Downtown Natomas Airport

Alternatives Analysis Report

January 2004

Final

Submitted to:
Sacramento Regional Transit District

Submitted by:
Parsons Brinckerhoff Quade & Douglas, Inc.

In Association with: Alternative Resources, Inc., Bay Area Economics, CH2M Hill, Design Styles, DKS Associates, The Hoyt Company, Kleinfelder, Inc., Koegel & Associates, Manuel Padron & Associates, McCormick/Rankin, Psomas

Downtown
Natomas
Airport

Transit Alternatives Analysis/
Draft Environmental Impact
Statement and Report

Downtown/Natomas/Airport Transit Corridor

FINAL
ALTERNATIVES ANALYSIS REPORT

Prepared for:
Sacramento Regional Transit District, Sacramento, California

Prepared by:
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PREFACE

The Sacramento Regional Transit District (RT), in cooperation with the Federal Transit Administration (FTA) is undertaking the preparation of an Alternatives Analysis (AA), a combined Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/R) and a Final Environmental Impact Report (FEIR) for alternative transit improvements for the Downtown/Natomas/Airport (DNA) Corridor in Sacramento, California. The AA is being prepared based on FTA guidelines, and the DEIS is being prepared in conformance with 40 CFR Part 1500-1508, Council on Environmental Quality Regulation for Implementing the Procedural Requirements of the National Environmental Policy Act (NEPA) of 1969 as amended; 49 CFR Part 611, Federal Transit Administration, Major Capital Investment Projects; and The Transportation Equity Act for the 21st Century (TEA-21). In addition, the DEIR and FEIR will fulfill the requirements of the California Environmental Quality Act (CEQA) concerning the assessment of the environmental impacts of major projects.

Study Description

Sacramento's DNA Corridor has been studied extensively over the past twenty years as part of both regional and local planning efforts, including the 1984 Sacramento Area Council of Governments (SACOG) Study, the 1994 North Natomas and South Natomas Community Plans, the 1998 Amendments to the City of Sacramento General Plan, and the SACOG 2025 Metropolitan Transportation Plan (MTP) prepared in 2002. The DNA Corridor was also identified in RT's Multi-Corridor Study (June 2001) as one of RT's high priority corridors for implementing major transit improvements. Beginning in downtown Sacramento, the Corridor proceeds north through South and North Natomas and west to the Sacramento International Airport. Generally, the Sacramento River is considered the Corridor's western boundary, and the ex-Western Pacific (WP) Railroad right-of-way (ROW) is considered the eastern boundary.

This DNA Corridor Study, sponsored by RT, commenced in October 2001. Following the review of FTA guidelines, public comments received during three Scoping sessions, input from the Technical Review Panel (TRP) and Citizens Review Panel (CRP) established by RT, and policy direction provided by the RT Board of Directors, the basic alternatives proposed for consideration include the following:

- Alternative 1: No-Build
- Alternative 2: Baseline/Transportation Systems Management (TSM)
- Alternative 3: Truxel Road Light Rail Transit
- Alternative 3A: Truxel Road Light Rail Transit – Starter Line
- Alternative 3B: Truxel Road Light Rail Transit – Minimum Operable Segment (MOS)
- Alternative 4: Truxel Road Bus Rapid Transit
- Alternative 4A: Truxel Road Bus Rapid Transit Starter Line
- Alternative 4B: Truxel Road Light Rail Transit – Minimum Operable Segment (MOS)
- Alternative 5: I-5/Truxel Road Light Rail Transit
- Alternative 6: I-5/Truxel Road Bus Rapid Transit
- Alternative 7: I-5 Light Rail Transit
- Alternative 8: I-5 Bus Rapid Transit

Study Scope

The DNA Corridor Study is being conducted in two steps. The first step consists of preparing an AA Report, which will describe the results of the alternatives analysis and conclude with the RT Board of Directors adopting a locally preferred alternative (LPA). The second step will consist of preparing the DEIS/R and FEIR, which will evaluate the environmental impacts associated with the LPA and a No-Build Alternative.

The AA Report, the DEIS/R and FEIR will comprehensively examine and comparatively evaluate its set of alternatives using a broad set of criteria, which embrace FTA New Starts guidelines/criteria for a new fixed guideway project. These criteria include: environmental concerns, ridership forecasts, engineering, capital, operating and maintenance costs, economic and cost-effectiveness considerations, traffic impacts, and opportunities for transit-oriented development. How well each alternative does or does not help achieve regional goals and objectives will play a major role in the selection of an LPA. Public input will be provided throughout the course of the study by community groups, the general public, agency staff, and elected officials through an active public participation program.

Purpose of This Document

Preparation of the AA Report, and the subsequent DEIS/R and FEIR, has been subdivided into a number of individual tasks and sub-tasks. As these are carried out, a number of documents, such as this one, will be produced for the purpose of providing early information to FTA and others interested in the study's procedures and findings.

Consequently, the material contained in the deliverables should be considered as work in progress. It is subject to revision as comments are received and responded to by the study team; it may be superceded as a result of subsequent activities. Ultimately, the final documentation for the study will be contained in an AA Report, DEIS/R and FEIR; and later, a Final Environmental Impact Statement (FEIS).

Schedule

The DNA Corridor study, which was initiated in October 2001, includes preparation of an AA Report that will lead to the selection of an LPA in December 2003. The LPA will then be submitted for approval by the Sacramento City Council, the Sacramento County Board of Supervisors, and by SACOG as an amendment to its financially constrained long-range MTP. The DEIS/R and FEIR will be available for public review in July of next year and is to be completed by September 2004.

Subsequent Steps

After selection of an LPA and completion of the DEIS/R and FEIR, FTA approvals to proceed will be sought, including authorization to begin Preliminary Engineering and completion of the FEIS.

For Further Information

For additional information about the study, visit RT's study website at www.DNArt.org. This publication is available in accessible formats. Please call (916) 321-2877 or (916) 483-HEAR (4327) (TDD for the hearing impaired) to request this document in an alternative format.

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EXECUTIVE SUMMARY

ES.1 Overview

The Sacramento Regional Transit District (RT), in cooperation with the Federal Transit Administration (FTA), has undertaken an Alternatives Analysis (AA) to evaluate future transit improvements in the Downtown/Natomas/Airport (DNA) Corridor in Sacramento, California. Consistent with FTA's New Starts guidelines, the AA process has been a coordinated effort between RT, members of the public, public agencies, and other stakeholders with numerous opportunities for input at each stage in the planning process.

This AA Report is specifically intended to compare and evaluate alternate transit technologies and alignments through the DNA Corridor. The AA technical analysis and associated public review and responses are designed to support and encourage the process whereby a locally preferred alterative (LPA) can be adopted and then undergo the required full environmental review.

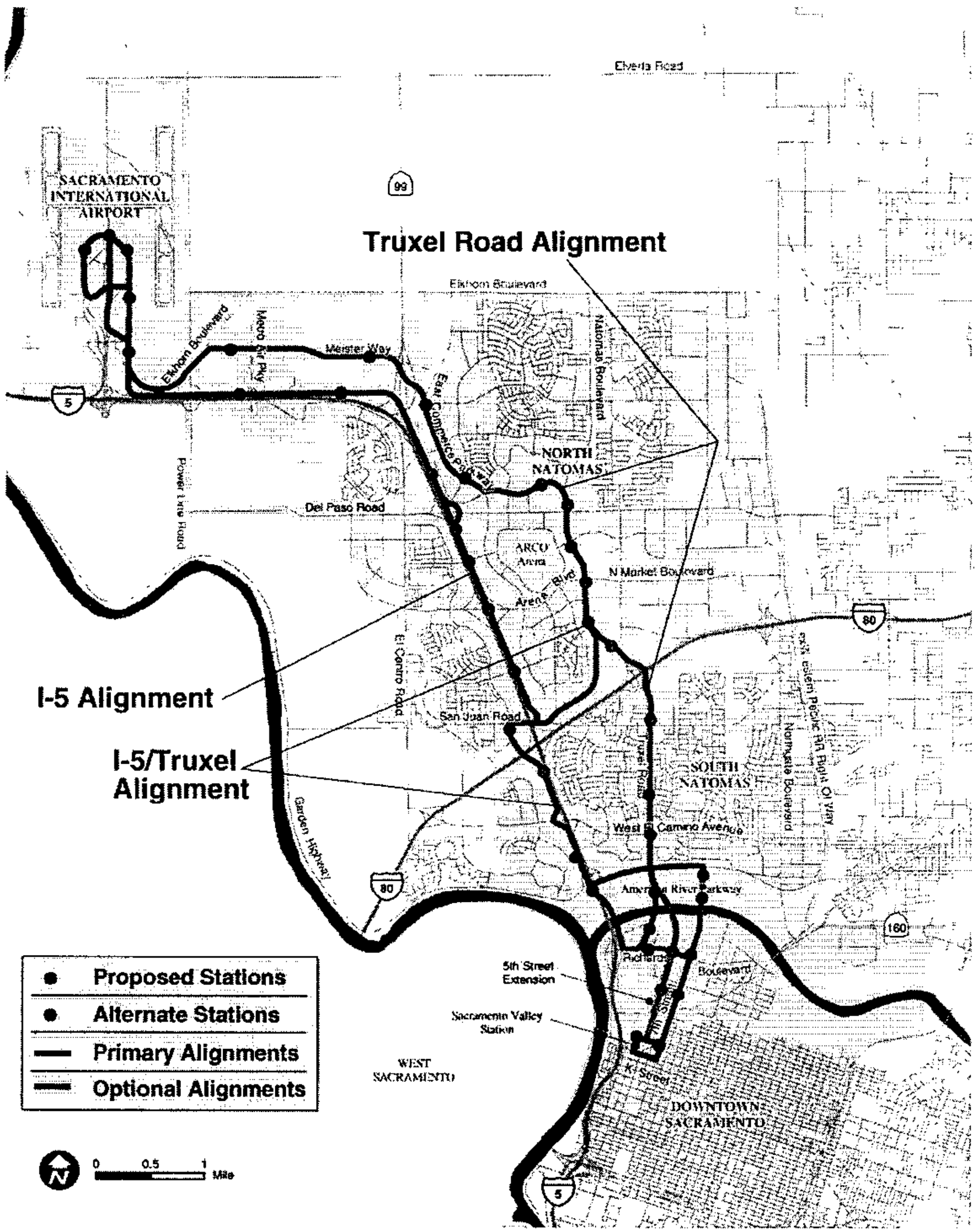
Corridor Alignment and Service Alternatives

Beginning in downtown Sacramento and proceeding north, the DNA Corridor takes in the 240-acre Union Pacific (UP) Railyards, the Richards Boulevard Redevelopment (Capitol District Station) Area, the fast growing communities of South and North Natomas, and certain lands to the west up to and including the Sacramento International Airport.

Figure ES-1 illustrates the DNA Corridor study area and the "short list" of potential north-south transit alignments evaluated in this AA which include the following:

- **Alternative 1: No-Build.** The No-Build Alternative consists of the existing transportation system, as well as all transportation projects that are planned and programmed in the Sacramento Metropolitan Transportation Plan for 2025.
- **Alternative 2: Baseline/Transportation Systems Management (TSM).** The Baseline/TSM Alternative was developed to meet an FTA requirement for an alternative that addresses transportation needs in the corridor without a major new capital investment. The Baseline/TSM Alternative includes a set of lower-cost bus transit improvements in the DNA Corridor.
- **Alternative 3: Truxel Light Rail Transit (LRT).** The Truxel LRT Alternative would extend RT LRT service from downtown Sacramento through Natomas, along Truxel Road, to the airport.
- **Alternative 3A: Truxel LRT Starter Line.** The Truxel LRT Starter Line Alternative would construct an LRT extension similar to Alternative 3, with single-track sections and fewer structures to provide a lower-cost alternative.
- **Alternative 3B: Truxel LRT Minimum Operable Segment (MOS).** The Truxel LRT MOS Alternative would construct a LRT extension similar to Alternative 3A, with single-track sections and fewer structures to provide a lower-cost alternative; however, the alignment would be shorter, extending from downtown Sacramento to the Natomas Town Center.
- **Alternative 4: Truxel Bus Rapid Transit (BRT).** The Truxel BRT Alternative would construct a new guided-busway for a BRT system from downtown Sacramento through Natomas, along Truxel Road, to the airport.

FIGURE ES-1
POTENTIAL NORTH-SOUTH ALIGNMENTS EVALUATED



- **Alternative 4A: Truxel BRT Starter Line.** The Truxel BRT Starter Line Alternative would construct a BRT extension similar to Alternative 4, with fewer structures and grade separations to provide a lower-cost alternative.
- **Alternative 4B: Truxel BRT Minimum Operable Segment (MOS).** The Truxel BRT MOS Alternative would construct a BRT extension similar to Alternative 4, with fewer structures and grade separations to provide a lower-cost alternative; however, the alignment would be shorter, extending from downtown Sacramento to the Natomas Town Center.
- **Alternative 5: I-5/Truxel LRT.** The I-5/Truxel LRT Alternative would extend LRT service along a route following Interstate 5 (I-5) and Truxel Road between downtown Sacramento, Natomas, and the airport.
- **Alternative 6: I-5/Truxel BRT.** The I-5/Truxel BRT Alternative would construct a new guided-busway for a BRT system using a route following I-5 and Truxel Road between downtown Sacramento, Natomas, and the airport.
- **Alternative 7: I-5 LRT.** The I-5 LRT Alternative would extend LRT service along a route following I-5 between downtown Sacramento, Natomas, and the airport.
- **Alternative 8: I-5 BRT.** The I-5 BRT Alternative would construct a new guided-busway for a BRT system using a route following I-5 between downtown Sacramento, Natomas, and the airport.

ES.2 DNA Corridor Study Process

The DNA Corridor AA has followed a rigorous and methodical approach. The major transit investment concept builds upon previous planning efforts in the region; has involved extensive collaboration between the public, government jurisdictions and stakeholders in multiple communities; and has undergone a technical analysis.

Consistency with Local, State, and Federal Planning Processes

For nearly 20 years, representatives of agencies and districts responsible for plans and policies in the Corridor have been considering significant transit improvements to serve anticipated growth in the Corridor planning areas. The following local, community and regional plans have been completed that support the construction and operation of light rail transit (LRT) service between downtown Sacramento and the airport:

- 1984 – Sacramento LRT Expanded LRT System Analysis
- 1986 – Sacramento Area Council of Governments (SACOG) LRT Extension Study
- 1987 – RT High Capacity Corridor Resolution
- 1988 – City of Sacramento General Plan
- 1991 – RT Route Refinement Study and Environmental Impact Report
- 1993 – RT 20-Year Transit Master Plan
- 1993 – County of Sacramento General Plan
- 1994 – North Natomas and South Natomas Community Plans
- 1998 – Amendments to the City of Sacramento General Plan
- 2000 – SACOG Sacramento International Airport Transit Access Study
- 2001 – RT Multi-Corridor Study
- 2002 – SACOG 2025 Metropolitan Transportation Plan

In continuing efforts to realize the local goals for improved transportation in the area, the DNA Corridor AA Study has built upon this breadth of prior planning decisions.

ES.3 Public Involvement Program

The ongoing Public Involvement (PI) program developed for the DNA Corridor AA Study has been extensive and inclusive and continues to be designed to receive public input from all affected citizens and stakeholders. The process documents and incorporates stakeholder comments into the alternatives development and selection process.

Significant Program Activities

To date, the PI Program included the following key activities:

- Three EIR/S scoping meetings and three public open houses.
- Over 100 meetings with citizens, homeowner associations, environmental groups, and business organizations.
- Regular study program updates at publicly noticed meetings (televised on cable TV) to the RT Board of Directors.
- Presentations to the Sacramento City Council, City of Sacramento Planning Commission, Sacramento County Board of Supervisors, Sacramento County Parks Commission, and Sacramento Area Flood Control Agency (SAFCA).
- Technical Review and Citizens Review Panel (TRP and CRP) meetings.
- Distribution of newsletters, media releases, public notices and other materials to a mailing list of over 7,000 individuals and organizations.
- Design and operation of a study website (www.DNArt.org).
- Maintenance of a study information "hotline."
- Attendance at community events (Natomas Community Festival).
- Participation in cable television broadcasts.
- Placement of paid ads in local newspapers and interior ad cards on RT buses.
- A program of public outreach through local schools (8,500 students).
- Door-to-door canvassing of businesses in the Truxel Corridor.

Through these activities the study team was able to obtain valuable, regional input throughout the study program decision-making process. Through September 2003, over 100 presentations/briefings have been made by RT and its consultant team to nearly 60 public agencies, community organizations, and groups of locally elected officials.

A full listing of the public agencies, community organizations, and groups of locally elected officials involved in this process is located in Chapter 3.

Technical and Citizens Review Panels

RT, with assistance from its consultant team, established a Technical Review Panel consisting of approximately 40 members representing various local, state, and federal agencies. The TRP meetings were conducted as working sessions, allowing members to actively participate with team members and RT Staff in discussing study issues.

A Citizens Review Panel also was established, representing a cross-section of community and other organizations with an interest in transportation issues in the study corridor. This group of over 50 individuals also provided valuable review and comment on the study goals, evaluation criteria, and other issues. See Section 3.1 for a complete listing of TRP and CRP member organizations.

Input Received

Numerous comments have been received from public agencies and the general public throughout the study. These comments generally fall into the following categories:

- Concerns about displacement of homes, traffic congestion, property values, public safety, and noise and visual impacts associated with the various alternatives, particularly along the segment of Truxel Road between Garden Highway and San Juan Road.
- Several groups and a number of individuals have expressed support for providing light rail service in the Corridor. Other individuals have indicated support for BRT.
- Comments or questions related to transit operational issues: for example, will park-and-ride lots be included in the corridor?; how often will feeder bus service be provided and what routes will it use?; how will bus service be provided at the airport?; and when will the location of future transit stations be determined?
- Questions about the criteria used for the definition and evaluation of the alternatives.

ES.4 Purpose of the Study Alternatives

The intent of the Purpose and Need statement is to document the rationale for consideration of transportation improvements in the DNA Corridor, as demonstrated by current and anticipated development and transportation conditions within the study area.

The purpose of the DNA Corridor study alternatives is to provide improved transit service between downtown Sacramento, the Sacramento International Airport and points in between, as well as connect the Corridor to the Regional transit system. Specifically, the study is needed because of:

- **Rapid population and employment growth expected in the Corridor.** Total Corridor population is expected to more than double by 2025, while employment is expected to grow by 65 percent. These projections are at best conservative, since the City of Sacramento has currently approved permits in North Natomas that total 44 percent of the projected residential growth.
- **Projected increases in roadway congestion.** As a result of limited north-south traffic capacity, significant growth will lead to higher traffic volumes on I-5, I-80 and parallel roadways. In addition, there are only two existing bridges across the American River within this three-mile wide corridor that limit north-south traffic capacity. As a result, by 2025, I-5 will be at level of service (LOS) "F" from downtown to I-80, and nearing capacity beyond.
- **Increased demand for transit service.** Increased demand will occur due to the need to serve a large transit dependent population in the Corridor, where 16.5 percent of households are without a personal vehicle as compared to 12.9 percent for the City of Sacramento and 8.7 percent for Sacramento County (U.S. Census 2000).
- **Transit supportive land use plans and policies.** The North Natomas Community Plan was designed as a transit-oriented community. Its center piece is an assumed light rail line with a dedicated right-of-way. It identifies stations with higher densities and mix of land uses in anticipation of the future transit system. A DNA transit improvement would complete that plan with a high quality transit service that is integrated with and enhances

planned corridor land use. Transit-oriented development (TOD) has been shown to decrease vehicle trips by 18 percent, decrease vehicle miles traveled by 12 percent and reduce travel times by 18 to 28 percent. In addition to the planned transit-oriented land uses in the North Natomas Community Plan, the City of Sacramento is also planning similar enhanced land uses in the Richards Boulevard and Railyards areas to encourage transit ridership.

- **The need to reduce vehicle trips and airborne emissions.** Sacramento has the sixth worst air quality in the nation. If the region does not meet the standard by 2005, it could lose $680 million in federal transportation funding.
- **To improve operating efficiencies.** The DNA Corridor would provide intermodal connections to existing and new bus service, to regional rail service at the Sacramento Valley Station (existing Amtrak station) and for Sacramento International Airport passengers. Transit service in the DNA Corridor would provide opportunities for connecting with existing and future light rail and regional rail corridors including the Folsom Corridor, the South Line extension and the Capitol Corridor train service that is operated by Amtrak, connecting Sacramento with San Jose and the Bay Area. The coordination of land use with transit service would improve transit system efficiency and use.

ES.5 Alternatives Screening and Selection Process

Each step of the screening and selection process for the DNA Corridor AA involved the active participation and endorsement by the CRP and TRP. The process of screening the alternatives included the following five steps:

Step 1: Development of Goals, Objectives and Criteria

Step 2: Development of a Long List of Alternatives

Step 3: Level 1 Screening (27 alternatives and 7 alignments screened)

Step 4: Level 2 Screening (12 alternatives, 5 alignments screened)

Step 5: Detailed Evaluation (12 alternatives, 3 alignments evaluated in the AA Report)

At the beginning of the DNA Corridor AA, a set of goals, objectives and evaluation criteria were developed that both met the local needs of the corridor and fulfilled FTA New Starts project justification criteria. The goals and objectives were reviewed and accepted by the CRP, TRP and the RT Board. The goals that guided the analysis included:

- Improve corridor mobility
- Promote patterns of smart growth
- Find cost-effective solutions
- Minimize community and environmental impacts
- Ensure consistency with other planning efforts
- Obtain strong community support

The first three goals are taken directly from FTA's New Starts criteria. These goals are measured by a set of key criteria, for which FTA has identified certain "thresholds" that must be met in order to qualify for New Starts funding.

Following the development of the study goals, objectives and evaluation criteria, a fatal flaw analysis was conducted on an initial set of potential corridor alignments, transit technologies, and American River bridge crossing locations. The fatal flaw analysis eliminated several transit technologies that did not satisfy the DNA Corridor goals (e.g., expensive transit technologies such as automated guideway transit, heavy rail, etc., since they would in appropriate for meeting future ridership needs or be too expensive to build and operate in the Corridor). Following the fatal flaw analysis, a long list of alternatives was compiled by "mixing and matching" the various potential alignments, transit technologies and river crossing options. A two-step screening process was then initiated by RT and its consultant team.

- Level One screening involved the TRP and CRP in the examination of the initial long list of alternatives. Based on results of the Level One screening, the alternatives were repackaged into five primary alignments that utilized both BRT and LRT modes.
- Level Two screening included refinement of study goals and objectives by the TRP and CRP and preliminary analyses of the five primary alternatives. This work included development of ridership estimates, conceptual engineering, station location options, capital, operating and maintenance (O&M) cost estimates, a preliminary financial analysis, and environmental assessments.

Following the Level Two screening, RT further refined the alternatives to optimize their cost-effectiveness and reduce environmental impacts, resulting in the identification and detailed evaluation of twelve alternatives.

Alternatives Carried Forward For Further Review

Eight of the twelve alternatives would construct a new LRT or BRT transit guideway from downtown Sacramento, through South and North Natomas, to the Sacramento International Airport; and two minimum operable segments would provide a new transit guideway between downtown Sacramento and the Natomas Town Center. The remaining two alternatives, the No-Build Alternative and Baseline/TSM Alternative, have been carried forward as legitimate alternatives, and for comparison purposes. As presented in Section ES-1, the following alternatives were evaluated in detail.

- Alternative 1: No-Build
- Alternative 2: Baseline/Transportation Systems Management (TSM)
- Alternative 3: Truxel Road Light Rail Transit
- Alternative 3A: Truxel Road Light Rail Transit – Starter Line
- Alternative 3B: Truxel Road Light Rail Transit – Minimum Operable Segment (MOS)
- Alternative 4: Truxel Road Bus Rapid Transit
- Alternative 4A: Truxel Road Bus Rapid Transit Starter Line
- Alternative 4B: Truxel Road Light Rail Transit – Minimum Operable Segment (MOS)
- Alternative 5: I-5/Truxel Road Light Rail Transit
- Alternative 6: I-5/Truxel Road Bus Rapid Transit
- Alternative 7: I-5 Light Rail Transit
- Alternative 8: I-5 Bus Rapid Transit

The physical, operational, and cost characteristics of all twelve alternatives are summarized in Table ES-1.

TABLE ES-1
SUMMARY OF PHYSICAL, OPERATIONAL, AND COST CHARACTERISTICS OF THE ALTERNATIVES

	1 No-Build	2 Baseline/ TSM	3 Truxel LRT	3A Truxel LRT Starter Line	3B Truxel LRT MOS	4 Truxel BRT	4A Truxel BRT Starter Line	4B Truxel BRT MOS	5 I-5/Truxel LRT	6 I-5/Truxel BRT	7 I-5 LRT	8 I-5 BRT
Physical Characteristics												
Guideway (in miles)												
At-Grade	N/A	N/A	8.46	8.20	2.77	5.83	6.61	1.49	9.25	6.74	5.57	5.61
On Retained Fill	N/A	N/A	1.19	0.91	0.31	2.52	0.98	0.73	0.95	3.18	1.93	2.72
On Structure	N/A	N/A	0.87	0.72	0.66	1.28	0.74	0.60	2.18	1.51	3.58	1.40
Retained Cut	N/A	N/A	0	0	0	0.43	0.18	0.0	0	0.18	0.25	0.17
Street Median	N/A	N/A	2.04	2.04	2.04	0.74	0.00	0.0	0.73	0.00	0.00	0.00
Bus Lanes	N/A	N/A	N/A	N/A	N/A	0.83	0.83	0.83	N/A	1.00	N/A	1.00
Embedded (mixed flow)	N/A	N/A	0.45	1.04	1.04	0.57	2.79	2.79	0.45	0.57	0.45	0.57
In Tunnel (cut & cover box)	N/A	N/A	0	0	0	0.21	0.02	0.0	0.02	0.02	0.02	0.07
Total Miles	N/A	N/A	**12.99**	**12.99**	**6.82**	**12.41**	**12.14**	**6.43**	**13.58**	**13.2**	**11.55**	**11.54**
Number of Stations	N/A	N/A	13	13	11	13	13	11	13	13	10	11
Number of lots (Capacity of Park-and-Ride Lots)	N/A	3 (770)	7 (2,070)	7 (1,910)	6 (1,970)	6 (1,840)	7 (1,760)	5 (1,730)	7 (1,880)	6 (1,660)	3 (1,500)	4 (1,460)
Operational Characteristics												
Travel Time in minutes (Sacramento Valley Station to Sacramento International Airport)	45	37	28	30	37*	28	30	34	27	30	21	27

* Mode change required at Natomas Town Center.

N/A – Not Applicable

TABLE ES-1
SUMMARY OF PHYSICAL, OPERATIONAL, AND COST CHARACTERISTICS OF THE ALTERNATIVES (CONTINUED)

	1	2	3	3A	3B	4	4A	4B	5	6	7	8
	No-Build	Baseline/ TSM	Truxel LRT	Truxel LRT Starter Line	Truxel LRT MOS	Truxel BRT	Truxel BRT Starter Line	Truxel BRT MOS	I-5/Truxel LRT	I-5/Truxel BRT	I-5 LRT	I-5 BRT
Annual Transit Vehicle Miles (thousands)												
Bus	12,857	13,837	13,160	13,160	13,319	13,970	13,956	14,070	12,875	14,381	13,219	14,259
Light Rail	5,007	5,007	6,263	6,166	5,579	5,007	5,007	5,007	6,286	5,007	6,084	5,007
RT Systemwide Annual Revenue Hours (thousands)												
Bus	951	1,020	956	956	970	1,000	1,002	1,008	939	1,013	961	1,009
Light Rail	116	116	140	147	140	116	116	116	140	116	140	116
RT Systemwide Vehicle Requirements												
Bus	481	493	472	472	479	494	495	506	469	512	477	515
Light Rail	104	104	120	121	115	104	104	104	120	104	120	104
Cost Characteristics												
RT Systemwide Operating and Maintenance Annual Costs (in millions of 2002$)	$156.3	$164.6	$172.8	$173.7	$169.7	$164.0	$164.1	$164.4	$171.3	$166.4	$172.1	$165.5
Capital Costs (in millions of 2002$)	N/A	$90.3	$623.1	$447.9	$290.8	$327.5	$208.8	$142.3	$793.1	$311.0	$746.4	$261.3

N/A – Not Applicable

Source: Parsons Brinckerhoff, October 2003.

ES.6 Capital and Operating & Maintenance Costs

Capital and O&M costs were developed for each alternative. Capital costs include all construction, right-of-way, engineering design and construction management costs associated with constructing each alternative. O&M costs include all expenditures required to provide daily transit service, including a pro-rata of RT system costs and the maintenance of the transit guideway, stations, facilities and vehicles. Tables ES-2 and ES-3 illustrate the anticipated capital and O&M costs respectively for the alternatives.

Capital Costs

The capital costs for the "build" alternatives vary considerably by alternative because of technology, length, and the physical infrastructure of the alternatives.

For the full-length LRT alternatives (3, 5 and 7) extending from downtown Sacramento to the Sacramento International Airport, the total capital costs range from $623 million to $793 million (in 2002$) with Alternative 3 the least expensive and thus potentially the most cost-effective. The alternatives would provide different alignments from downtown Sacramento to the airport; however, they all include double-track guideway stations; and a full-service maintenance facility with storage for 16 light rail vehicles. These alternatives also assume the same alignment between downtown Sacramento and Richards Boulevard.

Additional Refinement of Truxel Alternatives

Based on input received from the public and initial calculations of the financial feasibility of all the alternatives, RT subsequently examined how to reduce the cost and environmental impacts for a BRT or LRT guideway along a Truxel Road alignment. This alignment was selected since the Truxel Road alternatives have the highest potential for providing the most cost-effective transit solution. (See Section 6.1 for more detail.) By comparison, the alternatives proposed for I-5 and the I-5/Truxel alignments are not as cost-effective, since they do not directly serve as many residents and because of higher construction costs associated with use of aerial structures along the alignments.

From this analysis, four new sub-alternatives were developed for the Truxel alignment that would provide transit service in a more cost-effective manner. These sub-alternatives include the following:

3A: Truxel LRT Starter Line

3B: Truxel LRT Minimum Operable Segment (MOS)

4A: Truxel BRT Starter Line

4B: Truxel BRT MOS

Alternatives 3A and 3B differ from Alternative 3 in the following ways:

- The crossing of the American River would consist of a double track bridge with a single track span over the river channel rather than a full double-track bridge;
- Single-track rather than double-track on Truxel;
- The overall length of Alternative 3A, Truxel Starter Line, is approximately 13 miles and terminates at the Sacramento International Airport; and
- The overall length of Alternative 3B, the Truxel LRT MOS Alternative, is 6.8 miles and terminates at Natomas Town Center.

The BRT alternatives are generally less expensive in capital cost terms than the LRT alternatives, since BRT does not require significant track, signalization, and electrification improvements as needed for LRT. The full-length BRT alternatives (4, 6 and 8) extend from downtown Sacramento to Sacramento International Airport and range in cost from approximately $261 million to $328 million. As Alternative 4 was the most cost-effective, two sub-alternatives (Alternatives 4A and 4B) were created to further improve the cost-effectiveness of the alternative. Alternatives 4A and 4B differ from Alternative 4 in the following ways:

- Alternative 4A, the Truxel BRT Starter Line Alternative, would construct a BRT extension similar to Alternative 4, with fewer structures and grade separations at an estimated cost of $209 million.
- Alternative 4B, the Truxel BRT MOS Alternative, would also construct a BRT guideway with fewer structures and grade separations; however, it would extend only 5.9 miles from downtown Sacramento to the Natomas Town Center, at a cost of $142 million.

TABLE ES-2
SUMMARY OF CAPITAL COSTS FOR DNA ALTERNATIVES
(MILLIONS OF 2002$)

Alternative	Construction Costs	Vehicles	Right-of-Way	Final Engineering, Construction Management, Project Reserve	Total Costs
2. Baseline/TSM	$17.5	$54.3	$0	$18.5	$90.3
3. Truxel LRT	$327.8	$55.7	$63.5	$176.1	$623.1
3a. Truxel LRT Starter Line	$213.0	$59.2	$54.5	$121.2	$447.9
3b. Truxel LRT MOS	$140.7	$39.4	$31.4	$79.3	$290.8
4. Truxel BRT	$165.2	$6.9	$65.3	$90.1	$327.5
4a. Truxel BRT Starter Line	$101.7	$7.3	$43.5	$56.3	$208.8
4b. Truxel BRT MOS	$67.9	$12.2	$24.6	$37.6	$142.3
5. I-5/Truxel LRT	$463.9	$55.7	$38.1	$235.5	$793.1
6. I-5/Truxel BRT	$177.2	$13.9	$29.9	$90.0	$311.0
7 I-5 LRT	$435.2	$55.7	$34.3	$221.3	$746.4
8. I-5 BRT (new guideway)	$143.1	$16.4	$27.9	$73.9	$261.3

Sources: Parsons Brinckerhoff Quade & Douglas, Inc. and McCormick Rankin International, October 2003.

Operating and Maintenance Costs

O&M costs are calculated using a systemwide approach, since the impacts from new service often extend beyond the route or corridor served.

Under the DNA study, both the BRT and LRT alternatives rely on modifications to existing trunk routes and the establishment of new bus services that extend outside the DNA corridor. In addition, several of the BRT trunk lines are merged with existing RT routes. This interconnection with the future RT route network requires O&M costs to be examined systemwide.

Costs specific to the DNA corridor are identified as the incremental change between the Baseline/TSM Alternative and the "Build" Alternatives. Estimates of operating costs for all the alternatives are presented below in Table ES-3.

Like capital costs, the O&M costs vary by alternative depending on route length, the number of stations served, the frequency of service, and the number of vehicles required to meet passenger demand.

TABLE ES-3
SUMMARY OF SYSTEMWIDE OPERATING AND MAINTENANCE COSTS
FOR DNA ALTERNATIVES (MILLIONS OF 2002$)

Alternative	Bus Revenue Hours	LRT Revenue Hours	2025 Systemwide O&M Costs	Annual Cost Increase Over Baseline/TSM Alternative
1. No-Build	950,600	116,355	$156.3	--
2. Baseline/TSM	1,019,600	116,355	$164.6	--
3. Truxel LRT	956,200	140,141	$172.8	$8.2
3A. Truxel LRT Starter Line	956,200	147,200	$173.7	$9.1
3B. Truxel LRT MOS	969,600	140,100	$169.7	$5.1
4. Truxel BRT	999,600	116,400	$164.0	-($0.6)
4A. Truxel BRT Starter Line	1,002,400	116,400	$164.1	-($0.5)
4B. Truxel BRT MOS	1,008,200	116,400	$164.4	-($0.2)
5. I-5/Truxel LRT	939,500	140,100	$171.3	$6.7
6. I-5/Truxel BRT	1,012,900	116,400	$166.4	$1.8
7. I-5 LRT	960,500	140,100	$172.1	$7.5
8. I-5 BRT	1,009,700	116,400	$165.5	$0.9

Source: Manuel Padron & Associates, October, 2003.

ES.7 Evaluation of Alternatives

The proposed alternatives for the DNA Corridor were evaluated based on various factors, including: transportation impacts; environmental impacts; potential for smart growth; cost-effectiveness; financial feasibility; and community and political support. These factors are reflective of the goals and objectives developed for this study. FTA New Starts Criteria were also considered in the evaluation of the alternatives.

As stated in FTA's New Starts program guidelines, there are specific criteria which the FTA considers in its deliberations to advance transit fixed guideway projects through the study development process and enter into a long-term financial commitment to implement the proposed investments. The New Starts program categorizes these criteria into two broad areas: 1) Project Justification; and 2) Financial Rating. Project Justification criteria which are used to rank alternatives include:

- Mobility Improvements;
- Environmental Benefits;
- Operating Efficiencies;
- Cost Effectiveness; and
- Other Factors (e.g., Transit Supportive Land Use and Future Patterns).

FTA places high value on measures consistent with their "thresholds" for project justification, which are cost-effectiveness, financial affordability, and strong land use policies supporting transit-oriented development. As a result, a project applying for federal New Starts funds must rank at least "medium" under Project Justification and Financing Rating to be considered for federal funding.

Evaluation of Alternatives

As the array of findings and technical data presented in this report is evaluated, it is important to remember that the decision to select a public transit alternative will add value to the community it serves, and continue to do so for the next 50 to 100 years. To facilitate that decision, the alternatives' responsiveness to the DNA Corridor study goals have been summarized in an evaluation format and reflected in Tables ES-4 through ES-9.

Using the adopted DNA Corridor study goals, the following conclusions can be drawn from the technical analysis.

- **Goal #1: Improve Corridor Mobility.** Five alternatives rank highest overall in best meeting this goal: Alternatives 3, 3A, 4, 4A, and 4B. These alternatives along the Truxel alignment would provide access within ½-mile of the alignment to 21,450 residents (approximately 35 percent of the total residents in the Corridor), to 32,100 jobs also located within ½ mile of the transit alignment, good connectivity to the existing regional transit system, and to activity centers in the corridor. While the Truxel alternatives do not have the best travel time from downtown Sacramento to the airport, the 28 to 30 minute travel times for Alternatives 3 and 3A are very comparable with most of the I-5 and I-5/Truxel alternatives. Alternative 3B requires a longer traveling time due to a transfer to a bus connection to travel to the airport. However, the Truxel alternatives may experience potential operational impacts resulting from cross-street traffic, especially under the Starter Line alternatives.

- **Goal #2: Encourage Patterns of Smart Growth.** Alternatives 3, 3A, 3B, 4, 4A and 4B, all of which would use the Truxel Road alignment, offer the greatest opportunity to foster transit-oriented growth and achieve Goal #2, particularly in North Natomas and in the Railyards/Richards Boulevard area. However, the LRT alternatives may provide greater incentives to developers than BRT given its unproven potential for encouraging TOD, which is why LRT is ranked slightly higher. The LRT alternatives are also consistent with adopted community plans and provide the best pedestrian access opportunities.

- **Goal #3: Find Cost-Effective Solutions.** Alternatives 3B, 4, 4A, 4B, and 8 all rank medium or better based on FTA's thresholds. However, Alternative 3A Starter Line falls close to a cost-effectiveness rating that is acceptable to the FTA. If other considerations, such as land use, rate very high, this could offset the higher rankings.
- **Goal #4: Minimize Community and Environmental Impacts.** Alternative 2 appears to have the least overall impact on the environment as compared to the other alternatives. All of the other build alternatives have more community and environmental impacts. These impacts are pretty comparable between the alternatives, with the exception of very significant impacts under Alternatives 3 and 4.
- **Goal #5: Ensure Consistency with Other Planning Efforts.** Alternatives 3, 3A and 3B, which use the Truxel Road alignment, have the highest level of consistency with existing adopted community plans and current planning efforts in the DNA corridor.
- **Goal #6: Obtain Strong Community Support.** The Alternatives Analysis study and the consideration of LRT and BRT have generated considerable community interest from groups and individuals both from within and outside the corridor. Following a planned Community Workshop to be held on November 20 and a Public Hearing on December 8, RT will then be better able to gauge the level of community support for the individual alternatives and the two transportation modes considered in this study.

As RT and the community consider the alternatives, there are two other areas of consideration in selecting a preferred alignment and technology mode. First is the issue of future capacity concerns with the introduction of a new (third) technology into the RT fleet. LRT can best respond to the capacity requirements if the planned and projected figures for 2025 are exceeded in the Corridor. As the peak hour/peak demand maximum load point approaches a value of about 1,000 passengers per hour, the cost-effectiveness for LRT approaches that of BRT. The current patronage forecast reflects a maximum load point of about 1,200 passengers per hour for Alternative 3, Truxel Road LRT.

Second, the availability of construction and operating funding will also need to be carefully considered. RT and SACOG estimate that transit alternatives costing $400 million or less can be funded based on SACOG's 20-year revenue projections, renewal and expansion of RT's share of the County's Measure A sales tax program, and the federal government contributing 50% of the construction funding for a major transit investment in the DNA Corridor.

TABLE ES-4
EVALUATION OF ALTERNATIVES BY GOAL #1: MOBILITY AND OPERATIONAL EFFICIENCIES

	Alternative 1	Alternative 2	Alternative 3	Alternative 3A	Alternative 3B	Alternative 4	Alternative 4A	Alternative 4B	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Evaluation Criteria/Measure	**No-Build**	**Baseline/TSM**	**Truxel Road LRT**	**Truxel LRT Starter Line**	**Truxel LRT Minimum Operable Segment**	**Truxel BRT**	**Truxel BRT Starter Line**	**Truxel BRT Minimum Operable Segment**	**I-5/Truxel LRT**	**I-5/Truxel BRT**	**I-5 LRT**	**I-5 BRT**
Year 2025 average weekday transit linked trips in the corridor	7,550	9,970	13,780	13,520	12,800	12,340	12,120	11,870	13,270	12,120	11,770	11,360
Year 2025 average weekday transit boardings in the corridor	10,810	14 730	23,400	22,650	21,120	16,170	16,340	16,050	21,700	15,550	17,170	15,080
Number of persons within ½ mile of alignment	N/A	21,450	21,450	21,450	21,450 (1)	21,450	21,450	21,450	17,370	17,370	14,260	14,260
Employment within ½ mile of a station	N/A	32,100	32,100	32,100	32,100 (1)	32,100	32,100	32,100	34,900	34,900	36,400	36,400
Provide a direct connection to existing regional transit system	Provide limited connection to a portion of the DNA corridor	Provide limited connection to a portion of the DNA corridor	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Limited connectivity to other RT bus and LRT routes	Limited connectivity to other RT bus and LRT routes	Limited connectivity to other RT bus and LRT routes	Limited connectivity to other RT bus and LRT routes
Number of transit dependent households within ½ mile of alignment	N/A	N/A	1,760	1,760	1,760 (1)	1,760	1,760	1,760	1,700	1,700	1,590	1, 590
Number of low income households within ½ mile of stations	N/A	N/A	1,021 low income households within ½ mile of stations	1,021 low income households within ½ mile of stations	1,021 low income households within ½ mile of stations (1)	1,021 low income households within ½ mile of stations	1,021 low income households within ½ mile of stations	1,021 low income households within ½ mile of stations	892 low income households within ½ mile of stations	892 low income households within ½ mile of stations	892 low income households within ½ mile of stations	892 low income households within ½ mile of stations
Make use of advanced technology to increase capacity	N/A	Low	High	High	High	Medium	Medium	Medium	High	Medium	High	Medium
Travel Times along transit way (entire length)	N/A	37 minutes	28 minutes	30 minutes	37 minutes	28 minutes	30 minutes	34 minutes	27 minutes	30 minutes	21 minutes	27 minutes
Provide direct access to activity centers along guideway	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Only north of I-80	Yes	No	No

Note. (1) – Employment, household and population totals represent the entire Truxel Road alignment. Based on 2000 Census Data.

Source: Parsons Brinckerhoff, December 2003.

TABLE ES-5
EVALUATION OF ALTERNATIVES BY GOAL #2: ENCOURAGE PATTERNS OF SMART GROWTH

Evaluation Criteria/Measure	Alternative 1 No-Build	Alternative 2 Baseline/TSM	Alternative 3 Truxel Road LRT	Alternative 3A Truxel LRT Starter Line	Alternative 3B Truxel LRT Minimum Operable Segment	Alternative 4 Truxel BRT	Alternative 4A Truxel BRT Starter Line	Alternative 4B Truxel BRT Minimum Operable Segment	Alternative 5 I-5/Truxel LRT	Alternative 6 I-5/Truxel BRT	Alternative 7 I-5 LRT	Alternative 8 I-5 BRT
Development potential within ½ mile of a station	N/A	N/A	High	High	H gh	Medium-High	Medium-High	Medium-High	Medium-High	Medium	Medium	Low

Source: Parsons Brinckerhoff, October 2003.

TABLE ES-6
EVALUATION OF ALTERNATIVES BY GOAL #3: FIND COST-EFFECTIVE SOLUTIONS

Evaluation Criteria/Measure	Alternative 1 No-Build	Alternative 2 Baseline/TSM	Alternative 3 Truxel Road LRT	Alternative 3A Truxel LRT Starter Line	Alternative 3B Truxel LRT Minimum Operable Segment	Alternative 4 Truxel BRT	Alternative 4A Truxel BRT Starter Line	Alternative 4B Truxel BRT Minimum Operable Segment	Alternative 5 I-5/Truxel LRT	Alternative 6 I-5/Truxel BRT	Alternative 7 I-5 LRT	Alternative 8 I-5 BRT
Financial												
Capital Cost (in millions of 2002$)	N/A	$90.3	$623.1	$447.9	$290.8	$327.5	$208.8	$142.3	$793.1	$311.0	$746.4	$261.3
Change in Operating & Maintenance Annual Costs (in millions of 2002$) (1)	–	--	$8.2	$9.1	$5.1	-($0.6)	-($0.5)	-($0.2)	$6.7	$1.8	$7.5	$0.9
Cost-Effectiveness												
User Benefit (cost per hour of travel time saved)	N/A	N/A	$28.84	$22.44	$14.36	$12.51	$5.69	$1.24	$39.65	$18.14	$56.97	$13.30

Note: (1) – For Alternatives 3 through 8, the Annual Costs represent the net difference between the cost of operat ng and mainta ning the build alternative and the cost for the Baseline/TSM Alternative.

Source: Parsons Brinckerhoff, October 2003.

TABLE ES-7
EVALUATION OF ALTERNATIVES BY GOAL #4: MINIMIZE COMMUNITY AND ENVIRONMENTAL IMPACTS

	Alternative 1	Alternative 2	Alternative 3	Alternative 3A	Alternative 3B	Alternative 4	Alternative 4A	Alternative 4B	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Evaluation Criteria/Measure	**No-Build**	**Baseline/TSM**	**Truxel Road LRT**	**Truxel LRT Starter Line**	**Truxel LRT Minimum Operable Segment**	**Truxel BRT**	**Truxel BRT Starter Line**	**Truxel BRT Minimum Operable Segment**	**I-5/Truxel LRT**	**I-5/Truxel BRT**	**I-5 LRT**	**I-5 BRT**
Environment												
Wetlands	N/A	N/A	8 to 11.5 acres	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.
Noise	1 to 3 dBA increase in traffic volumes	1 to 3 dBA increase in traffic volumes	No noise impacts after mitigation. Significant vibration impacts during the construction period. Less than significant impacts from vibration during transit operations.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.
Visual	N/A	3 park-and-ride lots	10,877 feet of aerial structure plus overhead catenary and 7 park-and-ride lots.	8,606 feet of aerial structure plus overhead catenary and 7 park-and-ride lots.	5,122 feet of aerial structure plus overhead catenary and 6 park-and-ride lots.	20,084 feet of aerial structures, 6 park-and-ride lots, and 2 underpasses on South Truxel Road.	9,081 feet of aerial structures and 7 park-and-ride lots.	7,022 feet of aerial structures and 5 park-and-ride lots.	16,526 feet of aerial structures, plus overhead catenary wire and 7 park-and-ride lots.	24,763 feet of aerial structures, and 6 park-and-ride lots.	29,092 feet of aerial structures, catenary wires and 3 park-and-ride lots.	21,754 feet of aerial structure and 4 park-and-ride lots.
Total Displacements	N/A	N/A	7 residential and 7 commercial	7 residential and 7 commercial	7 residential and 7 commercial	0	0	0	10 commercial	8 commercial	10 commercial	8 commercial
Parkland (4(f)) Impacts	N/A	N/A	Permanent use of 3 to 4 acres.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.

Source: Parsons Brinckerhoff, October 2003.

TABLE ES-8

EVALUATION OF ALTERNATIVES BY GOAL #5: ENSURE CONSISTENCY WITH OTHER PLANNING EFFORTS

Evaluation Criteria/Measure	Alternative 1 No-Build	Alternative 2 Baseline/TSM	Alternative 3 Truxel Road LRT	Alternative 3A Truxel LRT Starter Line	Alternative 3B Truxel LRT Minimum Operable Segment	Alternative 4 Truxel BRT	Alternative 4A Truxel BRT Starter Line	Alternative 4B Truxel BRT Minimum Operable Segment	Alternative 5 I-5/Truxel LRT	Alternative 6 I-5/Truxel BRT	Alternative 7 I-5 LRT	Alternative 8 I-5 BRT
Land Use												
Supports community and general plans	No	No	High	High	Medium-High	Medium-Low	Medium-Low	Medium-Low	Medium	Low	Low	Low

Source: Parsons Brinckerhoff, October 2003.

TABLE ES-9

EVALUATION OF ALTERNATIVES BY GOAL #6: OBTAIN STRONG COMMUNITY SUPPORT

Evaluation Criteria/Measure	Alternative 1 No-Build	Alternative 2 Baseline/TSM	Alternative 3 Truxel Road LRT	Alternative 3A Truxel LRT Starter Line	Alternative 3B Truxel LRT Minimum Operable Segment	Alternative 4 Truxel BRT	Alternative 4A Truxel BRT Starter Line	Alternative 4B Truxel BRT Minimum Operable Segment	Alternative 5 I-5/Truxel LRT	Alternative 6 I-5/Truxel BRT	Alternative 7 I-5 LRT	Alternative 8 I-5 BRT
Community Support												
Potential community support for an alternative	Low	Low	Residential and commercial property owners have raised objections; 2,500 individuals have signed a petition supporting the use of an I-5 alignment	Same as Alternative 3	Same as Alternative 3	Same as Alternative 3	Same as Alternative 3	Same as Alternative 3	Residents and commercial properties have expressed an interested in the use of an alignment along I-5 or I-5/Truxel, without a preference for technology	Same as Alternative 5	Same as Alternative 5	Same as Alternative 5
Potential agency support for an alternative	N/A	N/A	High	High	High	Low	Low	Low	Medium	Low	Low	Low

Source: Parsons Brinckerhoff, December 2003.

ES.8 Selection of Locally Preferred Alternative

A locally preferred alternative (LPA) is the final candidate physical design concept and scope for a major corridor transit investment. For the DNA Corridor, the LPA will consist of two features: the identification and description of a corridor alignment and the identification of a transit (bus or light rail) mode. The LPA will also generally describe the proposed location of stations, the operating concepts by which transit service will be provided, and a set of specific design options to be further evaluated during the Preliminary Engineering phase of project development.

Selection Process

Earlier sections of this Executive Summary provided a comparison of 12 conceptual alternatives, including a No-Build, a Baseline/TSM, five LRT alternatives and five BRT alternatives. It was structured around criteria designed to reflect the study goals and objectives and FTA New Starts criteria.

Recommendation on a Locally Preferred Alternative

The results of the alternatives analysis were presented to the TRP, CRP and the general public in a series of meetings held in November 2003. As part of this effort, a public workshop was held at the Sacramento Convention Center on November 20. RT also held a public hearing on December 8 in the Chambers of the Sacramento County Board of Supervisors to allow the public more opportunity to provide comments on the alternatives evaluation. Based on the analysis results and public comments, RT staff then recommended to the RT Board of Directors Truxel LRT as the LPA. The RT Board adopted this recommendation at its meeting on December 15, 2003.

Use of the Truxel Road alignment will provide the largest transportation benefit to transit users in the Corridor and the region for the following reasons:

- **Improved Corridor Mobility**. While all three alignments would provide improved transit service between Downtown and the Airport, the Truxel alignment provides the shortest travel times for North and South Natomas residents.
- **Greater Transit Accessibility**. Based on the 2000 Census and year 2025 SACOG projections, the Truxel alignment would provide the greatest transit access to Corridor residents and households than either the I-5 or I-5/Truxel alignments.
- **Connectivity**. The Truxel Road alignment provides better connectivity to the existing regional transit system and to the major concentration of existing and planned activity centers and destinations within the DNA Corridor.
- **Potential for Transit-Oriented Development**. The Truxel Road alignment generally offers the greatest opportunity to foster transit-oriented development, particularly in the North Natomas Community and the Railyards/Richards Boulevard area.
- **Plan Consistency**. The Truxel alignment, with light rail, also offers the highest level of consistency with existing adopted community plans; the City and County general plans; current planning efforts within the Corridor; and over 15 years of prior development and infrastructure commitments in North Natomas.

In addition, among the alternatives studied, the Truxel Road alignment will provide the highest daily ridership, the most-cost effective transit solution using Federal Transit Administration ratings, and, given its construction cost of $450 million or below, the greatest likelihood for project funding.

ES.9 Next Steps

Following the conclusion of the alternatives analysis and adoption of an LPA, RT will proceed with a number of "Next Steps" to succeed at implementing major transit improvements in the Corridor.

Environmental Documentation -- RT has chosen to prepare a single integrated environmental document that represents an Environmental Impact Statement (EIS), consistent with the requirements under the National Environmental Policy Act (NEPA), and an Environmental Impact Report (EIR), which complies with the California Environmental Quality Act (CEQA).

The Draft EIS/R will evaluate two alternatives—a No-Build Alternative, which assumes for comparison purposes that no transit investment is built, and the RT-adopted LPA. Topics to be addressed include impacts to the natural environment, such as air quality, biological resources, noise and visual aesthetics, and impacts to the built environment, such as socioeconomic and fiscal impacts, property acquisition and relocation, environmental justice, cultural and parkland resources, public safety and security, construction impacts, and cumulative and growth inducing impacts.

The Draft EIS is to be prepared in early 2004 and will be circulated for public comment and review for a minimum of 45 days. Following the receipt and response to comments, RT will submit the Draft EIS and the comments to FTA. The agency will then conduct its own review and, assuming all statutory and regulatory requirements have been met, authorize RT to begin the next phase of proposed LPA development: Preliminary Engineering and completion of a Final EIS (PE/FEIS).

Concurrent with public review of the DEIS, RT will also request public comment on the DEIR portion of the document. Unlike the federal process, once RT has received and responded to comments, it will prepare a Final EIR (FEIR) for consideration and approval by the RT Board of Directors during the latter part of 2004. Adoption of the FEIR would enable RT to use local and state funds to acquire right-of-way (ROW) and to conduct other LPA-related implementation activities.

Preliminary Engineering and Refinement Of Design Options -- In preparing the AA, RT has evaluated the study alternatives based on conceptual planning and engineering, or within about a 10 percent level of design. During PE, RT intends to continue the refinement process by exploring in greater detail the engineering and design needed for implementing the LPA and one or more of its design options. During the PE phase, the level of design typically approaches 30 to 35 percent of a Final Design. Also during this phase, RT will complete its work on the FEIS.

Funding Commitments -- To eventually receive a federal commitment to help build any DNA Corridor major transit investment, FTA will require RT to demonstrate it can: a) provide at least 1/2 (50 percent) of the construction costs using local and state funds, and b) that RT has the authority and assumed financial resources to operate the proposed system improvements for the next 20 years. These local funding commitments will need to be documented and provided to FTA prior to the agency giving RT approval to begin Final Design. Upon completion of Final Design, these commitments will need to be reaffirmed by RT prior to FTA approving a Full Funding Grant Agreement (FFGA), thereby committing the federal government to pay for ½ of the construction cost for DNA Corridor improvements.

LPA Implementation Issues and Schedule

Building on the coordination and consultation process established during the planning phase of the DNA Corridor study, RT will continue working closely with local, state and federal agencies to implement its vision for the DNA Corridor. While the number of agencies RT will need to work with is large, there are seven public agencies where the coordination and consultation process will be critical in maintaining momentum for implementing the LPA. These agencies include:

Sacramento Area Council of Governments (SACOG) -- SACOG, as the regional and metropolitan planning agency for the Sacramento region, should support RT's proposed transit service expansion and update and/or amend its Metropolitan Transportation Plan (MTP) and transportation improvement program (TIP) to reflect RT's decision, and SACOG will play a major role in the programming of state and federal construction funding for the DNA Corridor LPA.

Sacramento Transportation Authority (STA) -- STA has the role of structuring an expenditure program and determining when County voters will be asked to renew the Measure A transportation sales tax program. RT has already begun working with STA staff and others to ensure that a renewal measure provides adequate funding for RT's current and future needs.

Sacramento International Airport -- When fully built, the DNA Corridor line will provide transit service from downtown Sacramento to the airport. Implementation issues include securing the airport's endorsement, coordination and cooperation during construction, and financial commitment toward a project.

City of Sacramento -- The City will play a key role during planning, design, engineering and construction of a new major transit investment in the Corridor. Issues of mutual interest to RT and the City include planned redevelopment of the Union Pacific Railroad (UPRR) Railyards and a new Sacramento Intermodal Transportation Facility (SITF); traffic circulation; encouraging the implementation of high density, transit supportive development within the DNA Corridor; and project funding.

County of Sacramento -- Sacramento County will have a major role in the planning and construction of the DNA line, balancing among competing priorities its capital funding needs. The County also needs to work closely with RT to ensure that the American River Parkway Plan (ARPP) includes provisions for a new transit crossing and that, with RT, transportation improvements are built consistent with RT's implementation schedule, primarily in the vicinity of the airport, Metro Air Park, and the crossing of the American River Parkway.

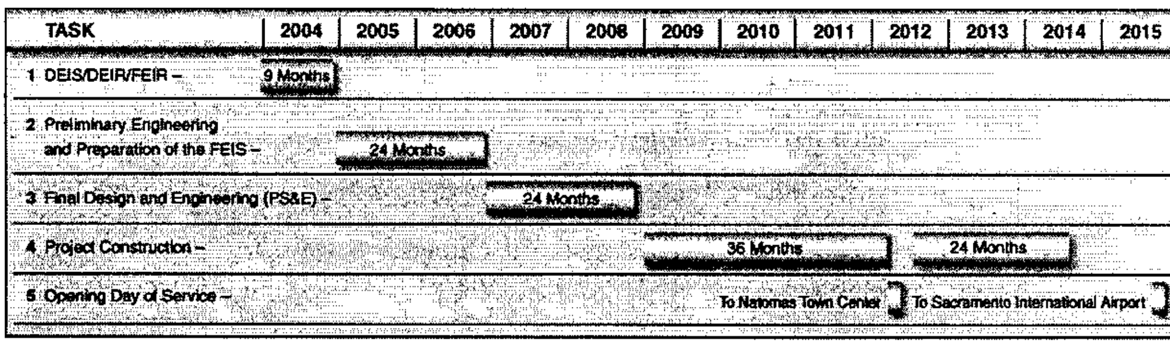
Sacramento Area Flood Control Agency (SAFCA) -- RT will need to work with SAFCA and others in subsequent planning, design, engineering and construction of transit improvements in the DNA Corridor, since all three study alignments are located within a protected floodplain and will require a new bridge crossing of the American River and the American River Parkway.

California Department of Transportation (Caltrans) -- Since all of the BRT and LRT alternatives would require using and/or crossing portions of the right-of-way maintained by Caltrans, RT will need to work with agency staff to ensure that Caltrans safety standards are maintained. RT will need to consider Caltrans maintenance facility requirements and the location of its existing park-and-ride lots.

LPA Schedule

The DNA Corridor LPA implementation schedule is anticipated to occur as depicted in Figure ES-2. With this scenario, completion of the environmental phase is anticipated in 2006; completion of Final Design and Engineering (PS&E) in 2008; LPA construction between 2009 and 2011; and opening for revenue service to Natomas Town Center by 2012 and to the Sacramento International Airport by 2015.

FIGURE ES-2
DNA CORRIDOR LPA IMPLEMENTATION SCHEDULE



1.0 OVERVIEW

The Sacramento Regional Transit District (RT), in cooperation with the Federal Transit Administration (FTA), has undertaken a Downtown/Natomas/Airport (DNA) Corridor Alternatives Analysis (AA) to evaluate future potential transportation system improvements in the DNA Corridor in Sacramento, California (see Figure 1.0-1).

1.1 Purpose of the Alternatives Analysis Report

Earlier studies identifying the need for improved transit services in the DNA Corridor (see Chapter 2 for background) supported preparation of this AA Report. This work will be followed by a combined Draft Environmental Impact Statement/Draft Environmental Impact Report (DEIS/DEIR) and Final Environmental Impact Report (FEIR). These documents are required by federal and state law and will form the basis for subsequent approved phases of DNA Corridor transit development, including Preliminary Engineering and preparation of a Final Environmental Impact Statement (FEIS), final design, and construction of transit service improvements.

- In response to adopted regional and local development improvement plans and policies that recommended light rail transit on Truxel Road, the emphasis of the AA is to examine other alternatives and improve mass transit service throughout the study area.
- This AA is specifically intended to compare and evaluate alternate transit technologies and routes ("alignments") necessary for improved service through the DNA Corridor. The AA technical analysis and associated public review and responses are designed to support and encourage the process whereby a Locally Preferred Alternative (LPA) can be adopted and then undergo the required full environmental review of a proposed improvement program.
- Local agencies have continuously endorsed in concept significant improvement of transit service through the Corridor. Local land use and infrastructure plans in the Corridor have been adopted with transit accommodation in mind. The AA's public involvement process has produced a set of potential transit service alternatives (see Chapters 2 and 3 for a review of the public process). Adopting a preferred alignment and transit mode (i.e., bus, light rail) for further detailed study is the next step.

1.2 What Is Covered in the AA Report

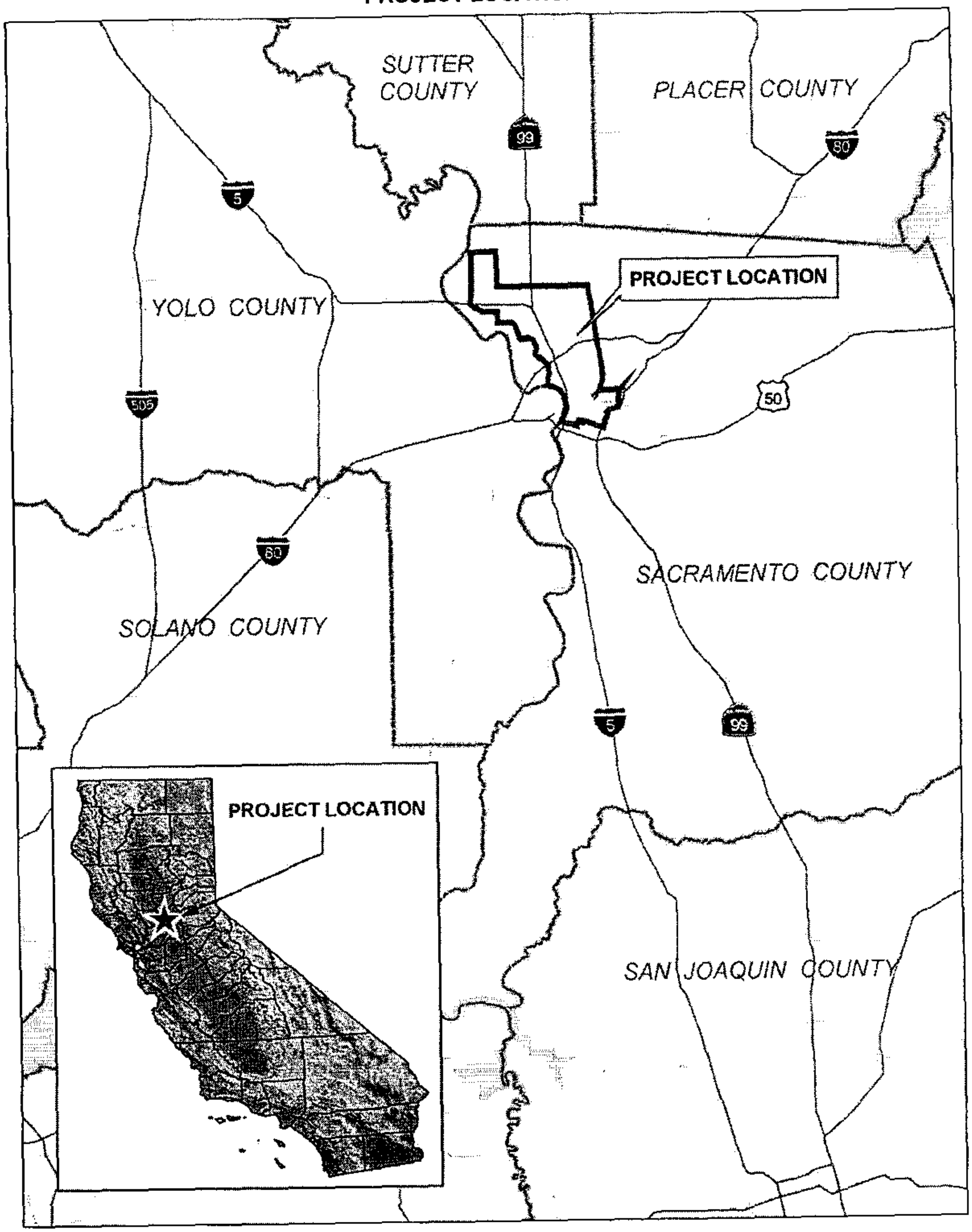
The AA Report presents transit alignment (and service) alternatives selected via the public participation process used to screen initial candidates, and presents a comparative analysis to refine previous assumptions developed for the alternatives. Based on further analysis of selected alternatives, the final AA report will recommend as the proposed LPA the alignment and service alternative that appears best achieves the overall study goals, and meets FTA's project justification criteria for federal funding under the agency's New Starts program.

