 Measured and projected velocity levels from freight trains traveling at 10 mph

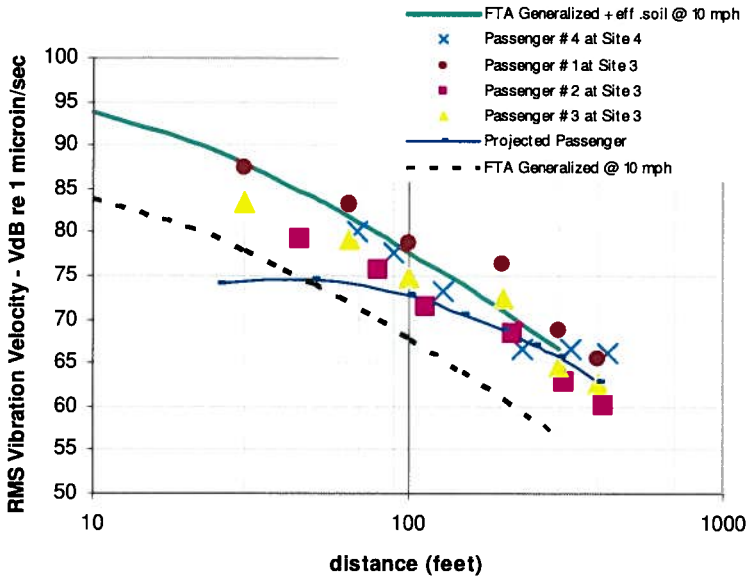

Figure 5-8 Measured and projected velocity levels from passenger trains traveling at 10 mph

Light Rail Transit

An analysis similar to that performed for the UPRR relocation project was applied to the effects of the light rail transit project. At the time of this report, no indication of the specific vehicle type to be used for the project was available in the DEIR document for the Downtown/Natomas/Airport (DNA) LRT [Ref. 10]. Nevertheless, we will assume that the extension would use a Siemens vehicle with a Chevron primary suspension similar or identical to the vehicles currently in use on the Sacramento LRT system. WIA has measured FDL data for a similar vehicle in use on the San Diego Trolley system with embedded tracks. These data in conjunction with the soil vibration propagation characteristics measured at the Railyards site, allowed us to develop a vibration curve for the proposed light rail extension.

The light rail vehicle (LRV) speeds for the analysis were assumed to be 35 mph along Seventh Street and 15 to 25 mph in the area of the Depot District along Downtown Sacramento.

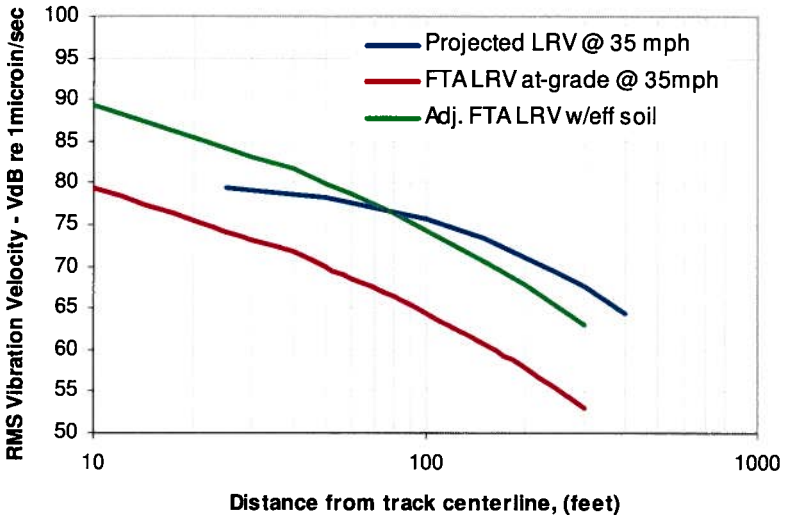

Figure 5-9 FTA generalized ground surface vibration curve and proposed analysis curve for DNA LRV.

Figure 5-9 shows the FTA generalized curve for vibration propagation for a 35 mph train speed with and without the adjustment for efficient vibration propagation in soil (+ 10 VdB). The projected curve for LRV presented in the figure, is the result of the initial vibration projections using the FDL from the San Diego Trolley vehicles on embedded tracks used in conjunction with the LSR data measured at the Project site.

The results show a close agreement between both curves. However, the standard FTA curve attenuates more rapidly than the projected curve which is based on the site-specific, measured vibration propagation. Consequently, for the analysis presented herein, the WIA projected curve was used to assess vibration impacts for the DNA LRT operations.

Vibration from Interstate 5

Vibration measurements during continuous traffic flow were conducted at Site 1 (see Figure 5-5). Values obtained during measurements were the overall velocity levels and third-octave band velocity levels. Results of the frequency analysis show that the highest third-octave band velocities occurred between 8 Hz and 20 Hz. However, the discussion for potential impact presented herein, will be focused on the overall vibration levels.

Figure 5-10 shows the results of the statistical analysis performed over a 5-minute interval. In Figure 5-10, the equivalent level (L_{eq}) obtained over the interval and two levels of the statistical analysis are shown (L_{10} and L_1). The velocity levels represented by the L_1 value could be associated with a single truck passby or with any short duration transient vibration source on I-5. On the other hand, the L_{eq} represents the expected continuous vibration velocity from I-5, or that vibration which is associated with the "normal" steady flow of traffic.

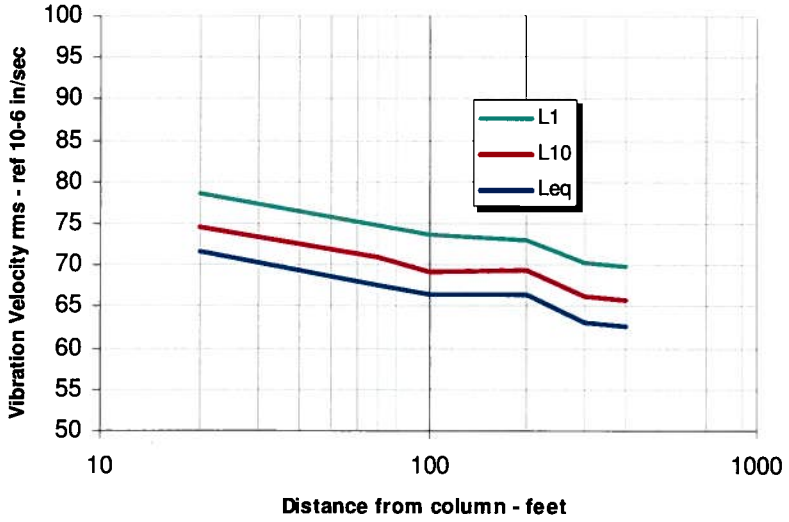

Figure 5-10 Vibration measurements at Site 1 due to traffic on Interstate 5

Proposed land uses that would be sensitive to vibration and next to the highway for the Initial Phase of the Railyards project are located in the West End District. The estimated distance from the roadway structure support columns to the sensitive land use would be 80 to 100 feet. Vibration velocities measured adjacent to Interstate 5 show that only single events such those associated with the L_1 descriptor could potentially generate vibration levels over the 72 VdB vibration criterion at the location of the sensitive land uses. As presented in Section 4.2, human response to transient vibration is less sensitive (i.e., tolerates higher levels) than for sustained vibration. A good characterization of the potential impact due to vehicle traffic on I-5 would be best represented by the measured L_{10} levels. Thus, Figure 5-10 shows that significant impacts at ground level of new buildings would occur for distances closer than 70 feet from the support columns.

5.2.2 Results of Initial Vibration Projections

Table 5-1 show the results of the vibration analysis performed for specific receptors in the Initial Phase of the Railyards Specific Plan. Specifically, vibration projections were performed for the Museum of Railroad Technology, the Performing Arts Facility, and parcels 47b, 51, 44, 68S and 12. Results in Table 5-1 show the expected ground-borne vibration and ground-borne noise levels due to each of the four vibration sources. Sensitive land uses were chosen based on their proximity to the alignments.

Neither reduction nor amplification in the overall building vibration response (BVR) was assumed for this initial evaluation. For the type of building expected at the Railyards project (i.e., mid-rise to high-rise height) the BVR would likely be null due to a cancellation between the foundation coupling loss and the floor amplification. The actual dynamic responses of the residential buildings constructed as part of the Railyards project are going to depend primarily on the location and type of foundation or piles, relative to the rail tracks plus the type of building construction used. A more refined analysis should be performed during the next stage of the project when more details of the buildings are known. The detailed analysis performed at later stage should be representative of the

type of buildings including the characteristics of the foundations to better assess the actual attenuation and/or amplification provided by the planned structures at that time

Table 5-1 shows that most Category 2 land uses located in the vicinity of the UPRR and DNA LRT alignments would be exposed to vibration levels that are a significant impact due to rail operations. Therefore, it is necessary to consider potential vibration mitigation that could reduce these impacts to a level that is less than significant.

Vibration levels from freight operations are projected to be about 19 VdB in excess of the criterion, whereas they are 12 VdB in excess of criterion for passenger train operation in Category 2 land uses. At the Museum of Railroad Technology, the projected ground-borne vibration exceeds the criterion of 75 VdB by 16 VdB for freight operations and 5 VdB for passenger train operations. Ground-borne noise is also expected 16 dBA in excess of the 35 dBA criterion for Category 2 land use due to freight and passenger train operations.

Ground-borne vibration levels would be expected to be12 VdB in excess of the 65 VdB criteria at the proposed location of the Performing Arts Facility due to freight train operations. However, vibration due to passenger trains operations is expected to be less than the FTA criterion. Nevertheless, this initial evaluation shows potential for ground-borne noise impact to the Performing Arts Facility due to both freight and passenger train operations.

The DNA LRT project is expected to generate ground-borne vibration velocities up to 2 VdB in excess of the FTA criterion for Parcel 47b at the West End District resulting in a significant impact. In contrast, in the Depot District where the assumed operational speed is 10 mph, the LRT project would produce a less than significant impact. However, special trackwork (i.e., crossovers) could increase the ground-borne vibration in the area of the Depot District up to 9 VdB over the 72 VdB criterion resulting in significant impact for such residences in the area near crossovers.

The projected vibration velocities from vehicle traffic on Interstate 5 are likely to cause a less than significant impact to Category 2 land uses in the West End District. Vibration sensitive land use at Parcel 12 would be located at a distance of 80 feet and further from the roadway structure columns. Ground-borne vibration from I-5 would be expected to be about 70 VdB at the location of Parcel 12.

In conclusion, vibration sensitive land uses proposed for the Initial Phase within 200 feet from the UPRR alignment could experience a significant impact from passenger trains operations. The distance could extend up to about 450 feet if the speed is 30 mph such as that expected east of Seventh Street. Ground-borne vibration from freight operations is likely to produce a significant impact to FTA Category 2 residential receptors up to a distance of 600 feet from the alignment.

Residential land use within 170 feet could experience significant impact from operations of the light rail extension project at 35 mph. In the area of the Depot district, Category 2 receptors could experience significant impact if they are located within 80 feet of the alignment or within 120 feet in the proximity of a crossover.

Environmental Vibration Impact Assessment Technical Report (Draft)

Table 5-1 Projected ground-borne vibration and ground-borne noise levels at the location of the closest sensitive receptors

Rec. ID	Receiver District Location	Source	Land Use	Side of Track	Speed (mph)	Distance to Near Track CL (feet)	Track Type	FTA GBV Criteria, VdB	Projected GBV, VdB (re 1µin/sec)	Type of Impact	FTA GNB Criteria, dBA	Projected GBN, dBA (re 20 µPa)	Type of Impact
1	Museum of Railroad Technology	Freight	INST	N	30	45	AG	75	91	I	40	51	I
		Pass			10	70			80	I		47	I
2	Performing Arts Facility	Freight	PA	N	30	520	AG	65	77	I	25	27	I
		Pass			10	550			63	NI		30	I
3	Parcel 47b – West End District	Freight	MFR	N	30	45	AG	72	91	I	35	51	I
		Pass			10	45			84	I		51	I
		LRT		E	35	150	EM		74	I		27	NI
4	Parcel 51 – East End District	Freight	MFR	N	30	100	AG	72	88	I	35	44	I
		Pass			30	100			84	I		51	I
5	Parcel 44 – Depot District	Freight	MFR	S	30	250	AG	72	83	I	35	34	NI
		Pass			10	90			78	I		45	I
		LRT			20	20	EM		74	I		50	I
6	Parcel 12 – West End District	I-5	MFR	E	n/a	80	n/a	72	70	NI	35	20	NI

Pass: Passenger trains, Amtrak or High-speed trains (CHSR).
LRT: Light rail train
I-5: vehicle traffic on Interstate 5
MFR: Multi-family residence; PA: Performing Art; INST: Institutional
AG: At-grade ballast and tie track
EM: At-grade embedded tracks
GVB: Ground-borne vibration; GBN: Ground-borne Noise
I: Impact as defined by FTA
NI: No Impact as defined by FTA

5.2.3 Potential Vibration Mitigation Measures

Vibration levels expected in the vicinity of the Railyards Specific Plan area would be higher than the FTA criteria. Thus, it is necessary to evaluate potential vibration mitigation to reduce the environmental impact from train operations to a level that is less than significant. Standard vibration mitigation measures applied at the track level that have been used successfully in the past are capable of providing varying degrees of vibration reduction depending on the type of mitigation. However, the available vibration mitigation measures are essentially limited to a maximum of 15 VdB reduction in the overall level. Consequently, achieving the criteria for ground-borne vibration might not be feasible for the current building siting plan. It is important to consider a mitigation alternative that provides reduction in vibration over all frequencies of concern. The initial evaluation for freight trains have shown that for residential receptors, the increase over the FTA's frequency-based curve for impact starts at 6 Hz. Consequently, it would be necessary to provide a vibration reduction in such a manner so as to decrease vibration beginning at 6 Hz.

Other means of avoiding and/or mitigating vibration levels involves the siting and/or design of impacted buildings. For example, avoiding large floor spans that result in resonance frequencies in the range of 6 Hz to12 Hz, which for this particular case, could result in amplification of the vibration caused by each train passby, may be helpful. Based on the soil conditions in the area of the Railyards, buildings are likely to be founded on deep piles. The design of building piles should be reviewed to provide maximum vibration reduction where possible. For example, "friction piles" designed to be heavier and with bigger diameter than normally used could provide vibration reductions on the order of 3 to 5 VdB, compared to end-bearing piles. This alternative should be evaluated during preliminary design.

In general, reduction of vibration could be achieved by applying mitigation at the source (vehicle, track support system), within the path (soil densification) or at the receiver (foundation piles or base building isolation).

Due to the high levels of projected vibration levels from freight and passenger train, the most viable mitigation solution is (but not limited to) to implement measures that focus on the path or receiver. But, further study of track support designs such floating slab track isolation systems should be evaluated during Preliminary Engineering (PE) design. Vibration mitigation to reduce the projected vibration levels from LRT operations could be achieved by reducing the amplitude of the vibration generated at the source.

The following section provides some recommendations for vibration mitigation for freight-passenger trains and LRT trains.

Freight and Passenger Trains

Increase Distance to Buildings: Locating vibration sensitive receptors further away from the rail alignment could help reduce the level of impact. The following distances are based on projected ground-borne vibration levels in the ground. A thorough review of the proposed structural properties of the buildings when they are available could alter the screening distances. All distances are measured from the closest track centerline. At this stage of the analysis, the minimum recommended distance for residential buildings is 700 feet from freight trains traveling at 30 mph, 200 feet from

passenger trains traveling 10 mph (West of Seventh Street), and 450 feet for passenger trains traveling 30 mph (East of Seventh Street).

Soil Densification: the increase of the soil stiffness under the track will theoretically reduce the force that the rail vehicle is capable of imparting to the soil and if so then the resulting soil vibration levels should be lower. However, this type of mitigation does not appear capable at this point of providing enough reduction by itself to achieve levels specified by the FTA criteria. Moreover, the extent of this type of solution should go down to the naturally occurring stiffer layers of soil, which may require treatment that is very deep. We anticipate that treatment of the soil to depths of at least 30 feet or deeper would provide benefits on the order of about 4 VdB of reduction. Detailed investigation and analysis of the local soil characteristics should be performed prior to further analyzing this mitigation approach in PE.

Trenches: The use of trenches could mitigate vibration from the UPRR rail. This method is more effective when trenches are located next to the rail alignment. Trenches work in a manner analogous to a sound wall. However, a general rule of thumb as presented by FTA is that the bottom of the trench should be at least 0.6 times the Rayleigh wavelength. Based on the initial third-octave band analysis, vibration mitigation must be achieved for frequencies of 6 Hz and higher. The equivalent trench depth for standard soil at a frequency of 6 Hz would be approximately 60 feet. The expected reduction in vibration levels could be on the order of 4 to 5 VdB with this method.

Piles under track bed: Another mitigation alternative is to construct a concrete track bed over deep and massive piles. Piles would need to be driven about 60 feet deep into the soil. The expected vibration reduction provided by this type of mitigation is no more than 5 VdB under optimal circumstances.

Tired-Derived Aggregate (TDA): The use of shredded scrap tires as a vibration isolating medium for rail is relatively recent. TDA as a vibration reduction medium consists of a construction with a compacted layer of shredded tires approximately 12 to 18 inches thick located below the sub-ballast and ballast layers of track. This system has been installed at selected locations on two transit systems, on the San Jose VTA Vasona Line and at Denver's TREX light rail line. Recent investigation indicates that the performance is more effective than a ballast mat, but less effective, particularly at lower frequencies when compared to the performance of a floating slab track bed system.

Floating Slab Tracks: This approach basically consists of a massive concrete slab supported on elastomeric elements, normally natural rubber. Several designs have been successfully used for heavy rail transit systems such as in Washington DC, Atlanta, Boston, and the San Francisco Bay Area on the BART system. This specific design consists of concrete slabs that are normally 6-feet long and supported vertically on four natural rubber pads per slab. Each slab is held in place in the lateral direction by natural rubber "side pads" that bear against a curb constructed in a concrete bathtub (shallow retained cut). In the longitudinal direction, natural rubber pads separate adjacent slabs. All of the horizontal (lateral and longitudinal) restraint pads are pre-compressed during installation. One of the most significant design parameters of the floating slab track bed is the fundamental natural frequency of the track bed in the vertical direction. The appropriate floating slab natural frequency depends on the groundborne vibration frequencies, which require reduction. Floating slab track bed designs to date have been in the 8 to 16 Hz range. The design for the BART

system was targeted to achieve an 8 Hz natural frequency, because of unusual circumstances primarily involving soil conditions.

Light Rail Train (LRT)

Increasing Distance to Buildings: Locating vibration sensitive receptors at least 180 feet from the LRV track centerline where trains are traveling 35 mph and at least 80 feet where traveling at 10 mph (120 feet in the proximity of a crossover) would reduce the vibration impact from LRV operation to a level that is less than significant.

Resiliently supported fasteners: The design of DNA tracks could include a resilient support fastener system which reduces ground-borne noise and vibration at frequencies above 30 to 40 Hz. Even though this type of mitigation is more effective at controlling ground-borne noise, it can effectively control vibration in cases such as this one. Such an approach should be investigated once the specific track design for the DNA extension is better known.

Ballast Mat: A ballast mat is a rubber or synthetic material mat, which is installed beneath the track bed. It is usually continuous, but may have voids within the mat, and its thickness is usually in the range of 1 inch to 2 inches. The ballast mat is most effective at frequencies above approximately 25 to 30 Hz, depending on details of installation. Ballast mats can provide up to 10 dB attenuation at frequencies above 30 Hz and it might represent a viable solution to mitigate ground-borne vibration from LRT.

Tired-Derived Aggregate (TDA): Tired-derived aggregate is a more effective vibration reduction than a ballast mat, but less effective than floating slab tracks (particularly at lower frequencies). TDA consists of a compacted layer of shredded tires (approximately 12 to 18 inches thick) located below the sub-ballast and ballast layers of track. TDA has been installed at selected locations on two light rail systems, on the San Jose VTA Vasona Line and at Denver's TREX light rail line.

Floating Slab Tracks: Floating slab track consists of a massive concrete slab supported on elastomeric elements, normally natural rubber. One of the most significant design parameters of the floating slab track bed is the fundamental natural frequency of the track bed in the vertical direction. The appropriate floating slab natural frequency depends on the groundborne vibration frequencies, which require reduction. Floating slab track bed designs to date have been in the 8 to 16 Hz range. Several designs have been successfully used for heavy rail transit systems such as in Washington DC, Atlanta, Boston, and the San Francisco Bay Area on the BART system.

6.0 References

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7.0 Appendix A – LSR Measurement

Lines Source Response Site 5

Table A- 1 Line Source Coefficients, Site 5

Frequency (Hz)	Coefficients			
	A	B	C	D
3.15	31.714	-9.225	2.718	0
4	51.803	-23.764	5.465	0
5	26.208	8.205	-3.430	0
6.3	9.914	27.576	-8.671	0
8	30.621	7.100	-3.455	0
10	8.412	33.965	-10.775	0
12.5	-21.806	67.601	-19.226	0
16	-16.140	63.870	-18.472	0
20	5.208	44.225	-14.142	0
25	-13.209	65.979	-20.257	0
31.5	-7.721	61.317	-20.159	0
40	-2.307	52.763	-18.507	0
50	-2.334	52.206	-19.402	0
63	-3.239	55.439	-22.107	0
80	14.379	36.073	-18.512	0
100	77.880	-35.022	-0.957	0
125	129.569	-89.448	12.291	0
160	172.213	-138.624	25.724	0

$LSR = A + B \cdot \log(d) + C \cdot \log^2(d) + D \cdot \log^3(d)$

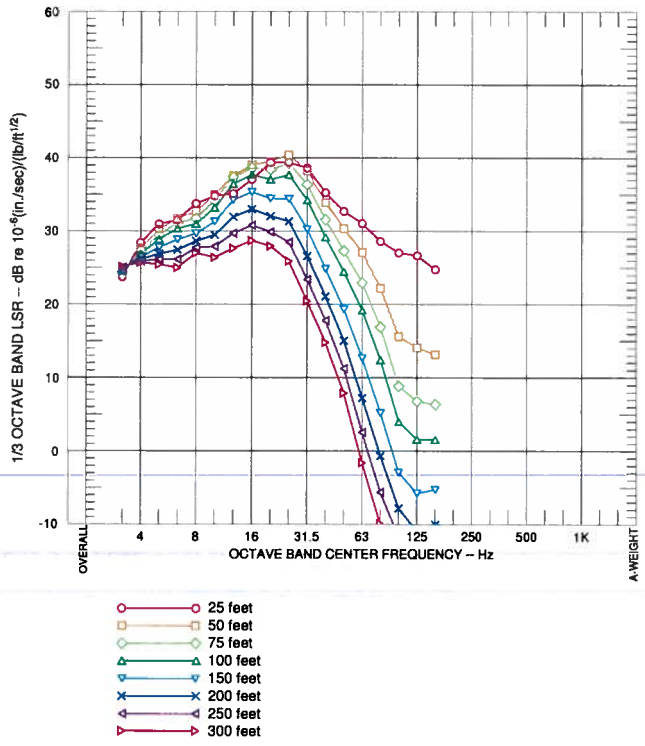

Figure A- 1 Line Source Response, Site 5

Lines Source Response Site 6

Table A- 2 Line Source Coefficients, Site 6

Frequency (Hz)	Coefficients			
	A	B	C	D
3.15	49.494	-32.322	8.988	0
4	25.790	0.152	-0.454	0
5	22.226	9.916	-3.919	0
6.3	20.461	12.152	-4.237	0
8	17.024	18.489	-6.337	0
10	15.427	21.813	-7.109	0
12.5	9.558	31.170	-9.863	0
16	7.297	37.640	-11.884	0
20	18.463	27.055	-9.330	0
25	16.610	30.057	-10.429	0
31.5	12.080	37.135	-13.330	0
40	40.272	9.216	-7.473	0
50	32.264	21.613	-12.408	0
63	59.723	-9.337	-5.779	0
80	68.090	-19.275	-4.489	0
100	161.788	-119.740	20.528	0
125	244.792	-209.383	43.392	0
160	263.092	-234.604	50.424	0

$LSR = A + B \cdot \log(d) + C \cdot \log^2(d) + D \cdot \log^3(d)$

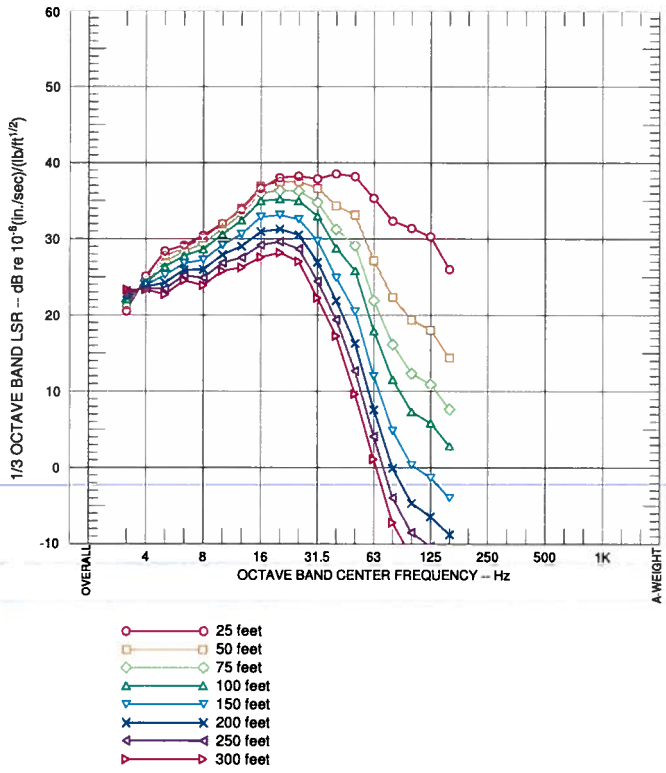

Figure A- 2 Line Source Response, Site 6

Combine Lines Source Response

Table A- 3 Line Source Coefficients, Combine LSR

Frequency (Hz)	Coefficients			
	A	B	C	D
3.15	40.604	-20.773	5.827	0
4	38.796	-11.806	2.5054	0
5	24.217	9.0607	-3.6747	0
6.3	15.188	19.864	-6.4538	0
8	23.822	12.794	-4.8959	0
10	11.919	27.899	-8.9419	0
12.5	-6.1242	49.385	-14.545	0
16	-4.4215	50.755	-15.178	0
20	11.835	35.64	-11.736	0
25	1.7005	48.018	-15.343	0
31.5	2.1793	49.226	-16.744	0
40	18.983	30.99	-12.99	0
50	14.965	36.909	-15.905	0
63	28.242	23.051	-13.943	0
80	83.04	-36.335	0	0
100	84.263	-39.319	0	0
125	85.974	-41.121	0	0
160	79.25	-38.518	0	0

$LSR = A + B \cdot \log(d) + C \cdot \log^2(d) + D \cdot \log^3(d)$

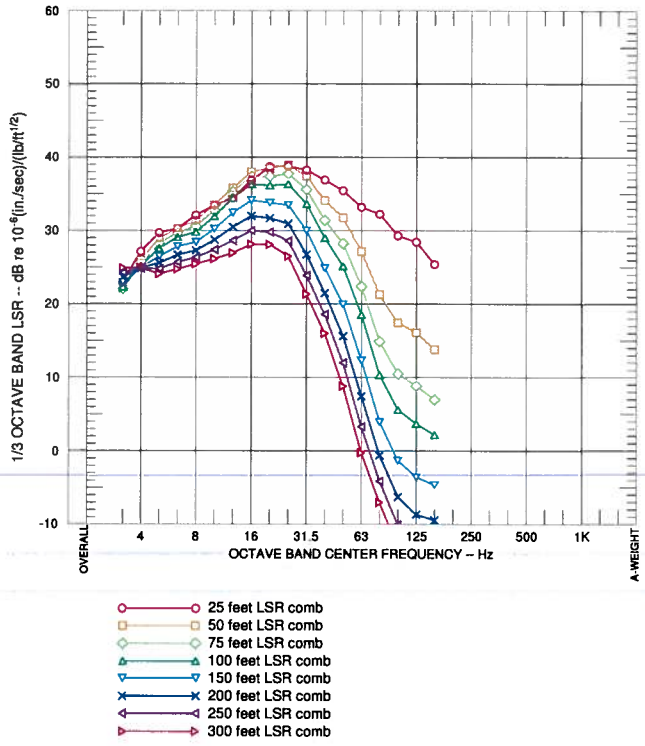

Figure A- 3 Combine Line Source Response (Site 5 and Site 6)

APPENDIX L
LETTER FROM SACRAMENTO CITY UNIFIED SCHOOL DISTRICT

SCIConsultingGroup
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Friday, July 21, 2006

Nedzlene Ferrario, Senior Planner
City of Sacramento, Development Services Department
New Growth Division
2101 Arena Blvd., 2nd Floor
Sacramento, CA 95834

Re: Comment by Sacramento City Unified School District on the Draft Environmental Impact Report for the Railyards Specific Plan

Dear Nedzlene,

SCI Consulting Group ("SCI") has been retained by Sacramento City Unified School District ("District") to provide a Development Impact Analysis of the Railyards Specific Plan ("Plan") on the school facilities of the District. The following is a summary of our initial and preliminary findings. As we've previously discussed, our final report is forthcoming and will be received by the District and the City shortly. These preliminary findings have yet to be shared with the District's Facilities Committee or Board of Education, but should serve as initial comments regarding the impact of the Plan on the District.

Residential Housing Units Assumption. It is our understanding that the Plan currently envisions between 7,721 to 10,676 high-density residential units on a programmatic level and 8,308 to 11,263 high-density residential units for an alternative "arena area" programmatic level. Based on the maximum number of units proposed for the programmatic level, the average density for the residential land use areas would be 128 dwelling units per acre.

Student Generation Rates Assignments. It is our experience that student generation rates (or "yields") for high-density housing tend to be relatively low compared with the rates for single-family housing (low-density) or attached single-family housing (medium density) types of development. High-density condominium or apartment type housing typically has less living area, less bedrooms and little to no outside play area for children.

There are other factors beyond the housing type that influence the average number of students who will live in a new housing development. These factors include: (1) a district's API score as an indicator of desirability to live in the district, (2) the percentage of income restricted housing units, (3) average unit size and number of bedrooms and (4) average housing price. These factors for the proposed land use plan have yet to be determined and considered in the overall analysis. However, a preliminary estimate by SCI indicates that the District could expect between .10 and .15 K-12 students per housing unit.

Projected Student Enrollment from Project. The table below presents expected student generation from the Plan under two preliminary yield scenarios and for the two programmatic alternatives. As shown, students generated by the Plan at buildout could generate between 500 to over 1,000 K-6 students, 100 to over 200 7-8 students and 150 to over 300 high school students.

The Railyards	Growth Scenario	Dwelling Units	K-6 Yield	K-6 Enroll	7 - 8 Yield	7 - 8 Enroll	9 - 12 Yield	9 - 12 Enroll
High Yield Scenario								
Programmatic Level	Low	7,721	0.100	773	0.020	155	0.030	232
Programmatic Level	High	10,676	0.100	1,068	0.020	214	0.030	321
Programmatic Level Arena Alt.	Low	8,308	0.100	831	0.020	167	0.030	250
Programmatic Level Arena Alt.	High	11,263	0.100	1,127	0.020	226	0.030	338
Low Yield Scenario								
Programmatic Level	Low	7,721	0.066	510	0.013	102	0.020	153
Programmatic Level	High	10,676	0.066	705	0.013	141	0.020	212
Programmatic Level Arena Alt.	Low	8,308	0.066	549	0.013	110	0.020	165
Programmatic Level Arena Alt.	High	11,263	0.066	744	0.013	149	0.020	224

(It is important to note that this high level projection is intent for preliminary planning purposes only. The actual student generation rates may be higher or lower, and will depend in large part, on the factors discussed above.)

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Existing School Building Capacity. The Railyards Specific Plan is currently within the attendance boundaries of Washington Elementary School, Sutter Middle School and McClatchy High School. For the 2005-06 school year, these schools were over their design student capacity. Therefore, the K-8 students generated by Plan will be considered "unhoused" and new school facilities will be needed to serve the students generated by the Plan. Furthermore, additional high school facilities at McClatchy High School will be required.

Washington Elementary School serves students in grades K-6. Washington has a design capacity of 317 students, and 257 students were enrolled there for academic year 2005-06. Sutter Middle School serves students in grades 7-8. Sutter has a design capacity of 1,293 students, and 1,228 students were enrolled for the 2005-06 school year. McClatchy High School serves students in grades 9-12. McClatchy has a design capacity of 1,754 students, and 2,429 students were enrolled there for the 2005-06 school year.

The District has a designed existing school building capacity for 28,018 elementary, 9,071 middle school, and 12,086 high school students, and had 26,633 elementary, 7,711 middle school, and 11,499 high school enrolled District-wide in the 2005-06 academic year.

Preliminary Facility Plan. The Development Impact Analysis will address the project-specific impact on K-6, 7-8 and 9-12 school facilities. The cumulative impact will be limited to the impact on the Central City boundaries. However, based on our preliminary analysis and initial conversations with the District, the City should reserve 2 elementary school sites within the Plan to serve the students from the Plan. The Board-approved capacity for a K-6 elementary school is 450 students. Alternatively, the District might consider 900-capacity K-8 schools or a combination of the two.

School site size requirements have yet to be determined, but State guidelines recommend 9.6 acres for a typical elementary school and 20.9 acres for a typical middle school. However, the District recognizes that eventual acreage for each school might need to be less then the State guidelines due to the land use intensity of the entire Plan.

SCIConsultingGroup
2300 Boynton Avenue, Suite 201 · Fairfield, California 94533 · Tel: 707.426.5016 · Fax: 707.426.0109

Funding. The District will be eligible for funding for new school construction under the School Facilities Program and statutory "Level 1" developer fees for the new construction with the Plan. The maximum developer fees are currently $2.63 per square foot for new residential construction and $0.42 per square foot for new commercial and industrial construction. Such developer fees are likely to be insufficient to mitigate the impact of residential development within the Plan, so the approval of the Plan should indicate a condition requiring the owners of the land with the Plan and the District to reach a mutually agreed upon mitigation agreement to offset the impact of the Plan on the District.

The Development Impact Analysis will determine whether the combination of state funding and developer fees will be sufficient to ensure that school facilities are available to meet the projected student demand. If a funding shortfall is protected, the District will expect new residential development in the Railyards Specific Plan to make up the funding shortfall through mutually agreed upon mitigation measures.

Should you have any questions regarding these preliminary findings, I can be reached at 707-426-5016 or blair.aas@sci-cg.com.

Sincerely,

Blair E. Aas
Planning Consultant
SCI Consulting Group

cc: Jim Dobson, Sacramento City Unified School District
Christina Erwin, EIP Associates

APPENDIX M
WATER SUPPLY ASSESSMENT

City of Sacramento
SB 610/SB 221 Water Supply Assessment and Certification Form

This form may be used to complete water supply assessments for projects located in an area covered by the City's most recent Urban Water Management Plan.

Note: Please do not use this form if the projected water demand for your project area was not included in the City's latest Urban Water Management Plan. To review the City's Urban Water Management Plan, please visit: http://www.cityofsacramento.org/utilities/urbanwater/index.html

Project: Railyards Specific Plan

Date: *TBD*

Project Applicant (Name of Company): Thomas Enterprises, Inc.

Applicant Contact (Name of Individual): David Beauchamp, EIP/PBS&J

Phone Number: 916.325.1472

E-mail: dsbeauchamp@pbsj.com

Address: 1200 Second Street, Ste 100, Sacramento, CA 95814

Project Applicant to fill in the following:

1. Does the project include:

Type of Development	Yes	No
A proposed residential development of 500 or more dwelling units		
A shopping Center employing more than 1,000 persons or having more than 500,000 square feet?		
A Commercial Office building employing more than 1,000 persons or having more than 250,000 square feet?		
A proposed hotel or motel, or both, having more that 500 rooms		
A proposed industrial, manufacturing, or processing plant or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area		
A mixed use project that includes one or more of the projects specified above	YES	
A project that would demand an amount of water equivalent to, or greater than, the water required by a 500 dwelling unit project		

If the answer is no to all of the above, a water supply assessment is not required for the project.

2. Is the projected water demand for the project location included in the City's 2005 Urban Water Management Plan, adopted November 14, 2006?

Yes:__X__ No:____

If the answer is no, you cannot use this form. Please refer to the requirements of SB 610 for preparing a water supply assessment.

3. Please fill in the project demands below:

LAND USE DESIGNATIONS WITH WATER DEMANDS

Land Use Designation (LUD)	Acres	Average Annual Demand (gpd)	Total Annual Demand (AFA)
Retail/Residential Mixed Use (RRMU)	48.83	1,019,261.40	1,142
Residential Mixed Use (RMU)	41.95	2,030,830.00	2,275
Transportation (TU)	28.88	11,987.48	13
Open Space (OS)	41.16	145,649.77	163
Office/Residential Mixed Use (ORMU)**	19.46	626,174.55	701
Total	**180.39**	**3,833,903.20**	**4,295**

Notes:
See Appendix A: Water Demand Spreadsheet for Railyards Specific Plan, June 2007
Source: EIP Associates, a division of PBS&J, June 2007.

4. Required Elements of Water Supply Assessment (Government Code § 10910)

A. Water supply entitlements, water rights or water service contracts (Gov't Code § 10910(d)):

The City's water supply entitlements, water rights and water service contract are identified and discussed in the Urban Water Management Plan, Chapters 4, 5 and 6.

All infrastructure necessary to deliver a water supply to the project is in place, excepting any distribution facilities required to be constructed and financed by the project applicant: Yes:____ No:____

B. Identification of other sources of water supply if no water has been received under City's existing entitlements, water rights or water service contracts (Gov't Code § 10910(e)):

Not applicable.

C. Information and analysis pertaining to groundwater supply (Gov't Code § 10910(f)):

Addressed by Urban Water Management Plan, Chapters 4, 5 and 6.

Verification of Water Supply
(for residential development of more than 500 dwelling units)

Based on the City's most recent Urban Water Management Plan, are there sufficient water supplies for the project during normal, single dry and multiple dry years over a 20 year period?

Yes:_____ No:_____

By:_____

Title:_____

Date:_____

This box to be filled in by the City

Distribution:

Applicant
Community Development Department (Org: 4913) – Scot Mende
Utilities Department (Org: 3334) - Development Review (Robert Thaung)
Utilities Department (Org: 3344) - Water Conservation
Utilities Department (Org: 3332) - Capital Improvements (Jim Peifer)

THE RAILYARDS

Land Use Distribution and Densities - Prefered Plan — **April 5, 2007**

PROGRAMMATIC LEVEL

Parcel #			Land Use	Residential Density		Residential		Retail		Mixed-Use 2nd Level on Camille		Hotel		Office FAR			All Visitors	Hist./Cultural		Open Space		Demand AFA
																						0.0
																						0.0
1	0.75	AC	OS																	0.75	AC	**3.2**
2	4.31	AC	RRMU					200,000	SF (Bass Pro+ 420,000 gallons/year (1.288 AFY) aquarium tank changes)								3,000,000					**79.7**
3a	2.84	AC	RRMU	49	DU/AC																	**0.0**
3b	0.13	AC	OS																	0.13	AC	**0.6**
3c	0.93	AC	RRMU									500	Kys									**72.8**
3d	0.73	AC	RRMU	230	DU/AC	168	DU	28,000	SF	32,000	SF											**66.8**
3e	0.67	AC	OS																	0.67	AC	**2.9**
3f	0.28	AC	RRMU			140	DU															**36.1**
5a	1.14	AC	RRMU	91	DU/AC	104	DU															**26.8**
5b	0.68	AC	RRMU	118	DU/AC	80	DU	27,000	SF	29,000	SF											**42.6**
6a	1.28	AC	RRMU	189	DU/AC	242	DU															**62.3**
6b	1.07	AC	RRMU	93	DU/AC	100	DU	43,000	SF	47,000	SF											**61.0**
6c	0.15	AC	OS																	0.15	AC	**0.6**
7a	2.06	AC	RRMU	90	DU/AC	186	DU	18,000	SF	18,000	SF											**62.0**
7b	1.19	AC	RRMU	91	DU/AC	108	DU	54,000	SF	58,000	SF											**71.7**
7c	0.03	AC	OS																	0.03	AC	**0.1**
8a	0.61	AC	RRMU	36	DU/AC	22	DU	27,000	SF	27,000	SF											**26.8**
8b	1.22	AC	RRMU	39	DU/AC	48	DU	33,000	SF	38,000	SF											**40.2**
9a	0.60	AC	RRMU	73	DU/AC	44	DU	26,000	SF	26,000	SF											**31.7**
9b	1.27	AC	RRMU	38	DU/AC	48	DU	34,000	SF	38,000	SF											**40.6**
10a	3.88	AC	RRMU	27	DU/AC	106	DU	116,000	SF	65,000	SF											**98.3**
10b	0.57	AC	OS																	0.57	AC	**2.4**
11a	4.42	AC	RRMU					223,000	SF													**87.4**
11b	0.27	AC	OS																	0.27	AC	**1.2**
12	1.17	AC	RRMU					71,000	SF	43,000	SF											**44.7**
13a	0.11	AC	RRMU					3,500	SF													**1.4**
13b	0.23	AC	RRMU					8,000	SF													**3.1**
13c	0.12	AC	RRMU					5,600	SF													**2.2**
13d	0.60	AC	OS																	0.60	AC	**2.6**
14	0.62	AC	RRMU					13,000	SF			100	Kys									**19.7**
15a	3.33	AC	RRMU	22	DU/AC	72	DU	65,500	SF	40,000	SF						360,000	100,000	SF			**62.7**
15b	0.05	AC	OS																	0.05	AC	**0.2**
16a	1.67	AC	RRMU	141	DU/AC	236	DU	28,000	SF	30,000	SF											**83.5**
16b	0.07	AC	OS																	0.07	AC	**0.3**
17	1.48	AC	RRMU																			**0.0**
18a	1.05	AC	OS																	1.05	AC	**4.5**
18b	0.25	AC	RRMU					38,500	SF													**15.1**
20	1.30	AC	RRMU															56,278	SF			**0.9**
21	5.30	AC	OS																	5.30	AC	**22.7**
22	0.15	AC	RRMU															6,500	SF			**0.0**
23	0.34	AC	RRMU															22,500	SF			**0.0**
24	0.73	AC	RRMU															42,028	SF			**0.0**
25	0.53	AC	RRMU															38,711	SF			**0.0**
26	0.33	AC	RRMU															28,500	SF			**0.0**
27	0.65	AC	RRMU															28,043	SF			**0.0**
28	2.24	AC	RRMU															93,134	SF			**0.0**
29	1.67	AC	RRMU														100,000	69,696	SF			**1.5**
30a	5.07	AC	OS																	5.07	AC	**21.8**
30b	1.35	AC	OS																	1.35	AC	**5.8**
31a	2.66	AC	OS																	2.66	AC	**11.4**
31b	0.32	AC	OS																	0.32	AC	**1.4**
33	2.62	AC	RRMU																			**0.0**
34	1.26	AC	OS																	1.26	AC	**5.4**
35	4.00	AC	RMU	225	DU/AC	900	DU	15,000	SF			500	Kys									**310.6**
38	16.78	AC	TU																			**0.0**
39	15.34	AC	TU																	3.13	AC	**13.4**
40	1.93	AC	ORMU	50	DU/AC	***96***	DU*	38,000	SF					1.4	***115,200***	SF*						**44.5**
41	2.43	AC	ORMU	66	DU/AC	***160***	DU*	85,000	SF					1.8	***192,000***	SF*						**82.6**
42	1.19	AC	ORMU	229	DU/AC	***273***	DU*	6,200	SF					5.8	***300,000***	SF*						**85.3**
43	2.56	AC	ORMU	178	DU/AC	***455***	DU*	12,000	SF					4.5	***500,000***	SF*						**142.8**
44	1.96	AC	ORMU	116	DU/AC	***227***	DU*	16,500	SF					2.9	***250,000***	SF*						**75.5**
45	0.33	AC	OS																	0.33	AC	**1.4**
46	2.89	AC	ORMU	57	DU/AC	***164***	DU*							1.4	***180,000***	SF*						**49.7**
47a	2.21	AC	ORMU	123	DU/AC	***273***	DU*							3.1	***300,000***	SF*						**82.9**
47b	0.78	AC	RRMU																			**0.0**
48	2.56	AC	ORMU	178	DU/AC	***455***	DU*							4.5	***500,000***	SF*						**138.1**
49a	4.87	AC	RMU	133	DU/AC	***650***	DU	60,000	SF													**191.0**
49b	0.73	AC	ORMU																			**0.0**
49c	1.00	AC	ORMU																			**0.0**
50	1.26	AC	OS																	1.26	AC	**5.4**
51	4.70	AC	RMU	138	DU/AC	650	DU	40,000	SF													**183.1**
52N	0.98	AC	RMU	107	DU/AC	105	DU															**27.1**
52S	1.30	AC	RMU	300	DU/AC	390	DU															**100.5**
53N	1.38	AC	RMU	109	DU/AC	150	DU															**38.6**
53S	1.49	AC	RMU	299	DU/AC	445	DU															**114.6**
54N	1.35	AC	RMU	204	DU/AC	275	DU	15,000	SF													**76.7**
54S	1.68	AC	RMU	298	DU/AC	500	DU	10,000	SF													**132.7**

THE RAILYARDS

Land Use Distribution and Densities - Prefered Plan

April 5, 2007

PROGRAMMATIC LEVEL

Parcel #			Land Use	Residential Density		Residential		Retail		Mixed-Use 2nd Level on Camille		Hotel		Office FAR		All Visitors	Hist./Cultural	Open Space		Demand AFA
																				0.0
																				0.0
54a	0.12	AC	OS															0.12	AC	0.5
57a	0.12	AC	OS															0.12	AC	0.5
57N	1.24	AC	RMU	202	DU/AC	250	DU	15,000	SF											70.3
57S	1.38	AC	RMU	301	DU/AC	415	DU	10,000	SF											110.8
58N	1.17	AC	RMU	107	DU/AC	125	DU													32.2
58S	1.15	AC	RMU	300	DU/AC	345	DU													88.9
59N	1.27	AC	RMU	106	DU/AC	135	DU													34.8
59S	1.11	AC	RMU	300	DU/AC	333	DU													85.8
60	1.12	AC	OS															1.12	AC	4.8
61	0.71	AC	OS															0.71	AC	3.0
62	0.92	AC	OS															0.92	AC	3.9
63	0.97	AC	OS															0.97	AC	4.2
64	0.89	AC	OS															0.89	AC	3.8
65	0.92	AC	OS															0.92	AC	3.9
66N	0.33	AC	RMU	106	DU/AC	35	DU													9.0
66S	1.07	AC	RMU	107	DU/AC	115	DU													29.6
67N	1.27	AC	RMU	303	DU/AC	385	DU													99.2
67S	1.12	AC	RMU	159	DU/AC	178	DU													45.9
68N	1.48	AC	RMU	291	DU/AC	430	DU													110.8
68S	1.17	AC	RMU	111	DU/AC	130	DU													33.5
69N	1.64	AC	RMU	293	DU/AC	480	DU													123.7
69S	1.21	AC	RMU	112	DU/AC	135	DU													34.8
70N	1.10	AC	RMU	300	DU/AC	330	DU													85.0
70S	0.88	AC	RMU	125	DU/AC	110	DU													28.3
71N	0.77	AC	RMU	260	DU/AC	200	DU													51.5
71S	0.84	AC	RMU	119	DU/AC	100	DU													25.8
72	10.37	AC	OS															10.37	AC	44.5
																				0.0
																				0.0
	Acres					**Residential**		**Retail**		**Mixed Use 2nd Level**		**Hotel**		**Office**			**Hist./Cultural**	**Open Space**		
TOTAL	**180.39**	**AC**			*Max.*	**12,101**	**DU**	**1,384,800**	**SF**	**491,000**	**SF**	**1,100**	**Kys**	*Max.*	**2,337,200 SF**		**485,390 SF**	**41.16**	**AC**	**4295.5**
					Min.	**10,000**	**DU**							*Min.*	**0 SF**					**2576.3**
Roads	56.90	AC																		
Site Total	237.29	AC		*	Indicates General Mixed Land Use. Either residential dwelling units OR office sf's OR hotel rooms apply,															
Devel Total	100.79	AC	42%		OR combinations fitting within the zoning envelope.															

TOTALS

			Water Demand (AFA)	Gallons per Day	Mgal/day
RRMU	**48.83**	**AC**	**1,142**	**1,019,261.40**	**1.019**
RMU	**41.95**	**AC**	**2,275**	**2,030,830.00**	**2.031**
TU	**28.99**	**AC**	**13**	**11,987.48**	**0.012**
OS	**41.16**	**AC**	**163**	**145,649.77**	**0.146**
ORMU	**19.46**	**AC**	**701**	**626,174.55**	**0.626**
			4,295	**3,833,903.20**	**3.834**
Total	**180.39**	**AC**			

WATER DEMANDS

	Facility Designations	Demand Factors	Units
1	Office	0.0375	gpd/ft2
3	Residential	230	gpd/DU
7	Retail/Restaurant	0.350	gpd/ft2
2	Hotel	130	gpd/room
4	Railroad Tech Museum/Arena	5	gpd/visitor
5	Performing Arts Theatre Visitors	2.5	gpd/visitor
6	Open Space/Parks	4.29	AFY/acre

NOTES

1 Billings, B. R. and C. V. Jones. 1996. Forecasting Urban Water Demand. American Water Works Association.

2 Seattle Public Utilities Resource Conservation Section, Hotel Water Conservation,
A Seattle Demonstration, July 2002, prepared by O'Neill & Siegelbaum and The RICE Group

3 high density residential (21+ DU/acre) from Placer County Water Agency IRWP, October 2005.

4 U.S. Department of Energy - Energy Efficiency and Renewable Energy, Federal Energy Management Program; Federal Water Use Indices
FEMP is providing these indices as a guide for agencies. Agencies should be aware that they are rough estimates of water usage at different types of sites. Your site may vary considerably. The indices should only be used to assist in determining baseline data when no other information is available about a site's water usage.

5 U.S. Department of Energy - Energy Efficiency and Renewable Energy, Federal Energy Management Program; Federal Water Use Indices
FEMP is providing these indices as a guide for agencies. Agencies should be aware that they are rough estimates of water usage at different types of sites. Your site may vary considerably. The indices should only be used to assist in determining baseline data when no other information is available about a site's water usage.

6 Sacramento Water Balance calculated from Station 131, CIMIS Western Regional Climate Center;
based on a leaching fraction of 5% and assumed distribution uniformity of 90%

7 Mazzetti & Associates, June 2005 for PAMF-SCC Sutter Health Foundation

APPENDIX N
URBAN DECAY STUDY

DRAFT

SACRAMENTO RAILYARDS: URBAN DECAY ASSESSMENT

Prepared for:
PBS&J/
City of Sacramento

Prepared by:
Keyser Marston Associates, Inc.

August 14, 2007

TABLE OF CONTENTS **Page**

INTRODUCTION

This urban decay assessment has been prepared pursuant to Keyser Marston Associates (KMA), Inc.'s contract with PBS&J as part of PBS&J's preparation of the Environmental Impact Report (EIR) for the Sacramento Railyards Specific Plan. The analysis of urban decay impacts, through a series of recent court decisions, has been determined to be within the purview of the California Environmental Quality Act (CEQA). Accordingly, KMA was retained by PBS&J and the City of Sacramento to evaluate the existing retail economic conditions of the Sacramento market and to assess whether the development of the proposed Railyards project might create impacts severe and substantial enough to result in urban decay in existing retail concentrations considered most vulnerable to negative impact. These vulnerable areas were agreed with the City and PBS&J to be the Downtown, where four retail concentrations: the Westfield Plaza, Old Sacramento, K-Street Mall, and Midtown Corridor.

The focus of this urban decay assessment is on the retail/entertainment component of the proposed Railyards project, as described in the Specific Plan. For the purpose of the assessment and consistent with the intent of the court decisions, "urban decay" is defined as the closure of retail and other stores in the surrounding area as a result of market competition and disinvestment - leaving decaying building shells in a state of sustained vacancy, long-term abandonment, repeated property damage, and/or deteriorated conditions that significantly impair the proper and safe use of the real estate. Properties in areas with higher than normal market vacancies and which have been empty and/or unused for at least three years or more are assumed to be in prolonged or sustained vacancies. An example in Sacramento would be the K-Street Mall, which has suffered urban decay – and is only now being transformed by coordinated public/private investment back to a state of economic vitality.

SECTION I. PROPOSED DEVELOPMENT

A. Overall Concept

The Sacramento Railyards project, as proposed by the developer/applicant, Thomas Enterprises, Inc., would redevelop approximately 240 acres of an older industrial area at the northwest edge of the Central Business District in downtown Sacramento into a transit-oriented, mixed use development consisting of high-density for-sale and rental housing, complemented by unique cultural opportunities, office, hotel, retail and entertainment uses, and parks and urban plazas, as defined in the Railyards Specific Plan. The development goal of the Railyards is to create an extension to the city's downtown with an activated ground floor retail and a walkable environment.

At build-out, the area is expected to contain an estimated 10,000 to 12,501 residential units, up to 1.38 million square feet of retail/entertainment space (1.54[1] million square feet if the additional .15 million square feet of retail in the historic and cultural component of the Central Shops district is included), 2.83 million square feet of office space, .48 million square feet of historic and cultural space (.33 million square feet if the .15 million square feet of retail space is excluded from this component), 1,100 hotel rooms, and approximately 41.2 acres of parks and open space.[2]

Per the Specific Plan and the applicant's representation, the build-out scenario would be accommodated in five distinct, thematic districts, as briefly summarized below and illustrated on the accompanying map:

- *Depot District:* This district is the connection point of the Railyards site to the downtown, and home of the new Sacramento Intermodel Transit Facility (SITF), a major regional transportation hub and its accompanying transit supportive uses, adjacent office, and ground floor retail uses. The retail component is designed to draw shoppers into the Railyards and create a better link with the Downtown. The historic Southern Pacific Railroad Depot building will be preserved and designed as a focal point of the SITF. It should be noted that while the Depot District is included in the Specific Plan, the development of the SITF parcels are the City's responsibility.

- *Central Shops:* This area represents the historic core of the Railyards, consisting of seven restored and renovated historic brick railyard buildings from the original Central Pacific Railyard constructed between 1868 and 1917 and includes the proposed Museum of Railroad Technology, an expansion of the existing State Railroad Museum in Old Sacramento. Another regional draw is envisioned to be the California Academy of

[1] Totals may not be equal due to rounding.

[2] Totals for specific land use components, however, may vary differ due to mixed usage (i.e., cultural facilities with ground floor retail/restaurants) and allowance in the development program for possible use conversions (i.e., from office space to residential units) depending on the market at the time of implementation.

the Arts, which is intended to offer a number of performance and display venues, including a 1,600 seat theater for theater and arts groups in the region, and a number of arts educational programs that would be resident at the site. The district will also contain a mixture of shops, museum, jazz clubs, galleries, restaurants and a farmer's market integrated into the historic Central Shops buildings.

- *West End*: This district links the entire Railyards project to the Sacramento River with pedestrian-oriented streets and provides a range of entertainment, cultural, and retail activities that add to the regional draw of the Railyards area. The area is characterized by three key elements:

  - Camille Lane, which cuts across the district and provides access to the entire length of the district, is an urban mixed use street featuring a 24-hour pedestrian-friendly "European" neighborhood feel with ground floor retail and entertainment venues with housing, office and college classrooms above;

  - Lifestyle retail and entertainment venues in the central portion of the district, integrated by a network of pedestrian alleys and plazas, with restaurants, bars and nightclubs; and

  - An approximately 200,000 square foot Bass Pro store on its northwest edge.

- *East End:* This district will be a new residential neighborhood that captures the spirit of the city's traditional open space-oriented neighborhoods with a linear urban park. It will provide an urban open space where residents can gather to walk, exercise and relax. Retail opportunities in this area, which include a significant ground floor component, will be neighborhood serving.

- *Riverfront District:* This area is the location where the Railyards site connects to the waterfront, with restaurants, a hotel, housing, parks and open space, featuring water views.

B. Retail Leasing

As envisioned, the 1.38 million square feet retail and entertainment space in the Railyards project (or 1.54 of million square feet if the additional .15 million square feet of retail space in the historic and cultural component is included) would be distributed in the five above districts. Although there will likely be a mix of different retail tenant types in each of the five districts, it is anticipated that:

- *Comparison Retail* (defined as Apparel, General Merchandise, Home Furniture/ Furnishings, and Specialty Retail) and *Eating and Drinking uses* (inclusive of nightclubs, sports bars, restaurants and other entertainment establishments serving food and drinks;

excludes museums, theaters, and other performance arts venues) would be concentrated primarily in the West End and Central Shops District;

- *Convenience Retail* (Food and Drugs Stores) and Services (e.g., dry cleaners, beauty salons, shoe repair, banks, etc.) would dominate in the Depot and East End Districts.

For the purpose of this analysis, KMA has assumed that the retail uses are located primarily on the street level, although it is possible that some of the retail uses may be located on the second floor. Typically, second floor uses such as entertainment and eating & drinking tend to work better than retail stores on the upper levels. However, as the vertical layout of the envisioned retail spaces has not yet been defined for the proposed program, no second floor retail uses are assumed.

The location of the proposed uses by districts within the Railyards are shown on Table 1 and summarized below:

Table 1a
Retail Entertainment Program
Sacramento Railyards

(In Sq. Ft.)	West End [3]	Central Shops [4]	Riverfront	Depot	East End	**Total** (Incl. Central Shops)	*% of Total*
Comparison Retail	605,000	35,000	--	--	--	640,000	*42%*
Eating & Drinking	405,000	63,000	15,000	24,000	25,000	532,000	*34%*
Convenience Retail/Services	53,000	56,000	--	133,000	125,000	367,000	*24%*
Total (Incl. Central Shops Retail)	**1,063,000**	**154,000**	**15,000**	**157,000**	**150,000**	**1,539,000**	***100%***
% of Total	*69%*	*10%*	*1%*	*10%*	*10%*	*100%*	
Total (Excl. Central Shops Retail)	**1,063,000**	**--**	**15,000**	**157,000**	**150,000**	**1,385,000**	
% of Total	*77%*	*--*	*1%*	*11%*	*11%*	*100%*	

[3] Given that no breakdown of retail versus entertainment space was provided by applicant for the West End, it is assumed that approximately 5% of the total retail sq.ft. would be Services, and the remainder allocated to Eating & Drinking and Comparison Retail, which would include the 200,000 sq.ft. Bass Pro store.

[4] According to information provided by the applicant, 154,000 sq.ft. of additional space would be available for additional food and beverage (63,000 sq.ft.), retail shops (35,000 sq.ft.), and a market (56,000 sq.ft.) The California Academy of the Arts facility (100,000 sq.ft.) would also be a key anchor in the Central Shops District .

Comparison Retail. As shown, of the total 1.54 million square feet of retail and entertainment space (including the additional retail opportunities in Historic/Cultural uses) proposed for the

Railyards, approximately 42%, or about 640,000 square feet, would be Comparison Retail. An estimated 605,000 square feet are assumed to be located in the West End, with the remainder, or 35,000 square feet, located in the Central Shops District.

The 605,000 square feet allocation of Comparison Retail space in the West End is based on an assessment by KMA and the City of the retail concepts identified in the Specific Plan for the five districts – as the applicant has not provided breakdown estimates of the retail space by type (i.e., Comparison Retail, Eating and Drinking, and Convenience Retail/Services.) Thus, for the purpose of this analysis, KMA has assumed that 5%[3] (or approximately 53,000 square feet) of the total retail space in West End would be Services, located primarily between 5th and 7th streets. Another 405,000 square feet would be Eating and Drinking space to complement the historic/cultural activities envisioned for the neighboring Central Shops District. The remaining, or roughly 605,000 square feet, of the retail space in the West End would be Comparison Retail. The applicant has represented that it has commitment from a Bass Pro store for an estimated 200,000 square feet and has indicated that an additional 300,000 to 400,000 square feet are targeted for large format anchor tenants (as yet unnamed). Less than 100,000 square feet of the remaining Comparison Retail space in the West End, therefore, would be non-anchored, small shop space.

Eating and Drinking. Approximately 34%, or 532,000 square feet, of the 1.54 million square feet retail/entertainment space in the Railyards is assumed to be Eating and Drinking – with the bulk of the space again in the West End and the remainder scattered in the other four districts. As envisioned in the Specific Plan, the space would be tenanted by restaurants, nightclubs and other food/entertainment venues.

Convenience Retail & Services. The remaining 24%, or 367,000 square feet, would be Convenience Retail and Services, serving residents in the Railyards and nearby neighborhoods. West End would likely have a predominant mix of Services such as banks, beauty salons and dry cleaners, while the Depot and the East End would also include more Convenience Retail stores, such as a grocery store and/or a pharmacy.

C. Implementation/Phasing

As noted above, at least three major, regional destination facilities are proposed for the Railyards Project: a relocated Sacramento Intermodal Transit Facility, the Museum of Railroad Technology, and the California Academy of the Arts, although these facilities are not certainties as they are highly funding-dependent. The three major anchors, which are anticipated to attract large numbers of transit riders and visitors to the Railyards, will require a significant level of non-developer funding (i.e., preliminarily estimated to be in the range of $500 million or more.) Thus, the implementation of the proposed Railyards concept as embodied in the Specific Plan will be heavily dependent on the ability of the project to secure the necessary capital for the construction of these essential components. In addition, given the dynamic real estate market

[3] Approximately 5% of space in a shopping center is typically services.

and the estimated 20-year build-out horizon, it must be assumed that actual implementation results will vary from the program and the phasing described herein.

In light of the need to secure capital funding as discussed above and in recognition of the complexity of the project, KMA has modified for the purpose of this urban decay analysis the applicant's estimated phasing schedule to allow for a slightly longer project funding and construction process in the initial phases (Phases 1 and 2) and a shorter timeframe for the later phases when the project has matured (Phases 3 and 4). Construction is assumed to start in 2009/10, with a two- to three-year lag for each subsequent phase. Each phase of the project is assumed to be stabilized (high tenant occupancy and mature level of sales), which typically is expected to occur by the second or third year after construction completion. Completion of the entire project is targeted for 2025, as shown on Table 1 and Exhibit A, and summarized below:

Table 1b
Projected Railyards Project Program and Timeline
Sacramento Railyards

	Total Retail Sq. Ft. (Incl. Cental Shops Retail)	Total Retail Sq. Ft. (Excl. Central Shops Retail)	Construction Start	Opening	Stabilized Year
Phases 1A & 1B	1,109,300 [5]	955,300	2009 -10	2011-14	2015
Phase 2	264,500	264,500	2015	2017	2018
Phase 3	40,000	40,000	2018	2020	2021
Phase 4	125,000	125,000	2022	2024	2025
Total	1,538,800	1,384,800			

[5] The higher estimated includes approximately 154,000 sq.ft. of additional retail/entertainment opportunities in the historical/cultural component of the Central Shops District (e.g., museum shops and cafes), as represented by the applicant.

SECTION II. PROJECTED MARKET POTENTIAL/SALES REQUIREMENTS (2015, 2025)

This section summarizes the projected market potential and sales requirement analysis for the retail and eating and drinking components envisioned at the Railyards. The analytical approach basically involves a five-step process: 1) definition of retail trade areas, 2) identification of market support segments for the specific retail concepts, 3) projection of total expenditure retail potential for the specific categories of retail uses proposed, 4) competitive supply and projected retail sales requirements, and 5) projection of net retail expenditure potential based on a comparison of total expenditure potential with projected retail sales requirements for existing and planned retail centers in the trade areas. The projected potential/sales requirement comparison is prepared for two points in time: Year 2015 (at the end of Phase I) - when a substantial percentage of the total retail and eating and drinking space proposed have been built and the operation has stabilized, and Year 2025 (at the end of Phase IV) - when 100% of the proposed retail and eating and drinking space has been completed as proposed and stabilized.

It should be noted that the 200,000 sq.ft. Bass Pro store, which is being planned for the Railyards, is a one-of-kind destination and currently has no competition in the Sacramento region. As such, it would be a major tourist attraction as well as a regional retail store. This is reinforced by the developer/applicant's projection of 2 to 4 million visitors to the store annually. However, plans for another Bass Pro store in the city of Manteca (approximately an hour's drive to the Railyards site) have recently been announced. If built, the Manteca Bass Pro store could reduce the Railyards store's anticipated draw of shoppers from the regional trade area.

A. Trade Area Definitions

Different types of retail uses draw from different trade areas for market support. According to Urban Land Institute's (ULI's) Shopping Center Development Handbook (1999), the *primary trade area* is defined as the "geographical area from which the center derives its largest share of repeat sales. This geographical area typically extends to 1 to 1½-mile for a neighborhood center, 3 to 5 miles for a community center and 8 to 12 miles for a regional mall." An estimated 70% to 80% of the center's regular customers are anticipated to be drawn from this area. The Handbook also states that some newer specialty centers like entertainment centers may draw from even larger trade areas, such as an entire metropolitan area. The *secondary trade area,* which can extend 3 to 7 miles beyond the primary trade area, depending on the center's type and size and the competition, is estimated to generate 15% to 20% of the total sales of an average shopping center. The broadest area from which customers can be drawn is the *tertiary or fringe trade area*. It may represent a small but significant share of the center's customers – particularly from large, specialty center, downtown centers and entertainment centers – and can extend 15 miles or more beyond the primary trade area.

Based on the retail and entertainment concepts represented by the applicant for the proposed Railyards and the above ULI's trade area definitions, it is anticipated that the *Comparison Retail and Eating and Drinking* components at the proposed project can potentially draw from a

regional trade area of approximately 30 miles radius from the subject site. This *Regional Trade Area (RTA)* is the catchment area for residents seeking a specific market that fits and appeals to their retail needs. For the purpose of this assessment, the boundaries of this area is defined as extending north to almost Marysville, east to the Sierra foothills, south to Lodi, and west to Vacaville. It includes generally the City of Sacramento and the nearby cities of Davis, West Sacramento, and Woodland, and the farther out suburban communities of Lincoln, Rocklin, Roseville, Citrus Heights, Folsom, Elk Grove, Vacaville, Dixon and portions of unincorporated Sacramento, Placer, Solano, Sutter and Yolo counties, as shown in Map 1.

The bulk of the sales for the proposed Railyards project, however, is expected to be drawn from the closer-in, urbanized area (or the primary trade area) within the larger regional trade area. This *Primary Trade Area (PTA)* is an approximately 10 to 15-mile oval-shaped polygon around the Railyards (inclusive of Downtown Sacramento), extending generally to the cities of Davis and Woodland to the west and midway between the subject site and the cities of Elk Grove to the south, Folsom to the east, and Roseville to the north. (See Map 2.) The boundaries of this trade area are delineated by the location of major existing or planned competitive centers, such as the Roseville Galleria and the Folsom Palladio, which are expected to "split" the market with the proposed Comparison Retail and Eating and Drinking uses envisioned at the Railyards. This is the area, which, according to ULI, is where the majority of a regional retail center's sales can be expected to be drawn.

For the purpose of this assessment, the remainder of the sales for the proposed Railyards Comparison Retail and Eating and Drinking are assumed to be drawn from the rest of the RTA (defined as the secondary/tertiary trade areas per ULI). This area encompasses basically the suburban communities and the unincorporated area of the counties within the RTA as referenced above.

Thus, the overall trade area defined for the Comparison Retail and Eating and Drinking uses at the Railyards is the RTA, which includes the PTA (and Downtown Sacramento), as shown on Map 1.

For *Convenience Retail and Services* proposed at the Railyards, the primary trade area is defined as the *Downtown (DT),* the boundaries of which are consistent with those defined by the City's for its Central Business District: an area bounded by the Sacramento River on the west and north, I-50 on the south, I-5 on the west to I-80 on the east, as shown on Map 3. This area includes four major retail concentrations: Westfield Plaza, Old Sacramento, K-Street Mall and Midtown. The Downtown would be the primary trade area for the Convenience Retail and Services at the Railyards as the types of uses envisioned, i.e., grocery stores/markets, drug stores, resident-serving services, typically draw the bulk of their market support from an area approximately 1 to 1½-mile radius from the subject site.

Following is a description of the demographic characteristics of these trade areas:

1. Comparison Retail and Eating and Drinking

Regional Trade Area (RTA) – Market support in the larger metropolitan area has grown considerably in the last decade, reflecting the expansion of the Greater Sacramento region, driven particularly by fast-growing cites such as Elk Grove and Roseville. As shown on Table 2, the RTA population increased 18% between 2000 and 2007, from 1.7 million to about 2.0 million. It is projected to continue growing at a faster rate than the State as a whole in the next two decade, with population projected to reach 2.3 million by 2015 and 2.7 million by 2025. Average per capita income of residents in this regional trade area is estimated at $26,900.

Primary Trade Area (PTA) – The estimated 2007 resident population in the closer-in trade area, or the PTA, is slightly over 1.0 million, an 11% increase over the 2000 population of 970,000. This trade area is projected to grow modestly – to 1.2 million residents by 2015 and nearly 1.4 million by 2025. The average per capita income within the PTA is similar to that for Downtown, at approximately $23,300. This area is expected to generate the bulk of sales support for the proposed project.