1.3 How These Alternatives Were Selected

Sacramento's DNA Corridor was evaluated and identified in the RT Multi-Corridor Study System Expansion and Phasing Strategy (June 2001) as one of the system's high priority corridors for implementing future fixed guideway improvements.

Prior to selection of the alignments and transit modes specifically discussed in this AA Report, a wide range of alternatives was considered and screened multiple times using these criteria (see Chapter 2 for a description of the screening process). The screening process was based on a set of Goals developed for the study, along with criteria for measuring how well each alternative met each goal.

FIGURE 1.0-1
PROJECT LOCATION



The criteria included accounting for Corridor land use changes, planned future development, and potential transit patronage (ridership) forecasts; engineering factors; projections of capital, operating, and maintenance costs; potential economic benefits; financial feasibility, expected changes in the environment related to land use, traffic, noise, visual and other impacts of the alternatives; and cost-benefit considerations using the FTA methodology. Using these criteria and additional refined technical analysis, this effort produced the final set of alternatives, which are defined and further examined in the AA Report.

1.4 Corridor Alignment and Service Alternatives

Beginning downtown and proceeding north, the DNA Corridor takes in the 240-acre Union Pacific Railroad (UPPR) Railyards, the Richards Boulevard Redevelopment area, the fast growing communities of South and North Natomas, and certain lands to the west up to and including the Sacramento International Airport. For planning purposes, the Sacramento River is considered the ultimate DNA Corridor western boundary (not all land between I-5 and the river is presently included), and the Western Pacific (WP) Railroad line right-of-way (ROW) as the eastern boundary.

Figure 1.0-2 illustrates the DNA Corridor study area and the potential north-south transit alignments selected for this AA, of which there are five primary candidate physical alignments or routes. Moving from north to south (Airport to Downtown), and west to east in the Corridor, these are:

- The I-5 and the I-5/Truxel alignments, both of which assume mass transit use of the I-5 freeway right-of-way (ROW).
- The Truxel Road alignment which does not utilize I-5.
- The Western Area Power Administration (WAPA) and Northgate alignments.

Additional alternatives/design options exist within the five alignment possibilities, including connections from west to east, incremental (staged) or partial development, assumed levels of private land contributions, environmental impacts and levels of transit service (see Chapter 5 for details).

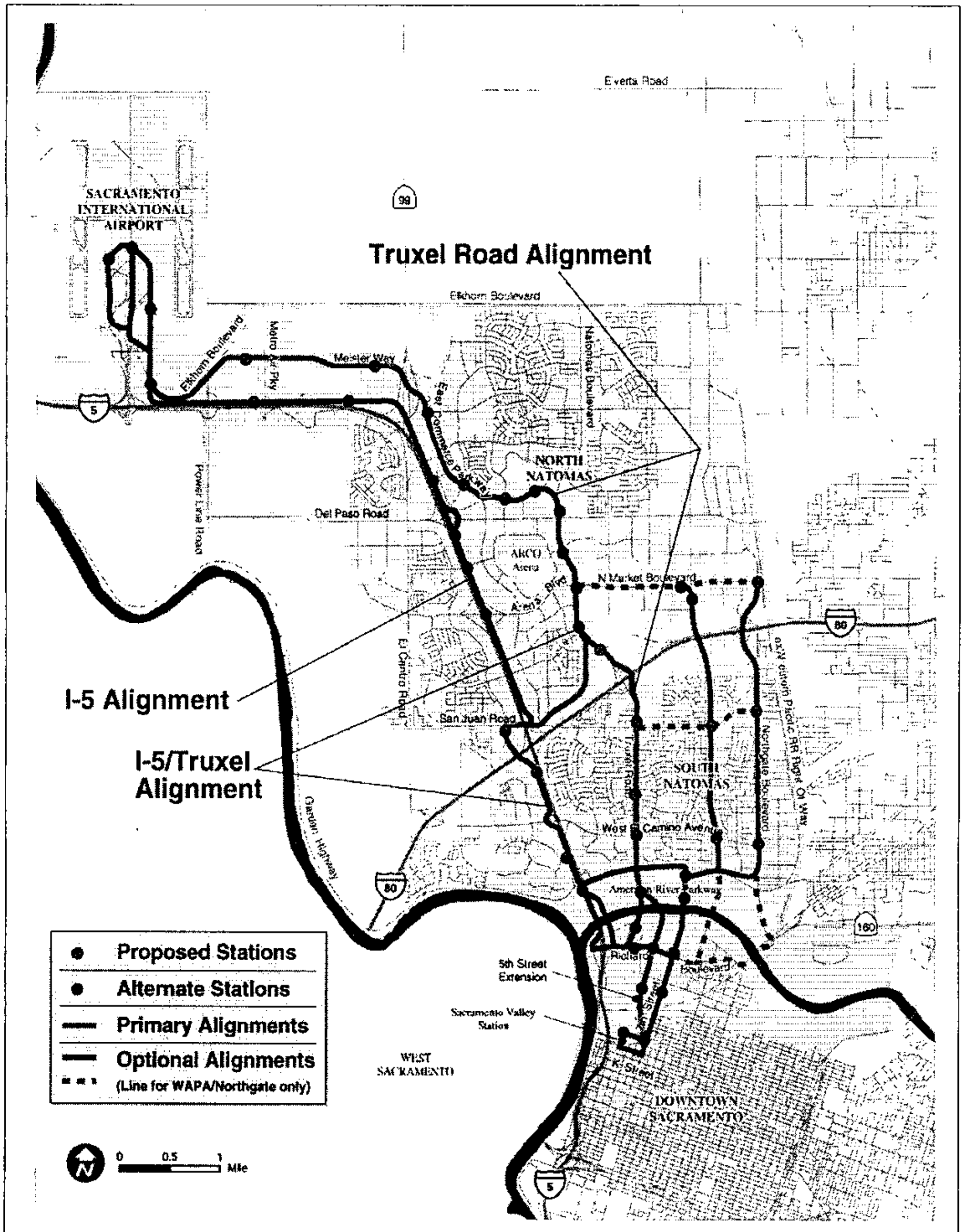
Any of the five primary alignments would provide for direct (no transfer) transit service between Sacramento International Airport and Downtown with interim stops. Each route could theoretically be developed for and operated with either bus rapid transit (BRT) or light rail transit (LRT) service.

To satisfy the requirements of federal and state environmental review, the AA addresses two additional alternatives which would not provide for significant expanded transit service.

- The No-Build alternative would involve no major transportation capital investment. It would generally maintain the status quo and Corridor resident and employee dependency on available local RT bus service, paratransit and vehicular travel.
- The Baseline/TSM alternative would address transportation needs in the Corridor through the use of lower cost bus transit improvements without a major new capital investment.

The following chapters of the AA Report present the setting, the technical analysis of alternatives and the conclusions drawn from this analysis. Chapter 8 explains the process for selection of the AA Report's recommended Locally Preferred Alternative.

FIGURE 1.0-2
ALIGNMENT ALTERNATIVES



Downtown Natomas Airport

2.0 DNA CORRIDOR STUDY PROCESS

Chapter Summary

The Downtown/Natomas/Airport (DNA) Corridor Alternatives Analysis (AA) builds upon previous planning efforts in the region and has involved extensive collaboration between government jurisdictions and stakeholders in multiple communities. For nearly 20 years, representatives of agencies and districts responsible for plans and policies in the Corridor have been considering significant transit improvements to serve anticipated growth in Corridor planning areas. Light rail service to the airport connecting to Downtown has been a key feature of numerous land use plans adopted over the past 20 years. Suggested alignments and operating features have varied; however, over the last twelve years Truxel Road has been identified as the locally adopted alignment.

The current Corridor study including this AA is a logical follow-through and refinement of earlier plans which cover 1984 through the present. Local authorities led by the Sacramento Regional Transit District (RT) as the local lead agency have followed a prescribed process of study and evaluation prior to adoption of a locally preferred alternative (LPA). This effort has been ongoing for about 24 months. A multi-layered screening process of all potential alternatives has been used to sort through facts and figures and to match transit concepts with goals established in the public review process and Federal Transit Administration (FTA) criteria.

2.1 A Closer Look at the DNA Corridor

The DNA Corridor study area extends north approximately 14 miles from the vicinity of K Street and 7th Street in downtown Sacramento to Sacramento International Airport, and includes the neighborhoods of Alkali Flat, the Railyards/Richards Boulevard Redevelopment area (Capitol Station District), the South Natomas and North Natomas planned communities, and the planned Metro Air Park industrial and commercial development zone.

Downtown Sacramento at the K Street Mall and 7th Street

- The Corridor area consists of approximately 34 square miles.
- The DNA Corridor is the fastest growing area in the City of Sacramento, and one of the fastest growing in the region.

The Corridor study area is defined by the following boundaries: on the south, K Street between the Sacramento River and the ex-Western Pacific (WP) Railroad right-of-way (ROW); on the east, the ex-WP Railroad ROW from the crossing of K Street north to Elkhorn Boulevard; on the north, Elkhorn Boulevard from the ex-WP Railroad ROW alignment to Power Line Road and the airport terminal area; and on the west, from the western edge of the airport south nearly to the Sacramento River and then to Downtown.

For descriptive and analytical purposes, the Corridor has been divided into four geographic segments that define broad travel markets and alignment options (Figure 2.1-1). Segment 1 represents downtown Sacramento, the American River and the American River Parkway to Garden Highway. Segment 2 begins north of Garden Highway and extends through South Natomas north to I-80. Segment 3 includes North Natomas and extends to El Centro Road. Finally, Segment 4 consists of the area west of El Centro Road and includes all of the airport property.

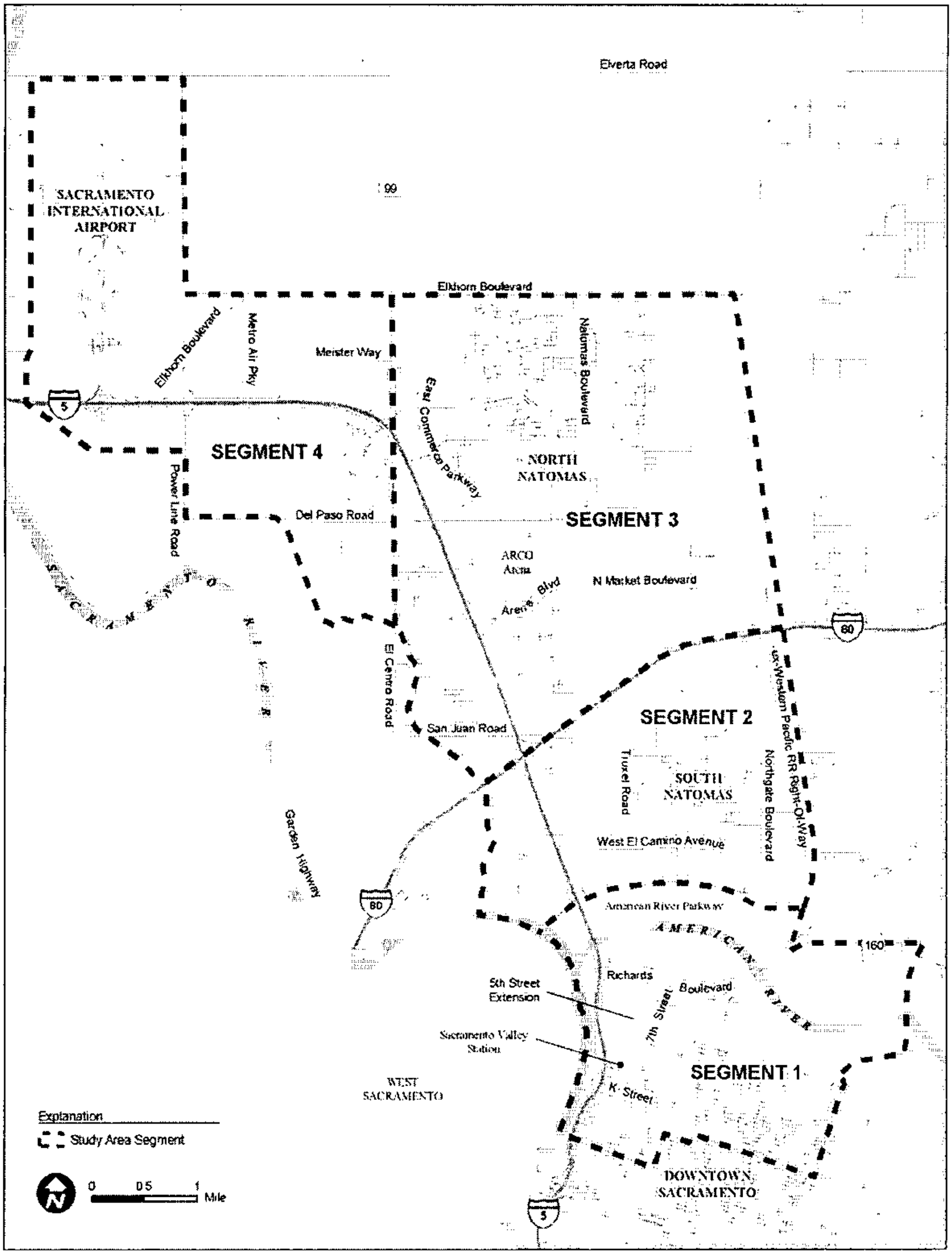
Sacramento International Airport

2.2 Consistency with Local, State, and Federal Planning Processes

Since 1984, communities that comprise the DNA Corridor have developed and begun implementing a vision of integrated land use and transportation. The following local, community and regional plans have been completed that support the construction and operation of light rail transit (LRT) service between downtown Sacramento and the airport:

- 1984 – Sacramento LRT Expanded LRT System Analysis
- 1986 – Sacramento Area Council of Governments (SACOG) LRT Extension Study
- 1987 – RT High Capacity Corridors Resolution
- 1988 – City of Sacramento General Plan
- 1991 – RT Route Refinement Study and Environmental Impact Report
- 1993 – RT 20-Year Transit Master Plan
- 1993 – County of Sacramento General Plan
- 1994 – North Natomas and South Natomas Community Plans

FIGURE 2.1-1
DNA CORRIDOR STUDY AREA SEGMENTS



- 1998 – Amendments to the City of Sacramento General Plan
- 2000 – SACOG Sacramento International Airport Transit Access Study
- 2001 – RT Multi-Corridor Study
- 2002 – SACOG 2025 Metropolitan Transportation Plan

Figure 2.2-1 provides a time line of key decisions related to the DNA Corridor. As shown in the figure, the RT Board of Directors adopted a recommendation for implementing LRT service serving the Corridor along a Truxel Road alignment as part of its 1991 RT Route Refinement Study and Environmental Impact Report. Subsequent land use and transportation decisions by the City and County have supported the selection of Truxel Road as the preferred transit alignment as well, including the following:

- Every land use and transportation plan adopted in the DNA Corridor for the last twelve years has endorsed the use of LRT along a Truxel Alignment, as noted above.
- The North Natomas Financing Plan, adopted by the City, provides funding for infrastructure improvements in North Natomas and includes several mechanisms that support the development of a future LRT extension. The financing plan includes requiring new development to allocate transit right-of-way (as an Irrevocable Offer of Dedication or IOD) along the adopted LRT route to provide right-of-way for a future LRT extension; and the assessment of a development fee to support transit improvements. In general, the IOD is 40-feet wide and extends approximately six miles along Truxel Road between I-80 and the Airport.
- The City of Sacramento has supported transit-oriented land uses near proposed station sites along the Truxel alignment. For example, in late 2001, the City Council denied an initial development application adjacent to the Gateway Park Boulevard Station Site and requested the developers to provide a plan that was more compatible with a LRT station. A transit supportive development plan was approved in October 2003.
- The County of Sacramento General Plan states that the median for a future extension of Meister Way through Metro Air Park should be reserved for LRT.
- The Truxel/I-80 over-crossing by the City of Sacramento and the California Department of Transportation (Caltrans) was designed to accommodate LRT tracks in the median traffic lanes of the structure; and
- The Meister Way over-crossing of State Route 99/70 is being designed to accommodate LRT service on or adjacent to the structure.

In continuing efforts to realize local goals for improved transportation in the area, the AA Study has sought to evaluate various potential alignments, including the previously adopted Truxel Road alignment. Based on input during the Scoping process, RT has chosen to evaluate the potential use of bus rapid transit (BRT) in the Corridor. Following completion of the AA and selection of a LPA, a Draft Environmental Impact Statement (DEIS), Draft Environmental Impact Report (DEIR) and Final Environmental Impact Report (FEIR) will be prepared consistent with federal and state environmental requirements. The Final Environmental Impact Statement (FEIS) environmental document will be prepared in conjunction with Preliminary Engineering.

FIGURE 2.2-1
HISTORY OF THE DNA CORRIDOR

Downtown Natomas Airport
Transit Alternatives Analysis/ Draft Environmental Impact Statement and Report

What is the history of the DNA corridor?

1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004

1984 SACOG Study - Initially suggested looking at LRT north of downtown using the Truxel alignment

1985 RT Board Resolution - Adopted the LRT on I-5/Truxel as the preferred alignment in the DNA corridor

1986 SACOG LRT Extension Study - Identified I-5/Truxel as the preferred alignment in the DNA Corridor

1986 North Natomas Community Plan - Adopted the I-5/Truxel alignment through South and North Natomas

1987 RT Study of High Capacity Study Corridors - Identified the LRT on I-5/Truxel as the preferred alignment in the DNA Corridor

1988 City General Plan - Supports LRT to airport showing I-5/ Truxel alignment

1989 RT Board Resolution - Retains I-5/Truxel and Truxel Alignments through North and South Natomas

1990 RT Route Refinement Study and Environmental Impact Report - Study initiated to examine alternative transit routes

1991 RT Route Refinement Study and Environmental Impact Report - Adopted LRT on Truxel as the environmentally preferred alternative

1993 Sacramento RT 20 Year Transit Master Plan - Identified Truxel alignment as preferred alternative

1993 Sacramento County General Plan - Identified Truxel alignment as the preferred route for a trunk transit line as part of a county-wide regional transit network

1994 North Natomas Community Plan - Adopted a preferred transit alternative along Truxel, with right-of-way and station locations identified

1994 South Natomas Community Plan - Amended to include a transit alignment along Truxel

1998 City of Sacramento General Plan - Supports LRT to North Natomas and Sacramento Airport on Truxel

2000 SACOG Sacramento International Airport Transit Access Study - Identified need for increased transit access to the airport using enhanced bus service or LRT

2001 RT Multi-Corridor Study System Expansion and Phasing Strategy - Identified a Truxel alignment

2001 DNA Alternatives Analysis Draft Environmental Impact Study / Report - Study initiated by RT to re-examine alternatives and prepare EIS/R

2002 SACOG 2025 Metropolitan Transportation Plan - Identified Truxel as the preferred transit alignment

2003 RT Board Decision - Board to select a locally preferred alternative for the DNA Corridor in December 2003

2004 RT Board Decision - Board to adopt DEIS/R for DNA Corridor in mid-2004

PB

10-16-03

2.2.1 Alternatives Analysis Process

The Alternatives Analysis process is part of a larger FTA transportation planning and project development process described in the FTA's Major Capital Investment Final Rule published December 7, 2000. This rule establishes the methodology by which FTA evaluates proposed "New Starts" fixed guideway projects that are potentially eligible for federal funding.

In October 2001, RT began the preparation of a combined AA/DEIS. As the study progressed, the list of alternatives expanded significantly. In such cases, FTA recommends that an AA report be prepared for the purpose of selecting a LPA prior to entering the DEIS phase of project development. RT has decided to follow this recommended approach and therefore, will prepare a separate DEIS report on the No-Build Alternative and LPA.

The FTA evaluation process culminates each year in an annual report submitted to Congress that includes a proposal on the allocation of funding to be made available to finance grants and/or loans for capital projects for New Starts. Proposed New Starts projects must receive FTA approval to advance from Alternatives Analysis to Preliminary Engineering, and then from Preliminary Engineering to Final Design based on an evaluation of the proposed projects using FTA's New Starts criteria. FTA utilizes two primary criteria for evaluating New Starts projects: Project Justification Criteria and Local Financial Commitment.

Under the Project Justification Criteria, five different measures are evaluated: Mobility Improvements; Environmental Benefits; Operational Efficiencies; Cost-Effectiveness; and Existing Land Use, Transit Supportive Land Use Policies, and Future Patterns. The Cost-Effectiveness and Transit Supportive Land Uses are the most important Project Justification Criteria. Under the Local Financial Commitment criterion, the degree of financial commitment for capital, operating and maintenance costs to the project is the most significant financial rating factor. There are three overall ratings that can be assigned to each project: highly recommended, recommended, or not recommended based on the results of FTA's evaluation of each of the criteria for project justification and local financial commitment. For RT to be eligible, it must, at a minimum, be rated as recommended if it is to successfully compete with other transit properties for New Starts funding.

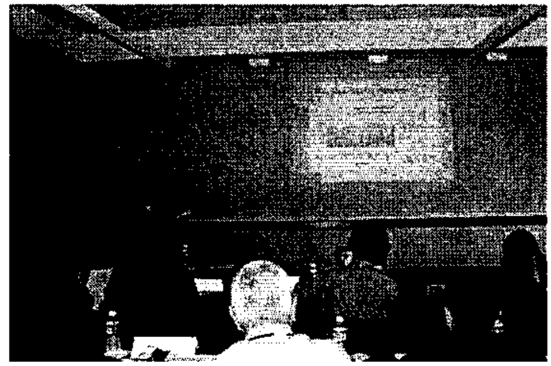
Consistent with FTA's New Starts guidelines, the AA process has been a coordinated effort between RT, members of the public, public agencies, and other stakeholders with numerous opportunities for input at each stage in the planning process.

2.2.2 Public Involvement as Part of the AA Process

Public involvement is an important part of the AA process. A comprehensive public involvement plan and program was developed and implemented. This program is described in detail in Chapter 3.

Review panels were created as a major element in the process that included a Citizens Review Panel (CRP) and a Technical Review Panel (TRP) made up of individuals representing local agencies, city and county representatives, neighborhood, community and business groups, homeowner associations, and environmental groups. These panels served as advisory groups that reviewed technical information produced during the study and provided valuable comments and suggestions throughout the study.

The panels continue to provide guidance to the RT Board of Directors as it makes an informed decision on a LPA.



Joint CRP/TRP Meeting on October 1, 2003

2.2.3 Screening and Selection Process

Each step of the screening and selection process for the DNA Corridor Alternatives Analysis involved active participation and input from the CRP and TRP. The process of screening the alternatives included the following five steps:

Step 1: Development of Goals, Objectives and Criteria

Step 2: Development of a Long List of Alternatives

Step 3: Level One Screening (27 alternatives and 7 alignments screened)

Step 4: Level Two Screening (12 alternatives, 5 alignments screened)

Step 5: Detailed Evaluation (12 alternatives, 3 alignments evaluated in the AA Report)

At the beginning of the DNA Corridor AA, a set of goals, objectives and evaluation criteria were developed that both met the local needs of the Corridor and fulfilled FTA New Starts criteria for a fixed guideway transit investment. The study goals and objectives were reviewed and approved by the CRP, TRP and the RT Board of Directors. The goals that guided the analysis included:

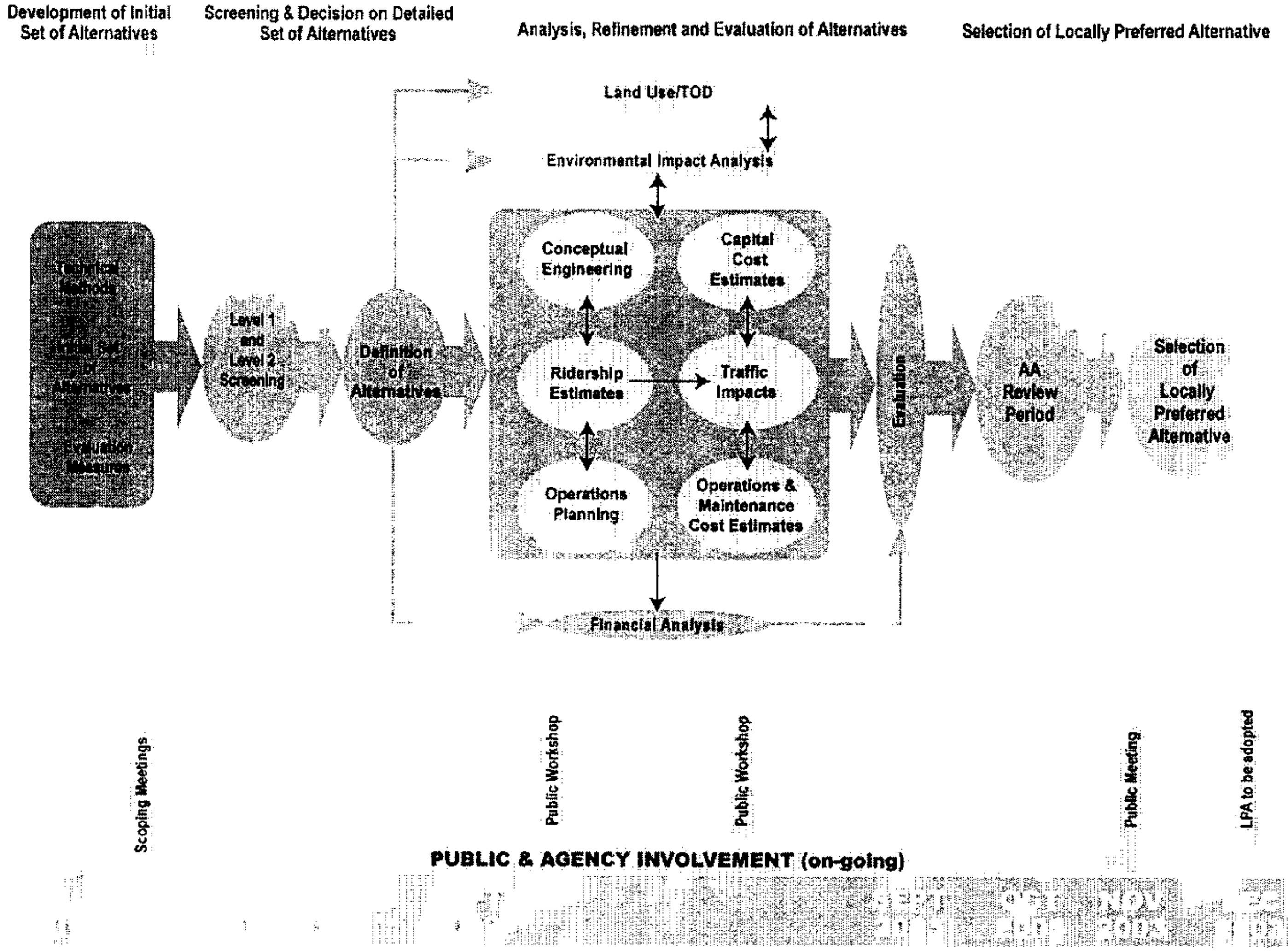
1. Improve corridor mobility
2. Promote patterns of smart growth
3. Find cost-effective solutions
4. Minimize community and environmental impacts
5. Ensure consistency with other planning efforts
6. Obtain strong community support

Following the development of the goals, objectives and evaluation criteria (described in Chapter 5, Table 5.1-1), a fatal flaw analysis was conducted on an initial set of potential corridor alignments, transit technologies, and American River bridge crossing locations. The fatal flaw analysis eliminated several transit technologies that did not satisfy the project goals (e.g., expensive transit technologies such as Automated Guideway Transit, heavy rail, etc., since they would be inappropriate for meeting future ridership demand and be too expensive to build and operate in the Corridor). Following the fatal flaw analysis, a long list of alternatives was compiled by "mixing and matching" the various potential alignments, transit technologies and river crossings. A two-step screening process was then initiated by RT.

- Level One screening involved the TRP and CRP in the examination of the initial long list of alternatives. Based on results of the Level One screening, the alternatives were repackaged into five primary alignments that utilized both BRT and LRT technologies or modes of travel. This allowed the subsequent analysis to focus on the proposed alignments first and then on the travel mode alternatives.
- Level Two screening included refinement of study goals and objectives by the TRP and CRP and preliminary analyses of the five primary alternatives. This work included development of "high level" transit patronage or ridership estimates, environmental assessments, a preliminary financial analysis, conceptual engineering for the corridor alignments, the development of station location options, and the consideration of technology design issues and constraints.

Subsequent to the Level Two screening, RT further refined the alternatives to optimize cost-effectiveness and reduce environmental impacts, resulting in the identification and detailed assessment of a final set of three alignments and twelve alternatives. These refined alternatives were included in the set of alternatives that were considered in the selection of the LPA. Figure 2.3-1 illustrates the alternatives evaluation process leading to the selection of the LPA.

FIGURE 2.3-1
ALTERNATIVES ANALYSIS PROCESS



3.0 AGENCY AND PUBLIC INVOLVEMENT

Chapter Summary

The ongoing Public Involvement Program (PI) developed for the Downtown/Natomas/Airport (DNA) Corridor Alternatives Analysis (AA) is one of the largest continuous programs of this type experienced in the Sacramento region. Over 30 groups from the public and private sectors have been participants since the study was initiated in late 2001. These groups have benefited from over 100 meetings held to discuss transit improvement alternatives for the Corridor.

Both technical review and citizens' review panels (advisory groups) have been deeply involved in the screening of the alternatives under review here. The participation of these groups has been essential to completion of the work of the technical consultants leading to this AA Report.

The extensive PI being implemented for the DNA Corridor AA study has been developed to receive public input from all affected citizens and stakeholders into the alternatives selection process.

Significant Program Activities

The PI Program included the following notable activities:

- Three EIR/S scoping meetings and public open houses (one televised).
- Meetings with citizens, homeowner associations, environmental groups, and business organizations.
- Regular study program updates at publicly noticed meetings (televised on cable TV) to the RT Board of Directors.
- Presentations to the Sacramento City Council, City of Sacramento Planning Commission, Sacramento County Board of Supervisors, Sacramento County Parks Commission, and Sacramento Area Flood Control Agency (SAFCA).
- Technical Review and Citizens Review Panel (TRP and CRP) meetings.
- Distribution of newsletters, media releases, public notices and other materials to a study mailing list of over 7,000 individuals and organizations.
- Design and operation of a study website (www.DNArt.org).
- Maintenance of a study information "hotline".
- Attendance at community events (Natomas Community Festival).
- Participation in cable television broadcasts.
- Placement of paid ads in local newspapers and interior ad cards on RT buses.
- A program of public outreach through local schools (8,500 students).
- Door-to-door canvassing of businesses in the Truxel Corridor.

Through these activities the study team was able to obtain valuable, regional input throughout the study program decision-making process. Through September 2003, over 100 presentations/briefings have been made by the Sacramento Regional Transit District (RT) to nearly 60 various public agencies, community organizations, and groups of locally elected officials.

DNA Project Website

3.1 Technical and Citizens Review Panels

RT, with assistance from its consultant team, established a Technical Review Panel (TRP) consisting of approximately 40 members representing various local, state, and federal agencies. The TRP meetings were conducted as working sessions, allowing members to actively participate with team members and RT Staff in discussing study issues. The TRP membership included the following organizations:

- California Department of Transportation (Caltrans)
- City of Sacramento (Planning, Public Works, Economic Development, Environmental Affairs)
- County of Sacramento (Planning)
- Federal Aviation Administration (FAA)
- Federal Transit Administration (FTA)
- Natomas Unified School District
- Sacramento Area Council of Governments (SACOG)
- Sacramento Area Flood Control Agency (SAFCA)
- Sacramento County Airport System
- Sacramento County Regional Parks and Recreation
- Sacramento Housing and Redevelopment Agency
- Sacramento Metropolitan Air Quality Management District (SMAQMD)

A Citizens Review Panel (CRP) also was established, representing a cross-section of community and other organizations with an interest in transportation issues in the study Corridor. This group of over 50 individuals also provided valuable review and comment on the study goals, evaluation criteria, and other issues. The CRP membership included the following organizations:

- Alleghany Properties
- Alkali Flat Neighborhood Association
- American River Parkway Foundation
- Arco Arena/Maloof Sports and Entertainment
- Capitol Station District
- Councilmember Ray Tretheway
- Cleaner Air Partnership
- County of Sacramento Disability Compliance Program
- Downtown Sacramento Partnership
- Environmental Council of Sacramento (ECOS)
- Integral Design
- Lennar Homes
- Lewis Operating Corporation
- Maloof Sports and Entertainment
- Metro Air Park
- Natomas Business Association
- Natomas Community Association (NCA)
- Neighborhood Area Group (NAG)
- North Natomas Transportation Management Association
- Northgate/Gardenland Neighborhood Association
- North Natomas Alliance
- North Natomas Community Association
- North Natomas Study Group
- Office of Assemblymember Steinberg
- River Oaks Community Association
- Sacramento Convention & Visitors Bureau
- Sacramento Labor Council
- Sacramento Metro Chamber
- Sacramento River Property Owners Association
- SacTEN
- Sacramento Area Commerce and Trade Organization (SACTO)
- Save the American River Association
- South Natomas Transportation Management Association
- Union Pacific Railroad Company (UPRR)
- Valley View Acres Community Association


DNA Corridor Open House, July 23, 2003

3.2 Agency Coordination

The following is a list of public agencies that provided information and/or participated in the identification and evaluation of the study alternatives throughout the AA study:

- American River Flood Control District
- California Department of Fish and Game
- California Department of Food and Agriculture
- California State Lands Commission

- Division of Aeronautics; California Department of Transportation
- Environmental Protection Agency (EPA)
- Federal Aviation Administration (FAA)
- Los Rios Community College District
- Lower American River Taskforce
- National Marine Fisheries
- Reclamation District 1000 (RD-1000)
- Sacramento County Department of Water Resources
- Sacramento Metropolitan Fire District
- Sacramento Regional County Sanitation District (CSD-1)
- Sacramento-Yolo Mosquito and Vector Control District
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Fish and Wildlife Service (USFWS)
- Western Area Power Administration (WAPA)

3.3 Organizations and Stakeholders Consulted

In addition to using agencies and groups represented on the TRP and CRP, the PI program used existing community forums to consult with various neighborhood, community, business and environmental organizations. Groups that were contacted and who participated in the study are listed in Table 3.3-1. As noted in the table, 81 meetings were held for the general public, 60 meetings with public agencies, and 42 stakeholder interviews and one-on-one meetings were held with elected officials, members of business and environmental groups, and community leaders.

3.4 Input Received

Numerous comments have been received from public agencies and the general public throughout the study. These comments generally fall into the following categories:

- Concerns about displacement of homes, traffic congestion, property values, public safety, and noise and visual impacts associated with the various alternatives.

- Several groups and a number of individuals have expressed support for providing light rail service in the Corridor. Other individuals have indicated support for BRT.

- Comments or questions related to transit operational issues: for example, will park-and-ride lots be included in the corridor?; how often will feeder bus service be provided and what routes will it use?; how will bus service be provided at the airport?; and when will the location of future transit stations be determined?

- Questions about the criteria used for the definition and evaluation of the alternatives.

TABLE 3.3-1
DNA CORRIDOR MEETINGS

General Public			
Date	**Group/Stakeholder**	**Date**	**Group/Stakeholder**
12/11/01	Public Scoping	09/25/02	TRP/CRP Meetings
12/12/01	Public Scoping	10/09/02	TRP/CRP Meetings
12/13/01	Public Scoping	10/09/02	Sacramento Co. Planning Comm.
01/11/02	City/County Planning Staff	10/23/02	TRP/CRP Meetings
01/16/02	Downtown Partnership	10/24/02	Lower American River Task Force
01/16/02	Airport Managers	10/28/02	RT Board of Directors
01/16/02	Natomas Community Assn.	10/29/02	LAR Floodway Protection Group
01/17/02	South Natomas TMA	10/31/02	LAR Fish Working Group
01/30/02	Capitol Station District	11/06/02	LAR Bank Protection Group
01/30/02	North Natomas Alliance	11/12/02	LAR Recreation Working Group
01/31/02	TRP/CRP Meeting	11/13/02	Community Workshop
02/06/02	North Natomas TMA	11/14/02	City Planning Commission
02/06/02	Sacramento City TMA	11/20/02	TRP/CRP Meetings
02/20/02	Alkali Flat Neighborhood PAC	11/20/02	SACTO
02/20/02	Natomas Transportation Faire	11/21/02	River Oaks Community Assn.
02/27/02	TRP/CRP Meetings	11/27/02	LAR Floodway Protection Group
03/06/02	ECOS	12/09/02	RT Board of Directors
03/06/02	North Natomas Study Group	12/12/02	SAFCA Board
03/12/02	Lower American River Task Force	01/21/03	Discovery Village Homeowners
02/18/02	DECAT	01/22/03	TRP/CRP Meetings
03/21/02	River Oaks Community Assn.	01/23/03	Natomas Crossing Comm. Assn.
03/27/02	TRP/CRP Meetings	03/20/03	Friends of Light Rail & Transit
04/08/02	RT Board of Directors	03/24/03	RT Board of Directors
04/17/02	Alkali Flat Neighborhood PAC	03/26/03	TRP/CRP Meetings
04/24/02	TRP/CRP Meeting	04/08/03	City Council Presentation
05/20/02	Neighborhood Area Group	04/16/03	Alkali Flat Neighborhood PAC
06/26/02	TRP/CRP Meetings	05/12/03	RT Board of Directors
07/24/02	TRP/CRP Meetings	05/28/03	TRP/CRP Meetings
08/07/02	South Natomas TMA	06/24/03	TRP/CRP Meetings
08/07/02	North Natomas TMA	07/22/03	Community Workshop
08/07/02	ECOS	07/28/03	RT Board of Directors
08/12/02	RT Board of Directors	07/30/03	Capitol Station District
07/29/02	Friends of Swainson's Hawk	09/04/03	DECAT
08/28/02	Metro Chamber	09/13/03	Truxel Road Preservation Assn.
08/28/02	Capitol Station District	09/22/03	RT Board of Directors
09/10/02	Lower American River Task Force	10/01/03	TRP/CRP Meetings
09/11/02	North Natomas Working Group	10/20/03	Truxel Road Preservation Assn.
09/18/02	Downtown Partnership	10/22/03	Metro Chamber
09/18/02	Alkali Flat Neighborhood PAC	10/27/03	RT Board of Directors
09/18/02	Natomas Community Assn.	10/29/03	Downtown Partnership
09/19/02	River Oaks Community Assn.	**Total number of meetings: 81**	

TABLE 3.3-1
DNA CORRIDOR MEETINGS (CONTINUED)

Public Agencies			
Date	**Group/Stakeholder**	**Date**	**Group/Stakeholder**
01/09/02	City Public Works Department	02/18/03	City Public Works Department
01/10/02	City Public Works Department	02/19/03	County Airport System
01/31/02	City Econ. Development Dept.	03/03/03	County Planning Department
02/20/02	Western Area Power Admin.	03/07/03	Federal Transit Administration
04/05/02	City Planning Department	03/12/03	City Public Works Department
04/24/02	City Planning Department	03/20/03	County Airport System
04/26/02	Federal Transit Administration	04/01/03	Sacramento Municipal Unity Dist.
06/03/02	City Public Works Department	04/03/03	City Public Works/Planning
07/23/02	Caltrans	04/10/03	City Public Works
07/29/02	County Parks, SAFCA	04/10/03	Sacramento Area Council of Gov.
07/29/02	Sacramento Area Council of Gov.	04/16/03	City Public Works Department
08/01/02	City Public Works/Planning	05/05/03	Co. Planning/Parks Departments
08/15/02	City Public Works Department	05/08/03	City Public Works Department
08/22/02	City Planning Department	05/13/03	Sacramento Municipal Unity Dist.
08/26/02	Caltrans	06/03/03	City Economic Development Dept.
08/29/02	City Planning Department	06/04/03	County Sanitation District
09/05/02	City Public Works/Planning	06/11/03	City Public Works Department
09/24/02	County Airport System	06/30/03	Environmental Agencies
10/02/02	SAFCA, County Parks	07/14/03	County Airport System
10/03/03	City Public Works/Planning	07/15/03	County Airport System
10/10/02	Reclamation District 1000	07/21/03	City Public Works Department
10/07/02	City Public Works/Planning	07/29/03	County Sanitation District
11/08/02	City Public Works Department	08/08/03	Sacramento Area Council of Gov.
12/13/02	Caltrans	08/14/03	City Public Works/Planning
12/18/02	Environmental Agencies	09/09/03	City Parking Division
01/02/03	City Public Works/Planning	09/10/03	City Public Works Department
01/10/03	Caltrans, City Public Works Dept.	09/10/03	Sacramento Area Council of Gov.
01/23/03	City Public Works Department	09/23/03	Natomas Unified School District
01/30/03	County Parks Department	10/02/03	City Public Works/Planning
02/06/03	City Public Works/Planning	10/06/03	County Airport System
		Total number of meetings: 60	

TABLE 3.3-1
DNA CORRIDOR MEETINGS (CONTINUED)

Stakeholders	
Date	**Group/Stakeholder**
03/11/02	Sacramento Mayor Heather Fargo
03/13/02	SACOG Exec. Director Marty Tuttle
03/19/02	RT Director Dave Jones
03/22/02	Mariko Yamada, Dist. Director, Yolo County Supervisor Dave Rosenberg
03/25/02	RT Director Roger Dickinson
03/26/02	Terry Burns, Natomas Unified School District
03/26/02	Sacramento County Parks Commissioner Art White
03/28/02	Sacramento City Councilmember Jimmie Yee
03/28/02	RT Director Ray Tretheway
03/28/02	Sacramento County Supervisor Illa Collin
03/28/02	Sacramento Councilmember Lauren Hammond
04/02/02	Martie Dotie, Yolo County Transportation District
04/03/02	Sacramento City Planning Commissioner Matt Jacobs
04/04/02	Mark Stone, Vice President, Arco Arena
04/08/02	Airport Executive Director Hardy Acree
04/08/02	Sacramento City Councilmember Steve Cohn
04/15/02	Sacramento County Supervisor Muriel Johnson
04/15/02	RT Director Don Notolli
04/23/02	California Department of General Services Director Barry Keene
04/25/03	Don Harris, President, Nehemiah Corporation
04/26/02	Sacramento City Planning Commissioners Debra Jones and Jim Bacchini
04/29/02	RT Director Roger Niello
04/29/02	RT Director Bonnie Pannell
07/16/02	RT Director Ray Tretheway
05/13/03	Representative of Northern Territories, Inc.
07/26/02	RT Director Roger Dickinson
08/13/02	Representatives of AKT Development
08/15/02	Gerry Kamilos, Metro Air Park
09/12/02	David Tooker, Superintendent, Natomas Unified School District
08/27/02	Consultant Representatives of Union Pacific Railroad
09/30/02	RT Director Roger Dickinson
10/02/02	Andy Plescia, City Railyards Redevelopment Consultant
10/03/02	RT Director Ray Tretheway
11/14/02	Sacramento City Councilmember Sandy Sheedy
01/14/03	RT Director Dave Jones
01/14/03	City Councilmember Jimmie Yee
01/23/03	RT Director Steve Cohn
06/05/03	RT Director Ray Tretheway
07/18/03	RT Director Ray Tretheway
07/18/03	RT Director Steve Cohn
07/21/03	RT Director Roger Dickinson
08/25/03	RT Director Dave Jones
Total number of meetings: 42	

- Comments from the USFWS, EPA, the US Coast Guard, the Lower American River Taskforce, the City of Sacramento, Sacramento County, and other resource agencies and groups requesting continuing agency coordination with RT.

3.5 Upcoming Public Involvement Through Adoption of a LPA

Through review of the AA Report and adoption of a LPA by the RT Board of Directors, RT will continue to meet with the TRP/CRP; neighborhood, business, environmental and community groups; stakeholders; and public agencies to provide information about the evaluation of alternatives and analysis results.

A draft of the DNA Corridor Alternatives Analysis Report was made available for public review beginning on November 6, 2003, with a public comment period extending through December 8, 2003. During this period, RT hosted a public workshop on November 20 at the Sacramento Convention Center. This provided the public an opportunity to review the study results and conclusions and to provide comments. In addition, the RT Board of Directors convened a Public Hearing to discuss the results of the AA Report on December 8, 2003. Following the Public Hearing, the RT Board of Directors considered the technical analysis, study results, and Public Hearing record. Based on this assessment along with feedback provided by the community throughout the identification and evaluation of the study alternatives, the RT Board of Directors then selected a LPA that identified a preferred corridor alignment and transit mode.

4.0 PURPOSE AND NEED

Chapter Summary

The intent of the Purpose and Need statement is to document the rationale for consideration of transit improvements in the Downtown/Natomas/Airport (DNA) Corridor, as demonstrated by current and anticipated development and transportation conditions within the study area. By identifying existing and anticipated future transportation deficiencies, this understanding of the study area conditions also contributes to the formulation of potential transit improvements.

The following sections address key characteristics of the DNA Corridor, problems and needs in the corridor, and the purpose of the DNA Corridor Study alternatives.

4.1 Problems and Needs

The need for a major transit investment in the DNA Corridor is based on the following issues, which form the basis for the goals established for the study:

- Population and employment growth
- Development patterns
- Increase demand for transit services
- Increase in traffic congestion
- Air quality
- Increased airport passenger demand

4.1.1 Population and Employment Growth

The DNA Corridor is one of the fastest growing areas in the Sacramento region, given its proximity to downtown Sacramento and planned development. The study area includes the Sacramento International Airport area, all of the North Natomas and South Natomas Community Plan Areas of the City of Sacramento, plus the northern portion of downtown Sacramento (north of K Street) including Richards Boulevard and Railyards Development areas. Travel growth in the corridor will also be heavily influenced by the growth in employment in downtown. Table 4.1-1 shows the projected growth of population and employment in this corridor between 2000 and 2025. Figures 4.1-1 and 4.1.-2 provide further illustration by Transportation Analysis Zones (TAZs) of anticipated increases in population and employment over the next 25 years. Over the longer term, this trend is likely to continue, given City/County discussions about future growth in unincorporated areas within and adjacent to the corridor.

The population in the North and South Natomas communities is expected to increase by 142 percent or by nearly 59,000 people by 2025. Employment in these two community plan areas is projected to increase by 100 percent or 21,800 jobs, between 2000 and 2025.

The North Natomas area is designated by the City as a major growth area for new housing and employment opportunities. Residential build-out of North Natomas through the fall of 2003 has outpaced original City and Sacramento Area Council of Governments (SACOG) growth projections by 40 percent. An additional 47,000 jobs are projected to be added in downtown Sacramento in that same period.

TABLE 4.1-1
PROJECTED POPULATION AND EMPLOYMENT GROWTH IN THE DNA CORRIDOR STUDY AREA

Area	2000		2025		2000 to 2025 Growth		Percent Change	
	Pop.	Empl.	Pop.	Empl.	Pop.	Empl.	Pop.	Empl.
North Natomas	4,000	9,900	62,200	28,400	58,200	18,500	1555%	187%
South Natomas	37,500	12,000	38,100	15,300	600	3,300	2%	28%
Subtotal	41,500	21,900	100,300	43,700	58,800	21,800	142%	100%
Downtown Sacramento	19,100	83,000	32,000	130,000	12,900	47,000	68%	57%
Total Corridor	60,600	104,900	132,300	173,700	71,700	68,800	119%	66%

Source: Data derived from information provided by Sacramento Area Council of Governments, 2003.

Population estimates completed for the DNA Corridor indicate that the study area population will increase at an annual compounded growth rate of two percent from 2000 to 2025, as compared to 1.1 percent for the City of Sacramento and 1.3 percent for the County of Sacramento as a whole. In addition, the percentage of households without access to an automobile in the study area and within 0.5 miles of the three alignments (Truxel, I-5 and I-5/Truxel alignments) range from 17 percent to 20 percent, as compared to 8.7 percent for the County of Sacramento as a whole.

The total corridor population is expected to more than double by 2025. Employment growth, during this same period is expected to grow by about 65 percent. The most dramatic population growth is projected to occur in the North Natomas area while employment will increase throughout the corridor. The large growth in population and jobs, and the distribution of this growth, will generate an equally large increase in corridor travel demand.

Implementation of a major transit investment in this corridor is intended to link a large number of workers to a host of jobs. It is also intended to link the Sacramento International Airport with the rest of the regional transit system, and will be a key part of an intermodal station in the vicinity of the historic Amtrak Depot. The Amtrak Depot provides an intermodal connection between the Capitol Corridor and will provide future planned connections to regional and inter-regional rail service. Currently, the Capitol Corridor/ Amtrak Service is the fourth busiest Amtrak corridor in the Nation and the second busiest Amtrak route west of the Mississippi.

4.1.2 Development Patterns

The rapid growth and development in the corridor frequently exceeds all projections. Straight-line trend forecasts would lead to the conclusion that the corridor will build out at a much more rapid pace than originally anticipated. Current development demonstrates this point, and as of July 2003, 44 percent of the residential dwelling units identified in the North Natomas Community Plan for completion by 2025 have been completed, approved or are in the final stages of the permitting process. Between 1999 (when development of the North Natomas Community Plan started) and July 2003, the City of Sacramento approved and recorded completion of 7,100 residential dwellings, and has issued permits for an additional 3,900. Final subdivision maps have also been approved for 3,600 residential lots, which have not yet applied for building permits.

FIGURE 4.1-1
2000 TO 2025 PROJECTED POPULATION CHANGE, DNA CORRIDOR STUDY AREA

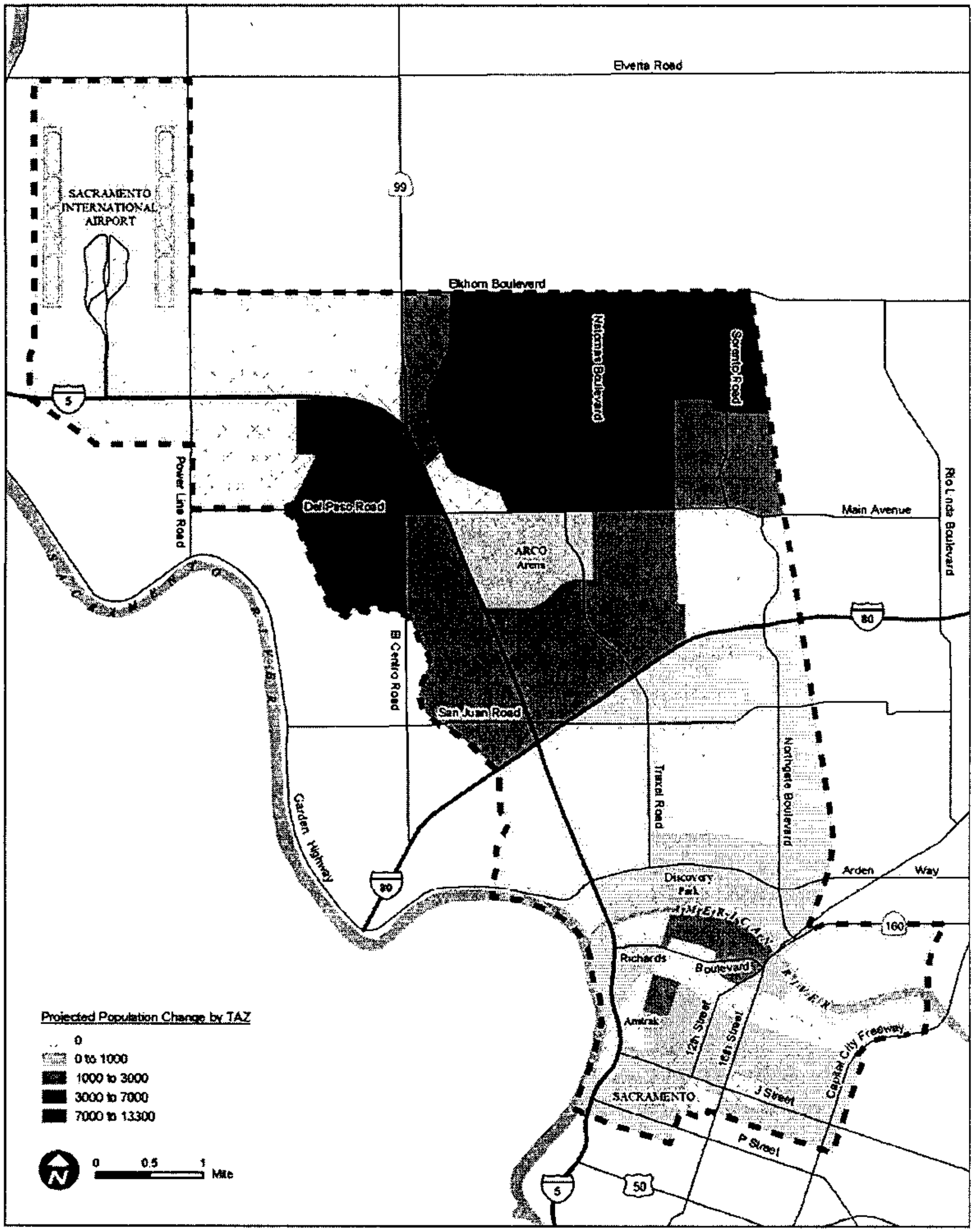
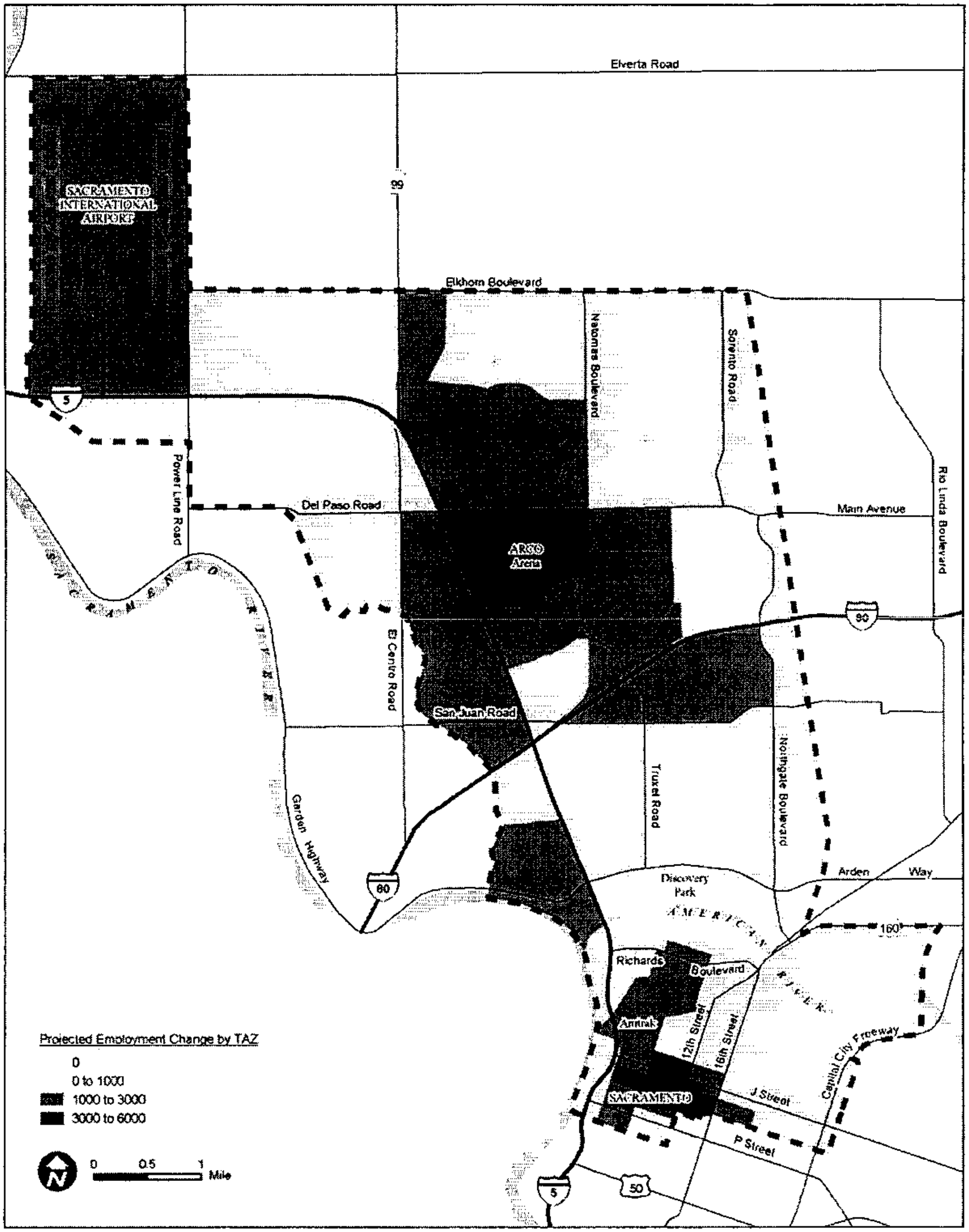


FIGURE 4.1-2
2000 TO 2025 PROJECTED EMPLOYMENT CHANGE, DNA CORRIDOR STUDY AREA



Source: SACOG, 2001.

As part of the North Natomas Financing Plan process, the City of Sacramento regularly conducts a review of absorption rates for residential and commercial development in North Natomas. Data from the absorption study is used to schedule infrastructure improvements and set levels of development fees in North Natomas. An update of the absorption study is currently under way, and current development trends as of late 2003 show that residential development in North Natomas is occurring much faster than previously planned.

Growth and development in the corridor is moving north towards the airport. A number of new development proposals in North Natomas and the airport environs are now underway, including the following:

- Creation of the "Natomas Joint Vision" between the City of Sacramento and County of Sacramento for planned development of 10,000 acres in unincorporated Sacramento County north of the Natomas area.

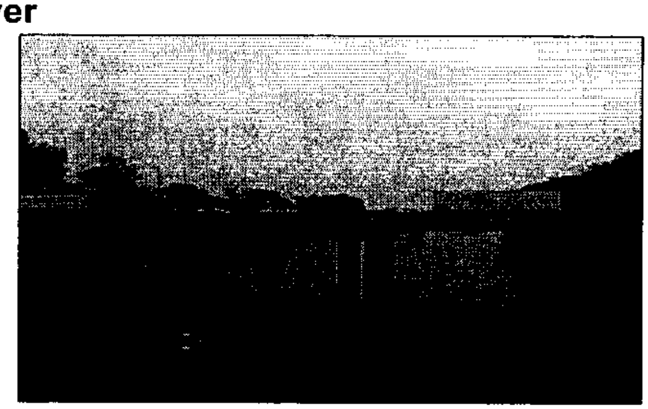
  In the fall of 2002, a memorandum of understanding (MOU) between the City and the County was approved. The MOU addresses open space, natural resource and policy issues between the two jurisdictions, and the provision and delivery of urban services within the 10,000 acres. The City and the County are developing amendments to their respective general plans to codify elements of the MOU and are planning to conduct an environmental review of these amendments. If approved, the growth that would occur in this area would exceed SACOG's currently adopted growth forecast.

- A proposal to build a new residential and commercial development project on 510 acres between Metro Air Park and State Route 99/70 (Greenbriar Farms).
- Plans to build an estimated 12,000 or more homes on 6,500 acres east of the study corridor.
- Construction of Metro Air Park, a County-approved project just east of the airport that will include 20 million square feet of warehouse, light manufacturing, office, retail space, and 950 hotel rooms.
- A proposed to develop 2,000 acres in North Natomas, in an area located just east of the Airport and north of Del Paso Road. The project would consist of more than 4,000 homes built on over 230 acres.

Physical and operational improvements at the airport, including Terminal B Modernization program and other improvements now being considered as part of an update of the Airport's long-range master plan. The Airport Master Plan Study is incorporating an extension of light rail service to the airport as part of future ground access plans.

4.1.3 Crossing the American River

Another factor that has helped shaped development patterns is the location of the American and Sacramento Rivers, which comprise two of the key environmental resources in the corridor. The American River divides the DNA Corridor, and the adjoining Discovery Park is a major recreational facility for the region. It crosses the corridor in an east-west direction just north of downtown Sacramento. One of the challenges is locating a new bridge crossing over the



I-5 bridge crossing of the American River

river and through the park linking the Downtown with the Natomas community. A second challenge is related to how the existing policy framework for protecting the river and the American River Parkway responds to the need for new transportation improvements. The 1985 American River Parkway Plan discourages new crossings of the American River; and an update of this document is underway.

4.1.4 Increased Demand for Transit Services

Operating agencies providing common carrier or public transportation services within or through the corridor are RT, Yolo County Transportation District "Yolobus," Yuba-Sutter Transit, Amtrak, and Greyhound. The DNA corridor is currently served by seven RT bus routes which carry 4,780 daily transit riders within the corridor. In addition to RT bus service, RT operates the existing light rail "Starter Line" through the downtown portion of the corridor. It is estimated that 2,500 riders travel within the DNA corridor use existing light rail routes. Public transportation to the airport consists largely of taxi, shared-ride van services, some dedicated hotel shuttles, and Route 42, a public bus route operated by the Yolo County Transportation District. Route 42 is a regional express bus line connecting Downtown Sacramento with the Sacramento International Airport. Route 42 continues outside of the DNA corridor to serve the cities of Davis and Woodland in Yolo County. During calendar year 2003, an average of approximately 3,250 riders per month either boarded or alighted the bus at the airport. Several other agencies provide transit service from areas outside the study area to downtown Sacramento such as El Dorado Transit, Roseville Transit, Folsom Commuter Bus, and others. Table 4.1-2 shows existing corridor transit demand while Figure 4.1-3 presents the existing transit routes serving the corridor.

Even with this existing level of transit service, there will be a significant demand for new service in the DNA Corridor for several reasons. First, there is a large transit-dependent population. According to the 2000 U.S. Census, 16.5 percent of all households within the study area did not own a vehicle compared to 12.9 percent for the City and 8.7 percent for the County. In addition, 46 percent of the study area residents (which totaled 41,200) are considered minority and 15 percent are low-income, many of whom are located in the southern portion of the corridor. The minority population is slightly higher in the City of Sacramento (52 percent) than in the County of Sacramento (36 percent). The distribution of low-income populations within the study area is similar to that for the City (20 percent) and County (14 percent).

TABLE 4.1-2
2003 TRANSIT DEMAND IN THE DNA CORRIDOR

Route	Description	Daily Percentage in the DNA Corridor
11	Truxel Road – Downtown Sacramento to North Natomas	146
13	Northgate Boulevard – Natomas Marketplace to Arden/Del Paso LRT Station	633
14	Norwood Avenue – North Natomas to Arden/Del Paso LRT Station	712
15	Rio Linda Boulevard – Downtown Sacramento to Watt/I-80 LRT Station	591
16	Del Paso Heights – Norwood Center to Arden/Del Paso LRT Station	146
87	Howe Avenue – Downtown Sacramento – North Sacramento – California State University, Sacramento – University/65th Street LRT Station	1,375

TABLE 4.1-2
2003 TRANSIT DEMAND IN THE DNA CORRIDOR (CONTINUED)

Route	Description	Daily Percentage in the DNA Corridor
88	West El Camino Avenue – Downtown Sacramento – South Natomas – Arden/Del Paso Road LRT Station	1,177
Light Rail	Boardings within downtown Sacramento	2,500
Total	Total Boardings	7,280

Source: June 2003 Boarding Survey, Sacramento Regional Transit District, 2004.
Note: Data for Downtown Sacramento to Airport trips provided by Yolo County Transit District is not available.

Second, there is a growing concentration of transit supporting land uses. The North Natomas portion of the study area, which represents 65 percent of the corridor, is being developed under the City of Sacramento-adopted North Natomas Community Plan, which promotes high density residential uses and intense employment generators clustered around planned transit stations along Truxel Road north of I-80.

Third, the study area contains a major concentration of existing and planned activity centers and destinations including the Sacramento International Airport; Metro Air Park, which is an approved mixed-use development project; the soon-to-be-built North Natomas Town Center with a regional park, high school and community college campus; Arco Arena; the Marketplace commercial center; the North Natomas High School; the South Natomas Community Center; the redeveloping Richards Boulevard area; and the Sacramento Valley Station which is part of a 240-acre proposed redevelopment project for the Union Pacific Railyards. Many of these centers are located within an increasingly congested portion of the study area north of Downtown along I-5 and to the east along I-80.