2. Convenience Retail

Downtown Sacramento (DT) - As shown on Table 2, the residential population in the Downtown is estimated by Claritas, a U.S. Census-based data source, at about 33,347 for 2007, an approximately 5% increase from 2000. However, there are an estimated 4,700 residential units under construction or being planned in the Downtown, plus an additional 10,000 to 12,000 units proposed for the Railyards alone. Thus, assuming these units are realized, the residential population in Downtown Sacramento could potentially increase from its 2007 total of 33,347 to an estimated 44,347 by 2015 and to 77,347 by 2025, an increase of 11,000 and 44,000 residents respectively. The household size for the Downtown population is estimated at 2.1 persons per household, which is smaller than that for the City of Sacramento overall; based on the experiences in other downtowns, in-town households tend to be heavily comprised of singles, childless couples and empty-nesters. The estimated 2007 per capita income of Downtown residents is in the range of $23,200.

B. Market Support Segments

The following four major segments of the market would be logical targets for the proposed retail and entertainment complex at the Railyards:

- Residents (Downtown, Primary Trade Area, Regional Trade Area). As shown on Table 3, an estimated total of 2.3 million and 2.7 million total residents are projected in these three trade areas, respectively, for 2015 and 2025. Of the approximately 2.3 million total residents projected for 2015, an estimated 44,000 residents would be located in the Downtown; approximately 1.2 million additional residents in the PTA, and the remainder of approximately 1.1 million residents in the RTA. For 2025, the number of total residents is projected to increase to 2.7 million, with the largest gain expected Downtown – 77,000

residents. An additional 1.3 million and 1.4 million are projected to locate, respectively, in the PTA and RTA. *(Source: Claritas, extrapolated by KMA based on trends and/or known residential developments – such as in the Downtown.)*

- Downtown Office Employees. Based on information from the Downtown Sacramento Partnership (DSP) and Sacramento Area Council of Governments (SACOG), the total number of office employees in Downtown Sacramento is estimated to be in the range of 91,000 by 2015, increasing to 106,000 by 2025. These estimates were adjusted downwards by approximately 50% to 46,000 and 53,000, respectively, for 2015 and 2025 to avoid double-counting of employees who may also be trade area residents. (See Table 3.)

- Downtown Visitors. According to data provided by DSP, a total of 4.6 million visitors attended various downtown events and attractions in 2005. In the absence of any more definitive statistical data, an adjustment of 50% reduction has also been made to this total to eliminate multiple visits to events/venues by the same visitor(s) and to avoid overlaps with the trade area resident and employee counts above. As shown on Table 3, an estimated 2.4 million visitors to Downtown Sacramento is projected for 2015, rising to approximately 2.7 million visitors for 2025. These projections are in the same range as the 2 to 4 million annual visitors per year projected by the applicant for the proposed Bass Pro store at the Railyards.

- Special Use-Generated Visitors (i.e., to museums, playhouse, other live-performance venues). As shown on Table 3, an estimated 175,000 are projected to be visitors to the proposed Museum of Railroad Technology. This number is extrapolated from the estimates in the 2000 Market Overview study prepared by the CA State Railroad Museum and Foundation. The projected 500,000 annual attendees (2015) and 700,000 attendees (2025) to the entertainment venues envisioned for the Railyards, such as a playhouse, live-performances, etc., are an estimate for the purpose of this analysis only as the precise number of attendees will be contingent upon the size and nature of the entertainment offered at the proposed project. This level of project information is not yet available with a high degree of certainty.

For the *Convenience Retail and Service* uses proposed at the Railyards, Downtown residents would be the primary segment of market support. Other downtown segments, such as downtown employees and visitors, are expected to represent secondary support for the local retail uses proposed.

For *Comparison Retail and Eating and Drinking,* residents in the Primary Trade Area (inclusive of Downtown) would be the primary market support segments. Others, including residents from the Regional Trade Area, downtown employees and visitors, and visitors generated by the special uses, are anticipated to represent secondary and tertiary support for the comparison retail and eating and drinking entertainment uses envisioned at the Railyards.

C. Projected Total Retail Expenditure Potential

The projection of per capita and total market demand is based on an assessment of each support segment's expenditure pattern for the selected types of retail goods and the projected growth of the segments to 2015 and 2025, as shown on Tables 4a and b and Table 5a and b. These assumptions and the analytical results for the selected types of retail and entertainment uses proposed at the Railyards are summarized as follows:

1. Comparison Retail Expenditure Potential

Based on the taxable retail sales from the State Board of Equalization (SBE), residents in the state spent an average of 14.5%, or about $3,700, of their 2005 per capital income on Comparison Retail goods (Apparel, General Merchandise excluding Drugs, Specialty Retail, and Home Furnishings and Appliances). Downtown employees are estimated to spend in the range of $1,600 per year and Downtown Visitors expenditures are estimated to spend approximately $34 per day for this category of retail goods[4]. (See Tables 4a and b.)

Assuming the above patterns, the total Comparison Retail expenditure potential available from all the market segments is projected to be in the range of $9.2 billion, as shown on Table 5a, for 2015. Over 98% of this total, or approximately $9.0 billion would be generated from trade area residents. An additional $60 million are projected to be generated from Downtown Employees, $83 million from Downtown visitors and the remainder, or about $11 million from Special-Uses in the Railyards. The total Comparison Retail expenditure potential is projected to increase to $12.1 billion by 2025, as shown on Table 5b.

2. Eating and Drinking Expenditure Potential

Similarly, taxable retail sales from the State Board of Equalization indicates that the average California resident spent 4.9%, or about $1,300, in 2005 on Eating and Drinking. Downtown employees are estimated to spend in the range of $1,800 per year and Downtown Visitors expenditures are estimated to spend approximately $23 per day for this category of retail goods. (See Tables 4a and b.)

Assuming these spending patterns, the total expenditure potential available from all the market segments for Eating and Drinking is projected to be about $3.2 billion, as shown on Table 5a, for 2015. Of this total, approximately $3.1 billion are expected to be generated from trade area residents. An additional $69 million are projected to be generated from Downtown Employees, $56 million from Downtown visitors and the remainder, or about $8 million from Special-Uses in the Railyards. The total Eating and Drinking expenditure potential is projected to grow to $4.2 billion by 2025 (See Table 5b.)

[4] These estimates are based on industry publications, such as the 2004 Office Worker Spending Patterns from the International Council of Shopping Centers, Dean Runyan Associates and Smith Travel Research reports, adjusted to 2007.

3. Convenience Retail and Services Expenditure Potential

Given that not all sales are typically taxable in grocery and drug stores, SBE's taxable sales data were adjusted to reflect total Convenience Retail sales. Based on this adjustment (at 30% for Food and 65% for Drugs stores), the average resident in the state spent about 8.2%, or $2,100, in 2005 on Convenience Retail goods. Services, such as beauty salons, shoe repairs, dry cleaners, banks, etc., do not generally generate any meaningful levels of retail sales or their sales are included in other retail categories; they also tend to represent only a small portion, i.e., around 5%, of total retail space in a center. Thus, expenditure potential for Services is not include in this analysis. (See Tables 4a and b.)

Assuming the spending patterns above, the total Convenience Retail expenditure potential projected from all the Downtown market support segments (Downtown residents, office workers and visitors) for is projected to be about $141 million, as shown on Table 5a for 2015. Of this total, approximately $91 million would be generated from Downtown residents, $42 million from Downtown Employees, and $7 million from Downtown visitors. Of just these three segments, the total expenditure potential is projected to increase to $242 million by 2025 for Convenience Retail (See Table 5b.)

4. Aggregated Expenditure Potential

In summary, the aggregated expenditure potential available to Downtown Sacramento from the four segments of support (applicable trade area residents, downtown employees and visitors, including special uses generated visitors) is projected to be $12.6 billion for 2015 and $16.6 billion for 2025, as summarized below:

Projected Total Expenditure Potential	***Estimated 2015***	***Projected 2025***
Comparison Retail		
Trade Area Residents	$ 9,056 M	$11,890 M
Downtown Office Workers	$ 60 M	$ 74 M
Downtown Visitors	$ 83 M	$ 106 M
Special Use Generated	$ 11 M	$ 17 M
Total RTA (Incl. DT, PTA)[5]	$ 9,211 M	$12,088 M
Eating and Drinking		
Trade Area Residents	$ 3,092 M	$ 4,055 M
Downtown Office Workers	$ 69 M	$ 90 M
Downtown Visitors	$ 56 M	$ 70 M
Special Use Generated	$ 8 M	$ 11 M
Total RTA (Incl. DT, PTA)[5]	$ 3,225 M	$ 4,226 M
Convenience Retail/Services		
Downtown Residents	$ 91 M	$ 176 M
Downtown Office Workers	$ 42 M	$ 58 M
Downtown Visitors	$ 7 M	$ 8 M
Total Downtown[5]	$ 141 M	$ 242 M

D. Competitive Supply

Given that there is no database for a comprehensive inventory of existing retail space in the City of Sacramento as well as in the PTA and RTA, KMA has estimated competitive supply based on information provided by the City, PBS&J, DSP, the applicant, and industry publication on known existing, under construction, and planned retail projects in the three trade areas: Downtown, PTA and RTA. Projects which are in early planning or conceptual stage with no known specifics, such as the Stone Lock project in West Sacramento and the proposed expansion at Arden Fair in Sacramento, have not been included at this time. The assumptions on the size and timing of existing, under-construction, and planned major retail projects (typically 500,000 square feet) or more outside of Downtown) are shown on Table 6a. Additional centers,[6] such as less directly competitive and/or smaller centers (i.e., under 500,000 square feet outside of Downtown in the remainder of the PTA or RTA) are aggregated on Worksheet 1. These totals are further adjusted on Tables 6a and b by a 25% allowance for other retail not listed, such as stand alone, upper-level, and/or scattered retail uses and/or retail in smaller centers/cities/unincorporated county areas.

[5] Totals may not equal due to rounding.

[6] Provided by applicant, amended by KMA based on additional/updated project information available.

1. Downtown

As shown, there are an estimated 2.1 million square feet of competitive supply existing in the Downtown, with over 1.7 million concentrated in four major retail areas within Downtown (Westfield Plaza, Old Sacramento, K-Street Mall, and Midtown Corridor) as of 2007. The salient retail characteristics of each of these areas are briefly described below:

- *Westfield Downtown Plaza* (est. 981,000 sq.ft.), a 2-level, regional retail center now anchored by Macy's and a multi-plex cinema. Plans have been proposed for an approximately 332,000 sq.ft. (or 110,000 sq. ft. of net new space after renovation of existing center) expansion, with a Target store and an upscale grocer. Residents comprised the major market support segment for this center;

- *Old Sacramento* (est. 410,000 sq.ft.), a visitor-oriented, historic-themed center, comprised mainly of restaurants/entertainment and small specialty retail shops;

- *K Street Mall* (est. 132,000 sq.ft.), a pedestrian/light rail mall, currently with a large amount of vacancy as it is in transition; city plans call for transformation of the area to a higher-end retail, restaurant/ entertainment downtown destination for both residents and visitors. An additional 450,000 sq.ft. of new retail space are under construction or planned in this area;

- *Midtown Corridor (*est. 150,000 sq.ft.), a local retail district which has emerged alongside the large number of new housing units recently been built in the area, it is anchored by small neighborhood restaurants/bars and one-of-a-kind boutiques. Another 50,000 sq.ft. of retail have been proposed for the Corridor.

A 25% allowance, or approximately 418,000 sq.ft., is estimated for the rest of the retail (i.e., not in the four concentrated locations) in the remainder of Downtown.

If the proposed Railyards is built, it would add approximately 1.5 million sq.ft., or nearly double the amount of existing retail space currently existing in the four concentrated locations within Downtown Sacramento. As shown on Table 6a, the retail space planned for the Railyards by 2015 would represent approximately 26% of total existing, under construction and planned inventory in the Downtown; by 2025, the Railyards project would represent an estimated 32% of the Downtown retail inventory.

2. Remainder of PTA

Outside of Downtown, there are an additional 9.8 million square feet of retail, of which an estimated 7.7 million square feet are in 10 existing retail centers, with the largest being the 1.1 million square foot Arden Fair. Other centers are Natomas Marketplace, Sacramento Gateway – Promenade and the Village, Florin Town Center, County Club Plaza, Country Club Plaza, Southgate (Sacramento), Riverpoint Marketplace (West Sacramento), and Woodland Gateway

Center. In addition, approximately 3.1 million square feet of retail are estimated for the remainder of the PTA. This additional space includes retail uses located in smaller centers and uses not located in centers, as shown on Worksheet 1.

On the PTA level (inclusive of Downtown), the proposed Railyards project would represent only about 7% of the total 2015 PTA inventory of existing, under-construction and planned retail space and 9% of the 2025 PTA inventory, as shown on Table 6a.

3. Remainder of RTA

There is anticipated to be another 9.1 million square feet of competitive retail space existing in the remainder of the Trade Area, as summarized in Table 6a. The most competitive would be the approximately 1.0 million sq.ft. Roseville Galleria, a Nordstrom-anchored, upper-end center and the 1.2 million sq.ft. Sunrise Mall in Citrus Heights, an older traditional department-store anchored retail center, as the least comparable.

However, over 5.0 million sq.ft. of new retail space are being planned in the remainder of the RTA, including expansions of the existing Roseville Galleria and Sunrise Mall and development of new centers in outlying communities such as Elk Grove (Laguna Ridge and the Promenade), Folsom (Palladio), Rocklin (Rocklin Crossing), and an yet unnamed regional mall south of Highway 50. An additional 9.6 million square feet of smaller retail centers and an allowance for other retail are estimated to be located in the rest of the RTA (See Table 6a.)

Thus, for the RTA (inclusive of PTA and DT), the proposed Railyards project, if built, would constitute only a small percentage of the total retail space in the region: in the range of 3% by 2015 and 4% by 2025.

4. Allocation by Retail Types

The estimated retail space inventory in Table 6a are also broken down by the same retail components (Comparison Retail, Eating and Drinking, and Convenience Retail and Services) as those proposed for the Railyards. These breakdowns are estimated based on square footage of retail space use information available for a specific project or, if such information is not readily available, on KMA's estimates, taking into account the type of retail project (if known) and/or by typical space usage within specific types of shopping centers. For example, typical space use in traditional comparison shopping centers is approximately 80% Comparison Retail, 15% Eating and Drinking, and 5% Services. In a lifestyle retail center, the space allocation tends to be lower in Comparison Retail (about 67%) and Services (about 4%), and higher in Eating and Drinking (i.e., 29%). Thus, centers for which the space usage is unknown are broken down based on typical rates as above.

These breakdowns are shown on Tables 6b, c, and d and summarized below (excluding and including the Railyards):

Competitive Retail Supply	***Estimated 2007***	***Projected 2015***	***Projected 2025***
(Excluding the Railyards)			
Total			
Downtown	2.1 M Sq.Ft.	3.1 M Sq.Ft.	3.2 M Sq.Ft.
Total PTA (Incl. DT)	9.8 M Sq.Ft.	15.2 M Sq.Ft.	15.3 M Sq.Ft.
Total RTA (Incl. DT, PTA)	18.9 M Sq.Ft.	33.3 M Sq.Ft.	33.4 M Sq.Ft.
Comparison Retail			
Downtown	1.4 M Sq.Ft.	2.2 M Sq.Ft.	2.3 M Sq.Ft.
Total PTA (Incl. DT)	7.9 M Sq.Ft.	11.8 M Sq.Ft.	11.9 M Sq.Ft.
Total RTA (Incl. DT, PTA)	15.2 M Sq.Ft.	26.2 M Sq.Ft.	26.3 M Sq.Ft.
Eating and Drinking			
Downtown	0.5 M Sq.Ft.	0.8 M Sq.Ft.	0.8 M Sq.Ft.
Total PTA (Incl. DT)	1.8 M Sq.Ft.	2.6 M Sq.Ft.	2.6 M Sq.Ft.
Total RTA (Incl. DT, PTA)	3.1 M Sq.Ft.	5.4 M Sq.Ft.	5.4 M Sq.Ft.
Convenience Retail & Services			
Downtown	.1 M Sq.Ft.	.2 M Sq.Ft.	.2 M Sq.Ft.
(Including the Railyards)			
Total			
Downtown	2.1 M Sq.Ft.	4.2 M Sq.Ft.	4.8 M Sq.Ft.
Total PTA (Incl. DT)	9.8 M Sq.Ft.	16.3 M Sq.Ft.	16.8 M Sq.Ft.
Total RTA (Incl. DT, PTA)	18.9 M Sq.Ft.	34.4 M Sq.Ft.	35.0 M Sq.Ft.
Comparison Retail			
Downtown	1.4 M Sq.Ft.	2.7 M Sq.Ft.	2.9 M Sq.Ft.
Total PTA (Incl. DT)	7.9 M Sq.Ft.	12.3 M Sq.Ft.	12.5 M Sq.Ft.
Total RTA (Incl. DT, PTA)	15.2 M Sq.Ft.	26.7 M Sq.Ft.	26.9 M Sq.Ft.
Eating and Drinking			
Downtown	0.5 M Sq.Ft.	1.2 M Sq.Ft.	1.3 M Sq.Ft.
Total PTA (Incl. DT)	1.8 M Sq.Ft.	3.0 M Sq.Ft.	3.2 M Sq.Ft.
Total RTA (Incl. DT, PTA)	3.1 M Sq.Ft.	5.8 M Sq.Ft.	5.9 M Sq.Ft.
Convenience Retail & Services			
Downtown	.1 M Sq.Ft.	.3 M Sq.Ft.	.5 M Sq.Ft.

5. Estimated Sales (2007) and Projected Sales Requirements (2015 and 2025)

Tables 7a, b and c provide sales estimates for the competitive retail supply identified on Tables 6b, c, and d. The purpose of these estimates is to quantify the total retail sales requirement for the competitive retail supply for comparison with the estimated total expenditure potential within the respective trade areas for the selected types of retail uses. The sales requirement estimates are based on the following: *(Note, for confidentiality purpose, sales for specific projects are not shown.)*

- For major Sacramento retail projects – The sales estimates for 2007 are based on 2006 taxable sales data provided by the City (escalated at 1% per year for real appreciation to 2007). All 2007 sales are escalated at 1% per year for real appreciation to 2015 and 2025.

- For sales in the remainder of the PTA and RTA outside of the major projects identified, the 2005 taxable sales from the State Board of Equalization for the cities within the trade areas are used if available. As in the inventory of retail space, a 25% allowance is included in the sales estimates to account for retail sales outside of cities (i.e., in unincorporated areas) and for sales in localities where no SBE taxable sales breakdowns are available (e.g., Galt, Cameron Park and Lincoln.)

- For projects for which existing sales are not available, the estimated 2007 sales are based on average per square foot sales requirement in the range of $250/sq.ft. for Comparison Retail, $350/sq.ft. Eating and Drinking, and $325/sq.ft. for Convenience Retail, or average sales per store for existing space as published in industry publications (as noted next, higher averages would be expected of new space.)

- For projects which are anticipated to be completed by 2015 and 2025, target industry averages ($350/sq.ft., $450/sq.ft. and $425/sq.ft.) are used to project future sales requirements. The average target sales requirements for new space are typically higher than those for existing stores as they reflect sales at presumably newer and more efficient facilities, which generally translate to higher cost requirements for market entry.

The sales requirement assumptions for the remainder of PTA and RTA are shown on Worksheets 2 and 3 in the Appendix of this report.

The target sales for the proposed Railyards project are shown on Table 8. As shown, the project is expected to have total sales requirements in the range of $428 million by 2015, comprised of an estimated $198 million would be for Comparison Retail, $185 million would be for Eating & Drinking and $45 million would be for Convenience Retail. A nominal amount is estimated for Services. By 2025, the total target sales requirement is projected to reach $669 million, with $256 million in Comparison Retail, $271 million for Eating & Drinking/Entertainment, and $142 million for Convenience Retail.

The aggregation of the estimated and projected sales for the selected retail categories (excluding and including the target sales requirements for the proposed Railyards) is shown on Tables 7a, b, and c, and summarized as follows:

Estimate/Projected Retail Sales Requirements ($0M)	***Estimated 2007 Sales***	***Projected 2015 Sales Reqmts***	***Projected 2025 Sales Reqmts***
(Excluding the Railyards)			
Comparison Retail			
Downtown	$ 170 M	$ 480 M	$ 530 M
Total PTA (Incl. DT)	$2,780 M	$ 4,520 M	$ 4,890 M
Total RTA (Incl. DT, PTA)	$5,250 M	$ 9,780 M	$10,810 M
Eating and Drinking			
Downtown	$ 120 M	$ 260 M	$ 280 M
Total PTA (Incl. DT)	$1,070 M	$ 1,600 M	$1,760 M
Total RTA (Incl. DT, PTA)	$1,720 M	$ 2,960 M	$3,270 M
Convenience Retail & Services			
Downtown	$30 M	$60 M	$70 M
(Including the Railyards)			
Comparison Retail			
Downtown	$ 170 M	$ 680 M	$ 750 M
Total PTA (Incl. DT)	$2,780 M	$ 4,710 M	$ 5,210 M
Total RTA (Incl. DT, PTA)	$5,250 M	$ 9,980 M	$11,030 M
Eating and Drinking			
Downtown	$ 120 M	$ 440 M	$ 560 M
Total PTA (Incl. DT)	$1,070 M	$ 1,780 M	$2,040 M
Total RTA (Incl. DT, PTA)	$1,720 M	$3,150 M	$3,540 M
Convenience Retail & Services			
Downtown	$30 M	$110 M	$210 M

E. Projected Net Retail Expenditure Potential (Projected Total Potential Comparison with Projected Sales Requirements)

The purpose of estimating the net expenditure potential (the comparison of the total expenditure potential projected generated from the applicable market segments with existing and projected sales requirements projected for the selected categories of retail) is to assess whether sufficient retail market support exist within the respective trade areas relative to the projected retail sales requirements of the existing, under-construction and planned supply.

The net expenditure potential is calculated by subtracting the projected sales requirements (shown on Tables 7a, b, and c) from the total estimated expenditure potential (shown on Tables 5a and b) for the specific retail categories. The results are summarized on Tables 9a (excluding target sales requirements from the proposed Railyard project) and 9b (including target sales requirements from the proposed Railyard project). The net expenditure potential is projected for 2015 (the year of projected substantial Railyards retail completion and stabilization) and 2025 (the year of projected 100% Railyards retail completion and stabilization). As shown, the net potential available in the respective trade areas with and without the Railyards is projected as follows:

Projected Net Expenditure Potential ***(Total Potential minus Sales Reqmts) ($0M)***	***Estimated 2015***	***Projected 2025***
(Excluding the Railyards – Table 9a)		
Comparison Retail		
Total PTA (Incl. DT)	$ 1 M	$ 680 M
Total RTA (Incl. DT, PTA)	($ 580 M)	$ 1,250 M
Eating and Drinking		
Total PTA (Incl. DT)	$ 30 M	$ 270 M
Total RTA (Incl. DT, PTA)	$ 260 M	$ 940 M
Convenience Retail & Services		
Downtown	$ 80 M	$170 M
(Including the Railyards – Table 9b)		
Comparison Retail		
Total PTA (Incl. DT)	($ 180 M)	$ 500 M
Total RTA (Incl. DT, PTA)	($ 770 M)	$1,060 M
Eating and Drinking		
Total PTA (Incl. DT)	($ 150 M)	$ 10 M
Total RTA (Incl. DT, PTA)	$ 80 M	$ 680 M
Convenience Retail & Services		
Downtown	$ 30 M	$ 30 M

1. Analytic Findings

As shown above, the analytical findings of KMA's market assessment indicate the following:

a. Excluding the Railyards (Table 9a.)

- *Comparison Retail* – Assuming real growth of existing retail center sales at 1% per year and the projected Comparison Retail sales requirements of known under-construction and planned projects in the PTA and RTA (inclusive of Downtown), the results of the net potential analysis indicates that there is projected to be sufficient support for Comparison Retail growth in the PTA in both 2015 and 2025. However, in the larger regional trade

area due to the addition of a number of new retail projects in the outlying communities, such as Elk Grove and Rocklin, the sales requirement will likely exceed the expenditure potential available in the RTA by 2015. By 2025, however, growth of the key market segments (residents, office workers and visitors) is projected to be sufficient to support future Competitive Retail supply as currently known in both the PTA and RTA.

- *Eating and Drinking and Convenience Retail and Services* – The analysis indicates that there is ample opportunity for the continued addition of new Eating and Drinking and Convenience Retail and Services in their respective trade areas (PTA and RTA for Eating and Drinking, Downtown for Convenience Retail and Services) in both 2015 and 2025.

b. Including the Railyards (Table 9b.)

- *Comparison Retail* – With the inclusion of the proposed Railyards, supply is expected to exceed demand in both the PTA and RTA by 2015, due to the introduction of a number of major retail projects into the trade areas. By 2025, however, growth of the key market segments (residents, office workers and visitors) is expected to be sufficient to support future Competitive Retail supply in both the PTA and RTA.

- *Eating and Drinking* – Supply is projected to exceed demand slightly in the PTA in 2015, but is anticipated to be in balance with demand by 2025. In the larger RTA, overall, market growth is expected to be able to support both the 1% real sales growth of the existing Eating and Drinking supply and the sales requirements of new additions to the inventory in both 2015 and 2025.

- *Convenience Retail* – As in the case of Convenience Retail excluding the projected Railyards project, the potential for Convenience Retail Downtown is expected to be sufficient to meet the sales requirements of the existing and new supply in the Downtown in both 2015 and 2025.

SECTION III. ECONOMIC IMPACT LESSONS LEARNED FROM TWO SELECTED RETAIL PROJECTS

In order to better understand the economic impacts which may result from the introduction of a major new shopping center into an existing central business area, two specific case studies were analyzed. The first is the Gateway Center (650,000 sq.ft.) in Downtown Salt Lake City; the second is Bay Street (400,000 sq.ft. + expansion) in the City of Emeryville. Both these projects are significant retail and entertainment developments introduced into a weakening retail location. Thus, the economic environment at the time the Gateway and Bay Street were introduced has similarities to that of Downtown Sacramento – with Downtown Sacramento having the added advantage of being poised for an upturn with a number of new projects proposed or planned in the area. For this reason, the lessons learned from these two case studies have relevancy in terms of assessing the possibility that the proposed Railyards project will cause urban decay in Downtown Sacramento.

A. Gateway, Salt Lake City

The Gateway is a $375 million mixed use development that was completed in November 2001. The project was centered on the historic Pacific rail depot in the 650-acre Gateway District, a once vibrant and prosperous area that has become forgotten and neglected older industrial, warehousing, and transportation area west of downtown. In 1998, the Depot District Redevelopment Project was created to revitalize the area in anticipation of the 2002 Olympic Games, leading to the development of the Gateway project. Following is a summary of the project profile, the similarities and differences between the Sacramento Railyards and the Salt Lake City Gateway projects, the lessons learned from Gateway's experience and their implications for the Railyards.

1. Project Profile

The total project is a 2.5 million sq.ft. mixed use development, located on a 40-acre site in the Gateway District. Covering three whole blocks, the project includes approximately 650,000 sq.ft. of retail/entertainment uses, consisting of about 590,000 sq.ft. of retail and eating and drinking, plus a 60,000 sq.ft. 12-screen theater. Other components of the project include 3 Class A office buildings, a renovated train depot, cultural attractions (e.g., Children's Museum), a public plaza, parking, 500 residential units and a hotel. This open-air center was conceived as a major urban destination, with retail tenants that are largely national chains that had not previously been in the Salt Lake City market.

The project is located approximately a mile from two existing retail centers along South Temple Street, the historic major retail street in the Downtown Salt Lake City: the 622,000 sq.ft. Crossroads Plaza, which at the time that Gateway was introduced, was anchored by Nordstrom's and a Mervyn's, and the ZCMI Center Mall, which was anchored by a Macy's. (These two malls have since closed and are being merged into a new center – City Creek Center.) The Gateway is visually and physically separated from these other centers by the Delta

Center and the Salt Palace Convention Center. It is also about a block away from the intermodal hub and a 44-mile commuter rail and light rail station, which are expected to be completed by 2008. South of the site is the Pierpoint Art District, including a Farmer's Market and a concentration of new restaurants. Northeast of the site is the Utah State Capitol.

2. Similarities and Differences between Railyards and Gateway

- Both the Gateway and the proposed Railyards projects were conceived as a catalyst project to stimulate the revitalization of Downtown. The Gateway was envisioned as an intervention element that could potentially stem the hemorrhaging of retail dollars to the malls and big boxes in the suburbs and reverse the downward economic "spiral" in downtown Salt Lake City, which has yet to recover from recession of the late 1990's. The Railyards is envisioned as an injection element that could accelerate and fuel the upward momentum of a downtown that is on the verge of a renaissance – as evidenced by the scores of new development under construction, planned or proposed for the downtown.

- Like the Gateway, the Railyards project, as proposed, includes a mix of offices, a renovated depot building, cultural facilities, public open spaces and housing. However, the Gateway's retail and entertainment component (650,000 sq.ft.) is substantially smaller than the 1.4 million sq.ft. contemplated for the Railyards.

- The Railyard will also locate in similar urban context as the Gateway, that is, in the proximity of major competitive retail concentrations, existing cultural facilities, the State capitol, public plazas, possibly an arena, a farmer's market, and an intermodal center. The Gateway is an isolated, stand-alone project. This isolation from the retail focus of the historic downtown on South Temple Street and Main Street is further reinforced by the City's large downtown blocks (660' x 660'), wide streets, and extreme weathers – all of which discourages pedestrian flow. The Railyards, on the other hand, is represented by the applicant as within walking distance to most of the existing retail and cultural facilities in Downtown Sacramento.

- In the case of both developments, their large scale, retail tenancy, and downtown location raised concerns about potential impacts on existing retailers. In Salt Lake City, both the Crossroads Plaza and ZCMI Center were becoming functionally and physically obsolete when Gateway was introduced. In the case of Sacramento, the Westfield Downtown Plaza appears to be currently under-achieving, but is planning a major repositioning.

3. Before and After Gateway

- According to Salt Lake City's economic development staff, Gateway is now thriving (particularly after the closure of the two malls, Crossroad Plaza and CZMI). Sales have grown every year since it opened in 2001, tenant turnover has been modest, its theater

and restaurants have been very popular; its planetarium and Children's Museum have attracted visitors from the metro area. Light rail line is being extended along the center and further west to the Amtrak station, where a new intermodal hub is planned. Gateway is more popular with suburban residents and has a suburban design/suburban aesthetic (akin to an open air mall).

- According to a June 2005 report prepared for The Downtown Alliance, economic conditions in Salt Lake's Central Business District have improved between 2002 and 2005, for example:

  - The CBD have not only recovered the 1,200 jobs lost during the recession, but showed a net job gain of about 295 jobs in 2005.

  - No new office space has been developed in the CBD since 2001; however, office vacancy rates have declined recently (Class A vacancy rate is estimated by city staff at less than 2%), accompanied by announcements of plans for three new office buildings totaling over 600,000 sq.ft.

  - CBD retail sales have increased by 12% or $81 million between 2001 and 2004, the second best year ever for downtown.

- Despite these positive indicators, a study by the University of Utah concluded that the opening of Gateway did impact the downtown malls in the following ways:

  - Gateway captured a share of their retail sales dollars. (According to one interviewee, the project has "sucked a lot of retail, office, and cultural energy out of downtown.")

  - Brokers interviewed also confirmed that some existing retail tenants did relocate from three separate Main Street locations in the downtown: from inside the downtown malls, from other Main Street buildings, and also from inside mall but with street frontage.

  - Office tenants also either have migrated or were targeted by Gateway. Fidelity Investments, a relocate from Main Street, is an anchor tenant at new office building constructed at Gateway. Morgan Stanley is cited as another tenant that relocated.

  - Retail vacancies have been noted along Main Street. However, some of the spaces appeared to have been converted to other/non-retail uses, such as offices and financial services.

- Although there was also significant concern expressed by those interviewed in Salt Lake City regarding the potential impacts of the Gateway development, the consensus is that the two downtown malls were on the slide anyway and that Gateway has generated

some positive results; for instance, it has spurred new residential and restaurant developments in the CBD.

- There is also general feeling from those interviewed that ultimately the competition is good for downtown, i.e., by forcing the owner (LDS) of the existing malls to reposition the malls, which has been long overdue. As evidence of this competition, the older Crossroads and the ZCMI centers are now being combined and updated into a new 900,000 sq.ft. City Creek Center, anchored to Nordstrom, Macy, and a new 150,000 sq.ft. Dillards, to better compete for the retail dollars downtown.

4. Lessons Learned (Implications for Sacramento Railyards)

When a major project is introduced into a weak retail environment, special efforts will need to be made to protect and preserve the existing retail. Examples include the following:

- To prevent Gateway from luring away existing tenants in the CBD, specific clauses were included in the Gateway's development agreement with the City to specify that, for the first four years, existing Main Street merchants would make up no more than 10% of the retailers at the Gateway or occupy more than 10% of the retail space. (Originally, the agreement specified no tenants over 90,000 sq.ft.). Violations of this clause would cost the developer a portion of the $18 million reimbursements that the City was allocating for public roads and sidewalks constructed by the developer. To comply with these provisions, the Gateway developers aggressively sought new tenants unique to Salt Lake Area and Utah in general – so that they are "not just creating another shopping center". Similar types of strategies can be developed by the City of Sacramento to discourage the cannibalization of tenants from existing retail concentrations Downtown by the Railyards.

- In addition, there has to be a willingness to invest significantly in the downtown. For example, LDS has announced that the Church is planning to invest $1.0 billion into merging the two malls into the new City Creek Center. Dillard has committed to locating a store in the new Center. A new office tower is being constructed in the downtown. Additional new office and residential developments have been proposed. The Salt Lake Chamber and Downtown Alliance unveiled a vision for the Downtown that, if realized, would result in about $2 billion dollar of investment within a 10-block area of Downtown in the next 5 years.

These efforts should reduce the possibility of urban decay occurring and could result in a stronger CBD in the longer term.

B. Bay Street, Emeryville

Opened in late 2002, Bay Street is an eclectic urban village, consisting of a mix of life style retail, residential, hotel, and entertainment uses connecting three city blocks in the City of

Emeryville. Located adjacent to I-80, north of the IKEA store on Shellmound Street, the area was once occupied by heavy industrial operations. The City of Emeryville invested over $27 million to assemble the property, remediate the soil, and select a developer for the project. Following is a summary of the project profile, the similarities and differences between the Sacramento Railyards and the Emeryville Bay Street projects, the lessons learned from Bay Street's experience and their implications for the Railyards.

1. Project Profile

The project is an open-air, mixed use development on 26 acres in Downtown Emeryville, consisting of 400,000 sq.ft. of retail and entertainment, 346 residential units, a 230-room hotel, a 16-screen Cineplex and a 2000-car parking garage. Covering three whole city blocks, the project represents the first lifestyle center in the East Bay. Instead of a traditional department store, it has a 3,300-seat stadium seating cinema, a Barnes and Noble bookstore, Old Navy, and a collection of eateries and retailers. Other components of the project include approximately 3.8 million square feet of Class A office space, a renovated train depot, and a public plaza. The development is linked by a Main Street over 3-city blocks.