As a result, based on ridership forecasts, transit trips are anticipated to significantly increase from 2000 to 2025, both regionally and in the DNA Corridor:

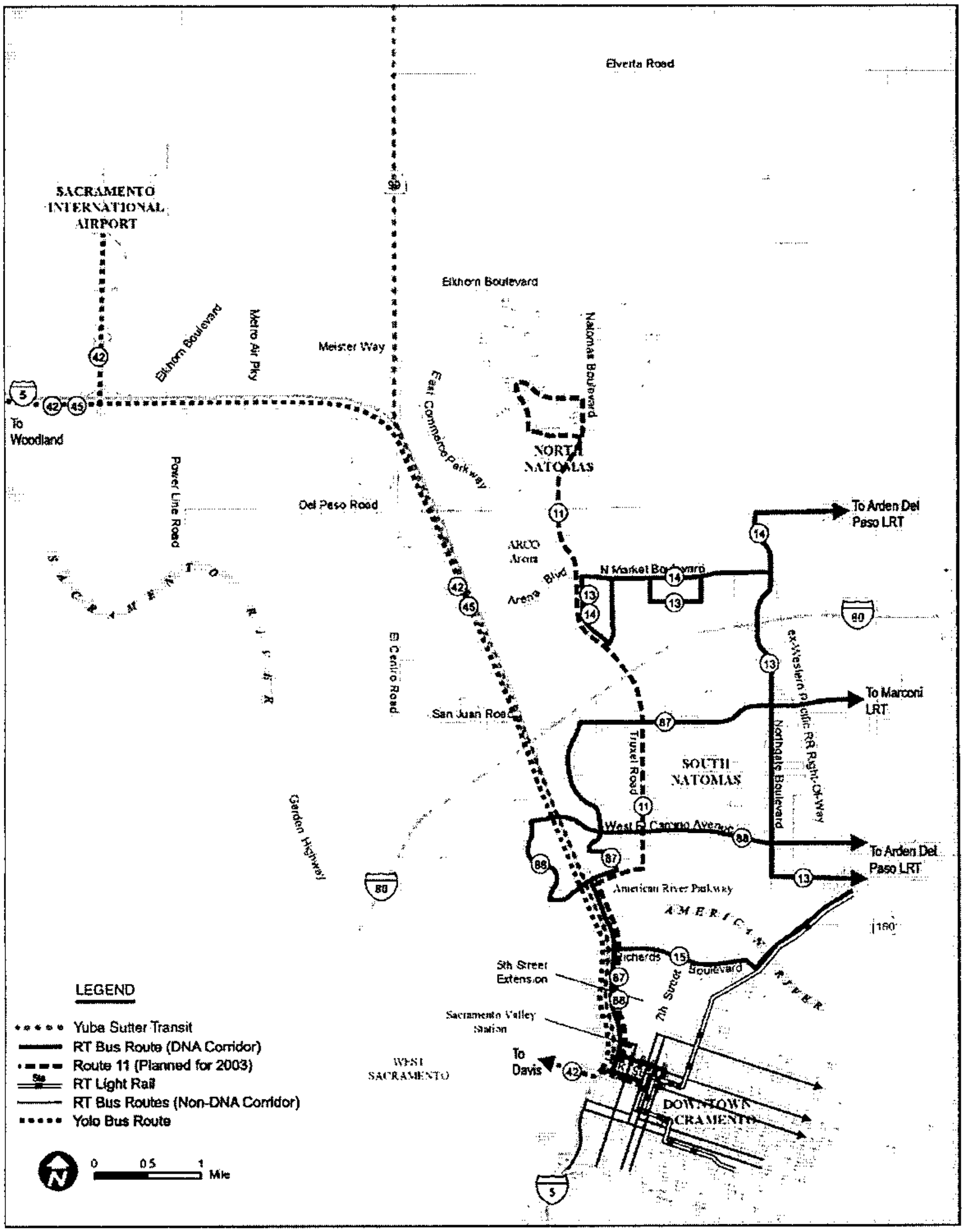
By 2025, transit trips region-wide are expected to more than double from 77,500 transit person trip ends to 160,000 on an average weekday.

- Transit ridership projections in the DNA Corridor indicate that transit trip-ends per average weekday would more than double from 2,900 to 7,900, even with minimal new transit service.
- Transit mode shares to downtown Sacramento from the DNA Corridor would increase from 17 percent under future No-Build conditions and up to 32 percent under build scenarios.
- Transit mode shares to the airport in the year 2025 would increase from two percent with little or no new service, and up to nine percent if fixed guideway transit service to the airport is provided.

4.1.5 Increase in Traffic Congestion

The DNA study area includes some the most important regional highways in the Sacramento area: Interstates 5 (I-5) and 80 (I-80), State Routes (SR) 99/70, and 160. The major roadways are presented in Figure 4.1-4.

FIGURE 4.1-3
EXISTING TRANSIT SERVICE



I-5 is an interstate freeway that traverses the study area in a north-south direction, providing connections from Canada to Mexico. To the south, it provides access to downtown Sacramento, the southern portions of the city and county, the San Joaquin Valley, and Southern California. To the north, I-5 provides access to Sacramento International Airport, the City of Woodland and other Central Valley communities. Table 4.1-3 provides information on the existing and planned lane geometry on I-5. The trans-continental I-80 traverses the study area in an east-west direction. To the west, it provides one of the few crossings of the Sacramento River connecting access to West Sacramento, Davis and the San Francisco Bay Area; and to the east, it provides access to major eastern suburbs of Sacramento and on to Reno and the east coast via Chicago and New York.

One of the purposes of implementing a major transit investment in the DNA Corridor is to provide a mobility option to automobile traffic demand between the fast-growing North and South Natomas communities and areas south of the American River, especially downtown Sacramento. There are only two existing highway bridges across the American River within this three-mile-wide corridor: I-5 and State Route 160. Due to this limited north-south traffic capacity, the high projected levels of growth in the corridor over the next 20 years will dramatically increase traffic congestion on I-5 and parallel roadways to this vital interstate facility.

Table 4.1-4 shows the existing and projected year 2025 traffic volumes on I-5 and I-80 based on SACOG's 2002 Metropolitan Transportation Plan (MTP). Peak hour traffic volumes along most of the segments of I-5 between the airport and downtown are expected to increase by 40 to 71 percent. The highest level of traffic growth on I-5 is projected to occur between the Arena Boulevard interchange (opening November 15, 2003) and I-80, where a growth in traffic volume of 100 percent is anticipated. Interstate 5 from J Street in downtown Sacramento to I-80 will be over capacity by 2025 and nearing capacity from I-80 to the airport.

Table 4.1-3 also shows levels of service (LOS). Determination of roadway operating conditions is based upon comparison of known or projected traffic volumes during peak hours to roadway capacity. LOS describes roadway operating conditions. LOS is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs. LOS is designated "A" through "F" (best to worst), and covers the entire range of traffic operations that might occur. Levels of service "A" through "D" represents traffic volumes at less than roadway capacity, "E" represents volumes at or near capacity, and LOS "F" represents over-capacity and/or forced-flow.

LOS "F" conditions currently exist on I-5 near US 50 and on I-80 east of I-5 on many weekday peak periods. This traffic congestion can cause substantial traffic backups on I-5 in the segment between I-80 and downtown. The traffic volumes on these segments are projected to increase over the next twenty years.

The 2002 MTP calls for HOV lanes to be added to I-5 between I-80 and the Airport. Auxiliary lanes will also added in some segments south of Arena Boulevard, but no mixed flow lanes will be added to I-5. With limited improvements to I-5 and a large projected increase in traffic volumes, high levels of traffic congestion are anticipated on I-5 within the corridor study area. Between downtown and I-80, the projected 2025 traffic volumes on I-5 will result in LOS "F" conditions during both peak commute periods.

FIGURE 4.1-4
DNA CORRIDOR STUDY AREA ROADWAYS

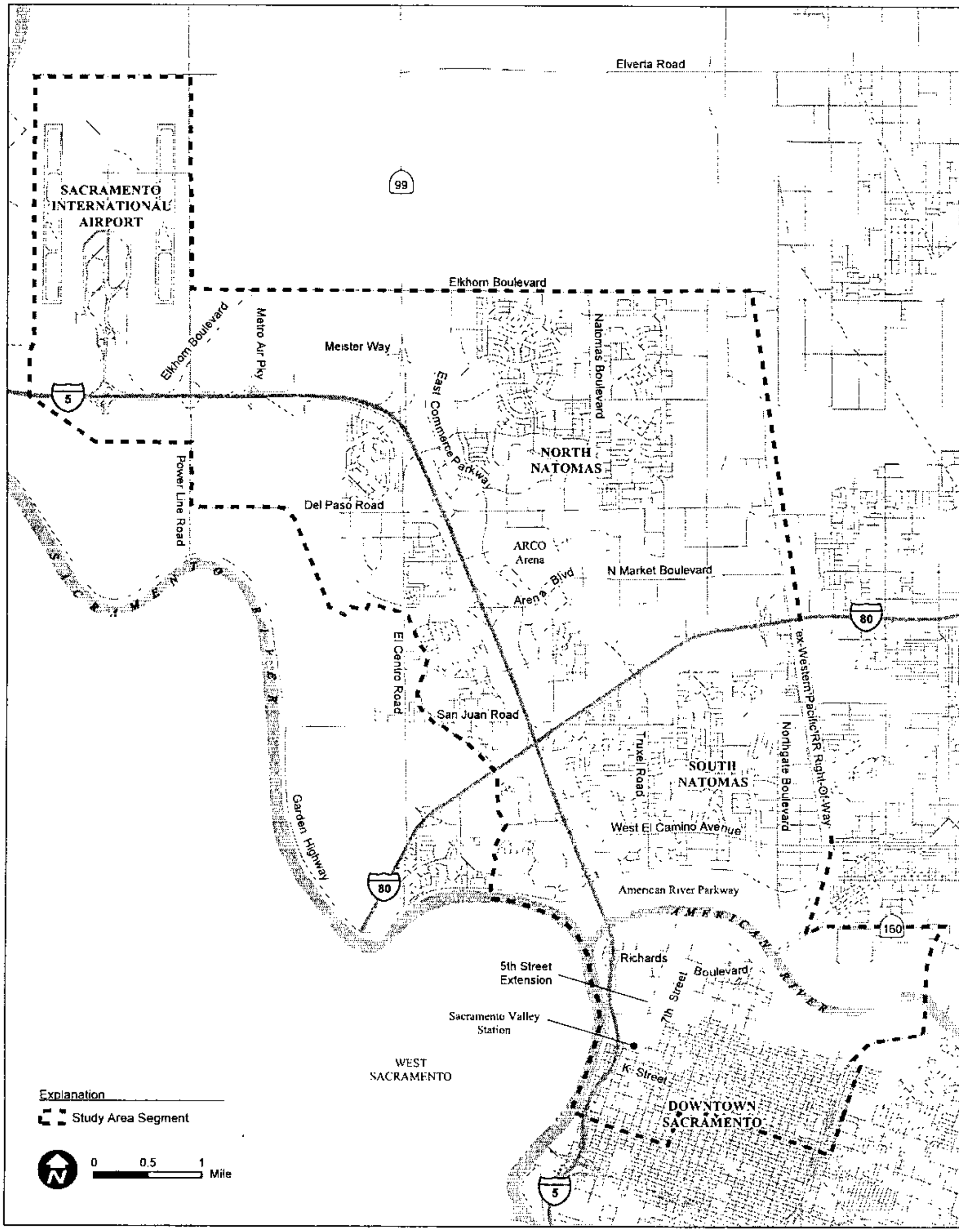


TABLE 4.1-3
EXISTING AND PLANNED LANE GEOMETRY ON INTERSTATES 5 AND 80

Freeway Segment	2000 Lanes (All Mixed Flow)	2025 Lanes		
		Mixed flow	HOV	Total
I-5				
J Street to Richards Boulevard	8 + 2 aux	8 + 2 aux	2	10 + 2 aux
Richards Boulevard to Garden Highway	8	8 + 2 aux	2	10 + 2 aux
Garden Highway to El Camino Boulevard	8 + 2 aux	8 + 2 aux	2	10 + 2 aux
El Camino Boulevard to I-80	8 + 2 aux	8 + 2 aux	2	10 + 2 aux
I-80 to Arena Boulevard	6	8 + 2 aux	2	10 + 2 aux
Arena Boulevard to Del Paso Road	6	6 + 2 aux	2	8 + 2 aux
Del Paso Road to SR 99/70	6	6	2	8
SR 99/70 to Lone Tree Road	4	4	2	6
Lone Tree Road to Airport	4	4	2	6
I-80				
Norwood Avenue to Northgate Boulevard	6	6	2	8
Northgate Boulevard to Truxel Road	6 + 2 aux	6 + 2 aux	2	8 + 2 aux
Truxel Road to I-5	6 + 2 aux	6 + 2 aux	2	8 + 2 aux
I-5 to W. El Camino Avenue	6	6	2	8

Source: DKS Associates based on aerial photos plus projects identified in the SACOG's 2002 Metropolitan Transportation Plan.

Interstate 5 is a vital federal and state transportation facility. It is the only continuous north-south interstate freeway through California. Interregional, interstate and international business, freight, tourist, and recreational travel among Mexico, California, Oregon, Washington, and Canada use this route. It is also a primary access route to downtown Sacramento and the State Capitol. As a result, the economic well-being and quality of life in local communities and throughout California will be affected by recurring traffic congestion on I-5 in the corridor study area.

The City of Sacramento utilizes a LOS "C" goal for operating conditions on its roadway system. Because of the constraints of existing development in the City and other environmental concerns, this goal cannot always be met. Traffic operations on the City's arterial and collector roadway system are primarily dictated by the capacity of its signalized intersections.

Peak hour traffic operations at over 60 existing and future intersections in the DNA Corridor study area were evaluated in terms of level of service. The analysis indicates that levels of service will degrade at seven of the intersections in the study area by 2025 (for more information, see Chapter 7, Table 7.1-10). Level of service will degrade to LOS D or E conditions and thus not meet the level of service policies in the City of Sacramento General

Plan. At these intersections, the LOS will degrade to LOS D, E or F. The City of Sacramento has been evaluating some development proposals in the fast-growing North Natomas Community Plan area. The traffic studies for those developments have involved an analysis of full build-out of the Community Plan area. Those studies indicate that traffic volumes on the major roadways in North Natomas, including Truxel Road and Gateway Park Boulevard, would be higher than those projected by 2025 for this Alternatives Analysis (AA).

4.1.6 Air Quality

Sacramento has the sixth worst air quality in the United States and has been designated by the US Environmental Protection Agency (EPA) as a severe non-attainment area for its inability to meet federal ozone air quality standard. If the Region does not meet the standard by 2005, it potentially could, according to SACOG, lose $680 million in federal transportation funding.

4.1.7 Increase in Airport Passenger Demand

Passenger travel at the airport has grown tremendously during the 1990s. In 1999, the airport served approximately 7.5 million passengers. This is a 100 percent increase in just nine years. According to the projections prepared for the Draft Sacramento International Airport Master Plan Study, airport passenger traffic is expected to increase at an average annual rate of 3.5 percent between 1999 and 2020, resulting in approximately 15 million passengers annually by 2020.

Transit demand at the Sacramento International Airport will increase as passenger activity increases over the next twenty years. On an average day for the peak month of passenger activity, the airport will have twice the number of passenger origins and destinations in 2020 (22,000) than is the case today. By 2025, origins and destinations to the airport will have increased 69 percent over year 2000 estimates; about two-thirds of these passengers will be passengers coming to or from the RT service area.

4.2 Purpose of the Study Alternatives

In summary, the purpose of the DNA study alternatives is to address the future mobility problems in the corridor by providing improved transit service from Downtown Sacramento to the Sacramento International Airport and points in between, as well as provide a connection to the Regional transit system. Specifically, a study is needed because of:

- **Rapid population and employment growth expected in the Corridor.** Total corridor population is expected to more than double by 2025, while employment is expected to grow by 65 percent. These projections are at best conservative, since the City of Sacramento has currently approved permits that total 44 percent of the projected growth.
- **Projected increases in roadway congestion.** As a result of limited north-south traffic capacity, significant growth will lead to higher traffic volumes on I-5, I-80 and parallel roadways. In addition, there are only two existing bridges across the American River within this three-mile wide corridor that limit north-south traffic capacity. As a result, by 2025, I-5 will be at LOS "F" from downtown to I-80, and nearing capacity beyond.
- **Increased demand for transit service.** Increased demand will occur due to the need to serve a large transit dependent population in the corridor, where 16.5 percent of households are without a personal vehicle as compared to 12.9 percent for the City of Sacramento and 8.7 percent for Sacramento County (U.S. Census 2000), and to provide improved transportation accessibility to major activity centers and destinations in the corridor.

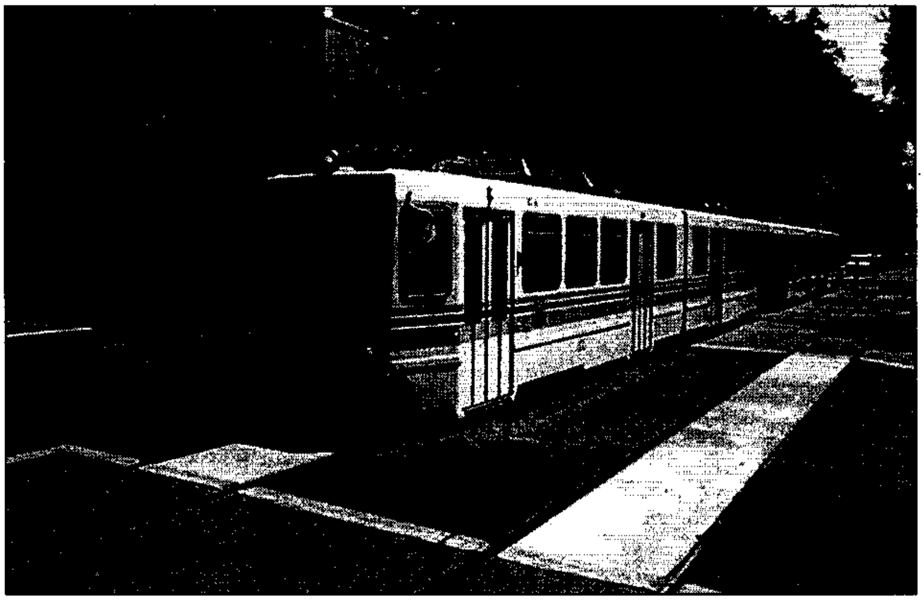
TABLE 4.1-4
YEAR 2025 TRAFFIC VOLUMES AND LEVELS OF SERVICE ON INTERSTATES 5 AND 80 IN THE DNA CORRIDOR

Freeway	Segment	Year 2000 Volume	Year 2025 No-Build Volume[2]			Year 2000-2025 Volume Growth		Level of Service	
			Mixed Flow	HOV	Total	Volume	Percent	2000	2025[4]
Southbound/Westbound AM Peak Hour									
I-5	J Street to Richards Boulevard	7,230	9,910	220	10,130	2,900	40%	D	F
	Richards Boulevard to Garden Highway	7,300	9,560	1,190	10,750	3,450	47%	D	F
	Garden Highway to El Camino Boulevard	6,800	9,090	1,250	10,340	3,540	52%	D	E
	El Camino Boulevard to I-80	6,170	8,430	1,220	9,650	3,480	56%	D	E
	I-80 to Arena Boulevard[1]	4,380	7,560	650	8,210	3,830	87%	C	D
	Arena Boulevard1to Del Paso Road	4,310	6,000	550	6,550	2,240	52%	C	E
	Del Paso Road to SR 99/70	4,800	5,950	320	6,270	1,470	31%	D	E
	SR 99/70 to Metro Air Park[1]	2,260	2,650	320	2,970	710	31%	C	C
	Metro Air Park[1] Interchange to Airport	2,260	2,980	380	3,360	1,100	49%	C	D
I-80	Norwood Avenue to Northgate Boulevard	5,800	6,270	1,130	7,400	1,600	28%	E	E
	Northgate Boulevard to Truxel Road	6,000	6,940	1,140	8,080	2,080	35%	E	F
	Truxel Road to I-5	6,120	7,320	1,010	8,330	2,210	36%	D	D
	I-5 to W. El Camino	3,280	4,770	370	5,140	1,860	57%	C	D

TABLE 4.1-4
YEAR 2025 TRAFFIC VOLUMES AND LEVELS OF SERVICE ON INTERSTATES 5 AND 80 IN THE DNA CORRIDOR (continued)

Freeway	Segment	Year 2000 Volume	Year 2025 No-Build Volume[2]			Year 2000-2025 Volume Growth		Level of Service	
			Mixed Flow	HOV	Total	Volume	Percent	2000	2025[4]
Northbound/Eastbound PM Peak Hour									
I-5	J Street to Richards Boulevard	6,920	9,110	1,280	10,390	3,470	50%	D	E
	Richards Boulevard to Garden Highway	7,700	10,140	1,480	11,620	3,920	51%	D	F
	Garden Highway to El Camino Boulevard	7,400	9,740	1,530	11,270	3,870	52%	D	F
	El Camino Boulevard to I-80	5,810	8,560	1,380	9,940	4,130	71%	D	D
	I-80 to Arena Boulevard[1]	4,530	8,240	880	9,120	4,590	101%	D	D
	Arena Boulevard1to Del Paso Road	4,630	6,430	630	7,060	2,430	52%	D	E
	Del Paso Road to SR 99/70	4,380	5,780	450	6,230	1,850	42%	D	D
	SR 99/70 to Metro Air Park[1]	2,640	3,320	320	3,640	1,000	38%	C	D
	Metro Air Park[1] Interchange to Airport	2,640	3,490	340	3,830	1,190	45%	C	D
I-80	Norwood Avenue to Northgate Boulevard	5,000	5,630	1,190	6,820	1,820	36%	F[3]	F[3]
	Northgate Boulevard to Truxel Road	5,050	5,940	1,240	7,180	2,130	42%	F[3]	F[3]
	Truxel Road to I-5	5,300	6,470	1,060	7,530	2,230	42%	D	D
	I-5 to W. El Camino	3,050	5,010	370	5,380	2,330	76%	C	D

Source: DKS Associates, 2003.
1 Metro Air Park and Arena Boulevard are planned future interchanges on I-5.
2 Traffic projections from DKS Associates based on SACMET01 travel demand model. Assumes "No-Build" transit service alternative for DNA Corridor.
3 Traffic volumes reflect forced flow (LOS F) conditions
4 By the year 2025, both I-5 and 1-80 will add HOV lanes (see Table4.1-2).



RT LRT in Downtown Sacramento

- **Transit supportive land use plans and policies.** The North Natomas Community Plan was designed as a transit-oriented community. Its center piece is an assumed light rail line with a dedicated right-of-way. It identifies stations with higher densities and mix of land uses in anticipation of the future transit system. A DNA transit improvement would complete that plan with a high quality transit service that is integrated with and enhances planned corridor land use. Transit-oriented development (TOD) has been shown to decrease vehicle trips by 18 percent, decrease vehicle miles traveled by 12 percent and reduce travel times by 18 to 28 percent.[1] In addition to the planned transit-oriented land uses in the North Natomas Community Plan, the City of Sacramento is also planning similar enhanced land uses in the Richards Boulevard and Railyards areas to encourage transit ridership. The transit stations in the DNA Corridor will provide major opportunities for smart growth.
- **The need to reduce vehicle trips and airborne emissions.** Sacramento has the sixth worse air quality in the nation. If the region does not meet the standard by 2005, it could lose $680 million in federal transportation funding.
- **To improve operating efficiencies.** The DNA Corridor would provide intermodal connections to existing and new bus service, to regional rail service at the Sacramento Valley Station (existing Amtrak station) and for Sacramento International Airport passengers. Transit service in the DNA Corridor would provide opportunities for connecting with existing and future light rail and regional rail corridors including the Folsom Corridor, the South Line extension and the Capitol Corridor train service that is operated by Amtrak, connecting Sacramento with San Jose and the Bay Area. The coordination of land use with transit service would improve transit system efficiency and use.

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[1] Middlesex Somerset Mercer Regional Council 1992; Comsis Corporation and ITE 1993

5.0 ALTERNATIVES SCREENING

Chapter Summary

The process for evaluating and screening DNA Corridor transit service alternatives has been extended and complex, involving many parties. As a first step, six major goals and objectives for Corridor service improvements were agreed upon. The challenging task of establishing evaluation criteria for screening followed. Level One screening involved analysis of the "long list" of 27 alternatives (alignments (routes) and transit mode possibilities).

This process reduced this number of candidates to five alignments (ten alternatives in total to account for an evaluation of bus or light rail for each alignment). Level Two screening resulted in the selection of three alignments (ten "build" alternatives accounting for transit modes and staging, plus two "no action" alternatives). Input from the Level Two screening supports final evaluation of the alternatives and a Locally Preferred Alternative (LPA), as fully discussed in this chapter.

5.1 Development of Goals and Objectives

Long-range DNA Corridor transit service goals and objectives were developed by RT with the input of both the Citizens Review Panel (CRP) and the Technical Review Panel (TRP). These goals were developed to reflect problems and needs in the DNA Corridor and incorporate measures that address Federal New Starts evaluation criteria. Table 5.1-1 outlines the goals and objectives developed for the Corridor, focusing on six key issues:

TABLE 5.1-1
GOALS AND OBJECTIVES FOR THE DNA CORRIDOR

Goal Number	Description	Objectives	Key Issues Addressed by Goal
1	Improve Corridor Mobility	Develop a coordinated transportation system that is safe, efficient, and provides a balanced set of travel alternatives in the corridor.	Mobility/Access Improvements
2	Promote Patterns of Smart Growth	Ensure compatibility between land use policies and transportation policies to minimize the demand for and amount of automobile travel in the corridor.	Land Use/Community Development Economic Development
3	Find Cost-Effective Solutions	Make the most efficient use of limited financial resources.	Cost-Effectiveness and Operating Efficiency Financial Feasibility
4	Minimize Community and Environmental Impacts	Minimize community and environmental impacts of any transportation improvements in the corridor.	Environmental Quality
5	Ensure Consistency with Other Planning Efforts	Ensure that the DNA Corridor study effort is consistent with all past and current planning efforts.	Land Use/Community Development
6	Obtain Strong Community Support	Recommend transportation improvements consistent with the needs and desires of the residents of the corridor and that maximize community acceptance and political support.	Land Use/Community Development

Source: Parsons Brinckerhoff, 2003.

Goals one, two and three listed in Table 5.1-1 represent measures that are viewed by FTA has having greater significance under the Federal New Starts evaluation process because of their relationship to transportation mobility, cost-effectiveness and encouragement of transit supportive development. While the remaining three goals are important, they generally refer to local concerns and priorities. Chapter 7 contains additional detail on how the corridor goals and objectives are related to the Federal New Starts criteria.

Based upon these goals and objectives, evaluation criteria were suggested by the review panels and chosen by RT for measuring each transit alternative. The criteria are listed below in Table 5.1-2. Evaluation criteria were employed to:

- Compare alternatives.
- Provide information needed by the RT Board of Directors and other local and regional agencies for decision-making during the alternatives analysis process.
- Provide specific information needed to satisfy the FTA New Starts criteria (in anticipation of applying for federal discretionary Section 5309 capital funds for any actual transit project approved by RT).
- Provide additional elements that address issues and needs specific to the DNA Corridor.

The evaluation criteria used to screen the alternatives are summarized in Table 5.1-2.

TABLE 5.1-2
EVALUATION CRITERIA FOR COMPARING AND SCREENING DNA ALTERNATIVES

1.	Number of Corridor residents within ½ mile of a transit alignment
2.	Number of Corridor residents within ½ mile of a transit station
3.	Number of jobs within ½ mile of a transit alignment
4.	Number of jobs within ½ mile of a transit station
5.	Number of low income persons within ½ mile of a transit alignment (below poverty level)
6.	Number of transit dependent persons within ¼ mile of a transit alignment (households with income < $10,000)
7.	Number of transit dependent persons within ½ mile of a transit alignment (households with no car)
8.	Total Alternative Capital Cost
9.	Travel Times
10.	2025 DNA Station Boardings by Station and Linked Trips
11.	Section 4(f) Impacts (acres of disturbed parkland)
12.	Wetlands (acres within 100 feet of the alignment)
13.	Impacts on habitat for special status and endangered species (acres of disturbed habitat)
14.	Environmental Justice (disproportionate impacts to areas with a high (>50%) number of persons of color)
15.	Number of potential displacements (commercial and residential parcels)
16.	Noise Impacts (number of sensitive receptors within 300 feet)
17.	Visual Impacts (number of sensitive receptors within 300 feet)
18.	Institutional/Agency Support (ranked as High, Moderate or Low)
19.	Transit Oriented Development Potential (ranked as High, Moderate or Low)

TABLE 5.1-2
EVALUATION CRITERIA FOR COMPARING AND SCREENING DNA ALTERNATIVES (CONTINUED)

20.	Access to Major Activity Centers along an Alternative Alignment (ranked as High, Moderate or Low)
21.	Construction Impacts (assessment of potential impacts on adjacent properties)
22.	Consistency with adopted local and regional planning efforts (ranked High, Moderate or Low)
23.	Support for joint public-private land development (ranked as High, Moderate or Low)
24.	Utilizes advanced technology to increase capacity
25.	Financial affordability

Source: Parsons Brinckerhoff, October 2003.

5.2 Fatal Flaw Analysis / Long List of Alternatives

Early in the DNA Corridor study, a preliminary evaluation of alternatives was conducted to eliminate those that had flaws that would prevent their implementation or would have a limited ability to service the transportation needs in the corridor. A total of seven transit modes and seven alignments or routes were initially analyzed. It was also necessary to consider the implications of six potential American River crossings (bridges). The modes, alignments, and river crossings evaluated in the "fatal flaw" analysis are described below.

Technologies

Seven transit technologies were identified with input provided from previous studies, members of the communities in the corridor, and local agencies:

- Enhanced Bus
- Bus Rapid Transit (BRT)
- Light Rail Transit (LRT)
- Monorail
- Automated Guideway Transit (AGT)/People Mover
- Personal Rapid Transit (PRT)
- Heavy Rail Transit (HRT)

The fatal flaw analysis resulted in the elimination of a number of different technologies, including AGT, PRT, Monorail, and HRT. These transit modes did not satisfy the goals and objectives of the corridor for the following reasons:

1. AGT/PRT and Monorail did not satisfy the corridor mobility goal because of lower vehicle capacity.
2. HRT would require higher construction and operating costs than the other technology options under review.
3 Initial ridership projections did not justify the high capacity HRT technology.
4. All four technologies were considered to be too expensive to be cost-effective in the DNA corridor.
5. All four technologies had the potential of creating an unacceptable level of visual environmental impacts as a result of the extensive use of aerial structures.

Alignment Alternatives

Seven different alignments were identified as potential locations for a fixed-guideway transit alternative. Alternative alignments were identified using information from past planning studies, guidance from RT staff, and public comments from the Scoping process. These alignments are described below and illustrated in Figure 1.0.2 (in Chapter 1):

- I-5 using a new transit guideway
- I-5 using shoulder lanes (for bus-based alternatives)
- Truxel Road
- An alignment using a portion of I-5 and Truxel Road
- Western Area Power Administration (WAPA) right-of-way
- Northgate Boulevard
- The ex-Western Pacific Railroad tracks

Among the potential alignments that were reviewed, the ex-Western Pacific Railroad (now UPRR) alignment was dropped from consideration due to its close proximity to the existing Northeast LRT line and, therefore, overlap in service area, and because it did not serve the heart of the DNA corridor since the alignment is located on the eastern fringe.

Potential Bridge Crossing Locations
Six options for crossing the American River were identified using information from past planning studies, guidance from RT staff, and public comments from the scoping process:

- A new crossing adjacent to I-5
- A new crossing directly south of and connecting to Truxel Road
- A new crossing connecting to the WAPA right-of-way
- Using the existing State Route (SR) 160 Bridge
- A new crossing connecting to Northgate Boulevard
- A new crossing connecting to the ex-Western Pacific Railroad tracks

The potential crossing using the existing SR 160 Bridge was dropped from consideration because this crossing would utilize an existing single-track that is currently used by RT's Northeast LRT route. RT expressed concerns about maintaining schedule reliability and flexibility for future expansion on the Northeast LRT line if the existing bridge was used.

Long List of Alternatives
Following the fatal flaw analysis, an initial long list of alternatives was developed by "mixing and matching" the remaining alignments, technologies, and potential river crossings. As shown in Table 5.2-1, a total 27 alternatives were identified, including: eleven alignments with BRT, seven alignments with LRT, and nine alignments with a combination of LRT and BRT.

TABLE 5.2-1
INITIAL LONG LIST OF ALTERNATIVES

	Alternative	Description	Technology	Source
1.	BRT-1	I-5 shoulder/mixed lanes from the Central Business District (CBD), or Downtown Sacramento to I-80; Truxel Road to Airport	BRT	RT
2.	BRT-2	I-5 shoulder/mixed lane from CBD to Garden Highway; Truxel Road to Airport	BRT	RT
3.	BRT-3	I-5 new guideway from CBD to I-80;Truxel Road to Airport	BRT	RT
4.	BRT-4	I-5 new guideway from CBD to Garden Highway; Truxel Road to Airport	BRT	RT
5.	BRT-5	I-5 shoulder/mixed lanes from CBD to Airport	BRT	Team

TABLE 5.2-1
INITIAL LONG LIST OF ALTERNATIVES (CONTINUED)

	Alternative	Description	Technology	Source
6.	BRT-6	I-5 new guideway from CBD to Airport	BRT	Team
7.	BRT-7	CBD to Richards Boulevard; Truxel Road Overpass to Truxel Road to Airport	BRT	RT
8.	BRT-8	CBD to Richards Boulevard; Truxel Road/El Camino Avenue to I-5 shoulder/mixed lanes to I-80; Truxel Road to Airport	BRT	Team
9.	BRT-9	CBD to Richards Boulevard; Truxel Road/El Camino Avenue to new I-5 guideway to I-80; Truxel Road to Airport	BRT	Team
10.	BRT-10	CBD to Richards Boulevard; WAPA Bridge to WAPA alignment; Truxel Road to Airport	BRT	RT
11.	BRT-11	CBD to Richards Boulevard; Northgate Boulevard/WAPA Bridge to Northgate Boulevard; Truxel Road to Airport	BRT	RT
12.	LRT/BRT-1	LRT from CBD to Richards Boulevard. BRT on I-5 shoulder/mixed lanes from Richards Boulevard to I-80; Truxel Road to Airport	LRT/BRT	RT
13.	LRT/BRT-2	LRT from CBD to Richards Boulevard. BRT on I-5 shoulder/mixed lanes from Richards Boulevard to Garden Highway; Truxel Road to Airport	LRT/BRT	RT
14.	LRT/BRT-3	LRT from CBD to Richards Boulevard. BRT on new I-5 guideway from Richards Boulevard to I-80; Truxel Road to Airport	LRT/BRT	RT
15.	LRT/BRT-4	LRT from CBD to Richards Boulevard. BRT on new I-5 guideway from Richards Boulevard to Garden Highway; Truxel Road to Airport	LRT/BRT	RT
16.	LRT/BRT-5	LRT from CBD to Richards Boulevard. BRT on Richards Boulevard to Truxel Road Overpass; Truxel Road to Airport	LRT/BRT	RT
17.	LRT/BRT-6	LRT from CBD to Richards Boulevard. BRT on Richards Boulevard to Truxel Road/El Camino Avenue to I-5 shoulder/mixed lanes to I-80; Truxel Road to Airport	LRT/BRT	Team
18.	LRT/BRT-7	LRT from CBD to Richards Boulevard. BRT on Richards Boulevard to Truxel Road/El Camino Avenue to new I-5 guideway to I-80; Truxel Road to Airport	LRT/BRT	Team
19.	LRT/BRT-8	LRT from CBD to Richards Boulevard. BRT on Richards Boulevard to WAPA Bridge to WAPA alignment; Truxel Road to Airport	LRT/BRT	RT
20.	LRT/BRT-9	LRT from CBD to Richards Boulevard. BRT on Richards Boulevard to Northgate Boulevard/ WAPA Bridge to Northgate Boulevard; BRT on Truxel Road to Airport	LRT/BRT	RT
21.	LRT-1	I-5 new guideway from CBD to I-80; Truxel Road to Airport	LRT	RT
22.	LRT-2	I-5 new guideway from CBD to Garden Highway; Truxel Road to Airport	LRT	RT
23.	LRT-3	I-5 new guideway from CBD to Airport	LRT	Team
24.	LRT-4	CBD to Richards Boulevard; Truxel Bridge; Truxel Road to Airport	LRT	RT

TABLE 5.2-1
INITIAL LONG LIST OF ALTERNATIVES (CONTINUED)

	Alternative	Description	Technology	Source
25.	LRT-5	CBD to Richards Boulevard; Truxel Road/El Camino Avenue; I-5 to I-80; Truxel Road to Airport	LRT	Team
26.	LRT-6	CBD to Richards Boulevard; WAPA Bridge to WAPA alignment; Truxel Road to Airport	LRT	RT
27.	LRT-7	CBD to Richards Boulevard; Northgate Boulevard/WAPA Bridge to Northgate Boulevard; Truxel Road to Airport	LRT	RT

Source: Parsons Brinckerhoff, 2002.

5.3 Alternatives Considered and Rejected

Level One Screening

The Level One screening process evaluated the initial set of 27 potential build alternatives and resulted in a repackaging of the potential alternatives into five primary alignments. These five alignments are defined in Table 5.3-1. This allowed the subsequent screening analysis to focus on the alignment first, and then on the transit technology. The selection of a technology was made secondary to the selection of an alignment to allow BRT to be compared directly against LRT for each alignment.

TABLE 5.3-1
ALTERNATIVES CARRIED FORWARD BASED ON THE LEVEL ONE SCREENING

Original Alternative Number	New Alternative Number	Description
21	1	I-5 new guideway from CBD to I-80;Truxel Road to Airport
22	2	I-5 new guideway from CBD to Airport
26	3	CBD to Richards Boulevard; WAPA Bridge to WAPA alignment; Truxel Road to Airport
16	4	CBD to Richards Boulevard; Truxel Road Bridge; Truxel Road to Airport
27	5	CBD to Richards Boulevard; Northgate Boulevard/WAPA Bridge to Northgate Boulevard; Truxel Road to Airport

Source: Parsons Brinckerhoff, 2002.

Level Two Screening

A Level Two screening was undertaken for the purpose of further reducing the number of alternatives by subjecting the selected alignments and technology carried forward from the Level One screening to a more detailed level of analysis. The Level Two screening included refinement of the study goals and objectives by the TRP and CRP (see Table 5.1-1), developing initial ridership estimates, conducting environmental assessments, performing a financial analysis, devising a preliminary corridor alignment, and developing station site options, as well as considering technology design issues and constraints for each alternative. Detailed data and information derived from this stage provided input for developing a detailed screening data table for evaluating seven key issues that included environmental, demographic, operational, physical, ridership, and cost characteristics as well as implementation issues associated with each alternative. The evaluation process was further refined by applying quantitative factors for comparing attaining each of the goals and objectives for the DNA Corridor.

The Level Two screening focused on analyzing alternatives on the basis of alignments, using the five primary alignments identified at the end of the Level One analysis. These five alignments consist of transit corridors along I-5, Truxel Road, a combination of I-5 and Truxel Road, the Western Area Power Administration (WAPA) right-of-way, and Northgate Boulevard.

As a result of the Level Two screening process, the Northgate and WAPA alignments were dropped from further consideration. The WAPA alignment was eliminated for the following reasons:

1. The use of the right-of-way for LRT or BRT could limit the possibility of expanding power transmission lines for both the WAPA and Sacramento Municipal Utility District.
2. The alignment was not as conducive to transit-oriented development as the other alignments since it goes through single-family residential neighborhoods whose walled backyards abut against the utility rights-of-way.

The Northgate alignment was eliminated due to its longer alignment, and correspondingly longer travel times, higher construction cost, and its location at the eastern fringe of the corridor – thus, not adequately serving the heart of the study area. In addition, the Northgate alignment would potentially divert ridership from RT's Northeast LRT starter line.

As part of the Level Two screening process, the consultant team recommended the elimination of the I-5 alignment. This recommendation was based on preliminary capital cost and cost-effectiveness estimates. The performance of the I-5 alignment against the study goals was only slightly better than the WAPA and Northgate alignments. After obtaining feedback from the TRP and CRP and conducting a meeting with corridor residents, it was determined that there was significant support for keeping an I-5 alignment as a study option. Therefore, this alignment was carried forward as part of the Level Two screening process.

The remaining three alignments were carried forward for further evaluation--each potentially using either BRT or LRT technology. This created six distinct build alternatives to be carried forward in the AA process. The results of the Level Two screening are summarized in Table 5.3-2.

TABLE 5.3-2
ALIGNMENTS CARRIED FORWARD BASED ON THE LEVEL TWO SCREENING

Level Two Alternative Number	Description	Results	Alternative Number in the AA Report
1	I-5/Truxel Road Alignment: New guideway on I-5 from CBD to I-80;Truxel Road to Airport	Carried Forward	5 – LRT 6 – BRT
2	I-5 Alignment: New guideway on I-5 from CBD to Garden Highway; Truxel Road to Airport	Carried Forward	7 – LRT 8 – BRT
3	WAPA Alignment: CBD to Richards Boulevard; WAPA Bridge to WAPA alignment; Truxel Road to Airport	Dropped	-
4	Truxel Road Alignment: LRT from CBD to Richards Boulevardl BRT on Richards Boulevard to Truxel Road Overpass; Truxel Road to Airport	Carried Forward	3 – LRT 4 – BRT

TABLE 5.3-2
ALIGNMENTS CARRIED FORWARD BASED ON THE LEVEL TWO SCREENING (CONTINUED)

Level Two Alternative Number	Description	Results	Alternative Number in the AA Report
5	Northgate Alignment: CBD to Richards Boulevard; WAPA Bridge to Northgate Boulevard; Truxel Road to Airport	Dropped	-

Source: Parsons Brinckerhoff, 2002.

Design Options Considered and Rejected

Several design options were proposed and dropped from further consideration during the alternatives screening process. Design options are alignment variations at certain locations along each of the alternatives. The design options that were dropped include the following:

- An alignment along 7th Street going over the UPRR/Amtrak Railroad right-of-way in the Railyards area: This option was considered and dropped because it would have created significant visual impacts and potential opposition from community residents. However, the option to cross over the railroad tracks along 6th Street remains open, if the Railyards developer and the City recommend this option.
- A stub-end LRT station at the Sacramento Valley Station (Amtrak): This option was dropped because it would have a negative impact on travel time, requiring train operators to walk to the other end of the train to leave the station.
- Operating BRT service in a combination single-lane exclusive busway/single-lane mixed-flow operation using the existing 7th Street undercrossing: This design option was dropped because it did not provide a significant travel time advantage as compared to operating BRT service in mixed-flow lanes using the 7th Street undercrossing.
- A new BRT or LRT bridge across the American River along the west side of I-5: This bridge option was dropped because it would have limited future physical improvements to the I-5/Richards Boulevard Interchange, crossed over a popular recreation destination (i.e., confluence of the American and Sacramento Rivers), and resulted in the removal of a number of trees in the American River Parkway.
- An exclusive BRT or LRT alignment along the east side of Truxel Road in South Natomas: This alignment option was dropped by the RT Board of Directors because it would have the highest number of property displacements of any remaining alternative along Truxel Road. This alternative evoked strong community opposition and was also the most expensive alignment option along Truxel Road.
- A semi-exclusive LRT double track alignment down the median of Truxel Road in South Natomas: Like the exclusive east side alignment options discussed above, this alignment option was also dropped because it too would have significant property displacement impacts to residential and commercial properties.
- The use of shoulder lanes along I-5 north of I-80 for the I-5 BRT alternative: This alternative was dropped because it does not conform to Caltrans design standards. In addition, the use of shoulder lanes would not provide a significant travel time benefit as compared to mixed flow operations north of I-80.

Additional Refinement of Truxel Alternatives

Based on input received from the public and initial calculations of the financial feasibility of all the alternatives, RT subsequently examined how to reduce the cost and environmental impacts for a BRT or LRT guideway along a Truxel Road alignment. This alignment was selected since the Truxel Road alternatives have the highest potential for providing the most cost-effective transit solution. (See Section 6.1 for more detail.) By comparison, the alternatives proposed for I-5 and the I-5/Truxel alignments are not as cost-effective, since they do not directly serve as many residents and because of the higher construction cost associated with use of aerial structures along the alignments.

From this analysis, four new sub-alternatives were developed for the Truxel alignment that would provide transit service in a more cost-effective manner. These sub-alternatives include the following:

3A: Truxel LRT Starter Line

3B: Truxel LRT Minimum Operable Segment (MOS)

4A: Truxel BRT Starter Line

4B: Truxel BRT MOS

The addition of these four alternatives has resulted in a total of twelve alternatives (ten build alternatives in addition to the No-Build and Baseline Alternative/TSM) to be carried forward in the AA process.

5.4 Alternatives Carried Forward for Further Review

Eight of the 12 alternatives would construct a new transit guideway from Downtown Sacramento, through South and North Natomas, to the Sacramento International Airport; and two minimum operable segments would provide a new transit guideway between Downtown Sacramento and the Natomas Town Center. The remaining two alternatives, the No-Build Alternative and Baseline/TSM Alternative, have been carried forward as legitimate alternatives and for comparison purposes to satisfy environmental requirements under the National Environmental Policy Act (NEPA), the California Environmental Quality Act (CEQA), and federal New Starts funding guidelines. The No-Build/No-Action alternative is required by CEQA and NEPA to serve as a baseline for comparing the environmental impacts of the "study" alternatives. The development of a Baseline/TSM alternative is required by the FTA to serve as a less costly alternative that could potentially solve the transportation problems in the corridor in a less costly manner. The following list provides a summary description of the 12 alternatives identified in this section:

- **Alternative 1: No-Build.** The No-Build Alternative consists of the existing transportation system, as well as all transportation projects that are planned and programmed in the Metropolitan Transportation Plan for 2025 (MTP) adopted by the Sacramento Area Council of Governments (SACOG) in July 2002.
- **Alternative 2: Baseline/Transportation Systems Management (TSM).** The Baseline/TSM Alternative was developed to meet an FTA requirement for an alternative that addresses transportation needs in the corridor without a major new capital investment. Based on the 2025 MTP, the Baseline/TSM Alternative includes a set of lower-cost bus transit improvements in the DNA Corridor.

- **Alternative 3: Truxel Light Rail Transit (LRT).** The Truxel LRT Alternative would extend RT LRT service from Downtown Sacramento through Natomas, along Truxel Road, to Sacramento International Airport.
- **Alternative 3A: Truxel LRT Starter Line.** The Truxel LRT Starter Line Alternative would construct an LRT extension similar to Alternative 3, with single-track sections and fewer structures to provide a lower-cost alternative.
- **Alternative 3B: Truxel LRT Minimum Operable Segment (MOS).** The Truxel LRT MOS Alternative would construct a LRT extension similar to Alternative 3A, with single-track sections and fewer structures to provide a lower-cost alternative; however, the alignment would be shorter, extending from Downtown Sacramento to the Natomas Town Center.
- **Alternative 4: Truxel Bus Rapid Transit (BRT).** The Truxel BRT Alternative would construct a new guided-busway for a BRT system from Downtown Sacramento through Natomas, along Truxel Road, to the airport.
- **Alternative 4A: Truxel BRT Starter Line.** The Truxel BRT Starter Line Alternative would construct a BRT extension similar to Alternative 4, with fewer structures and grade separations to provide a lower-cost alternative.
- **Alternative 4B: Truxel BRT Minimum Operable Segment (MOS).** The Truxel BRT MOS Alternative would construct a BRT extension similar to Alternative 4, with fewer structures and grade separations to provide a lower-cost alternative; however, the alignment would be shorter, extending from Downtown Sacramento to the Natomas Town Center.
- **Alternative 5: I-5/Truxel LRT.** The I-5/Truxel LRT Alternative would extend LRT service along a route following I-5 and Truxel Road between Downtown Sacramento, Natomas, and the airport.
- **Alternative 6: I-5/Truxel BRT.** The I-5/Truxel BRT Alternative would construct a new guided-busway for a BRT system using a route following I-5 and Truxel Road between Downtown Sacramento, Natomas, and the airport.
- **Alternative 7: I-5 LRT.** The I-5 LRT Alternative would extend LRT service along a route following I-5 between Downtown Sacramento, Natomas, and the airport.
- **Alternative 8: I-5 BRT.** The I-5 BRT Alternative would construct a new guided-busway for a BRT system using a route following I-5 between Downtown Sacramento, Natomas, and the airport.

Transit Modes

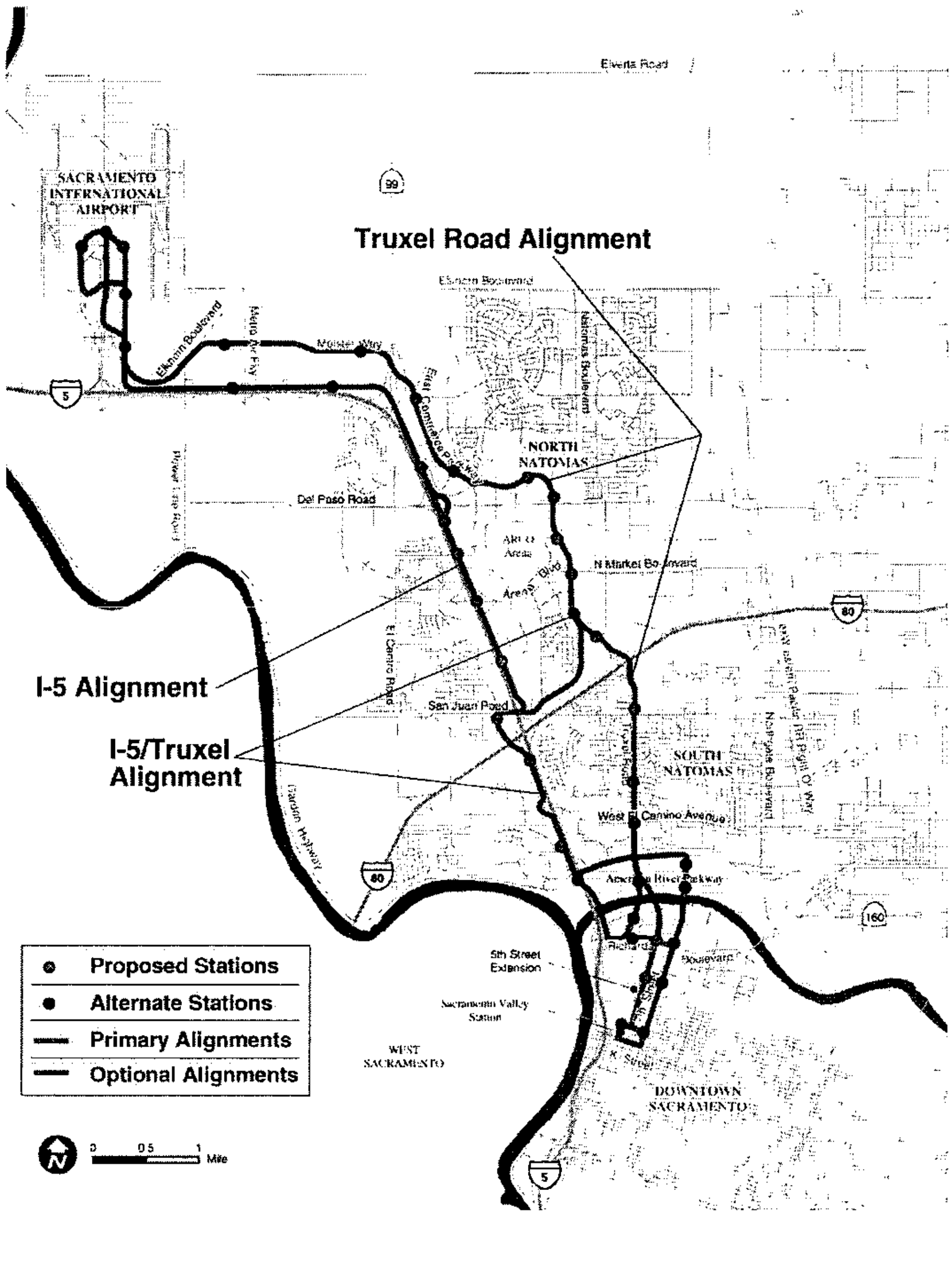
The buses that would be used on the BRT guideway include the standard, 40-foot low-floor, compressed natural gas (CNG) powered, Americans with Disabilities Act (ADA) accessible vehicles, purchased as part of RT's normal bus program, and newly designed low-floor, clean fuel (e.g., hybrid or CNG powered), ADA compliant, 60-foot articulated BRT buses.

Examples of this type of articulated bus are now being manufactured in Europe and North America. They are already being used in revenue service in Europe, and North American services using these types of buses are expected to be in place within a year or two.

These buses include the Civis bus manufactured by Irisbus of France, shown to the left, the Invero BRT bus from New Flyer of America, shown below left, and the Phileas bus from Advanced Public Transport Systems in the Netherlands, shown below right.

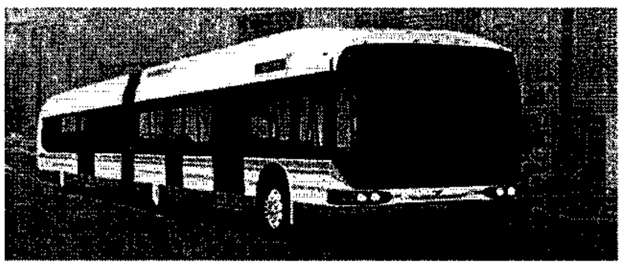
Figure 5.4-1 shows the alignments carried forward from the level two screening process.

FIGURE 5.4-1
ALIGNMENTS CARRIED FORWARD FROM THE LEVEL TWO SCREENING PROCESS



CIVIS BUS, MANUFACTURED BY IRISBUS

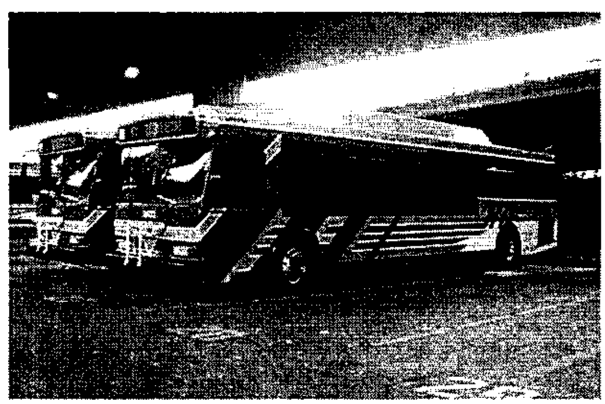
PHILEAS BUS, FROM ADVANCED PUBLIC TRANSPORT SYSTEMS



INVERO BRT BUS, FROM NEW FLYER OF AMERICA

The photos below show examples of bus vehicles used in the existing RT bus system.

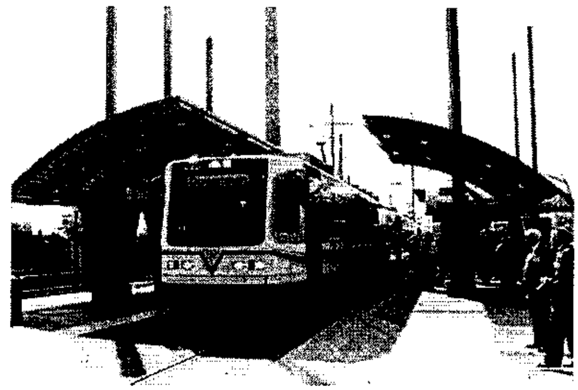
RT 40-FOOT LOW FLOOR BUS ON 8TH STREET IN DOWNTOWN SACRAMENTO



RT 40-FOOT, LOW FLOOR BUS FOR E-BUS SERVICE

The photos below show examples of LRT vehicles used in the existing RT LRT system.

RT CAF LIGHT RAIL VEHICLE (LRV) AT THE K STREET MALL



RT CAF LRV AT MEADOWVIEW STATION

The physical, operational, and cost characteristics of all twelve alternatives are summarized in Table 5.4-1.

Public Input/Disposition of Comments: As indicated in earlier sections of this chapter, the ten build alternatives were developed, modified or refined based on technical analyses. However, public input was instrumental in the development and refinement process. The following section summarizes how public input helped develop and screen the build alternatives carried forward for further review.

Alternative 3: Truxel LRT: Because of public concerns regarding the displacement of residential properties, several design options were developed to minimize and avoid property acquisition. Others that were considered unacceptable because of environmental impacts were also dropped. These design options were thoroughly reviewed and discussed with both the TRP and CRP.

Alternative 3A: Truxel LRT Starter Line: The Truxel Starter Line was designed with the goal of reducing costs and environmental impacts to the South Natomas neighborhood.

Alternative 3B: Truxel LRT MOS: The Truxel LRT MOS was developed as a phasing option to initially provide LRT service between Downtown Sacramento and Natomas Town Center at a lower cost.

Alternative 4: Truxel BRT: The BRT mode and, therefore alternatives, were developed as a result of public interest in studying the BRT mode.

Alternative 4A: Truxel BRT Starter Line: Same as Alternative 4.

Alternative 4B: Truxel BRT MOS: Same as Alternative 4.

Alternative 5: I-5/Truxel LRT: This alternative was developed in direct response to comments from residents living along Truxel Road in South Natomas that requested RT to examine an alternative alignment that avoided any direct impacts to their neighborhood.

Alternative 6: I-5/Truxel BRT: Same as Alternative 5.

TABLE 5.4-1
SUMMARY OF PHYSICAL, OPERATIONAL, AND COST CHARACTERISTICS OF THE ALTERNATIVES

	1 No-Build	2 Baseline/ TSM	3 Truxel LRT	3A Truxel LRT Starter Line	3B Truxel LRT MOS	4 Truxel BRT	4A Truxel BRT Starter Line	4B Truxel BRT MOS	5 I-5/Truxel LRT	6 I-5/Truxel BRT	7 I-5 LRT	8 I-5 BRT
Physical Characteristics												
Guideway (in miles)												
At-Grade												
In-Street Mixed Flow	N/A	N/A	2.25	1.67	1.67	1.31	2.79	2.79	0.89	0.57	0.89	0.57
In Exclusive Right-of-Way	N/A	N/A	8.70	9.84	4.78	5.83	6.61	1.49	9.64	6.74	4.85	5.61
On Retained Fill	N/A	N/A	0.63	0.40	0.09	2.52	0.98	0.73	0.57	3.18	1.28	2.72
On Structure	N/A	N/A	0.99	0.63	0.56	1.28	0.74	0.60	2.18	1.51	3.78	1.40
Retained Cut	N/A	N/A	0	0	0	0.43	0.18	0	0	0.18	0.32	0.17
Bus Lanes	N/A	N/A	N/A	N/A	N/A	0.83	0.83	0.83	N/A	1.00	N/A	1.00
In Tunnel (cut & cover box)	N/A	N/A	0	0	0	0.21	0.02	0	0	0.02	0.12	0.07
Total Miles	N/A	N/A	**12.57**	**12.54**	**7.10**	**12.41**	**12.15**	**6.44**	**13.28**	**13.20**	**11.24**	**11.54**
Number of Stations	N/A	N/A	13	13	11	13	13	11	13	13	10	11
Number of lots (Total capacity of Park-and-Ride Lots)	N/A	3 (770)	7 (2,070)	7 (1,910)	6 (1,970)	7 (1,840)	7 (1,760)	5 (1,730)	6 (1,880)	6 (1,660)	3 (1,500)	4 (1,460)

N/A – Not Applicable

TABLE 5.4-1
SUMMARY OF PHYSICAL, OPERATIONAL, AND COST CHARACTERISTICS OF THE ALTERNATIVES (CONTINUED)

	1 No-Build	2 Baseline/ TSM	3 Truxel LRT	3A Truxel LRT Starter Line	3B Truxel LRT MOS	4 Truxel BRT	4A Truxel BRT Starter Line	4B Truxel BRT MOS	5 I-5/Truxel LRT	6 I-5/Truxel BRT	7 I-5 LRT	8 I-5 BRT
Operational Characteristics												
Travel Time in minutes (Sacramento Valley Station to Sacramento International Airport)*	45	37	28	30	37*	28	30	34	27	30	21	27
RT Systemwide Annual Transit Vehicle Miles (thousands)												
Bus	12,857	13,837	13,160	13,160	13,319	13,970	13,956	14,070	12,875	14,381	13,219	14,259
Light Rail	5,007	5,007	6,263	6,166	5,579	5,007	5,007	5,007	6,286	5,007	6,084	5,007
RT Systemwide Annual Revenue Hours (thousands)												
Bus	951	1,020	956	956	970	1,000	1,002	1,008	939	1,013	961	1,009
Light Rail	116	116	140	147	140	116	116	116	140	116	140	116
RT Systemwide Vehicle Requirements												
Bus	481	493	472	472	479	494	495	506	469	512	477	515
Light Rail	104	104	120	121	115	104	104	104	120	104	120	104

* Mode change required at Natomas Town Center; Includes timed-transfer to bus.

TABLE 5.4-1
SUMMARY OF PHYSICAL, OPERATIONAL, AND COST CHARACTERISTICS OF THE ALTERNATIVES (CONTINUED)

	1 No-Build	2 Baseline/ TSM	3 Truxel LRT	3A Truxel LRT Starter Line	3B Truxel LRT MOS	4 Truxel BRT	4A Truxel BRT Starter Line	4B Truxel BRT MOS	5 I-5/Truxel LRT	6 I-5/Truxel BRT	7 I-5 LRT	8 I-5 BRT
Cost Characteristics												
RT Systemwide Operating and Maintenance Annual Costs (in millions of 2002$)	$156.3	$164.6	$172.8	$173.7	$169.7	$164.0	$164.1	$164.4	$171.3	$166.4	$172.1	$165.5
Capital Costs (in millions of 2002$)	N/A	$90.3	$523.1	$447.9	$290.8	$327.5	$208.8	$142.3	$715.7	$311.0	$668.9	$261.3

Source: Parsons Brinckerhoff, December 2003.

N/A – Not Applicable

Alternative 7: I-5 LRT: This alternative stays parallel to I-5, avoiding the central areas where residential and commercial development occurs in the Corridor. Although it was dropped from further consideration in the 1991 Route Refinement Study, public interest in keeping a transit improvement adjacent to an existing transportation corridor convinced RT to retain this alternative.

Alternative 8: I-5 BRT: Same as Alternative 7.

In addition to the public input that helped refine the alternatives, comments from several local environmental groups led to development of four different American River bridge crossing options in order to avoid impacts to Discovery Park, the American River Parkway, and cultural resources located within the Park. These bridge crossings could apply to all of the alternatives under consideration.

The following sections provide a more detailed overview of each alternative.

5.4.1 Alternative 1: No-Build

The No-Build Alternative consists of the existing transportation system, as well as all transportation projects that are planned and programmed in the Sacramento region for operation by the year 2025, as reflected in the 2025 MTP. The No-Build Alternative excludes the LRT project programmed for the DNA Corridor in the 2025 MTP (see Table 5.4-2). Figures 5.4-2 and 5.4-3 illustrate the I-5 corridor and existing Truxel Road in South Natomas. Transit service provided in the DNA Corridor under the No-Build Alternative is described in Table 5.4-2. The No-Build Alternative does not include any additional park and ride facilities or intermodal centers in the DNA Corridor beyond those programmed in the 2025 MTP. Significant improvements to the highway and transit network occurring by 2025 are identified in the Detailed Definition of Alternatives Report for the DNA Study.