This open-air center was conceived as a major urban destination, with retail tenants that are largely national chains, such as Chico, Abercrombie & Fitch, Aerosoles, Ann Taylor Loft, Talbot, Williams-Sonoma, and Coach, that had not previously been in the close-in East Bay market.

The project is located approximately a mile from three existing retail centers along the I-80 corridor: Powell Street Plaza (a 170,000 sq.ft. promotional center), Emeryville Marketplace (190,000 sq.ft. complex with a public market, a 12-screen UA theater, a book store, and other retail/entertainment), and East Bay Bridge Center (a 397,000 sq.ft. power center). Bay Street is also adjacent to a 275,000 sq.ft. IKEA store, which opened in 2000. It is also located within a mile of the Amtrak Station.

A second phase of Bay Street, with a hotel and additional residential and retail use, is being planned. As envisioned, the new retail would include a mid- to upscale department store and/or a mix 10,000± sq. ft. stores, totaling in the usage of 82,000 to 100,000 sq. ft. Completion and occupancy of the second phase is targeted for 2010/2011.

2. Similarities and Differences between Railyards and Bay Street

- Whereas the Railyards is envisioned as an injection element for accelerating the renaissance of Downtown Sacramento, Bay Street was viewed as opportunity to help continue the economic revitalization of the City that has significantly transformed a heavy industrial-based economy into one fueled by high technology/biotechnology. Bay Street is envisioned to further enhance the dramatic regional shoppers draw and retail recovery begun by the newly opened IKEA store and the original Powell Street Plaza.

- The proposed Railyards project and the Bay Street development both include a mix of offices, a major transit station, public open spaces and housing. However, Bay Street's retail and entertainment component (400,000 sq.ft. to 500,000 sq.ft. with expansion) is substantially smaller (30% to 40%) than the 1.3 million sq.ft. contemplated for the Railyards.

- The Railyard will also locate in similar urban context as Bay Street, that is, in close proximity to competitive retail concentrations, theaters, a public market and a major transit facility.

- In the case of both developments, their large scale, retail tenancy, and downtown location raised concerns about potential impacts on existing retailers. In Emeryville, the nearby Powell Street Plaza and Emeryville Marketplace were becoming a bit dated. In the case of Sacramento, as noted above, the Westfield Downtown Plaza appears to be under-achieving but is poised for an expansion.

3. Before and After Bay Street

- Bay Street appears to be successful as an expansion of the center is being planned. Since 2002 (when the project was completed), apparel sales in the City have nearly doubled, increasing from $2.6 million to over $5.0 million, and are continuing to grow every year. There have been some tenant turnovers, which, according to the city staff interviewed, is expected for a new center until it reaches stability. The 16-screen AMC cinema and restaurants reportedly are doing well – especially on weekends. As a lifestyle center, the retail at Bay Street was initially targeted more towards the affluent East Bay communities, but now has also become a shopping attraction for San Francisco customers.

- According to city staff interviewed in Emeryville, the three major nearby centers (Powell Street Plaza, Emeryville Marketplace, East Bay Bridge) are doing well. Store closures that have occurred at Powell Street Plaza were the result of corporate decisions unrelated to Bay Street: Copeland Sports (purchased by Sports Authority) Diamond Jewelers and Tower Records (chain liquidations). These vacated spaces have been successfully released. Vacancy at the Emeryville Marketplace has been typical of small business/entrepreneurs. The only discernable impact was on the older and smaller 12-screen UA Theater. However, it has recovered sufficiently to renew its lease at the Marketplace.

- Overall, the city staff's impression is that there was no significant economic impact on existing retailer concentrations nearby as a result of the Bay Street project (other than a worsening of the traffic congestion in the area – the cause of which extends way beyond Bay Street alone). In fact, there were a number of positive developments, such as an increase in pedestrian activities due to both the retail and the housing projects above.

The impression of Emeryville city staff is that the Bay Street project has opened up the market and brought additional people to Emeryville.

4. Lessons Learned (Implications for Sacramento Railyards)

Given the strong demand in both Emeryville and Sacramento, the parallels that can be drawn from the Bay Street project to improve the proposed Railyards' probability of success and minimize potential negative impacts on vulnerable existing retail in the Downtown are as follows:

- Bay Street is a much smaller retail center, i.e., 30% to 40% smaller than the 1.3 million sq. ft. proposed for the Railyards project. As such, the smaller amount of retail space created less of an impact on the existing retail.

- Bay Street introduced a upscale, lifestyle retail concept which is differentiated from the promotional retail at Powell Street Plaza, the public market at Emeryville Marketplace and the power center anchors at East Bay Bridge. As a result of this special niche, there has been no relocation of tenants from the existing centers to Bay Street and its leasing plan is not likely to conflict with those of the other centers. By reinforcing the different retail niches, Emeryville anticipates that the city will more likely be able to sustain its future retail growth. Similarly, the proposed Railyards project will need define its own niche in the Sacramento retail market to minimize potential negative impacts on vulnerable retail areas in the Downtown and to increase the overall retail draw of Downtown Sacramento (so that "the whole becomes greater than its parts".)

SECTION IV: CONCLUSIONS/IMPLICATIONS

The salient conclusions of the market analysis and the implications for urban decay resulting from the proposed Railyard project are as follows:

- ***With or without the proposed Railyards project*, the results of the net expenditure potential analysis are as follows:**
  - Projected Comparison Retail sales requirements in the RTA will likely be greater than projected total Comparison Retail expenditure potential in the trade area by 2015 as known projects under construction or planned are completed, but will be less than projected demand growth by 2025 as projected population and employment growth in the trade area catches up with projected future supply;
  - Projected Eating and Drinking and Convenience Retail market demand growth is expected to exceed future Eating and Drinking and Convenience Retail supply in the RTA by both 2015 and 2025; thus opportunities appear to exist for continued growth in these two categories of retail in the future.

- **The imbalance in projected Comparison Retail sales requirements and projected potential in the RTA in 2015 will likely have a negative impact on existing, under-construction and planned retail in the trade area.** The extent and nature of the negative impacts on individual existing developments will depend on the relative strength of existing and planned Comparison Retail locations within the RTA - including the four retail concentrations Downtown (Westfield Plaza, Old Sacramento, K-Street Mall, and Midtown Corridor).

- **This imbalance between future Comparison Retail supply and future demand is expected to be corrected as market growth (of residents, office employees and visitors) in the Comparison Retail trade areas catches up with sales requirement in the longer term, i.e., by 2025 – unless additional supply continues to be added to exceed projected demand.**

- **KMA's judgement is that, until future Comparison Retail market growth is sufficient to support future sales requirement, the more vulnerable retail locations in the trade area may experience an interim period of economic instability that could potentially lead to vacancies, which, if unmitigated, could be prolonged.** Prolonged vacancies (assumed to be space left empty and unused for three or more years), combined with a lack of investment and/or building maintenance, could ultimately lead to decaying building shells in long-term abandonment and/or in deteriorated conditions that significantly impair the proper and safe use of the real estate, or "urban decay" as defined in recent court decisions, and, for example, as has occurred in past years on sections of K Street in Downtown Sacramento.

- **However, with a coordinated public and private strategy, Downtown Sacramento has already demonstrated its ability to eliminate vacancy by having space evolve to uses that are supported by the market.** Through aggressive public and private investment, there are now renovations and/or conversions of existing buildings, which, when completed, will reinforce the competitiveness of Downtown and forestall or eliminate vacancies. For example, Westfield Plaza is undergoing plans to add a Target and an upscale grocer to its mix to better position the shopping center in the competitive Downtown retail market. These changes are also occurring on a smaller scale and on a scattered basis in the Downtown, such as the conversion of rental office spaces to office condominiums at 13th/I Street, automotive-based retail spaces to restaurant/residential mixed use along 16th Street, and warehouse to residential, retail and office in the R Street corridor in Downtown Sacramento. In most cases, these projects have been undertaken with a combination of private and public investments.

- **Thus, to avoid and/or minimize the negative effects that could potentially lead to prolonged vacancies as a result of the imbalance between future Comparison Retail supply and demand in the years around 2015, there needs to be an intensive and coordinated public and private strategy and investments to protect and preserve the more vulnerable retail locations in the Downtown.** The commitment of significant public and private dollars is likely to be necessary given the higher costs of developing in the downtown relative to the suburbs. For retail concentrations Downtown to remain competitive with those in the suburbs and/or the farther-out trade areas, this strategy should include at minimum the following:

  - Reinforcement and enhancement of the differentiated retail offerings of the four retail concentrations in the Downtown, i.e., repositioned regional shopping center for Westfield Plaza, specialty retail and eating and drinking/entertainment for K-Street Mall, visitor-oriented retail for Old Sacramento, and neighborhood-oriented retail/eating and drinking for Midtown Corridor.

  - Identification of a special, unrepresented retail niche for the proposed Railyards project to create a separate identity and destination to minimize overlaps with the other four existing retail concentrations in the Downtown.

  - Development of physical linkages between the proposed Railyards project and other retail concentrations in the Downtown to create retail synergy and a large draw for the Downtown so that, again like Bay Street in Emeryville, the “whole is larger than its parts.”

  - Development of a significant amount of private and public amenities, such as parks, plaza, and streetscapes, and the infrastructure needed to support future improvements in the Downtown so that it can truly become a desirable and attractive “place-to-be” for residents and visitors alike.

  - Continued development of new residential projects in the Downtown to transform the area into both a vibrant and attractive retail destination and living/working community in the Greater Sacramento region.

SECTION V. CAVEATS AND LIMITATIONS

1. The analysis contained in this document is based principally on the development program and implementation schedule represented by the applicant and the Sacramento Railyards Specific Plan. The demographic data were obtained from secondary sources such as the U.S. Census, state and local government, planning agencies, real estate brokers, and other third parties, such as Claritas. While KMA believes that these sources are reliable, we cannot guarantee their accuracy.

2. The analysis assumes that the economy will not experience any major and sudden market fluctuations and that it will continue to improve from its current conditions – albeit at a slow rate.

3. The findings are based on economic rather than political considerations. Therefore, they should be construed neither as a representation nor opinion that government approvals for development can be secured.

4. Market feasibility is not equivalent to financial feasibility; other factors apart from the level of demand for a land use are of crucial importance in determining feasibility. These factors include the cost of acquiring sites, relocation burdens, traffic impacts, remediation of toxics (if any), and mitigation measures required through the approval process.

5. Development opportunities are assumed to be achievable during the specified time frame. A change in development schedule requires that the conclusions contained herein be reviewed for validity.

6. The analysis, opinions, recommendations and conclusions of this document are KMA's informed judgment based on market and economic conditions as of the date of this report. Due to the volatility of market conditions and complex dynamics influencing the economic conditions of the building and development industry, conclusions and recommended actions contained herein should not be relied upon as sole input for final business decisions regarding current and future development and planning.

TABLE 1.
PROJECTED RAILYARDS RETAIL BUILD-OUT
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

ESTIMATED RETAIL MIX	*(At Build-Out)* [1] TOTAL SF	*Ph. 1A* 2012	2013	2014	*Ph. 1B* 2015	2016	2017	*Ph. 2* 2018	2019	2020	*Ph. 3* 2021	2022	2023	2024	*Ph. 4* 2025
Comparison Retail															
West End	**605,000** [2]	200,000			315,000 [2]			90,000 [2]							
Central Shops	**35,000** [3]	*(Bass Pro)*			35,000 [3]										
Riverfront District	**0**														
Depot District	**0**														
East End	**0**														
Subtotal Comparison Retail	**640,000**	200,000	0	0	350,000	0	0	90,000	0	0	0	0	0	0	0
Cumulative		*200,000*	*200,000*	*200,000*	*550,000*	*550,000*	*550,000*	*640,000*	*640,000*	*640,000*	*640,000*	*640,000*	*640,000*	*640,000*	*640,000*
Eating & Drinking [2]															
West End	**405,000** [3]				315,000 [3]			90,000 [3]							
Central Shops	**63,000** [4]				63,000 [4]										
Riverfront District	**15,000**										15,000				
Depot District [5]	**24,000**	24,000													
East End [5]	**25,000**														25,000
Subtotal E&D	**532,000**	24,000	0	0	378,000	0	0	90,000	0	0	15,000	0	0	0	25,000
Cumulative		*24,000*	*24,000*	*24,000*	*402,000*	*402,000*	*402,000*	*492,000*	*492,000*	*492,000*	*507,000*	*507,000*	*507,000*	*507,000*	*532,000*
Convenience Retail/Services															
West End	**52,600** [3]				34,100 [3]			18,500 [3]							
Central Shops	**56,000** [4]				56,000 [4]										
Riverfront District	**0**														
Depot District [5]	**133,200**	67,200						66,000							
East End [5]	**125,000**										25,000				100,000
Subtotal Convenience Retail	**366,800**	67,200	0	0	90,100	0	0	84,500	0	0	25,000	0	0	0	100,000
Cumulative		*67,200*	*67,200*	*67,200*	*157,300*	*157,300*	*157,300*	*241,800*	*241,800*	*241,800*	*266,800*	*266,800*	*266,800*	*266,800*	*366,800*
GRAND TOTAL															
West End	**1,062,600**	**200,000**			**664,100**			**198,500**			**0**				**0**
Central Shops	**154,000** [3]	**0**			**154,000**			**0**			**0**				**0**
Riverfront District	**15,000**	**0**			**0**			**0**			**15,000**				**0**
Depot District [5]	**157,200**	**91,200**			**0**			**66,000**			**0**				**0**
East End [5]	**150,000**	**0**			**0**			**0**			**25,000**				**125,000**
TOTAL (Incl. Central Shops) [4]	**1,538,800**	**291,200**	**0**	**0**	**818,100**	**0**	**0**	**264,500**	**0**	**0**	**40,000**	**0**	**0**	**0**	**125,000**
CUMULATIVE		***291,200***	***291,200***	***291,200***	***1,109,300***	***1,109,300***	***1,109,300***	***1,373,800***	***1,373,800***	***1,373,800***	***1,413,800***	***1,413,800***	***1,413,800***	***1,413,800***	***1,538,800***
TOTAL (Excl. Central Shops)	**1,384,800**	**291,200**	**0**	**0**	**664,100**	**0**	**0**	**264,500**	**0**	**0**	**40,000**	**0**	**0**	**0**	**125,000**
CUMULATIVE		***291,200***	***291,200***	***291,200***	***955,300***	***955,300***	***955,300***	***1,219,800***	***1,219,800***	***1,219,800***	***1,259,800***	***1,259,800***	***1,259,800***	***1,259,800***	***1,384,800***
TOTAL (Excl. Central Shops and Bass Pro Store)	**1,184,800**	**91,200**	**0**	**0**	**664,100**	**0**	**0**	**264,500**	**0**	**0**	**40,000**	**0**	**0**	**0**	**125,000**
CUMULATIVE		***91,200***	***91,200***	***91,200***	***755,300***	***755,300***	***755,300***	***1,019,800***	***1,019,800***	***1,019,800***	***1,059,800***	***1,059,800***	***1,059,800***	***1,059,800***	***1,184,800***

[1] Based on applicant's proposed phasing, modified to allow slightly longer initial periods for securing funding and approvals.
[2] Includes nightclubs, sportsbar, etc., which serve food and/or beverage. Does not include entertainment venues, such as theaters, performing arts centers, etc
[3] As no breakdown of space by retail types was provided by applicant, West End space is assumed to include approximately 5% for Services, with the remainder in E&D. and Comparison Retail (including 200,000 sq.ft. Bass Pro store.)
[4] Includes additional retail opportunities under Historic/Cultural uses in the Railyards program, as represented by applicant.
[5] Assumes approximately 15% in E&D and remainder in Convenience Retail/Services - per city staff.

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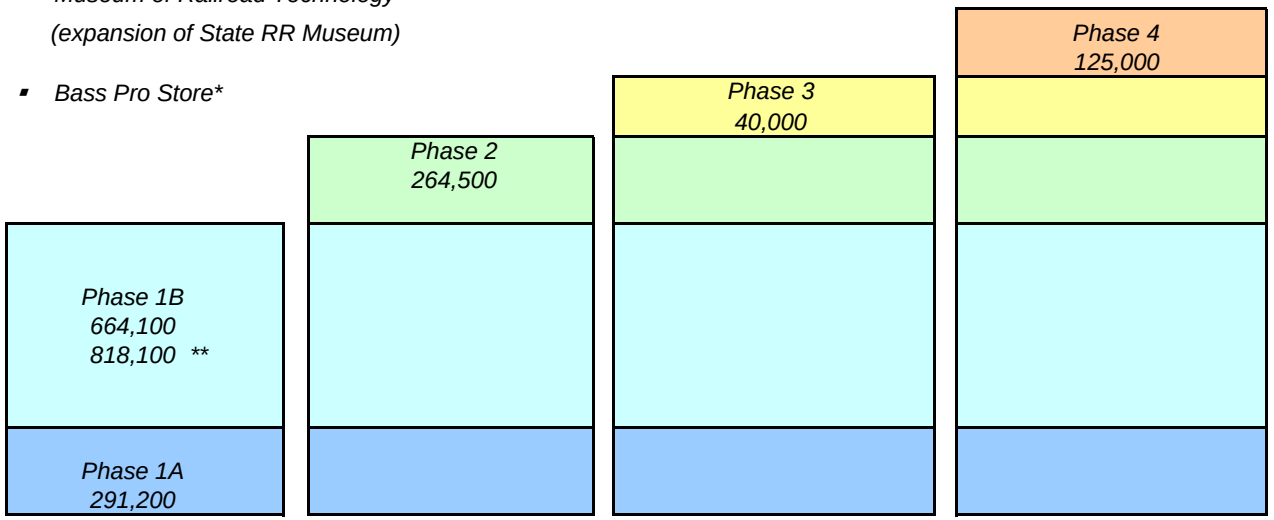
EXHIBIT A
RETAIL AND ENTERTAINMENT PLANNING TIMELINE
SACRAMENTO RAILYARDS ***WORKING DRAFT ASSUMPTIONS***

Phase 1 (A&B)	Phase 2	Phase 3	Phase 4
▪ *Intermodal Relocated Facility**			
▪ *California Academy of Arts**			
▪ *Museum of Railroad Technology** *(expansion of State RR Museum)*			
▪ *Bass Pro Store**			



Cumulative:	***955,300***	***1,219,800***	***1,259,800***	***1,384,800***
Cumulative**:	***1,109,300***	***1,373,800***	***1,413,800***	***1,538,800***
Construction start	2009-10	2015	2018	2022
Opening	2011-14	2017	2020	2024
Stabilized Year	2012-15	2018	2021	2025

** These uses are funding dependent and thus, their implementation timing is highly uncertain.*
*** Includes 154,000 square feet of retail space in Historic/Cultural component.*

TABLE 2.
DEMOGRAPHICS AND EMPLOYMENT CHARACTERISTICS
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

	Downtown Sacramento [1]	Primary Trade Area [2]	Sacramento County	Regional Trade Area [3]	State of California
POPULATION					
2000	31,723	969,644	1,223,499	1,671,975	33,871,648
Est. 2007	33,347	1,074,585	1,399,888	1,968,049	37,075,982
% Change ('00-'07)	5%	11%	14%	18%	9%
Projected 2012	38,847 [4]	1,158,173	1,532,998	2,185,050	39,684,022
% Change ('07-'12)	16%	8%	10%	11%	7%
Projected 2015 [5]	*44,347* [4]	*1,208,000*	*1,613,000*	*2,315,000*	*41,249,000*
Projected 2025 [5]	*77,347* [4]	*1,375,000*	*1,879,000*	*2,749,000*	*46,465,000*
Median Age (2007)	37.68	33.45	34.24	34.40	34.56
2007 ETHNICITY					
White	66.7%	62.0%	63.6%	69.2%	65.9%
Black	11.8%	12.6%	12.0%	9.2%	9.4%
Asian & Pacific Islander	14.8%	18.3%	17.4%	15.2%	19.9%
Other	6.8%	7.1%	7.0%	6.3%	4.8%
Hispanic Origin	19.8%	22.0%	19.2%	18.8%	35.8%
NUMBER OF HOUSEHOLDS					
2000	17,274	368,526	453,602	613,228	11,502,870
Est. 2007	18,595	406,987	515,783	719,427	12,461,651
% Change ('00-'07)	8%	10%	14%	17%	8%
Projected 2012	19,981	438,202 [2]	563,508	797,885	13,275,749
% Change ('07-'12)	7%	8%	9%	11%	7%
Persons Per Household	2.10 [6]	2.59	2.72	2.69	2.89
Est. 2007 AVG. HOUSEHOLD INCOME	$39,373	$60,838	$68,082	$72,747	$76,956
Est. 2007 PER CAPITA INCOME	$23,180	$23,343	$25,392	$26,878	$26,250

Source: Claritas (U.S. Census 2000 based), unless othewise indicated.

[1] Defined generally as the area generally bounded by Sacramento River, I-50, I-5 and I-80. Estimate from Claritas is lower than the 45,000 residents estimate by SACOG, which assumes 18,000 households and the county average of 2.5 person/HH. The lower and more conservative estimate by Claritas is used for this analysis.

[2] Based on a polygon of roughly 10 to 15 miles from the railyard site.

[3] Based on an approximately 30-mile radius ring from the site, including most of Davis and Woodland, and about halfway between the site and fast-growing cities of Roseville and Elk Grove.

[4] Assumed completion of planned/proposed units in the downtown and 2.1 persons/HH (as in-town residents tend to be smaller households):

	Railyard (per Applicant)	*Rest of DT (DSP '06 report)*	TOTAL	Est. New Pop. *@ 2.10 /HH*
2007 - 2015 (Avg.)	537	4,700 (Est.)	5,237	11,000
2018 (Avg.)	1,835		1,835	4,000
2021 (Avg.)	4,222		4,222	9,000
2025 (Avg.)	4,438		4,438	9,000
	11,031		15,731	33,000

[5] Extrapolated by KMA based on straight-line projection of population for the PTA, Sacramento County, RTA, and the State.

[6] Estimated per BPS&J and KMA to reflect the likely higher proportion of single/childless couples/empty nester households in the Downtown.

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TABLE 3.
RETAIL MARKET DEMAND SEGMENTS
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

COMPONENTS OF RETAIL DEMAND:	Est. 2015	Proj. 2025
1. Residents		
Downtown (DT)	44,000	77,000
Primary Trade Area (Excluding DT)	1,164,000	1,298,000
Regional Trade Area (Exclusive of PTA and DT)	1,107,000	1,374,000
Total Trade Area Residents	2,315,000	2,749,000
2. Downtown Office Employees	46,000 [1]	53,000 [1]
3. Visitors (to Downtown)		
Total Visitors	2,370,000 [2]	2,720,000 [2]
4. Special Use-Generated (Additional to Above)		
Museum Visitors	175,000 [3]	175,000 [3]
Playhouse/Live-Performance Venue(s)	500,000 [4]	700,000 [4]
Total Special Use-Generated		

[1] Projected from Downtown Sacramento Partnership's 2005 Annual Report (based on SACOG). Reduced by approximately 50% to adjust for overlaps between residents, employees & visitors.

[2] Assumes 50% of the total 4.6 million visitors to Downtown attractions in 2006 estimated by Downtown Partnership to reflect visits to multiple sites and overlaps with residents and employees. Growth rate is estimated at 3% per year, which is based on Cal Trade report's visitor growth projections.

[3] Based on 2000 Market Overview for the Railroad Technology Museum prepared by CA State Railroad Museum and Foundation. Reduced by 50% to avoid overlaps with residents and employees. Projection assumes no further increase.

[4] Assumes 1,000,000 attendees per yea Projection assumes modest 2% growth per year.

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TABLE 4a.
PER CAPITAL RESIDENT RETAIL SALES - CITY, COUNTY & STATE
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

	City of Sacramento		***Sacramento County***		***State of California***		
Population (Dept. of Finance - 1/1/06)		*457,514*		*1,385,607*		*37,172,015*	
Selected Retail Categories	Total Sales (2006) *($'000)*	Sales Per Capita	Total Sales (2005) [2] *($'000)*	Sales Per Capita	Total Sales (2005) [2] *($'000)*	Sales Per Capita	Sales As % of State PCI of *$25,500* [3]
Comparison Goods							
Apparel Stores	$258,749	$570	$625,454	$450	$17,966,000	$480	1.9%
General Merchandise (Excl. Drugs)	$658,674	$1,440	$2,163,395	$1,560	$50,489,000	$1,360	5.3%
Specialty Stores	$694,880	$1,520	$2,160,396	$1,560	$51,575,000	$1,390	5.5%
Home Furnishings & Appliances	$275,816	$600	$750,226	$540	$17,381,000	$470	1.8%
Total Comparison Categories	**$1,888,119**	**$4,130**	**$5,699,471**	**$4,110**	**$137,411,000**	**$3,700**	**14.5%**
Eating & Drinking	$650,516	$1,420	$1,574,702	$1,140	$46,923,603	$1,260	4.9%
Convenience Retail/Services [1]							
Food	$910,000	$1,990	$3,014,000	$2,180	$68,407,000	$1,840	7.2%
Drugs	$99,000	$220	$12,000	$10	$9,569,000	$260	1.0%
Total Convenience Retail/Services	**$1,009,000**	**$2,210**	**$3,026,000**	**$2,190**	**$77,976,000**	**$2,100**	**8.2%**
GRAND TOTAL	**$3,547,635**	**$7,760**	**$10,300,173**	**$7,440**	**$262,310,603**	**$7,060**	**27.7%**

Source: California Retail Survey, Eureka Group 2006.

[1] Adjusted for total sales - as taxable sales typically represent an estimated 65% of Drug store sales and 30% of Grocery Sales.

[2] 2006 taxable sales data not yet available for county and state (per SBE Research Dept.)

[3] Based on 2004 per capita income estimate from Claritas, escalated at 1%/yr. (Differs from BEA as it is based on money-income, excluding in-kind income.)

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TABLE 4b.
OTHER MARKET SEGMENT RETAIL EXPENDITURE POTENTIAL -
DOWNTOWN OFFICE EMPLOYEES & VISITORS ***PRELIMINARY DRAFT - CONFIDENTIAL***
SACRAMENTO RAILYARDS PROJECT ***FOR DISCUSSION ONLY***
SACRAMENTO, CA

	Per Downtown Office Employee [1]		Per Downtown Visitor
SELECT RETAIL CATEGORIES	Est. 2007 Retail Expenditure Potential	As % of HH Income *$66,000*	Est. 2007 Retail Expenditure Potential [2]
Comparison Goods			
Apparel Stores	*(Included)*		*(Included)*
General Merchandise (Excl. Drugs)	*(Included)*		*(Included)*
Specialty Stores	*(Included)*		*(Included)*
Sporting Goods	*(Included)*		*(Included)*
Home Furnishings & Appliances	*(Included)*		*(Included)*
Total Comparison Categories	**$1,600 /Yr.**	**2.4%**	**$34 /Day**
Eating & Drinking	**$1,800 /Yr.**	**2.7%**	**$23 /Day**
Convenience Retail/Services [3]			
Food	$700 /Yr.		**$3 /Day**
Drugs	$400 /Yr.		*(Included)*
Total Convenience Retail	**$1,100 /Yr.**	**1.7%**	**$3 /Day**
GRAND TOTAL	**$4,500 /Yr.**	**6.8%**	**$60 /Day**

[1] Office Worker Spending Patterns, ICSC, Spring 2004. Assumed real appreciation at 1% per year from 2003 (date of data).

[2] Based on California Travel Impacts by County 1992-05, 2005 Preliminary State Estimate, prepared by Dean Runyan Assoc. for Sacramento County and Smith Travel Research's 2005 per visitor domestic visitor spending in the Gold Country.

[3] Adjusted to reflect total sales as taxable sales typically represent an estimated 65% of Drug Store sales and 30% of Grocery Sales.

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TABLE 5a.

PROJECTED TOTAL EXPENDITURE POTENTIAL - 2015
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

Real Appreciation: 1%/Yr.

	Total Trade Area Residents				Downtown Office Employees [2]	Downtown Visitors [3]	Special Uses - Generated [4]		TOTAL
	Downtown	*Remainder PTA*	*Remainder RTA*	*Total*			*Museum Visitors*	*Enter. Visitors*	
	44,000	*1,164,000*	*1,107,000*	*2,315,000*	*46,000*	*2,370,000*	*175,000*	*500,000*	
Est. 2015 Per Capita Income [1]	*$25,100*	*$25,000*	*$29,100*	*$27,000*					
PROJECTED PER CAPITA EXPENDITURE POTENTIAL (2015)									
Comparison Retail									
Apparel	$470	$470	$550		*(Included)*	*(Included)*	*(Included)*	*(Included)*	
General Merchandise	$1,340	$1,330	$1,550		*(Included)*	*(Included)*	*(Included)*	*(Included)*	
Home Furnishings & Accessories	$1,370	$1,360	$1,590		*(Included)*	*(Included)*	*(Included)*	*(Included)*	
Specialty Retail	$460	$460	$540		*(Included)*	*(Included)*	*(Included)*	*(Included)*	
Total Comparison Retail	$3,640	$3,620	$4,230		$1,300	$34 /Day	$34 /Day	$34 /Day	
Eating & Drinking 2	$1,240	$1,240	$1,440		$1,500	$23 /Day	$23 /Day	$23 /Day	
Convenience Retail									
Food	$1,810	$1,800	$2,100		$600	$3 /Day	NA	NA	
Drugs	$260	$250	$300		$325	NA	NA	NA	
Total Convenience Retail	$2,070	$2,050	$2,400		$925	$3 /Day	NA	NA	
PROJECTED TOTAL EXPENDITURE POTENTIAL (2015)									
Comparison Retail									
Apparel	$20,680,000	$547,080,000	$608,850,000	$1,176,610,000	NA	NA	NA	NA	1,176,610,000
General Merchandise	$58,960,000	$1,548,120,000	$1,715,850,000	$3,322,930,000	NA	NA	NA	NA	3,322,930,000
Home Furnishings & Accessories	$60,280,000	$1,583,040,000	$1,760,130,000	$3,403,450,000	NA	NA	NA	NA	3,403,450,000
Specialty Retail	$20,240,000	$535,440,000	$597,780,000	$1,153,460,000	NA	NA	NA	NA	1,153,460,000
Total Comparison Retail	$160,160,000	$4,213,680,000	$4,682,610,000	$9,056,450,000	$59,800,000	$82,997,000	$2,975,000	$8,500,000	9,210,722,000
Eating & Drinking	$54,560,000	$1,443,360,000	$1,594,080,000	$3,092,000,000	$69,000,000	$56,145,000	$2,013,000	$5,750,000	3,224,908,000
Convenience Retail									
Food	$79,640,000	NA	NA	$79,640,000	$27,600,000	$7,323,000	NA	NA	114,563,000
Drugs	$11,440,000	NA	NA	$11,440,000	$14,943,000	NA	NA	NA	26,383,000
Total Convenience Retail	$91,080,000	$0	$0	$91,080,000	$42,543,000	$7,323,000	$0	$0	$140,946,000
PROJECTED TOTAL EXPENDITURE POTENTIAL (2015)	**$305,800,000**	**$5,657,040,000**	**$6,276,690,000**	**$12,239,530,000**	**$171,343,000**	**$146,465,000**	**$4,988,000**	**$14,250,000**	**$12,576,576,000**

[1] Assumes 1% real appreciation per year adjustment from 2007 per capita income.

[2] Discounted by about 25% to reflect typically lower expenditure patterns of government workers. Government jobs represent roughly 25% of total jobs in the County, according to Cal State University, Sacramento Forecast Project, July 2005.

[3] Based on visitor data from D.K. Shiflet & Assoc. (2006), the average length of stay for all visitor trips is 1.3 nights. Assumes approximately 50% of day-trippers (54% of total visitors) are also residents/employees.

[4] Assumes museum visitors, and entertainment venue visitors are day visitors only and that no expenditure for Convenience Retail.
Deduct 50% to allow for inclusion in other categories, i.e., downtown visitors, residents, and/or employees.

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TABLE 5b.
PROJECTED EXPENDITURE POTENTIAL - 2025
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

Real Appreciation: 1%/Yr.

	Total Trade Area Residents				Downtown Office Employees [2]	Downtown Visitors	Special Uses - Generated [3]		TOTAL
	Downtown	*Remainder PTA*	*Remainder RTA*	*Total*			*Museum Visitors*	*Enter. Visitors*	
	77,000	*1,298,000*	*1,374,000*	*2,749,000*	*53,000*	*2,720,000*	*175,000*	*700,000*	
Est. 2025 Per Capita Income [1]	*$27,700*	*$27,600*	*$32,100*	*$29,900*					
PROJECTED PER CAPITA EXPENDITURE POTENTIAL (2025)									
Comparison Retail									
Apparel	$520	$520	$600		*(Included)*	*(Included)*	*(Included)*	*(Included)*	
General Merchandise	$1,480	$1,470	$1,710		*(Included)*	*(Included)*	*(Included)*	*(Included)*	
Home Furnishings & Accessories	$1,510	$1,500	$1,750		*(Included)*	*(Included)*	*(Included)*	*(Included)*	
Specialty Retail	$510	$510	$590		*(Included)*	*(Included)*	*(Included)*	*(Included)*	
Total Comparison Retail	$4,020	$4,000	$4,650		$1,400	$38 /Day	$38 /Day	$38 /Day	
Eating & Drinking	$1,370	$1,360	$1,590		$1,700	$25 /Day	$25 /Day	$25 /Day	
Convenience Retail									
Food	$2,000	$1,990	$2,320		$700	$3 /Day	NA	NA	
Drugs	$280	$280	$330		$400	NA	NA	NA	
Total Convenience Retail	$2,280	$2,270	$2,650		$1,100	$3 /Day	$0	$0	
PROJECTED TOTAL EXPENDITURE POTENTIAL (2025)									
Comparison Retail									
Apparel	$40,040,000	$674,960,000	$824,400,000	$1,539,400,000	NA	NA	NA	NA	1,539,400,000
General Merchandise	$113,960,000	$1,908,060,000	$2,349,540,000	$4,371,560,000	NA	NA	NA	NA	4,371,560,000
Home Furnishings & Accessories	$116,270,000	$1,947,000,000	$2,404,500,000	$4,467,770,000	NA	NA	NA	NA	4,467,770,000
Specialty Retail	$39,270,000	$661,980,000	$810,660,000	$1,511,910,000	NA	NA	NA	NA	1,511,910,000
Total Comparison Retail	$309,540,000	$5,192,000,000	$6,389,100,000	$11,890,640,000	$74,200,000	$106,461,000	$3,325,000	$13,300,000	12,087,926,000
Eating & Drinking/Entertainment	$105,490,000	$1,765,280,000	$2,184,660,000	$4,055,430,000	$90,100,000	$70,040,000	$2,188,000	$8,750,000	4,226,508,000
Convenience Retail									
Food	$154,000,000	NA	NA	$154,000,000	$37,100,000	$8,405,000	NA	NA	199,505,000
Drugs	$21,560,000	NA	NA	$21,560,000	$21,200,000	NA	NA	NA	42,760,000
Total Convenience Retail	$175,560,000	$0	$0	$175,560,000	$58,300,000	$8,405,000	$0	$0	$242,265,000
PROJECTED TOTAL EXPENDITURE POTENTIAL (2025)	**$590,590,000**	**$6,957,280,000**	**$8,573,760,000**	**$16,121,630,000**	**$222,600,000**	**$184,906,000**	**$5,513,000**	**$22,050,000**	**$16,556,699,000**

[1] Assumes 1% real appreciation per year adjustment from 2007 per capita income.