TABLE 5.4-2
ALTERNATIVE 1: NO-BUILD ALTERNATIVE 2025 TRANSIT SERVICE

Route	Description	As Modeled Headway (minutes)		Difference from 2003 Bus Service
		Peak	Off-Peak	
DNA-B1	Express service connecting Downtown Sacramento to Sacramento International Airport via I-5	60	60	New Route
DNA-B2	Local trunk line from Downtown Sacramento to Airport, via Truxel Rd through North and South Natomas.	60	60	Replaces Route 11
NN-1	Feeder to DNA-B2 serving residential areas north of Del Paso Rd, and employment areas along Commerce Parkway throughout North Natomas	30	30	New Route
NN-2	Feeder two-way loop to DNA-B2 operating through North Natomas	30	30	New Route
SN-1	Feeder route to DNA-B2 connecting from the north Gateway Oaks area to West El Camino Ave and Truxel Rd	15	30	New Route
SN-2	Feeder route to DNA-B2 connecting from the south Gateway Oaks area to West El Camino Ave and Truxel Rd	15	30	New Route

TABLE 5.4-2
ALTERNATIVE 1: NO-BUILD ALTERNATIVE 2025 TRANSIT SERVICE (CONTINUED)

Route	Description	As Modeled Headway (minutes)		Difference from 2003 Bus Service
		Peak	Off-Peak	
13 (Northgate)	Northern end of existing route is straightened and extended westward along Market/Arena Boulevard, then hooking back to terminate at El Centro and Del Paso. The southern end is rerouted. Instead of running east to serve the Arden/Del Paso LRT station, it runs west along Garden Hwy, and north on Truxel Rd to terminate at West El Camino Ave	30	60	Extension of existing route
14 (Norwood)	The western end of the existing route is straightened to serve the Main Ave/Del Paso Rd corridor, and terminates at the Arena Park-and-ride Lot. Eastern end extended from Arden Del Paso LRT station to Swanston LRT/Commuter Rail station	30	60	Extension of existing route
15 (Rio Linda Blvd – T St.)	Existing route is rerouted between Arden Del Paso and Rio Linda Blvd to serve the Swanston LRT station	15	30	Extension of existing route
87 (Howe)	Western end of existing route is modified connecting with DNA—B2 trunk line service rather than going Downtown. Follows current route to Natomas Park Dr and Capital Park Dr, then east on Capitol Park Dr and Millcreek Dr to terminate at the Truxel Rd and West El Camino Ave	30	30	Extension of existing route
88 (West El Camino)	Route is straightened and extended to provide a crosstown route along West El Camino Ave, turning north to provide service on El Centro Rd to Del Paso Rd, then turning east on Del Paso to terminate at the Arco Arena BRT station park-and-ride. Eastern end extended from Arden Del Paso LRT station to Swanston LRT/Commuter Rail station	30	60	Extension of existing route
M	New service connecting DNA-B2 trunk route to Elverta, Rio Linda, and Antelope via Natomas Blvd and Elkhorn Blvd	15	30	New Route
Yolo Transit 42 Intercity Loop	Intercity service on I-5 between Downtown Sacramento and the Airport, Woodland, and Davis.	45	45	None
Yolo Transit 45 Woodland Express	Express service on I-5 between Woodland and Downtown Sacramento	60	n/a	None

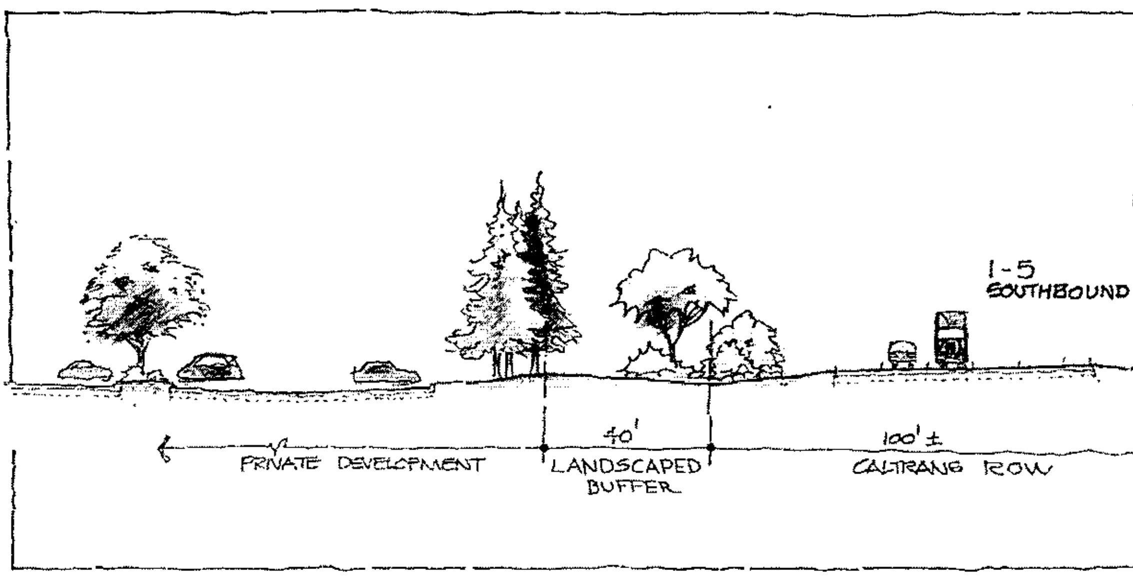
Source: Manuel Padron Associates, DKS Associates, Parsons Brinckerhoff, 2004

5.4.2 Alternative 2: Baseline/TSM

The Baseline/TSM Alternative for the DNA Corridor was developed as part of the Alternatives Analysis process to satisfy a Federal Transit Administration (FTA) requirement to obtain funding under FTA's New Starts program. FTA requires the development of a TSM Alternative that utilizes lower-cost methods to solve the transportation problems in a corridor. The TSM Alternative was developed as a modified version of the fiscally constrained 2025 MTP adopted by SACOG. The TSM Alternative includes a set of lower-cost bus transit improvements serving the DNA Corridor. The Baseline/TSM Alternative also includes three park and ride lots at key locations in the corridor to enhance access to improved bus services. It also includes all other transit and highway improvements in the region that were identified in the 2025 MTP.

The Baseline/TSM Alternative provides three types of transit improvements in the DNA Corridor: new DNA Corridor trunk routes, modifications to existing RT trunk routes, and new RT local circulators. Bus routes provided under the Baseline/TSM Alternative are listed in Table 5.4-3 and illustrated in Figure 5.4-4. New DNA Corridor trunk routes include a new express bus and local enhanced (or E-bus) routes between Downtown Sacramento and the Airport, and a new trunk route connecting North Natomas to communities east of the study area. Existing RT trunk routes would be modified to provide better connections to the new DNA Corridor transit routes and to link the DNA Corridor with other parts of the RT service area. Finally, local circulator bus service would be provided to link residential areas to trunk routes serving the corridor.

FIGURE 5.4-2
EXISTING I-5 TYPICAL SECTION



5.4.3 Alternative 3: Truxel LRT

Alternative 3 would provide frequent, medium-capacity transit service by extending RT LRT service to Sacramento International Airport. Although LRT service is provided in Downtown Sacramento, currently trains do not operate north and west of K Street. In 2005, the extension of the Folsom LRT line to the Sacramento Valley Station (Amtrak) will bring LRT service to the southern edge of the DNA Corridor, linking the existing light rail lines to the Sacramento Valley Station and southern edge of the Railyards development. Alternative 3 would build on this extension, constructing a new transit guideway from the Sacramento Valley Station to the Airport.

Under Alternative 3, double-track LRT service would be provided along a 12.99 route-mile alignment through South and North Natomas to the Airport. This route would follow an alignment along Truxel Road through South and North Natomas. Figure 5.4-5 illustrates the alignment. Figure 5.4-6 shows the cross-section for Alternative 3 through South Natomas, where dedicated rights-of-way would not be provided. This alternative is shown by study area segment. Design options, which are variations in alignment at select locations, are identified in Section 5.5.

FIGURE 5.4-3
TRUXEL ROAD AT PEBBLESTONE WAY IN SOUTH NATOMAS

Stations

- This alternative would include a total of 13 stations. Each station would have a 400-foot-long platform to accommodate a maximum four-car train, and would include platforms to satisfy accessibility requirements under ADA regulations. Under Alternative 3, all stations would be at-grade.
- There would be park-and-ride lots at seven of the 13 stations with a total of 2,070 park-and-ride spaces.

Transit Service

- LRT service would operate at 15-minute headways.
- Seven feeder bus routes and shuttles would connect residences and businesses with stations.

Maintenance Facility

Several potential sites have been identified for a full light rail vehicle (LRV) maintenance facility located towards the northern end of the DNA line. The 15.5-acre facility would be designed to accommodate 16 LRVs with room to accommodate RT's future expansion needs.

TABLE 5.4-3
ALTERNATIVE 2: BASELINE/TSM 2025 TRANSIT SERVICE

Route	Description	As Modeled Headway (minutes)		Difference from No-Build Alternative
		Peak	Off-Peak	
DNA-B1	Express service connecting Downtown Sacramento to Sacramento International Airport via I-5	30	30	Higher Frequency
DNA-B2	Local trunk line from Downtown Sacramento to Airport, via Truxel Rd through North and South Natomas, will replace Route 11	15	15	Higher Frequency
NN-1	Feeder to DNA-B2 serving residential areas north of Del Paso Rd, and employment areas along Commerce Parkway throughout North Natomas	30	30	None

TABLE 5.4-3
ALTERNATIVE 2: BASELINE/TSM 2025 TRANSIT SERVICE (CONTINUED)

Route	Description	As Modeled Headway (minutes)		Difference from No-Build Alternative
		Peak	Off-Peak	
NN-2	Feeder two-way loop to DNA-B2 operating through North Natomas	30	30	None
SN-1	Feeder route to DNA-B2 connecting from the north Gateway Oaks area to West El Camino Ave and Truxel Rd	15	30	None
SN-2	Feeder route to DNA-B2 connecting from the south Gateway Oaks area to West El Camino Ave and Truxel Rd	15	30	None
13 (Northgate)	Northern end of existing route is straightened and extended westward along Market/Arena Boulevard, then hooking back to terminate at El Centro and Del Paso. The southern end is rerouted. Instead of running east to serve the Arden/Del Paso LRT station, it runs west along Garden Hwy, and north on Truxel Rd to terminate at West El Camino Ave	30	60	None
14 (Norwood)	The western end of the existing route is straightened to serve the Main Ave/Del Paso Rd corridor, and terminates at the Arena Park-and-ride Lot. Eastern end extended from Arden Del Paso LRT station to Swanston LRT/Commuter Rail station	30	60	None
15 (Rio Linda Blvd – T St.)	Existing route is rerouted between Arden Del Paso and Rio Linda Blvd to serve the Swanston LRT station	15	30	None
87 (Howe)	Western end of existing route is modified connecting with DNA—B2 trunk line service rather than going Downtown. Follows current route to Natomas Park Dr and Capital Park Dr, then east on Capitol Park Dr and Millcreek Dr to terminate at the Truxel Rd and West El Camino Ave	30	30	None
88 (West El Camino)	Route is straightened and extended to provide a crosstown route along West El Camino Ave, turning north to provide service on El Centro Rd to Del Paso Rd, then turning east on Del Paso to terminate at the Arco Arena BRT station park-and-ride. Eastern end extended from Arden Del Paso LRT station to Swanston LRT/Commuter Rail station	30	60	None
M	New service connecting DNA-B2 trunk route to Elverta, Rio Linda, and Antelope via Natomas Blvd and Elkhorn Blvd	15	30	None
Yolo Transit 42 Intercity Loop	Intercity service on I-5 between Downtown Sacramento and the Airport, Woodland, and Davis.	45	45	None
Yolo Transit 45 Woodland Express	Express service on I-5 between Woodland and Downtown Sacramento	60	n/a	No difference

FIGURE 5.4-4
ALTERNATIVE 2: BASELINE/TSM ALTERNATIVE

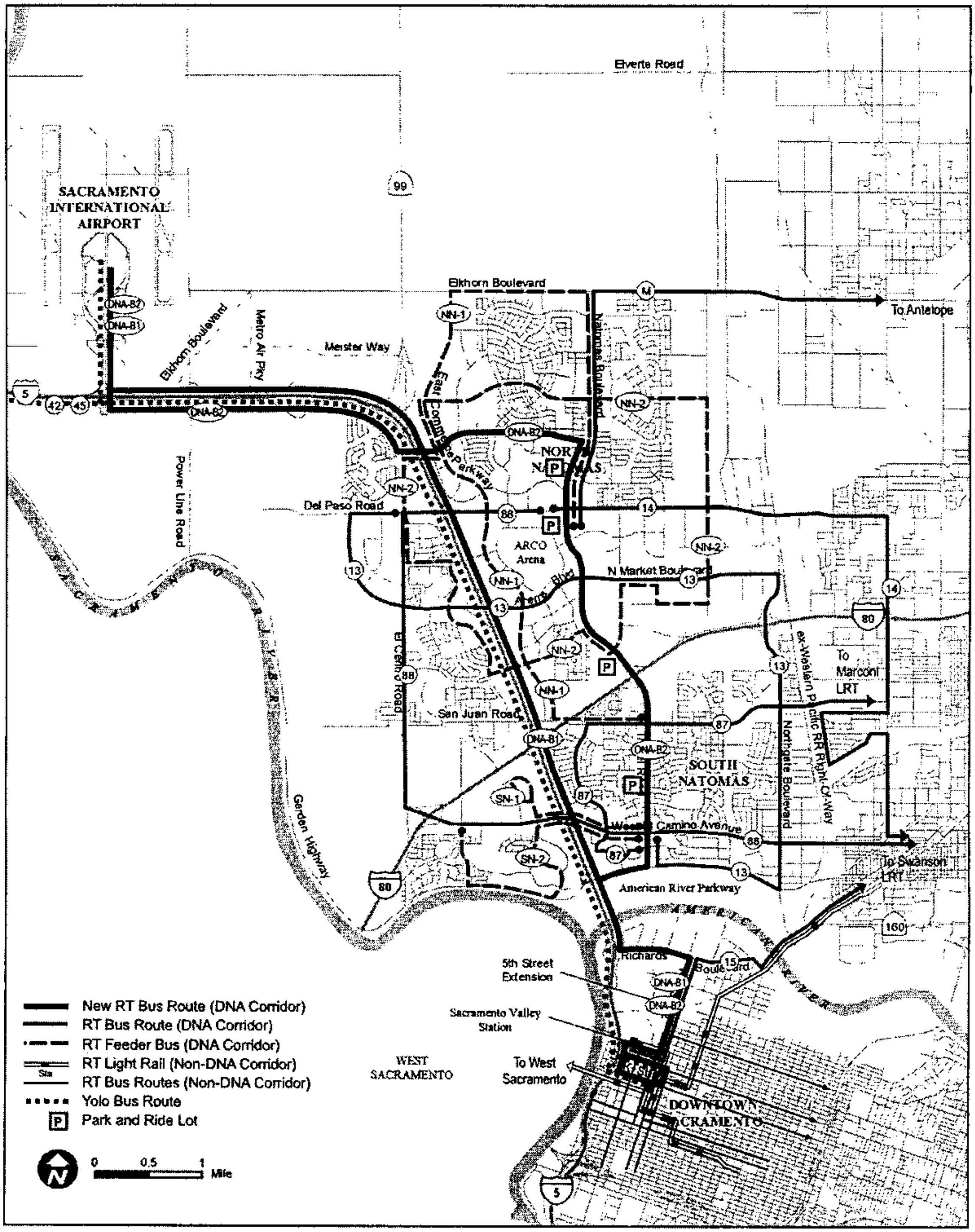


FIGURE 5.4-5
ALTERNATIVE 3: TRUXEL LRT ALIGNMENT

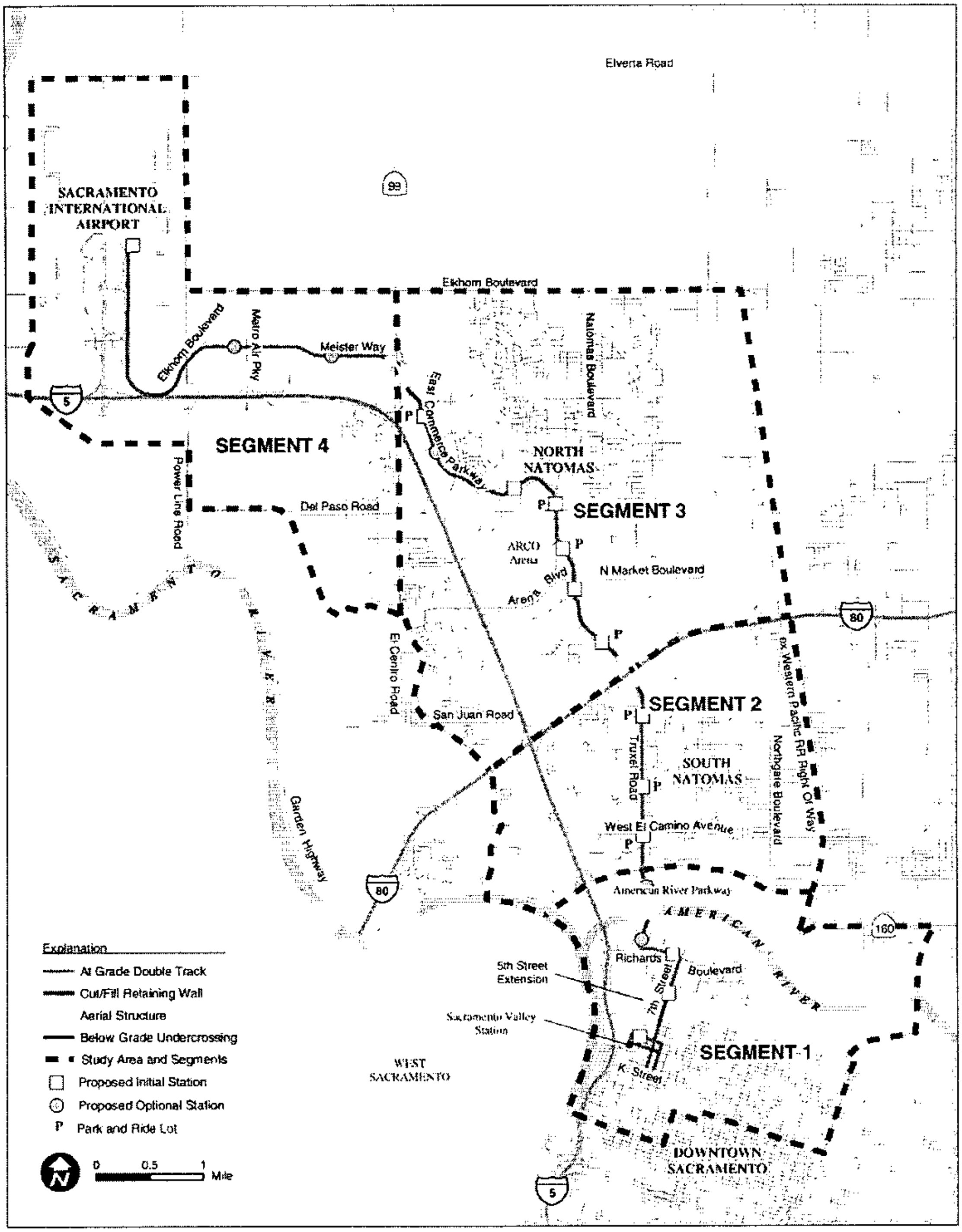
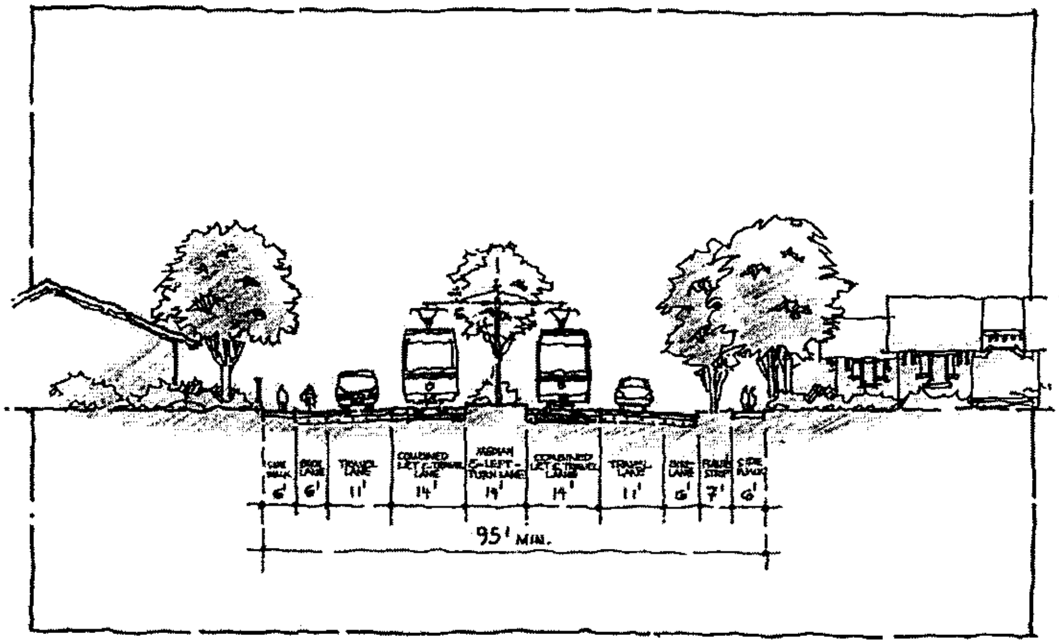


FIGURE 5.4-6
CROSS SECTION FOR ALTERNATIVE 3: TRUXEL LRT MIXED FLOW OPTION, IN SOUTH NATOMAS



5.4.4 Alternative 3A: Truxel LRT Starter Line

The Truxel LRT "Starter Line" Alternative would be the same as Alternative 3, but with the following modifications:

1. Approximately 66 percent of the guideway in the DNA Corridor would be single-track in the median of Truxel Road. This concept is illustrated in Figures 5.4-7 and 5.4-8.
2. Double-track sections would be provided only where trains meet and pass each other.
3. Other cost savings would be achieved through building four stations with only a single-track and platform; crossing Garden Highway at-grade; utilizing the planned Meister Way overcrossing of SR 99/70; and using the existing Truxel Road overcrossing of I-80.
4. The construction of a full maintenance facility would be deferred. Although land for a 50-vehicle maintenance facility would be acquired, a more modest maintenance facility would be constructed including a storage yard for 28 LRVs. Alternative 3A would require 17 additional LRVs.
5. Park-and-ride lots at seven of the 13 stations would have a total of 1,910 spaces.

FIGURE 5.4-7
ALTERNATIVE 3A: TRUXEL LRT STARTER LINE ALIGNMENT

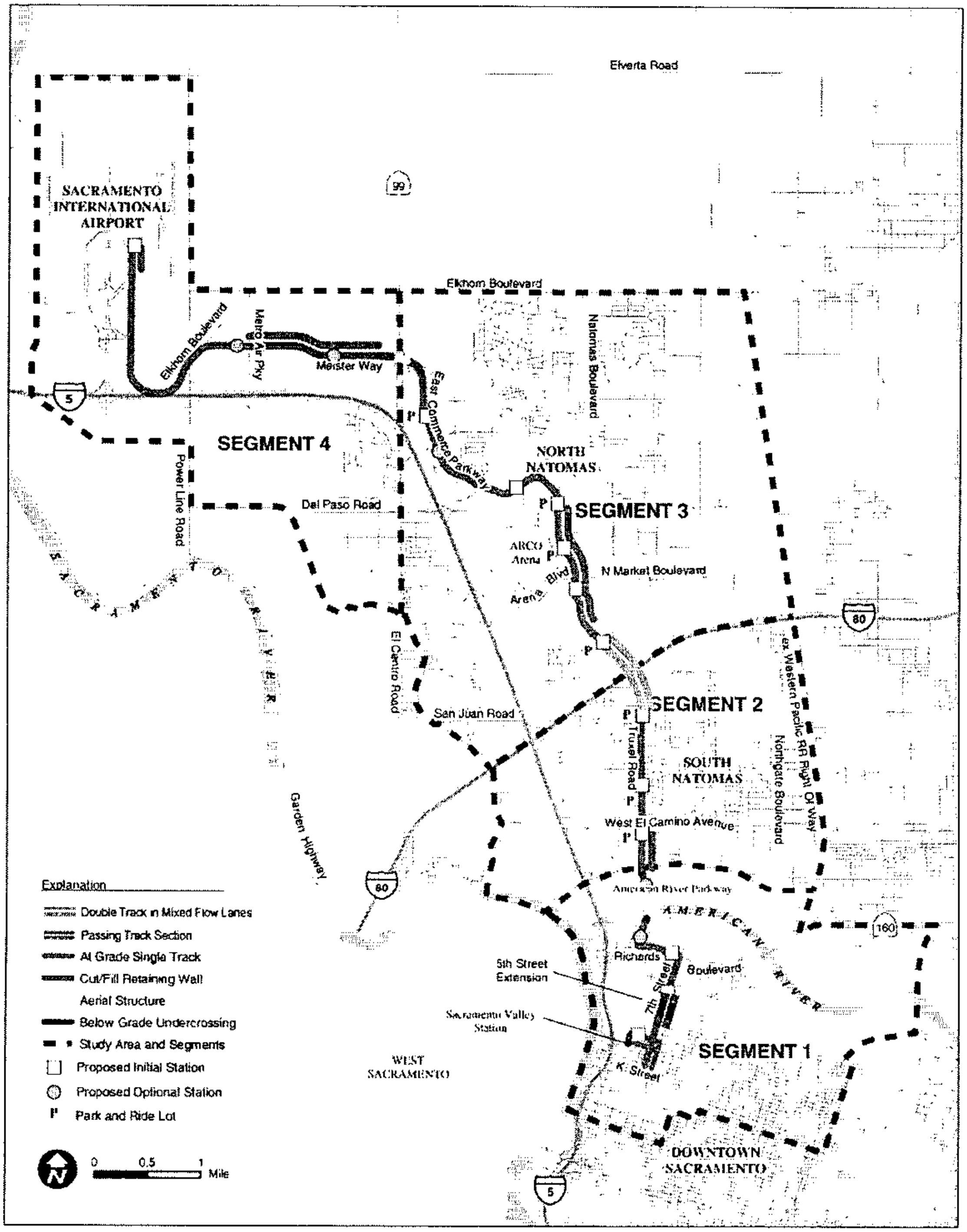
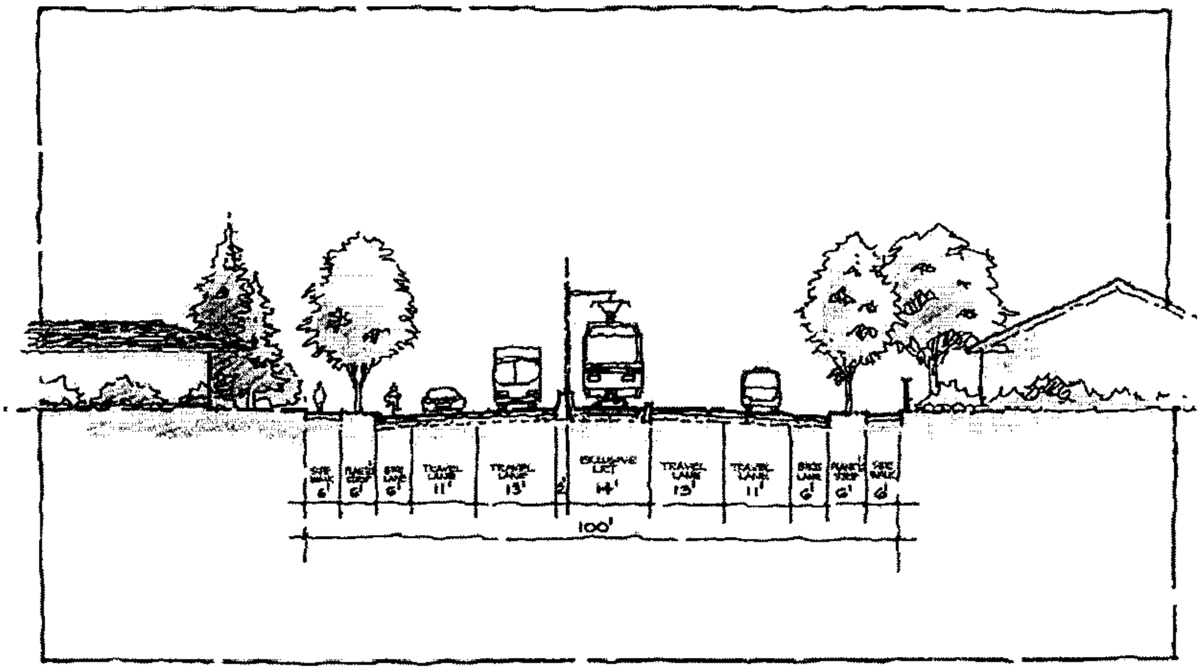


FIGURE 5.4-8
CROSS SECTION FOR ALTERNATIVE 3A: TRUXEL LRT STARTER LINE IN SOUTH NATOMAS



5.4.5 Alternative 3B: Truxel LRT Minimum Operable Segment (MOS)

The Truxel LRT Minimum Operable Segment (MOS) Alternative would provide LRT service between Downtown Sacramento and the Natomas Town Center, using the same assumptions as the 3A Truxel LRT Starter Line Alternative. Figure 5.4-9 provides an overview of the MOS alignment.

Stations

- A total of eleven stations would be included, with a total of 1,970 parking spaces provided at six park-and-ride lots.

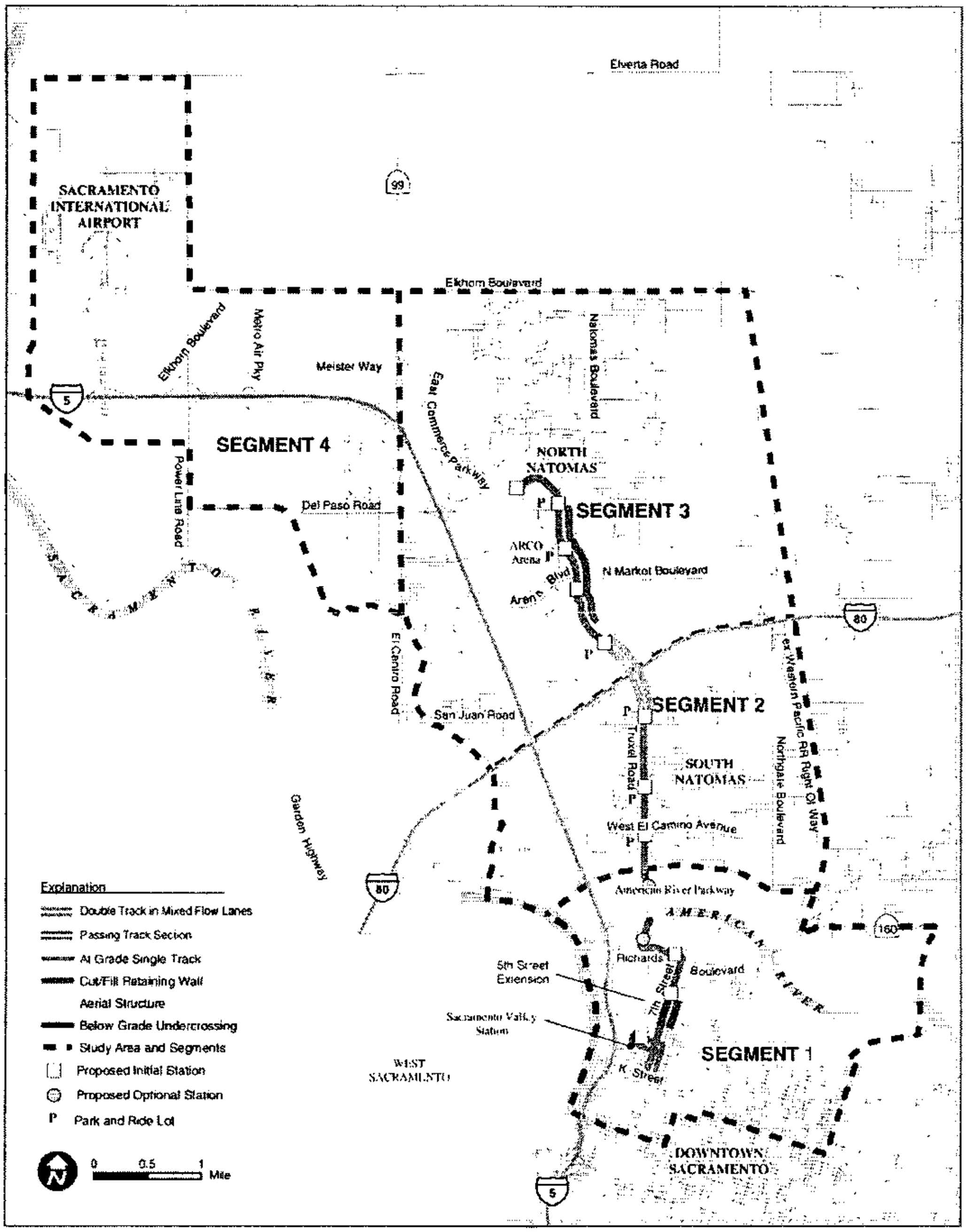
Transit Service

- LRT service would operate at 15-minute headways.
- Seven feeder bus routes and shuttles would connect residences and businesses with LRT stations. Two additional feeder bus routes would be added to link the Sacramento International Airport with Downtown Sacramento and North Natomas.

Maintenance Facility

No new LRV maintenance facility is assumed, with improvements assumed at an existing or planned LRV maintenance facility to accommodate the additional ten light rail vehicles needed for Alternative 3B.

FIGURE 5.4-9
ALTERNATIVE 3B: TRUXEL LRT MOS ALIGNMENT



5.4.6 Alternative 4: Truxel BRT

This alternative would develop frequent, medium-capacity BRT service from Downtown Sacramento, along a 12.41 route-mile corridor through South and North Natomas to Sacramento International Airport. The alignment followed by this alternative would be similar to that described for Alternative 3. The BRT Alternative uses a guided busway with raised curbs to guide buses through most of the corridor. Buses would be equipped with horizontal guide wheels similar to the Essen, Germany and Adelaide, Australia guided busways. Exceptions to the guided busway concept include the BRT alignment along Richards Boulevard, which is in curbside bus lanes, and west of SR 99/70, which is in a conventional busway. Frequent BRT service will require major street crossings to be grade-separated, rather than operating through the at-grade, barrier, or signal-controlled intersections proposed for LRT. The alignment for the Truxel Road BRT is depicted in Figure 5.4-10, and a typical section illustrating a BRT alignment along Truxel Road in South Natomas is provided in Figure 5.4-11.

Stations

- This alternative would include a total of 13 stations.
- Stations would have a mix of at-grade, aerial and below-grade configurations, with access to the station platform provided using elevators and escalators as needed.
- Seven of the 13 stations would provide a total of 1,840 park-and-ride spaces.

Transit Service

- Alternative 4 would include 13 bus routes. Each route would operate on a headway ranging from 10 to 60 minutes. Bus lines would feed into the BRT alignment at various locations, reducing the effective time between buses. As a result, buses would operate at a peak/off-peak headway of 15 minutes at the Airport, with a 3.3-minute peak and 3.8 minute off-peak headway in Downtown Sacramento.
- Six BRT routes would provide direct connections between residences and businesses and Downtown Sacramento using the BRT alignment.

Maintenance Facility

Improvements would be made at a future RT bus maintenance facility at McClellan Park to accommodate the 18 new BRT vehicles.

5.4.7 Alternative 4A: Truxel BRT Starter Line

The Truxel BRT Starter Line Alternative would be similar to Alternative 4: Truxel BRT Alternative, providing service from Downtown Sacramento through South and North Natomas to the Airport, but with the following modifications:

1. Approximately 13 percent of the BRT alignment between the new Sacramento Valley Station (Amtrak) and the Airport would be in mixed-flow compared to about five percent for Alternative 4.
2. Roadway construction cost savings: Savings would be accrued by deferring the construction of the proposed Garden Highway, San Juan and El Camino grade separations, replacing the median guided busway with mixed-flow BRT service with signal priority on Truxel Road in South Natomas, and postponing construction of the I-80 exclusive BRT overpass.

FIGURE 5.4-10
ALTERNATIVE 4: TRUXEL BRT ALIGNMENT

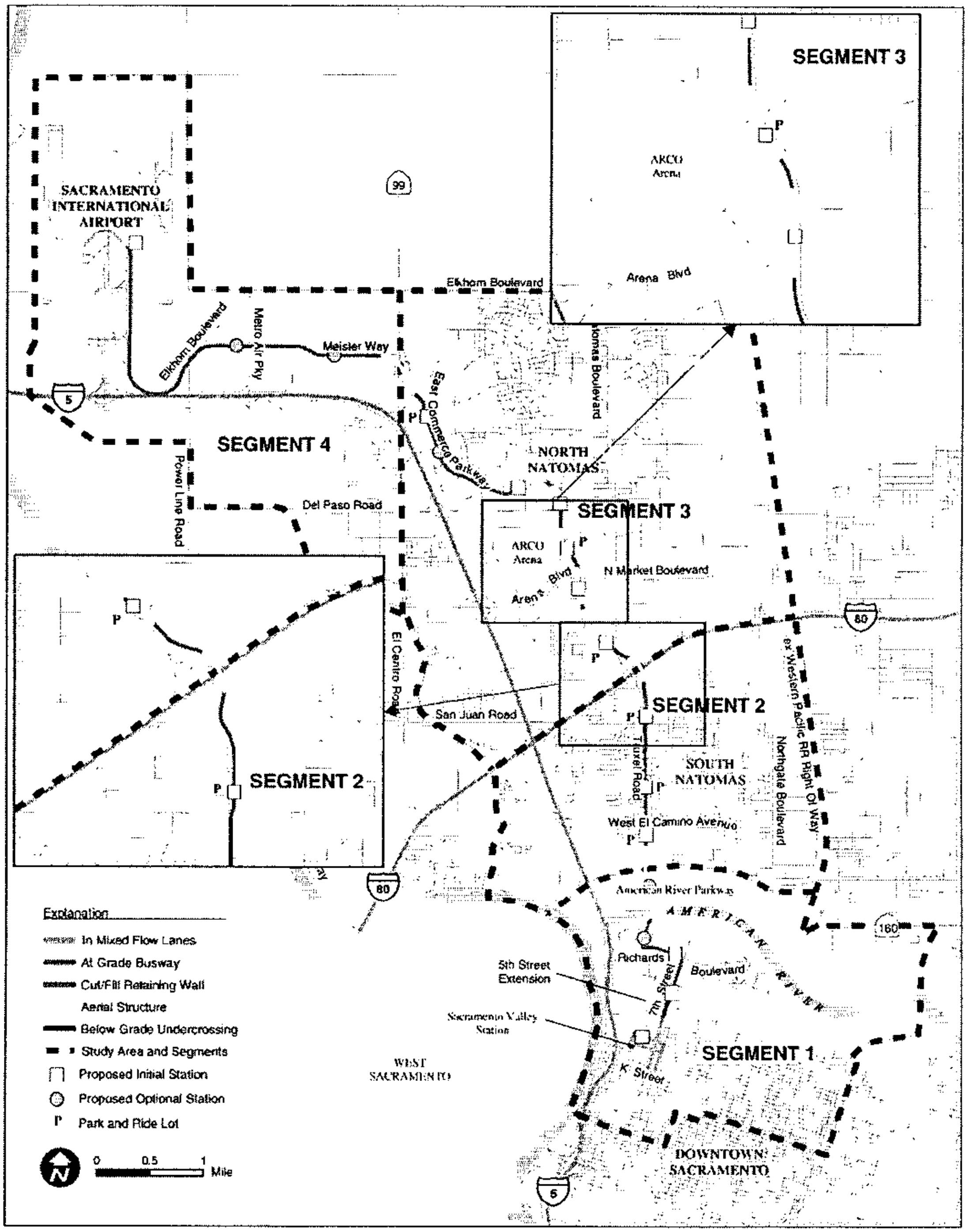
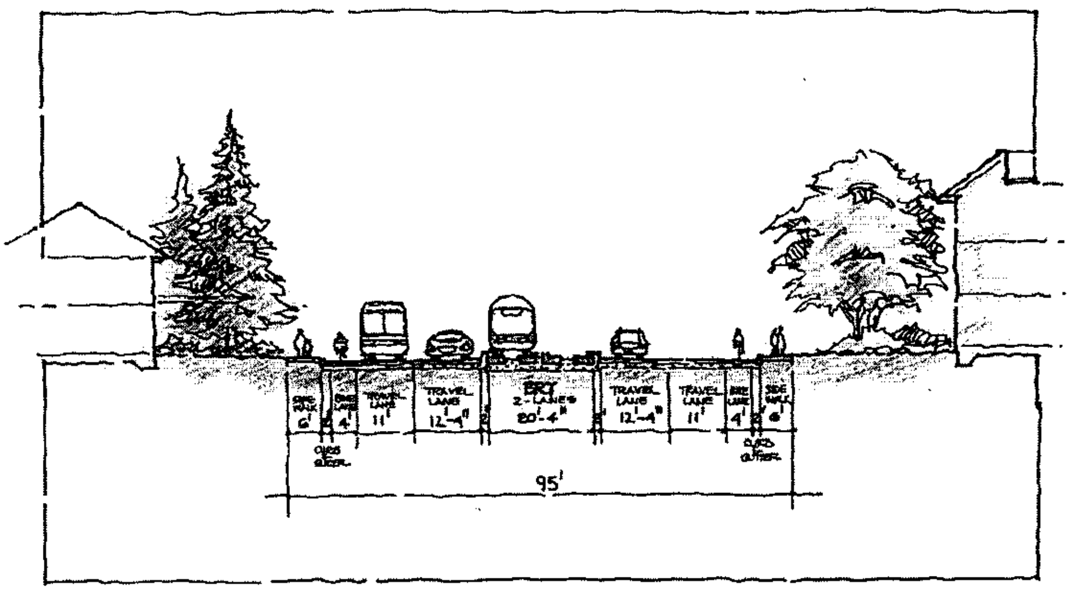


FIGURE 5.4-11
TYPICAL SECTION FOR ALTERNATIVE 4: TRUXEL BRT IN SOUTH NATOMAS



3. Station cost savings: The West El Camino Avenue, San Juan, and Natomas Marketplace Stations would be replaced with at-grade stations using on street bus bays and platforms.
4. Seven of the 13 stations would include a total of 1,760 park-and-ride parking spaces.

This alignment for the Truxel BRT Starter Line is depicted in Figure 5.4-12.

5.4.8 Alternative 4B: Truxel BRT Minimum Operable Segment (MOS)

The Truxel BRT Minimum Operable Segment (MOS) Alternative would provide BRT service between Downtown Sacramento and the Natomas Town Center, using the same assumptions as the Truxel BRT Starter Line Alternative for the Truxel Road alignment, but with a reduced length BRT guideway. Although the MOS Alternative terminates at the North Natomas Town Center Station, BRT buses would continue to the Airport in mixed flow operations on Del Paso Road, I-5 and the Airport road system. This alternative is illustrated in Figure 5.4-13.

Stations

- A total of eleven stations would be included.
- Five of eleven stations would provide a total of 1,730 parking spaces.

Maintenance Facility

Improvements would be made at a future RT bus maintenance facility at McClellan Park to accommodate the 18 new BRT vehicles.

FIGURE 5.4-12
ALTERNATIVE 4A: TRUXEL BRT STARTER LINE ALIGNMENT

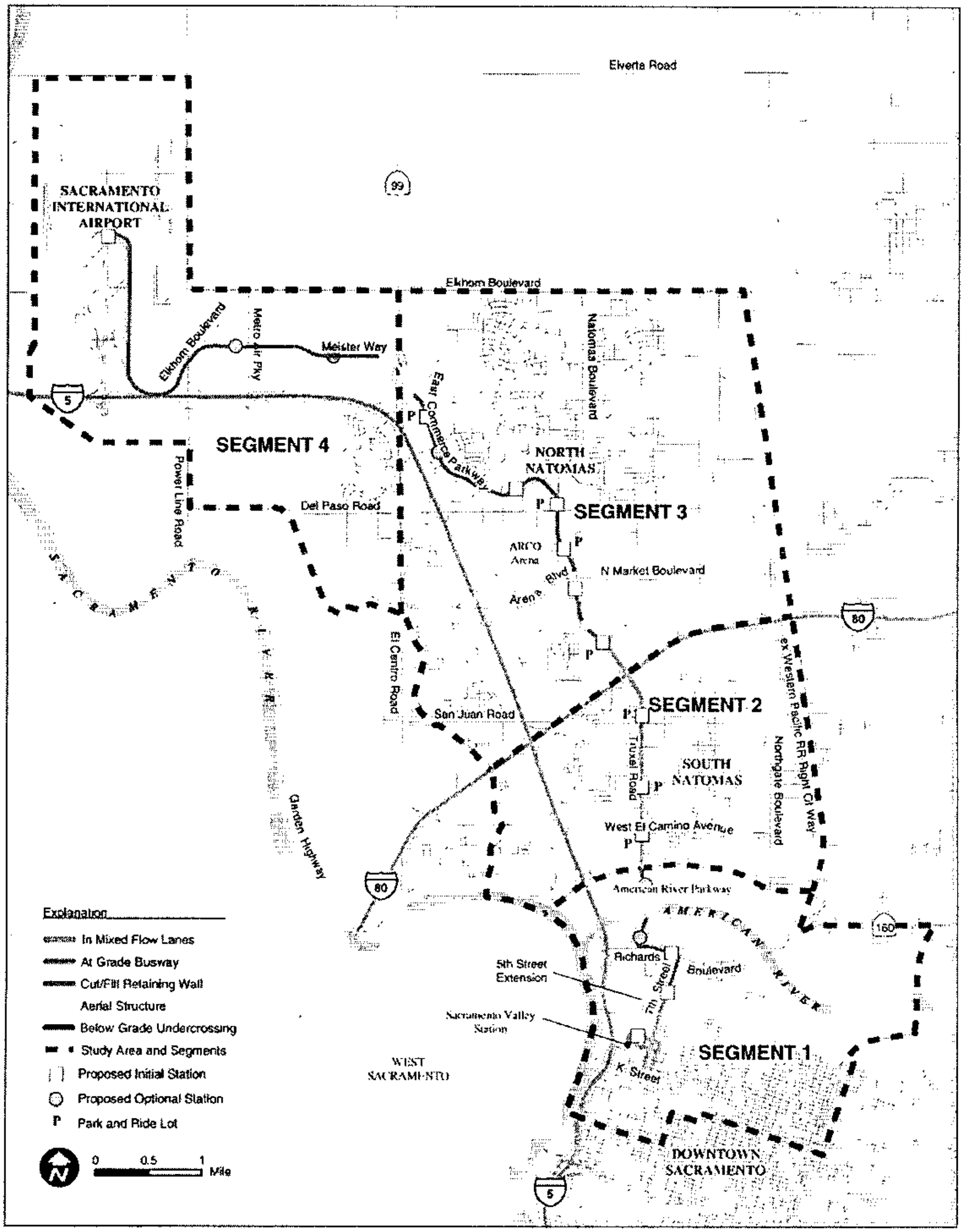
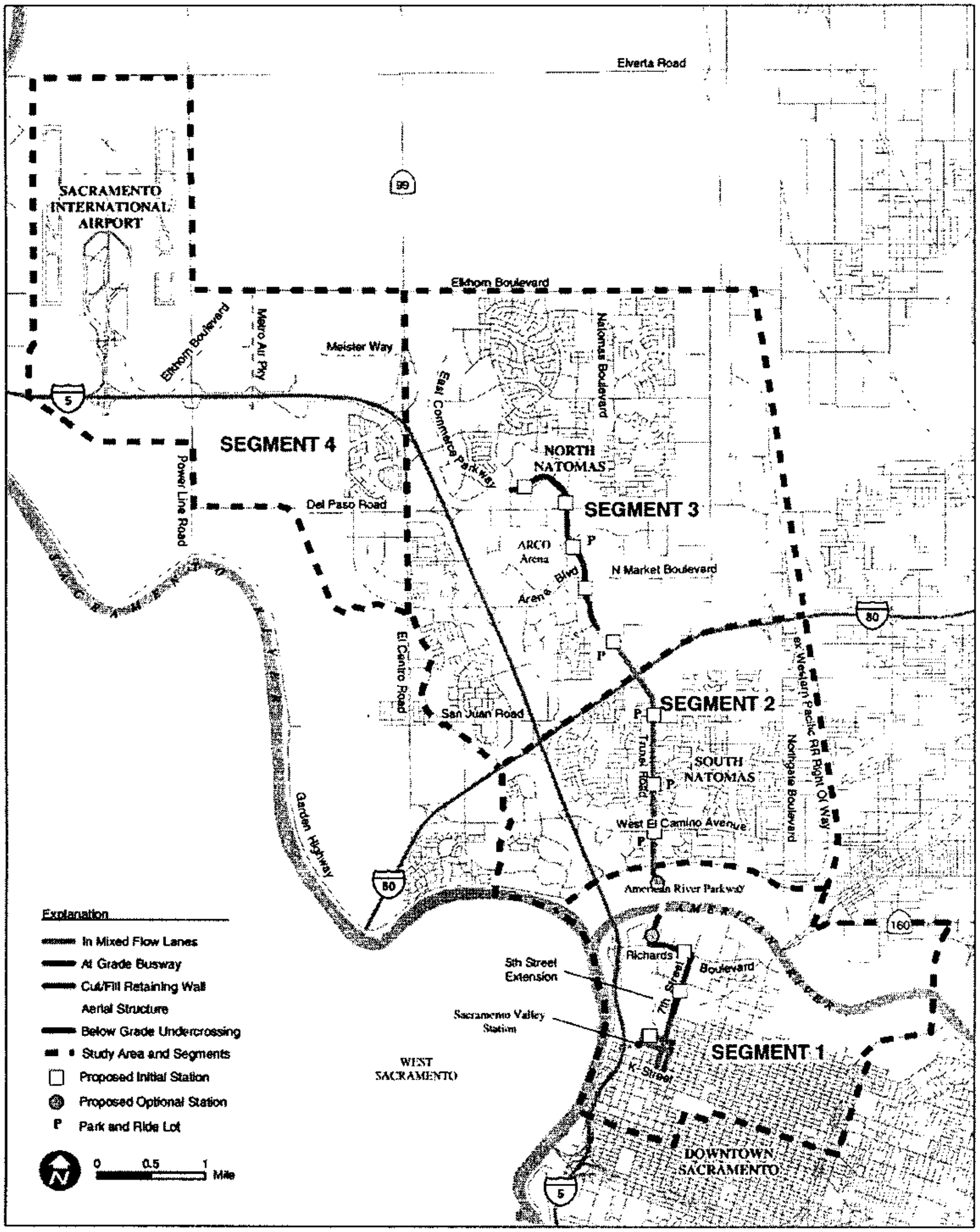


FIGURE 5.4-13
ALTERNATIVE 4B: TRUXEL BRT MOS ALIGNMENT



5.4.9 Alternative 5: I-5/Truxel LRT

This alternative would extend LRT service from Downtown Sacramento along a 13.6-mile corridor through South and North Natomas to the Airport. This alignment avoids penetrating South Natomas by following I-5 from Downtown Sacramento to I-80; then continues east parallel to I-80; and finally north, following Truxel Road in North Natomas. An overview of the I-5/Truxel LRT Alternative is provided in Figure 5.4-14. A typical section illustrating this alternative along I-5 is provided in Figure 5.4-15.

Stations

- Thirteen stations are planned as part of the I-5/Truxel BRT Alternative. With the exception of the Gateway Park Boulevard/Marketplace Station, the station locations are the same as those described for Alternatives 3 and 7.
- Stations are planned to be located in a mix of at-grade and aerial configurations, with access to the station platform provided using elevators and escalators as needed.
- Six of the 13 stations would provide a total of 1,880 parking spaces.

Transit Service

- LRT service would operate at 15-minute headways.
- Seven feeder bus routes and shuttles would connect homes and businesses with LRT stations.

Maintenance Facility

A full LRV maintenance facility would be built at or near the northern end of the DNA line, as described in more detail under Alternative 3.

5.4.10 Alternative 6: I-5/Truxel BRT

Alternative 6 would operate BRT service along an alignment termed the I-5/Truxel alignment. This designation is applied because the alignment would use portions of the Truxel BRT (Alternative 4) and the I-5 BRT alignment (Alternative 8). This alternative would provide BRT service from Downtown Sacramento, along a 13.2-mile corridor through South and North Natomas to Sacramento International Airport. Between downtown and the San Juan Station, the alignment is the same as that for Alternative 8; and between a point just north of Natomas Crossing Drive on the west side of Truxel Road and Sacramento International Airport, the alignment is the same as that for Alternative 4. Between these two segments, the I-5/Truxel BRT Alternative follows an exclusive guided busway on the north side of I-80. The I-5/Truxel BRT alignment is presented in detail in Figure 5.4-16. A typical section along I-5 is displayed in Figure 5.4-17.

Stations

- Thirteen stations are planned as part of the I-5/Truxel BRT Alternative. With the exception of the Gateway Park Boulevard/Marketplace Station, the station locations are the same as those described for Alternatives 4 and 8.
- Stations are planned to be located in a mix of at-grade and aerial configurations, with access to the station platform provided using elevators and escalators.
- Six of the 13 stations would provide a total of 1,660 parking spaces.

FIGURE 5.4-14
ALTERNATIVE 5: I-5/TRUXEL LRT ALIGNMENT

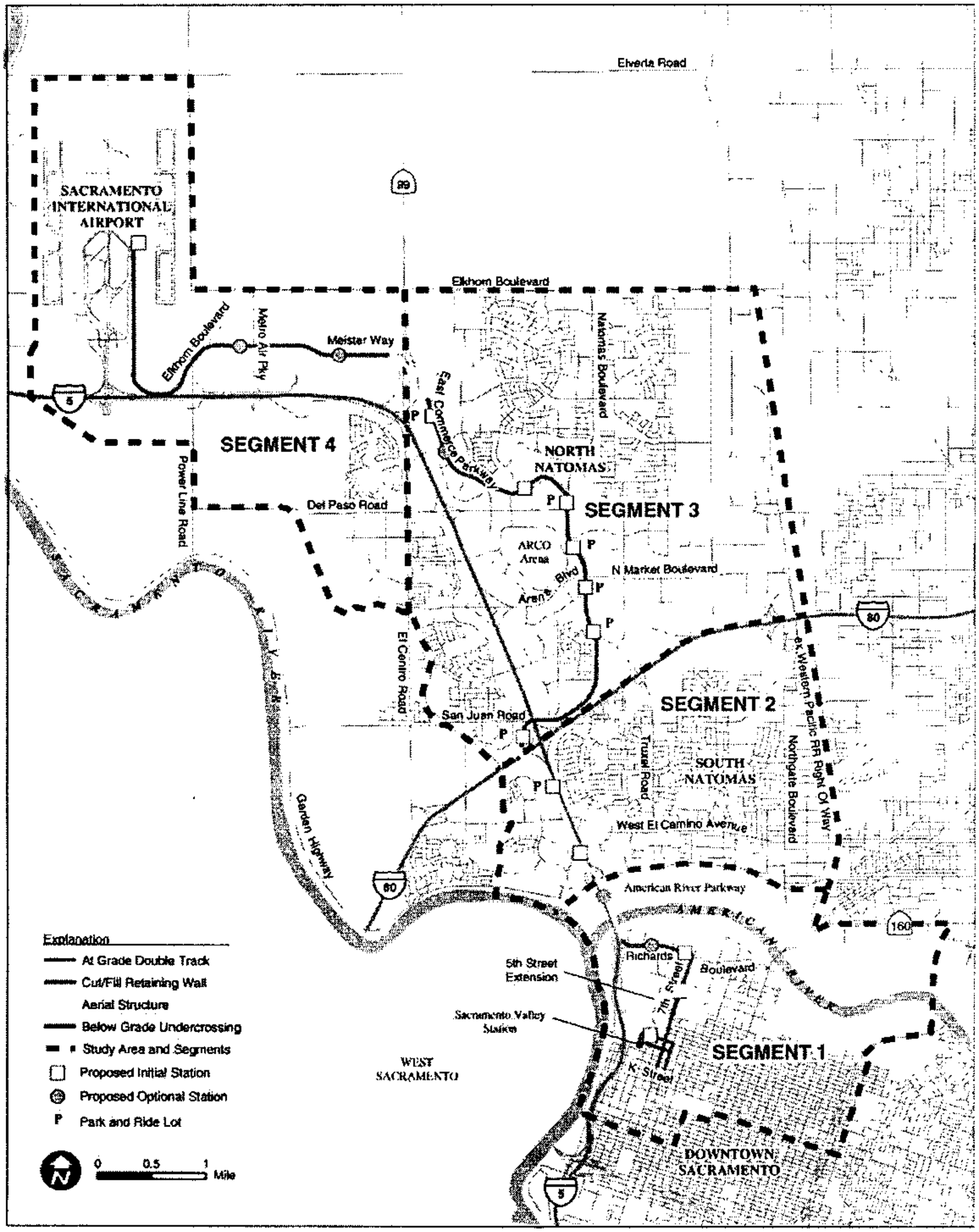
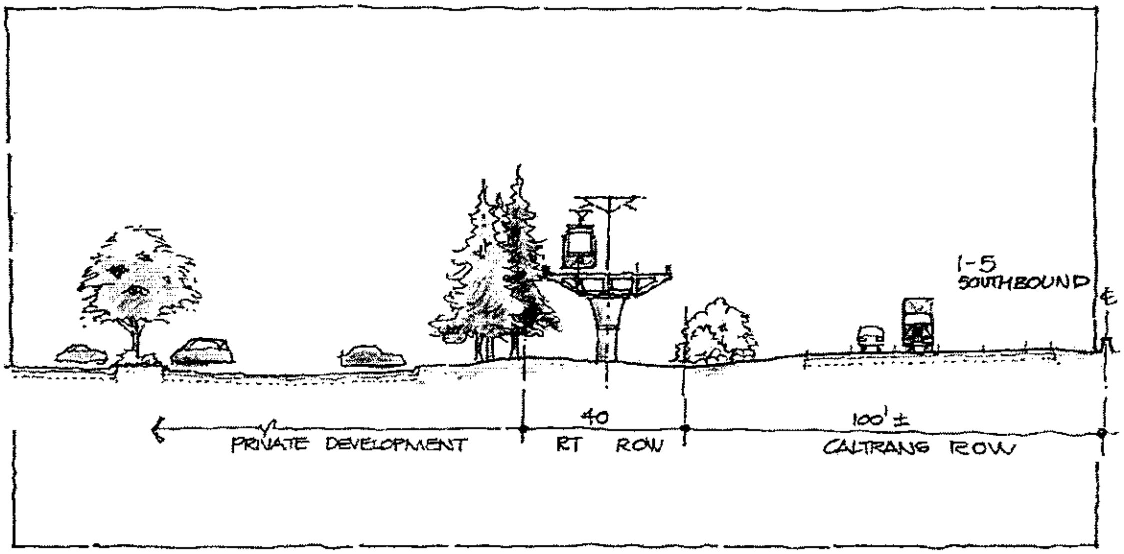


FIGURE 5.4-15
TYPICAL SECTION FOR ALTERNATIVE 5: I-5/TRUXEL LRT ALONG I-5



Transit Service

- Alternative 6 would include 13 bus routes, with each route operating on a headway ranging from 10 to 60 minutes. Bus lines would feed into the BRT alignment at various locations along the alignment, reducing the effective time between buses. As a result, buses would operate at a peak/off-peak headway of 15 minutes at the Airport, with a 3.3 minute peak and 3.8 minute off-peak headway in Downtown Sacramento.
- Six BRT routes would provide direct connections between residences and businesses and Downtown Sacramento using the BRT alignment.

Maintenance Facility

Improvements would be made at a future RT bus maintenance facility at McClellan Park.

FIGURE 5.4-16
ALTERNATIVE 6: I-5/TRUXEL BRT ALIGNMENT

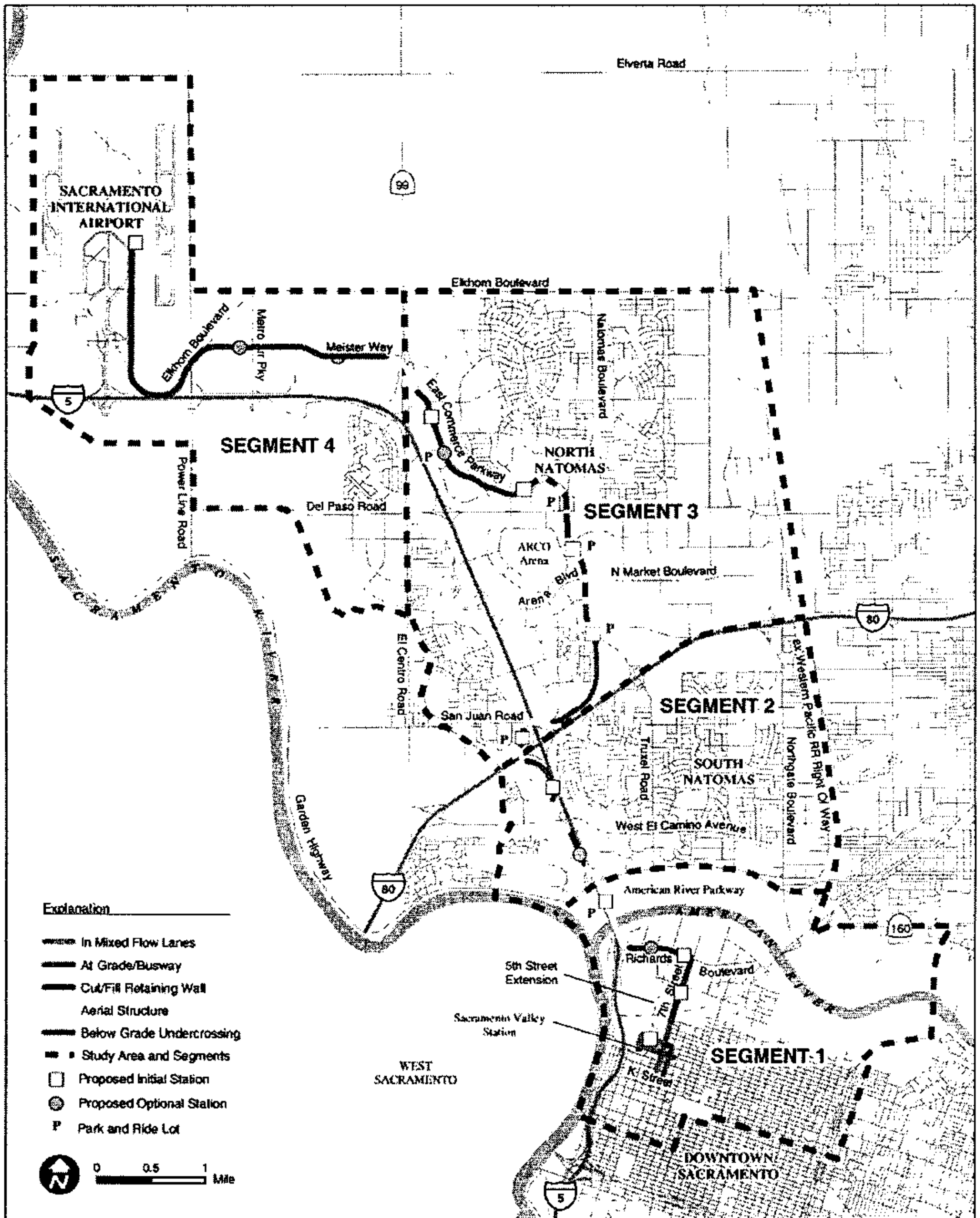
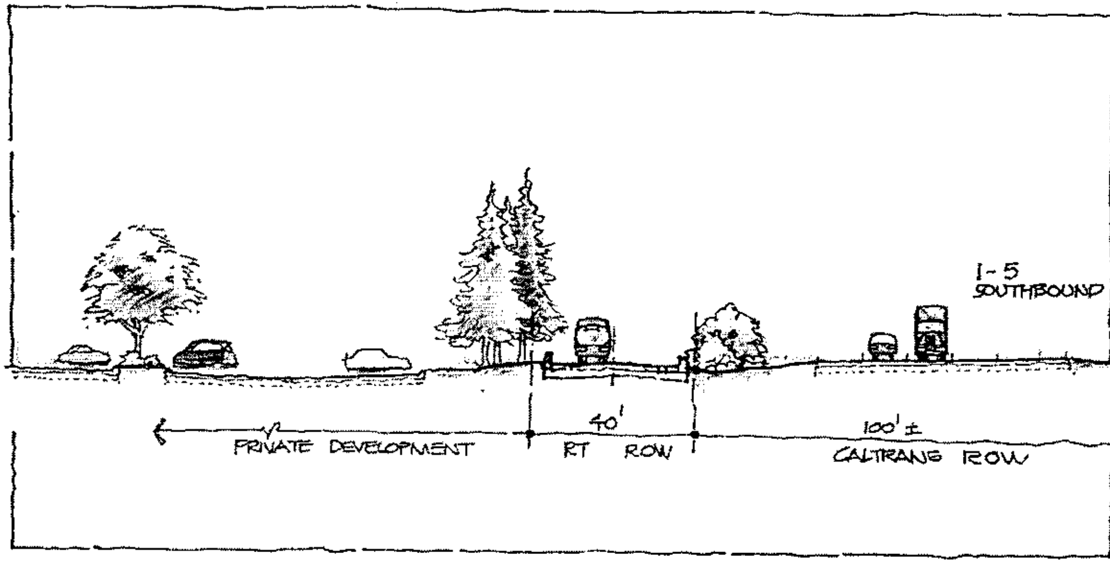


FIGURE 5.4-17
TYPICAL SECTION FOR ALTERNATIVE 6: I-5/TRUXEL BRT ALONG I-5



5.4.11 Alternative 7: I-5 LRT

Alternative 7 would provide LRT service from Downtown Sacramento, along an 11.6-mile corridor through South and North Natomas along I-5 to Sacramento International Airport. The I-5 LRT alignment is presented in detail in Figure 5.4-18. The alignment would be constructed parallel to I-5 in a separate right-of-way adjacent to the Caltrans right-of-way. A typical section along I-5 in South Natomas would be similar to that depicted in Section 5.4.9.

Stations

- Ten stations are planned for construction as part of the I-5 LRT Alternative. All stations would be accessible to patrons with mobility impairments.
- Stations are planned to be located in a mix of at-grade and aerial configurations, with access to the station platform provided using elevators and escalators.
- A total of 1,500 park-and-ride spaces would be provided at three stations.

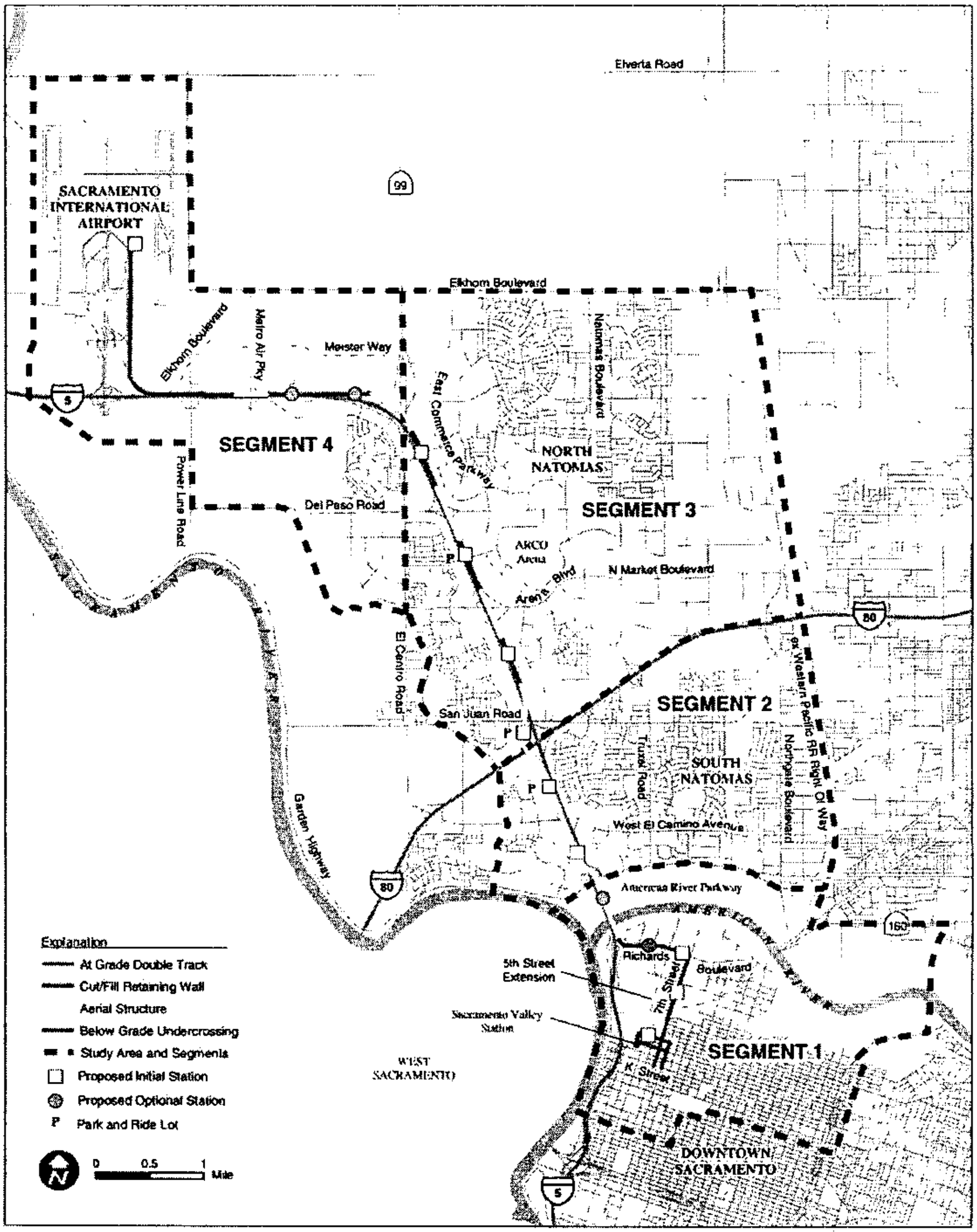
Transit Service

- LRT service would operate at 15-minute headways.
- Seven feeder bus routes and shuttles would connect homes and businesses with LRT stations.

Maintenance Facility

A full LRV maintenance facility would be built near or at the northern end of the DNA line, as described under Alternative 3.

FIGURE 5.4-18
ALTERNATIVE 7: I-5 LRT ALIGNMENT



5.4.12 Alternative 8: I-5 BRT

Alternative 8 would be an 11.6-mile BRT system along I-5 in an exclusive bus guideway between Downtown Sacramento and the Airport. Between downtown and Richards Boulevard, this alternative is identical to Alternative 4. West of Sequoia Pacific Boulevard, the alignment would continue along Richards Boulevard to I-5, and then turn north, parallel to I-5 on a separate right-of-way to the Airport.

This BRT alternative uses a guided busway with raised curbs to guide the buses, which would be equipped with horizontal guide wheels, similar to the guided busway in Essen, Germany, and Adelaide, Australia. Exceptions would occur along Richards Boulevard, where the BRT guideway is in curbside bus lanes, and west of SR 99/70, which is a conventional busway. The alignment for the I-5 BRT Alternative is shown in Figure 5.4-19. This alternative provides BRT service on a corridor adjacent to I-5, with a typical section similar to that depicted for Alternative 6.

Stations

- Eleven stations are planned for construction as part of the build alternative for the I-5/Truxel BRT Alternative. Functional characteristics for the I-5 BRT stations are similar to those described for Alternative 6.
- 1,460 park and ride spaces would be provided at four stations.

Transit Service

- Alternative 8 would include 13 bus routes, with each route operating on a headway ranging from 10 to 60 minutes. Bus lines would feed into the BRT alignment at various locations, reducing the effective time between buses. As a result, buses would operate at a peak/off-peak headway of 15 minutes at the Airport, with a 3.3 minute peak and 3.8 minute off-peak headway in Downtown Sacramento.
- Six BRT routes would provide direct connections between residences and businesses and Downtown Sacramento using the BRT alignment.

Maintenance Facility

Improvements would be made at a future RT bus maintenance facility at McClellan Park.

5.5 Summary of Design Options

A number of additional alignment options have been developed in response to questions raised by community members and public agencies. Alignment options, also referred to as design options, are variations in alignment or station location at select locations. As noted in section 5.3, some design options were dropped from consideration. The 28 LRT and 24 BRT design options that have been carried forwarded are listed in Table 5.5-1 and are illustrated in Figures 5.5-1 through 5.5-5.

FIGURE 5.4-19
ALTERNATIVE 8: I-5 BRT ALIGNMENT

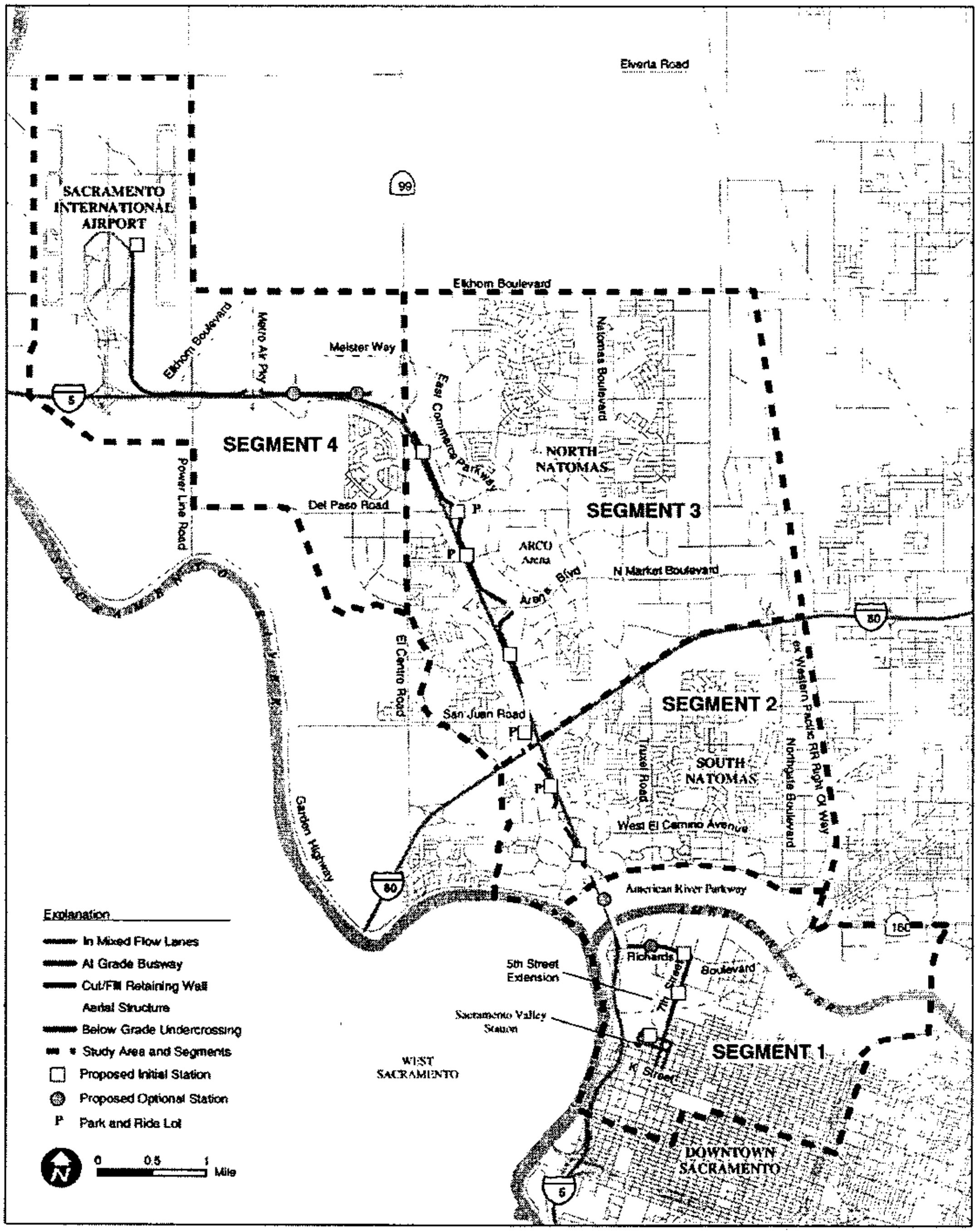


TABLE 5.5-1
DNA ALTERNATIVE DESIGN OPTIONS

	Design Option	Description	Alt.3 Truxel LRT	Alt. 3A Truxel LRT Starter	Alt. 3B Truxel LRT MOS	Alt.4 Truxel BRT	Alt. 4A Truxel BRT Starter	Alt. 4B Truxel BRT MOS	Alt. 5 I-5/ Truxel LRT	Alt. 6 I-5/ Truxel BRT	Alt. 7 I-5 LRT	Alt. 8 I-5 BRT
Downtown/Railyards to Richards Boulevard												
1.	North 5th Street, Mixed Flow Grade Separation	Double-track LRT or BRT guideway in mixed flow lanes through grade separation of relocated UPRR tracks; exclusive double-track in median of new 5th/6th Street north of UPRR	•	•	•	•	•	•	•	•	•	•
2.	North 5th Street, Exclusive Grade Separation	Double-track LRT or BRT guideway in median of proposed 5th/6th Street grade separation of relocated UPRR tracks; double-track in median of new 5th/6th Street north of UPRR	•	•	•	•	•	•	•	•	•	•
3.	North 6th Street, Exclusive Grade Separation	Double-track LRT or BRT guideway in exclusive guideway in median of proposed 6th Street grade separation of relocated UPPR tracks; double-track exclusive along 6th Street alignment north of UPRR.	•	•	•	•	•	•	•	•	•	•
4.	7th Street, Exclusive Single Track	Exclusive single-track alignment in 2-lane 7th Street extension undercrossing (LRT only) single track exclusive guideway along 7th Street north of UPRR.	✓	✓	✓	n/a	n/a	n/a	✓	n/a	✓	n/a
5.	7th Street, Exclusive Double Track	Exclusive single-track alignment in 7th Street extension undercrossing (LRT only); double-track exclusive guideway along 7th Street north of UPRR.	•	•	•	n/a	n/a	n/a	•	n/a	•	n/a
6.	7th Street, Mixed Flow Double Track/Guideway	Double-track mixed flow BRT or LRT guideway in 2-lane 7th Street extension undercrossing; double-track exclusive guideway along 7th Street north of UPRR.	•	•	•	✓	✓	✓	•	✓	•	✓
7	7th Street, Two-Phased Undercrossing Construction	Double-track exclusive BRT or LRT guideway in new RT-only undercrossing adjacent to existing 2-lane 7th Street extension; double-track exclusive guideway along 7th Street north of UPRR	•	•	•	•	•	•	•	•	•	•
8.	7th Street Exclusive Double-Track; RT Undercrossing	Double-track exclusive guideway in new RT-only undercrossing for BRT or LRT, double track exclusive guideway along 7th Street; assumes RT builds a new undercrossing as a permanent crossing.	•	•	•	•	•	•	•	•	•	•

Key:

✓ Primary Design Option

• Secondary Design Option

n/a Not Applicable

TABLE 5.5-1
DNA ALTERNATIVE DESIGN OPTIONS (CONTINUED)

	Design Option	Description	Alt.3 Truxel LRT	Alt. 3A Truxel LRT Starter	Alt. 3B Truxel LRT MOS	Alt.4 Truxel BRT	Alt. 4A Truxel BRT Starter	Alt. 4B Truxel BRT MOS	Alt. 5 I-5/ Truxel LRT	Alt. 6 I-5/ Truxel BRT	Alt. 7 I-5 LRT	Alt. 8 I-5 BRT
9.	7th Street, east-side running (North B Street to Richards Boulevard)	Double- or single-track guideway using city-owned land on the east side of 7th Street between North B Street and Richards Boulevard.	•	•	•	•	•	•	•	•	•	•
American River Crossing												
10.	Urrutia Bridge Crossing	Continue north on 7th Street to a crossing of the American River just east of Discovery Park	•	•	•	•	•	•	•	•	•	•
11.	Truxel Bridge Crossing	Transit only crossing along an abandoned railroad spur, with a direct connection to Garden Highway at Truxel Road	✓	✓	✓	✓	✓	✓	•	•	•	•
12.	North 5th Street Bridge Crossing	Continue north on 5th Street to a crossing of the American River east of the existing I-5 Bridge	•	•	•	•	•	•	•	•	•	•
13.	I-5 East Bridge	A new bridge crossing immediately adjacent to the existing I-5 Bridge	•	•	•	•	•	•	✓	✓	✓	✓
South Natomas												
14.	Exclusive Median Double Lane	Double-lane guideway in the median of Truxel Road (See Figure 5.4-11)	n/a	n/a	n/a	✓	•	•	n/a	n/a	n/a	n/a
15.	Mixed Flow, Double Track or Traffic Lanes	For LRT, assumes a double-track guideway in mixed flow travel lanes on Truxel Road; buses would use existing lanes on Truxel Road for BRT (See Figure 5.4-6)	✓	•	•	•	✓	✓	n/a	n/a	n/a	n/a
16.	Exclusive Median Single-Track	Single track guideway would operate in the median of Truxel Road, with double track sections at selected locations (See Figure 5.4-8)	n/a	✓	✓	n/a	n/a	n/a	n/a	n/a	n/a	n/a
17.	Exclusive Median Single-Track with Single-Track Mixed Flow	Single track guideway would operate in the median of Truxel Road, with a second track located in an adjacent mixed flow lane (See Figure 5.5-3)	n/a	•	•	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Key:

✓ Primary Design Option

• Secondary Design Option

n/a Not Applicable

TABLE 5.5-1
DNA ALTERNATIVE DESIGN OPTIONS (CONTINUED)

	Design Option	Description	Alt.3 Truxel LRT	Alt. 3A Truxel LRT Starter	Alt. 3B Truxel LRT MOS	Alt.4 Truxel BRT	Alt. 4A Truxel BRT Starter	Alt. 4B Truxel BRT MOS	Alt. 5 I-5/ Truxel LRT	Alt. 6 I-5/ Truxel BRT	Alt. 7 I-5 LRT	Alt. 8 I-5 BRT
North Natomas (I-80 to Del Paso Road)												
18.	New East Side Double Track Aerial Structure	New BRT or LRT aerial structure over I-80 located on the east side of the Truxel Road overcrossing	✓	n/a	n/a	✓	n/a	n/a	n/a	n/a	n/a	n/a
19.	Mixed Flow Double Track Aerial Structure	Double-track LRT mixed flow on the existing I-80 overcrossing	n/a	✓	✓	n/a	✓	✓	n/a	n/a	n/a	n/a
20.	New I-80 Aerial Structure to the West Side of Truxel Road	New LRT aerial structure over I-80 with an elevated transition to the west side of Truxel Road just north of the Natomas Marketplace	•	•	•	•	•	•	n/a	n/a	n/a	n/a
21.	ARCO Arena Spur	Operation of either LRT or BRT along a spur to ARCO Arena for special events	•	•	•	•	•	•	•	•	n/a	n/a
22.	Sports Parkway Alignment	Operation of either LRT or BRT along Sports Parkway past ARCO Arena to Town Center Drive	•	•	•	•	•	•	•	•	n/a	n/a
Airport Area												
23.	Single Station	Locate a transit station between existing Terminals A and B. (See note 1 below)	•	•	n/a	•	•	n/a	•	•	•	•
24.	Rental Car Station	Locate a station at the Rental Car Facility south of the terminals. (See note 1 below)	•	•	•	•	•	•	•	•	•	•
25.	Rental Car/Terminals A & B	Locate stations at the Rental Car Facility and between existing Terminals A and B	•	•	n/a	•	•	n/a	•	•	•	•
26.	Two Stations	Locate stations at Terminals A and B	•	•	n/a	•	•	n/a	•	•	•	•
27	Terminal A, East Side	Locate a station along the east side of Terminal A with an alignment along the eastern side of Airport Boulevard	✓	✓	n/a	✓	✓	n/a	✓	✓	✓	✓
28.	Station Immediately North of I-5	Locate a station immediately north of I-5 (near former oxidation ponds) that would serve future airport development between I-5 and Crossfield Drive	•	•	n/a	•	•	n/a	•	•	•	•

Notes: 1. A transit alignment and vertical section at the airport will be studied in greater detail during subsequent study development phases. This work will rely on approval of a preferred terminal concept, pending adoption of the Sacramento International Airport Master Plan in 2004.

Key:

✓ Primary Design Option

• Secondary Design Option

n/a Not Applicable

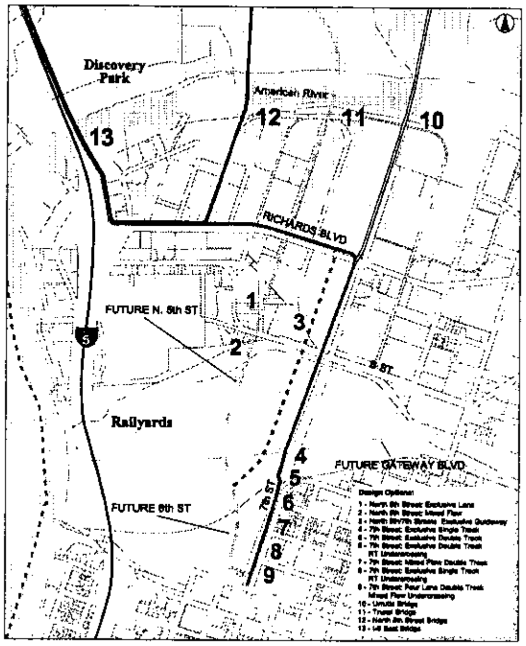


FIGURE 5.5-1
DOWNTOWN DESIGN OPTIONS

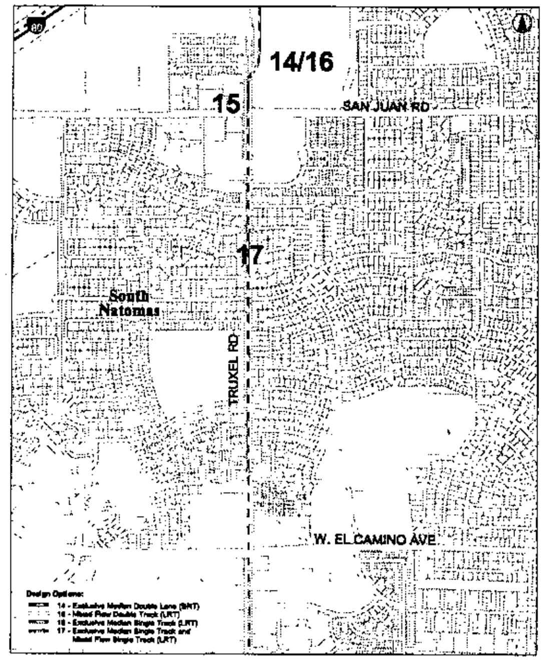


FIGURE 5.5-2
SOUTH NATOMAS DESIGN OPTIONS

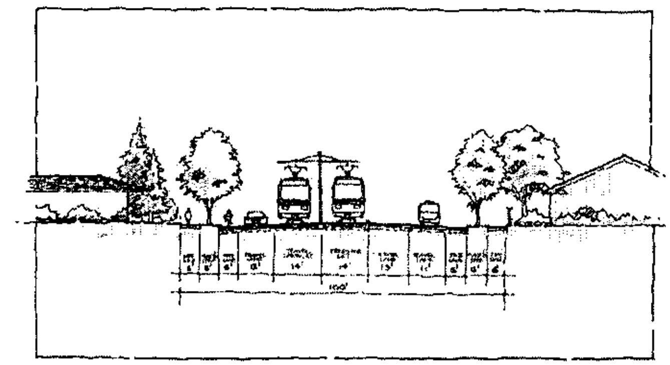


FIGURE 5.5-3
TYPICAL SECTION FOR EXCLUSIVE MEDIAN SINGLE-TRACK WITH SINGLE-TRACK MIXED FLOW IN SOUTH NATOMAS

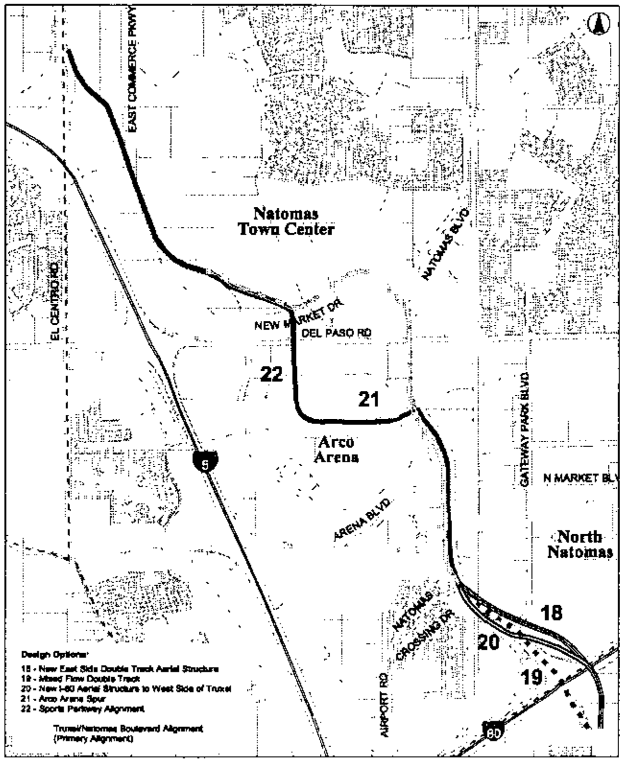


FIGURE 5.5-4
DESIGN OPTIONS IN NORTH NATOMAS

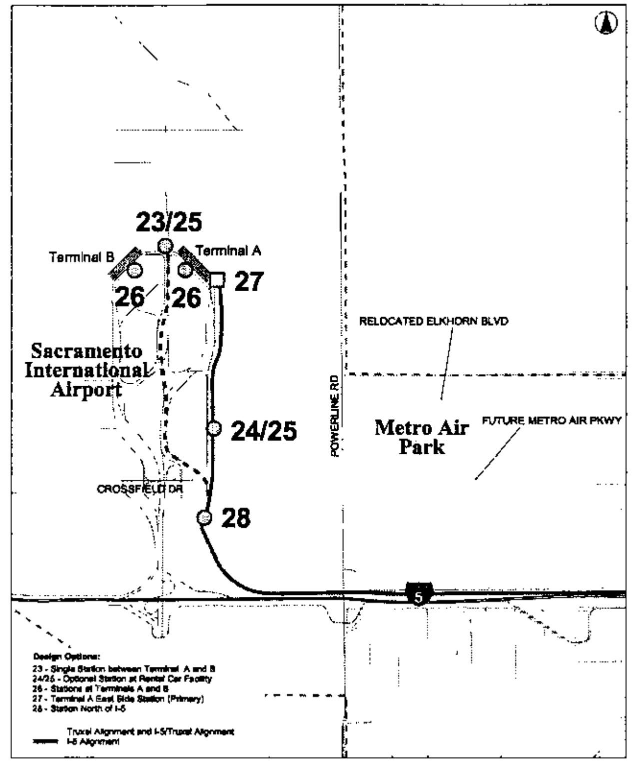


FIGURE 5.5-5
DESIGN OPTIONS IN THE AIRPORT AREA

6.0 CAPITAL, OPERATING, AND MAINTENANCE COSTS

Chapter Summary

Provision of significantly improved transit service to the Downtown/Natomas/Airport (DNA) Corridor will involve the Regional Transit District (RT) and other agencies and private interests sharing program capital costs (land acquisition and costs of construction, and required vehicles and equipment). RT will then assume the responsibility for operating and maintenance (O&M) costs.

Both capital and O&M costs have been evaluated on a preliminary basis for the final Corridor alignment and transit mode alternatives. A comparison of the alternatives is provided to facilitate selection of the Locally Preferred Alternative (LPA).

6.1 Capital Costs

The total cost to construct a new transit system, or "Capital Costs" are summarized in this chapter for the Baseline/Transportation Systems Management (TSM), bus rapid transit (BRT) and light rail transit (LRT) alternatives. Capital costs include all construction costs (including construction of the transit guideway, maintenance facilities, park and ride lots, special conditions, stations and associated facilities, and utility relocations); costs for new transit vehicles and initial spare parts; acquisition of right-of-way (ROW); and allowances for final engineering design, construction management, construction change orders and an allocation for costs to RT for managing the construction. Cost estimates prepared for each alternative are summarized in Table 6.1-1.

Total estimated capital cost estimates for the five LRT alternatives (3, 3A, 3B, 5, and 7) in the DNA Corridor range between \$290.8 million and \$793.1 million in 2002 dollars. In comparison, total estimated capital costs for the five BRT alternatives (4, 4A, 4B, 6, and 8) range between \$142.3 million and \$327.5 million, also in 2002 dollars. For both technologies, the capital costs include a valuation of the dedicated and public properties that they would occupy in addition to the value of new property needed to be purchased.

The construction costs vary considerably due to alignment length, the number of stations, vehicle and right-of-way requirements, the number of structures needed, and other factors. For example, the LRT alternatives are generally more expensive than the BRT alternatives because light rail requires significant track, signalization, and electrification improvements.

Alternatives 3, 5, and 7 would provide different alignments from Downtown Sacramento to the Sacramento International Airport; however, they share the following design characteristics: double-track guideway stations; and a full-service maintenance facility with storage for 16 vehicles. These alternatives also have the same alignment between Downtown Sacramento and Richards Boulevard.

Of the three full-length LRT alternatives – 3, 5, and 7 – the total cost for Alternative 3, the Truxel LRT Alternative, is the least expensive. However, to identify greater cost savings, two additional sub-alternatives were created. For Alternatives 3A and 3B, the crossing over the American River would consist of double-track to the River bank, and single-track over the water, thereby significantly reducing the structure costs of these two alternatives. The overall length of Alternative 3B, the Truxel LRT Minimal Operable Segment (MOS) Alternative, is also approximately six miles shorter than Alternatives 3 and 3A, extending from

TABLE 6.1-1
SUMMARY OF CAPITAL COSTS FOR DNA ALTERNATIVES (MILLIONS OF 2002$)

Alternative		Construction Costs	Vehicles	Right-of-Way	Final Engineering, Construction Management, Project Reserve	Total Costs
2	Baseline/TSM	$17.5	$54.3	$0	$18.5	$90.3
3	Truxel LRT	$327.8	$55.7	$63.5	$176.1	$623.1
3A	Truxel LRT Starter Line	$213.0	$59.2	$54.5	$121.2	$447.9
3B	Truxel LRT MOS	$140.7	$39.4	$31.4	$79.3	$290.8
4	Truxel BRT	$165.2	$6.9	$65.3	$90.1	$327.5
4A	Truxel BRT Starter Line	$101.7	$7.3	$43.5	$56.3	$208.8
4B	Truxel BRT MOS	$67.9	$12.2	$24.6	$37.6	$142.3
5	I-5/Truxel LRT	$463.9	$55.7	$38.1	$235.5	$793.1
6	I-5/Truxel BRT	$177.2	$13.9	$29.9	$90.0	$311.0
7	I-5 LRT	$435.2	$55.7	$34.3	$221.3	$746.4
8	I-5 BRT (new guideway)	$143.1	$16.4	$27.9	$73.9	$261.3

Sources: Parsons Brinckerhoff Quade & Douglas, Inc. and McCormick Rankin International, October 2003.

Downtown Sacramento only to the Natomas Town Center (instead of the Airport), for a total of 6.82 miles. The total cost of Alternative 3B is nearly $291 million, compared to approximately $623 million for Alternative 3 and $448 for Alternative 3A

Similarly, two sub-alternatives (Alternatives 4A and 4B) were created to improve the cost-effectiveness of Alternative 4, the Truxel BRT Alternative. Alternative 4A, the Truxel BRT Starter Line Alternative, would construct a BRT extension similar to Alternative 4, with fewer structures and grade separations to provide a lower-cost alternative. The total estimated capital cost of Alternative 4A is approximately $209 million, roughly $119 million less than Alternative 4. Alternative 4B, the Truxel BRT MOS Alternative, would also construct a BRT guideway with fewer structures and grade separations, however, it would extend only 5.9 miles from Downtown Sacramento to the Natomas Town Center, at a cost of $142 million.

6.2 Operating and Maintenance Costs

An overview follows of estimated O&M costs associated with each of the proposed Corridor alternatives. O&M costs include all expenditures required to provide daily transit service, including pro-rata RT system administrative costs, wages and benefits for transit vehicle operators and maintenance workers, security, and the maintenance of the transit guideway, stations, facilities and vehicles.

6.2.1 Current RT Operating and Maintenance (O&M) Costs

In fiscal year (FY) 2002, RT bus revenue miles totaled 7.73 million and 0.60 million hours of revenue vehicle service was provided. The cost per passenger and cost per passenger mile for operating the bus system was $3.23 and $0.81, respectively.

Light rail annual revenue miles for FY 2002 were close to 2.13 million with 0.104 million hours of revenue service provided. The cost per passenger and cost per passenger mile for operating the LRT system was $2.83 and $0.52, respectively.

6.2.2 Projected Operating and Maintenance Costs for DNA Baseline Alternative

An estimate of the O&M costs for the No-Build and DNA Baseline/TSM Alternative were developed as follows:

- First, the study team estimated RT system-wide expenses to operate existing and proposed DNA Corridor transit services with new Corridor services provided under the Baseline/TSM Alternative.
- O&M costs were prepared using existing unit maintenance costs and applying an estimated rate of change to these costs to generate year 2025 figures.
- Following FTA evaluation criteria, costs for the DNA Corridor program are calculated as the incremental change between the No-Build, Baseline/TSM, and the ten build alternatives. Estimates of operating costs for the No-Build and Baseline/TSM Alternatives are presented in Table 6.2-1.

6.2.3 Projected Operating and Maintenance Costs for DNA Build Alternatives

An estimate of the O&M costs for the DNA Build Alternatives was developed by estimating the cost to operate existing and proposed RT services along with the provision of new transit service in the DNA corridor.

O&M costs are calculated using a systemwide approach, since the impacts from new service often extend beyond the route or corridor served. Under the DNA study, both the BRT and LRT alternatives rely on modifications to existing trunk routes and the establishment of new bus services that extend outside the DNA corridor. In addition, several of the BRT trunk lines are merged with existing RT routes. This interconnection with the future RT route network requires operating and maintenance costs to be examined systemwide. Costs specific to the DNA corridor are identified as the incremental change between the Baseline/TSM Alternative and the Build Alternatives. Estimates of operating costs for the Baseline/TSM Alternative are presented below in Table 6.2-1.

Like capital costs, the O&M costs vary by alternative depending on route length, the number of stations served, the frequency of service, and the number of vehicles required to meet passenger demand.

Table 6.2.1 shows the Truxel BRT alternatives that have total O&M costs less than the O&M cost for the Baseline Alternative. With use of the BRT busway, the average vehicle speed ranges from 22 to 26 mph depending on the alternative, whereas under the Baseline the buses operate in mixed traffic at an average corridor speed of only 10.8 miles mph. As a result, the BRT busway requires fewer vehicles to provide the same level of service (i.e., headway) as under the Baseline Alternative. While the Truxel BRT alternatives require 14 to 18 additional peak-period regular-length buses as compared to the Baseline alternative, it is anticipated that there will be less of a need for the more-expensive-to-operate articulated buses, thereby reducing the number of vehicles from 17 to 5 and resulting in a net cost savings.

TABLE 6.2-1
SUMMARY OF ANNUAL SYSTEMWIDE OPERATING AND MAINTENANCE COSTS FOR DNA ALTERNATIVES FOR 2025 (MILLIONS OF 2002$)

Alternative		Bus Revenue Hours	LRT Revenue Hours	2025 O&M Costs	Annual Cost Increase Over Baseline/TSM Alternative
1	No-Build	950,600	116,355	$156.3	--
2	Baseline/TSM	1,019,600	116,355	$164.6	--
3	Truxel LRT	956,200	140,100	$172.8	$8.2
3A	Truxel LRT Starter Line	956,200	147,200	$173.7	$9.1
3B	Truxel LRT MOS	969,600	140,100	$169.7	$5.1
4	Truxel BRT	999,600	116,400	$164.0	-($0.6)
4A	Truxel BRT Starter Line	1,002,400	116,400	$164.1	-($0.5)
4B	Truxel BRT MOS	1,008,200	116,400	$164.4	-($0.2)
5	I-5/Truxel LRT	939,500	140,100	$171.3	$6.7
6	I-5/Truxel BRT	1,012,900	116,400	$166.4	$1.8
7	I-5 LRT	960,500	140,100	$172.1	$7.5
8	I-5 BRT	1,009,700	116,400	$165.5	$0.9

Source: Manuel Padron & Associates, October, 2003.

7.0 ALTERNATIVES EVALUATION

Chapter Summary

The proposed alternatives for the Downtown/Natomas/Airport (DNA) Corridor were evaluated based on various factors, including: transportation impacts; environmental impacts; potential for smart growth; cost effectiveness; financial feasibility; and community and political support. These factors are reflected in the goals and objectives developed for this study. The proposed DNA build alternatives were evaluated determine potential ridership and traffic impacts in the DNA corridor. Environmental impacts were also addressed, concentrating on the impact build alternatives along the three alignments under study would have on natural resources and the physical environment. The Federal Transit Administration (FTA) New Starts Criteria were also considered in the evaluation of the alternatives, as described in Section 7.7. As stated in FTA's New Starts program guidelines, there are specific criteria, which the FTA considers in its deliberations to advance transit fixed guideway projects through the project development process and enter into a long-term financial commitment to implement the proposed investments. The New Starts program categorizes these criteria into two broad areas: 1) Project Justification; and 2) Local Financial Commitment. Project Justification criteria, which are used to rank alternatives, include:

- Mobility Improvements;
- Environmental Benefits;
- Operating Efficiencies;
- Cost Effectiveness; and
- Other Factors (e.g., Transit Supportive Land Use and Future Patterns)

A comparison of how well each alternative meets the study goals and objectives (described in Section 5.1) and New Starts criteria is presented at the end of the chapter.

7.1 Transportation Impacts

This section summarizes the transportation impacts related to each alternative, including transit ridership impacts; highway, local roadway and intersection impacts; parking impacts; and impacts regarding access and egress at the airport.

7.1.1 Ridership

7.1.1.1. Changes to Transit Travel Time

Travel times for transit passengers are one key measure of project benefit. Two types of travel times are commonly used. "Station-to-station" time refers to just the time it takes a transit vehicle to move from one station to another. Station-to-station times are presented in Table 7.1-1. A typical transit trip, though, includes more than just the Sacramento Valley Station (Amtrak) to airport travel times. It takes time to walk or drive to a transit station, wait for a bus or train, and transfers may be required to get to a final destination. Table 7.1-1 provides a comparison of travel times from North Natomas and South Natomas to the core area of downtown Sacramento, including time needed to get to a station or stop, wait time, and transfer times.

- All build alternatives provide some transit travel timesavings, relative to the No-Build or Baseline/TSM alternatives.

- Alternative 3 (Truxel LRT) provides transit travel timesavings of 33 to 43 percent, for both walk and drive access passengers.

TABLE 7.1-1
YEAR 2025 AVERAGE TRANSIT TRAVEL TIMES

	North Natomas to Downtown Sacramento				South Natomas to Downtown Sacramento			
Alternative	Walk Access	Change from Baseline	Drive Access	Change from Baseline	Walk Access	Change from Baseline	Drive Access	Change from Baseline
1. No-Build	57	n/a	n/a	n/a	43	n/a	38	n/a
2. Baseline/TSM	54	n/a	48	n/a	40	n/a	37	n/a
3. Truxel LRT	31	- 43%	28	- 42%	27	- 33%	24	- 35%
3A. Truxel LRT Starter	33	- 39%	30	- 38%	28	- 30%	25	- 32%
3B. Truxel LRT MOS	32	- 41%	31	- 35%	27	- 33%	24	- 35%
4. Truxel BRT	34	- 37%	33	- 31%	31	- 23%	27	- 27%
4A. Truxel BRT Starter	36	- 33%	35	- 27%	31	- 23%	27	- 27%
4B. Truxel BRT MOS	36	- 33%	35	- 27%	32	- 20%	28	- 24%
5. I-5/Truxel LRT	34	- 37%	29	- 40%	37	- 8%	33	- 11%
6. I-5/Truxel BRT	37	- 31%	34	- 29%	38	- 5%	35	- 5%
7. I-5 LRT	50	- 7%	31	- 35%	35	- 13%	32	- 14%
8. I-5 BRT	42	- 22%	35	- 27%	33	- 18%	31	- 16%

Source: DKS Associates, 2003

- Alternative 4 (Truxel BRT) provides slightly lower travel times savings than Alternative 3, with savings ranging from 20 to 37 percent.
- Alternatives 5 (I-5/Truxel LRT) and 6 (I-5/Truxel BRT) both provide less timesavings than Alternatives 3 and 4 for North Natomas, and significantly less timesavings for South Natomas.
- Alternatives 7 and 8 (I-5 LRT and BRT) provide the least timesavings for both North and South Natomas.

7.1.1.2 Changes to Transit Ridership

The differences in ridership among the alignments under consideration are due in large measure to the proximity of residents and jobs to the logical station locations for each alignment. Figure 7.1-1 illustrates one-half mile radius "sheds" around station locations. Table 7.1-2 provides an accounting of the Year 2000, Year 2025, and build-out households and employment within station sheds. Build-out refers to the number of households and employment projected to be in place if the community and general plan estimates are fully achieved.

- The I-5 alignment includes 3,700 (approximately 20 percent) fewer households within ½-mile of stations than the Truxel alignment, based on Year 2025 projections or buildout of current plans.
- The I-5 alignment includes 1,600 more jobs (or two percent) within ½-mile of stations than the Truxel alignment based on Year 2025 projections; however, with buildout of current plans, the I-5 alignment would include 4,100 fewer jobs within one-half mile of stations.
- The I-5/Truxel alignment is very similar to the I-5 alignment in terms of numbers of households near stations. Because this alignment jogs west to serve the Venture Oaks/Gateway Oaks area in South Natomas, this alignment includes the highest number of jobs near stations (5,800 more than the Truxel alignment at buildout of current plans).

Transit ridership is typically quantified in two ways. "Transit boardings" is the most common measure. A transit boarding occurs whenever a passenger boards a transit vehicle in the course of making a trip. "Linked transit trips" are the other common measure of ridership. A linked trip includes all segments a passenger travels in getting from a trip origin to a trip destination. For example, a linked trip could include a walk from home to a transit station, a bus ride with a transfer to a second route, and a walk to the final destination. A single linked trip may require more than one transit boarding, if transfers are required.

Table 7.1-3 provides a tabulation of annual linked transit trips for the alternatives under consideration, broken out by area. The "Rest of Downtown Sacramento" includes all of Downtown Sacramento (bounded by the Capital City Freeway and the Sacramento and American Rivers), except for the portions within the DNA Corridor. The "Rest of the Region" includes the remainder of Sacramento County, Yolo County, plus Placer and El Dorado Counties.

- Alternative 3 provides the highest increase relative to the Baseline/TSM Alternative (38 percent), and Alternatives 7 and 8, the lowest (18 and 14 percent, respectively).
- Within the rest of downtown Sacramento, all of the alternatives provide modest increases in ridership, ranging from three to five percent. The Truxel BRT alternative provides the highest increase, because it provides significant additional bus service in Downtown.

FIGURE 7.1-1
ONE-HALF MILE RADII AROUND STATIONS

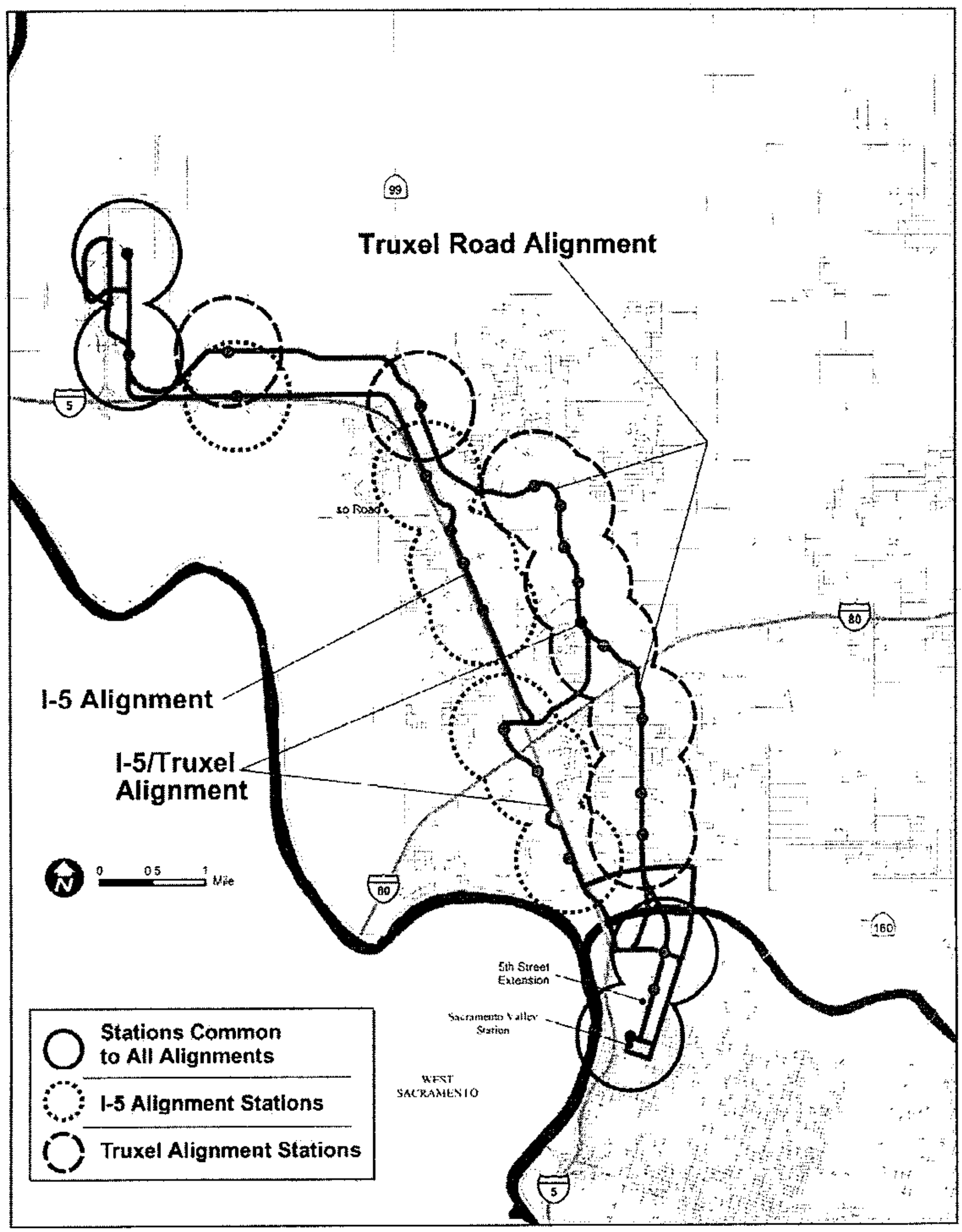


TABLE 7.1-2
COMPARISON OF HOUSEHOLDS AND EMPLOYMENT WITHIN 1/2 MILE OF STATIONS BY ALIGNMENT

	Households								
	Year 2000			Year 2025			Buildout		
Segment	Truxel	I-5	I-5/Truxel	Truxel	I-5	I-5/Truxel	Truxel	I-5	I-5/Truxel
DNA Alternative	Alts 3, 3A, 4, 4A	Alts 6,8	Alts 5,7	Alts 3, 3A, 4, 4A	Alts 6,8	Alts 5,7	Alts 3, 3A, 4, 4A	Alts 6,8	Alts 5,7
1: Railyards/Richards	1,300	1,300	1,300	4,500	4,500	4,500	6,700	6,700	6,700
2: South Natomas	6,100	3,100	3,100	6,200	3,100	3,100	6,500	3,100	3,100
3: North Natomas, E. of SR99-El Centro	300	300	300	6,100	5,400	6,100	6,400	6,000	6,400
4: W. of SR 99/70 to Airport	0	0	0	0	100	0	0	100	0
Total	7,700	4,700	4,700	16,800	13,100	13,700	19,600	15,900	16,200
Difference from Truxel		-39%	-39%		-22%	-18%		-19%	-17%
	Total Employment								
	Year 2000			Year 2025			Buildout		
Segment	Truxel	I-5	I-5/Truxel	Truxel	I-5	I-5/Truxel	Truxel	I-5	I-5/Truxel
DNA Alternative	Alts 3, 3A, 4, 4A	Alts 6,8	Alts 5,7	Alts 3, 3A, 4, 4A	Alts 6,8	Alts 5,7	Alts 3, 3A, 4, 4A	Alts 6,8	Alts 5,7
1: Railyards/Richards	28,200	28,400	28,200	52,800	53,100	52,800	69,300	69,500	69,300
2: South Natomas	2,100	6,400	6,400	2,200	7,400	7,400	2,600	8,400	8,400
3: North Natomas, E. of SR99-El Centro	1,800	100	1,800	12,600	9,000	12,600	25,900	21,500	25,900
4: W. of SR 99/70 to Airport	0	0	0	500	200	500	8,400	2,700	8,400
Total	32,100	34,900	36,400	68,100	69,700	73,300	106,200	102,100	112,000
Difference from Truxel		9%	13%		2%	8%		-4%	5%

Source: DKS Associates, 2003.

Table 7.1-4 provides a similar tabulation of average weekday LRT or BRT transit boardings, while Table 7.1-5 shows average systemwide weekday boardings. The results mirror the information provided for linked trips.

7.1.1.3 Changes in Automobile Travel Demand to Downtown Sacramento

To the extent that each Build alternative provides better transit service and higher ridership, auto travel to and from congested roadways to and within downtown Sacramento is reduced. Table 7.1-6 provides a tabulation of reductions in weekday peak period trips to downtown Sacramento, and reductions in parking demand, due to the increased transit patronage for each Build alternative.

- The maximum reduction in automobile travel demand would be provided by Alternative 3 (Truxel LRT), which provides approximately three times the reduction in auto travel demand to downtown Sacramento than the Baseline/TSM Alternative, eliminating approximately 4,700 average weekday auto person trips, and the need for over 2,000 parking spaces.
- Alternatives 3A, 3B, 4, 4A, 4B, and 5 provide slightly smaller reductions than Alternative 3.
- Alternatives 6 through 8 provide significantly less benefit than Alternative 3.

7.1.1.4 Transit Service to the Sacramento International Airport

Air passenger travel demand at the airport has increased strongly over the last decade, and future increases are projected. The airport currently serves over eight million passengers per year, and is expected to serve nearly double that number by the Year 2020. Approximately two-thirds of these passengers have origins or destinations within the greater RT service area, including those portions of Yolo, Placer and El Dorado Counties within reasonable drive distance of an RT route. The alternatives under consideration would provide a wide range of transit service to the airport. Table 7.1-7 provides a summary of the alternatives.

The No-Build and Baseline/TSM Alternatives are similar, in that they provide conventional bus service to the airport with two routes: one which operates "point-to-point" from downtown Sacramento to the airport via I-5 with no intermediate stops, and a "local" route operating from

TABLE 7.1-3
YEAR 2025 ANNUAL SYSTEMWIDE LINKED TRANSIT TRIPS (THOUSANDS)

Alternative	DNA Corridor	Increase From Baseline	Rest of Downtown	Increase From Baseline	Rest of Region	Increase From Baseline
1. No-Build	2,235	n/a	15,960	n/a	25,616	n/a
2. Baseline/TSM	2,951	n/a	16,413	n/a	25,811	n/a
3. Truxel LRT	4,079	+ 38%	17,109	+ 4%	26,323	+ 2%
3A. Truxel LRT Starter	4,002	+ 36%	17,056	+ 4%	26,294	+ 2%
3B. Truxel LRT MOS	3,789	+ 28%	17,023	+ 4%	26,187	+ 1%
4. Truxel BRT	3,653	+ 24%	17,269	+ 5%	26,128	+ 1%
4A. Truxel BRT Starter	3,588	+ 22%	17,233	+ 5%	26,104	+ 1%
4B. Truxel BRT MOS	3,514	+ 19%	17,198	+ 5%	26,081	+ 1%
5. I-5/Truxel LRT	3,928	+ 33%	17,050	+ 4%	26,288	+ 2%
6. I-5/Truxel BRT	3,588	+ 22%	16,913	+ 3%	26,075	+ 1%
7. I-5 LRT	3,484	+ 18%	16,875	+ 3%	26,196	+ 1%
8. I-5 BRT	3,363	+ 14%	16,854	+ 3%	26,039	+ 1%

Source: DKS Associates, October 2003.

downtown to the airport via local streets in South and North Natomas. For both alternatives, travel times are highly variable and dependent on traffic conditions.

The LRT alternatives differ in alignment through North and South Natomas, but all are extensions of the Folsom Line to the airport, and would operate at four trains per hour throughout the day. As such, they provide "one-seat-ride" service for anyone within walk access of LRT, or within easy "drop off" access to LRT. This "one-seat-ride" service is critical, because air passengers respond negatively to off-airport transfers. Because this service operates on its own guideway, travel times will be very reliable.

Service to the airport for the BRT alternatives is provided by one fixed route at four buses per hour, which operates generally on guideway or exclusive lanes through South and North Natomas. Routes serving the airport in the BRT alternatives generally are extended from Downtown Sacramento to either the Folsom Corridor or the South Sacramento Corridor, by merging with another planned bus routes. This provides some level of service continuity and "one-seat-ride" potential for the BRT alternatives.

For ridership estimating purposes, all of the alternatives were assumed to terminate just east of Terminal A.

Table 7.1-8 provides a tabulation of the annual transit passengers forecasted to use each alternative, along with the total passenger mode share for the airport. The mode share ranges from about a low of two percent for the No-Build to nine percent for Alternatives 3, 3A and 5. Because the Truxel LRT MOS alternative truncates LRT service at Natomas Town Center, with continuation bus service to the Airport, this alternative generated fewer transit passengers.

TABLE 7.1-4
YEAR 2025 AVERAGE WEEKDAY TRANSIT TRIPS

Alternative	DNA Corridor	Increase From Baseline	Rest of Downtown	Increase From Baseline	Rest of Region	Increase From Baseline
1. No-Build	7,550	n/a	53,920	n/a	86,540	n/a
2. Baseline/TSM	9,970	n/a	55,450	n/a	87,200	n/a
3. Truxel LRT	13,780	+ 38%	57,800	+ 4%	88,930	+ 2%
3A. Truxel LRT Starter	13,520	+ 36%	57,620	+ 4%	88,830	+ 2%
3B. Truxel LRT MOS	12,800	+ 28%	57,510	+ 4%	88,470	+ 1%
4. Truxel BRT	12,340	+ 24%	58,340	+ 5%	88,270	+ 1%
4A. Truxel BRT Starter	12,120	+ 22%	58,220	+ 5%	88,190	+ 1%
4B. Truxel BRT MOS	11,870	+ 19%	58,100	+ 5%	88,110	+ 1%
5. I-5/Truxel LRT	13,270	+ 33%	57,600	+ 4%	88,810	+ 2%
6. I-5/Truxel BRT	12,120	+ 22%	57,140	+ 3%	88,090	+ 1%
7. I-5 LRT	11,770	+ 18%	57,010	+ 3%	88,500	+ 1%
8. I-5 BRT	11,360	+ 14%	56,940	+ 3%	87,970	+ 1%

Source: DKS Associates, October 2003

TABLE 7.1-5
YEAR 2025 AVERAGE SYSTEMWIDE WEEKDAY TRANSIT BOARDINGS

Alternative	DNA Corridor	Increase From Baseline	Rest of Downtown	Increase From Baseline	Rest of Region	Increase From Baseline
1. No-Build	10,810	n/a	76,950	n/a	139,220	n/a
2. Baseline/TSM	14,730	n/a	82,290	n/a	143,440	n/a
3. Truxel LRT	23,400	59%	81,400	-1%	143,660	0%
3A. Truxel LRT Starter	22,650	54%	81,200	-1%	142,090	-1%
3B. Truxel LRT MOS	21,120	43%	81,170	-1%	141,450	-1%
4. Truxel BRT	16,710	13%	85,590	4%	140,930	-2%
4A. Truxel BRT Starter	16,340	11%	85,210	4%	140,940	-2%
4B. Truxel BRT MOS	16,050	9%	85,130	3%	140,810	-2%
5. I-5/Truxel LRT	21,700	47%	81,090	-1%	142,000	-1%
6. I-5/Truxel BRT	15,550	6%	78,410	-5%	143,710	0%
7. I-5 LRT	17,170	17%	80,330	-2%	142,390	-1%
8. I-5 BRT	15,080	2%	78,780	-4%	143,770	0%

Source: DKS Associates, October 2003

TABLE 7.1-6
CHANGE IN YEAR 2025 AUTO TRAVEL TO DOWNTOWN SACRAMENTO

Alternative	Reduced Weekday Peak Period Auto Person Trips	Reduced Weekday Parking Demand
1. No-Build	0	0
2. Baseline/TSM	-1,600	-700
3. Truxel LRT	-4,700	-2,200
3A. Truxel LRT Starter	-4,500	-2,000
3B. Truxel LRT MOS	-4,500	-2,000
4 Truxel BRT	-4,300	-1,900
4A. Truxel BRT Starter	-4,100	-1,800
4B. Truxel BRT MOS	-4,000	-1,700
5. I-5/Truxel LRT	-4,300	-1,900
6. I-5/Truxel BRT	-3,900	-1,700
7. I-5 LRT	-3,400	-1,500
8. I-5 BRT	-3,300	-1,400

Source: DKS Associates, 2003.

TABLE 7.1-7
YEAR 2025 TRANSIT LINE HAUL TIME AND FREQUENCY, DOWNTOWN TO AIRPORT

Alternative	Line Haul Travel Time (In Minutes)	Frequency (Trains/Buses Per Hour)
1. No-Build	30-50	2 to 4
2. Baseline/TSM	30-50	2 to 4
3. Truxel LRT	28	4
3A. Truxel LRT Starter	30	4
3B. Truxel LRT MOS	23-45	4
4. Truxel BRT	29	4
4A. Truxel BRT Starter	30	4
4B. Truxel BRT MOS	35	4
5. I-5/Truxel LRT	26	4
6. I-5/Truxel BRT	30	4
7. I-5 LRT	22	4
8. I-5 BRT	28	4

Source: DKS Associates, 2003

TABLE 7.1-8
YEAR 2025 AVERAGE DAILY AIR PASSENGER TRIPS BY TRANSIT

Alternative	Number of Trips	Air Passenger Transit Share
1. No-Build	1,050	2%
2. Baseline/TSM	1,800	4%
3. Truxel LRT	3,820	9%
3A. Truxel LRT Starter	3,700	8%
3B. Truxel LRT MOS	2,520	6%
4. Truxel BRT	2,800	6%
4A. Truxel BRT Starter	2,710	6%
4B. Truxel BRT MOS	2,430	6%
5. I-5/Truxel LRT	3,900	9%
6. I-5/Truxel BRT	2,440	6%
7. I-5 LRT	3,750	9%
8. I-5 BRT	2,780	6%

Source: DKS Associates, 2003.

7.1.2 Street and Highway Impacts

This section reviews the impacts of the alternatives on the traffic operations of freeways, arterials and intersections in the DNA Corridor. The primary indicator of how the alternatives would impact traffic operations is the expected change they would cause on the "level of service" of major intersections in the study area.

Level of service (LOS) describes roadway-operating conditions. LOS is a qualitative measure of the effect of a number of factors, including speed and travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs. LOS is designated "A" through "F" (best to worst), and covers the entire range of traffic operations that might occur. Levels of service "A" through "E" generally represent traffic volumes at less than roadway capacity, while LOS "F" represents over-capacity and/or forced-flow conditions.

The City of Sacramento utilizes a LOS "C" goal for roadway operating conditions. Because of the constraints of existing development in the City and other environmental concerns, this goal cannot always be met. Sacramento County has a LOS "E" goal for its roadway system.

Impacts of Alternative 1: No-Build

The roadway improvements in the 2025 Metropolitan Transportation Plan (MTP) are significant for this corridor and include new carpool lanes on I-80 and I-5, various new interchanges or interchange improvements, and local roadway improvements. Even with programmed roadway improvements, future traffic conditions in the DNA Corridor are expected to deteriorate.

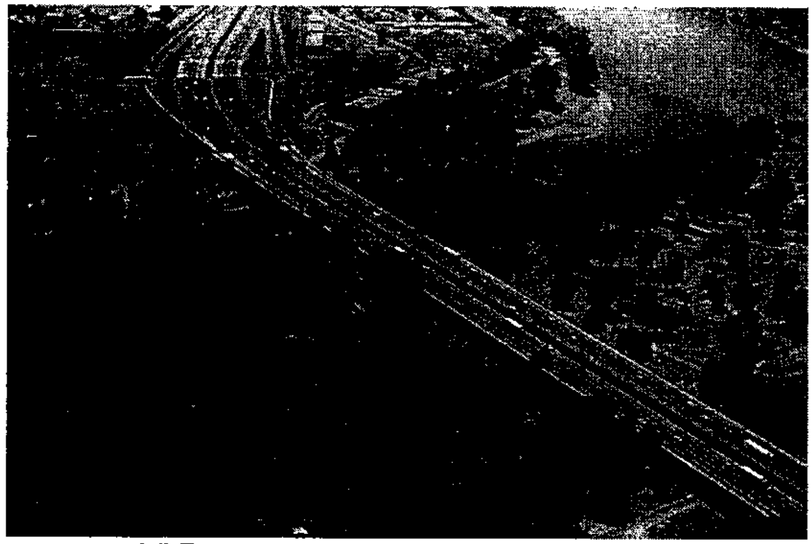
Traffic volumes and levels of service on study area freeways under existing and Alternative 1: No-Build conditions are provided in Chapter 4, Table 4.1-3. Traffic volumes along the segments of I-5 between the Airport and Downtown are expected to increase by 40 to 100 percent by 2025. In spite of capacity improvements in the 2025 MTP (particularly the addition of HOV lanes on I-5 between the airport and downtown), the mixed-flow lanes on I-5 south of Interstate 80 will operate at LOS F for several hours during both the morning and evening peak commute periods under the No-Build Alternative.

Projected traffic volume increases between 2000 and 2025 on other roadways in the study area vary greatly. Daily volumes are projected to increase by more than 50 percent under the No-Build on several important study area roadways including:

- Truxel Road
    - Garden Highway to San Juan volumes increase from 50 to 60 percent
    - I-80 to Gateway Park increase by 80 percent
    - Gateway Park to Elkhorn volumes increase from 110 to 270 percent
- Northgate Boulevard
    - San Juan to I-80 volumes increase by 50 percent
    - National to Del Paso volumes increase by 100 percent
- Del Paso Road
    - El Centro to Truxel volumes increase from 380 to 980 percent
    - Truxel to Northgate volumes increase by 80 to 220 percent
- Arena/Market - from Commerce to Gateway volumes increase from 290 to 900 percent

Traffic operations on the local arterial and collector roadway system are primarily dictated by the capacity of its major intersections. Level of service was evaluated during the a.m. and p.m. peak hours at over 60 existing and future intersections in the DNA Corridor study area. Signalized and stop sign controlled intersection analyses were conducted using methodologies outlined in the Transportation Research Board's Special Report 209, Highway Capacity Manual, 2000. These methods calculate an average delay per vehicle at an intersection, and assign a LOS designation based on the delay.

Table 7.1-9 summarizes a.m. and p.m. peak-hour LOS at the key intersections under existing and year 2025 No-Build conditions. All of the key intersections currently meet the City's target LOS "C" goal with the exception of the 7th Street/I Street intersection in the p.m. peak hour. The analysis indicates that levels of service will degrade at many of intersections in the study area by 2025. At seven study area intersections, levels of service will degrade to LOS D or E conditions and thus not meet the level of service policies in the City of Sacramento General Plan.