[2] Discounted by about 25% to reflect typically lower expenditure patterns of government workers. Government jobs represent roughly 25% of total jobs in the County, according to Cal State University, Sacramento Forecast Project, July 2005.

[3] Based on visitor data from D.K. Shiflet & Assoc. (2006), the average length of stay for all visitor trips is 1.3 nights. Assumes approximately 50% of day-trippers (54% of total visitors) are also residents/employees.

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TABLE 6a.
ESTIMATED EXISTING, UNDER CONSTRUCTION & PROPOSED RETAIL SUPPLY (TOTAL)
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

	2007				2015				2025			
DOWNTOWN SACRAMENTO	**Est. Total Retail SF**	**% DT Total**	**% PTA Total**	**% RTA Total**	**Est. Total Retail SF**	**% DT Total**	**% PTA Total**	**% RTA Total**	**Est. Total Retail SF**	**% DT Total**	**% PTA Total**	**% RTA Total**
(Proposed) Railyards [1]	**0**	**0%**	**0%**	**0%**	**1,109,300**	**26%**	**7%**	**3%**	**1,538,800**	**32%**	**9%**	**4%**
Westfield Downtown Plaza	981,000	47%	10%	5%	824,000	19%	5%	2%	824,000	17%	5%	2%
Proposed Expansion (Gross, excl. Theater)					*266,000*	6%	2%	1%	266,000	6%	2%	1%
Old Sacramento	410,000	20%	4%	2%	410,000	10%	3%	1%	410,000	9%	2%	1%
K Street Mall	132,000	6%	1%	1%	132,000	3%	1%	0%	132,000	3%	1%	0%
Under Constr./Planned/Proposed					*450,000*	11%	3%	1%	450,000	9%	3%	1%
Midtown Corridor	150,000	7%	2%	1%	150,000	4%	1%	0%	150,000	3%	1%	0%
Under Constr./Planned/Proposed					*50,000*	1%	0%	0%	50,000	1%	0%	0%
Remainder of DT [2]	418,000	20%	4%	2%	848,000	20%	5%	2%	955,000	20%	6%	3%
TOTAL DOWNTOWN SACRAMENTO	**2,091,000**	**100%**	**21%**	**11%**	**4,239,300**	**100%**	**26%**	**12%**	**4,775,800**	**100%**	**28%**	**14%**
TOTAL DOWNTOWN SACRAMENTO (Excluding RY)	**2,091,000**				**3,130,000**				**3,237,000**			
REMAINDER OF PTA												
Arden Fair, Sacramento	1,110,000		11%	6%	1,110,000		7%	3%	1,110,000		7%	3%
Proposed Expansion [3]	*NA*		*NA*	*NA*	*NA*		*NA*	*NA*	*NA*		*NA*	*NA*
Delta Shores (Proposed), Sacramento					*1,200,000*		7%	3%	1,200,000		7%	3%
Natomas Marketplace, Sacramento	492,000		5%	3%	492,000		3%	1%	492,000		3%	1%
Sacramento Gateway												
Promenade at Gateway (Big Box)	600,000		6%	3%	600,000		4%	2%	600,000		4%	2%
Village at Gateway (lifestyle)	64,000		1%	0%	64,000		0%	0%	64,000		0%	0%
Florin Mall (rebuild as Florin Towne Centre)					*850,000*		5%	2%	850,000		5%	2%
Country Club Plaza, Sacramento	600,000		6%	3%	600,000		4%	2%	600,000		4%	2%
Country Club Centre, Sacramento	594,000		6%	3%	594,000		4%	2%	594,000		4%	2%
Southgate Plaza, Sacramento	569,000		6%	3%	569,000		3%	2%	569,000		3%	2%
Riverpoint Marketplace, W. Sacramento (U.C.)	602,000		6%	3%	*660,000*		4%	2%	660,000		4%	2%
Woodland Gateway Center, Woodland					*525,000*		3%	2%	525,000		3%	2%
Remainder of PTA [2]	3,109,000		32%	16%	4,767,000		29%	14%	4,767,000		28%	14%
TOTAL REMAINDER OF PTA	**7,740,000**				**12,031,000**				**12,031,000**			
TOTAL PTA (Including DT)	**9,831,000**		**100%**	**52%**	**16,270,300**		**100%**	**47%**	**16,806,800**		**100%**	**48%**
TOTAL PTA (Including DT, Excluding RY))	**9,831,000**				**15,161,000**				**15,268,000**			
REMAINDER OF RTA												
Galleria, Roseville (Existing)	1,033,000			5%	1,033,000			3%	1,033,000			3%
Proposed Expansion					*335,000*			1%	335,000			1%
Laguna Ridge, Elk Grove (Proposed)					*1,000,000*			3%	1,000,000			3%
Promenade, Elk Grove (Approved)					*1,200,000*			3%	1,200,000			3%
Palladio at Broadstone, Folsom (Planned)					*860,000*			2%	860,000			2%
Broadstone Plaza, Folsom	533,000		5%	3%	533,000		3%	2%	533,000		3%	2%
Sunrise Mall, Citrus Heights (Existing)	1,160,000			6%	1,160,000			3%	1,160,000			3%
Rocklin Crossing, Rocklin					*544,000*			2%	544,000			2%
Blue Oaks Town Center, Rocklin	599,000		6%	3%	599,000		4%	2%	599,000		4%	2%
The Ridge at Creekside, Roseville	694,000		7%	4%	694,000		4%	2%	694,000		4%	2%
Regional Mall (S. of Hwy 50)					*1,200,000*			3%	1,200,000			3%
Remainder of RTA [2]	5,092,000			27%	9,012,000			26%	9,012,000			26%
TOTAL REMAINDER OF RTA	**9,111,000**				**18,170,000**				**18,170,000**			
GRAND TOTAL (DT, PTA & RTA)	**18,942,000**			**100%**	**34,440,300**			**100%**	**34,976,800**			**100%**
GRAND TOTAL, Excluding Railyards	**18,942,000**				**33,331,000**				**33,438,000**			

[1] Includes an approximately 200,000 sq.ft. Bass Pro store,Central Shops retail and entertainment and services.

[2] Includes other centers in remainder of trade area + an allowance for other retail uses, i.e., stand-alone, in smaller centers/cities/unincorp. areas, etc.

[3] No plans known.

TABLE 6b.
ESTIMATED EXISTING, UNDER CONSTRUCTION & PLANNED COMPARISON RETAIL SUPPLY
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

	2007				2015				2025			
DOWNTOWN SACRAMENTO	**Est. Total Retail SF**	**% DT Total**	**% PTA Total**	**% RTA Total**	**Est. Total Retail SF**	**% DT Total**	**% PTA Total**	**% RTA Total**	**Est. Total Retail SF**	**% DT Total**	**% PTA Total**	**% RTA Total**
(Proposed) Railyards [1]	**0**	**0%**	**0%**	**0%**	**550,000**	**20%**	**4%**	**2%**	**640,000**	**22%**	**5%**	**2%**
Westfield Downtown Plaza	800,000	55%	10%	5%	673,000	25%	5%	3%	673,000	23%	5%	3%
Proposed Expansion					*175,000*	6%	1%	1%	*175,000*	6%	1%	1%
Old Sacramento	246,000	17%	3%	2%	246,000	9%	2%	1%	246,000	8%	2%	1%
K Street Mall	53,000	4%	1%	0%	53,000	2%	0%	0%	53,000	2%	0%	0%
Under Constr./Planned/Proposed (Est. 70%)					*315,000*	12%	3%	1%	*315,000*	11%	3%	1%
Midtown Corridor	23,000	2%	0%	0%	23,000	1%	0%	0%	23,000	1%	0%	0%
Under Constr./Planned/Proposed (Est. 30%)					*15,000*	1%	0%	0%	*15,000*	1%	0%	0%
Remainder of DT [2]	334,000	23%	4%	2%	678,000	25%	5%	3%	764,000	26%	6%	3%
TOTAL DOWNTOWN SACRAMENTO	**1,456,000**	**100%**	**18%**	**10%**	**2,728,000**	**100%**	**22%**	**10%**	**2,904,000**	**100%**	**23%**	**11%**
TOTAL DOWNTOWN SACRAMENTO (Excluding RY)	**1,456,000**				**2,178,000**				**2,264,000**			
REMAINDER OF PTA												
Arden Fair, Sacramento	888,000		11%	6%	888,000		7%	3%	888,000		7%	3%
Proposed Expansion [3]	*NA*		*NA*	*NA*	*NA*		*NA*	*NA*	*NA*		*NA*	*NA*
Delta Shores (Proposed), Sacramento					*960,000*		8%	4%	960,000		8%	4%
Natomas Marketplace, Sacramento	394,000		5%	3%	394,000		3%	1%	394,000		3%	1%
Sacramento Gateway												
Promenade at Gateway (Big Box)	480,000		6%	3%	480,000		4%	2%	480,000		4%	2%
Village at Gateway (lifestyle)	43,000		1%	0%	43,000		0%	0%	43,000		0%	0%
Florin Mall (rebuild as Florin Towne Centre)					*680,000*		6%	3%	*680,000*		5%	3%
Country Club Plaza, Sacramento	480,000		6%	3%	480,000		4%	2%	480,000		4%	2%
Country Club Centre, Sacramento	475,000		6%	3%	475,000		4%	2%	475,000		4%	2%
Southgate Plaza, Sacramento	455,000		6%	3%	455,000		4%	2%	455,000		4%	2%
Riverpoint Marketplace, W. Sacramento (U.C.)	740,000		9%	5%	*528,000*		4%	2%	*528,000*		4%	2%
Woodland Gateway Center, Woodland					*420,000*		3%	2%	*420,000*		3%	2%
Remainder of PTA [2]	2,487,000		31%	16%	*3,814,000*		31%	14%	3,814,000		30%	14%
TOTAL REMAINDER OF PTA	**6,442,000**				**9,617,000**				**9,617,000**			
TOTAL PTA (Including DT)	**7,898,000**		**100%**	**52%**	**12,345,000**		**100%**	**46%**	**12,521,000**		**100%**	**47%**
TOTAL PTA (Including DT, Excluding RY))	**7,898,000**				**11,795,000**				**11,881,000**			
REMAINDER OF RTA												
Galleria, Roseville (Existing)	826,000			5%	826,000			3%	826,000			3%
Proposed Expansion					*268,000*			1%	268,000			1%
Laguna Ridge, Elk Grove (Proposed)					*800,000*			3%	800,000			3%
Promenade, Elk Grove (Approved)					*960,000*			4%	960,000			4%
Palladio at Broadstone, Folsom (Planned)					*576,000*			2%	576,000			2%
Broadstone Plaza, Folsom	426,000		5%	3%	426,000		3%	2%	426,000		3%	2%
Sunrise Mall, Citrus Heights (Existing)	928,000			6%	928,000			3%	928,000			3%
Rocklin Crossing, Rocklin					*435,000*			2%	435,000			2%
Blue Oaks Town Center, Rocklin	450,000		6%	3%	450,000		4%	2%	450,000		4%	2%
The Ridge at Creekside, Roseville	555,000		7%	4%	555,000		4%	2%	555,000		4%	2%
Regional Mall (S. of Hwy 50)					*960,000*			4%	960,000			4%
Remainder of RTA [2]	4,074,000			27%	*7,210,000*			27%	7,210,000			27%
TOTAL REMAINDER OF RTA	**7,259,000**				**14,394,000**				**14,394,000**			
GRAND TOTAL (DT, PTA & RTA)	**15,157,000**			**100%**	**26,739,000**			**100%**	**26,915,000**			**100%**
GRAND TOTAL, Excluding Railyards	**15,157,000**				**26,189,000**				**26,275,000**			

[1] Includes an approximately 200,000 sq.ft. Bass Pro store,Central Shops retail and entertainment and services.

[2] Includes other centers in remainder of trade area + an allowance for other retail uses, i.e., stand-alone, in smaller centers/cities/unincorp. areas, etc.

[3] No plans known.

TABLE 6c.
ESTIMATED EXISTING, UNDER CONSTRUCTION & PLANNED EATING & DRINKING SUPPLY
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

	2007				*2015*				*2025*			
DOWNTOWN SACRAMENTO	**Est. Total Retail SF**	***% DT Total***	***% PTA Total***	***% RTA Total***	**Est. Total Retail SF**	***% DT Total***	***% PTA Total***	***% RTA Total***	**Est. Total Retail SF**	***% DT Total***	***% PTA Total***	***% RTA Total***
(Proposed) Railyards	**0**	**0%**	**0%**	**0%**	**402,000**	**34%**	**13%**	**7%**	**532,000**	**40%**	**17%**	**9%**
Westfield Downtown Plaza	150,000	27%	8%	5%	120,000	10%	4%	2%	120,000	9%	4%	2%
Proposed Expansion					*30,000*	3%	1%	1%	*30,000*	2%	1%	1%
Old Sacramento	164,000	30%	9%	5%	164,000	14%	5%	3%	164,000	12%	5%	3%
K Street Mall	66,000	12%	4%	2%	66,000	6%	2%	1%	66,000	5%	2%	1%
Under Constr./Planned/Proposed (Est. 30%)					*135,000*	11%	4%	2%	*135,000*	10%	4%	2%
Midtown Corridor	105,000	19%	6%	3%	105,000	9%	3%	2%	105,000	8%	3%	2%
Under Constr./Planned/Proposed (Est. 70%)					*35,000*	3%	1%	1%	*35,000*	3%	1%	1%
Remainder of DT [1]	63,000	11%	4%	2%	*127,000*	11%	4%	2%	*143,000*	11%	5%	2%
TOTAL DOWNTOWN SACRAMENTO	**548,000**	**100%**	**31%**	**18%**	**1,184,000**	**100%**	**39%**	**20%**	**1,330,000**	**100%**	**42%**	**22%**
TOTAL DOWNTOWN SACRAMENTO (Excluding R	**548,000**				**782,000**				**798,000**			
REMAINDER OF PTA												
Arden Fair, Sacramento	166,000		9%	5%	166,000		5%	3%	166,000		5%	3%
Proposed Expansion [2]	*NA*		*NA*	*NA*	*NA*		*NA*	*NA*	*NA*		*NA*	*NA*
Delta Shores (Proposed), Sacramento					*180,000*		6%	3%	180,000		6%	3%
Natomas Marketplace, Sacramento	98,000		5%	3%	98,000		3%	2%	98,000		3%	2%
Sacramento Gateway												
Promenade at Gateway (Big Box)	90,000		5%	3%	90,000		3%	2%	90,000		3%	2%
Village at Gateway (lifestyle)	19,000		1%	1%	19,000		1%	0%	19,000		1%	0%
Florin Mall (rebuild as Florin Towne Centre)					*128,000*		4%	2%	128,000		4%	2%
Country Club Plaza, Sacramento	90,000		5%	3%	90,000		3%	2%	90,000		3%	2%
Country Club Centre, Sacramento	90,000		5%	3%	90,000		3%	2%	90,000		3%	2%
Southgate Plaza, Sacramento	89,100		5%	3%	89,100		3%	2%	89,100		3%	2%
Riverpoint Marketplace, W. Sacramento (U.C.)	139,000		8%	5%	*99,000*		3%	2%	99,000		3%	2%
Woodland Gateway Center, Woodland					*79,000*		3%	1%	79,000		2%	1%
Remainder of PTA [1]	466,000		26%	15%	*715,000*		24%	12%	715,000		23%	12%
TOTAL REMAINDER OF PTA	**1,247,100**				**1,843,100**				**1,843,100**			
TOTAL PTA (Including DT)	**1,795,100**		**100%**	**58%**	**3,027,100**		**100%**	**52%**	**3,173,100**		**100%**	**53%**
TOTAL PTA (Including DT, Excluding RY))	**1,795,100**				**2,625,100**				**2,641,100**			
REMAINDER OF RTA												
Galleria, Roseville (Existing)	155,000			5%	155,000			3%	155,000			3%
Proposed Expansion					*50,000*			1%	50,000			1%
Laguna Ridge, Elk Grove (Proposed)					*150,000*			3%	150,000			3%
Promenade, Elk Grove (Approved)					*180,000*			3%	180,000			3%
Palladio at Broadstone, Folsom (Planned)					*249,000*			4%	249,000			4%
Broadstone Plaza, Folsom	89,100		5%	3%	89,100		3%	2%	89,100		3%	2%
Sunrise Mall, Citrus Heights (Existing)	174,000			6%	174,000			3%	174,000			3%
Rocklin Crossing, Rocklin					*82,000*			1%	82,000			1%
Blue Oaks Town Center, Rocklin	20,000		1%	1%	20,000		1%	0%	20,000		1%	0%
The Ridge at Creekside, Roseville	85,350		5%	3%	85,350		3%	1%	85,350		3%	1%
Regional Mall (S. of Hwy 50)					*180,000*			3%	180,000			3%
Remainder of RTA [1]	764,000			25%	*1,352,000*			23%	1,352,000			23%
TOTAL REMAINDER OF RTA	**1,287,450**				**2,766,450**				**2,766,450**			
GRAND TOTAL (DT, PTA & RTA)	**3,082,550**			**100%**	**5,793,550**			**100%**	**5,939,550**			**100%**
GRAND TOTAL, Excluding Railyards	**3,082,550**				**5,391,550**				**5,407,550**			

[1] Includes other centers in remainder of trade area + an allowance for other retail uses, i.e., stand-alone, in smaller centers/cities/unincorp. areas, etc.

[2] No plans known.

TABLE 6d.
ESTIMATED EXISTING, UNDER CONSTRUCTION & PROPOSED CONVENIENCE RETAIL SUPPLY
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

	2007		*2015*		*2025*	
DOWNTOWN SACRAMENTO	**Est. Total Retail SF**	***% DT Total***	**Est. Total Retail SF**	***% DT Total***	**Est. Total Retail SF**	***% DT Total***
(Proposed) Railyards [1]	**0**	**0%**	**102,300**	**38%**	**289,800**	**62%**
Westfield Downtown Plaza	31,000	36%	31,000	11%	31,000	7%
Proposed Expansion			61,000	22%	*61,000*	13%
Old Sacramento	0	0%	0	0%	0	0%
K Street Mall	13,000	15%	13,000	5%	13,000	3%
Under Constr./Planned/Proposed			0	0%	*0*	0%
Midtown Corridor	22,000	25%	22,000	8%	22,000	5%
Under Constr./Planned/Proposed			*0*	0%	*0*	0%
Remainder of DT [2]	21,000	24%	*42,000*	15%	*48,000*	10%
TOTAL DOWNTOWN SACRAMENTO	**87,000**	**100%**	**271,300**	**100%**	**464,800**	**100%**
TOTAL DOWNTOWN SACRAMENTO, excluding Railyards	**87,000**		**169,000**		**175,000**	

[1] Includes Services.

[2] Includes other centers in remainder of trade area + an allowance for other retail uses, i.e., stand-alone, in smaller centers/cities/unincorp. areas, etc.

Prepared by: Keyser Marston Associates, Inc.
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TABLE 7a.
PROJECTED EXISTING, UNDER CONSTRUCTION & PLANNED COMPARISON RETAIL SALES REQUIREMENTS
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

Real Appreciation:
1%/Yr.

	Estimated 2007 Sales				*Projected 2015 Sales Requirements*				*Projected 2025 Sales Requirements*			
DOWNTOWN SACRAMENTO	**Est. Total Retail Sales [1, 2]**	***% DT Total***	***% PTA Total***	***% RTA Total***	**Est. Total Sales Reqmts [2]**	***% DT Total***	***% PTA Total***	***% RTA Total***	**Est. Total Sales Reqmts [2]**	***% DT Total***	***% PTA Total***	***% RTA Total***
(Proposed) Railyards	**$0**	**0%**	**0%**	**0%**	**$198,000,000**	**29%**	**4%**	**2%**	**$218,715,000**	**29%**	**4%**	**2%**
Westfield Downtown Plaza (Est.)												
Proposed Expansion												
Old Sacramento (Est.)												
K Street Mall (Est.)												
Under Constr./Planned/Proposed												
Midtown Corridor (Est.)												
Under Constr./Planned/Proposed												
Remainder of DT												
TOTAL DOWNTOWN SACRAMENTO	**$166,500,000**	**100%**	**6%**	**3%**	**$680,264,000**	**100%**	**14%**	**7%**	**$751,434,000**	**100%**	**14%**	**7%**
TOTAL DOWNTOWN SACRAMENTO (Excluding RY)	**$166,500,000**				**$482,264,000**				**$532,719,000**			
REMAINDER OF PTA												
Arden Fair, Sacramento												
Proposed Expansion [4]												
Delta Shores (Proposed), Sacramento												
Natomas Marketplace, Sacramento												
Sacramento Gateway												
Promenade at Gateway (Big Box)												
Village at Gateway (lifestyle)												
Florin Mall (rebuild as Florin Towne Centre)												
Country Club Plaza, Sacramento												
Country Club Centre, Sacramento												
Southgate Plaza, Sacramento												
Riverpoint Marketplace, W. Sacramento (U.C.)												
Woodland Gateway Center, Woodland												
Remainder of PTA [3, 5]												
TOTAL REMAINDER OF PTA	**$2,613,600,000**				**$4,033,480,000**				**$4,455,472,000**			
TOTAL PTA (Including DT)	**$2,780,100,000**		**100%**	**53%**	**$4,713,744,000**		**100%**	**47%**	**$5,206,906,000**		**100%**	**47%**
TOTAL PTA (Including DT, Excluding RY))	**$2,780,100,000**				**$4,515,744,000**				**$4,988,191,000**			
REMAINDER OF RTA												
Galleria, Roseville (Existing)												
Proposed Expansion												
Laguna Ridge, Elk Grove (Proposed)												
Promenade, Elk Grove (Approved)												
Palladio at Broadstone, Folsom (Planned) [6]												
Broadstone Plaza, Folsom [6]												
Sunrise Mall, Citrus Heights (Existing)												
Rocklin Crossing, Rocklin												
Blue Oaks Town Center, Rocklin												
The Ridge at Creekside, Roseville												
Regional Mall (S. of Hwy 50)												
Remainder of RTA [3, 7]												
TOTAL REMAINDER OF RTA	**$2,469,100,000**				**$5,268,694,000**				**$5,819,916,000**			
GRAND TOTAL (DT, PTA & RTA)	**$5,249,200,000**			**100%**	**$9,982,438,000**			**100%**	**$11,026,822,000**			**100%**
GRAND TOTAL, Excluding Railyards	**$5,249,200,000**				**$9,784,438,000**				**$10,808,107,000**			

[1] Based on 2006 sales data for Sacramento and 2005 State Board of Equalization Taxable Sales data for W. Sacramento, escalated at 1% per year to 2007.
Data not shown for Sacramento centers due to confidentiality issues.

[2] Where sales are unknown, assumes average per sq. ft. sales of $250 /yr. for existing retail space & $350 /yr. for new retail space, escalated @ 1% per year.

[3] Includes additional allowance (+25%) for other retail not in cities included above, in unincorporated county areas, and/or not reported separately due to confidentiality issues.

[4] No plans known.

[5] Includes the cities of Sacramento, West Sacramento, Davis (1/2), and Woodland (1/2). Assumes only 1/2 of the retail sales near edge + 25% for sales not included above.
Also assumes an estimated 85% of Other Retail sales reported is Specialty Retail Sales (no breakdowns provided; thus estimate is based on statewide sales ratio.)

[6] Assumes only 1/2 of the retail sales are drawn from the trade area given their locations near the edge of trade area.

[7] Includes the cities of Davis, Vacaville (1/2), Elk Grove, Folsom (1/2), Roseville, Rocklin, Lincoln (1/2) and Auburn (1/2). Assumes only 1/2 of the retail sales near edge of trade area.

TABLE 7b.
PROJECTED EXISTING, UNDER CONSTRUCTION & PLANNED EATING & DRINKING SALES REQUIREMENTS
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

Real Appreciation:
1%/Yr.

	Estimated 2007 Sales				*Projected 2015 Sales Requirements*				*Projected 2025 Sales Requirements*			
DOWNTOWN SACRAMENTO	**Est. Total Retail Sales [1, 2]**	***% DT Total***	***% PTA Total***	***% RTA Total***	**Est. Total Sales Reqmts [2]**	***% DT Total***	***% PTA Total***	***% RTA Total***	**Est. Total Sales Reqmts [2]**	***% DT Total***	***% PTA Total***	***% RTA Total***
(Proposed) Railyards	**$0**	**0%**	**0%**	**0%**	**$184,900,000**	**42%**	**10%**	**6%**	**$271,320,000**	**49%**	**13%**	**8%**
Westfield Downtown Plaza												
Proposed Expansion												
Old Sacramento												
K Street Mall												
Under Constr./Planned/Proposed												
Midtown Corridor												
Under Constr./Planned/Proposed												
Remainder of DT [3]												
TOTAL DOWNTOWN SACRAMENTO	**$123,810,000**	**100%**	**12%**	**7%**	**$443,746,000**	**100%**	**25%**	**14%**	**$557,246,000**	**100%**	**27%**	**16%**
TOTAL DOWNTOWN SACRAMENTO (Excluding RY)	**$123,810,000**				**$258,846,000**				**$285,926,000**			
REMAINDER OF PTA												
Arden Fair, Sacramento												
Proposed Expansion [4]												
Delta Shores (Proposed), Sacramento												
Natomas Marketplace, Sacramento												
Sacramento Gateway												
Promenade at Gateway (Big Box)												
Village at Gateway (lifestyle)												
Florin Mall (rebuild as Florin Towne Centre)												
Country Club Plaza, Sacramento												
Country Club Centre, Sacramento												
Southgate Plaza, Sacramento												
Riverpoint Marketplace, W. Sacramento (U.C.)												
Woodland Gateway Center, Woodland												
Remainder of PTA [3, 5]												
TOTAL REMAINDER OF PTA	**$949,776,000**				**$1,338,385,000**				**$1,478,412,000**			
TOTAL PTA (Including DT)	**$1,073,586,000**		**100%**	**62%**	**$1,782,131,000**		**100%**	**57%**	**$2,035,658,000**		**100%**	**57%**
TOTAL PTA (Including DT, Excluding RY))	**$1,073,586,000**				**$1,597,231,000**				**$1,764,338,000**			
REMAINDER OF RTA												
Galleria, Roseville (Existing)												
Proposed Expansion												
Laguna Ridge, Elk Grove (Proposed)												
Promenade, Elk Grove (Approved)												
Palladio at Broadstone, Folsom (Planned) [6]												
Broadstone Plaza, Folsom [6]												
Sunrise Mall, Citrus Heights (Existing)												
Rocklin Crossing, Rocklin												
Blue Oaks Town Center, Rocklin												
The Ridge at Creekside, Roseville												
Regional Mall (S. of Hwy 50)												
Remainder of RTA [3, 7]												
TOTAL REMAINDER OF RTA	**$650,416,000**				**$1,364,334,000**				**$1,507,074,000**			
GRAND TOTAL (DT, PTA & RTA)	**$1,724,002,000**			**100%**	**$3,146,465,000**			**100%**	**$3,542,732,000**			**100%**
GRAND TOTAL, Excluding Railyards	**$1,724,002,000**				**$2,961,565,000**				**$3,271,412,000**			

[1] Based on 2006 sales data for Sacramento and 2005 State Board of Equalization Taxable Sales data for W. Sacramento, escalated at 1% per year to 2007.
Data not shown for Sacramento centers due to confidentiality issues.

[2] Where sales are unknown, assumes average per sq.ft. sales of $350 /yr. for existing retail space & $450 /yr. for new retail space, escalated @ 1% per year.

[3] Includes additional allowance (+25%) for other retail not in cities included above, in unincorporated county areas, and/or not reported separately due to confidentiality issues.

[4] No plans known.

[5] Includes the cities of Sacramento, West Sacramento, Davis (1/2), and Woodland (1/2). Assumes only 1/2 of the retail sales near edge + 25% for sales not included above.

[6] Assumes only 1/2 of the retail sales are drawn from the trade area given their locations near the edge of trade area.

[7] Includes the cities of Davis, Vacaville (1/2), Elk Grove, Folsom (1/2), Roseville, Rocklin, Lincoln (1/2) and Auburn (1/2). Assumes only 1/2 of the retail sales near edge of trade area.

TABLE 7c.
PROJECTED EXISTING, UNDER CONSTRUCTION & PLANNED CONVENIENCE RETAIL SALES REQUIREMENTS
SACRAMENTO RAILYARDS PROJECT ***PRELIMINARY DRAFT - CONFIDENTIAL***
SACRAMENTO, CA ***FOR DISCUSSION ONLY***

Real Appreciation:
1%/Yr.

	Estimated 2007 Sales		***Projected 2015 Sales Requirements***		***Projected 2025 Sales Requirements***	
DOWNTOWN SACRAMENTO	**Est. Total Retail Sales [1]**	***% DT Total***	**Est. Total Sales Requirements [1]**	***% DT Total***	**Est. Total Sales Requirements [1]**	***% DT Total***
(Proposed) Railyards [2]	**$0**	**0%**	**$45,000,000**	**41%**	**$142,002,000**	**66%**
Westfield Downtown Plaza						
Proposed Expansion						
Old Sacramento						
K Street Mall						
Under Constr./Planned/Proposed						
Midtown Corridor						
Under Constr./Planned/Proposed						
Remainder of DT [3]						
TOTAL DOWNTOWN SACRAMENTO	**$25,744,000**	**100%**	**$110,614,000**	**100%**	**$214,481,000**	**100%**
TOTAL DOWNTOWN SACRAMENTO, Excluding Railyards	**$25,744,000**		**$65,614,000**		**$72,479,000**	

[1] 2007 Sales tax data for food are adjusted at 30% to reflect total (taxable and non-taxable) sales typical of food stores, escalated at 1% per year to 2015 and 2025.
Where sales are unknown, assumes average per sq.ft. sales of $425 /sq.ft.
Data not shown for Sacramento centers due to confidentiality issues.

[2] Excludes Services, which typically have nominal retail sales.

[3] Allowance for other retail not in centers.

Prepared by: Keyser Marston Associates, Inc.
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TABLE 8.
PROJECTED PRPPOSED RAILYARD PROJECT SALES REQUIREMENT
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

Real Appreciation: *1%/Yr.*

ILLUSTRATIVE RETAIL MIX	Target Sales/ Per SF ($2007)	EST. PROJECT SALES REQUIREMENT (2015) Total SF	Sales/ Per SF	Total Sales	EST. PROJECT SALES REQUIREMENT (2025) Total SF	Sales/ Per SF	Total Sales
Comparison Retail	$350	550,000	$360	$198,000,000	640,000	$400	$256,000,000
Eating & Drinking *(Incl. Food Hall)*	$450	402,000	$460	$184,900,000	532,000	$510	$271,320,000
Convenience Retail [1]	$425	102,300	$440	$45,000,000	289,800	$490	$142,002,000
TOTAL		**1,054,300**	**$406**	$427,900,000	**1,461,800**	$458	$669,322,000
Services [1]	Nominal	55,000	*(Nominal)*	*(Nominal)*	77,000	*(Nominal)*	*(Nominal)*
GRAND TOTAL		**1,109,300**	**$386**	**$427,900,000**	**1,538,800**	**$435**	**$669,322,000**

[1] Assumes that Services represnet approximately 5% of total square footage in proposed Railyards project, so that the remainder of the Convenience Retail/Services category of the development program would be Convenience Retail.

Prepared by: Keyser Marston Associates, Inc.
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TABLE 9a.

PROJECTED NET EXPENDITURE POTENTIAL (Total Potential Comparison with Sales Requirements) - EXCLUDING PROPOSED RAILYARD PROJECT

SACRAMENTO RAILYARDS PROJECT

SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

Real Appreciation: 1%/Yr.

	Projected 2015			*Projected 2025*		
	Total Expend. Pot.	***Sales Requirements (No Railyards)***	**Net Expend. Pot. Available**	**Total Expend. Pot.**	***Sales Requirements (No Railyards)***	**Net Expend. Pot. Available**
COMPARISON RETAIL						
Downtown Residents	$160,160,000			$309,540,000		
Downtown Office Employees	$59,800,000			$59,800,000		
Downtown Visitors	$82,997,000			$106,461,000		
Special Use-Generated	N.A. [1]			N.A. [1]		
Remainder PTA Residents	$4,213,680,000			$5,192,000,000		
Total PTA (Including DT)	$4,516,637,000	$4,515,744,000	$893,000	$5,667,801,000	$4,988,191,000	$679,610,000
Remainder of RTA Residents	$4,682,610,000	$5,268,694,000	($586,084,000)	$6,389,100,000	$5,819,916,000	$569,184,000
Total RTA (Including DT & PTA)	$9,199,247,000	$9,784,438,000	($585,191,000)	$12,056,901,000	$10,808,107,000	$1,248,794,000
EATING & DRINKING						
Downtown Residents	$54,560,000			$105,490,000		
Downtown Office Employees	$69,000,000			$90,100,000		
Downtown Visitors	$56,145,000			$70,040,000		
Special Use-Generated	N.A. [1]			N.A. [1]		
Remainder PTA Residents	$1,443,360,000			$1,765,280,000		
Total PTA (Including DT)	$1,623,065,000	$1,597,231,000	$25,834,000	$2,030,910,000	$1,764,338,000	$266,572,000
Remainder of RTA Residents	$1,594,080,000	$1,364,334,000	$229,746,000	$2,184,660,000	$1,507,074,000	$677,586,000
Total RTA (Including DT & PTA)	$3,217,145,000	$2,961,565,000	$255,580,000	$4,215,570,000	$3,271,412,000	$944,158,000
CONVENIENCE RETAIL & SERVICES						
Downtown Residents	$91,080,000			$175,560,000		
Downtown Office Employees	$42,543,000			$58,300,000		
Downtown Visitors	$7,323,000			$8,405,000		
Total Downtown	$140,946,000	$65,614,000	$75,332,000	$242,265,000	$72,479,000	$169,786,000

[1] Would not be applicable if the proposed Railyards project is not included.

Prepared by: Keyser Marston Associates, Inc.
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TABLE 9b.
PROJECTED NET EXPENDITURE POTENTIAL (Total Potential Comparison with Sales Requirements) - INCLUDING PROPOSED RAILYARD PROJECT
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

Real Appreciation: 1%/Yr.

	Projected 2015			*Projected 2025*		
	Total Expend. Pot.	***Sales Requirements (With Railyards)***	**Net Expend. Pot. Available**	**Total Expend. Pot.**	***Sales Requirements (With Railyards)***	**Net Expend. Pot. Available**
COMPARISON RETAIL						
Downtown Residents	$160,160,000			$309,540,000		
Downtown Office Employees	$59,800,000			$74,200,000		
Downtown Visitors	$82,997,000			$106,461,000		
Special Use-Generated	$11,475,000			$16,625,000		
Remainder PTA Residents	$4,213,680,000			$5,192,000,000		
Total PTA (Including DT)	$4,528,112,000	$4,713,744,000	($185,632,000)	$5,698,826,000	$5,206,906,000	$491,920,000
Remainder of RTA Residents	$4,682,610,000	$5,268,694,000	($586,084,000)	$6,389,100,000	$5,819,916,000	$569,184,000
Total RTA (Including DT & PTA)	$9,210,722,000	$9,982,438,000	($771,716,000)	$12,087,926,000	$11,026,822,000	$1,061,104,000
EATING & DRINKING						
Downtown Residents	$54,560,000			$105,490,000		
Downtown Office Employees	$69,000,000			$90,100,000		
Downtown Visitors	$56,145,000			$70,040,000		
Special Use-Generated	$7,763,000			$10,938,000		
Remainder PTA Residents	$1,443,360,000			$1,765,280,000		
Total PTA (Including DT)	$1,630,828,000	$1,782,131,000	($151,303,000)	$2,041,848,000	$2,035,658,000	$6,190,000
Remainder of RTA Residents	$1,594,080,000	$1,364,334,000	$229,746,000	$2,184,660,000	$1,507,074,000	$677,586,000
Total RTA (Including DT & PTA)	$3,224,908,000	$3,146,465,000	$78,443,000	$4,226,508,000	$3,542,732,000	$683,776,000
CONVENIENCE RETAIL & SERVICES						
Downtown Residents	$91,080,000			$175,560,000		
Downtown Office Employees	$42,543,000			$58,300,000		
Downtown Visitors	$7,323,000			$8,405,000		
Total Downtown	$140,946,000	$110,614,000	$30,332,000	$242,265,000	$214,481,000	$27,784,000

Prepared by: Keyser Marston Associates, Inc.
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WORKSHEET 1.
REMAINDER OF PTA AND RTA RETAIL SUPPLY
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

Existing Centers	Year	Renovated	City	SF	Trade Area
Market Square at Arden Fair	1957	2003	Arden	123,093	PTA
Truxel Station			Natomas	110,000	PTA
Park Place	2003		Natomas	108,000	PTA
Rancho Cordova Town Center	1987	1991	Rancho	280,000	PTA
Town & Country Village	1951	2006	Sacramento	232,914	PTA
Pavillions	1985		Sacramento	103,000	PTA
IKEA (Included in Riverpoint Mktplace)	2006		West Sac	N.A.	PTA
Westbridge Plaza Phase 1			West Sac	201,000	PTA
Country Fair Mall	1986	2006	Woodland	403,119	PTA
Subtotal PTA				1,561,126	
Marketplace at Birdcage	1976	2001	Citrus Heights	314,000	RTA
Elk Grove Commons	2004		Elk Grove	241,911	RTA
Laguna Crossroads	1996		Elk Grove	433,179	RTA
Laguna Gateway East and West	2001		Elk Grove	207,494	RTA
Marketplace 99	1993	2001	Elk Grove	248,540	RTA
Folsom Premium Outlets (@ 50%) [1]	1987	1999	Folsom	149,639	RTA
Madison Mall	1962	1998	Orangevale	260,199	RTA
Creekside Ranch Crossing	1996		Roseville	330,000	RTA
Creekside Town Center	2001		Roseville	370,300	RTA
Roseville Center	1985	1991	Roseville	271,010	RTA
Roseville Square	1962	1990	Roseville	219,212	RTA
Vacaville Premium Outlets (@ 50%) [1]	1988	1993	Vacaville	224,000	RTA
Subtotal RTA				3,269,484	
Total Existing in Remainder of PTA & RTA				*4,830,610*	

Planned Centers	Year	City	SF	Trade Area
The Landing		Rancho	400,000	PTA
Ose Properties		Sacramento	400,000	PTA
Subtotal PTA			800,000	
Roseville Crossing		Roseville	220,000	RTA
Fountains, Roseville (Under Constr.)		Roseville	360,000	RTA
Sunset West		Rocklin	130,000	RTA
Rocklin Pavilions		Rocklin	361,000	RTA
Granite Plaza		Placer Co	170,000	RTA
Trimm Pavilions		Placer Co	61,000	RTA
Lowes Home Improvement		Placer Co	137,000	RTA
Vineyard at Madera		Elk Grove	103,380	RTA
College Sqr Marketplace		Sac Co (near Elk Gr)	270,000	RTA
Lincoln Crossing Marketplace (@ 50%) [1]		Lincoln	184,500	RTA
Sterling Point (@ 50%) [1]		Lincoln	111,537	RTA
Subtotal RTA			2,108,417	
Total In Planning 2007-2010			*2,908,417*	

Source: Applicant (Integra Realty Resources,Inc.., adjusted to include/exclude competitive centers under 500,000 sq.ft.

[1] Assumes an estimated 50% of sales for these centers are drawn from the proposed Railyards project's RTA.

WORKSHEET 2.
2005/06 TAXABLE SALES FOR CITIES REPORTING IN PTA
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

Real Appreciation: *1.0%*

	EXISTING RETAIL SALES					
	Apparel	General Merchandise	Specialty Retail	Home Furnishing	Total	Eating & Drinking
Unadjusted Taxable Sales [1]						
City of Sacramento [2]	$258,749,400	$658,674,400	$694,880,000	$275,816,300	**$1,888,120,100**	$650,516,100
West Sacramento	$3,018,000	$10,739,000	$58,319,000	NA.	**$72,076,000**	$32,857,000
Subtotal	$261,767,400	$669,413,400	$753,199,000	$275,816,300	**$1,960,196,100**	$683,373,100
Woodland	$12,302,000	$114,889,000	$53,516,000	$10,751,000	**$191,458,000**	$50,557,000
Davis	$9,958,000	$24,802,000	$65,325,000	$6,879,000	**$106,964,000**	$73,530,000
Subtotal	$22,260,000	$139,691,000	$118,841,000	$17,630,000	**$298,422,000**	$124,087,000
Subtotal (@ 50%) [3]	$11,130,000	$69,845,500	$59,420,500	$8,815,000	**$149,211,000**	$62,043,500
Total Unadjusted Taxable Sales	$272,897,400	$739,258,900	$812,619,500	$284,631,300	**$2,109,407,100**	$745,416,600
Adjusted Taxable Sales [4, 5, 6]						
City of Sacramento [2]	$261,337,000	$665,261,000	$701,829,000	$278,574,000	**$1,907,001,000**	$657,021,000
West Sacramento	$3,079,000	$9,859,000	$50,568,000	NA.	**$63,506,000**	$33,517,000
Subtotal	$264,416,000	$675,120,000	$752,397,000	$278,574,000	**$1,970,507,000**	$690,538,000
Woodland	$12,549,000	$105,478,000	$46,403,000	$10,967,000	**$175,397,000**	$51,573,000
Davis	$10,158,000	$22,770,000	$56,642,000	$7,017,000	**$96,587,000**	$75,008,000
Subtotal	$22,707,000	$128,248,000	$103,045,000	$17,984,000	**$271,984,000**	$126,581,000
Subtotal (@ 50%) [3]	$11,353,500	$64,124,000	$51,522,500	$8,992,000	**$135,992,000**	$63,290,500
Total Adjusted Taxable Sales	$275,769,500	$739,244,000	$803,919,500	$287,566,000	**$2,106,499,000**	$753,828,500

[1] 2006 sales for City of Sacramento. All others are based on 2005 SBE Taxable Sale (not yet available for 2006).
[2] Based on 2006 taxable sales data breakdowns provided by City.
[3] Assumes 50% of sales of cities at edge of PTA come from within and remainder from outside of trade area.
[4] Assumes an estimated 10% are sales from Drugstores (based on statewide ratio as no breakdown available in SBE Report.)
[5] Assumes an estimated 85% are Specialty Retail sales (based on statewide ratios as no breakdown available in SBE Report.)
[6] Escalated at 1% per year to 2007.

Prepared by: Keyser Marston Associates, Inc.
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WORKSHEET 3.
2005/06 TAXABLE SALES FOR CITIES REPORTING IN RTA
SACRAMENTO RAILYARDS PROJECT
SACRAMENTO, CA

PRELIMINARY DRAFT - CONFIDENTIAL
FOR DISCUSSION ONLY

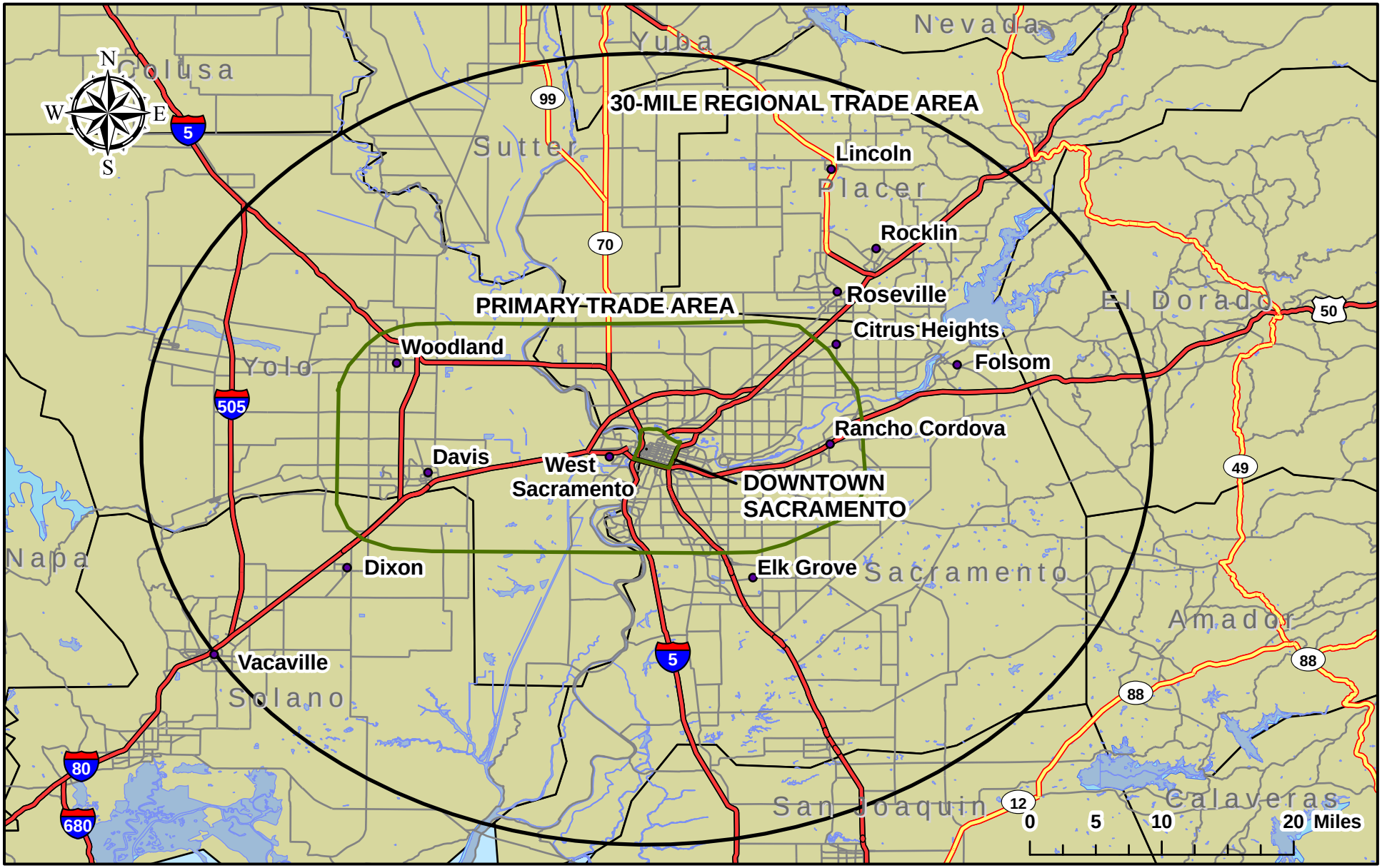
Real Appreciation: *1.0%*

	EXISTING RETAIL SALES					
	Apparel	General Merchandise	Specialty Retail	Home Furnishing	Total	Eating & Drinking
Unadjusted Taxable Sales [1]						
Elk Grove	$59,715,000	$188,921,000	$223,128,000	$59,633,000	**$531,397,000**	$139,161,000
Roseville	$167,693,000	$599,179,000	$495,148,000	$135,036,000	**$1,397,056,000**	$258,486,000
Rocklin	$9,958,000	$24,802,000	$65,325,000	$6,879,000	**$106,964,000**	$46,935,000
Subtotal	$237,366,000	$812,902,000	$783,601,000	$201,548,000	**$2,035,417,000**	$444,582,000
Vacaville	$133,350,000	$233,607,000	$127,292,000	$50,445,000	**$544,694,000**	$111,140,000
Woodland	$12,302,000	$114,889,000	$53,516,000	$10,751,000	**$191,458,000**	$50,557,000
Davis	$9,958,000	$24,802,000	$65,325,000	$6,879,000	**$106,964,000**	$73,530,000
Folsom	$94,238,000	$267,446,000	$235,679,000	$32,476,000	**$629,839,000**	$117,814,000
Auburn	$3,269,000	$25,854,000	$189,076,000	$8,285,000	**$226,484,000**	$24,829,000
Subtotal	$253,117,000	$666,598,000	$670,888,000	$108,836,000	**$1,699,439,000**	$377,870,000
Subtotal (@ 50%) [2]	$126,558,500	$333,299,000	$335,444,000	$54,418,000	**$849,719,500**	$188,935,000
Total Unadjusted Taxable Sales	$363,924,500	$1,146,201,000	$1,119,045,000	$255,966,000	**$2,885,136,500**	$633,517,000
Adjusted Taxable Sales [3, 4, 5]						
Elk Grove	$60,915,000	$173,446,000	$193,471,000	$60,832,000	**$488,664,000**	$141,958,000
Roseville	$171,064,000	$550,100,000	$429,335,000	$137,750,000	**$1,288,249,000**	$263,682,000
Rocklin	$10,158,000	$22,770,000	$56,642,000	$7,017,000	**$96,587,000**	$47,878,000
Subtotal	$242,137,000	$746,316,000	$679,448,000	$205,599,000	**$1,873,500,000**	$453,518,000
Vacaville	$136,030,000	$214,472,000	$110,373,000	$51,459,000	**$512,334,000**	$113,374,000
Woodland	$12,549,000	$105,478,000	$46,403,000	$10,967,000	**$175,397,000**	$51,573,000
Davis	$10,158,000	$22,770,000	$56,642,000	$7,017,000	**$96,587,000**	$75,008,000
Folsom	$96,132,000	$245,539,000	$204,354,000	$33,129,000	**$579,154,000**	$120,182,000
Auburn	$3,335,000	$23,736,000	$163,945,000	$8,452,000	**$199,468,000**	$25,328,000
Subtotal	$258,204,000	$611,995,000	$581,717,000	$111,024,000	**$1,562,940,000**	$385,465,000
Subtotal (@ 50%) [2]	$129,102,000	$305,997,500	$290,858,500	$55,512,000	**$781,470,000**	$192,732,500
Total Adjusted Taxable Sales	$371,239,000	$1,052,313,500	$970,306,500	$261,111,000	**$2,654,970,000**	$646,250,500

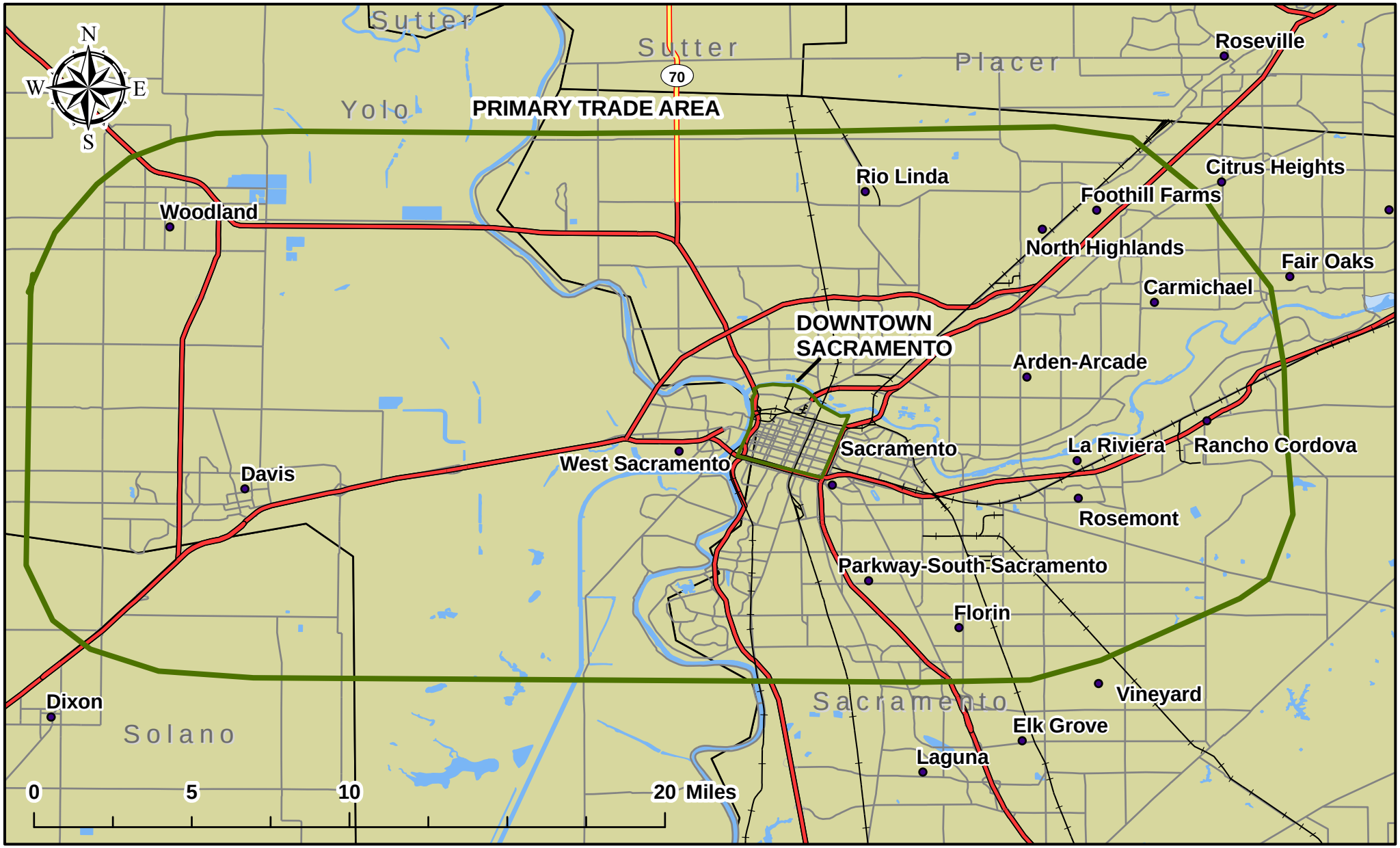
[1] 2005 SBE Taxable Sale. Not available for Galt, Cameron Park and Lincoln.
[2] Assumes 50% of sales of cities at edge of RTA come from within and remainder from outside of trade area.
[3] Assumes an estimated 10% are sales from Drugstores (based on statewide ratio as no breakdown available in SBE Report.)
[4] Assumes an estimated 85% are Specialty Retail sales (based on statewide ratios as no breakdown available in SBE Report.)
[5] Escalated at 1% per year to 2007.

Prepared by: Keyser Marston Associates, Inc.
\\Sf-fs1\wp\17\17255\17255.002\Analysis '07 v 3 (Conf).xls; RTA Sales; 8/14/2007; mc

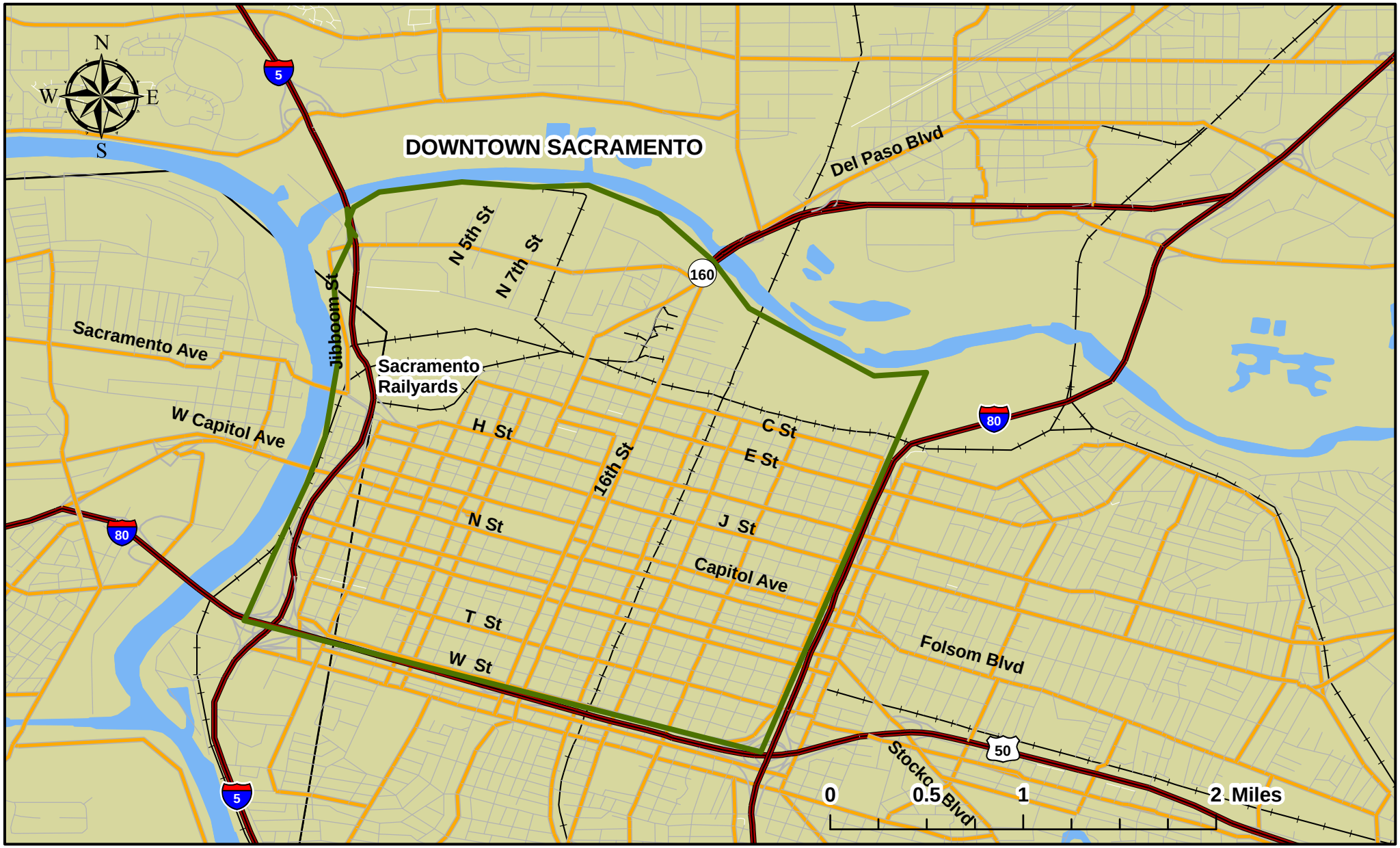
Map 1
Proposed Sacramento Railyards Project
Thirty Mile Regional Trade Area (RTA)



Map 2
Proposed Sacramento Railyards Project
Primary Trade Area (PTA)



Map 3
Proposed Sacramento Railyards Project
Downtown Trade Area (DT)



APPENDIX O
HEALTH RISK ASSESSMENT

DRAFT

SACRAMENTO RAILYARDS REDEVELOPMENT

SCREENING HEALTH RISK ASSESSMENT OF DPM FROM FREEWAY AND RAILWAY

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Submitted to:

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July 2007

Contract Number: 03-16472A

LIST OF TABLES

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ACRONYMS

ARB	California Air Resources Board
DPM	diesel particulate matter
HRA	health risk assessment
IMTH	Inter-Modal Transportation Hub
SMAQMD	Sacramento Metropolitan Air Quality Management District
TAC	Toxic Air Contaminants
TFV	transit fleet vehicles
UP	Union Pacific
USEPA	United States Environmental Protection Agency
VMT	vehicle miles traveled

1.0 INTRODUCTION AND PROJECT DESCRIPTION

This technical report has been prepared to evaluate the potential cancer risk due to diesel particulate matter (DPM) for a new development that may result from its location proximate to freeway and railway line in Sacramento. The redevelopment of the Railyards area, a 237-acre site in downtown Sacramento as shown in Figure 1, will include a residential land use element within the various mixed land uses.

The California Air Resource Board (ARB) published land use guidance[1] that raises concerns about locating sensitive receptors (which include residential communities) near freeways or heavily traveled roadways. The ARB guidance suggests that a site specific health risk assessment (HRA) should be performed to characterize the health risks of a given development project, when sensitive land, including residential land, uses are sited closer than 500 feet from a freeway or other high traffic roadway.

To address the need of a separate site specific health risk assessment for every sensitive land use project that does not meet the siting distance recommendation from the ARB, Sacramento Metropolitan Air Quality Management District (SMAQMD) published The Recommended Protocol For Evaluating The Location Of Sensitive Land Uses Adjacent To Major Roadways, to provide guidance to local land use planners on how to assess potential cancer risk of sensitive receptors exposed to DPM from major roadways[2].

There are three potential sources of diesel particulate matter that are addressed in this report. First is residential land use near a freeway. The second is residential land use near the rail line. The third is residential land use near the Inter-Modal Transit Hub (IMTH). As requested by the SMAQMD[3], the screening approach recommended in the SMAQMD guidance is applied to the Railyards Redevelopment project for both the freeway and the railway. The risks to residents near the IMTH are discussed qualitatively, as there is insufficient information to allow a quantitative assessment of risks.

[1] Air Resources Board (ARB). 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April.

[2] Sacramento Metropolitan Air Quality Management District (SMAQMD). 2007. *Recommended Protocol for Evaluating the Location of Sensitive Land Uses Adjacent to Major Roadways*

[3] Personal Communication, between Shari Libicki of ENVIRON and SMAQMD staff.

2.0 SCREENING HRA OF FREEWAY DPM EMISSIONS

The Railyards Redevelopment project has planned to place residences within 500 feet of Interstate-5. Following ARB guidance and SMAQMD recommendations, a screening approach is used to assess the potential cancer risks from vehicles DPM emissions of the section of freeway near to residences. The screening process involves the use of look-up tables that estimate DPM cancer risks based on the project characteristics, which include freeway orientation, traffic volume of the freeway, and location of the project relative to the freeway.

2.1 SCREENING ANALYSIS

The project area is located in downtown Sacramento and to the east (downwind) of Interstate-5, which runs north and south, as shown in Figure 1. In this case, the upper matrix of Table 2 from the SMAQMD guidance should be applied.

Peak hour traffic conditions of Interstate-5 near the site were projected by Dowling Associates Inc., from Caltrans' estimates of the 2005 traffic. Information summarizing the morning and evening peak traffic counts was provided by Dowling to ENVIRON for the following scenarios:

- Existing, without project
- Baseline, without project
- Baseline, with initial phase
- Near term – Year 2013, without project
- Near term – Year 2013, with initial phase
- Long term – Year 2030, without project
- Long term – Year 2030, with initial phase
- Long term – Year 2030, with full project

The data shows that, as the project progresses, the traffic on Interstate-5 increases, and Year 2030 represents the busiest freeway operations. The 2030 traffic conditions are summarized in Table 1. As shown in Table 1, traffic counts were provided for the following locations:

- Northbound Interstate-5
    - South of L Street on-ramp

- South of I Street on-ramp
- South of Richards Blvd off-ramp
- North of Richards Blvd off-ramp
- North of Richards Blvd on-ramp

- Southbound Interstate-5
  - North of Richards Blvd off-ramp
  - North of Richards Blvd on-ramp
  - North of J Street off-ramp
  - North of I Street on-ramp

Since the site being evaluated is located immediately south of the Richards Boulevard off-ramp of northbound Interstate-5, and immediately north of the I Street on-ramp of southbound Interstate-5, the traffic volumes of these two locations (i.e., the northbound and the southbound traffic adjacent to the site) were summed up to estimate the total peak traffic on the section of Interstate-5 in the vicinity of the project area. The estimated traffic counts range between 17,702 and 18,983 for the three scenarios in 2030. According to the screening process, these traffic counts are all rounded up to 20,000, the nearest entry in Table 2 from the SMAQMD guidance. Based on this table, if the nearest new residence is placed no closer than 200 feet, the cancer risks from the freeway DPM are considered less than the evaluation criteria selected by the SMAQMD (446 per million) and a site specific HRA is not recommended.

2.2 UNCERTAINTIES

This screening analysis, as recommended by the SMAQMD, has simplified the procedures of a site specific HRA; therefore, the results of the screening analysis are likely to be a conservative approximation of the cancer risks estimated from a refined HRA. For example, the screening tables do not consider the fleet turn-over in the future years, but assumed the 2007 fleet average DPM emission factors. As stricter emissions regulations and improved technologies phase in over the years, it is expected that the 2030 fleet average DPM emission factors would be significantly lower than that of year 2007, and residences probably could be sited closer than the values specified by the screening tables, without exceeding the cancer risk criteria.

It is also noted that the screening procedure provides a methodology for assessing cancer risk only, and there are potential short term health risks of living near freeways and major roadways. The SMAQMD guidance pointed out that studies have shown that living near major roadways is

associated not only with increased cancer risk, but with short term adverse health impacts such as reduced lung function and increased asthma hospitalizations. At this time, very little information exists on how to quantify the adverse short term health impacts of living near freeways.

3.0 SCREENING HRA OF RAILWAY DPM EMISSIONS

The Railyards Redevelopment project has planned residences close to railway lines that run through downtown Sacramento. The DPM emitted by the train locomotives also results in potential cancer risks. For this reason, the ARB guidance[4] advised against siting sensitive receptors nearby rail yards. The approach described in the SMAQMD guidance does not directly address the railway lines. However, as discussed with the SMAQMD, the equivalent freeway traffic volume was estimated for the DPM emissions from the railway lines, and the screening tables were then used to assess the DPM cancer risks in a similar fashion as the freeway DPM emissions.

3.1 DPM EMISSIONS FROM FREIGHT TRAINS

Based on the information provided by EIP-PBS&J, Union Pacific (UP) operates the freight trains that travel on the nearby railways. Since the engine information is not available for those freight trains, the emissions information for UP locomotives from the Roseville Rail Yard Study,[5] as summarized in Table 2, was used to estimate the DPM emissions of the freight trains. At an average traveling speed of 30 miles per hour[6], the locomotives notch setting is estimated to be Notch 5[7]. The average Notch 5 DPM emission rate (0.101 g/s/locomotive) for all the UP line-haul locomotives in the Roseville study was used.

The activity of the freight train locomotives were estimated from the following parameters:

- Average number of freight trains per day is estimated to be 14[8].
- Average number of locomotives per train is 2.9[9].

Emissions in gram per mile-hr were calculated using the following formula:

> [Average Notch 5 Emission Rate (g/s/locomotive)] x [3600 (s/hr)] / [Average Speed (mile/hr)] x [Average Number of Locomotives per Train (locomotives/train)] x [Average Number of Freight Trains per Day (trains/day)] / [24 (hr/day)]

[4] ARB. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective.* April.
[5] ARB. 2004. *Roseville Rail Yard Study*. October.
[6] Email communication from Mr. Bodipo-Memba on July 21, 2006.
[7] For notches 1 through 4, the maximum speed in each notch is approximately 8 mph per notch setting, based on the Roseville study.
[8] UP estimated that 12 to 14 trains use the rail line, according to email communication from Mr. Bodipo-Memba on July 16, 2007.
[9] Average number of locomotives per train in the Roseville study..

The resulting total DPM emissions from UP freight train locomotives were estimated to be 20.6 gram per miles traveled during a one-hour period.

It is assumed that the freight trains do not idle near the project site in downtown Sacramento.

3.2 DPM EMISSIONS FROM PASSENGER TRAINS

The Intermodal Facility as part of the Railway Redevelopment project will provide a direct connection between the transit systems, including the passenger rail services operated by Amtrak, Capitol Corridor, and the San Joaquin Corridor. Forty passenger trains per day, including four Amtrak trains, 32 Capitol Corridor trains, and four San Joaquin Corridor trains, were projected for September 2006[10].

These passenger trains are also assumed to run at a projected speed of 30 miles per hour[11] and a large amount of idling is expected[12]:

- From 9:00 PM to 4:00 AM between one and four trains are idle;
- From 6:28 AM to 8:55 AM there is an average idle time of 1 hour.

The total idling time is estimated to be 18.5 hours per day on average. The idling emissions are assumed be spread over a 0.3 mile distance along the railway tracks south of the Intermodal Facility, between Interstate-5 and 7th Street.

For the passenger trains, one locomotive engine per train is assumed[13]. Information was provided for three passenger train engines and they are summarized in Table 3[14]. Since the engine composition of the passenger train fleet is unknown, the fleet average rated power output was estimated to be the average of the three engines listed in Table 3, resulting in a value of 2,408 horsepower. The actual power demand of the engines would be lower for a single engine train moving at a slow speed through an urban area. Thus, a 50% load factor was assumed to account for lower speeds and the flat terrain in Sacramento.

Since these engines were all likely manufactured prior to 2001 and no specific emission information is available, the United State Environmental Protection Agency (USEPA) Tier 0 controlled DPM emission factor of line-haul engines (0.32 gram per bhp-hr) was selected[15]. It should be noted that these Tier 0 emission factors are the current standards for these engines.

[10] Email communication from Mr. Bodipo-Memba on July 21, 2006.
[11] Ibid.
[12] Email communication from Mr. Bodipo-Memba on February 8, 2007.
[13] Ibid.
[14] Email communication from Mr. Bodipo-Memba on July 3, 2007
[15] USEPA. 1997. *Emission Factors for Locomotives*. December. http://www.epa.gov/otaq/regs/nonroad/locomotv/frm/42097051.pdf, accessed July 20 2007.

The proposed future year standards require retrofitting and result in much lower DPM emission factors (0.20 gram per bhp-hr for Tier 0 engines[16]). Therefore, the emissions estimated based on the current emission factors will be an over-estimate for the future residents.