I-5 Freeway Crossing the American River

TABLE 7.1-9
INTERSECTION LEVELS OF SERVICE:
EXISTING AND YEAR 2025 ALTERNATIVE 1: NO-BUILD

Intersection	AM Peak Hour				PM Peak Hour			
	Existing		2025 No-Build		Existing		2025 No-Build	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
I-5 SB Off Ramp & Richards	12.9	B	12.9	B	14.8	B	20.8	C
I-5 NB On Ramp & Richards	13.5	B	11.3	B	16.4	B	17.8	B
N. 5th Street & Richards	4.5	A	17.3	B	4.2	A	22.6	C
N. 7th St & Richards	9.2	A	18.6	B	13.1	B	32.0	C
N. 5th St & N. B St	-	-	7.9	A	-	-	8.4	A
N. 7th St & N. B St	9.1	A	14.7	B	11.5	B	23.0	C
N. 6th St & Gateway	-	-	19.1	B	-	-	17.4	B
N. 7th St & Gateway	-	-	22.1	C	-	-	31.1	C
6th St & G St	-	-	22.1	C	-	-	29.4	C
7th St & G St	11.0	B	13.6	B	12.6	B	39.7	D

TABLE 7.1-9
INTERSECTION LEVELS OF SERVICE:
EXISTING AND YEAR 2025 ALTERNATIVE 1: NO-BUILD (CONTINUED)

Intersection	AM Peak Hour				PM Peak Hour			
	Existing		2025 No-Build		Existing		2025 No-Build	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
6th St & H St	-	-	64.8	E	-	-	53.7	D
7th St & H St	14.6	B	47.9	D	11.1	B	56.9	E
7th St & I St	11.1	B	22.2	C	38.3	D	52.1	D
5th St & G St	-	-	18.7	B	-	-	23.9	C
5th St & H St	-	-	12.5	B	-	-	14.3	B
8th St & G St	-	-	8.6	A	-	-	18.2	B
8th St & H St	10.3	B	13.5	B	-	-	13.2	B
I-5 SB On Ramp & Bannon	-	-	0.6	A	-	-	0.8	A
I-5 NB Off Ramp & Bannon	-	-	13.3	B	-	-	10.7	B
N. 5th St & Bannon	-	-	15.7	B	-	-	21.7	C
N. 7th St & Bannon	-	-	14.6	B	-	-	13.1	B
Truxel & Garden Hwy	22.4	C	26.7	C	24.5	C	68.7	E
Truxel & El Camino	26.6	C	27 4	C	29.6	C	33.7	C
Truxel & Pebblewood Dr	23.8	C	12.5	B	15.6	B	6.8	A
Truxel & San Juan	28.5	C	33.4	C	26.2	C	31.0	C
Truxel & I-80 East Ramp	10.6	B	11.0	B	10.3	B	11.9	B
Truxel & I-80 West Ramp	8.6	A	6.5	A	9.9	A	7.2	A
Truxel & Gateway Park	16.8	B	16.2	B	25.7	C	22.4	C
Truxel & Natomas Crossing Dr	17.6	B	26.8	C	19.0	B	26.9	C
Truxel & Arena	11 1	B	25.9	C	20.6	C	32.3	C
Truxel & Del Paso	31 2	C	53.4	D	30.6	C	37.6	D
National Dr & N Market Blvd	14.5	B	18.2	B	10.7	B/E	17.4	B
Northgate & San Juan	16.9	B	21.8	C	17 4	B	24.6	C
Northgate & I-80 East Ramp	13.1	B	15.5	B	9.8	A	13.0	B
Northgate & I-80 West Ramp	9.0	A	9.6	A	7.5	A	12.6	B
Gateway Park & Arena	17.9	B	22.6	C	16.8	B	30.1	C
Gateway Park & Del Paso	6.8	C	28.8	C	2.1	B	37.2	D
National Dr & Del Paso	1.2	A	8.6	A	1.9	A/B	13.7	B
Northgate & Del Paso1	26.3	C	69.2	E	27.8	C	59.9	E
Northgate & N Market	13.8	B	28.9	C	14.3	B	14.6	B

TABLE 7.1-9
INTERSECTION LEVELS OF SERVICE:
EXISTING AND YEAR 2025 ALTERNATIVE 1: NO-BUILD (CONTINUED)

Intersection	AM Peak Hour				PM Peak Hour			
	Existing		2025 No-Build		Existing		2025 No-Build	
	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS	Delay (sec)	LOS
Rosin & San Juan	11.4	B	14.6	B	3.7	A	8.9	A
Commerce Pkwy & Arena Blvd1	0.0	A	27.1	C	5.7	A	20.3	C
Commerce Pkwy & Del Paso Rd1	0.0	B	22.6	C	0.2	B	26.2	C
El Centro Rd & San Juan Rd	18.7	C	20.3	C	12.5	B	19.0	B
El Centro Rd & Arena Blvd1	7.7	C	19.5	B	4.7	B	19.5	B
I-5 NB ramps & Garden Hwy	22.7	C	30.2	C	24.1	C	29.1	C
I -5 SB Ramps & Garden Hwy	23.1	C	58.2	E	19.4	B	31.5	C
I-5 NB Ramp & El Camino	5.5	A	7.8	A	6.4	A	6.7	A
I-5 SB Ramps & El Camino	NA	NA	NA	NA	NA	NA	NA	NA
I-5 NB Ramp & Del Paso Blvd1	2.9	C	8.6	A	1.8	B	7.1	A
I-5 SB Ramp & Del Paso Blvd1	8.8	C	14.1	B	5.1	B	12.6	B
Elkhorn Blvd & SR99 SB Ramps1	3.3	A	11.8	B	2.5	A/A	11.6	B
Elkhorn Blvd & SR99 SB Ramps1	2.6	A	21.4	C	8.6	A/B	16.7	B
I-5 N Ramp & Airport Blvd1	0.2	A	1.0	A	0.1	A/B	1.0	A
I-5 S Ramp & Airport Blvd1	6.4	A	11.0	B	5.0	A/A	12.4	B
I-5 North Ramp & Arena Blvd	-	-	8.2	A	-	-	7.4	A
I-5 North Ramp & Arena Blvd	-	-	11.8	B	-	-	12.5	B
Commerce Pkwy & Natomas Crossing	-	-	17.7	B	-	-	18.8	B
I-5 & NB Metro Air Parkway Ramps	-	-	10.1	B	-	-	12.2	B
I-5 & SB Metro Air Parkway Ramps	-	-	11.2	B	-	-	10.7	B
Elkhorn Blvd & Metro Air Parkway	-	-	14.4	B	-	-	15.0	B
Elkhorn Blvd (relocated) & Power Line Rd	-	-	15.9	B	-	-	11.1	B
Elkhorn Blvd & Lone Tree	-	-	2.5	A	-	-	2.3	A

1 Average Intersection LOS reported for existing unsignalized intersections.

"-" future intersection

Intersections operating at LOS D or worse are shaded

Source: DKS Associates, October 2003.

Impacts of Alternative 2: Baseline/TSM

The proposed transit improvements under Alternative 2 would encourage shifts from auto to transit and are projected to result in some lessening in traffic on corridor roadways. The projected shift, however, would not be sufficient to reduce roadway congestion substantially.

Traffic volumes and LOS on study area freeways in 2025 the Baseline/TSM would be almost identical to the No-Build Alternative.

Estimated daily traffic volumes on study area arterials in this alternative would reduce traffic volumes on some roadways and increase volumes on others compared to the No-Build but these changes would only be marginal. Traffic reductions in this alternative would result from the attraction of some additional transit riders compared to Alternative 1. Traffic increases on particular arterials under this scenario would result from additional traffic in the vicinities of park-and-ride lots. The Baseline/TSM is not projected to have any significant impacts at study area intersections.

Impacts of Alternatives 3 through 8

Alternatives 3 through 8 would reduce traffic volumes on some roadways in the study area and increase volumes on others, compared to the No-Build, but only marginally. The decrease of traffic volumes would be related to an increase in transit ridership, while an increase of volumes would be due to increased traffic near park-and-ride locations and new travel patterns to those locations.

For Alternative 6, direct access ramps proposed to/from I-5 for autos and buses to access the San Juan station could have impacts to merging maneuvers on I-5.

Table 7.1-10 presents the intersections impacted by each alternative. The thresholds the City of Sacramento uses for evaluating impacts on intersections are different from the thresholds by Sacramento County. The City considers intersections impacted by a project if it causes the LOS during the AM or PM peak hour to degrade from C or better conditions to LOS D or worse. The City also considers an intersection impacted if the LOS without the study is D or worse and if the study causes the average delay per vehicle during the AM or PM peak hour to increase by five seconds or more. Sacramento County considers intersections impacted if the project causes the LOS to degrade from E or better to LOS F, or if the LOS without the project is already F and the project causes the average peak hour delay to increase by 5 seconds or more.

In addition to intersection impacts related to increased volumes at or near park-and-ride lots, some intersection impacts are related to increases in delay due to new at-grade rail crossings. The traffic analysis for the LRT alternatives includes an estimate of the increase in delay at intersections related to a loss of the green time for autos at traffic signals when signals are pre-empted. This loss of green signal time and increase in delay could be enough at some intersections to change their LOS.

The grey-shaded cells in Table 7.1-9 represent intersections where significant LOS impacts may occur, but mitigations may be feasible. The black-shaded cells represent intersections where feasible mitigations have not been identified and significant and unavoidable LOS impacts may occur. Alternatives 3 through 8 would have a significant impact at some intersections in the City of Sacramento but would not have significant impacts on intersections in the unincorporated portions of Sacramento County.

Alternative 3, 3A and 3B (Truxel LRT) would have the greatest number of intersection impacts, but the impacts are highly dependent on the design option evaluated. Many of the design options were defined specifically to avoid anticipated impacts on traffic operations. Some design options avoid crossing key traffic movements at an intersection or involve a grade-separation. Mitigation measures that appear to be feasible have been identified at each impacted intersection under the LRT alternatives. These measures typically involve widening of one or more approaches to an intersection to accommodate additional turning or through lanes.

The City of Sacramento has expressed the most concern about the impacts of LRT on traffic operations in two areas: 7th Street through the Railyards area and Truxel Road from San Juan Road to Arena Boulevard. Several design options have been identified in each of these areas that would mitigate some impacts without additional widening of intersections. Traffic simulation models are being developed for both of these areas to test the various design options and better demonstrate their impacts and/or benefits on traffic operations.

Alternatives 4, 6 and 7 that involve BRT would substantially increase the number of buses on a number of streets in downtown Sacramento near the Sacramento Valley Station (Amtrak). These alternatives would significantly impact the intersections on H Street with 6th Street and 7th Street. Feasible measures to mitigate those impacts have not been identified. Outside of downtown and the Richards/Railyards area, the BRT alternatives would have a grade-separation at major intersections and thus would have limited impacts.

Arco Arena

TABLE 7.1-10
IMPACTED INTERSECTIONS BY ALTERNATIVE[1]

Alternative	Pk Hr	2025 Level of Service at Impacted Intersections[2, 3]											
		7th St & H St	6th St & H St	7th St & G St	6th St & G St	7th St & N. B St	7th St & Richards	5th & Richards	Truxel & Garden Highway	Truxel & El Camino	Truxel & San Juan	Truxel & Gateway Park	Truxel & Del Paso
1: No-Build	AM	D	E	B	C	B	B	B	C	C	C	B	D
	PM	E	D	D	C	B	C	C	E	C	C	C	C
2: Baseline/TSM	AM	D	E	B	C	B	B	B	C	C	C	B	D
	PM	E	D	D	C	B	C	C	E	C	C	C	C
3: Truxel LRT Full Build	AM	D	E	B	C-D	C	C	C	C-D	C	C-E	C	E-F
	PM	E	D	C-E	C-D	D	D	C-D	E-F	D	D-E	C-D	D
3A: Truxel LRT Starter Line	AM	D	E	B	C-D	C	C	C	C-D	C	C-E	C	E-F
	PM	E	D	C-E	C-D	D	D	C-D	E-F	D	D-E	C-D	D
3B: Truxel LRT MOS	AM	D	E	B	C-D	C	C	C	C-D	C	C-E	C	E-F
	PM	E	D	C-E	C-D	D	D	C-D	E-F	D	D-E	C-D	D
4: Truxel BRT Full Build	AM	**D-E**	**E**	B	C	B	B	B	C	D	C	B	E-F
	PM	**E**	**E**	D	C	B	D	C	E	C	C	C	C-D
4A: Truxel BRT Starter Line	AM	**D-E**	**E**	B	C	B	B	B	C	D	C	B	E-F
	PM	**E**	**E**	D	C	B	D	C	E	C	C	C	C-D
4B: Truxel BRT MOS	AM	**D-E**	**E**	B	C	B	B	B	C	D	C	B	E-F
	PM	**E**	**E**	D	C	B	D	C	E	C	C	C	C-D
5: I-5/Truxel LRT	AM	D	E	B	C-D	C	C	C	C	C	C	B	D-E
	PM	E	D	C-E	C-D	D	D	C-D	E	C	C	C	D
6: I-5/Truxel BRT	AM	**D-E**	**E**	B	C	B	B	B	C	C	C	B	E
	PM	**E**	**E**	D	C	B	D	C	E	C	C	C	C
7 I-5 LRT	AM	D	E	B	C-D	C	C	C	C	C	C	B	D
	PM	E	D	C-E	C-D	D	D	C-D	E	C	C	C	C
8: I-5 BRT	AM	**D-E**	**E**	B	C	B	B	B	C	C	C	B	D
	PM	**E**	**E**	D	C	B	D	C	E	C	C	C	C

[1] Table includes 12 intersections where one or more of the alternatives would potentially cause a significant level of service (LOS) impact compared to the No-Build Alternative. Significant LOS impacts are not anticipated at the remaining 50 study area intersections under any of the study alternatives.

[2] Range in LOS reflects differences between design options.

[3] Grey-shaded cells represent intersections where significant LOS impacts may occur, but mitigations may be feasible; Bold text in cells represent intersections where significant and unavoidable LOS impacts may occur.

Source: DKS Associates, December 2003.

7.1.3 Parking Impacts

At selected stations for each alternative under consideration, park-and-ride lots would be provided. (See Section 5.4 for a more detailed description.) The assumed location and size of the lots for each alternative varies, based on the availability of suitable lot locations, and on the forecasted demand for park-and-ride access. Table 7.1-11 provides the approximate numbers of park-and-ride lot spaces assumed to be available in each line segment.

Because transit improvements under either the Baseline/TSM Alternative or any of the build (Alternatives 3-8) include sufficient parking to accommodate forecasted demands, and because the overall demand for parking in Downtown Sacramento would be reduced, the overall impact on parking of the alternatives would be positive.

TABLE 7.1-11
YEAR 2025 PARK-AND-RIDE SPACES BY ALTERNATIVE ALIGNMENT AND SEGMENT

Alternative		Baseline/	Truxel Alignment		Truxel/I-5 Alignment		I-5 Alignment	
Segment	No Build	TSM	Low	High	Low	High	Low	High
1: Railyards/Richards	0	0	0	0	0	0	0	0
2: South Natomas	0	100	650	720	40	40	40	40
3: North Natomas, East of SR 99-El Centro	0	600	1,080	1,350	1,620	1,840	1,420	1,460
4: West of SR 99/70 to the Airport	0	0	0	0	0	0	0	0
Total	0	700	1,730	2,070	1,660	1,880	1,460	1,500

Source: DKS Associates, October 2003

The No-Build Alternative would not add park-and-ride spaces for transit services or displace any parking in the DNA Corridor.

Because transit improvements under either Alternative 2, Baseline/TSM or the LRT alternatives would include park-and-ride lots with adequate spaces to match demand, and because these alternatives would reduce parking demand in downtown Sacramento, there is expected to be a beneficial impact overall on parking supply for all alternatives compared to the No-Build.

However, each alternative also includes proposed park-and-ride lots in close proximity to existing commercial uses with surface parking or on-street parking. There is a significant chance that parking demand may exceed the available supply at some locations, with spill-over of parking into areas outside the park-and-ride lot. Tables 7.1-12 through 7.1-14 identify the primary and optional location of park-and-ride lots for the corridor, and how land would be acquired for the facilities. Residential permit parking program or an aggressive parking management plan would be needed to address these areas, including a program for not allowing 24-hour parking so as not to compete with Airport parking.

TABLE 7.1-12
PARK AND RIDE LOCATIONS FOR THE TRUXEL ALIGNMENT ALTERNATIVES (ALTERNATIVES 3, 3A, 3B, 4, 4A, 4B)

	Primary Park and Ride Lot Location	Optional Sites	Method of Acquisition
W. El Camino/Truxel	City Park Site	Commercial Office Site at Millcreek Drive Shopping Center at the Southwest Corner of West El Camino Avenue and Truxel Road	Land acquired from private owner
Pebblestone/Truxel	Community Center Site	Not Available	Land acquired from City of Sacramento
San Juan/Truxel	Fong Ranch Properties west of Truxel Road and North of Vallarta Court	Not Available	Land acquired from private owner
Gateway Park/Truxel	Northeast corner of Gateway Park Boulevard and Truxel Road	Fong Ranch Site Natomas Marketplace	Land acquired from private owner
ARCO Arena/Truxel	ARCO Arena Parking Lots just west of Truxel Road	Not Available	Joint-use agreement with City of Sacramento/ARCO Arena management
East Town Center	Park Place Shopping Center Parking Lot	Not Available	To be determined: Potential condition of development with Park Place Shopping Center or joint-use agreement.
North Natomas Village Center	Future Commercial Center at East Commerce Parkway and Club Center Drive	Not Available	To be determined: Potential Irrevocable Offer of Dedication or joint-use agreement.

TABLE 7.1-13
PARK AND RIDE LOCATIONS FOR THE I-5/TRUXEL ALIGNMENT ALTERNATIVES (ALTERNATIVES 5,6)

	Primary Park and Ride Lot Location	Optional Sites	Method of Acquisition
Gateway Oaks	Parking facility located adjacent on existing office complex parking	Not Available	Land acquired from private owner
Venture Oaks	Parking facility located adjacent on existing office complex parking	Not Available	Land acquired from private owner
San Juan Road	Private Property adjacent to I-5/I-80 interchange	Not Available	Land acquired from private owner

TABLE 7.1-13
PARK AND RIDE LOCATIONS FOR THE I-5/TRUXEL ALIGNMENT ALTERNATIVES
(ALTERNATIVES 5,6) (CONTINUED)

	Primary Park and Ride Lot Location	Optional Sites	Method of Acquisition
Natomas Crossing Drive	Natomas Marketplace	Not Available	None: Joint-use agreement with Natomas Marketplace management
ARCO Arena/Truxel	ARCO Arena Parking Lots just west of Truxel Road	Not Available	Joint-use agreement with City of Sacramento/ARCO Arena management
East Town Center	Park Place Shopping Center Parking Lot	Not Available	To be determined: Potential condition of development with Park Place Shopping Center or joint-use agreement.
North Natomas Village Center	Future Commercial Center at East Commerce Parkway and Club Center Drive	Not Available	To be determined: Potential Irrevocable Offer of Dedication or joint-use agreement.

TABLE 7.1-14
PARK AND RIDE LOCATIONS FOR THE I-5 ALIGNMENT ALTERNATIVES
(ALTERNATIVES 7,8)

	Primary Park and Ride Lot Location	Optional Sites	Method of Acquisition
Gateway Oaks	Parking facility located adjacent on existing office complex parking	Not Available	Land acquired from private owner
Venture Oaks	Parking facility located adjacent on existing office complex parking	Not Available	Land acquired from private owner
San Juan Road	Private Property adjacent to I-5/I-80 interchange	Not Available	Land acquired from private owner
Natomas Crossing Drive	Adjacent to future extension of Natomas Crossing Drive and I-5	Not Available	Land acquired from private owner
ARCO Arena/Truxel	Adjacent to the future extension of Snowy Egret Way and I-5	Not Available	Land acquired from private owner
Del Paso Road (Alternative 8, I-5 BRT Only)	Adjacent to Del Paso Road/I-5 Interchange	Not Available	Land acquired from private owner and Caltrans

7.1.4 Airport Transit Passenger Ground Access and Associated Ridership Impacts

A key factor influencing transit ridership in the DNA study area is determined by the access and egress options at the airport. Five airport station options were considered: 1) a remote location near the proposed rental return area; 2) a remote location south of the proposed rental return area at a future development site (former oxidation ponds); 3) a station at the east end of terminal A; 4) a combined station between the two existing terminals with walk access; and 5) two stations, one in each terminal.

For purposes of the analysis, the LRT Alternatives 3, 3A, 5 and 7 were assumed to use the combined station between the two terminals and the BRT Alternatives 4, 4A, 6 and 8 were assumed to use the two-station option. Since BRT is implemented with conventional busses, a stop at each terminal was assumed.

Ridership for the remote car rental location was forecast to be the lowest for all of the alternatives. The combined station between terminals provided for 15 percent to 18 percent lower ridership than the two-station option; which provided for the highest forecast ridership of the options evaluated. The two-station option provided for 130 percent to 150 percent increase in ridership over the remote station option.

In conclusion, the access/egress options at the airport were determined to be more significant to ridership levels than either the alignment location or technology.

7.2 Environmental Impacts

7.2.1 Environmental Evaluation of Alternatives

All of the build alternatives represent major construction projects, are from 7 to 14 miles in length and would disturb from 110 to 175 acres during construction. Construction easements were assumed to range from 50 feet to 200 feet. Under worst case conditions, the LRT build alternatives require a permanent 40-foot right-of-way, while the BRT could be designed to take a minimum of 28 feet. When comparing alternatives for the DNA study area, the analysis considered the consequences of alignment, mode/technology, and the design options. The findings suggest the following:

- The selection of alignment has a greater environmental impact than the choice of mode/technology (for the build alternatives)
- Discriminators between the LRT and BRT technologies are subtle
- Design options only represent significant discriminators at the American River Crossing, and on Truxel Road in the residential areas of South Natomas

The Truxel alignment has three alternatives for both modes, full-length build-out (Alternatives 3 and 4), Starter (Alternatives 3A and 4A) and Minimum Operable Segment (Alternatives 3B and 4B), offering varying service potential dependent on the length and amount of double track sections. With few exceptions, environmental impacts are generally relative to the increased levels of service, although most differences are slight.

7.2.1.1 Alignment Considerations

Table 7.2-1 on the following page provides a summary of the environmental effects of each of the three primary alignments by corridor segment.

TABLE 7.2-1
ENVIRONMENTAL IMPACTS BY SEGMENT

Segment	Truxel Alignment	I-5/Truxel Alignment	I-5 Alignment
Segment 1: **Downtown to American River**	• All would have similar disruptions to the downtown area during construction • All present the potential for business relocation • All would have visual effects on the historic Sacramento Valley Station (Amtrak) • All would require about the same amount of utility relocation • All represent significant challenges for building a bridge across the American River • All would support redevelopment plans for the Railyard area		
Segment 2: **American River to I-80**	• Serves the largest number of minority and low-income populations • Designed with the least amount of aerial structure • Consistent with the City of Sacramento land use plans • Consistent with the County of Sacramento General Plan • Inconsistent with the American River Parkway Plan • Results in the greatest overall effect on neighborhoods • Greatest potential for relocations due to right-of-way (ROW) acquisition • Greatest potential for effects to minority and low-income populations • Greatest utility relocation requirement	• Designed with an extensive amount of aerial structure, resulting in more visual concerns • Less service to minority and low-income populations • Somewhat consistent with City of Sacramento approved land use plans • Somewhat consistent with the County of Sacramento General Plan • Result in no residential relocations • Inconsistent with the American River Parkway Plan	• Designed with an extensive amount of aerial structure, resulting in more visual concerns • Less service to minority and low-income populations • Inconsistent with City of Sacramento approved land use plans • Inconsistent with the County of Sacramento General Plan • Result in no residential relocations • Inconsistent with the American River Parkway Plan
Segment 3: **I-80 to Highway 99** **and** **Segment 4:** **Highway 99 to Airport**	• Have accessible construction with fewer impacts • Have the same environmental issues related to farmlands • Are most supportive of approved land use plans and goals to create transit oriented development (TOD) along the Truxel Road Alignment	• Have accessible construction with fewer impacts • Have the same environmental issues related to farmlands • Is partially supportive of approved land use plans and goals to create transit oriented development (TOD) along Truxel Road	• Also has accessible construction with few impacts • Is not consistent with approved land use plans • Parallels the interstate ROW and has fewer environmental issues in general

Source: CH2M Hill, October 2003

7.2.1.2 LRT and BRT Technologies Compared

As mentioned above, the differences in environmental effect between the LRT and BRT technologies are subtle. BRT alternatives have been designed to operate at comparable levels of service to the LRT.

Table 7.2-2 highlights the general differences among the environmental effects of the two technologies.

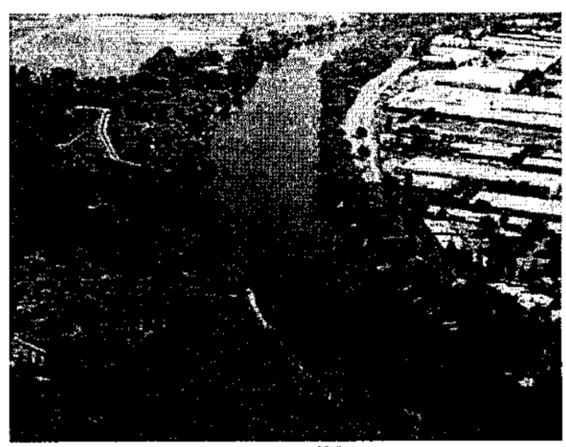
TABLE 7.2-2
ENVIRONMENTAL EFFECTS OF LRT AND BRT TECHNOLOGIES

LRT	BRT
Advantages • Better fulfills land use planning objectives • Higher capacity vehicles and the potential for multi-car consists can reduce the number of trips • Direct connection with Amtrak Folsom LRT line (no transfer required) • Low potential for community bifurcation • Offers Transit-Oriented Development (TOD) potential Disadvantages • Longer construction period • More potential to require business and residential relocations • More utility relocation • Visual impact of overhead wire (catenary) • Maintenance facility and sub-stations needed to support LRT mode	Advantages • Avoids business and residential relocations without diminishing service • Shorter construction period by approximately one year • Less utility relocation due to shallower excavation requirements • No visual impacts from overhead wire (catenary) • Lower cost maintenance facility • No sub-stations needed Disadvantages • Transfer required in CBD for riders traveling to and from Rancho Cordova or Folsom • Aerial structures and tunnels may cause bifurcation effects • Not identified in the General Plans • More vehicles needed for the same capacity as LRT • More aerial structure • Number of vehicles passing by create higher potential for noise and vibration impacts • Unproven potential investment for TOD • New mode of transit for RT (training, staffing, and parts supply impacts)

Source: CH2M Hill, October 2003

7.2.1.3 Environmental Differences Among the Range of Truxel Alternatives

There are relatively few differences between the Truxel, Starter Line and the Minimum Operable Segment Truxel alternatives, because all alternatives will serve the area with the most urban development, where the impacts are generally greatest. The primary differences are that Alternative 3 LRT and 4 BRT will be designed as a fully double-tracked guideway along the entire route from downtown to the airport (12.5 miles); the LRT Starter Line Alternative 3A extends the entire route with primarily single-track guideway except for passing locations; and Alternative 4A BRT is double-lane. Finally the LRT MOS Alternatives 3B will extend primarily in a single-track guideway from downtown to North Natomas Town Center station, a distance of 6.5 miles. BRT Alternative 4B would be double-lane.



American River

Differences among the Truxel LRT alternatives are highlighted in the following table:

TABLE 7.2-3
TRUXEL LRT ALTERNATIVES

Alternative 3: Truxel LRT	Alternative 3A:Starter Line	Alternative 3B:Minimum Operable Segment
• Highest potential for relocations effects • Affects 5 acres of prime farmlands • Safety issues: avoids several at-grade intersection crossings • May cause vibration impacts to one day care center • Noise effects would be less than significant after mitigation	• Few to no relocations • Affects 5 acres of prime farmlands • Safety issues: highest number of at-grade intersection crossings, mixed flow running • No noise impacts	• Few to no relocations • No impacts to farmlands • Safety issues: fewer at-grade intersection crossings due to length, mixed flow running • No noise impacts

Source: CH2M Hill, October 2003.

7.2.1.4 Effects of the Design Options

There are 28 LRT and 24 BRT design options which are compared against a "basic alignment." Design options are alignment permutations that in most cases do not represent major decision discriminators with regard to environmental effects. However, design options represent significant tradeoffs at the American River crossing

The I-5 east bridge option has less effect on the natural environment but has more effect on active park and recreational use. The Urrutia bridge option is intermediate (e.g., a moderate effect on the natural environment) of the other two.

The remaining design options provide operational tradeoffs for either the LRT or BRT technologies primarily with the intention of improving vehicle circulation but represent little difference in environmental effects.

7.2.2 Summary of the Most Significant Impacts

An evaluation of the environmental impacts during construction and operations with mitigation measures for the twelve alternatives was conducted. Table 7.2-4 presents an overview of which resources result in significant impacts. Appendix B provides more detailed information on the comparison of the environmental resources for the "basic" alternatives with no design options. However, with mitigation, avoidance design options infer that effects can be lessened through the choice of particular alternative design options. The environmental resource areas with less than significant impacts are not detailed further, as they do not help in differentiating between alternatives. They include:

- Air Quality
- Geology
- Utilities
- Energy
- Water Resources
- Health and Safety of Children
- Cumulative Impacts and growth inducing impacts.

TABLE 7.2-4
SUMMARY OF IMPACTS ASSUMING THE BASIC ALIGNMENT FOR EACH ALTERNATIVE

Resource	Alternative 1, No-Build	Alternative 2, Baseline/TSM	Alternative 3/3A/3B/3B, Truxel LRT— High/Low/MOS	Alternative 4/4A/4B Truxel BRT – High/Low/MOS	Alternative 5, I-5/Truxel LRT	Alternative 6, I-5/ Truxel BRT	Alternative 7, I-5 LRT	Alternative 8, I-5 LRT
Land Use	S	LSM	B	B	LSM	LSM	S	S
Community Impact	LS	LS	S	S	S	S	S	S
Socioeconomic and Fiscal	LS	LS	B	B	B	B	B	B
Property Acquisition	LS	LS	S	LS	LSM	LS	LSM	LS
Environmental Justice	LS	LS	Both B and S	Both B and S	LSM	LSM	LSM	LSM
Cultural Resources	S	LS	S	S	S	S	S	S
Parklands	S	LS	S	S	S	S	S	S
Public Safety and Security	LS	LS	LSM	LSM	LSM	LSM	LSM	LSM
Visual	LS	LS	S	S	S	S	S	S
Air Quality	LS	LS	LS	LS	LS	LS	LS	LS
Noise and Vibration	LSM/S	LSM/S	LSM	LSM	LSM	LSM	LSM	LSM
Biological Resources	LS	LS	S	S	S	S	S	S
Wildlife Habitat	LS	LS	S	S	S	S	S	S
Special Status Species	LS	LS	LSM	LSM	LSM	LSM	LSM	LSM
Geology	LS	LS	LS	LS	LS	LS	LS	LS
Farmland	LS	LS	LS	LS	LS	LS	LS	LS
Utilities	LS	LS	LSM	LS	LSM	LS	LSM	LS
Energy	LS	LS	LS	LS	LS	LS	LS	LS
Water Resources	LS	LS	LSM	LSM	LSM	LSM	LSM	LSM
Construction	LSM	LSM	S	S	S	S	S	S
Cumulative/Growth Inducing	LS	LS	LS	LS	LS	LS	LS	LS

S= Significant After Mitigation; LS = Less Than Significant; LSM = Less than Significant After Mitigation; B = Beneficial

Source: CH2M Hill, October 2003.

7.2.3 Summary of Environmentally Significant/Unavoidable Impacts and Insignificant Impacts

This section summarizes impacts and defines: (1) those impacts that cannot be mitigated to a less-than-significant level and (2) those impacts determined to be insignificant.

Impacts that cannot be mitigated to a less-than-significant level are described as significant and unavoidable impacts because they remain significant even with the implementation of feasible mitigation measures.

The significant and unavoidable impacts are as follows:

Land Use. The adoption of an alternative that is not consistent with local plans for a transit corridor along the Truxel alignment (e.g., City of Sacramento General Plan, North Natomas Community Plan, South Natomas Community Plan, American River Parkway Plan) would be a significant conflict with existing plans and policies. This impact would be significant and unavoidable under Alternative 1, No-Build as well as under the build alternatives along the I-5 alignment.

Relocation. Should a mix-flow design option or Alternatives 3A or 3B be built along Truxel Road, up to 7 homes and 7 businesses would need to be acquired for right-of-way purposes. This impact could be mitigated to a less-than-significant level.

Parkland. Impacts to active and passive park use in the American River Parkway, including Discovery Park, would be significant and unavoidable. Mitigation would be implemented to ensure continuing available use of the park areas. However, the disruption could not be mitigated to a less-than-significant level. The commitment of three to four acres of parkland for transit is significant and unavoidable.

Visual. Visual resource impacts would be significant and unavoidable along all alignments, primarily because of the removal of trees in the American River Parkway and the addition of LRT or BRT infrastructure including aerial structures and catenary. Mitigation is proposed, but the impacts would remain significant after mitigation.

Noise. Unmitigated noise impacts would be significant and unavoidable along the Truxel alignment (Alternatives 3, 3A, 3B and 4) because of the extensive residential uses in this area. These impacts could be mitigated to be less than significant with the use of substantial soundproofing.

Biological Resources. The loss of three to seven acres of mature riparian forest along the American River would be a significant impact under all alternatives and bridge options. Because of various factors, including the intact character of the existing habitat, the impact would remain significant after all feasible mitigation measures (e.g., compensation by restoring offsite habitat) are implemented.

Cultural Resources. The development of modern LRT or BRT facilities (e.g., fixed guideway, catenary) would be incompatible with the historical context of the Southern Pacific Depot (Sacramento Valley Station (Amtrak)) and the Alkali Flat Historic District, which would be a significant impact. Because the impact is associated with the infrastructure of the project itself, the only available mitigation would be the adoption of Alternative 1, No-Build or Alternative 2, Baseline/TSM.

The following impacts have been determined to be insignificant:

- Land use conflicts under the Alternatives 3, 3A, 3B, 4, 4A, and 4B (Truxel LRT or BRT) or Alternatives 5 and 6 (I-5/I-80/Truxel LRT or BRT).
- Impacts to public safety and security under all alternatives
- Air quality impacts under all alternatives
- Noise and Vibration impacts under Alternatives 5 and 6 (I-5/Truxel LRT or BRT) and Alternatives 7 and 8 (I-5 LRT or BRT) alternatives
- Impacts to special-status species under all alternatives
- Geology, soils, and seismic activity impacts under all alternatives
- Impacts to important farmlands
- Impacts to existing and planned utilities under all alternatives
- Energy impacts under all alternatives
- Impacts to urban drainage under all alternatives
- Impacts to floodplains under all alternatives
- Impacts to groundwater hydrology under all alternatives
- Impacts to surface and groundwater quality under all alternatives
- Cumulative impacts under all alternatives

7.3 Land Use Projections and Potential For Smart Growth

As described in Chapter 4, land use projections in the high growth areas of the Corridor have exceeded growth projections and are expected to nearly achieve their "build-out" numbers well before 2025. In order to assess the potential implications for selecting an appropriate transit alternative that will meet that expected demand, a special ridership estimate was made using SACOG's regional forecasting model, but with higher household and employment data that approximates what the "build-out" numbers might be. Below is a description of the growth potential, the "what if" ridership results using the "build-out" population and employment data, and how this might be considered in the assessment of a preferred alternative.

7.3.1 Potential for Smart Growth

The development of the DNA line and new transit stations between downtown Sacramento and the airport will create major opportunities for smart growth. The stations proposed will be an incentive for higher density mixed-use development that meets the smart growth goal. In particular, developers can take advantage of special zoning provisions to build higher density projects within the vicinity of stations. However, based on recent experience in US transit systems, rail transit improvements, and in particular, LRT improvements show significantly higher residential and employment densities and increases in ridership. There have been many studies that demonstrate that transit ridership is enhanced by carefully planned density within walking distance of stations. A recent technical paper published by the Transportation Research Board provides a summary of the literature indicating that neighborhood TOD will increase daily linked trips by a significant percentage. Examples in Sacramento indicated that by adding 10 percent population and employment to 15 small zones, each connected to a light rail station with a ¼-mile walk link, transit usage ranged from 12.5 percent to 35 percent.[1]

Considerable developable land is available in the DNA Corridor. As an example, the gross land area within ¼ mile of the proposed Truxel Road stations includes a total of 1,764 acres. Taking the total land area, and subtracting existing development and major infrastructure yields a total of 996 acres that are potentially developable.

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[1] Thompson G.L., and Audirac, I. *Types of Transit-Oriented Development That Matter to Light Rail.* TRB Conference on Light Rail: Investment for the Future—8th Joint Conference on Light Rail Transit.

The adopted community land use plans adopted for North Natomas strongly emphasize the need for TOD and include several mechanisms to support the inclusion of transit in there respective plan areas. The North Natomas Community Plan in particular identified land adjacent to new development that would be provided as an Irrevocable Offer of Dedication (IOD) for use by a future light rail transit guideway. In addition, the infrastructure financing plan for North Natomas included a development fee structure to finance transit improvements. If it is assumed that future development will conform to community plans, or where applicable, adopting proposed development plans, approximately 647 acres of the developable land would be allocated for commercial use, and 349 acres for residential use.

The total development potential for commercial space, both office and retail commercial, could yield as much as 19 million square feet of space and 45,000 new employees. An illustrative plan for the Arena Boulevard Station is shown in Figure 7.3-1.

The North Natomas Community Plan requires a minimum acreage intensity of 80 employees per net acre (Employment Center (EC) 80 within 1/8-mile of transit stations). According to the Plan, the initial site plan shall be designed to allow future intensification of thep roject once light rail is funded. Once the light rail system is fully funded, the City would strongly encourage an increase in intensity of the EC designation within a 1/8-mile distance of an LRT Station." This language fully supports the viability of increased densities.

It is estimated that there is the potential for 24,000 residents on 349 acres--68 residents and 27 units per developable acre. The North Natomas Community Plan and current plans and proposals south of the American River, either recommend or plan for densities at 29 units and more per acre. Densities are highest in the Richards Boulevard and Railyards area, reflecting proximity to downtown Sacramento and the planned intermodal terminal.

The total land available for development at the stations proposed along the I-5 alignment is somewhat less than on the Truxel alignment, because the opportunities for smart growth are constrained by the freeway right-of-way, which limits pedestrian access to the west side of the freeway, and hence reduces the transit-oriented development opportunities. The case study stations on the I-5 alignment show, however, that there are substantial opportunities for relatively high intensity TOD. One such example, at Commerce Parkway Station, is shown in Figure 7.3-2.

Together, development at the transit stations could accommodate as much as 30 percent of the residential development and half of the commercial development forecast for build-out in the DNA Corridor communities.

A pro forma analysis was conducted to assess the economic feasibility of a more aggressive land use assumption at four case study stations in the DNA Corridor. This analysis employed current day economic conditions to gauge the development incentive for relatively high density development. It was found that higher density commercial development at the case study stations would generally meet developer feasibility thresholds, and in certain cases exceed developer profit thresholds with annual returns of more than 12 percent of total development costs. On the other hand, higher density residential projects with densities of about 30 dwelling units per acre, conforming to the North Natomas Community Plan, yielded low returns. However, by implementing strategies to reduce the costs of residential development, the City could attract higher densities that exceed current limits and meet developer profit thresholds. The situation is also likely to improve as light rail is

FIGURE 7.3-1
TRUXEL ROAD CORRIDOR – ARENA BOULEVARD STATION ILLUSTRATIVE PLAN

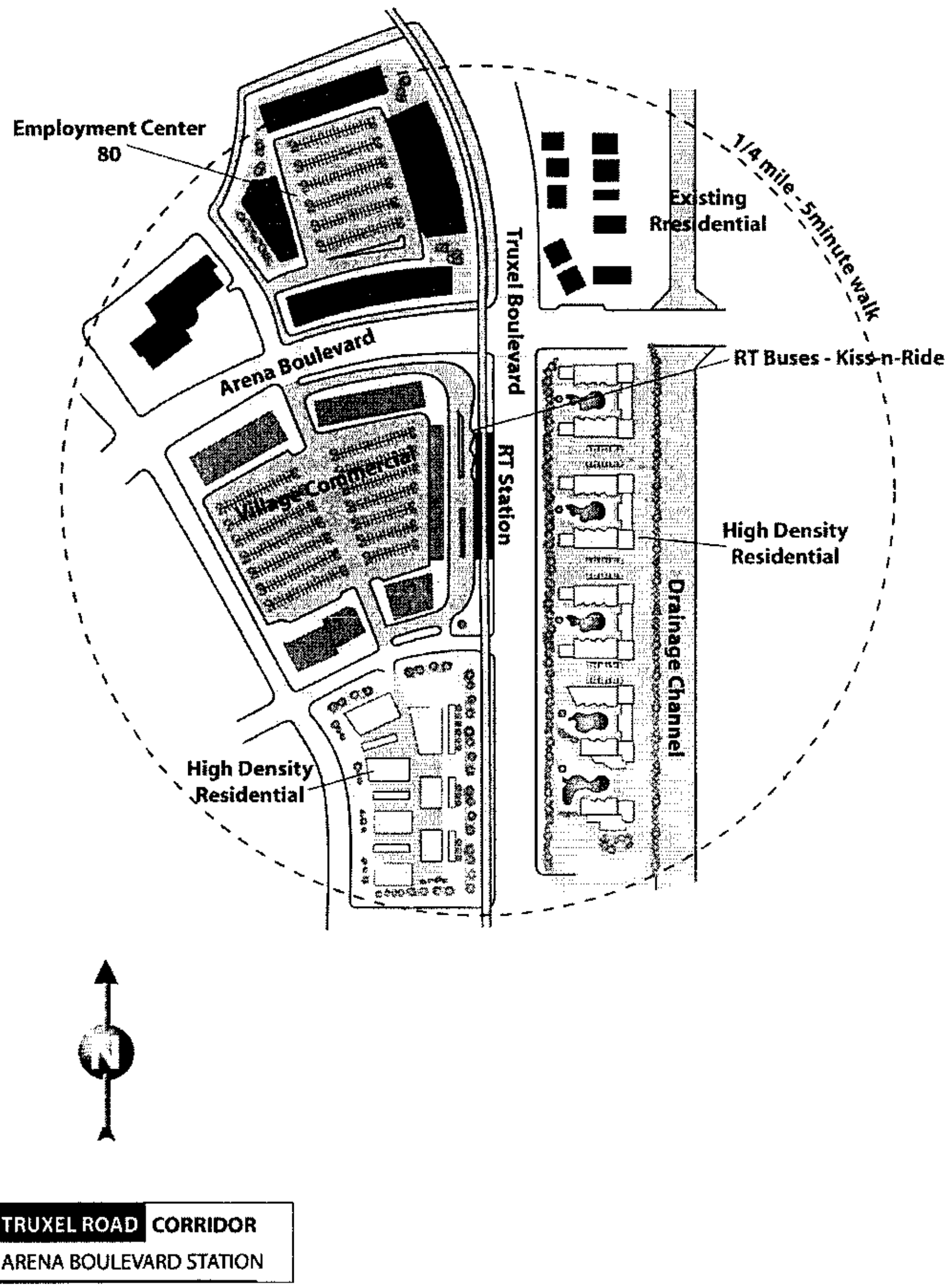
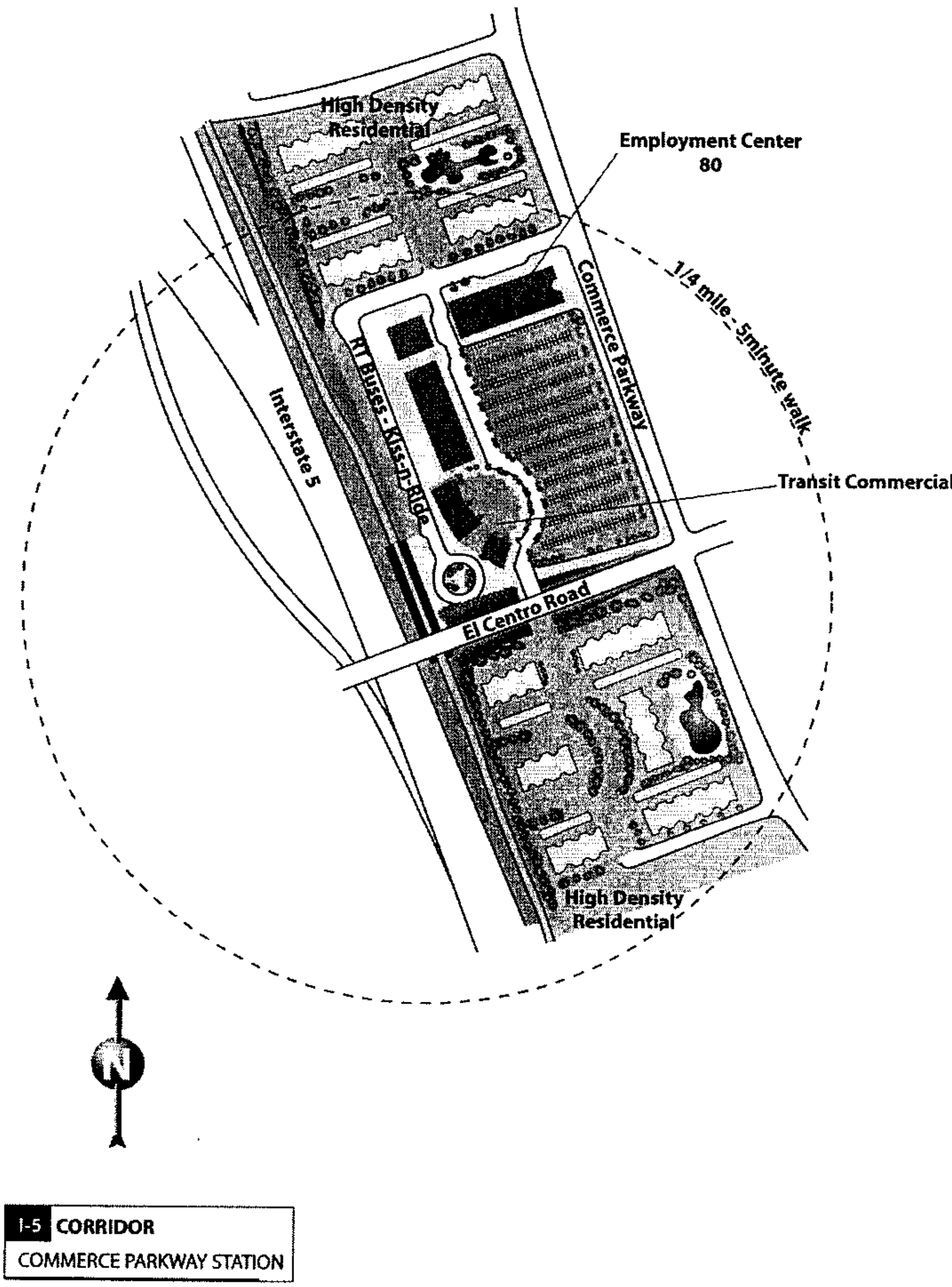


FIGURE 7.3-2
I-5 CORRIDOR – COMMERCE PARKWAY STATION ILLUSTRATIVE PLAN



implemented; BRT's impact on development trends is less certain, since few BRT systems have been built in the United States.

7.4 Cost-Effectiveness

FTA has developed a new measure of project benefits aimed at quantifying travel time savings for all users of the proposed project (both existing riders and new riders); the measure is referred to as "user benefits." According to this definition, a 'benefit' is generated if a Build alternative provides reduced travel time or travel cost, compared to a Baseline alternative. User benefits include: savings in travel time (i.e., a Build alternative that provides faster station-to-station times, reduced wait times, reduced transfer times, compared to the Baseline); better access to transit (i.e., provides a transit alternative to areas not served by the Baseline); or avoidance of out-of-pocket costs, such as cost of parking in the Downtown, or cost of driving further to a park-and-ride lot. All of these benefits are totaled, and translated to "equivalent hours" of travel time. Calculations are made using special software developed by FTA, and required for use in applications for federal funds.

Rating values are assigned by FTA to the user benefit measures which are then used to rank projects from low to high; "high" indicates the best return on investment and "medium" is the lowest rating an alternative can receive from FTA in order to compete for federal funding. These rating values are shown below:

Low:	>$25 per hour
Med-Low:	$20 - $24.99 per hour
Medium:	$13 - $19.99 per hour
Med-High:	$10 - $12.99 per hour
High:	<$10 per hour

The cost-effectiveness measure is calculated by dividing the incremental annualized cost of the project by hours of travel-time savings. The cost includes estimated capital cost plus annual operating and maintenance costs. The user benefit calculations were prepared for the build alternatives in the DNA Corridor and are shown in Table 7.4-1.

TABLE 7.4-1
FTA COST PER USER BENEFIT MEASURE

	BRT					LRT				
	Alt 4 Truxel	Alt 4A Truxel Starter Line	Alt 4B Truxel MOS	Alt 6 I-5/ Truxel	Alt 8 I-5	Alt 3 Truxel	Alt 3A Truxel Starter Line	Alt 3B Truxel MOS	Alt 5 I-5/ Truxel	Alt 7 I-5
User Benefit	$12.51	$5.69	$1.24	$18.14	$13.30	$28.84	$22.44	$14.36	$39.65	$56.97

Source: Parsons Brinckerhoff, October 2003.

As indicated in the table, the highest or best ranking alternative for the BRT mode is the Alternative 4B, Truxel MOS, although all BRT alternatives fall within the FTA rating threshold of $19.99 for a "medium" cost-effectiveness rating. For the LRT alternatives, Alternative 3B, the Truxel MOS, received an acceptable ranking with a user benefit of $14.36. Therefore, based on this criterion, only BRT Alternatives 4, 4A, 4B and LRT Alternative 3B would be eligible for federal New Starts funding. None of the other alternatives would compete favorably for federal funding. It should be noted that the only viable alternatives in this evaluation category are located on the Truxel alignment.

7.5 Financial Feasibility

RT's ability to finance the operating and capital costs of the DNA Corridor will depend on a number of factors, many of which are outside RT's direct control. Some funding for the DNA Corridor is committed but many of the major non-federal funding sources will require state, regional or voter approval before funding is secured. While the current funding climate is presently unstable and depressed, past trends have shown that cycles of funding opportunities appear even in financially challenged times.

Funding opportunities for RT over the next few years appear constrained due to a variety of conditions. First, the State and national economy have experienced a general downtown that is negatively impacting local sales tax revenue and the State's transportation funding programs. Second, RT's most flexible and reliable funding source, Measure A, is due to sunset in 2009. Unless this sales tax or a substitute is found that provides increased funding to RT, it will be impossible for the agency to sustain its fixed guideway expansion program.

Lastly, TEA-21, the federal transportation authorization measure also expired this past September. While congress has passed a short-term extension, a long-term reauthorization bill is expected to pass in the spring of 2004. Against this backdrop, the uncertainty surrounding future federal funding levels casts doubt on the State's ability to fund all planned transportation infrastructure over the next few years.

Despite similar types of challenges in the past, RT has been able to undertake two major light rail extensions during the last ten years: the South Line Phase 1 to Meadowview Road which opened this past September, and the Folsom Extension scheduled to open in 2005. In addition, other improvements including the purchase of new clean fuel buses and the creation of Stockton Boulevard enhanced bus service have been realized. These improvements have been completed in a conservative funding environment. While traditional funding sources were used as the foundation to build and implement these projects, it was through the use of creative partnerships choices on services and programs that have allowed RT to move forward in implementing its long-range capital expansion program.

7.5.1 Funding Sources

To fund any of the transit improvements proposed for the DNA Corridor, RT will need to rely on a mix of existing and future local, state and federal funding sources. In general, it is assumed that 1/2 (50 percent) of the construction funding will be provided through state and local sources, while the remaining funds will come from the federal government's New Starts program for fixed guideway projects. The federal share could potentially reach 80 percent through locally controlled federal dollars (e.g., CMAQ, etc.). Operating funds will come from farebox revenues and from other local sources. Table 7.5-1 lists the potential sources of capital and operating funding to build and operate corridor transit improvements, while Table 7.5-1 represents estimates of funding thought to be available.

7.5.2 Funding Needs

As described in Chapter 6, the alternatives range in construction cost from a low of $90 million (for Alternative 2, Baseline/TSM) to a high of $793 million (Alternative 5, I-5/Truxel LRT) in 2002 dollars. Annual systemwide operating costs range from $165 million (Alternative 2, Baseline/TSM) to $174 million (Alternative 3A, Truxel LRT Starter).

TABLE 7.5-1
EXISTING AND POTENTIAL DNA STUDY FUNDING SOURCES

Source	Existing RT Revenue Source	Projected/ Potential Revenue Source	Formula/ Discretionary	Primary Use	Level of Stability
Existing County Measure A Sales Tax	Yes	No	Formula	Capital or O&M	High
County Sales Tax Renewal	No	Yes	Formula	Capital or O&M	High
Transportation Development Act	Yes	Yes	Formula	O&M	High
Downtown/Railyards/Richards Boulevard	No	Yes	Formula	Capital	Medium
South Natomas Benefit Assessment Dist.	No	Yes	Formula	Capital	Low
North Natomas Finance Plan	Yes	Yes	Formula	Capital	Medium
Metro Air Park Facilities Financing Plan	No	Yes	Formula	Capital	Medium
Redevelopment Tax Increment Financing	No	Yes	Formula	Capital	Low
Joint Development & Air Rights Development	No	Yes	Formula	Capital	Medium
County Service Area	No	Yes	Formula	Capital or O&M	Low
County Roadway & Transit Development Fee	Yes	Yes	Formula	Capital	Medium
Farebox Revenues	Yes	Yes	Discretionary	O&M	High
Airport Funds (Source to be Determined)	No	Yes	Discretionary	Capital	High
State Transit Assistance	Yes	Yes	Formula	Capital	High
State Transportation Improvement Program	Yes	Yes	Discretionary	Capital	High
Proposition 42	Yes	Yes	Formula	Capital or O&M	Medium
Federal TEA-21 Funds (STP/CMAQ)	Yes	Yes	Discretionary	Capital	Medium
Federal Section 5309 (New Starts)[1]	No	Yes	Discretionary	Capital	High

1 RT was successful receiving $111 million, or 50% of the funds needed, for construction of its South Line Phase 1 LRT extension project between Downtown and Meadowview Road.

Source: Parsons Brinckerhoff, October 2003.

7.5.3 Funding Capability

RT'S funding capability is determined by its ability to construct, acquire, operate, and recapitalize all of the services and equipment proposed in either the BRT or LRT alternatives described in this report. Alternatives costing over $400 million do not meet the FTA cost-effectiveness ratio threshold and will not compete favorably for federal funds; thus, they are not discussed in this section. The discussion below focuses on the existing and potential funding sources for a study alternative costing between $370 and $400 million. While these cost figures do not correspond with any specific alternative, they were selected based on an assessment of reasonably available revenues from existing and potential sources.

Using the long range revenue estimates prepared by SACOG, along with independent estimates prepared by RT and its consultant, it was determined that alternatives costing $400 million and below are within the SACOG MTP 20-year revenue projections. These alternatives can be funded with the "pay as you go" approach which relies on federal, state and local revenue as they become available. Project alternatives that are below $400 million include Alternatives 3B, 4, 4A, 4B, and 8. All of these alternatives will compete favorably for federal funding since they all meet the FTA cost-effectiveness ratio threshold.

Table 7.5-2 provides a prototype funding plan for alternatives costing between $370 million and $400 million using the "pay-as-you-go" approach. It assumes that 1/2 of the funding for the capital study is derived from the federal New Starts program. The other half relies on other regionally approved federal and state funding sources (e.g., CMAQ, STIP), developer fees, and an airport contribution.

Although the table outlines a funding plan, all funding is contingent upon a number of assumptions. Taking into account RT's financial condition and capacity, the funding plan assumes:

- local economic conditions improve within the next several years
- the federal transportation reauthorization is consistent with SACOG projections
- the federal transportation reauthorization continues to provide flexible funding
- state transportation funding levels return to projected levels in 2006
- RT is successful in obtaining an FTA Full Funding Grant Agreement (FFGA) that commits the federal government to providing one half of the capital funding.

TABLE 7.5-2
DNA CAPITAL FUNDING PLAN BASED ON AN ESTIMATED CONSTRUCTION COST $370 - $400 MILLION (IN 2002$)

Federal, State and Local Revenue Sources	Project Cost		
FTA New Starts @ 50%[1]	$185		$200
CMAQ	$33		$33
STIP	$65		$80
Airport Contribution[2]	$32		$32
Developer Fees North Natomas Financing Plan $14.9 Metro Air Park Facilities Financing Plan $4.0 Downtown Railyards/Richards Boulevard $6.1(est)[3] Total	$25		$25
Dedication of Right-of-Way Credit (IODs)	$30		$30
Total Revenue Needed	$370		$400

[1] Actual amount will vary depending upon cost of locally preferred alternative.
[2] Actual amount and funding source to be determined.
[3] Represents existing and potential fees primarily for station development.

Source: Koegel and Associates, October 2003.

For all alternatives it is critical that Measure A is renewed at 2/3 cent beginning in 2009, since it will provide a major source of operating funds. Recent funding analyses show that RT's share of the renewed sales tax must equal 1/3 cent in order to continue existing bus, paratransit, light rail operations and undertake new services.

7.5.4 Importance of Renewing Measure A

Currently, the existing Measure A half-cent sales tax program provides RT approximately $30 million a year to fund its transit operations with a significant percentage of the funding assigned for operating support. The remaining funds are used for capital projects and local match for grants. This program is scheduled to expire in April 2009. Unless this program is extended by County voters between now and November 2008, RT will be forced to make significant reductions in bus and rail service and cancel any further light rail, enhanced bus and bus rapid transit extensions. SACOG, as the metropolitan transportation planning agency, and RT have both determined that unless the sales tax is increased from1/2 cent to 2/3 of a cent, with RT's portion of the tax doubling from one-sixth to one-third cent, the agency will be unable to fund additional light rail service in South Sacramento, nor any new transit improvements proposed for the DNA corridor. Similarly, proposed enhanced bus service in the Watt Avenue and Sunrise Boulevard corridors would be delayed along with other long-range service improvements proposed in other portions of the RT service area.

As a result, it will be critical for RT to work closely with the general public to obtain the necessary political support to approve a new sales tax as early as November 2004 and no later than November 2008. In addition to reductions and deferred capital projects, an impact of Measure A renewal after November 2004 is that the FTA New Starts process requires that operating funds and half of local capital match be committed before a project can move from the Preliminary Engineering phase to the Final Design phase. Both the South Line Phase 2 light rail extension and the DNA Corridor will require FTA's approval to enter final design. Since the South Line Phase 2 is sequenced ahead of the DNA Corridor, any schedule delay in the South Line Phase 2 will impact the schedule for the DNA Corridor.

RT will need this additional revenue approved early if it is to build and operate the DNA project and implement other long-range bus and rail improvements on schedule.

7.6 Community and Political Support

Since the opening of RT's first light rail line in March 1987, the Region has embraced the system and encouraged its expansion. Civic leaders, businesses, local policy makers, developers and the media have all noted the benefits of light rail, including increased mobility options, cleaner air, opportunities for smart growth, and reduced demand for parking in the central business district.

Soon after the opening of the light rail system a private non-profit organization was formed called the Friends of Light Rail (in early 2003 they modified their name to the Friends of Light Rail and Transit). In November 1989 the Sacramento County voters voluntarily voted to tax themselves with the passage of a half cent sales tax called Measure A. This measure has provided the necessary funding for the operation, maintenance and expansion of the overall bus and light rail transit system.

Almost from the beginning of light rail operations, various areas of the Sacramento region began competing with each other for the next light rail line to be in their specific community or neighborhood. With community and political support running so strong for light rail extensions, the RT Board of Directors decided to advance construction of two light rail corridors at the same time---the 6.3 mile South Line and the 11.9 mile eastern extension to the cities of Rancho

Cordova and Folsom. The South Line to Meadowview Road opened to rave reviews and packed trains on September 26, 2003. The Folsom Extension is under construction and will open a 3.5-mile extension to Sunrise Boulevard in June 2004, and the remaining 7.4-mile extension to downtown Folsom in April 2005. An additional 0.9 mile extension in downtown Sacramento, from the K Street Mall to the Amtrak Station, will also open in 2005.

As the South Line and the City of Folsom construction was well underway, RT again began advancing two corridors simultaneously, the DNA Corridor (the focus of this AA Report) and the South Line Phase 2 from Meadowview Road to Calvine and Auberry Roads (currently in environmental review and Preliminary Engineering).

Support for light rail between downtown and the airport dates back to the early 1980's. In 1988-89 as RT prepared to embark on the Systems Planning Study, the City and County of Sacramento co-financed a Route Refinement study to allow for the adoption of a basic alignment, and subsequent land reservation and dedication in the fast growing areas of South and North Natomas.

In 1994 the City of Sacramento's South Natomas Community Plan and North Natomas Community Plan called for light rail as a major transportation component and specifically identified Truxel Road as the alignment. The 1998 City of Sacramento General Plan reaffirmed Truxel Road as preferred alignment. Each of these three plans went through a public involvement and public hearing process and was adopted by the Sacramento City Council. In addition the Sacramento County General Plan shows Truxel Road as the preferred alignment for future transit improvements.

It should be noted that all studies and plans prepared by the City and County of Sacramento assumed light rail transit and did not address BRT. RT studies prior to this Alternatives Analysis looked at a TSM alternative and LRT alternative, but not a fixed guideway BRT option.

Because of the activity centers located in the Corridor, the DNA is more of a regional corridor than the other individual corridors in the RT system. These activity centers include the airport, Los Rios Community College District Natomas Center, the Arco Arena, Natomas Marketplace, South Natomas Community Center and Library, and downtown Sacramento. For that reason it enjoys a broad base of regional support from individuals and organizations who want light rail transit to the airport. There has consistently been strong community and political support for the DNA Corridor prior to and throughout the AA study with notable concerns by some citizens on particular design options which may directly impact their property and/or immediate neighborhood.

A Citizens Review Panel (CRP) over 50 individuals representing a diverse cross section of neighborhoods, community groups, the disabled community, the environmental community and business concerns has taken a bus tour of the corridor and met as a group 13 times. The CRP has consistently supported fixed guideway transit in the DNA corridor. They have not, as a group taken a position on either alignment or mode of transit.

Some individual groups represented on the CRP have taken formal action. There will likely be several more groups that will formally adopt a position after the Alternatives Analysis report is available. Those groups that RT is aware of are identified below:

Capitol Station District – Have taken a formal position on LRT (rather than BRT) as their preferred mode of transportation. They have an informal position on Truxel Road as their preferred alignment.

Downtown Sacramento Partnership – Have formally supported the Truxel Road alignment and LRT, and have consistently supported the DNA study.

Sacramento Metro Chamber of Commerce – On October 28, 2003, the Sacramento Metro Chamber of Commerce Board formally adopted LRT and the Truxel Road alignment as their preferred mode and alignment.

Natomas Community Association – Supports the Truxel Road Alignment as the one that best meets the criteria of the AA study. They have taken no position on mode of transportation.

Natomas School District – On December 11, 2002, the Board of Trustees for the Natomas Unified School District passed a resolution unanimously stating their support of the Truxel alignment for the DNA study.

South Natomas Preservation Association – A group formed in the late summer of 2003, which strongly opposes light rail on Truxel Road.

Public comments received at Open Houses, on the telephone information line and via e-mail have expressed both support for and against the light rail project in general, and a range of concerns regarding specific alignment and design alternatives. As it relates to the segment traveling through South Natomas, the public has expressed both support for and opposition to the light rail project on Truxel Road. There have been virtually no concerns raised regarding the impacts of BRT or LRT on I-5 (other than those who oppose it in favor of a Truxel Road alignment).

General areas of concern raised by residents located on or near the South Truxel Road area are as follows:

- Transit will decrease property values
- Transit will bring crime to neighborhoods
- Transit will deteriorate public safety for school children
- Transit will exacerbate traffic impacts
- Transit will increase noise levels
- Transit will require acquisition of private residences and commercial businesses
- Transit will cause damage to homes due to vibration

Public outreach on the DNA study as part of the Alternatives Analysis has perhaps been the most extensive of any transportation public works project in the Sacramento region. Numerous outreach efforts and tools were utilized to maximize opportunities for public participation and comment. A few of the tools used include; project website, newsletters, stakeholder interviews, open houses, telephone information line, advertising in local newspapers neighborhood meetings, a Citizen Review Panel and a Technical Review Panel, participation in a community festival, and numerous presentations to business organizations and interest groups in the corridor.

In summary, while the various publics agree that mobility improvements are needed in the Corridor, there continue to be concerns voiced by some residents in South Natomas regarding the compatibility of a new transit improvement along Truxel Road. Numerous design options have been developed to address their concerns, and educational information has been provided to address the areas of concern identified above. Design options that would potentially remove a large number of homes have been eliminated from further study by the RT Board. All community concerns will need to be addressed by the RT Board of Directors as it considers all of the study alternatives in selecting a transit solution that best serves the entire corridor and the region.

7.7 Comparative Analysis of Alternatives

The purpose of this section is to provide summary information about the more significant elements contributing to a decision on a LPA. The more significant criteria, both qualitative and quantitative, for each alternative are arrayed so that their benefits and costs can be evaluated against the stated goals for the project. This section also includes the key project justification criteria used by FTA to rank projects applying for federal Section 5309 New Starts funds.

7.7.1 Achievement of Goals

A set of goals, objectives and corresponding evaluation criteria were developed for evaluating the range of potential transit alignments and technology alternatives for the study corridor. These goals and objectives were developed and adopted early in the study by RT, and the TRP and the CRP established for the study.

As described in Chapter 5.0, the following DNA Corridor goals and objectives were adopted by RT:

- Goal #1: Improve Corridor Mobility with a Competitive Alternative to the Use of Single Occupant Vehicles (SOVs)
- Goal #2: Encourage Patterns of Smart Growth
- Goal #3: Find Cost Effective Solutions
- Goal #4: Minimize Community and Environmental Impacts
- Goal #5: Ensure Consistency with Other Planning Efforts
- Goal #6: Obtain Strong Community Support

The first three goals highlighted above are consistent with the FTA New Starts Criteria, which fall under the following measurement categories:

- Mobility Improvements;
- Environmental Benefits;
- Operating Efficiencies;
- Cost-Effectiveness;
- Existing Land Use, Transit Supportive Land Use Policies, and Future Patterns; and
- Degree of Financial Commitment for Capital, Operating and Maintenance Costs.

The data used for this evaluation are supported by extensive technical information and documentation. This section provides a relative comparison among the alternatives and provides the information needed to compare the level of desired transportation benefits to the costs and impacts of each alternative.

7.7.2 Evaluation Against the Goals of the Study

This section discusses the results of the evaluation against the measures used to establish the effectiveness of the alternatives in satisfying the study goals for the DNA Corridor Study. The alternatives with the highest rating for each goal are discussed below.

Goal # 1: Improve Corridor Mobility

Five alternatives rank highest overall in best meeting Goal #1:

- Alternative 3: Truxel Road LRT;
- Alternative 3A: Truxel Road LRT Starter Line;
- Alternative 4: Truxel BRT;
- Alternative 4A: Truxel Road BRT Starter Line; and
- Alternative 4B: Truxel Road BRT MOS

These alternatives along the Truxel alignment would provide access to 34 percent of corridor residents living within ½ mile of the transit alignment, to 32,100 jobs located within ½ mile of the transit alignment, good connectivity to the existing regional transit system, and to activity centers in the corridor. While the Truxel alternatives do not have the best travel time from Downtown Sacramento to the airport, the 28 to 30 minute travel times for Alternative 3 and 3A are very comparable with most of the I-5 and I-5/Truxel alternatives. Alternative 3B requires a longer traveling time due to a transfer to a bus connection to travel to the airport. However, the Truxel alternatives may experience potential operational impacts resulting from cross-street traffic, especially under the Starter Line alternatives.