The moving emissions in grams per mile-hr were calculated using the following formula:

> [USEPA Tier 0 Locomotive Emission Rate (g/hp-hr/locomotive)] x [Average Rated Power Output (hp)] x [Load Factor (-)] / [Average Speed (mile/hr)] x [Average Number of Locomotives per Train (locomotives/train)] x [Average Number of Freight Trains per Day (trains/day)] / [24 (hr/day)]

The DPM emissions from moving passenger train locomotives were estimated to be 21.4 grams per mile traveled during a one-hour period

The average idling DPM emission rate[17] (27.5 g/hour) of an EMD 12-710G3 passenger locomotive engine, which corresponds to the F59PH1 engine, was used in the following formula to estimate the idling emissions:

> [Idling Emission Rate (g/hr)] x [total idling time (hr/day)] / [0.3 mile] / [24 (hr/day)]

The DPM emissions from idling passenger train locomotives were estimated to be 70.7 grams per mile traveled during a one-hour period.

3.3 SCREENING ANALYSIS

In order to follow a similar screening procedure as the freeway DPM emissions, the DPM emissions from the freight trains and the passenger trains were summed up to be 113 gram per miles traveled during a one-hour period. This emission rate was converted to equivalent peak hour vehicle traffic, using the weighted average of the DPM emission rates based on relative VMT (0.0376 g/vehicle-mile), which were estimated from Table 3 of the SMAQMD guidance. This results in a value of 2,997 vehicles per hour.

The project area is located to the north (downwind) of the east-west railroad tracks, as shown in Figure 1. In this case, the upper matrix of Table 1 from the SMAQMD guidance should be applied. According to the screening process, the peak hour traffic is rounded up to 4,000, the nearest entry in Table 1 from the SMAQMD guidance. Based on this table, no matter where the new residence is placed, the cancer risks from the locomotive DPM are considered less than the

[16] USEPA. 2007. *Draft Regulatory Impact Analysis: Control of Emissions of Air Pollution from Locomotive Engines and Marine compression-Ignition Engines Less than 30 Liters per Cylinder.* March. http://www.epa.gov/otaq/regs/nonroad/420d07001.pdf, accessed July 20, 2007

[17] ENVIRON. 2007. *Los Angeles – Hobart Railyard TAC Emission Inventory.* http://www.arb.ca.gov/railyard/hra/env_hobart_eirpt.pdf, accessed July 20, 2007

evaluation criteria selected by SMAQMD (446 per million) and a site specific HRA is not recommended

3.4 UNCERTAINTIES

This SMAQMD screening approach was initially devised to address the HRA of freeway DPM emissions. Although this equivalent traffic approach approximates the emissions aspect of a HRA, the release characterizations of vehicle exhaust (such as release height and release momentum) are very different from those of locomotives exhaust.. However, locomotive's higher stack and stronger upward momentum generally facilitates air dispersion and would result in a lower DPM concentration and cancer risk.

Secondly, the activity levels of the locomotives are based on the current operations and the emission rates are based on the existing engines. It is possible that the activity of trains will increase and the existing engines will be replaced by newer engines that conform to stricter emission standards. These two factors could offset each other and are unlikely to change the results of this screening analysis.

As noted earlier, the selected USEPA Tier 0 DPM emission factor of line-haul engines is the current standard, and the proposed future year standards require retrofitting and result in much lower DPM emission factors for Tier 0 engines[18]. Thus, the emissions estimated based on the current emission factors will be an over-estimate for the future residents.

It is also noted that the screening procedure provides a methodology for assessing cancer risk only, and there are potential short term health risks of living near freeways and major roadways. The SMAQMD guidance pointed out that studies have shown that living near major roadways is associated not only with increased cancer risk, but with short term adverse health impacts such as reduced lung function and increased asthma hospitalizations. At this time, very little information exists on how to quantify the adverse short term health impacts of living near railways.

[18] ENVIRON. 2007. *Los Angeles – Hobart Railyard TAC Emission Inventory.* http://www.arb.ca.gov/railyard/hra/env_hobart_eirpt.pdf, accessed July 20, 2007

4.0 QUALITATIVE EVALUATION OF THE RISKS FROM INTER-MODAL TRANSPORTATION HUBS AND MITIGATION MEASURES

There is insufficient information to allow a detailed evaluation of the health risks that may result from the IMTH. Accordingly, EIP-PBS&J has asked ENVIRON to qualitatively assess the potential for impacts on human health that may be imposed by an IMTH. This report describes the types of emission sources that may impact human health at an IMTH, presents the results of two risk assessments that have been completed at IMTHs for comparison, and discusses the regulations that will decrease emissions at an IMTH. Finally, this section ends with a discussion of the types of design parameters that can be used to reduce risks from an IMTH

4.1 EMISSIONS SOURCES AT THE IMTH THAT MAY IMPACT HUMAN HEALTH

The primary source of Toxic Air Contaminants (TACs) from an IMTH is the exhaust from diesel-powered transit equipment. Diesel engines emit a complex mixture of air pollutants, composed of gaseous and solid material. The visible emissions in diesel exhaust are known as DPM. In 1998, California identified DPM as a toxic air contaminant based on its potential to cause cancer, premature death, and other health problems. The IMTH at the Sacramento Railyards will allow the integration of rail, bus, bicycle and pedestrian transport. The buses and locomotives serving the IMTH have the potential to emit DPM.

4.2 REVIEW OF IMTH RISK ASSESSMENTS IN THE LITERATURE

ENVIRON was able to locate two recent risk assessments for IMTHs in the literature. One was conducted by ENVIRON in 2005 for the proposed Vallejo Station Project, and the second was prepared by Jones and Stokes in 2005 for the proposed Union City Inter-modal Station Passenger Rail Project. The evaluations resulted in incremental cancer risks at the nearest resident of 8 and 9 in a million, respectively. They are briefly described below.

ENVIRON evaluated the risks at Vallejo of ferries calling at a ferry terminal and of public transit buses, including regional buses and local buses. Both the ferries and buses emit DPM. There were mixed use areas near the ferry and bus terminals, including apartment buildings. ENVIRON estimated the incremental cancer risks from this IMTH center to be 8 in a million at the nearest residence.

The Union City Intermodal Station Passenger Rail Project consists of a pedestrian-oriented, high-density downtown district that would have an inter-modal facility focused around the

existing BART station. It would accommodate BART, a 16-bus bay facility, and a passenger rail station. The passenger rail station would serve Capitol Corridor and the planned Dumbarton Rail service. The modeled concentrations of DPM from trains result in an increase in cancer risk of 9 in 1 million at the nearest residence[19]. However, it appears that the additional diesel exhaust from the buses was not considered in the assessment. Were the buses to have been considered, the risks would likely be higher.

4.3 REGULATIONS AND ACTIVITIES REDUCING DIESEL EMISSIONS FROM TRANSIT SOURCES AT IMTHS

The diesel sources at the IMTH that will be located at the Sacramento Railyards will include buses and trains. This section contains a discussion of regulations and other activities that will result in decreasing diesel emissions from diesel sources at the IMTH over the next few years. In addition to the ARB activities described here, local jurisdictions are also restricting diesel emissions through the entitlement process.

The ARB is taking active steps to reduce diesel exposure from buses. These measures include imposing stricter diesel exhaust standards on bus fleets and requiring low sulfur fuel for buses. Particulate emissions from diesel combustion sources are reduced as the sulfur content of diesel fuel is reduced. Low sulfur fuel (15 ppm) sold in California is referred to as CARB diesel fuel. As of June 2006, only CARB diesel fuel[20] can be sold in California. In addition, ARB's new Transit Fleet Vehicle Rule[21] requires reductions in the total diesel PM emissions from all diesel transit fleet vehicles[22] (TFV) statewide. The rule establishes total TFV diesel PM emissions as of January 1, 2005 as a baseline and requires that total TFV fleet diesel PM emissions be reduced to 40% of the baseline by January 2008 and 80% of the baseline by January 2011. These reductions will be achieved by replacement, retrofit, and refueling.

The ARB does not have jurisdiction over locomotive engines. However, they can and do regulate fuel used in intrastate locomotives. Beginning January 1, 2007, diesel fuel sold for use in intrastate diesel-electric locomotives operating in California was required to meet the specifications of CARB diesel fuel[23]. ARB is also attempting to work with owners and operators

[19] Jones & Stokes (2005). *Union City Intermodal Station Passenger Rail Project Draft Environmental Impact Report.* http://www.ci.union-city.ca.us/commdev/EIR.Staton/draftEIR.htm, accessed July 20, 2007

[20] California Code of Regulations, Title 13, Division 3, Chapter 5.1. Standards for Fuels for Nonvehicular Sources § 2299. Standards for Nonvehicular Diesel Fuel Used in Diesel-Electric Intrastate Locomotives and Harborcraft.

[21] Title 13, California Code of Regulations, sections 2020, 2023, 2023.2 & 2023.4

[22] A transit fleet vehicle is an on-road vehicle operated by a public transit agency, less than 35' in length and 33,000 gross vehicle weight rate (GVWR), but greater than 8,500 GVWR, powered by heavy duty engines fueled by diesel or alternative fuel; including service vehicles, tow trucks, dial-a-ride buses, paratransit buses, charter buses, and "commuter service" buses operated only during peak commute hours with 10 or fewer stops per day. Gasoline-powered TFVs are exempt.

[23] California Code of Regulations, Title 13, Division 3, Chapter 5.1. Standards for Fuels for Nonvehicular Sources § 2299. Standards for Nonvehicular Diesel Fuel Used in Diesel-Electric Intrastate Locomotives and Harborcraft.

or rail lines to encourage the use of cleaner engines[24] absent regulatory jurisdiction. Although agreements have been signed to reduce emissions in the South Coast Air Basin and at rail yards, there is currently no agreement in place to reduce emissions from passenger rail lines in the Sacramento metropolitan area.

As a result of ARB and USEPA diesel risk reduction measures, risks from IMTHs are likely to be reduced over the coming years.

4.4 AVAILABLE MITIGATION MEASURES TO REDUCE EXPOSURE TO DPM

In addition to reducing the emissions of DPM from diesel equipment, as discussed above, there are other available mitigation measures for reducing exposure to DPM at a receptor. First, one can increase the distance between the receptor and the source of emissions. Second, one can reduce the transport of emissions from the source by some type of barrier. Third, one can reduce the indoor air concentration of freeway emissions using filtration systems. While there is substantial knowledge about the efficacy of these systems on controlling medium- and larger-sized particulate matter, less known about the efficacy of these methods for control of very small particulate matter, such as DPM. The last two options are discussed below.

4.4.1 USE OF VEGETATIVE BARRIERS

There is a substantial body of literature discussing the use of vegetative barriers to reduce airborne particulate emissions. Overall, the recent work by Raupach and others[25,26,27] at Australia's Commonwealth Scientific and Industrial Research Organisation contains the most relevant theoretical predictive work on estimating the efficacy of vegetative barriers in removing particulate from the air, with some comparison to experimental results.

Raupach's work concludes that the particle transmittance is roughly equal to optical porosity, for median particle sizes of 30 micrometers (μm). As the particle sizes become smaller, the efficacy of the barrier is lowered. The work states that vegetative buffers are more effective close to the source of emissions, and the papers discuss the details of a number of different scenarios (combinations of shrub and pasture, length of buffer, along wind length of sources, etc.). There is little information in the literature about the effect of vegetative buffers on very small particles, such as the sizes that one would expect for diesel exhaust emissions.

[24] http://www.arb.ca.gov/msprog/offroad/loco/loco.htm, accessed July 20, 2007

[25] Raupach, M.R., Woods, N., Dorr, G., Leys, J.F. and Cleugh, H.A. 2001. "The Entrapment of Particles by Windbreaks". Atmospheric Environment, (35) 3373-3383.

[26] Raupach M.R. and Leys, J.F. 1999. "The efficacy of vegetation in limiting spray drift and dust movement." Technical Report 47/99 CSIRO Land and Water, October.

[27] Raupach M.R., Leys J.F., Woods N., Dorr G., and Cleugh, H.A. 2000. "Modeling the effects of riparian vegetation on spray drift and dust: The role of local protection." August 17.

4.4.2 USE OF AIR FILTRATION SYSTEMS

Indoor exposure to DPM may be further reduced by filtration of indoor air. According to a recent study, DPM has a trimodal size distribution consisting of a nuclei mode (0.005 µm to 0.05 µm in diameter), an accumulation mode (0.05 µm to 1 µm in diameter), and a coarse mode (1 µm to 10 µm in diameter).[28]

Typically, greater than 90% of DPM exists in the nuclei mode, whereas the majority of the particle mass exists in the accumulation mode.[29] Air cleaners may reduce the concentrations of some particles, including small solid or liquid substances suspended in air, such as dust or light spray mists. Air cleaners may be installed in the ducts which are part of central heating or air-conditioning systems. Portable air cleaners stand alone in a room. Most air cleaners are tested with a standard minimum particle size of 0.3 microns. However, as noted above, most freeway exhaust particles are in a smaller size range. As a result, there exists little literature information on the efficacy of air cleaners on the reduction of particulate in the size ranges that might be expected from a freeway. It is therefore difficult to judge the performance of filtration systems in reducing indoor concentrations that may result from nearby freeway emissions.

4.5 SUMMARY OF QUALITATIVE EVALUATION

The estimated risks from two previous IMTH projects were slightly less than 10 in a million. However, the risks that were estimated for the Union City project, which will likely more closely represent the Sacramento Railyards IMTH, considered risks only from trains and did not include the risks from the buses. There are also significant regulations that have been introduced that will reduce the diesel emissions from buses and trains. The reduction in diesel emissions from buses and trains will reduce the risks due to the IMTH in the Sacramento Railyards. Although these diesel risk reduction measures will reduce the emissions of diesel exhaust from the IMTH in the Sacramento Railyards, the actual risk from the IMTH being developed there will depend on the orientation of the IMTH, the proximity of housing, and the number of vehicles calling on the IMTH.

[28] Arnold, Kittelson, and Winthrop Watts. *Review of Diesel Particulate Matter Sampling Methods (Supplemental Report #2), Aerosol, Dynamics, Laboratory and On-Road Studies*. 31 July. 1998. <http://www.me.umn.edu/centers/cdr/reports/EPAreport2.pdf>

[29] Ibid

Table 1: Interstate-5 Traffic Volumes – Year 2030
Sacramento Railyards Redevelopment
Sacramento, CA

Location	Without Project		With Initial Phase		With Full Project	
	AM Peak Hour Vol	PM Peak Hour Vol	AM Peak Hour Vol	PM Peak Hour Vol	AM Peak Hour Vol	PM Peak Hour Vol
Northbound I-5						
South of L Street on-ramp	7,220	7,407	7,136	7,434	7,141	7,550
South of I Street on-ramp	7,850	8,505	7,820	8,632	7,845	8,746
South of Richards Blvd off-ramp	8,448	10,742	8,309	10,909	8,364	11,260
North of Richards Blvd off-ramp	6,627	9,324	6,487	9,104	6,465	9,134
North of Richards Blvd on-ramp	7,516	11,237	7,446	11,517	7,640	11,632
Southbound I-5						
North of Richards Blvd off-ramp	12,721	8,798	13,223	9,036	13,211	9,163
North of Richards Blvd on-ramp	11,149	7,870	11,060	7,775	11,101	7,834
North of J Street off-ramp	11,800	9,190	11,674	9,410	11,830	9,393
North of I Street on-ramp	9,667	7,754	9,393	7,832	9,230	7,723
Total near Railyards Redevelopment site	18,115	18,496	17,702	18,741	17,594	18,983

Source: Dowling Associates, Inc., 2007

Table 2: Roseville Locomotive Emissions Rate (g/s)
Sacramento Railyards Redevelopment
Sacramento, CA

Locomotive Class	Idle	Notch-1	Notch-2	Notch-3	Notch-4	Notch-5	Notch-6	Notch-7	Notch-8
GP-3x	0.0106	0.0086	0.0306	0.0517	0.0589	0.0742	0.1158	0.1286	0.1689
GP-4x	0.0122	0.0096	0.0343	0.0661	0.0715	0.0919	0.1416	0.1661	0.2217
GP-50	0.0072	0.0142	0.0396	0.0838	0.0864	0.1094	0.1844	0.2015	0.2577
GP-60	0.0044	0.0138	0.037	0.0813	0.0863	0.106	0.1831	0.2039	0.2578
SD-7x	0.0067	0.0114	0.0183	0.0436	0.0675	0.0892	0.1041	0.132	0.1637
SD-90	0.017	0.0139	0.0275	0.0711	0.1177	0.156	0.0915	0.0717	0.2593
Dash-7	0.0092	0.0169	0.0194	0.0372	0.0558	0.0858	0.1219	0.1256	0.1436
Dash-8	0.0106	0.0194	0.0222	0.0428	0.0642	0.0986	0.1403	0.1442	0.1653
Dash-9	0.0083	0.0104	0.0231	0.0643	0.0969	0.1204	0.1586	0.188	0.2504
C60-A	0.0197	0.019	0.0218	0.0772	0.065	0.0767	0.0865	0.0633	0.1008
Average	0.01059	0.01372	0.02738	0.06191	0.07702	0.10082	0.13278	0.14249	0.19892

Source: Air Resources Board (ARB). 2004. Roseville Rail Yard Study. October.

Table 3: Summary of Passenger Locomotives
Sacramento Railyards Redevelopment
Sacramento, CA

Passenger Locomotive Engine	Build Date	Power Output (hp)
F59PH1- Electro Motive Diesel (EMD- a subsidiary of GM)	1993-	3000
P42- Genesis (Built by GE)	1996-2001	1073
P32- Dash 8 (Built by GE)	1984-1991	3150
Average		2408

Source: Email communication from Mr. Bodipo-Memba on July 3, 2007

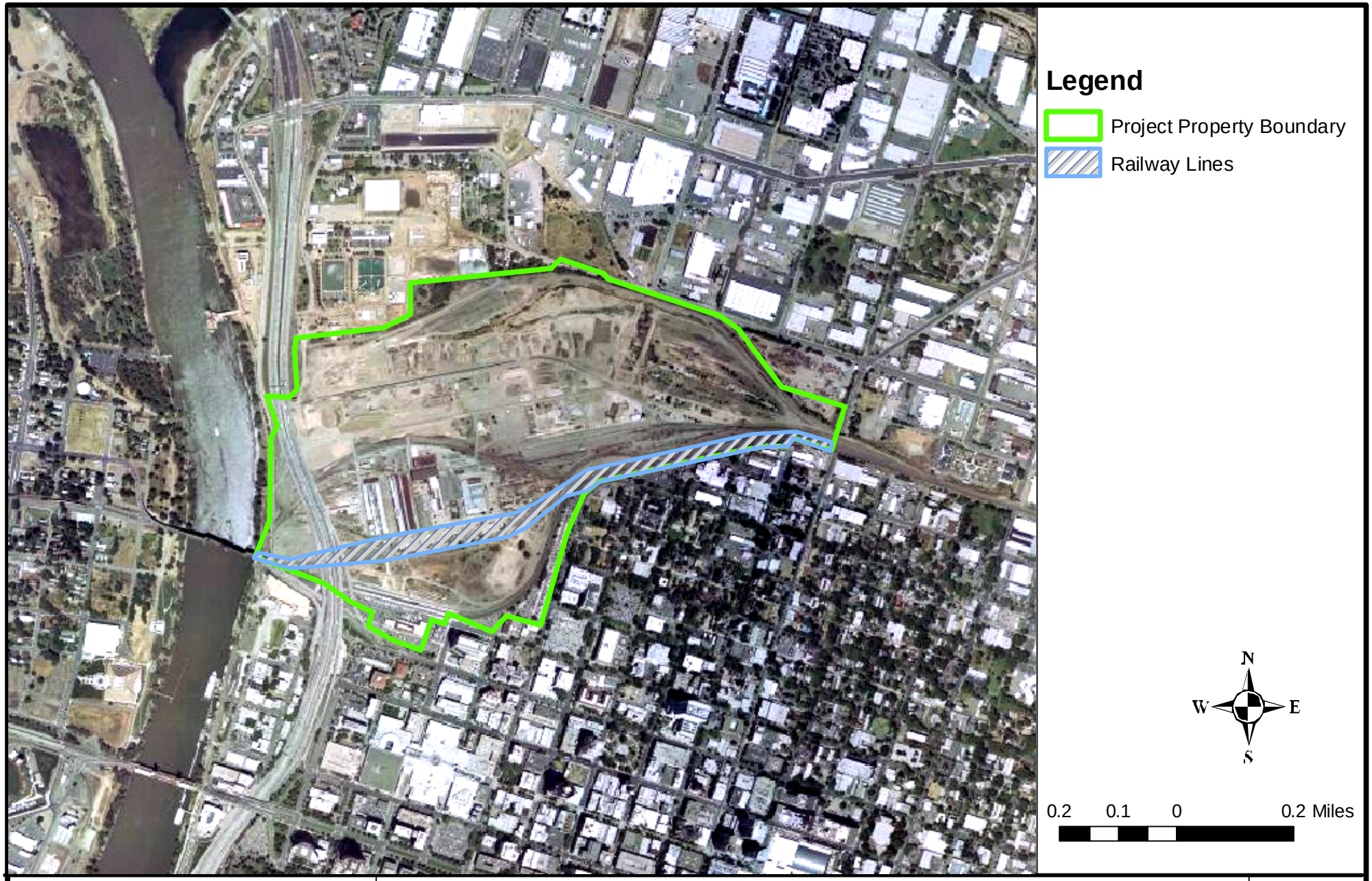

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Figure 1: Site Location
Sacramento Railyards Redevelopment
Sacramento, CA

Figure 1

Drafter: Date: Contract Number: 03-16472A Approved: Revised:

SACRAMENTO RAILYARDS REDEVELOPMENT

HEALTH RISK ASSESSMENT OF DIESEL PARTICULATE MATTER (DPM) AND SOIL FUGITIVES FROM CONSTRUCTION ACTIVITIES

Prepared for:

EIP/PBS&J
353 Sacramento Street, Suite 1000
San Francisco, California 94111

Submitted to:

City of Sacramento

Prepared by:

ENVIRON Corporation
6001 Shellmound Street, Suite 700
Emeryville, California 94608

August 2007

Contract Number: 03-16472A

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ACRONYMS

CalEPA	California Environmental Protection Agency
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulation
CO	Carbon Monoxide
DEM	Digital Elevation Model
DPM	Diesel Particulate Matter
EIR	Environmental Impact Report
HEI	Health Effects Institute
HHRA	Human Health Risk Assessment
HI	Hazard Index
HQ	Hazard Quotient
ISCST3	Industrial Source Complex Model – Short Term
NCP	National Contingency Plan
NO_x	Nitrogen Oxides
OEHHA	Office of Environmental Health Hazard Assessment
PCB	Polychlorinated Biphenyl
PM_{10}	Total Respirable Particulate Matter
REL	Reference Exposure Level
RfD	Reference Dose
ROG	Reactive Organic Gas
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO_2	Sulfur Dioxide
SVOC	Semi-Volatile Organic Compound
TPH	Total Petroleum Hydrocarbon
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
VOC	Volatile Organic Compound
WHO	World Health Organization

Units:

g	gram
kg	kilogram
µg	microgram
m^3	cubic meter
mg	milligram
s	second

1.0 INTRODUCTION AND PROJECT DESCRIPTION

This technical report has been prepared to evaluate the potential health risks to the surrounding community from chemicals that may become airborne due to soil disturbances and diesel particulate matter (DPM) in heavy equipment exhaust during construction activities on a contaminated site in Sacramento. The redevelopment of the Sacramento Railyards consists of five phases (Phases 1a, 1b, 2, 3, and 4) over a period of 20 years, from 2011 to 2030. The details of the phasing plans are described in the draft Railyards Specific Plan prepared for the City of Sacramento[1].

The history of the Railyards site shows continuous industrial operations since the 1860's as a locomotive and railyard car assembly, building, repair, and refurbishing facility. These functions and supporting activities involved the use of substances and materials that are considered toxic. In 1988, the Railyards site was listed as a state superfund site, and investigations and cleanup activities have been carried out.

Chemicals present in site soil may be released into air during demolition and site grading of the redevelopment project. Similarly, diesel construction equipment exhaust contains DPM, which is listed as a toxic air contaminant by the Office of Environmental Health Hazard Assessment (OEHHA). This report is intended to evaluate the potential health impacts that the construction activities may have on the nearby business and residential communities.

The methodology and the results of the human health risk assessment (HHRA) of exposures to the activities discussed above are described in the following chapters.

[1] Administrative Draft, dated May 31, 2007.

2.0 ESTIMATED EMISSIONS

Emissions of individual air toxics from soil fugitives and DPM were estimated based on URBEMIS 2002 outputs and soil concentrations from remedial investigations conducted for the Railyards site. This is described in further detail below.

2.1 EMISSIONS OF CRITERIA POLLUTANTS

Air emissions from construction activities were estimated by EIP/PBS&J using URBEMIS 2002 and included the following pollutants: reactive organic gas (ROG), carbon monoxide (CO), nitrogen oxides (NO_x), sulfur dioxide (SO_2), total respirable particulate matter (PM_{10}), PM_{10} exhaust and PM_{10} dust.

The URBEMIS output files were provided to ENVIRON International Corporation[2] and contained the annual and daily emissions and the operating schedule for the following categories of sources during each year of the five planning phases from 2011 to 2030:

- Demolition Emissions
  - Fugitive Dust
  - Off-Road Diesel
  - On-Road Diesel
  - Worker Trips
- Site Grading Emissions
  - Fugitive Dust
  - Off-Road Diesel
  - On-Road Diesel
  - Worker Trips
- Building Construction
  - Building Construction Off-Road Diesel
  - Building Construction Worker Trips
  - Arch Coatings Off-Gas
  - Arch Coatings Worker Trips
  - Asphalt Off-Gas
  - Asphalt Off-Road Diesel

[2] Email communication from Mr. Bodipo-Memba at EIP/PBS&J on July 5, 2007.

- Asphalt On-Road Diesel
- Asphalt Worker Trips

This HHRA focused on the emissions of chemicals that will occur at the project site. This would include the fugitive PM_{10} dust emissions during the demolition and site grading, and the PM_{10} exhaust emissions (i.e. DPM from off-road diesel equipment during demolition, site grading and building construction):

- Demolition Emissions
  - Fugitive Dust (dust PM_{10} only)
  - Off-Road Diesel (exhaust PM_{10} only)
- Site Grading Emissions
  - Fugitive Dust (dust PM_{10} only)
  - Off-Road Diesel (exhaust PM_{10} only)
- Building Construction
  - Building Construction Off-Road Diesel (exhaust PM_{10} only)

EIP/PBS&J used URBEMIS 2002 to estimate emissions for the daily and annual averaging periods. According to its output files, the construction equipment will operate six to eight hours per day. The maximum hourly emissions were estimated from the maximum daily emissions, by conservatively assuming six hours of operation per day.

This HHRA was performed for the unmitigated emissions, although the URBEMIS 2002 runs also estimated mitigated emissions of fugitive dust, assuming a 50% control efficiency of PM_{10} from watering exposed surfaces three times per day. It is also noted that fugitive dust emissions from off-road diesel equipment are not accounted for in URBEMIS 2002, even though soil could be disturbed and released into the air by the operation of the equipment on dirt roads at the site.

2.2 LOCATIONS OF EMISSIONS

Maps from the draft Railyards Specific Plan[3] show that Phases 1a, 1b, 2, and 3 include the development of 23 discrete parcels of land. In this analysis, each parcel of land is identified by the phase number and a letter. In addition to these 23 parcels of land, Phase 4 has one land parcel that is identified only by the phase number. The locations of these 24 parcels of land (or construction areas) are presented in Figure 1.

[3] Administrative Draft, dated May 31, 2007.

Only one phase of construction activity will take place in any one year during the 20-year construction program. It is assumed that demolition, site grading and building construction activities could occur anywhere within the lands developed for that phase. Thus, the total annual emissions were proportionally divided, based on the sizes of the areas (see Table 1), to estimate the annual emissions for each area of that phase. For the short term averaging periods, it is assumed that the emission could occur in any area developed for that phase. Annual and hourly emissions of DPM and soil fugitive PM_{10} from each of the construction areas are summarized in Table 1.

2.3 EMISSIONS OF TOXIC AIR POLLUTANTS

Concentrations of chemicals in the soil at the Railyards site have been investigated for the groundwater and soil remediation purposes. Soil samples from the remedial investigation were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), total and soluble metals, and polychlorinated biphenyls (PCBs). The statistics of compounds detected in the samples were summarized for each study area in Table D-1 of the Draft Environmental Impact Report[4] of the 7th Street Extension project. EIP/PBS&J has stated[5] that these concentration values are appropriate for the speciation of fugitive soil dust emissions. For the purposes of this HHRA, it is assumed that the average soil concentrations listed for each chemical in each of the five soil study areas (Northern Shops Study Area, Central Shops Study Area, Central Corridor, Car Shop Nine, and Lagoon Soil Area) are representative of the chemical composition of dust emissions that would be present in those areas during demolition, grading and building construction. All detected SVOCs, TPH, metals and PCBs were included for evaluation in the HHRA. VOCs were not included, as it was assumed that the differences in VOC emissions during construction activities and for the 'no project alternative' would be minimal.

As shown in Figure 1-2 of the Year 2004 Soil Remediation Summary Report[6], the five soil study areas are not divided in a similar way as the 24 land parcels or construction areas discussed above. If a construction area overlaps with more than one soil study area, the average of the soil concentrations of all the study areas was assumed to be representative of the construction area, excluding the study areas that take up less than 10% of the construction area. To estimate the potential acute health impacts, the maximum of the soil concentrations of all the study areas was selected for the construction area, excluding the study areas that take up less than 10% of the construction area. The study areas included for each construction area are summarized in Table 1.

[4] Prepared by EIP Associates and dated November 1998.
[5] Email communication from Mr. Bodipo-Memba at EIP/PBS&J on July 3, 2007.
[6] Prepared by ERM-West Inc. and dated November 2006.

3.0 CALCULATION OF AIR CONCENTRATIONS

Concentrations of individual chemicals from soil fugitive emissions and DPM around the boundary of the redevelopment site were estimated using air dispersion modeling. The inputs to the air dispersion models are described below.

3.1 AIR DISPERSION MODEL

Air dispersion modeling was performed using the Industrial Source Complex Model – Short Term (ISCST3) model from the United States Environmental Protection Agency (USEPA). On November 9, 2006, the USEPA approved AERMOD as the preferred model, replacing ISCST3. However, the current California Environmental Quality Act (CEQA) Guide to Air Quality Assessment[7] of the Sacramento Metropolitan Air Quality Management District (SMAQMD) still recommends ISCST3 for PM_{10} air dispersion modeling. In this analysis, ISCST3 was selected to estimate the air concentrations.

3.2 SOURCE INPUTS

Polygon area sources were selected to represent the 24 construction areas, as shown in Figure 1. All the emissions were assumed to occur at ground-level, and the release heights and the vertical dimension of the area sources are zero.

The modeled emissions in gram per second per square meter were calculated as the inverse of the area size in square meter, so that each area source is modeled at an emission rate of one gram per second.

The emissions were assumed to occur 24 hours per day, as the exact daily schedule of the operations are unknown. This is likely to be conservative for the 1-hour and annual concentration estimation, as air dispersion is less favorable during night time hours when the construction activities are paused.

Although some construction activities will be performed during a fraction of a year, the emissions were assumed to occur over the entire year for the estimation of long-term health risks, since construction schedules may shift.

3.3 OTHER MODELING INPUTS

Urban dispersion conditions were selected based on an Auer land use analysis of the surrounding areas.

[7] http://www.airquality.org/ceqa/2004AQMDCEQAGuidelines.pdf, accessed August 14, 2007

Five years (1985-1989) of local meteorological data were obtained from the SMAQMD.[8] The anemometer height of the Sacramento Executive monitor (Station ID 23232) during that period was determined to be 20 feet. Receptors were placed along the boundary of the Railyards site, at 50-meter spacing, as shown in Figure 1. Elevations of the sources and the receptors were estimated from the United States Geological Survey (USGS) Digital Elevation Model (DEM) data files of the Sacramento East and the Sacramento West quadrangles. Averaging periods of one hour and one year were selected.

3.4 ESTIMATING CONCENTRATIONS

Modeled with a unit emission rate (one gram per second), the resulting concentrations are called dispersion factors of the source. The dispersion factors can be multiplied by the actual emissions of an air pollutant from the source to estimate the concentrations of the air pollutant resulting from the source.

3.4.1 CONCENTRATIONS OF FUGITIVE TOXICS

The equation used to estimate the 20 year average concentrations is:

$$A20Conc_{i,j} = \sum_{k} (AAPMEmis_{k} \times ASFraction_{i,k} \times AADispFctr_{k,j})$$

Where:

$A20Conc_{i,j}$ = 20-year Average Concentrations of $Chemical_i$ at $Receptor_j$ (microgram per cubic meter or $\mu g/m^3$)

$AAPMEmis_k$ = 20-year Average PM_{10} Emissions of $Construction\ Area_k$ (grams per second or g/s)

$ASFraction_{i,k}$ = Average Soil Fraction of $Chemical_i$ for $Construction\ Area_k$ (-)

$AADispFctr_{k,j}$ = 5-year Annual Average Dispersion Factor of $Construction\ Area_k$ at $Receptor_j$ $[(\mu g/m^3)/(g/s)]$

The equation used to estimate the maximum annual concentrations is:

$$MAConc_{i,j} = \sum_{k} (MAPMEmis_{k} \times ASFraction_{i,k} \times MADispFctr_{k,j})$$

[8] Email communication from Ms. Rachel Dubose at SMAQMD on October 17, 2006

Where:

$MAConc_{i,j}$ = Max Annual Concentrations of $Chemical_i$ at $Receptor_j$ ($\mu g/m^3$)

$MAPMEmis_k$ = 20-year Max Annual PM_{10} Emissions of Construction $Area_k$ (g/s)

$ASFraction_{i,k}$ = Average Soil Fraction of $Chemical_i$ for Construction $Area_k$ (-)

$MADispFctr_{k,j}$ = 5-year Max Annual Dispersion Factor of Construction $Area_k$ at $Receptor_j$ [($\mu g/m^3$)/(g/s)]

The equation used to estimate the maximum hourly concentrations is:

$$MHConc_{i,j,k} = MHPMEmis_k \times MSFraction_{i,k} \times MHDispFctr_{k,j}$$

Where:

$MHConc_{i,j,k}$ = Max Hourly Concentrations of $Chemical_i$ from Construction $Area_k$ at $Receptor_j$ ($\mu g/m^3$)

$MHPMEmis_k$ = 20-year Max Hourly PM_{10} Emissions of Construction $Area_k$ (g/s)

$MSFraction_{i,k}$ = Max Soil Fraction of $Chemical_i$ for Construction $Area_k$ (-)

$MHDispFctr_{k,j}$ = 5-year Max Hourly Dispersion Factor of Construction $Area_k$ at $Receptor_j$ [($\mu g/m^3$)/(g/s)]

3.4.2 CONCENTRATIONS OF DPM

The equation used to estimate the 20 year average concentrations is:

$$A20Conc_{DPM,j} = \sum_k (AADPMEmis_k \times AADispFctr_{k,j})$$

Where:

$A20Conc_{DPM,j}$ = 20-year Average Concentrations of DPM at $Receptor_j$ ($\mu g/m^3$)

$AADPMEmis_k$ = 20-year Average DPM Emissions of Construction $Area_k$ (g/s)

$AADispFctr_{k,j}$ = 5-year Annual Average Dispersion Factor of Construction $Area_k$ at $Receptor_j$ [($\mu g/m^3$)/(g/s)]

The equation used to estimate the maximum annual concentrations is:

$$MAConc_{DPM,j} = \sum_{k} (MADPMEmis_{k} \times MADispFctr_{k,j})$$

Where:

$MAConc_{DPM,j}$ = Max Annual Concentrations of DPM at $Receptor_j$ ($\mu g/m^3$)

$MADPMEmis_k$ = 20-year Max Annual DPM Emissions of Construction $Area_k$ (g/s)

$MADispFctr_{k,j}$ = 5-year Max Annual Dispersion Factor of Construction $Area_k$ at $Receptor_j$ [($\mu g/m^3$)/(g/s)]

3.5 UNCERTAINTIES

Uncertainties in the calculation of air concentrations include:

- Selection of average soil concentrations for each soil study area, instead of the 95 percentile on the average commonly used in risk assessments. It is assumed that the averages were calculated using ½ the detection limit for nondetects. Where all chemicals measured in an area were non-detect, a zero value was used.

- Emissions from each of the 24 area sources are evenly spread over the whole area source. This might underestimate the concentrations for short term averaging periods, when the construction activities are possibly confined to a small area within a large modeled area source near the Railyards boundary.

- The chemical concentrations in soil were measured during the 1998 remedial investigation. These concentrations are likely to be lower due to the soil remediations that have been performed since then.

- Unmitigated dust emissions provided by EIP/PBS&J were used to estimate the emissions of potentially contaminated soils. Actual concentrations and health risks will be lower as a result of mitigation.

- Although VOCs could be emitted by volatilization during construction activities, it was assumed that the differences in emissions during construction activities and for the 'no project alternative' would be minimal.

- There are no soil chemical concentrations listed for the Sacramento Station Study Area. Accordingly, contaminant concentrations for this area are assumed to be zero.

- URBEMIS 2002, rather than the most recent version of URBEMIS was used to estimate tailpipe exhaust concentrations. URBEMIS 2002 does not take into account new developments in restrictions on diesel equipment. As a result, the risks from DPM may be overestimated. In addition, no consideration of the new Off-road Diesel Vehicle Regulation recently promulgated by the California Air Resources Board. This regulation will further reduced DPM emissions from fleets of off-road vehicles and result in a further reduction in DPM emissions over what was assumed in this document. However, ENVIRON did not consider DPM emissions from on-road vehicles in this assessment, as the DPM emissions from those vehicles are much lower than off-road vehicles, and most emissions from those vehicles will take place off-site.

- Only the inhalation pathway was assessed. Therefore, risks from other pathways that may exist as a result of particulate deposition was not considered. As a result, risks may be higher than estimated here.

- The boundary receptors were placed around the entire boundary of the redevelopment area. Risks to populations that may move into the redevelopment area during the redevelopment process were not considered.

4.0 ESTIMATED CANCER RISKS AND NONCANCER HAZARD INDICES

4.1 METHODOLOGY

The methodology used to derive the cancer risks and noncancer HIs is based on guidance provided by the California Environmental Protection Agency (CalEPA) and USEPA. For carcinogenic effects, the relationship is given by the following equation:

$$\text{Risk} = \text{I} * \text{CSF}$$

Where:

Risk = Cancer Risk; the incremental probability of an individual developing cancer as a result of exposure to a particular cumulative dose of a potential carcinogen (unitless)

I = Intake of a chemical (milligrams [mg] chemical/kilogram [kg] body weight-day)

CSF = Cancer Slope Factor (mg chemical/kg body weight-day)$^{-1}$

The relationship for chronic noncarcinogenic effects is given by the following equation:

$$\text{HQ} = \frac{\text{I}}{\text{RfD}}$$

Where:

HQ = Hazard Quotient; an expression of the potential for noncarcinogenic effects, which relates the allowable amount of a chemical (RfD) to the estimated site-specific intake (unitless)

I = Intake of chemical (mg chemical/kg body weight-day)

RfD = Reference Dose; the toxicity value indicating the threshold amount of chemical contacted below which no adverse health effects are expected (mg chemical/kg body weight-day).

The hazard index (HI) is the sum of more than one hazard quotient for multiple substances and/or multiple exposure pathways. For this HHRA, only the inhalation pathway was evaluated.

The National Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] §300) is commonly cited as the basis for target risk and hazard levels. According to the NCP, lifetime incremental cancer risks posed by a site should not exceed one in a million (1×10^{-6}) to one hundred in a million (1×10^{-4}), and noncarcinogenic chemicals should not be present at levels expected to cause adverse health effects (i.e., HI greater than one). As a risk management policy, the CalEPA generally considers 1×10^{-6} to be a point of departure for purposes of making risk management decisions, with most approved remediation achieving incremental risk levels of 10 in one million (1×10^{-5}) or lower. The typical threshold of significance for impacts from stationary sources (i.e., factories, or other fixed sources of contaminants) for HHRAs used to support Environmental Impact Reports (EIRs) is 10 in a million. This threshold is the same threshold used for most air quality permitting evaluations and is the threshold for warnings under California's Proposition 65.

4.2 EXPOSURE ASSUMPTIONS AND TOXICITY VALUES

For both equations, the chemical intake or I is calculated as follows:

$$\frac{Ca * IR * EF * ED}{BW * AT}$$

Where:

Ca	=	Concentration in air (milligrams per cubic meter or mg/m^3)
IR	=	Inhalation Rate (cubic meters per day or m^3/day)
EF	=	Exposure Frequency (days)
ED	=	Exposure Duration (years)
BW	=	Body Weight (kilograms or kg)
AT	=	Averaging Time (days)

The exposure assumptions used in the calculation of the cancer risk and chronic noncancer HI's are summarized in Table 2. All boundary receptors were evaluated for potential residential land

use. This is a conservative measure as some boundary areas will be used for commercial purposes.

The majority of the demolition and grading takes place in the first year of each construction phase. For chronic noncarcinogenic effects, it is assumed that the adult and child resident are exposed to the estimated maximum annual emissions for each chemical. That is to say, the concentrations used to estimate the chronic noncancer effects are based on the highest year of PM emissions, average chemical concentrations for each site, and the most conservative year of modeling. For carcinogenic effects, an age-adjusted intake factor was calculated which takes into account the differences in route-specific intake rates, body weights, and exposure duration for children and adults. The 20-year construction duration (or potential exposure period) is a composite of exposure assumptions for six years as a child and 16 years as an adult. Regulatory guidance recommends this age-adjusted approach.

The hierarchy of sources for toxicity values used is consistent with the CalEPA guidance outlined in the *Preliminary Endangerment Assessment Guidance Manual* (CalEPA, January 1994). However, where more recently updated values are available they are given higher priority. The toxicity criteria used in this evaluation are presented in Table 3. This table includes the CalEPA acute reference exposure levels (RELs) which were compared to the maximum hourly concentrations to determine the acute HIs. This was the only source of toxicological information used to estimate acute HIs.

The values published by CalEPA for DPM were used for both the carcinogenic and non-carcinogenic toxicity. The CalEPA toxicity value for diesel exhaust is not without controversy. The USEPA, relying in part on an expert panel report by the Health Effects Institute (HEI), ultimately reached a different conclusion than CalEPA and decided not to pursue a unit risk factor for diesel exhaust emissions as it considered the available data too uncertain. Consistent with the findings of CalEPA, other health agencies and scientific bodies have concluded that diesel exhaust is a probable human carcinogen. However, with the exception of the World Health Organization (WHO), these agencies have concluded that there is insufficient information from which to determine a quantitative dose-response relationship and thus to derive a unit risk factor.

4.3 RESULTS

The estimated cancer risks and noncancer hazard indices for the maximum boundary receptors are shown in Table 4. For dust emissions, the maximum estimated cancer risk at a boundary receptor, assuming residential land use is 1.4×10^{-8} and the maximum chronic HI is 0.07. These levels are well below agency target risk levels. The maximum acute HI is estimated to be 1.2. When mitigation is considered, this value will likely be below the target level of 1. For DPM,

the estimated cancer risk at the maximum boundary receptor, assuming residential land use is 2.2 x 10^{-5}; with an HI of 0.16.

5.0 CONCLUSIONS

In this HHRA, potential health risks to surrounding businesses were assessed for both soil and DPM fugitive emissions from construction activities. Chemicals present in site soils may be released into air during demolition and site grading of the redevelopment project. For dust emissions, the maximum estimated cancer risk at a boundary receptor, assuming residential land use is 1.4×10^{-8} and the maximum chronic HI is 0.07. These levels are well below agency target risk levels. The maximum acute HI is estimated to be 1.2. When mitigation is considered, this value will likely be below the target level of 1.

Diesel construction equipment exhaust contains DPM. DPM emissions were evaluated during demolition, grading and construction. For DPM, the estimated cancer risk at the maximum boundary receptor, assuming residential land use is 2.2×10^{-5}; with an HI of 0.16. As presented, the risks from DPM are slightly higher than 10 in a million. It is likely that mitigation of construction equipment, including the addition of diesel particulate filters, reduction in idling of equipment and the use of newer construction equipment will results in risks lower than 10 in a million.

DRAFT

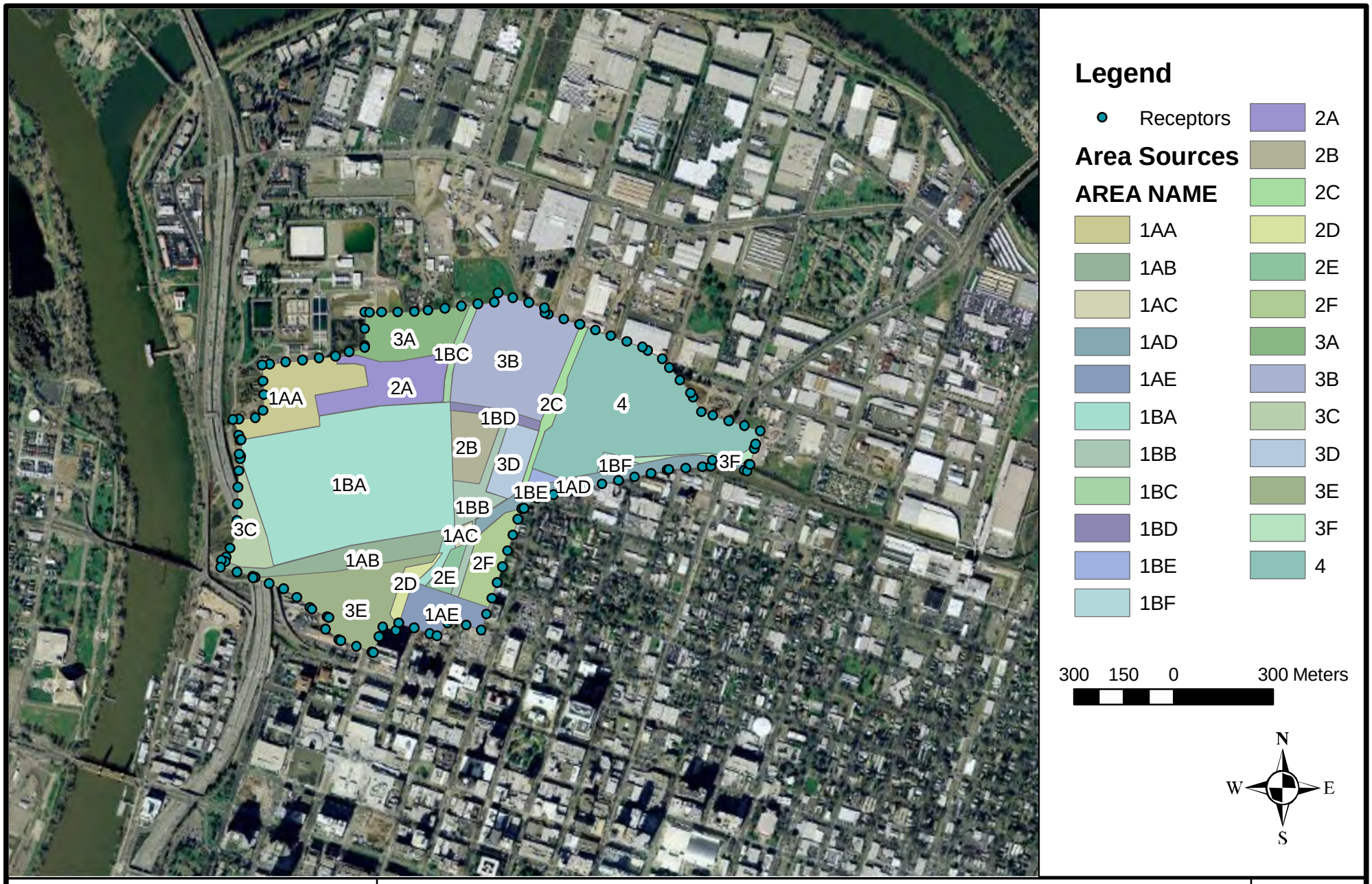

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Figure 1: Modeled Area Sources and Receptors

Figure 1

Drafter:	Date:	Contract Number:	Approved:	Revised:

Table 1: Summary of Soil Fugitives and DPM Emissions
Sacramento Railyards Redevelopment
Sacramento, CA

Construction Area ID	Phase	Area (m2)	Modeled Emissions (g/s/m2)	20-yr Avg Annual Emissions (g/s)		Max Annual Emissions (g/s)		Max Hourly Emissions (g/s)		Soil Remediation Study Area				
				Dust PM_{10}	DPM	Dust PM_{10}	DPM	Dust PM_{10}	DPM	Northern Shops	Central Shops	Central Corridor	Car Shop Nine	Lagoon Soil Area
1AA	1A	5.18E+04	1.93E-05	1.48E-03	3.19E-04	2.96E-02	3.61E-03	1.26E+00	6.34E-02	*				*
1AB	1A	3.45E+04	2.90E-05	9.85E-04	2.13E-04	1.97E-02	2.40E-03	1.26E+00	6.34E-02		*			
1AC	1A	2.77E+03	3.61E-04	7.90E-05	1.71E-05	1.58E-03	1.93E-04	1.26E+00	6.34E-02			*		
1AD	1A	3.03E+04	3.30E-05	8.65E-04	1.87E-04	1.73E-02	2.11E-03	1.26E+00	6.34E-02				*	
1AE	1A	2.53E+04	3.96E-05	7.21E-04	1.56E-04	1.44E-02	1.76E-03	1.26E+00	6.34E-02					
1BA	1B	2.40E+05	4.16E-06	3.21E-03	9.12E-04	6.42E-02	9.25E-03	1.26E+00	7.33E-02	*	*	*		
1BB	1B	2.24E+04	4.47E-05	2.99E-04	8.49E-05	5.98E-03	8.61E-04	1.26E+00	7.33E-02			*		
1BC	1B	6.95E+03	1.44E-04	9.30E-05	2.64E-05	1.86E-03	2.68E-04	1.26E+00	7.33E-02			*		*
1BD	1B	7.32E+03	1.37E-04	9.79E-05	2.78E-05	1.96E-03	2.82E-04	1.26E+00	7.33E-02			*		
1BE	1B	3.01E+03	3.32E-04	4.03E-05	1.15E-05	8.06E-04	1.16E-04	1.26E+00	7.33E-02				*	
1BF	1B	4.12E+03	2.43E-04	5.51E-05	1.57E-05	1.10E-03	1.59E-04	1.26E+00	7.33E-02				*	
2A	2	4.42E+04	2.26E-05	1.36E-03	8.43E-04	2.71E-02	3.91E-03	1.26E+00	6.11E-02					*
2B	2	2.45E+04	4.07E-05	7.53E-04	4.68E-04	1.51E-02	2.17E-03	1.26E+00	6.11E-02			*		
2C	2	1.29E+04	7.77E-05	3.95E-04	2.46E-04	7.90E-03	1.14E-03	1.26E+00	6.11E-02				*	*
2D	2	7.93E+03	1.26E-04	2.43E-04	1.51E-04	4.87E-03	7.01E-04	1.26E+00	6.11E-02					
2E	2	7.76E+03	1.29E-04	2.38E-04	1.48E-04	4.76E-03	6.86E-04	1.26E+00	6.11E-02					
2F	2	2.64E+04	3.79E-05	8.10E-04	5.03E-04	1.62E-02	2.33E-03	1.26E+00	6.11E-02					
3A	3	4.07E+04	2.46E-05	6.19E-04	3.87E-04	1.24E-02	1.78E-03	1.26E+00	6.11E-02					*
3B	3	9.84E+04	1.02E-05	1.50E-03	9.37E-04	3.00E-02	4.32E-03	1.26E+00	6.11E-02			*	*	*
3C	3	2.25E+04	4.45E-05	3.42E-04	2.14E-04	6.84E-03	9.85E-04	1.26E+00	6.11E-02	*	*			
3D	3	2.06E+04	4.86E-05	3.14E-04	1.96E-04	6.27E-03	9.03E-04	1.26E+00	6.11E-02			*	*	
3E	3	6.23E+04	1.61E-05	9.49E-04	5.93E-04	1.90E-02	2.73E-03	1.26E+00	6.11E-02					
3F	3	4.87E+03	2.05E-04	7.42E-05	4.64E-05	1.48E-03	2.14E-04	1.26E+00	6.11E-02				*	*
4	4	1.58E+05	6.33E-06	3.80E-03	2.76E-03	7.59E-02	1.04E-02	1.26E+00	5.75E-02				*	*

g = grams
m2 = square meter
s = seconds

DPM = Diesel Particulate Matter
PM_{10} = Total Respirable Particulate Matter

Table 2: Exposure Assumptions - Residential Land Use
Sacramento Railyards Redevelopment
Sacramento, CA

Parameter	Symbol	Resident	
		Adult	Child
Inhalation of Vapors and Particulates			
Inhalation Rate (m^3/day)	IR_{day}	20	10
Exposure Time (hours/day)	ET	24	24
Exposure Frequency (days/year)	EF	350	350
Exposure Duration (years) - demolition/grading	ED	1	1
Exposure Duration (years) - Age-Adjusted	$ED_{age-adj}$	14	6
Body Weight (kg)	BW	70	15
Averaging Time for Carcinogens (days)	AT_c	25,550	25,550
Averaging Time (chronic) for Noncarcinogens (days)	AT_{nc}	365	365

kg = kilogram
m^3 = cubic meter

Table 4: Toxicity Values
Sacramento Railyards Redevelopment
Sacramento, CA

Chemicals	Inhalation Slope Factor (mg/kg-day)-1		Inhalation Unit Risk (ug/m3)-1	Inhalation Chronic REL (ug/m3)	Inhalation RfD (mg/kg-day)		Inhalation Acute REL (ug/m3) b
Diesel Particulate Matter (DPM)	1.10E+00	Cal EPA 2007	3.00E-04	5	1.43E-03	Cal EPA 2005a	
Metals							
Silver	---		---	0.01	2.86E-06	NCEA	---
Arsenic	1.20E+01	Cal EPA 2007	3.30E-03	0.03	8.57E-06	Cal EPA 2005a	1.90E-01
Barium	**---**		**---**	**---**	1.40E-04	HEAST	---
Beryllium	8.40E+00	Cal EPA 2007	2.40E-03	0.007	2.00E-06	Cal EPA 2005a	---
Cadmium	1.50E+01	Cal EPA 2007	4.20E-03	0.02	5.71E-06	Cal EPA 2005a	---
Cobalt	9.80E+00	PPRTV	---	---	5.70E-06	NCEA	---
Triavalent Chromium	---		---	---	---		---
Hexavalent Chromium	5.10E+02	Cal EPA 2007	1.50E-01	0.2	5.71E-05	Cal EPA 2005a	---
Copper	---		---	---	---		1.00E+02
Mercury	---		---	0.09	2.57E-05	Cal EPA 2005a	1.80E+00
Molybdenum	---		---	---	---		---
Nickel	9.10E-01	Cal EPA 2007	2.60E-04	0.05	1.43E-05	Cal EPA 2005a	6.00E+00
Lead	4.20E-02	Cal EPA 2007	1.20E-05				
Antimony	---		---	---	---		---
Selenium	---		---	20	5.71E-03	Cal EPA 2005a	---
Tin	---		---	---	---		---
Thallium	---		---	---	---		---
Vanadium	---		---	---	---		---
Zinc	---		---	---	---		---
Cyanide	---		---	---	---		---
Polychlorinated Biphenyls							
Aroclor 1248	2.00E+00	Cal EPA 2007	5.70E-04	---	---		---
Aroclor 1254	2.00E+00	Cal EPA 2007	5.70E-04	---	2.00E-05	Cal EPA 2005a, a	---
Aroclor 1260	2.00E+00	Cal EPA 2007	5.70E-04	---	---		---
Semi-volatile Organic Compounds							
Acenaphthylene	---		---	---	---		---
Benzo(a)anthracene	3.90E-01	Cal EPA 2007	1.10E-04	---	---		---
Benzo(a)pyrene	3.90E+00	Cal EPA 2007	1.10E-03	---	---		---
Benzo(b)fluoranthene	3.90E-01	Cal EPA 2007	1.10E-04	---	---		---
Benzo(g,h,i)perylene	---		---	---	---		---
Benzo(k)fluoranthene	3.90E-01	Cal EPA 2007	1.10E-04				
Benzyl butyl phthalate	---		---	---	2.00E-01		---
Benzoic acid	---		---	---	4.00E+00		---
Carbazole	2.00E-02	HEAST	---	---	---		---
Chrysene	3.90E-02	Cal EPA 2007	1.10E-05	---	---		---
Dibenzo(a,h)anthracene	4.10E+00	Cal EPA 2007	1.20E-03	---	---		---
Dibenzofuran	---		---	---	2.00E-03		---
Diethylphthalate	---		---	---	8.00E-01	Cal EPA 2005a, a	---
2,4-Dimethylphenol	---		---	---	2.00E-02		---
Di-n-butylphthalate	---		---	---	1.00E-01	a	---
Di-n-octylphthalate	---		---	---	4.00E-02	a/pprtv	---
Indeno(1,2,3-cd)pyrene	3.90E-01	Cal EPA 2007	1.10E-04	---	---		---
Isophorone	0.00095	IRIS, a	---	2000	5.71E-01		---
2-Methyl-4,6-dinitrophenol	---		---	---	1.00E-04	Reg 9, a	---
2-Methylnaphthalene	---		---	---	4.00E-03	IRIS, a	---
2-Methylphenol	---		---	---	5.00E-02	Cal EPA 2005a, a	---
4-Methylphenol	---		---	---	5.00E-02	Cal EPA 2005a, a	---
N-Nitrosodiphenylamine	9.00E-03	Cal EPA 2007	2.60E-06	---	2.00E-02	Cal EPA 2005a, a	---
Phenanthrene	---		---	---	---		---
Pentachlorophenol	0.018	Cal EPA 2007	4.60E-06		3.00E-02	IRIS, a	
Phenol	---		---	200	5.71E-02	Cal EPA 2005a	5.80E+03
bis(2-Ethylhexyl)phthalate	8.40E-03	Cal EPA 2007	2.40E-06	---	2.00E-02	Cal EPA 2005a, a	---
Total Petroleum Hydrocarbons							
- all compounds	---		---	---	1.43E-02	Cal EPA 2005b	---

ug/m^3 = micrograms per cubic meter
mg/kg-day = milligrams per kilogram-day

Cal EPA = California Environmental Protection Agency
DTSC = Department of Toxic Substances Control
HEAST = Health Effects Assessment Summary Tables (USEPA 1997)
IRIS = Integrated Risk Information System (USEPA 2007)
NCEA = National Center for Environmental Assessment (USEPA 2004)
PPRTV = Provisional Peer Reviewed Toxcicity Values (USEPA 2004)

a = oral reference dose used for inhalation; assumes route-to-route extrapolation
b = acute RELs from CalEPA 2000.

Sources:

California Environmental Protection Agency (CalEPA). 2000. Acute Reference Exposure Levels (RELs), Averaging Times, and Toxicologic Endpoints. May.

California Environmental Protection Agency (CalEPA). 2005a. *All Chronic Reference Exposure Levels Adopted by Office of Environmental Health Hazard Assessment (OEHHA)* . February.

California Environmental Protection Agency (CalEPA). 2005b. *Cal/EPA's Proposed Methology for Evaluating TPH. August. (Most conservative inhalation reference dose was used to screen all TPH compounds.)*

California Environmental Protection Agency (CalEPA). 2007. Toxicity Criteria Database Cancer Slope Factors, Adopted by Office of Environmental Health Hazard Assessment. June.

United States Environmental Protection Agency (USEPA). 1997. Health Effects Assessment Summary Tables (HEAST). FY 1997 Update. EPA 540-R-97-036. Office of Solid Waste and Emergency Response. Washington, D.C. July.

United States Environmental Protection Agency (USEPA). 2004. USEPA Region 9 Preliminary Remediation Goals (PRGs) 2004. San Francisco, CA. October.

United States Environmental Protection Agency (USEPA). 2007. *Integrated Risk Information System (IRIS)* . Online database Maintained by the USEPA. Cincinnati, OH. Accessed June 2005.

Table 4: Estimated Cancer Risks and Noncancer Hazard Indices at the Maximum Boundary Receptor
Sacramento Railyards Redevelopment
Sacramento, CA

Sources	HealthParameter	UTMx	UTMy	Value
Fugitive Dust	Cancer Risk	630615	4272332.5	1.40E-08
Fugitive Dust	Chronic HI	630615	4272332.5	6.74E-02
Fugitive Dust	Acute HI	631859.1875	4272006.5	2.30E-01
DPM	Cancer Risk	631715.6875	4272163.5	2.22E-05
DPM	Chronic HI	630615	4272332.5	1.58E-01

APPENDIX P
FINANCING AND MAINTENANCE OF PUBLIC FACILITY IMPROVEMENTS SUMMARY

SACRAMENTO RAILYARDS - FINANCING AND MAINTENANCE OF PUBLIC FACILITY IMPROVEMENTS SUMMARY

The Sacramento Railyards Public Facilities Financing Plan (PFFP) identifies all backbone infrastructure improvements needed to serve the Project, including storm drainage, sewer, water, roadways, freeways, dry utilities, passenger facilities, and a light rail station. The PFFP also identifies all public facilities needed to serve the Project, which include the central shops rehabilitation, parks and open space, public parking structures, a community center, library, and a school. The PFFP describes the costs and financing mechanisms that will be used to construct these improvements in a timely manner.

The PFFP is designed to achieve the following goals:

- Identify ways to finance construction of infrastructure through public and private financing.
- Establish Project-specific fees to fund major backbone facilities not included in existing fee programs.
- Utilize existing City of Sacramento (City) and Special District fee programs to the extent possible.
- Make maximum use of "pay-as-you-go" mechanisms.
- Make appropriate use of municipal debt financing mechanisms.
- Make maximum use of federal, state, and regional funding mechanisms.
- Identify legitimate redevelopment activities for use of tax increment funds.
- Build in flexibility to allow response to market conditions.

OVERVIEW OF FINANCING STRATEGY

The major infrastructure required for development to proceed in the Project may be funded through a combination of public and private financing. Fees, such as City, Special District, and plan area development impact fees may be used to fund required facilities when possible. Bond financing may be needed to fund public facility costs during the early years of development, as well as at other strategic times when fees are not available to fund the necessary facilities required for new development in a timely manner. Debt financing will be limited to prudent levels, however, and shall be consistent with State and City guidelines. Federal, state, and regional funding may be used to finance the cost of infrastructure, in particular transportation, improvements. Tax increment financing may be available to reimburse the Developer for public infrastructure costs and other improvements.

Facilities will be constructed as they are needed to serve new development. Development projects will be conditioned during the subdivision process to construct facilities needed to serve the development. Developers will receive either fee credits or reimbursements for advancing eligible projects based on the City or Special District reimbursement policies. Developers participating in the debt financing mechanism will also receive fee credits for facilities funded through debt-financing. If the bond capacity is insufficient to fund all the improvements, other funding mechanisms such as private financing will be required.

It is expected that costs will change over time and therefore each funding mechanism should include a method for adjusting the amount of funding to reflect current costs at the time of construction.

General Financing Policies

The following policies shall be followed in implementing the PFFP for the Project:

1. The City and Developer will seek to maximize federal and State of California (State) funding for infrastructure improvements to serve the Project.
2. All essential infrastructure and public facilities, as defined in the PFFP, will be constructed in accordance with a development schedule to serve each phase of the Project, and the phasing plan will be developed for reasonable development in accordance with the funding available.
3. The PFFP will identify the regional benefit of public infrastructure and facilities serving multiple project areas (e.g., Richards, Downtown) and identify the Railyards' and the other project areas' proportional financial contribution.
4. The City will, in accordance with prudent fiscal judgment, provide tax-exempt municipal financing to keep financing costs for public facilities to a minimum.
5. The Developer will advance funds or construct significant portions of backbone infrastructure and public facilities. The Developer will seek private financing necessary to fund such improvements to the extent public financing is not available and to fund the Developer's own share of such costs.
6. The Redevelopment Agency will work with the Developer to identify legitimate redevelopment activities for use of tax increment (TI) funds. The Redevelopment Agency may use TI revenues to reimburse the Developer for infrastructure costs and public improvements and amenities not typically found in development projects. These costs may include funding of major roadways, environmental mitigation measures, historic preservation projects, structured parking facilities, and civic amenities.
7. The Redevelopment Agency may reimburse the Developer with TI revenues for infrastructure costs and public improvements and amenities only to the extent

that such revenues actually are realized from development in the Railyards and the designated project area.

8. The Redevelopment Agency will allocate TI revenues to fund infrastructure and public improvements and amenities if the City and Redevelopment Agency can make the necessary findings that no other funding sources are available to pay for that portion of those public improvements.
9. The Redevelopment Agency may provide TI funding to subsidize specific private development projects demonstrating the need for public funds on an individual project basis and if such projects qualify as redevelopment projects.
10. New development shall fully fund typical subdivision in-tract and frontage infrastructure. Public funds invested in such infrastructure related to the Project will be recovered through reimbursement agreements or otherwise except to the extent reasonably necessary to assure the fiscal feasibility of the Project.
11. The PFFP will identify the quantity and general location of all lands needed for right-of-way and public facilities. All lands needed for right-of-way and public facilities will be dedicated at no cost to the City.
12. The PFFP will identify all special maintenance costs unique to the Railyards and identify appropriate funding sources.
13. Following approval of the PFFP by City Council, the City shall promptly initiate proceedings and undertake actions to implement the various components of the PFFP in accordance with the approved development schedule.
14. The actions contemplated herein by the City and the Redevelopment Agency are subject to the legislative discretion of each body at the time of approval and must be in compliance with all applicable laws and regulations.

FINANCING OF PUBLIC FACILITIES

The construction of backbone and other public improvements designed to serve the Project will be funded by a variety of mechanisms including plan area fees, citywide impact fees, school district impact fees, establishment of special districts and assessments (e.g., Mello-Roos Community Facilities District), developer financing, tax increment financing, federal, state, and regional financing, and other potential methods.

FINANCING METHODS

Financing methods may include the following:

- **City Impact Fees.** Following the approval of the Railyards Specific Plan in 1997, the City implemented two new development fee programs to fund rail/transit, arterial roadway, freeway, storm drainage, sanitary sewer, and fire station improvements. These City fee programs will be updated to reflect land use and public facility changes in the current Project.
- **School District Impact Fees.** The various school districts have established fees, in accordance with state regulations, to be used to construct school facilities. School impact fees are collected by the City before the issuance of a building permit and are forwarded to the applicable school districts.
- **Plan Area Fees.** City and other existing fee programs may not finance all capital improvements required to serve the Plan Area. Plan area fees and/or a reimbursement program may be created to finance the balance of road, water, sewer, drainage, open space, parks, and other capital facilities.
- **Community Facilities District.** One or more community facilities district (CFD) may be established to help fund the construction and/or acquisition of backbone infrastructure and facilities in the Plan Area. The 1982 Mello Roos Community Facilities Act enables cities and other entities to establish a CFD to fund various facilities and services. The proceeds from a CFD bond sale can be used for direct funding of improvements, to acquire facilities constructed by the developer, and/or to reimburse developers for advance funding of improvements. The annual special tax can be used toward bond debt service or to build infrastructure as needed. The proceeds of the Mello Roos special tax can be used for direct funding of facilities and/or to pay off bonds.
- **Private Funding Sources.** Initial phases of development require major public investments in backbone infrastructure and facilities, yet the availability of public funding is limited at the outset. As a result, the Developer may need to provide upfront funding to construct backbone infrastructure and other public facilities not adequately funding by other means. Upfront funding from the Developer will be provided through a combination of cash, equity, or private debt financing.
- **Tax Increment Financing.** Currently in a redevelopment area, the Project will generate TI revenues payable to the City Redevelopment Agency. Twenty percent of TI is required to be set aside for low and moderate income housing. Other portions of the TI will be subject to statutory pass-throughs. The remaining uncommitted increment may be available for funding the costs not typically found in development projects. These extraordinary costs may include

partial funding of major roadways, environmental mitigation measures, historic preservation projects, structured parking facilities, and civic amenities.

- **Measure A.** Measure A, the half-cent sales tax approved by the voters in Sacramento County, may be used to fund a portion of the freeway improvements needed for the Project.
- **Major Street Construction Tax.** Major Street Construction Tax revenues may be available to fund portions of several arterial and collector roadway improvements in the Project.
- **Downtown/Richards Fees.** Several public facilities included in the Project, including roads and sewer will benefit residents and employees in the Downtown and Richards plan areas. The Project will participate with these areas in the funding of such facilities. In these cases, each area's fair share of these costs will be identified, and a cost-sharing methodology will be developed and reflected in the PFFP.
- **Federal, State, and Regional Funding Sources.** Federal, state, and regional funding sources may be available to fund a portion of the Project's transportation and school facility improvements. Most of the federal, state, and regional funding will likely be used for major regional projects such as transit and freeway improvements. The timing of this funding will depend on Congress and the State Legislature, voters' authorization of funding, and the City's ability to quality for such funding.

Other funding mechanisms may be available to finance public facilities required for development of the Project.

INFRASTRUCTURE NOT INCLUDED IN FINANCING PLAN

The costs of in-tract subdivision and frontage improvements are not included in the PFFP. These costs are anticipated to be privately funded.

OPERATIONS AND MAINTENANCE FUNDING

The PFFP will describe how the operation and maintenance of public facilities will be funded. The Project is likely to have annual costs higher than normal for parks and landscaping in particular because of their enhanced amenities and the expected high level of demand for park services generated by the Project's commercial and high-density residential land uses. A CFD or Assessment District may be established to fund these annual operations and maintenance costs.

Costs associated with operation and maintenance of commercial areas in the Railyards also may be higher than normal as a result of the Project's attractions, which are expected to draw large crowds of local and other visitors. Commercial property owners also may decide to participate in a Business Improvement District (BID) or approve a Special Assessment to cover the costs required to operate and maintain facilities.