Goal #1 provides a close connection to the mobility improvements measure under the FTA New Starts evaluation process and is incorporated into the Project Justification category. Table 7.7-1 shows the results of the analysis for all alternatives and how well they achieve Goal #1

Goal #2: Encourage Patterns of Smart Growth

Alternatives 3, 3A, 3B, 4, 4A and 4B, all of which using the Truxel Road alignment, offer the greatest opportunity to foster transit-oriented growth and meet Goal #2, particularly in North Natomas and in the Railyards/Richards Boulevard area. However, the LRT alternatives provide greater incentives to developers than BRT, which is why LRT is ranked slightly higher. The LRT alternatives are also consistent with adopted community plans and provide the best pedestrian access opportunities.

Goal #2 provides the closest connection to the Existing Land Use, Transit Supportive Land Use Policies, and Future Patterns criteria under the FTA New Starts evaluation process. FTA views land use as one of the two primary criteria for determining the project justification rating of a New Starts project. Table 7.7-2 shows the results of the analysis for all alternatives and how well they achieve Goal #2.

Goal #3: Find Cost-Effective Solutions

Alternatives 3B, 4, 4A, 4B and 8 all rank medium or better based on FTA's thresholds. However, Alternative 3A, the Truxel Starter Line falls close to a cost-effectiveness rating that is acceptable to the FTA. If other considerations, such as land use, rate very high, this could potentially offset the higher rankings.

Three primary factors are used in evaluating the cost-effective goal: Capital Cost, Ridership and RT's financial capacity to build, operate and maintain the alternative. The cost-effectiveness for most of the Truxel BRT alternatives is primarily due to the lower capital, operating and maintenance costs required to construct and operate the alternatives. The ridership for the Truxel BRT alternatives is relatively high, and comes close to the levels obtained by the Truxel LRT alternatives. In terms of RT's financial capacity to build, operate and maintain the planned transit improvement, Alternative 4B also performs best in this category.

Goal #3 provides the closest connection to the cost-effectiveness measure under the FTA New Starts evaluation process. FTA views cost-effectiveness as one of the two primary criteria for determining the project justification rating of a New Starts project. A project must achieve at least a "medium" rating, which is equivalent to a $19.99 user benefit.

This goal also addresses the degree of financial commitment for capital, operating and maintenance costs operate a new starts transit improvement, which is used to determine FTA's local financial commitment rating for a New Starts project. Table 7.7-3 shows the results of the analysis for all alternatives and how well they achieve Goal #3.

Goal #4: Minimize Community and Environmental Impacts
Alternative 2 appears to have the least overall impact on the environment as compared to the other alternatives. All of the other build alternatives have more community and environmental impacts. These impacts are pretty comparable between the alternatives, with the exception of very significant impacts under Alternatives 3 and 4. Table 7.7-4 shows the results of the analysis for all alternatives and how well they achieve Goal #4.

Goal #5: Ensure Consistency with Other Planning Efforts
Alternatives 3, 3A and 3B, which use the Truxel Road alignment, have the highest level of consistency with existing adopted community plans and current planning efforts in the DNA corridor. Table 7.7-5 shows the results of the analysis for all alternatives and how well they achieve Goal #5.

Goal #6: Obtain Strong Community Support
LRT Alternative 5 and BRT Alternative 6, which use the I-5/Truxel Road alignment, appear to have a higher level of local community support than the other alternatives under review in the DNA corridor due to stronger support in North Natomas and the airport area. However, the local and regional public agencies involved in the DNA study process have generally supported a transit alternative along the Truxel Road alignment. All of the alternatives with the exception of Alternative 3 Truxel LRT and Alternative 5 I-5/Truxel LRT are financially affordable.

TABLE 7.7-1
EVALUATION OF ALTERNATIVES BY GOAL #1: MOBILITY AND OPERATIONAL EFFICIENCIES

	Alternative 1	Alternative 2	Alternative 3	Alternative 3A	Alternative 3B	Alternative 4	Alternative 4A	Alternative 4B	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Evaluation Criteria/Measure	**No-Build**	**Baseline/TSM**	**Truxel Road LRT**	**Truxel LRT Starter Line**	**Truxel LRT Minimum Operable Segment**	**Truxel BRT**	**Truxel BRT Starter Line**	**Truxel BRT Minimum Operable Segment**	**I-5/Truxel LRT**	**I-5/Truxel BRT**	**I-5 LRT**	**I-5 BRT**
Year 2025 average weekday transit linked trips in the corridor	7,550	9 970	13,780	13,520	12,800	12,340	12,120	11,870	13,270	12,120	11,770	11,360
Year 2025 average weekday transit boardings in the corridor	10,810	14,730	23 400	22,650	21,120	16,170	16,340	16,050	21,700	15,550	17,170	15,080
Number of persons within ½ mile of alignment	N/A	21,450	21,450	21,450	21,450 (1)	21,450	21,450	21,450	17,370	17,370	14 260	14,260
Employment within ½ mile of a station	N/A	32,100	32,100	32,100	32,100 (1)	32,100	32,100	32,100	34,900	34,900	36,400	36,400
Provide a direct connection to existing regional transit system	Provide limited connection to a portion of the DNA corridor	Provide lim ted connection to a portion of the DNA corridor	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Good connectivity to other RT bus and LRT routes	Limited connectivity to other RT bus and LRT routes	Limited connectivity to other RT bus and LRT routes	Limited connectivity to other RT bus and LRT routes	Limited connectivity to other RT bus and LRT routes
Number of transit dependent households within ½ mile of alignment	N/A	N/A	1,760	1,760	1,760 (1)	1,760	1,760	1,760	1,700	1,700	1,590	1, 590
Number of low income households within ½ mile of stations	N/A	N/A	1,021 low income households within ½ mile of stations	1,021 low income households within ½ mile of stations	1,021 low income households within ½ mile of stations (1)	1,021 low income households within ½ mile of stations	1,021 low income households within ½ mile of stations	1,021 low income households within ½ mile of stations	892 low income households within ½ mile of stations	892 low income households within ½ mile of stations	892 low income households within ½ mile of stations	892 low income households within ½ mile of stations
Make use of advanced technology to increase capacity	N/A	Low	High	High	High	Medium	Medium	Medium	High	Medium	High	Medium
Travel Times along transit way (entire length)	N/A	37 minutes	28 minutes	30 minutes	37 minutes	28 minutes	30 minutes	34 minutes	27 minutes	30 minutes	21 minutes	27 minutes
Provide direct access to activity centers along guideway	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Only north of I-80	Yes	No	No

Note: (1) – Employment, household and population totals represent the entire Truxel Road alignment. Based on 2000 Census data.

Source Parsons Brinckerhoff, December 2003.

TABLE 7.7-2
EVALUATION OF ALTERNATIVES BY GOAL #2: ENCOURAGE PATTERNS OF SMART GROWTH

	Alternative 1	Alternative 2	Alternative 3	Alternative 3A	Alternative 3B	Alternative 4	Alternative 4A	Alternative 4B	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Evaluation Criteria/Measure	No-Build	Baseline/TSM	Truxel Road LRT	Truxel LRT Starter Line	Truxel LRT Minimum Operable Segment	Truxel BRT	Truxel BRT Starter Line	Truxel BRT Minimum Operable Segment	I-5/Truxel LRT	I-5/Truxel BRT	I-5 LRT	I-5 BRT
Development potential within ½ mile of a station	N/A	N/A	High	High	High	Medium-High	Medium-High	Medium-High	Medium-High	Medium	Medium	Low

Source: Parsons Brinckerhoff, October 2003.

TABLE 7.7-3
EVALUATION OF ALTERNATIVES BY GOAL #3: FIND COST-EFFECTIVE SOLUTIONS

	Alternative 1	Alternative 2	Alternative 3	Alternative 3A	Alternative 3B	Alternative 4	Alternative 4A	Alternative 4B	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Evaluation Criteria/Measure	No-Build	Baseline/TSM	Truxel Road LRT	Truxel LRT Starter Line	Truxel LRT Minimum Operable Segment	Truxel BRT	Truxel BRT Starter Line	Truxel BRT Minimum Operable Segment	I-5/Truxel LRT	I-5/Truxel BRT	I-5 LRT	I-5 BRT
Financial												
Capital Cost (in millions of 2002$)	N/A	$90.3	$623.1	$447.9	$290.8	$327.5	$208.8	$142.3	$793.1	$311.0	$746.4	$261.3
Change in Operating & Maintenance Annual Costs (in millions of 2002$) (1)	--	--	$8.2	$9.1	$5.1	$-(0.8)	$-(0.5)	$-(0.2)	$6.7	$1.8	$7.5	$0.9
Cost-Effectiveness												
User Benefit (cost per hour of travel time saved)	N/A	N/A	$28.84	$22.44	$14.36	$12.51	$5.69	$1.24	$39.65	$18.14	$56.97	$13.30

Note: (1) – For Alternative 3 through 8, the Annual Costs represent the net difference between the cost of operating and maintaining the build alternative and the cost for the Baseline/TSM Alternative.

Source: Parsons Brinckerhoff, October 2003.

TABLE 7.7-4
EVALUATION OF ALTERNATIVES BY GOAL #4: MINIMIZE COMMUNITY AND ENVIRONMENTAL IMPACTS

	Alternative 1	Alternative 2	Alternative 3	Alternative 3A	Alternative 3B	Alternative 4	Alternative 4A	Alternative 4B	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Evaluation Criteria/Measure	**No-Build**	**Baseline/TSM**	**Truxel Road LRT**	**Truxel LRT Starter Line**	**Truxel LRT Minimum Operable Segment**	**Truxel BRT**	**Truxel BRT Starter Line**	**Truxel BRT Minimum Operable Segment**	**I-5/Truxel LRT**	**I-5/Truxel BRT**	**I-5 LRT**	**I-5 BRT**
Environment												
Wetlands	N/A	N/A	8 to 11.5 acres	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.
Noise	1 to 3 dBA increase in traffic volumes	1 to 3 dBA increase in traffic volumes	No noise impacts after mitigation. Significant vibration impacts during the construction period. Less than significant impacts from vibration during transit operations.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.
Visual	N/A	3 park-and-ride lots	10,877 feet of aerial structure plus overhead catenary and 7 park-and-ride lots.	8,606 feet of aerial structure plus overhead catenary and 7 park-and-ride lots.	5,122 feet of aerial structure plus overhead catenary and 6 park-and-ride lots.	20,064 feet of aerial structures, 6 park-and-ride lots, and 2 underpasses on South Truxel Road.	9,081 feet of aerial structures and 7 park-and-ride lots.	7,022 feet of aerial structures and 5 park-and-ride lots.	16,526 feet of aerial structures, plus overhead catenary wire and 7 park-and-ride lots.	24,763 feet of aerial structures, and 6 park-and-ride lots.	29,092 feet of aerial structures, catenary wires and 3 park-and-ride lots.	21,754 feet of aerial structure and 4 park-and-ride lots.
Total Displacements	N/A	N/A	7 residential and 7 commercial	7 residential and 7 commercial	7 residential and 7 commercial	0	0	0	10 commercial	8 commercial	10 commercial	8 commercial
Parkland (4(f)) Impacts	N/A	N/A	Permanent use of 3 to 4 acres.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.	Comparable to Alternative 3.

Source: Parsons Brinckerhoff, October 2003.

TABLE 7.7-5
EVALUATION OF ALTERNATIVES BY GOAL #5: ENSURE CONSISTENCY WITH OTHER PLANNING EFFORTS

	Alternative 1	Alternative 2	Alternative 3	Alternative 3A	Alternative 3B	Alternative 4	Alternative 4A	Alternative 4B	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Evaluation Criteria/Measure	**No-Build**	**Baseline/TSM**	**Truxel Road LRT**	**Truxel LRT Starter Line**	**Truxel LRT Minimum Operable Segment**	**Truxel BRT**	**Truxel BRT Starter Line**	**Truxel BRT Minimum Operable Segment**	**I-5/Truxel LRT**	**I-5/Truxel BRT**	**I-5 LRT**	**I-5 BRT**
Land Use												
Supports community and general plans	No	No	High	High	Medium-High	Medium-Low	Medium-Low	Medium-Low	Medium	Low	Low	Low

Source: Parsons Brinckerhoff, October 2003.

TABLE 7.7-6
EVALUATION OF ALTERNATIVES BY GOAL #6: OBTAIN STRONG COMMUNITY SUPPORT

	Alternative 1	Alternative 2	Alternative 3	Alternative 3A	Alternative 3B	Alternative 4	Alternative 4A	Alternative 4B	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Evaluation Criteria/Measure	**No-Build**	**Baseline/TSM**	**Truxel Road LRT**	**Truxel LRT Starter Line**	**Truxel LRT Minimum Operable Segment**	**Truxel BRT**	**Truxel BRT Starter Line**	**Truxel BRT Minimum Operable Segment**	**I-5/Truxel LRT**	**I-5/Truxel BRT**	**I-5 LRT**	**I-5 BRT**
Community Support												
Potential community support for an alternative	Low	Low	Residential and commercial property owners have raised objections; 2,500 individuals have signed a petition supporting the use of an I-5 alignment	Same as Alternative 3	Same as Alternative 3	Same as Alternative 3	Same as Alternative 3	Same as Alternative 3	Residential and commercial property owners have expressed an interest in the use of an alignment along I-5 or I-5/Truxel, without a preference for technology	Same as Alternative 5	Same as Alternative 5	Same as Alternative 5
Potential agency support for an alternative	N/A	N/A	High	High	High	Low	Low	Low	Medium	Low	Low	Low

Source. Parsons Brinckerhoff, December 2003

7.7.3 Comparative Summary Evaluation of Alternatives

To more easily compare how well the proposed DNA alternatives meet the project goals, Table 7.7-7 was developed showing the trade-offs associated with each of the alternatives. Trade-offs refers to the fact that any alternative may have both positive and negative aspects and that selecting a Locally Preferred Alternative requires balancing these trade-offs. The trade-offs discussion is an evaluation in which all relevant criteria are considered together and the major advantages and disadvantages of each alternative are described. The table includes only those measures where discernible and significant differences can be noted between alternatives.

TABLE 7.7-7
SUMMARY OF MAJOR TECHNICAL ADVANTAGES AND DISADVANTAGES

Alternative/Design Option	Advantage	Disadvantage
No-Build	• Does not cause short-term construction impacts • Least expensive alternative	• Does not support adopted plans • Does not supply capacity to growing congestion • Does not meet objectives of study • Does little to help achieve air quality goals
Baseline/TSM	• Does not cause short-term construction impacts • Has the lowest environmental impact • Relatively inexpensive to implement	• Does not support adopted plans • Does not supply capacity to carry growing transit demand
Alt 3 Truxel LRT	• Provides high capacity technology to accommodate growth and demand • Consistent with adopted plans • Encourages patterns of Smart Growth • Provides good connectivity to RT system	• Exceeds likely available funding • Not cost-effective; options exist to improve cost-effectiveness to meet FTA guidelines • Significant impacts on parklands due to double-track bridge • Visual impacts of overhead wire and bridge crossing • Loss of 7 residential, 7 commercial properties
Alt 3A Truxel LRT Starter Line	• Consistent with adopted plans • Provides high capacity technology to accommodate growth and demand • Encourages patterns of Smart Growth • Provides good connectivity to RT system	• Slightly exceeds FTA user benefit threshold; options exist to improve cost-effectiveness to meet FTA guidelines • Mixed flow segments could reduce service reliability • Visual impacts of overhead wire and bridge crossing • Loss of 7 residential, 7 commercial properties • May impede automobile turning movements

TABLE 7.7-7
SUMMARY OF MAJOR TECHNICAL ADVANTAGES AND DISADVANTAGES (CONTINUED)

Alternative/Design Option	Advantage	Disadvantage
Alt 3B Truxel LRT MOS	• Provides most cost-effective LRT solution • Provides high capacity technology to accommodate growth and demand. • Encourages patterns of Smart Growth • Provides good connectivity to RT system • Cost is within projected available funding • Competitive New Starts project	• Does not directly serve the airport without a timed transfer to bus • Loss of 7 residential, 7 commercial properties • Single track segments could reduce service reliability • May impede automobile turning movements
Alt 4 Truxel BRT	• Provides moderate capacity technology to accommodate growth and demand • Provides good connectivity to RT system • Within the anticipated financial resources • Faster to build • No relocations • Competitive New Starts project	• Has significant visual impacts in North and South Natomas • Significant number of buses entering downtown during peak hour
Alt 4A Truxel BRT Starter Line	• Provides moderate capacity technology to accommodate growth and demand • Faster to build • Very cost-effective based on FTA criteria • No relocations • Competitive New Starts project	• Single track segments could reduce service reliability • Some visual impacts due to aerial structures
Alt 4B Truxel BRT MOS	• Provides most cost-effective BRT solution based on FTA criteria • Provides moderate capacity technology to accommodate growth and demand • Faster to build • No relocations • Competitive New Starts project	• Does not provide strong encouragement for patterns of Smart Growth • Visual impacts due to aerial structures
Alt 5 I-5/Truxel LRT	• Provides high capacity technology to accommodate growth and demand. • Has strong community support • Few relocations (10)	• Not cost-effective • Does not support adopted plans • Most expensive of LRT alternatives and not affordable
Alt 6 I-5/Truxel BRT	• Provides moderate capacity technology to accommodate growth and demand • Mode has some community support • Few relocations (8)	• Does not support adopted plans • Marginally encourages patterns of Smart Growth

TABLE 7.7-7
SUMMARY OF MAJOR TECHNICAL ADVANTAGES AND DISADVANTAGES (CONTINUED)

Alternative/Design Option	Advantage	Disadvantage
Alt 7 I-5 LRT	• Provides high capacity technology to accommodate growth and demand • Few relocations (10)	• Mixed community support • Not cost-effective • Not financially affordable • Does not encourage patterns of Smart Growth • Serves lowest number of low income households
Alt 8 I-5 BRT	• Provides moderate capacity technology to accommodate growth and demand. • Few relocations (8)	• Does not have strong community support • Does not encourage patterns of Smart Growth • Limited connectivity to RT system • Serves lowest number of low income households

Note: Underscore indicates potential "fatal flaw."

Source: Parsons Brinckerhoff, October 2003.

8.0 LOCALLY PREFERRED ALTERNATIVE SELECTION

Chapter Summary

A Locally Preferred Alternative (LPA) is the selected candidate physical design concept and scope for a major corridor transit investment. In the Downtown/Natomas/Airport (DNA) Corridor, the LPA will consist of two features: the identification and description of a corridor alignment and the identification of a transit (bus, light rail) mode. The LPA will also generally describe the proposed location of stations, the operating concepts by which transit service will be provided, and a set of specific design options to be further evaluated during the draft environmental phase. Refinements to the LPA will continue during subsequent Preliminary Engineering (PE) and the Final Environmental Impact Statement (FEIS) phase.

The PE/FEIS phase will focus on developing more specific environmental and engineering information including detailed environmental testing and mitigation plans, geometric alignment design, bridges and structures, station location and design, landscaping features, access and operating strategies, drainage, right-of-way requirements, maintenance of traffic during construction, phasing of construction, and a detailed financial plan including funding commitments. Minor alignment and engineering adjustments to the LPA will likely occur during final design and construction phases of the transit improvement. Subsequent to the Preliminary Engineering (PE) phase of LPA development, minor alignment and engineering adjustments to the LPA will likely occur during PE, final design, and construction of the transit improvement.

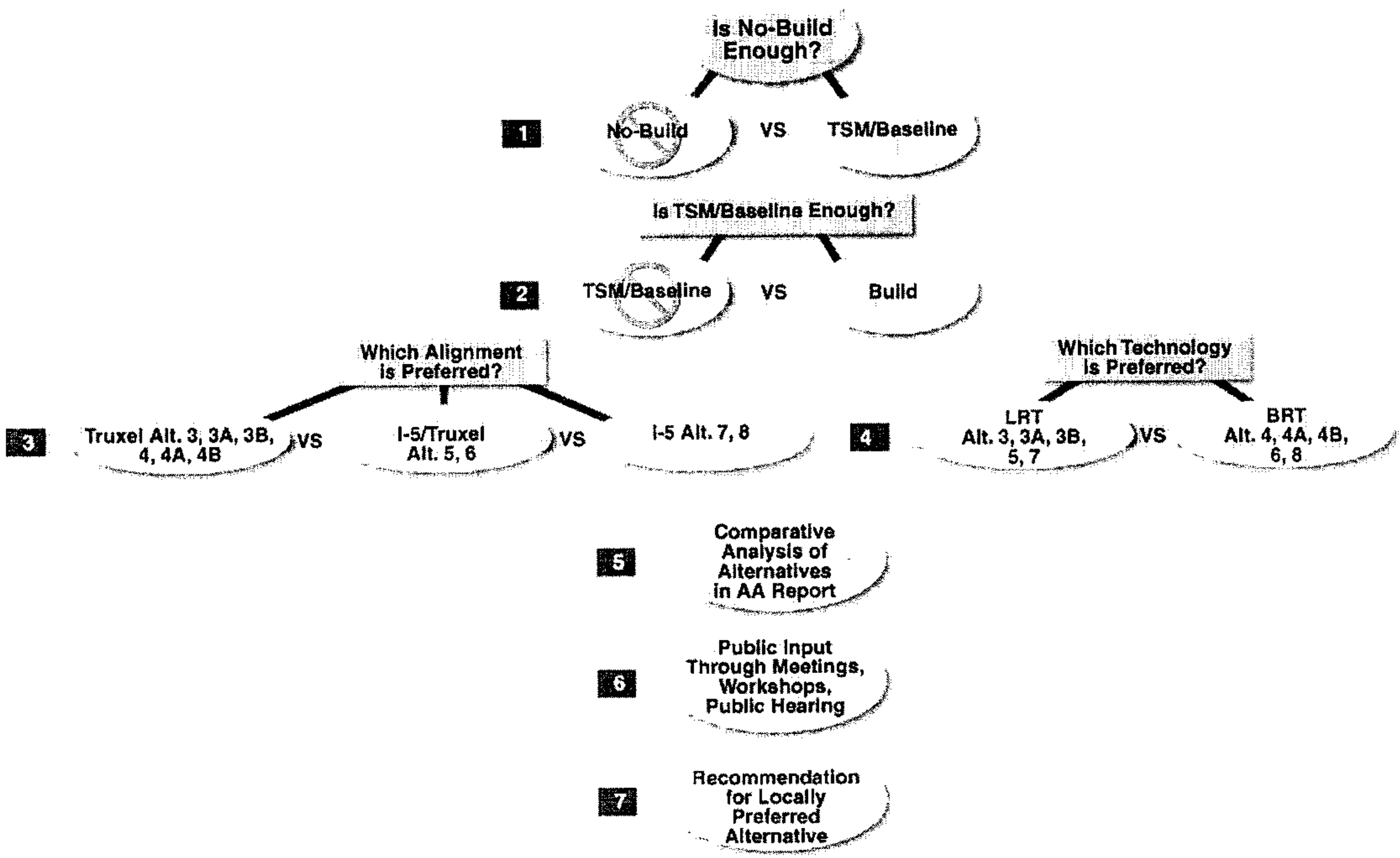
8.1 Selection Process

Earlier chapters of this report provided a systematic comparison of 12 conceptual alternatives, including a No-Build, a Baseline/TSM, five light rail transit (LRT) alternatives and five bus rapid transit (BRT) alternatives. It was structured around criteria and indicators designed to reflect the study goals and objectives as endorsed by the Technical Review Panel (TRP), Citizens Review Panel (CRP), the Sacramento Regional Transit District (RT) Board of Directors, and from information provided by the City of Sacramento, Sacramento County, public agencies, and the general public.

On November 6, 2003 RT formally released for a 30-day period the Draft Alternatives Analysis (AA) Report for public review and comment. On November 10, the RT Board of Directors was presented with a summary of the Draft Report. RT then convened a community workshop on November 20 at the Sacramento Convention Center, enabling the public an opportunity to review the study findings and to pose questions regarding the alternatives to agency staff and the consultant team. RT also held a public hearing on December 8 in the chambers of the Sacramento County Board of Supervisors to provide the public more opportunity to provide comment on the AA Report.

Based on the technical analysis results and public comment received on the Draft AA report, agency staff has developed an LPA recommendation for the RT Board of Directors to consider on December 15, 2003. At this meeting, the Board of Directors will have the opportunity to accept, modify or reject the LPA recommendation. Figure 8.1-1 illustrates the decision-making process RT will have used to select an LPA for the DNA Corridor.

FIGURE 8.1-1
DECISION TREE SUMMARY



8.2 Recommendation on a Locally Preferred Alternative

Since the mid-1980's, there has been an increasing recognition by the public and its elected officials of the need for a major public transit investment in the DNA Corridor. Three primary factors have contributed to this vision, including:

1. Recognition that significant growth and development will continue to occur, particularly in North Natomas, in close proximity to the Airport, and in surrounding areas north and east of the corridor;
2. Concern over increasing traffic congestion along Interstate (I-5), and the need to provide people living and working in the corridor a transportation alternative to driving their own vehicle; and
3. A desire to improve transportation mobility between the Downtown, South and North Natomas Communities, and the Sacramento International Airport and to other parts of the Sacramento region.

In exploring this vision, several corridor alignments and transportation technologies have been studied extensively over time, including the I-5, Truxel Road, and I-5/Truxel alignments and the potential for expanding existing bus service and extending LRT service into the Corridor. More recently, as part of this study, BRT has also been considered as a viable transit technology. It is clear, however, that when considering future ridership, costs, and impacts to the local community and region, each study alternative has both advantages and disadvantages.

These trade-offs have been the topic of much regional and community discussion and debate, resulting in a decision by RT in 1991 to support construction of light rail on Truxel Road. The City of Sacramento and County of Sacramento have included the locally adopted alignment in their respective general plans and community plans. The Sacramento Area Council of Governments (SACOG) has consistently reaffirmed the local decision, as recently as July 2002, with the adoption of the Metropolitan Transportation Plan (MTP) for 2025. The results of this current AA Report support this conclusion.

8.3 Preference for Alignment

Use of the Truxel Road alignment will provide the largest transportation benefit to transit users in the Corridor and in the region. In summary, these benefits include the following:

- **Improved Corridor Mobility**. While all three alignments would provide improved transit service between Downtown and the Airport, the Truxel alignment provides the shortest travel time for North and South Natomas residents. While the Truxel alignment does not have the best travel time from Downtown to the Airport, the 28 to 30 minute travel time is comparable to the I-5 alignment alternatives.
- **Greater Transit Accessibility**. Based on the 2000 Census and year 2025 SACOG projections, the Truxel alignment would provide the greatest transit access to corridor residents and households than either the I-5 or I-5/Truxel alignments.

There are 21,500 residents living within ½-mile of the Truxel Road alignment, including a greater concentration of low income and transit dependent households. Likewise, there are 32,100 jobs located within ½-mile of the alignment; nearly equivalent to the number of jobs located along I-5 or the I-5/Truxel alignment alternatives. In addition, the Truxel alignment provides the best pedestrian access opportunities.

Due to limited north-south traffic capacity in the DNA Corridor, with only two bridges across the American River within a three-mile wide reach, a new bridge crossing along the Truxel Road alignment is needed to provide improved and direct transit accessibility into Downtown Sacramento.

- **Connectivity**. Generally, the Truxel Road alignment provides better connectivity to the existing regional transit system and to the major concentration of existing and planned activity centers and destinations within the DNA Corridor.

  These activity centers and destinations include: (1) the Sacramento International Airport; (2) Metro Air Park, an improved mixed use commercial/office development; (3) the soon to be built North Natomas Town Center, with a 200-acre Regional Park, high school and community college campus and library; (4) ARCO Arena; (5) the Natomas Marketplace commercial center; (6) Natomas High School; (7) the South Natomas Community Center; (8) the redeveloping Richards Boulevard area; and (9) the Sacramento Valley Station, which is part of a 240-acre proposed master plan redevelopment project for the Union Pacific Railyards.

  Moreover, the DNA Corridor connection with the Sacramento Valley Station provides intermodal connections to existing and new bus services, existing Capitol Corridor intercity rail service, long distance Amtrak service, soon to be constructed Folsom Corridor LRT service, and future regional commuter rail service.

- **Potential for Transit-Oriented Development**. The Truxel Road alignment generally offers the greater opportunity to foster transit-oriented development, particularly in the North Natomas community and the Railyards/Richards Boulevard area. Land use plans in these two areas propose the highest density employment and housing clustered in a mix around planned stations. The North Natomas Community Plan, in particular, was designed as a transit-oriented community, with dedicated right-of-way along Truxel Road set aside for a light rail alignment as a central element. Opportunities also exist for further increases in density and intensity in station areas once the LRT is constructed.

  The Truxel alignment provides a further opportunity to shape future land use decisions within the unincorporated area, west of State Route 99/70 and north of Elkhorn Boulevard, in the same planned vision that created the North Natomas Community Plan, if the region desires to grow in that direction.

  The total land available for development at future stations along the Truxel alignment is greater than that along the I-5 alignment. Opportunities for smart growth are curtailed by I-5, which limits pedestrian access to either side of the freeway, and hence reduces the potential for transit-oriented development opportunities.

- **Plan Consistency**. The Truxel alignment, with light rail, also offers the highest level of consistency with existing adopted community plans, the City and County general plans, current planning efforts within the Corridor, and over 15 years of prior development and infrastructure commitment in North Natomas.

  In particular, the North Natomas Community Plan set aside land use by the future light rail guideway. In addition, the Truxel Road Interchange was designed and built to structurally support a future light rail alignment. And the North Natomas infrastructure-financing plan includes a development fee structure to finance light rail station improvements.

  Perhaps most importantly, the Truxel Road alignment, with light rail, offers the lowest potential for physically dividing the community.

- **Higher Ridership**. Across all the alternatives studied, the opportunities for the highest daily ridership occur along the Truxel Road alignment.

- **Cost-Effectiveness**. Generally, all of the Truxel Road alignment modal alternatives fair better in terms of providing the most cost-effective transit solution, using Federal Transit Administration ratings, because they directly serve more residents and have lower construction costs.
- **Fundability**. Using long-range revenue estimates prepared by RT and SACOG, it was determined that any alternative costing $450 million or below could be funded with a combination of federal, state and local revenue as they become available. The majority of the alternatives that fall within this funding threshold occur on the Truxel Road alignment.

8.4 Preference for Mode

Use of light rail also will provide greater transportation benefits to transit users. In summary, these benefits include the following:

- **Ridership**. In the DNA Corridor, light rail generally generates ten percent higher ridership than BRT, with most of the difference resulting from airport passengers (as service continuity is a key factor for airport transit service).
- **Capacity**. Over the next 20 years and beyond, the Natomas Basin is seen as a major new growth area for the Sacramento region. The travel corridor warrants a high capacity mode. LRT has a superior ability to respond to growth pressures by increasing capacity compared to other modes, such as BRT. Light rail can add another car to a train to carry more riders and not affect labor costs. This is a primary reason LRT is more efficient with higher ridership demand.
- **Speed**. Light rail systems generally have increased speed over bus systems (as well as the perception of being faster).
- **Technology**. LRT has higher vehicle performance technology and passenger comfort features. Light rail vehicles are more spacious and provide for a more stable ride. The guideway feature makes possible use of larger vehicles and trains of up to four cars, as well as partial signal control. The vehicles are clean, non-polluting electric–propulsion powered. Clean-fueled buses still produce particulates and nitrogen oxides emissions, which is objectionable, particularly in areas with high concentrations of people. Noise produced by buses also remains a problem.

  Buses are also considerably less expensive than LRT vehicles, although the difference in their life costs is not as great as the difference in their purchase prices because light rail vehicles have 2.5 to 3.0 times longer life spans. Buses last 12 years, while light rail vehicles last between 25 and 40 years. Therefore, a current comparison must be based on life cycle costs per unit of vehicle capacity. Such a comparison would tend to favor LRT.
- **Economic Development**. LRT is attractive as a tool for transit-oriented development, a characteristic not convincingly displayed in the United States by bus service of any type. Light rail has a permanent infrastructure that becomes part of the urban structure. Because BRT is less capital intensive, it is more likely to be abandoned if the market were not supporting the service. It is the permanence of light rail that tells private investors and transit users that this form of transportation is here to stay.
- **Reduction in Auto Travel**. The highest level of traffic growth over the next 20 years will occur on I-5, between the Arena Boulevard Interchange and the I-80 junction with I-5, where a growth in traffic volumes of 100 percent is forecasted. This will result in prolonged Level of Service (LOS) "F" (failure) conditions for several hours during morning and evening peak commute periods. Even with future programmed roadway improvements in the adopted

MTP, traffic under No Build conditions will deteriorate on I-5, leading to higher traffic volumes on I-80 and parallel roadways.

Of the alignment alternatives studied, the Truxel Road alignment offers the greatest reduction in weekday peak period auto travel to Downtown Sacramento, with the highest reduction coming from light rail, eliminating 4,700 daily person trips. Likewise, the greatest reductions in weekday parking demand in Downtown Sacramento occur with the Truxel Road alignment, with LRT eliminating the need for 2,200 parking spaces.

- **A Balanced Transportation System**. Further, in a region, such as Sacramento, a single transit mode cannot provide as efficient service as several coordination modes. A "family" of modes operating as an integrated transport system, with buses feeding light rail lines rather than competing with each other, is defined as a balanced transportation system.

- **Service Continuity**. Light rail provides greater service continuity that BRT, with seamless service through Downtown and beyond, connecting other major activity centers. LRT can provide a "one-seat-ride" for anyone within walk access of the service, or within easy "drop off" access.

  This "one-seat-ride" service is especially critical within the DNA Corridor because air passengers respond negatively to off-airport transfers. In some situations, LRT may involve more transfers from other trains coming from the Watt/I-80 and the South Line light rail corridors. These transfers are, however, simple—they are made at the same platform and require little or no walking.

  LRT may also involve transfers with buses. In this situation, the transfers are organized in a timed manner so that transferring is made conveniently.

- **Service Reliability**. LRT generally has enhanced service reliability over bus-based systems due to the use of a guideway and preferential treatments, such as traffic signal prioritization. LRT service would operate at 15-minute headways throughout the DNA Corridor. BRT service would operate at varying headways within the Corridor, culminating in a combined 3.3-minute peak and 3.8-minute off-peak headway in downtown Sacramento. Without the benefit of traffic signal prioritization that is afforded to the LRT, large segments of the BRT route in downtown Sacramento would suffer reduced service reliability, due to the unavailability of sufficient "green" time to allocate a priority to BRT and still accommodate all other vehicular traffic and movements. The practical result will be substantial delays to the BRT service, long queues of buses waiting at intersections, and insufficient bus stop capacity to accommodate lines of buses.

- **Other Characteristics**. Other important characteristics that favor LRT include: frequency, durability, efficiency, simplicity, directness, and comfort. These are very desirable features for transit services. Transit services need to be aimed at attracting incidental users. The general public needs to have fixed routes, fixed (memorable) schedules, and known fares, in order to use the service.

  For these reasons, LRT on Truxel Road provides the most cost-effective, superior, long-term major transit investment for the DNA Corridor. At the same time, however, it is recognized that residents and commercial property owners along Truxel Road, especially in the segment between Garden Highway and San Juan Road, have significant concerns with the use of Truxel Road. These concerns include station location, traffic circulation, pedestrian safety, noise, vibration, and visual impacts, property values, and resident and transit user safety. For RT to build and operate LRT service along Truxel Road, a concerted effort will be required for the District to work closely with residents, businesses, property owners, and neighborhood groups to address these various specific and important quality of life concerns.

8.5 A Long-Term Transit Vision for the Corridor

In implementing a long-term transit vision for the DNA Corridor, it may be necessary to phase construction of light rail between downtown Sacramento and the Airport. This is consistent with the progression of growth and evolving development patterns within the Corridor by 2025 and beyond, the funding strategy set forth in SACOG's adopted MTP, and follows the pattern established by RT in building Phase 1 of the recently opened South Line LRT extension from Downtown to Meadowview Road as well as the construction of the Folsom LRT extension to Sunrise and ultimately to the City of Folsom.

Using this approach, Alternative 3: Truxel Road Light Rail Transit could initially be built in two phases, with full implementation by 2025 or beyond. This phased approach would ultimately, be determined during the PE phase of the project development process.

- Phase 1 (by 2012) – implementation of Truxel LRT MOS (Alternative 3B), with light rail service between Downtown and the Natomas Town Center, with a feeder bus service connection to the Airport.
- Phase 2 (by 2015) – implementation of Truxel LRT Starter (Alternative 3A), with the extension of light rail service beyond Natomas Town Center to the Airport.

As part of this long-term transit vision for the DNA Corridor, during the environmental phase and subsequently in PE and final design, RT will evaluate in greater detail design options that are also retained as part of the LPA. A listing of these design options is shown in Table 8.8-1. These design options will influence transit station and park-and-ride lot location, transit user accessibility, traffic flow and circulation, and pedestrian safety.

While Alternative 3 falls above the FTA user benefit threshold of $25.00, it is anticipated that additional design and engineering refinements could be achieved, thereby enhancing the eligibility of Alternatives 3 and 3A for federal funding. This could occur, for example by treating the LRT maintenance facility and bike/pedestrian path on the new American River bridge, as separate capital projects and thus paid for through other sources of funding. Under this scenario, the resulting FTA user benefits would be $24.41 and $20.36, respectively. Other types of cost savings, value engineering, and/or funding strategies will be considered in the PE phase of project development to improve this ratio. This type of separate capital project approach occurred during South Line Phase 1, with the separate funding of the Wayne Hultgren LRT station and the Florin Road grade separation project. Alternative 3B already falls well below FTA's user benefit threshold of $19.99 per hour allowing it to compete for a medium project rating in FTA's New Starts process.

8.6 Funding Strategy

A long-term commitment of local, state and federal funding will be required to build the DNA LRT extension. SACOG's MTP identifies approximately $400 million in funding available to build light rail from Downtown to the Airport. This figure could potentially increase to $450 million assuming the availability of Airport funding for airport-related transit improvements and local developer fees that are reasonable to expect based on redevelopment of the Railyards/Richards Boulevard areas. It is further assumed that:

- Project construction will be funded based on a 50 percent federal New Starts match, coupled with local and state funds, and

- Project operation assumes local funding, primarily through farebox revenues and renewal and expansion of Sacramento County's Measure A sales tax program. Critical to the construction and operation of DNA improvements will be an increase in RT's share of a renewed sales tax program, from an existing 1/6 of a cent to at least 1/3 of a cent as identified in the adopted MTP.

The phasing of project construction will be dictated, in large part, by the availability of construction and operating funds. RT will need to work closely with FTA, SACOG, and other local and state agencies to ensure that necessary funding is available when needed to maintain project momentum so that initial LRT service between Downtown and the Natomas Town Center begins by 2012 and that service is extended to the Airport no later than by 2015.

8.7 Recommendation

Thus it is recommended that the LPA consist of building and operating high capacity LRT service on the Truxel Road alignment from Downtown, through South and North Natomas to the Sacramento International Airport. Figure 8-8.1 shows the location of the alignment, while Table 8.8-2 identifies design options that are recommended to be dropped from further study.

FIGURE 8.7-1
LOCALLY PREFERRED ALTERNATIVE

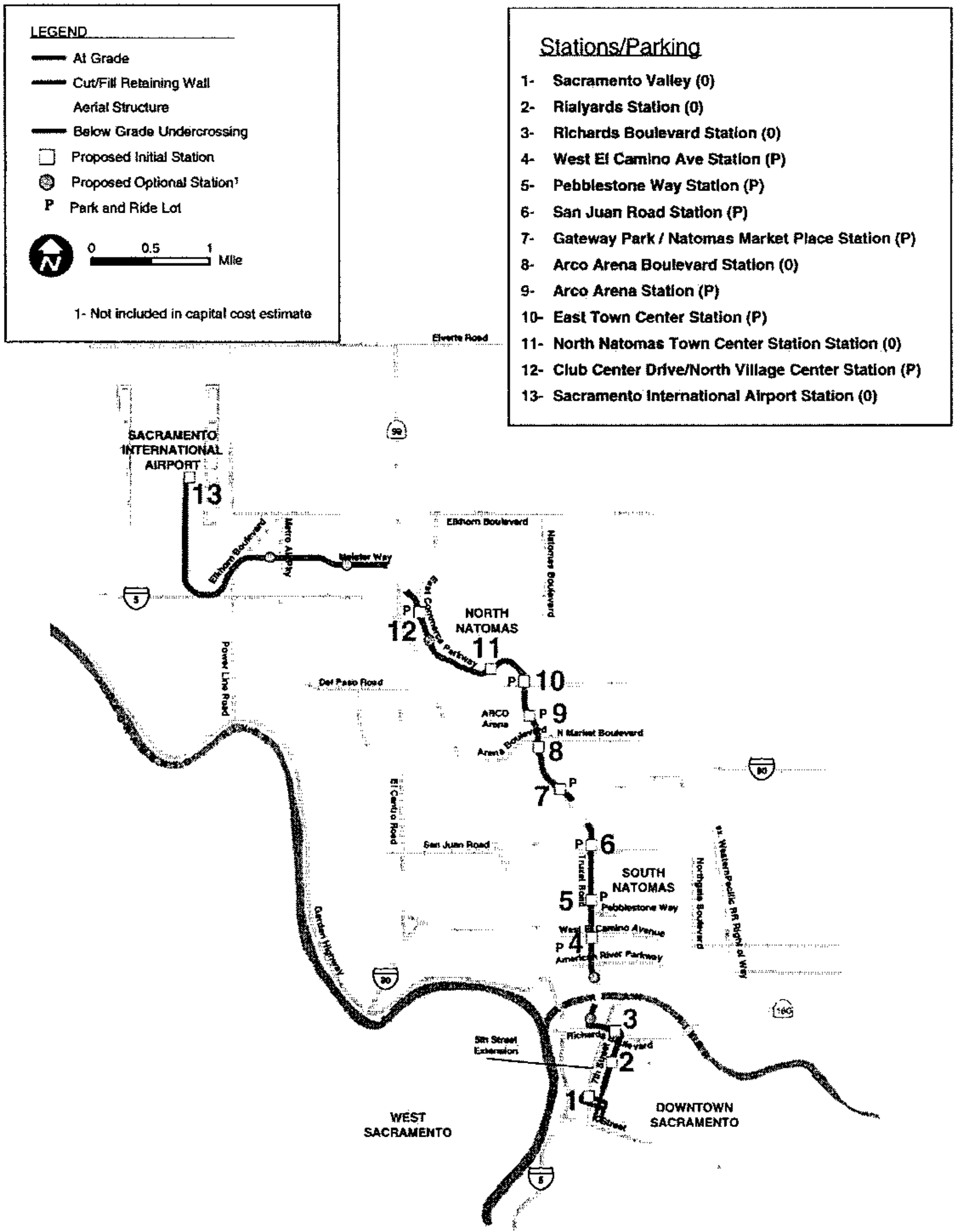


TABLE 8.7-1
DESIGN OPTIONS TO BE CARRIED FORWARD AS PART OF THE LOCALLY PREFERRED ALTERNATIVE

	Design Option	Description
Downtown to Richards Boulevard		
1	North 5th Street, Mixed Flow Grade-separation	Double-track mixed flow guideway through grade-separation of relocated Union Pacific Railroad (UPRR) tracks; Double-track in exclusive median of new 5th/6th Street north of UPRR
2	North 5th Street, Exclusive Grade-Separation	Double-track exclusive guideway in median of proposed 5th/6th Street grade-separation of relocated UPRR tracks; Double-track exclusive guideway in median of new 5th/6th Street north of UPRR
3	North 6th Street, Exclusive Grade-Separation	Double-track exclusive guideway in median of proposed 6th Street grade-separation of relocated UPPR tracks; Double-track exclusive guideway along 6th Street alignment north of UPRR
4	7th Street, Exclusive Single Track **(Starter Line and Minimum Operable Segment [MOS])**	Single-track exclusive guideway in 2-lane 7th Street extension undercrossing, Single track exclusive guideway along 7th Street north of UPRR
5	7th Street, Exclusive Double Track	Single track exclusive guideway in 7th Street extension undercrossing; Double-track exclusive guideway along 7th Street north of UPRR
6	7th Street, Mixed Flow Double Track/Exclusive Guideway	Double-track mixed flow guideway in 2-lane 7th Street extension undercrossing; Double-track exclusive guideway along 7th Street north of UPRR
7	7th Street, Two-Phased Under-crossing Construction	Phase One: Single-track exclusive guideway in existing 2-lane 7th Street extension undercrossing, Phase Two: Double-track exclusive guideway in new 4-lane 7th Street undercrossing Phase One and Two: Double-track exclusive guideway along 7th Street north of UPRR
8	7th Street, east-side running (North B Street to Richards Boulevard)	Double- or single-track exclusive guideway using city-owned land on the east side of 7th Street between North B Street and Richards Blvd.
9	Sequoia Pacific Boulevard Station	Light Rail Transit (LRT) station on abandoned railroad spur west of Sequoia Pacific Boulevard

Text in **Bold** type indicates the primary design option in a particular geographic segment

TABLE 8.7-1
DESIGN OPTIONS TO BE CARRIED FORWARD AS PART OF THE LOCALLY PREFERRED ALTERNATIVE (CONTINUED)

Design Option		Description
Crossing of the American River		
10	Truxel Bridge Crossing **(All Alternatives)**	Transit only crossing along an abandoned railroad spur west of Sequoia Pacific Boulevard, with a direct connection to Garden Highway at Truxel Road
11	North 5th Street Bridge Crossing	Transit only crossing from the end of North 5th Street with a direct connection to Garden Highway at Truxel Road
Through South Natomas		
12	Mixed Flow, Double-Track in Traffic Lanes **(Truxel LRT)**	Double-track exclusive guideway in mixed flow travel lanes on Truxel Road;
13	Exclusive Median Single-Track **(Truxel LRT Starter Line/MOS)**	Single track exclusive guideway would operate in the median of Truxel Road, with double track sections at selected locations
14	Exclusive Median Single-Track with Single-Track Mixed Flow	Single track exclusive guideway would operate in the median of Truxel Road, with a second track located in an adjacent mixed flow lane
15	West El Camino Avenue Station South Site	LRT Station located on Truxel Road south of West El Camino Avenue
16	San Juan Road Station North Site	LRT Station located north of San Juan Road in the median of Truxel Road with parking west of Truxel Road adjacent to the Truxel/I-80 interchange
Crossing of Interstate 80		
17	New East Side Double Track Aerial Structure **(Truxel LRT)**	New aerial structure over I-80 located on the east side of the Truxel Road overcrossing
18	Mixed Flow Double Track Aerial Structure **(Truxel LRT Starter Line/MOS)**	Double-track mixed flow guideway on the existing I-80 overcrossing
19	New I-80 Double Track Aerial Structure to the West Side of Truxel Road	New aerial structure over I-80 with an elevated transition to the west side of Truxel Road just north of the Natomas Marketplace

Text in **Bold** type indicates the primary design option in a particular geographic segment

TABLE 8.7-1
DESIGN OPTIONS TO BE CARRIED FORWARD AS PART OF THE LOCALLY PREFERRED ALTERNATIVE (CONTINUED)

	Design Option	Description
Through North Natomas		
20	Arco Arena Spur	Operation of LRT along a spur to Arco Arena for special events; Light rail vehicle storage for MOS alternative
21	Gateway Park Boulevard and Truxel Road – West Side	Station located along the west side of Truxel Road adjacent to the Natomas Marketplace
22	Gateway Park Boulevard and Truxel Road – Center **(Truxel LRT Starter Line/MOS)**	LRT Station in the median of Truxel Road north of Gateway Park Boulevard.
23	Gateway Park Boulevard and Truxel Road – East Side **(Truxel LRT)**	LRT Station along the east side of Truxel Road north of Gateway Park Boulevard
24	Commerce Parkway Station	LRT Station along the east side of East Commerce Parkway at North Park Drive
25	Greenbriar Farms Station	LRT Station along future extension of Meister Way
26	Metro Air Park Station	LRT Station along Meister Way just west of Metro Air Parkway
Access into the Airport		
27	Single Station	Locate an LRT station between existing Terminals A and B.
28	Rental Car Station	Locate an LRT station at the Rental Car Facility south of the terminals.
29	Rental Car/Terminals A & B	Locate LRT stations at the Rental Car Facility and between existing Terminals A and B
30	Two Stations	Locate LRT stations at Terminals A and B
31	Terminal A, East Side **(All Alternatives)**	Locate an LRT station along the east side of Terminal A with an alignment along the eastern side of Airport Boulevard
32	Station Immediately North of I-5	Locate a station immediately north of I-5 (near former oxidation ponds) that would serve future airport development between I-5 and Crossfield Drive
Maintenance Facility Options		
33	Maintenance Facility at Metro Air Park **(Truxel LRT/LRT Starter Line)**	Locate a light rail vehicle maintenance facility near Meister Way at Metro Air Park

Text in **Bold** type indicates the primary design option in a particular geographic segment

TABLE 8.7-2
DESIGN OPTIONS TO BE DROPPED FROM THE LOCALLY PREFERRED ALTERNATIVE

Design Option		Description
Crossing of the American River		
1	Urrutia Bridge Crossing	Continue north on 7th Street to a crossing of the American River just east of Discovery Park
2	I-5 East Bridge	A new bridge crossing immediately adjacent to the existing I-5 Bridge
Through South Natomas		
3	Exclusive Median Double-Lane/Double-Track BRT/LRT Guideways	Double-lane or double-track guideway in the median of Truxel Road (See Figure 5.4-11)
4	Exclusive East Side BRT/LRT Guideways	Double-lane or double-track guideway on the east side of Truxel Road
Through North Natomas		
4	Sports Parkway Alignment	Operation of either LRT along Sports Parkway past Arco Arena to Town Center Drive
Maintenance Facility Options		
5	Maintenance Facility at the Airport	Locate a light rail vehicle maintenance facility on airport property south of I-5

9.0 NEXT STEPS

Chapter Summary

Following the conclusion of the Alternatives Analysis (AA) and adoption of a Locally Preferred Alternative (LPA), the Sacramento Regional Transit District (RT) will be well positioned to initiate the next phase of LPA development, which consists of completing a Draft Environmental Impact Statement/Environmental Impact Report (DEIS/DEIR). RT will also need to begin addressing other short- and long-term LPA implementation issues. Building on the coordination and consultation process established during the planning phase of the Downtown/Natomas/Airport (DNA) Corridor study, RT will continue working closely with local, state and federal agencies to implement its vision for the DNA Corridor. A set of "Next Steps" are provided below that RT should take to pursue its vision of implementing transit improvements in the DNA Corridor.

9.1 Environmental Documentation

Under both state and federal law, RT is required to prepare an environmental document that identifies and evaluates environmental impacts associated with a proposed major transit investment. RT has chosen to prepare a single integrated document that represents an Environmental Impact Statement, consistent with the requirements under the National Environmental Policy Act (NEPA), and an Environmental Impact Report, which complies with the California Environmental Quality Act (CEQA). To initiate the environmental evaluation process, the Federal Transit Administration (FTA) published in the December 2001 *Federal Register* a Notice of Intent (NOI) to evaluate a DNA Corridor transit investment. Three public scoping meetings were held in Sacramento where comments were received from both resource agencies and the general public. A Notice of Preparation (NOP), required by CEQA, was also published and distributed by RT in December 2001. The NOI and NOP will be reissued before the actual preparation of the DEIS/DEIR begins.

The DEIS/DEIR will evaluate two alternatives—a No-Build Alternative, which assumes for comparison purposes that no transit investment is built, and the RT-adopted LPA. Topics to be addressed include impacts to the natural environment, such as air quality, biological resources, noise and visual aesthetics, and impacts to the built environment, such as socioeconomic and fiscal impacts, property acquisition and relocation, environmental justice, cultural and parkland resources, public safety and security, construction impacts, and cumulative and growth inducing impacts.

Under FTA and NEPA guidelines RT has chosen to prepare the DEIS following completion of this AA Report and selection of the LPA. The DEIS is to be prepared in early 2004 and will be circulated for public comment and review for a minimum of 45 days. Following the receipt and response to comments, RT will submit the DEIS and the comments to FTA. The agency will then conduct its own review and, assuming all statutory and regulatory requirements have been met, authorize RT to begin the next phase of proposed LPA development: Preliminary Engineering (PE) and completion of a Final EIS.

Concurrent with public review of the DEIS, RT will also request public comment on the DEIR portion of the document. Unlike the federal process, once RT has received and responded to comments, it will prepare a Final EIR (FEIR) for consideration and approval by the RT Board of Directors during the latter part of 2004. Adoption of the FEIR will enable RT to use local and state funds to acquire right-of-way (ROW) and to conduct other proposed LPA-related activities.

9.2 Preliminary Engineering and Refinement of Design Options

In preparing the AA, RT has evaluated the study alternatives based on conceptual planning and engineering, or within about a 10 percent level of design. During Preliminary Engineering, RT intends to continue the refinement process by exploring in greater detail the engineering and design needed for implementing the LPA and one or more of its design options. During PE, the level of design typically approaches 30 to 35 percent of a Final Design. Also during this phase, RT will complete its work on the Final EIS (FEIS).

9.3 Funding Commitments

To eventually receive a federal commitment to help build any DNA Corridor major transit investment, FTA will require RT to demonstrate it can: a) provide at least ½ (50 percent) of the construction costs using local and state funds, and b) that RT has the authority and assumed financial resources to operate the proposed system improvements for the next 20 years. These local funding commitments will need to be documented and provided to FTA prior to the agency giving RT approval to begin Final Design. Upon completion of Final Design, these commitments will need to be reaffirmed by RT prior to FTA approving a Full Funding Grant Agreement (FFGA), thereby committing the federal government to pay for ½ of the construction cost for DNA Corridor improvements. The FTA major transit investment development process is depicted in Figure 9.3-1.

9.4 LPA Implementation Issues and Schedule

Building on the coordination and consultation process established during the planning phase of the DNA Corridor study, RT will continue working closely with local, state and federal agencies to implement its vision for the DNA Corridor. This interactive process will occur on several levels, including the coordination of planning activities; obtaining political support at key milestones; the resolution of alignment, station location, traffic, environmental and other technical issues; and all funding commitments. In addition, the types of issues will change over time, as the transit investment evolves from planning to design, from design to detailed engineering, and from engineering to construction and the initiation of revenue service.

While the number of agencies RT will need to work with is large, there are seven local agencies where the coordination and consultation process will be critical in maintaining momentum for implementing the LPA. These agencies include the Sacramento International Airport, the City of Sacramento, the County of Sacramento, the Sacramento Area Council of Governments (SACOG), the Sacramento Transportation Authority (STA), Sacramento Area Flood Control Agency (SAFCA), and the California Department of Transportation (Caltrans). A general discussion of the types of issues to be addressed by each of these agencies is described below. In addition, Table 9.4-1 provides more detail on the type of actions required, who will need to participate in the decision-making process, and the timeline for these decisions.

The issues identified here will likely change over time, so RT will periodically update its implementation plan to accomplish its adopted goal of opening new transit revenue service between downtown and Natomas Town Center by 2012 and extending service to the airport by 2015.

FIGURE 9.3-1
FTA LPA DEVELOPMENT PROCESS

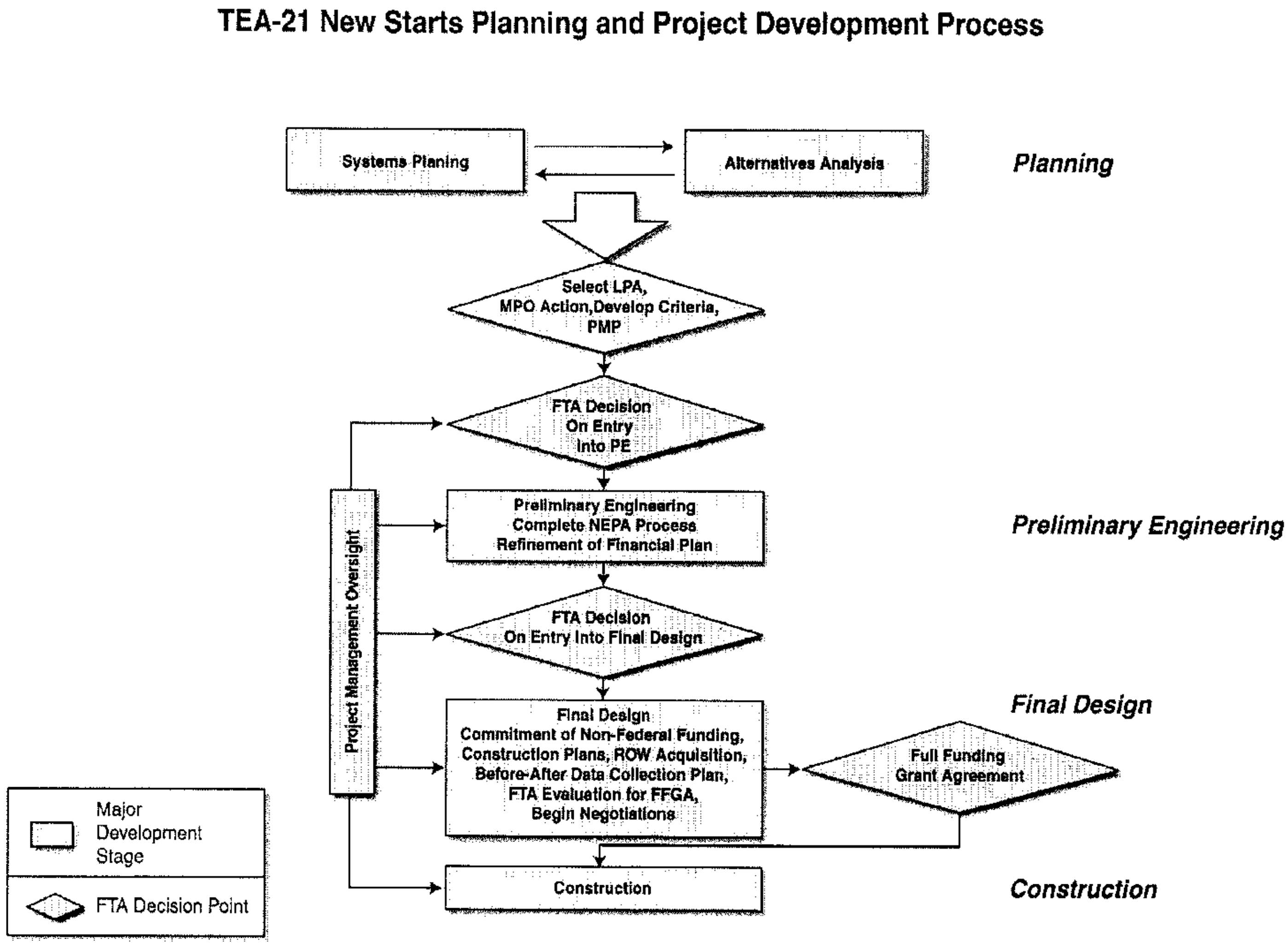


TABLE 9.4-1
LPA IMPLEMENTATION ACTION PLAN

Implementation Issue	Action(s)	Responsible Parties	Timeline
Sacramento International Airport			
1. Consistency between the Draft Sacramento International Airport Master Plan Study (Airport Master Plan Study) and RT's DNA Expansion Program	Ensure that the Airport Master Plan now being prepared generally identifies the location of alignment, transit station, and light rail vehicle (LRV) maintenance facility site options on airport property	County Airport Agency, Sacramento Regional Transit, the Federal Aviation Administration	During the Preliminary Engineering phase of the LPA
2. Airport Financial Participation	Work with airport staff to determine and confirm the level and timing of the airport's financial participation in the planning, design, engineering and construction of DNA-related transit improvements; negotiate an agreement for access/lease/acquisition of a LRV maintenance facility site; prepare a Memorandum of Agreement (MOA) that formally establishes the process and schedule by which RT and the airport will work together to plan, fund, build and operate transit service to the airport; ensure that the DNA transit investment is included in the airport's Capital Improvement Program (CIP)	County Airport Agency, Sacramento Regional Transit, the Federal Aviation Administration	During the Preliminary Engineering phase of the LPA
3. Employee and Airport Passenger Incentives to Use Transit Service	Work with airport staff to determine how transit service can accommodate airport employee work schedules; identify mechanism for airport employees to purchase transit passes on airport property; evaluate short- and long-term employee and passenger parking needs and its relationship to the provision of future transit service.	County Airport Agency, Sacramento Regional Transit, the Federal Aviation Administration	During the Preliminary Engineering phase of the LPA. Issue should be revisited from time-to-time once transit improvements are implemented.
4. Maintenance Facility Site	Work with airport staff to identify a preferred option for a proposed LRV maintenance facility on airport property	County Airport Agency, Sacramento Regional Transit, the Federal Aviation Administration	During the Preliminary Engineering phase of the LPA

TABLE 9.4-1
LPA IMPLEMENTATION ACTION PLAN (CONTINUED)

Implementation Issue	Action(s)	Responsible Parties	Timeline
City of Sacramento			
5. Design and Development of the Sacramento Intermodal Transportation Facility; Redevelopment of the UPRR Railyards	Work with City staff to design the SITF to support efficient and cost-effective RT rail and bus service; support a Railyards land use plan that will generate transit ridership and ease of transfer between different transportation modes; assist in developing a Railyards Financing Plan that identifies specific transit improvements (e.g., stations, fixed guideway construction near stations, etc.) that can be funded through redevelopment activities; participate in discussions about a Downtown Entertainment District to determine how best transit can serve local needs	RT staff; City staff representing Planning, Economic Development, Public Works, and Environmental Review Departments; Union Pacific Railroad; Capitol Corridor JPA; and Amtrak, brief City Manager and City Council Members on implementation progress	Ongoing effort throughout planning, design, engineering and construction of the DNA LPA
6. Address Traffic Circulation, Parking, and Other Related Issues	Continue to work with City staff to identify, evaluate and resolve issues of mutual concern (e.g., traffic circulation, parking, pedestrian/bicycle access, etc.); discuss the need to develop a residential parking permit program near stations to prevent transit-patron parking on nearby streets; with City participation, initiate a study to evaluate downtown bus circulation issues	RT staff; City staff representing Planning, Economic Development, Public Works, and Environmental Review Departments; brief City Manager and City Council Members on LPA progress	Ongoing effort throughout planning, design, engineering and construction of the DNA LPA

TABLE 9.4-1
LPA IMPLEMENTATION ACTION PLAN (CONTINUED)

Implementation Issue	Action(s)	Responsible Parties	Timeline
7. Promote Transit-Supportive Land Use	Through the review of development applications, identify opportunities for increased densities of residential, office and commercial development around transit stations; work with City staff to determine the feasibility of implementing transit overlay zoning in portions of the DNA Corridor, such as in the Railyards, the Richards Boulevard area, Arco Arena re-use; the Commerce Parkway Station area, and potentially in South Natomas. Also work with the County to identify transit supportive land uses within Greenbriar Farms, if approved, and other areas covered by the Natomas Vision agreement between the City and County	RT staff, City staff representing Planning and Economic Development	Ongoing effort throughout planning, design, engineering and construction of the DNA LPA
8. Infrastructure Financing	Ensure that infrastructure financing plans that do not have any specific set asides for transit be updated to address transit capital needs (e.g., Railyards/ Richards, etc.)	RT staff; City staff representing Planning and Economic Development	During the Preliminary Engineering phase of the LPA
County of Sacramento			
9. County Oversight of the Airport	Periodically brief members of the Board of Supervisors on DNA activities as they relate to airport service; monitor City/ County negotiations/agreements on implementing Natomas Vision; provide comment on possible development proposals in unincorporated areas adjacent to the DNA Corridor	RT staff; County Board of Supervisors; County staff representing Planning, Economic Development, and Transportation Departments	Ongoing effort throughout planning, design, engineering and construction of the DNA LPA
10. Update of the American River Parkway Plan (ARPP)	Work closely with County staff to make sure that the ARPP is consistent with the locally preferred alternative selected for the DNA transit investment	RT staff; County Board of Supervisors; County parks Department staff	During the Preliminary Engineering phase of the LPA

TABLE 9.4-1
LPA IMPLEMENTATION ACTION PLAN (CONTINUED)

Implementation Issue	Action(s)	Responsible Parties	Timeline
11. DNA-Related Transportation Improvements	RT will need to work with County Public Works staff to ensure that transportation improvements critical to implement the DNA LPA, such as construction of the Meister Way overcrossing and a possible LRV maintenance facility at Metro Air Park, occur in a location and at a time consistent with RT's expansion plans to the airport	RT staff; County Public Transportation Department staff; Metro Air Park	Ongoing effort throughout planning, design, and engineering for the LPA
Sacramento Area Council of Governments			
12. Transportation Programming of DNA Improvements	Given its important role in programming state and federal transportation funds, work closely with SACOG staff to obtain its support for the DNA transit investment; work with staff to prepare amendments for an updated MTP and TIP, thereby making the LPA eligible for local, state and federal funding; work with SACOG staff to prepare LPA funding applications, as needed	RT staff; SACOG staff	Ongoing effort throughout planning, design, and engineering for the LPA
Sacramento Transportation Authority			
13. Measure A Renewal	RT must work with STA staff and others to ensure that a renewal measure provides adequate funding for RT's current and future needs; also work with agency staff to secure necessary recommendations to SACOG for the allocation of state and federal transportation funding	RT staff; STA staff	Depending on timing of renewal measure, ongoing effort throughout DNA LPA; funding commitment needed prior to the start of Final Design

TABLE 9.4-1
LPA IMPLEMENTATION ACTION PLAN (CONTINUED)

Implementation Issue	Action(s)	Responsible Parties	Timeline
Sacramento Area Flood Control Agency			
14. Operation within the American River Floodplain	RT must work with SAFCA staff and others to ensure that crossing the American River and operating within the floodplain meets all applicable local, state and federal flood control/protection requirements	RT staff; SAFCA staff; Lower American River Taskforce; and staff representing Reclamation District 1000 and the American River Flood Control District	Ongoing effort throughout planning, design, engineering, and construction of the LPA
California Department of Transportation			
15. Operation within the Caltrans Right-of-Way	Work closely with Caltrans staff to ensure the safe operation of transit improvements within the state right-of-way; work with agency staff to secure necessary encroachment and other permits; identify areas where the two agencies can work together to achieve mutual goals to increase transit ridership	RT and Caltrans staff	Ongoing effort throughout planning, design, engineering, construction and operation of transit improvements

Sacramento International Airport

When fully built, the DNA Corridor line will provide transit service from Downtown Sacramento to the airport. Implementation issues that need to be addressed include: 1) securing the airport's endorsement of the transit investment from a policy, planning and financial perspective; 2) formalizing this support through a letter of agreement on interagency coordination and cooperation needed during planning and construction, and 3) securing a specific financial commitment from the County Airport System for construction of the transit investment.

City of Sacramento

There are a number of DNA-related planning, design, and engineering issues of mutual interest to RT and the City. These include, for example, planned redevelopment of the Union Pacific Railroad (UPRR) Railyards and the City's desire to build a new Sacramento Intermodal Transportation Facility (SITF). When built, this facility will serve the DNA Corridor as a major system-wide intermodal and transfer facility, and the transit needs of individuals using local and regional bus, light rail, regional and intercity rail services. RT will need to work with City staff to make sure that the SITF is designed to accommodate DNA-related transit improvements as well as other RT bus and light rail requirements.

RT and the City will also need to work closely on issues related to traffic circulation, particularly along 7th Street and through the Railyards, and, depending on which alignment is selected as the LPA, a segment of Truxel Road between Garden Highway and San Juan Road along with the crossing of I-80.

Encouraging the implementation of high density, transit supportive residential, office (e.g., in excess of EC-80 zoning in North Natomas) and commercial development within the DNA Corridor is a third area where RT and the City will want to collaborate. Higher density development helps to promote transit ridership.

LPA funding is a fourth area where the City can play an important role in helping to establish one or more benefit assessment districts, primarily as part of redevelopment of the UPRR Railyards, that can help fund transit station development and other improvements.

RT will also want to periodically brief members of the City Council to keep them apprised of progress on implementing the LPA.

County of Sacramento

The County of Sacramento will also have a major role in the planning and construction of the DNA line. First, because the Sacramento County Board of Supervisors is the policy board for the airport, the Board will need to balance among competing priorities the capital funding needs for planned expansion of the airport, including the provision of new transit service. While several of the Board members sit on the RT, SACOG or STA boards, not all the members may be equally conversant with issues related to implementing the DNA major transit investment. As a result, RT and County staff will want to provide periodic briefings to Board members so that the entire Board can address DNA issues when issues come before it for consideration and action.

Second, the County has responsibility for preparing and periodically updating the American River Parkway Plan (ARPP). A Parkway Plan Update is now underway and is to be completed in 2006. Since all of the LRT and BRT alternatives will require a new bridge crossing of the American River and Parkway, RT and the County will need to work closely to ensure that the ARPP includes provisions for a new transit crossing.

Third, the County makes many policy decisions affecting local transportation funding. Again, RT will want to work with County staff to ensure that transportation improvements critical to implementing the DNA line, such as construction of the Meister Way overcrossing of SR 99/70, are built in a location and at a time consistent with RT's implementation schedule for the DNA Corridor LPA.

Sacramento Area Council of Governments

SACOG has two major roles in facilitating the New Starts approval process. First, as the regional and metropolitan planning agency for the Sacramento region, SACOG should support RT's proposed transit service expansion program, since it is identified in the agency's 2025 *Metropolitan Transportation Plan* (MTP). Agency efforts to maintain and update its population, housing and employment growth forecasts and its regional transportation demand model also help to substantiate and document the need for transit improvements in the DNA Corridor.

Following the RT Board of Directors adoption of a LPA, SACOG will update and/or amend its MTP and transportation improvement program (TIP) to reflect RT's decision. RT will then request SACOG to formally endorse the LPA, since the FTA will need this approval prior to giving RT approval to initiate the next step in LPA development.

RT and SACOG will also need to work together, since SACOG will need to support funding requests that allocate design, engineering and construction funds for the DNA LPA. SACOG will need to also work with RT to package funding that bridges multiple funding cycles.

Sacramento Transportation Authority

The STA has the critical role of structuring an expenditure program and determining when county voters will be asked to renew the Measure A transportation sales tax program. RT has already begun working with STA staff and others to ensure that a renewal measure provides adequate funding for RT's current and future needs. In addition STA has the role for establishing transit investment priorities for various federal and state funding programs. These priorities are forwarded to SACOG and serve as countywide priorities for the allocation of state and federal funding at the regional level.

RT will want to brief STA management, Board and advisory committees on DNA investment funding needs to ensure that countywide transportation priorities can be accommodated with available funding.

Sacramento Area Flood Control Agency

Established by the California Legislature in 1989, SAFCA has primary responsibility for coordinating flood control protection in the Sacramento region. RT will need to work closely with agency staff and others (e.g., the American River Flood Control District, the Lower American River Taskforce, Reclamation District-1000, etc.) in the subsequent planning, design, engineering and construction of transit improvements in the DNA Corridor, since all three study alignments are located within a protected floodplain and will require a new bridge crossing of the American River and the American River Parkway.

California Department of Transportation

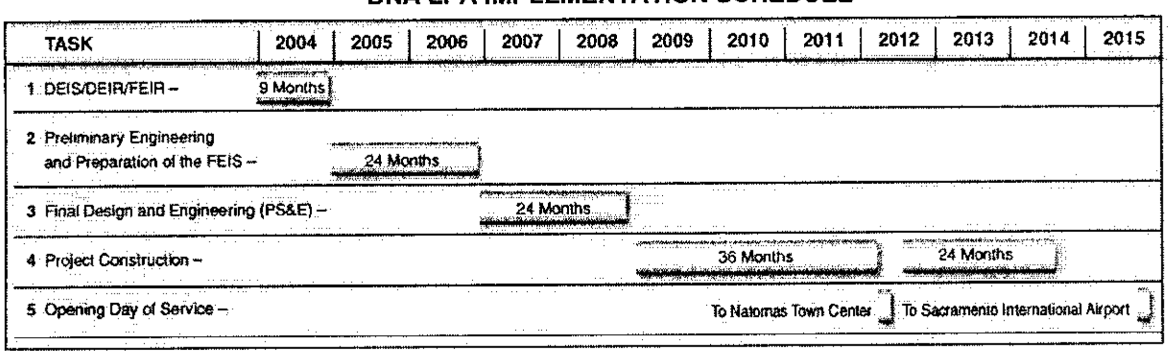
All of the BRT and LRT alternatives will require using and/or crossing a portion of the ROW maintained by Caltrans. As a result, RT will need to work with agency staff during the design, engineering and construction phases of a planned transit investment to ensure that Caltrans vehicle and pedestrian safety standards are maintained for use of the state highway system. RT will also need to consider Caltrans facility maintenance requirements and the location of its existing park-and-ride locations.

LPA Schedule

In general, the DNA Corridor LPA implementation schedule assumes the following (See Figure 9.4-1):

- Completion of the DEIS/DEIR/FEIR, September 2004
- Initiation of Preliminary Engineering and Preparation of the FEIS, December 2004
- Completion of PE and FEIS, December 2006
- Initiation of Final Design and Engineering (PS&E), December 2006
- Completion of PS&E, December 2008
- LPA Construction, 2009 – 2011
- Opening Day of Service – 2012

FIGURE 9.4-1
DNA LPA IMPLEMENTATION SCHEDULE



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12.0 LIST OF ACRONYMS AND KEY DEFINITIONS

Acronyms

AA	Alternatives Analysis
AGT	Automated Guideway Transit
ARPP	American River Parkway Plan
BRT	Bus Rapid Transit
Caltrans	California Department of Transportation
CBD	Central Business District
CEQA	California Environmental Quality Act
CRP	Citizens Review Panel
DEIS/R	Draft Environmental Impact Statement/Report
DNA	Downtown/Natomas/Airport
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FEIS/R	Final Environmental Impact Statement/Report
FEIR	Final Environmental Impact Report
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HOV	High Occupancy Vehicle
HRT	Heavy Rail Transit
IOD	Irrevocable Offer of Dedication
LOS	Level of Service
LPA	Locally Preferred Alternative
LRT	Light Rail Transit
LRV	Light Rail Vehicle
MOS	Minimum Operable Segment
MOU	Memorandum of Understanding
MTP	Metropolitan Transportation Plan

NEPA	National Environmental Policy Act
NOI	Notice of Intent
NOP	Notice of Preparation
PE	Preliminary Engineering
RFP	Request for Proposals
ROW	Right-of-Way
RT	Sacramento Regional Transit District
SACOG	Sacramento Area Council of Governments
SAFCA	Sacramento Area Flood Control Agency
SHPO	State Historic Preservation Officer
SITF	Sacramento Intermodal Transportation Facility
STA	Sacramento Transportation Authority
TES	Traction Electrification System
TMA	Transportation Management Association
TOD	Transit-Oriented Development
TRP	Technical Review Panel
TSM	Transportation Systems Management
UPRR	Union Pacific Railroad Company
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
WAPA	Western Area Power Administration

Key Definitions

Alignment: the route that an improvement, such as a bus or light rail line, could take through a corridor.

Alternative: a feasible transportation improvement that is under consideration.

At-grade: running on street-level.

Bus Rapid Transit (BRT): combines the quality of rail transit and the flexibility of buses. It can operate on exclusive transitways, high occupancy lanes, expressways, or ordinary streets. It is a system that combines intelligent transportation systems technology, priority for transit, cleaner and quieter vehicles, rapid and convenient fare collection, and integration with land use policy.

Capital Costs: the expense of designing and constructing a new project.

Final Design: begins after the environmental document is approved and includes the preparation of detailed engineering plans, specifications, and estimates for approved transportation projects in addition to right-of-way acquisition, utility relocation and construction contract advertisement and award.

Fixed Guideway: an exclusive travelway used by a particular mode of public transportation.

Impact: an effect that a transportation improvement could have, such as an environmental impact.

Light Rail Transit (LRT): lightweight passenger rail cars operating singly (or in short, usually tow-car trains) on fixed rails in right-of-way that can be separated or not separated from other traffic for much of the way. Light rail vehicles are driven electrically with power being drawn from an overhead electric line via a trolley or pantograph.

Locally Preferred Alternative: the transportation improvement selected by decision-makers as the solution to the transportation needs and problems in a corridor.

Mixed-flow: automobiles and transit vehicles sharing the same roadway.

Mixed-use: a type of development where residences and businesses are located in the same area.

New Starts: Federal government program which is the primary financial resource for supporting locally-planned, implemented, and operated transit "guideway" capital investments. Projects eligible for New Starts funding include any fixed guideway system which utilizes and occupies a separate right-of-way, or rail line, for the exclusive use of mass transportation and other high occupancy vehicles, or uses a fixed centenary system and a right-of-way usable by other forms of transportation. This includes, but is not limited to, rapid rail, light rail, commuter rail, automated guideway transit, people movers, and exclusive facilities for buses (such as bus rapid transit) and other high occupancy vehicles.

Operating and Maintenance (O & M) Costs: The expense of keeping a project running once it's built.

Preliminary Engineering (PE): the level of project design which defines the project limits and horizontal and vertical alignments to use as a baseline for determining right-of-way requirements, environmental impacts, and project costs.

Stakeholder: a person who has a strong interest in the transportation decisions made, such as a resident or business owner in the corridor.

Transit-oriented development (TOD): moderate to higher density development, located within an easy walk of a major transit stop, generally with a mix of residential, employment and shopping opportunities designed for pedestrians without excluding the auto. TOD can be new construction or redevelopment of one or more new buildings whose design and orientation facilitate transit use.

Transportation System Management (TSM): More effectively using an existing transportation system.

APPENDIX A

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

TABLE A-1
SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Alternative 1, No-Build	Alternative 2, TSM (Baseline)	Alternative 3/3A/3B, Truxel LRT— Build-out/Starter/MOS	Alternative 4/4A/4B, Truxel LRT—Build-out/Starter/MOS	Alternative 5, I-5/Truxel LRT	Alternative 6, I-5/Truxel BRT	Alternative 7, I-5 LRT	Alternative 8, I-5 BRT
LAND USE AND COMMUNITY IMPACTS							
Consistency with Plans and Policies							
Effects. Inconsistent with adopted General Plans. Auto-oriented land uses would persist. **Mitigation.** Requires amending Sacramento General Plan and relevant elements be amended to focus away from TOD. **Conclusion.** Significant impact	**Effects.** Inconsistent with adopted General Plans. Less potential for TOD. **Mitigation.** Requires amending Sacramento General Plan and relevant elements be amended to focus away from TOD. **Conclusion.** Less than significant with mitigation	**Effects.** All are consistent with adopted General Plans. High potential for TOD. Alternative, 3/3A impacts 5 acres of prime farmland. Alternative 3B has no farmland effects. **Mitigation.** No mitigation is required. **Conclusion.** Beneficial impact	**Effects.** All alignments are consistent with adopted General Plans, but BRT mode is not. Reduced TOD potential from Alternative 3/3A/3C. Alt 4/4A impact 5 acres of prime farmland Alternative 4B has no farmland effects. **Mitigation.** Sacramento General Plan and relevant elements would need to be amended to accommodate BRT. **Conclusion.** Beneficial impact	**Effects.** Portions of alignment are inconsistent with adopted General Plans. TOD development potential north of I-80. **Mitigation.** Sacramento General Plan and relevant elements would need to be modified for station areas west of I-5. **Conclusion.** Less than significant with mitigation	**Effects.** Portions of alignment and BRT mode are inconsistent with adopted General Plans. TOD development potential from Alternative 5. **Mitigation.** Sacramento General Plan and relevant elements would need to be amended to accommodate BRT. **Conclusion.** Less than significant with mitigation	**Effects.** Alignment is inconsistent with adopted General Plans. Minimal opportunity for TOD development. May shift employment and some population closer to I-5. Also minimal Farmland effects. **Mitigation.** General plans would need to be amended to relocate the LRT alignment and TOD to the I-5 corridor. **Conclusion.** Significant impact	**Effects.** Alignment and BRT mode are inconsistent with adopted General Plans. Minimal opportunity for TOD development. May shift employment and some population closer to I-5. Minimal Farmland effects. **Mitigation.** Similar to Alternative 7, BRT would have to be identified as the technology in the general plans. **Conclusion.** Significant impact
Community Impacts							
Effects. The effects of implementing the MTP have been addressed in MTP EIR. **Mitigation.** No further mitigation is required. **Conclusion.** Less than significant impact	**Effects.** No adverse community effects. The community would be benefited by additional transit services. **Mitigation.** No further mitigation is required. **Conclusion.** Less than significant	**Effects.** Construction effects to communities would be significant. Operation could cause noise and visual effects. No bifurcation effects due to at-grade construction. **Mitigation.** Mitigation would include best management practices during construction and avoidance design options. **Conclusion.** Significant construction impacts.	**Effects.** Construction effects to communities would be significant. Up to one year shorter than LRT Construction. Community bifurcation effects due to aerial structures. **Mitigation** Mitigation would include best management practices during construction and avoidance design options, where possible. **Conclusion.** Significant construction impacts. Neighborhood bifurcation are significant and unavoidable.	**Effects.** Construction effects to communities would be significant but less than Alternatives 3/3A/3B/3B & 4/4A/4B. No bifurcation. **Mitigation.** Mitigation would include best management practices during construction and avoidance design options. **Conclusion.** Significant construction impact.	**Effects.** Construction effects to communities would be significant but less than Alternatives 3/3A/3B/3B & 4/4A/4B. One year shorter than LRT construction. Potential for some community bifurcation due to aerial structures. **Mitigation.** Mitigation would include best management practices during construction and avoidance design options. **Conclusion.** Significant construction impact.	**Effects.** Construction effects to communities would be significant, but less than Alternatives 3/3A/3B/3B & 4/4A/4B, 5, & 6 because this alignment largely avoids residential areas. No bifurcation. **Mitigation.** Mitigation would include best management practices during construction and avoidance design options. **Conclusion.** Significant construction impact	**Effects.** Construction effects to communities would be significant but less than Alternatives 3/3A/3B/3B & 4/4A/4B, 5, & 6 because this alignment largely avoids residential areas. One year shorter than LRT construction. No bifurcation. **Mitigation.** Mitigation would include best management practices during construction and avoidance design options. **Conclusion.** Significant construction impact.

TABLE A-1
SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative 1, No-Build	Alternative 2, TSM (Baseline)	Alternative 3/3A/3B, Truxel LRT— Build-out/Starter/MOS	Alternative 4/4A/4B, Truxel LRT—Build-out/Starter/MOS	Alternative 5, I-5/Truxel LRT	Alternative 6, I-5/Truxel BRT	Alternative 7, I-5 LRT	Alternative 8, I-5 BRT
SOCIOECONOMIC AND FISCAL IMPACTS							
Effects. The EIR for the MTP has addressed the socioeconomic and fiscal effects of MTP implementation. **Mitigation.** No further mitigation is required. **Conclusion.** Less than significant impact	**Effects.** Short-term addition of 80 jobs, plus $9 million in regional labor income. Some improvement in mobility, especially for transit dependent populations, compared to Alternative 1. **Mitigation.** No further mitigation is required. **Conclusion.** Less than significant impact	**Effects.** Short-term addition of 860 jobs, plus $100 million in regional labor income. Respective numbers for 3A are 620 and $70 million and for 3B are 398 and $45 million. Some restriction of access of up to nine businesses and five shopping centers during construction. Reduced congestion and improved mobility would have a positive economic effect on the study area. **Mitigation.** Maintain access to local businesses during construction. **Conclusion.** Beneficial impact. Impacts to business access during construction is less than significant after mitigation.	**Effects.** Short-term addition of 689 jobs, plus $80 million in regional labor income. Respective numbers for 3A are 441 and $51 million and for 3B are 294 and $34 million. Same access restriction issues as described for Alternatives 3/3A/3B. Operation effects are comparable to Alternative 3. **Mitigation.** Provision of access to local businesses during construction. **Conclusion.** Benefical impact. Impacts to business access during construction is less than significant after mitigation.	**Effects.** Short-term addition of 1,065 jobs, plus $124 million in regional labor income. Some restriction of access of up to nine businesses during construction. Operational effects are comparable to Alternative 3. Some minor movement of employment may occur to the I-5 corridor south of I-80 as compared to Alternatives 3 and 4. **Mitigation.** No mitigation is required. **Conclusion.** Beneficial impact. Impacts to business access during construction is less than significant after mitigation.	**Effects.** Short-term addition of 629 jobs, plus $73 million in regional labor income. Some restriction of access of up to nine businesses during construction. Operational effects are similar to Alternative 5. **Mitigation.** No mitigation is required. **Conclusion.** Beneficial impact. Impacts to business access during construction is less than significant after mitigation.	**Effects.** Short-term addition of 1,002 jobs, plus $117 million in regional labor income. Some restriction of access of up to nine businesses during construction. Operational effects are generally comparable to Alternative 5 south of I-80. Some movement of employment from the Truxel to the I-5 corridor may occur around transit stations north of I-80. **Mitigation.** No mitigation is required. **Conclusion.** Beneficial impact	**Effects.** Short-term addition of 532 jobs plus $62 million in regional labor income. Some restriction of access for up to nine businesses during construction. Operational effects similar to Alternative 7 **Mitigation.** No mitigation is required. **Conclusion.** Beneficial impact
PROPERTY ACQUISITION AND RELOCATION							
Effects. No property acquisition over what is documented in the MTP EIR. **Mitigation.** No mitigation is required. **Conclusion.** Less than significant impact	**Effects.** No property acquisition over what is documented in the MTP EIR. **Mitigation.** No mitigation is required. **Conclusion.** Less than significant	**Effects.** Alternative 3/3A may require up to 7 residential and 11 commercial properties or 56 acres for alignment and station locations. Parking will require up to 8 acres and the acquisition of vacant lots. Substations will require up to 2 acres spread over 14 locations. One maintenance facility will require 15 acres. (Approx. total of 81 acres of permanent acquisition) Alternative 3B may require up to 7 residential and 10 commercial relocations for alignment and stations. No maintenance facility, 8 acres for parking, 1 acre for 10 substations. (Approx. 29 acres total) **Mitigation.** Application of the provisions of the Uniform Relocation Act. Use of avoidance design options. **Conclusion.** Significant impact for Alt. 3. Less than significant impact after mitigation with avoidance design options or the selection of 3A/3B	**Effects.** Zero relocations, only partial lot acquisitions and parking lot development on 8 acres of vacant lands. No substations or maintenance facility needed. (Approx. total of 20 acres of permanent acquisition) **Mitigation.** Application of the provisions of the Uniform Relocation Act. Use of avoidance design options. **Conclusion.** Less than Significant impact.	**Effects.** Up to 10 business relocations. Up to 46 acres for alignment, stations and parking, 2 acres for substations and 15 acres for a maintenance facility. (Approx. total of 63 acres of permanent acquisition) **Mitigation.** Application of the provisions of the Uniform Relocation Act. Use of avoidance design options. **Conclusion.** Less than significant with mitigation	**Effects.** Alternative 6 could avoid all relocations. Alignment and stations will require acquisition of approximately 20 acres. **Mitigation.** Application of the provisions of the Uniform Relocation Act. Use of avoidance design options. **Conclusion.** Less than significant with mitigation	**Effects.** Alternative 7 would require up to 10 relocations, but a total of approximately 60 acres of permanent ROW needs for alignment, stations and parking, 2 acres for substations and 15 acres for a Maintenance facility (Approx. total of 77 acres of permanent acquisition) **Mitigation.** Application of the provisions of the Uniform Relocation Act. Use of avoidance design options. **Conclusion.** Less than significant with mitigation	**Effects.** Alternative 8 could avoid all relocations. Alignment and stations will require acquisition of approximately 40 acres. **Mitigation.** Application of the provisions of the Uniform Relocation Act. Use of avoidance design options. **Conclusion.** Less than significant with mitigation

TABLE A-1
SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative 1, No-Build	Alternative 2, TSM (Baseline)	Alternative 3/3A/3B, Truxel LRT— Build-out/Starter/MOS	Alternative 4/4A/4B, Truxel LRT—Build-out/Starter/MOS	Alternative 5, I-5/Truxel LRT	Alternative 6, I-5/Truxel BRT	Alternative 7, I-5 LRT	Alternative 8, I-5 BRT
ENVIRONMENTAL JUSTICE							
Effects. No disproportionate nor beneficial impacts to minority and low-income populations **Mitigation.** No mitigation is required. **Conclusion.** Less than significant impact	**Effects.** No disproportionate impacts to minority and low-income populations. Beneficial impacts through new transit service to low-income or minority or transit-oriented populations. **Mitigation.** No mitigation is required **Conclusion.** Less than significant	**Effects.** Expected disproportionate impacts to minority and low-income populations due to construction. Beneficial impacts through new transit service to 10,275 minority and 2,982 low-income and transit-dependent populations. **Mitigation.** Best management practices during construction, application of the Uniform Relocation Act, avoidance design options, urban design treatments and sound walls and home insulation for noise mitigation. **Conclusion.** Beneficial but also Significant and unavoidable for the build-out alternative. Alts 3A/3B (Starter and MOS) can be reduced to less than significant after mitigation.	**Effects.** Expected disproportionate impacts to minority and low-income populations due to construction. Beneficial impacts through new transit service to 10,275 minority and 2,982 low-income and transit-dependent populations. **Mitigation.** Best management practices during construction, application of the Uniform Relocation Act, avoidance design options, urban design treatments and sound walls and home insulation for noise mitigation. **Conclusion.** Beneficial but also, Significant and unavoidable for the alternative 3. Alts 4A/4B (Starter and MOS) can be reduced to less than significant after mitigation.	**Effects.** Expected disproportionate impacts to minority and low-income populations due to construction. Beneficial impacts through new transit service to 5,744 minority and 1,884 low-income and transit-dependent populations. **Mitigation.** Best management practices during construction, application of the Uniform Relocation Act, avoidance design options and urban design treatments. **Conclusion.** Less than significant after mitigation.	**Effects.** Same as Alternative 5. **Mitigation.** Best management practices during construction, application of the Uniform Relocation Act, avoidance design options and urban design treatments. **Conclusion.** Less than significant after mitigation.	**Effects.** Expected disproportionate Impacts to minority and low-income populations due to construction. Beneficial impacts through new transit service to 5,853 minority and 1,883 low-income and transit-dependent populations. **Mitigation.** Best management practices during construction, application of the Uniform Relocation Act, avoidance design options and urban design treatments. **Conclusion.** Less than significant after mitigation.	**Effects.** Same as Alternative 7. **Mitigation** Best management practices during construction, application of the Uniform Relocation Act, avoidance design options and urban design treatments. **Conclusion.** Less than significant after mitigation.
CULTURAL RESOURCES							
Effects. The MTP EIR concluded that both direct and indirect impacts would be potentially significant and unavoidable **Mitigation.** Mitigation measures were suggested at the programmatic level that include focused studies for individual projects (per NHPA criteria) **Conclusion.** Less than significant impact, but, Individual projects in these areas will need to provide for environmental assessment and mitigation	**Effects.** Comparable to Alternative 1. **Mitigation.** Comparable to Alternative 1. **Conclusion.** Less than significant	**Effects.** Significant impact to 3 cultural resources: These are Alkali Flats, Sacramento Valley Station and an archaeological site. **Mitigation.** Use of avoidance options and low profile catenary to reduce visual conflict. Coordinate with Native American Community to avoid further impacts. **Conclusion.** Significant impact.	**Effects.** Significant impact to 3 cultural resources, but less visual impact from BRT mode. These are Alkali Flats, Sacramento Valley Station and an archaeological site. **Mitigation.** Same as Alternative 3/3A/3B/3B. **Conclusion.** Significant impact.	**Effects.** Significant impact to 2 cultural resources. These are Alkali Flats, and Sacramento Valley Station. **Mitigation.** Comparable to Alternative 3/3A/3B/3B. **Conclusion.** Significant impact.	**Effects.** Significant impact to 2 cultural resources, but less visual impact from BRT mode. These are Alkali Flats, and Sacramento Valley Station. **Mitigation.** Comparable to Alternative 3/3A/3B/3B. **Conclusion.** Significant impact.	**Effects.** Comparable to Alternative 5 These are Alkali Flats, and Sacramento Valley Station. **Mitigation.** Comparable to Alternative 3/3A/3B. **Conclusion.** Significant impact.	**Effects.** Comparable to Alternative 6. These are Alkali Flats and Sacramento Valley Station... **Mitigation.** Comparable to Alternative 3/3A/3B/3B. **Conclusion.** Significant impact.

TABLE A-1
SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative 1, No-Build	Alternative 2, TSM (Baseline)	Alternative 3/3A/3B, Truxel LRT— Build-out/Starter/MOS	Alternative 4/4A/4B, Truxel LRT—Build-out/Starter/MOS	Alternative 5, I-5/Truxel LRT	Alternative 6, I-5/Truxel BRT	Alternative 7, I-5 LRT	Alternative 8, I-5 BRT
			PARKLANDS AND RECREATIONAL RESOURCES				
Effects. MTP projects that will have impacts in Segment 1 include the widening of Garden Highway and the widening of the I-5 bridge over the American River for HOV lanes. This will result in permanent visual impacts to the park area from the bridge and shading under the bridge. **Mitigation.** See Visual impacts. Other mitigation is noted in the MTP EIR. **Conclusion.** Significant impact	**Effects.** Comparable to Alternative 1. However, the addition of the Baseline elements will result in no significant effects. **Mitigation.** No additional mitigation. **Conclusion.** No significant impacts above the MTP projects	**Effects.** Significant construction effects to the American River Parkway by disturbing 15 acres, restricting use and increase temporary safety concerns. Beneficial operational effects of providing park access to the transit dependent. A permanent ROW requirement of 4 to 6 acres would be required. **Mitigation.** The application of BMPs during construction. Implement security patrol, aesthetic treatment of bridge and routine maintenance. **Conclusion.** Significant impacts during construction. Significant long term commitment of parkland (3-4 acres) for ROW. Security and maintenance impacts would be less than significant with mitigation	**4/4A/4B Effects.** Comparable construction and operational effects to Alternative 3/3A/3B. **Mitigation.** Comparable to Alternative 3. **Conclusion.** Significant impacts, see Alternative 3/3A/3B.	**Effects.** Comparable construction and operational effects to Alternative 3/3A/3B. Crossing is near I-5, effects developed parkland in Discovery Park greater than for Alternatives 3/3A/3B. **Mitigation.** Comparable to Alternatives 3/3A/3B. **Conclusion.** Significant impacts, see Alternative 3/3A/3B.	**Effects.** Comparable construction and operational effects to Alternative 5 **Mitigation.** Comparable to Alternatives 3/3A/3B. **Conclusion.** Significant impacts, see Alternative 3/3A/3B.	**Effects.** Comparable construction and operational effects to Alternative 5. **Mitigation.** Comparable to Alternatives 3/3A/3B. **Conclusion.** Significant impacts, see Alternative 3/3A/3B.	**Effects.** Comparable construction and operational effects to Alternative 5. **Mitigation.** Comparable to Alternatives 3/3A/3B. **Conclusion.** Significant impacts, see Alternative 3/3A/3B.
			PUBLIC SAFETY AND SECURITY				
			Safety Impacts				
Effects. Alternative 1 does not cause adverse impacts to security and safety of transit providers, auto or pedestrians. **Mitigation.** No mitigation is required. **Conclusion.** Less than significant impact	**Effects.** Potential concerns for public safety at bus stops and on bus vehicles. **Mitigation.** RT to add proportional increase in security forces to cover increases in transit operation. No further mitigation is required. **Conclusion.** Less than significant	**Effects.** Alternative 3 holds concerns for public safety at LRT stations and on LRT vehicles. Potential accidents due to 39 at-grade crossings for build-out. Potential accidents due to 43 at-grade crossings for Alternative 3A and 36 for Alternative 3B and mixed flow portions in the alignment. **Mitigation.** Security forces would be added proportionately to increases in transit service hours. Life safety criteria would be incorporated into at-grade crossings, LRT stations and park and rides, resulting in a less than significant impact. **Conclusion.** Less than significant with mitigation	**Effects.** Alternative 4 holds concerns for public safety at BRT stations and on BRT vehicles. Potential accidents due to 33 at-grade crossings for build-out. Potential accidents due to 36 at-grade crossings for Alternative 4A and 34 for Alternative 4B and mixed flow portions in the alignment. **Mitigation.** Comparable to Alternative 3. **Conclusion.** Less than significant with mitigation	**Effects.** Concerns for public safety at LRT stations and on LRT vehicles. Potential accidents due to 35 at-grade crossings, but no mixed-flow operation. Difficult and remote access to station locations may increase security risk. **Mitigation.** Comparable to Alternatives 3 and 4. **Conclusion.** Less than significant with mitigation	**Effects.** Concerns for public safety at BRT stations and on BRT vehicles. Potential accidents due to 14 at-grade crossings. Also, shoulder use along Richards may hold the potential for accidents. Similar to Alternative 5, difficult and remote access to station locations. **Mitigation.** Comparable to Alternative 5. **Conclusion.** Less than significant with mitigation	**Effects.** Concerns for public safety at LRT stations and on LRT vehicles. Potential accidents due to 16 at-grade crossings, but no mixed-flow operation. Similar to Alternative 5, difficult and remote access to station locations. This alternative has all exclusive **Mitigation.** Comparable to Alternative 5. Additionally, access issues to the ROW would need to be addressed. **Conclusion.** Less than significant with mitigation	**Effects.** Concerns for public safety at BRT stations and on BRT vehicles. Potential accidents due to 14 at-grade crossings. Also, shoulder use along Richards may hold the potential for accidents. Similar to Alternative 5, difficult and remote access to station locations. **Mitigation.** Comparable to Alternative 7. **Conclusion.** Less than significant with mitigation

TABLE A-1
SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative 1, No-Build	Alternative 2, TSM (Baseline)	Alternative 3/3A/3B, Truxel LRT— Build-out/Starter/MOS	Alternative 4/4A/4B, Truxel LRT—Build-out/Starter/MOS	Alternative 5, I-5/Truxel LRT	Alternative 6, I-5/Truxel BRT	Alternative 7, I-5 LRT	Alternative 8, I-5 BRT
VISUAL AESTHETICS							
Effects. Alternative 1, includes the implementation of several future land use plans which will result in visual improvements along the corridor. **Mitigation.** No mitigation is required. **Conclusion.** Less than significant impact	**Effects.** No adverse visual impacts would result from Alternative 2. **Mitigation.** No mitigation is required. **Conclusion.** Less than significant	**Effects.** Visual impacts from 11,000 feet of aerial structures for Alternative 3, 8,600 for Alternative 3A, and 5,100 for Alternative 3B overhead catenary throughout, up to 14 traction power substations and four new Park-and-Ride locations. **Mitigation.** Screening, aesthetic treatments and public input where appropriate. **Conclusion.** Significant visual impact due to aerial structures.	**Effects.** Visual impacts from: 20,000 feet of aerial structures 9,000 for Alternative 4A and 7 000 for Alternative 4B and four new Park-and-Ride locations. No overhead catenary or traction power substations. Alternative 4 also includes visual impacts from a tunnel at San Juan and Truxel Road. **Mitigation.** Screening, aesthetic treatments and public input where appropriate **Conclusion.** Significant visual impact due to tunnel and aerial structures	**Effects.** Alternative 5 involves visual impacts from: 10,500 feet of aerial structures, catemary wires throughout, 14 traction power substations, 5 new Park-and-Ride locations. **Mitigation.** Screening, aesthetic treatments and public input where appropriate. **Conclusion.** Significant visual impact due to aerial structures	**Effects.** Alternative 6 involves visual impacts from: 24,700 feet of aerial structures and 5 new Park-and-Ride locations. No catenary or traction power substations. **Mitigation.** Screening, aesthetic treatments and public input where appropriate **Conclusion.** Significant visual impact due to aerial structures	**Effects.** Alternative 7, involves visual impacts from 29,000 feet of aerial structures, catemary wires throughout, 13 traction power substations, 3 new Park-and-Ride locations. **Mitigation.** Screening, aesthetic treatments and public input where appropriate **Conclusion.** Significant visual impact due to aerial structures	**Effects.** Alternative 8, involves visual impacts from: 13,000 (shoulder design or freeway shoulder option) to 21,700 feet of aerial structures, and 3 new Park-and-Ride locations. No catenary or traction power substations. **Mitigation.** Screening aesthetic treatments and public input where appropriate **Conclusion.** Significant visual impact due to aerial structures
NOISE AND VIBRATION							
Effects. Increases in traffic volumes would result in noise level increases between 1 to 3 dBA relative to existing conditions **Mitigation.** The 2025 MTP calls for mitigation's to be included in project-level analysis as appropriate **Conclusion.** The 2025 MTP finds construction impacts to be LSM and the operation and expansion of transportation facilities to be Significant.	**Effects.** The same general noise conditions as Alternative 1. **Mitigation.** Mitigation's should be included in project-level analysis as appropriate. **Conclusion.** The 2025 MTP finds construction impacts to be LSM and the operation and expansion of transportation facilities to be Significant and this would also apply to Alternative 2	**Effects.** Noise— Alternatives 3/3A/3B construction will cause noise impacts throughout corridor. Alternative 3/3A/3B noise impacts during operation include crossing the American River Parkway and up to 42 residences if the Urrutia Bridge crossing is chosen. If not, then operation would not result in noise effects. **Effects.** Vibration— Alternative 3 May impact a day care center. **Mitigation.** Construction mitigation's would include limiting pile driving and demolition activities to daytime hours and other BMP's. Mitigations for operations would include sound walls/berms, home acoustical insulation and avoidance. **Conclusion.** Construction impacts would result in short term (1 year longer than BRT) significant impacts after mitigation. Operations impacts would be Less than Significant impact after mitigation.	**Effects.** Noise— Alternatives 4/4A/4B construction will cause noise impacts throughout corridor. Noise impacts during operation include crossing the American River Parkway and up to 211 residences. **Effects.** Vibration—None **Mitigation.** Generally the same as for Alternative 3 with the possible addition of the procurement of quieter BRT vehicles. **Conclusion.** Construction impacts would result in short term significant impacts after mitigation. Operation would be Less than Significant impact after mitigation.	**Effects.** Noise— Construction will cause noise impacts throughout corridor. Noise impacts during operation include crossing the American River Parkway and 42 residences. **Effects.** Vibration—None Construction impacts on this alternative would be somewhat greater than for the BRT alternatives due to a year longer construction duration. **Mitigation.** Same as for Alternative 3/3A/3B. **Conclusion.** Noise impacts would be Less than Significant with Mitigation. Construction impacts would result in short term (1 year longer than BRT) significant impacts after mitigation.	**Effects.** Noise— Construction will cause noise impacts throughout corridor. Noise impacts during operation include crossing the American River Parkway and 84 residences. **Effects.** Vibration—None **Mitigation.** Same as for Alternative 4. **Conclusion.** Noise impacts would be Less than Significant with Mitigation. Construction impacts would result in short term significant impacts after mitigation.	**Effects.** Noise— Construction will cause noise impacts throughout corridor. Operation will cause noise impacts to the American River Parkway and possibly 42 residences. **Effects.** Vibration—None **Mitigation.** Same as for Alternative 3. **Conclusion.** Noise impacts would be Less than Significant with Mitigation. Construction impacts would result in short term (1 year longer than BRT) significant impacts after mitigation.	**Effects.** Noise— Construction will cause noise impacts throughout corridor. Operation will cause noise impacts to the American River Parkway and possibly 45 residences **Effects.** Vibration—None **Mitigation.** Same as for Alternative 3. **Conclusion.** Noise impacts would be Less than Significant with Mitigation. Construction impacts would result in short term significant impacts after mitigation.

TABLE A-1
SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative 1, No-Build	Alternative 2, TSM (Baseline)	Alternative 3/3A/3B, Truxel LRT— Build-out/Starter/MOS	Alternative 4/4A/4B, Truxel LRT—Build-out/Starter/MOS	Alternative 5, I-5/Truxel LRT	Alternative 6, I-5/Truxel BRT	Alternative 7, I-5 LRT	Alternative 8, I-5 BRT
BIOLOGICAL RESOURCES							
Wildlife Habitat Resources							
Effects. No impacts associated with this project. Habitat loss for the MTP and projected land use plans are determined significant. **Mitigation.** Impacts are addressed in the Natomas Basin HCP **Conclusion.** Less than significant impact	**Effects.** No impacts associated with this project. **Mitigation.** No mitigation is required. **Conclusion.** Less than significant	**Effects.** Alternatives 3/3A/3B effect 7.2 acres of riparian forest habitat, 0.3 acres of willow-cottonwoods, 4.0 urban parkland, and 2 acres of grassland in the American River Parkway. **Mitigation.** Provision of BMP's and immediate revegetation. Adoption of avoidance alternatives that minimize destruction of riparian forest habitat. **Conclusion.** Significant impacts to riparian forest habitat. All remaining impacts can be mitigated to less than significant.	**Effects.** Comparable to Alternatives 3/3A/3B. **Mitigation.** Comparable to Alternative 3/3A/3B. **Conclusion.** Comparable to Alternative 3/3A/3B.	**Effects.** 3.5 acres of riparian habitat, 0 acres of willow-cottonwoods, 6.5 urban parkland, and 5 acres of grassland. **Mitigation.** All impacts can be mitigated to with re-vegetation to less than significant except impacts to riparian habitat are significant and unavoidable impacts. **Conclusion.** Significant impacts to riparian forest habitat. All remaining impacts can be mitigated to less than significant.	**Effects.** Comparable to Alternative 5. **Mitigation.** Comparable to Alternative 5. **Conclusion.** Significant impacts to riparian forest habitat. All remaining impacts can be mitigated to less than significant.	**Effects.** Comparable to Alternative 5. **Mitigation.** Comparable to Alternative 5. **Conclusion.** Significant impacts to riparian forest habitat. All remaining impacts can be mitigated to less than significant.	**Effects.** Comparable to Alternative 5. **Mitigation.** Comparable to Alternative 5. **Conclusion.** Significant impacts to riparian forest habitat. All remaining impacts can be mitigated to less than significant.
SPECIAL STATUS SPECIES							
Effects. No impacts associated with this project. Habitat loss for the MTP and projected land use plans are determined significant. **Mitigation.** Impacts are addressed in the Natomas Basin HCP **Conclusion.** Less than significant impact	**Effects.** No significant construction or operational impacts. **Mitigation.** No mitigation is required. **Conclusion.** Less than significant	**Effects.** Significant impacts to • Swainson's hawk during nesting season • Removal of elderberry beetle habitat. • Special-status fish and loss of habitat. • Giant Garter Snake habitat. **Mitigation.** Avoidance and species removal techniques can mitigate impacts to less than significant. **Conclusion.** Less than significant impact with mitigation.	**Effects.** Comparable to Alternative 3/3A/3B. **Mitigation.** Comparable to Alternative 3/3A/3B. **Conclusion.** Less than significant impact with mitigation.	**Effects.** Comparable to Alternative 3/3A/3B. However, the location of the bridge crossing adjacent to I-5 would reduce the effects on habitat. **Mitigation.** Comparable to Alternative 3/3A/3B. **Conclusion.** Less than significant impact with mitigation.	**Effects.** Same as Alternative 5. **Mitigation.** Comparable to Alternative 3/3A/3B. **Conclusion.** Less than significant impact with mitigation.	**Effects.** Same as Alternative 5. **Mitigation.** Comparable to Alternative 3/3A/3B. **Conclusion.** Less than significant impact with mitigation.	**Effects.** Same as Alternative 5. **Mitigation.** Comparable to Alternative 3/3A/3B. **Conclusion.** Less than significant impact with mitigation.

TABLE A-1
SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative 1, No-Build	Alternative 2, TSM (Baseline)	Alternative 3/3A/3B, Truxel LRT— Build-out/Starter/MOS	Alternative 4/4A/4B, Truxel LRT—Build-out/Starter/MOS	Alternative 5, I-5/Truxel LRT	Alternative 6, I-5/Truxel BRT	Alternative 7, I-5 LRT	Alternative 8, I-5 BRT
			SUMMARY OF CONSTRUCTION IMPACTS				
Effects. The construction effects of Alternative 1 have been addressed in the EIR for the MTP Approved general plans accommodate over 12,000 of development over the next 20 years. **Mitigation.** Construction impacts were found to be less than significant after mitigation in the MTP EIR. **Conclusion.** Less than significant impact	**Effects.** Approximately 15 acres would be disturbed during construction above Alternative 1. **Mitigation.** Construction impacts would be less than significant after mitigat on **Conclusion.** Less than significant	**Effects.** 3.5 years Construction period. Alternative 3 effects 170 acres (170 acres for Alternative 3A 115 acres for Alternative 3B) would be disturbed. Currently, 3,639 persons within 300 of alternatives 3/3A/3B. Community Impacts and Env ronmental Justice impacts. Approximate y 15 acres would be disturbed in the American R ver Parkway. **Mitigation.** BMPs and mplementation of avoidance design options. **Conclusion.** Sign ficant and unavoidable construction impacts on b ological, parkland resources, m nority and low-income persons.	**Effects.** 2.5 years Construction period. Alternative 4 effects 120 acres (120 acres for 4A, 80 for 4B) would be disturbed. Currently,. 3,639 persons within 300 feet of the alignment. Approximately 15 acres would be disturbed in the American River Parkway. Community Impacts and Environmental Justice impacts **Mitigation.** Same as Alternatives 3/3A/3B. **Conclusion.** Same as Alternatives 3/3A/3B.	**Effects.** 3.5 years Construction period. Approximately 175 acres would be d sturbed. Currently, 2,232 persons with n 300 feet of the alignment. But, Alternative 5 has less the Community and Environmental Justice effects than Alts 3/3A/3B and 4/4A/4B. Approximately 15 acres would be disturbed in the American River Parkway. **Mitigation.** Same as Alternatives 3/3A/3B. **Conclusion.** Same as Alternatives 3/3A/3B.	**Effects.** 2.5 years Construction penod. Otherwise same as Alternative 5. **Mitigation.** Same as Alternat ves 3/3A/3B. **Conclusion.** Same as Alternatives 3/3A/3B.	**Effects.** 3.5 years Construction period. Approximately 150 additional acres would be disturbed. Currently, 2,242 persons within 300 feet of the alignment. Alternative 5 has less the Community and Environmental Justice effects than Alts 3/3A/3B and 4/4A/4B. Approximately 15 acres would be disturbed in the American River Parkway. **Mitigation.** Same as Alternatives 3/3A/3B. **Conclusion.** Same as Alternatives 3/3A/3B.	**Construction.** 2.5 years Construct on period. Otherwise, same as Alternat ve 7. **Mitigation.** Same as Alternat ves 3/3A/3B. **Conclusion.** Same as Alternatives 3/3A/3B.

APPENDIX B

PROPOSED RECOMMENDATIONS FOR TRANSIT GUIDEWAY STATIONS WITH DETAILS ON FUNCTIONAL AMENITIES

Proposed Recommendations for Transit Guideway Stations with Details on Functional Amenities

TABLE B-1
LIST OF STATIONS FOR ALTERNATIVE 3: TRUXEL LRT

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss-and-Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B St.	0	N/A	Kiss-and-Ride
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Blvd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
4.	West El Camino Avenue	Intersection of W. El Camino Ave and Truxel Rd.	160	Proposed new lot near W. El Camino Ave west of Truxel Road	Kiss-and-Ride; Minor Bus Transfer Facility
5.	Pebblestone Way	Intersection of Pebblestone Way. and Truxel Rd.	160	South Natomas Community Center parking lot	Kiss-and-Ride
6.	San Juan Road	NE corner of San Juan Rd. and Truxel Rd.	400	West side of Truxel Road, north of Vallarta Circle	Kiss-and-Ride; Minor Bus Transfer Facility
7.	Gateway Park Boulevard/Natomas Marketplace	NE corner of Gateway Park Blvd. and Truxel Rd.	980	Natomas Marketplace	Kiss-and-Ride; Minor Bus Transfer Facility
8.	Arena Boulevard	SE corner of Arena Blvd. and Truxel Rd. (Options described below)	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
9.	ARCO Arena (just south of the Arena entrance)	SE corner of Arena East Entrance Rd. and Truxel Rd.	350	Arena Parking Lot	Kiss-and-Ride; Major Bus Transfer Facility
10.	East Town Center	NW corner of Natomas Blvd. and Del Paso Rd.	10	Park Place Shopping Center	Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-1
LIST OF STATIONS FOR ALTERNATIVE 3: TRUXEL LRT (CONTINUED)

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
11.	North Natomas Town Center	New Market Dr. east of Town Center Dr.	0	N/A	Kiss-and-Ride
12.	Club Center Drive/ North Village Center	East Commerce Pkwy. and Club Center Dr.	10	At new commercial center (obtained through IOD)	Kiss-and-Ride; Minor Bus Transfer Facility
13.	Sacramento International Airport	Just south of the Airport Administration building, between Terminals A and B	0	N/A	Driver layover facility; Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-2
LIST OF STATIONS FOR ALTERNATIVE 3A: TRUXEL LRT STARTER LINE

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss and Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B St.	0	N/A	Kiss-and-Ride
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Blvd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
4.	West El Camino Avenue	Intersection of W. El Camino Ave and Truxel Rd.	150	Proposed new lot near W. El Camino Ave west of Truxel Road	Kiss-and-Ride; Minor Bus Transfer Facility
5.	Pebblestone Way	Intersection of Pebblestone Way. and Truxel Rd.	140	South Natomas Community Center parking lot	Kiss-and-Ride

TABLE B-2
LIST OF STATIONS FOR ALTERNATIVE 3A: TRUXEL LRT STARTER LINE (CONTINUED)

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
6.	San Juan Road	NE corner of San Juan Rd. and Truxel Rd.	390	West side of Truxel Road, north of Vallarta Circle	Kiss-and-Ride; Minor Bus Transfer Facility
7.	Gateway Park Boulevard / Natomas Marketplace	NE corner of Gateway Park Blvd. and Truxel Rd.	870	Natomas Marketplace	Kiss-and-Ride; Minor Bus Transfer Facility
8.	Arena Boulevard	SE corner of Arena Blvd. and Truxel Rd. (Options described below)	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
9.	ARCO Arena (just south of the Arena entrance)	SE corner of Arena East Entrance Rd. and Truxel Rd.	340	Arena Parking Lot	Kiss-and-Ride; Major Bus Transfer Facility
10.	East Town Center	NW corner of Natomas Blvd. and Del Paso Rd.	10	Park Place Shopping Center	Kiss-and-Ride; Minor Bus Transfer Facility
11.	North Natomas Town Center	New Market Dr. east of Town Center Dr.	0	N/A	Kiss-and-Ride
12.	Club Center Drive/ North Village Center	East Commerce Pkwy. and Club Center Dr.	10	At new commercial center (obtained through IOD)	Kiss-and-Ride; Minor Bus Transfer Facility
13.	Sacramento International Airport	Just south of the Airport Administration building, between Terminals A and B	0	N/A	Driver layover facility; Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-3
LIST OF STATIONS FOR ALTERNATIVE 3B: TRUXEL LRT MOS

	Stations	Location	Park–and-Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss-and-Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B St.	0	N/A	Kiss-and-Ride
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Blvd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
4.	West El Camino Avenue	Intersection of W. El Camino Ave and Truxel Rd.	150	Proposed new lot near W. El Camino Ave west of Truxel Road	Kiss-and-Ride; Minor Bus Transfer Facility
5.	Pebblestone Way	Intersection of Pebblestone Way. and Truxel Rd.	150	South Natomas Community Center parking lot	Kiss-and-Ride
6.	San Juan Road	NE corner of San Juan Rd. and Truxel Rd.	400	West side of Truxel Road, north of Vallarta Circle	Kiss-and-Ride; Minor Bus Transfer Facility
7	Gateway Park Boulevard / Natomas Marketplace	NE corner of Gateway Park Blvd. and Truxel Rd.	910	Natomas Marketplace	Kiss-and-Ride; Minor Bus Transfer Facility
8.	Arena Boulevard	SE corner of Arena Blvd. and Truxel Rd. (Options described below)	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
9.	ARCO Arena (just south of the Arena entrance)	SE corner of Arena East Entrance Rd. and Truxel Rd.	350	Arena Parking Lot	Kiss-and-Ride; Major Bus Transfer Facility
10.	East Town Center	NW corner of Natomas Blvd. and Del Paso Rd.	10	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
11.	North Natomas Town Center	New Market Dr. east of Town Center Dr.	0	N/A	Kiss-and-Ride

TABLE B-4
LIST OF STATIONS FOR ALTERNATIVE 4: TRUXEL BRT

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss-and-Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B St.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Blvd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
4.	West El Camino Avenue	Intersection of W. El Camino Ave and Truxel Rd.	150	Proposed new lot on W. El Camino Ave west of Truxel Road	Kiss-and-Ride; Minor Bus Transfer Facility
5.	Pebblestone Way	Intersection of Pebblestone Way. and Truxel Rd.	130	South Natomas Community Center parking lot	Kiss-and-Ride
6.	San Juan Road	NE corner of San Juan Rd. and Truxel Rd.	390	West side of Truxel Road, north of Vallarta Circle	Kiss-and-Ride; Minor Bus Transfer Facility
7.	Gateway Park Boulevard / Natomas Market Place	NE corner of Gateway Park Blvd. and Truxel Rd.	830	Natomas Marketplace	Kiss-and-Ride; Minor Bus Transfer Facility
8.	Arena Boulevard	SE corner of Arena Blvd. and Truxel Rd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
9.	ARCO Arena	SE corner of Arena East Entrance Rd. and Truxel Rd. (Options described below)	330	Arena Parking Lot	Major Bus Transfer Facility; Kiss and Ride; Pathway to ARCO Arena Parking Lot
10.	East Town Center	NW corner of Natomas Blvd. and Del Paso Rd.	0	Park Place Shopping Center (obtained through IOD)	Kiss-and-Ride; Minor Bus Transfer Facility
11.	North Natomas Town Center	New Market Dr. east of Town Center Dr.	0	N/A	Kiss-and-Ride

TABLE B-4
LIST OF STATIONS FOR ALTERNATIVE 4: TRUXEL BRT (CONTINUED)

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
12.	Club Center Drive/ North Village Center	East Commerce Pkwy. and Club Center Dr.	10	At new commercial center (obtained through IOD)	Kiss-and-Ride; Minor Bus Transfer Facility
13.	Sacramento International Airport	Just south of the Airport Administration building, between Terminals A and B	0	N/A	Driver layover facility; Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-5
LIST OF STATIONS FOR ALTERNATIVE 4A: TRUXEL BRT STARTER LINE

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss-and-Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B St.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Blvd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
4.	West El Camino Avenue	Intersection of W. El Camino Ave and Truxel Rd.	150	Proposed new lot near W. El Camino Ave west of Truxel Road	Kiss-and-Ride; Minor Bus Transfer Facility
5.	Pebblestone Way	Intersection of Pebblestone Way. and Truxel Rd.	120	South Natomas Community Center parking lot	Kiss-and-Ride
6.	San Juan Road	NE corner of San Juan Rd. and Truxel Rd.	380	West side of Truxel Road, north of Vallarta Circle	Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-5
LIST OF STATIONS FOR ALTERNATIVE 4A: TRUXEL BRT STARTER LINE (CONTINUED)

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
7.	Gateway Park Boulevard/ Natomas Market Place	NE corner of Gateway Park Blvd. and Truxel Rd.	770	Natomas Marketplace	Kiss-and-Ride; Minor Bus Transfer Facility
8.	Arena Boulevard	SE corner of Arena Blvd. and Truxel Rd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
9.	ARCO Arena	SE corner of Arena East Entrance Rd. and Truxel Rd. (Options described below)	320	Arena Parking Lot	Major Bus Transfer Facility; Kiss-and-Ride; Pathway to ARCO Arena Parking Lot
10.	East Town Center	NW corner of Natomas Blvd. and Del Paso Rd.	10	Park Place Shopping Center (obtained through IOD)	Kiss-and-Ride; Minor Bus Transfer Facility
11.	North Natomas Town Center	New Market Dr. east of Town Center Dr.	0	N/A	Kiss-and-Ride
12.	Club Center Drive/ North Village Center	East Commerce Pkwy. and Club Center Dr.	10	At new commercial center (obtained through IOD)	Kiss-and-Ride; Minor Bus Transfer Facility
13.	Sacramento International Airport	Just south of the Airport Administration building, between Terminals A and B	0	N/A	Driver layover facility; Kiss and Ride; Minor Bus Transfer Facility

TABLE B-6
LIST OF STATIONS FOR ALTERNATIVE 4B: TRUXEL BRT MOS

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss-and-Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B St.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Blvd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
4.	West El Camino Avenue	Intersection of W. El Camino Ave and Truxel Rd.	150	Proposed new lot near W. El Camino Ave west of Truxel Road	Kiss-and-Ride; Minor Bus Transfer Facility
5.	Pebblestone Way	Intersection of Pebblestone Wy. and Truxel Rd.	120	South Natomas Community Center parking lot	Kiss-and-Ride
6.	San Juan Road	NE corner of San Juan Rd. and Truxel Rd.	380	West side of Truxel Road, north of Vallarta Circle	Kiss-and-Ride; Minor Bus Transfer Facility
7.	Gateway Park Boulevard / Natomas Market Place	NE corner of Gateway Park Blvd. and Truxel Rd.	760	Natomas Marketplace	Kiss-and-Ride; Minor Bus Transfer Facility
8.	Arena Boulevard	SE corner of Arena Blvd. and Truxel Rd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
9.	ARCO Arena	SE corner of Arena East Entrance Rd. and Truxel Rd. (Options described below)	320	Arena Parking Lot	Major Bus Transfer Facility; Kiss-and-Ride; Pathway to ARCO Arena Parking Lot
10.	East Town Center	NW corner of Natomas Blvd. and Del Paso Rd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
11.	North Natomas Town Center	New Market Dr. east of Town Center Dr.	0	N/A	Kiss-and-Ride

TABLE B-7
LIST OF STATIONS FOR ALTERNATIVE 5: I-5/TRUXEL LRT

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss-and-Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B Street	0	N/A	Kiss-and-Ride
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Boulevard	0	N/A	Kiss-and-Ride
4.	Venture Oaks Way (just north of Garden Highway)	Along I-5, east of Venture Oaks Dr. and north of Garden Hwy.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
5.	Gateway Oaks Drive (north of West El Camino Avenue)	Along I-5, east of Gateway Oaks Dr. and north of W. El Camino Ave.	40	New parking lot next to station	Kiss-and-Ride
6.	San Juan Road	Just south of San Juan Road, west of I-5 and north of I-80	850	Adjacent to station	Kiss-and-Ride; Minor Bus Transfer Facility
7.	Natomas Crossing Drive/Market Place	NW corner of Natomas Crossing Drive and Truxel Rd.	670	Adjacent to station	Kiss-and-Ride
8.	Arena Boulevard	SE corner of Arena Blvd. and Truxel Rd.	10	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
9.	ARCO Arena	SE corner of Arena East Entrance Rd. and Truxel Rd. (Options described below)	260	Arena Parking Lot	Kiss-and-Ride; Major Bus Transfer Facility
10.	East Town Center	NW corner of Natomas Blvd. and Del Paso Rd.	40	Park Place Shopping Center	Kiss-and-Ride; Major Bus Transfer Facility

TABLE B-7
LIST OF STATIONS FOR ALTERNATIVE 5: I-5/TRUXEL LRT (CONTINUED)

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
11.	North Natomas Town Center	New Market Dr. east of Town Center Dr.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
12.	Club Center Drive/North Village Center	East Commerce Pkwy. and Club Center Dr.	10	At new commercial center (obtained through IOD)	Kiss-and-Ride; Minor Bus Transfer Facility
13.	Sacramento International Airport	Just south of the Airport Administration building, between Terminals A and B	0	N/A	Driver layover facility; Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-8
LIST OF STATIONS FOR ALTERNATIVE 6: I-5/TRUXEL BRT

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss-and-Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B Street	0	N/A	Kiss-and-Ride
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Boulevard	0	N/A	Kiss-and-Ride
4.	Garden Highway/South Natomas at Natomas Park Drive *(Only for I-5 BRT to Truxel Bridge alignment)*	Along Garden Highway at Natomas Park Dr.	0	N/A	Kiss-and-Ride
5.	Venture Oaks Way (just north of Garden Highway)	Along I-5, east of Venture Oaks Dr. and north of Garden Hwy.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-8
LIST OF STATIONS FOR ALTERNATIVE 6: I-5/TRUXEL BRT (CONTINUED)

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
6.	Gateway Oaks Drive (north of West El Camino Avenue)	Along I-5, east of Gateway Oaks Dr. and north of W. El Camino Ave.	40	New parking lot next to station	Kiss-and-Ride
7.	San Juan Road	Just south of San Juan Road, west of I-5 and north of I-80	860	Adjacent to station	Kiss-and-Ride; Minor Bus Transfer Facility
8.	Natomas Crossing Drive/Market Place	NW corner of Natomas Crossing Drive and Truxel Rd.	480	Adjacent to station	Kiss-and-Ride; Minor Bus Transfer Facility
9.	Arena Boulevard	SE corner of Arena Blvd. and Truxel Rd.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
10.	ARCO Arena	SE corner of Arena East Entrance Rd. and Truxel Rd. (Options described below)	240	Arena Parking Lot	Kiss-and-Ride; Major Bus Transfer Facility
11.	East Town Center	NW corner of Natomas Blvd. and Del Paso Rd.	30	Park Place Shopping Center (obtained through IOD)	Kiss-and-Ride; Minor Bus Transfer Facility
12.	North Natomas Town Center	New Market Dr. east of Town Center Dr.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
13.	Club Center Drive/North Village Center	East Commerce Pkwy. and Club Center Dr.	10	At new commercial center (obtained through IOD)	Kiss-and-Ride; Minor Bus Transfer Facility
14.	Sacramento International Airport	Just south of the Airport Administration building, between Terminals A and B	0	N/A	Driver layover facility; Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-9
LIST OF STATIONS FOR ALTERNATIVE 7: I-5 LRT

	Stations	Location	Park-and Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss-and-Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B Street	0	N/A	Kiss-and-Ride
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Boulevard	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
4.	Venture Oaks Way (just north of Garden Highway)	Along I-5, east of Venture Oaks Dr. and north of Garden Hwy.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
5.	Gateway Oaks Drive (north of West El Camino Avenue)	Along I-5, east of Gateway Oaks Dr. and north of W. El Camino Ave.	40	New parking structure/lot next to station	Kiss-and-Ride;
6.	San Juan Road	Just south of San Juan Road, west of I-5 and north of I-80	950	Adjacent to station	Kiss-and-Ride; Minor Bus Transfer Facility
7.	Natomas Crossing Drive	At the I-5 / future Natomas Crossing Drive overcrossing	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
8.	ARCO Arena	At the Arco Arena Rd. overcrossing of I-5	510	Further analysis needed: Potential locations include the Arena Parking Lot or a new lot adjacent to station (in current EC zone area)	Kiss-and-Ride; Major Bus Transfer Facility
9.	Commerce Parkway (at El Centro Road overcrossing of I-5/99)	Along I-5 at the (future) El Centro Rd. overcrossing	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-9
LIST OF STATIONS FOR ALTERNATIVE 7: I-5 LRT (CONTINUED)

	Stations	Location	Park-and Ride Spaces	PNR Location	Other Amenities
10.	Sacramento International Airport	Just south of the Airport Administration building, between Terminals A and B	0	N/A	Driver layover facility; Kiss-and-Ride; Minor Bus Transfer Facility

TABLE B-10
LIST OF STATIONS FOR ALTERNATIVE 8: I-5 BRT

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
1.	Sacramento Valley Station (Amtrak)	On 5th Street between G and H Streets	0	N/A	Driver layover facility; Kiss and Ride; Major Bus Transfer Facility (To be provided by others as part of Intermodal Station)
2.	Railyards (formerly North B Street)	Along 7th Street south of North B Street	0	N/A	Kiss-and-Ride
3.	Richards Boulevard at 7th Street	NW corner of 7th Street and Richards Boulevard	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
4.	Garden Highway/South Natomas *(Only for I-5 BRT to Truxel Bridge alignment)*	Along Garden Highway at Natomas Park Dr.	0	N/A	Kiss-and-Ride
5.	Venture Oaks Way (just north of Garden Highway)	Along I-5, east of Venture Oaks Dr. and north of Garden Hwy.	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
6.	Gateway Oaks Drive (north of West El Camino Avenue)	Along I-5, east of Gateway Oaks Dr. and north of W. El Camino Ave.	40	New parking structure/lot next to station	Kiss-and-Ride

TABLE B-10
LIST OF STATIONS FOR ALTERNATIVE 8: I-5 BRT (CONTINUED)

	Stations	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
7.	San Juan Road	Just south of San Juan Road, west of I-5 and north of I-80	900	Adjacent to station	Kiss-and-Ride; Minor Bus Transfer Facility
8.	Arena Boulevard	At the I-5/Arena Boulevard Interchange	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
9.	ARCO Arena	Along I-5 at ARCO Arena Rd. overcrossing	30	Adjacent to overcrossing	Kiss-and-Ride; Major Bus Transfer Facility
10.	Del Paso Road	On the interchange ramps of the Del Paso Rd./I-5 interchange	490	Adjacent to I-5/Del Paso Road Interchange	Kiss-and-Ride; Major Bus Transfer Facility
11.	Commerce Parkway	Along I-5 at the (future) El Centro Rd. overcrossing	0	N/A	Kiss-and-Ride; Minor Bus Transfer Facility
12.	Sacramento International Airport	Just south of the Airport Administration building, between Terminals A and B	0	N/A	Driver layover facility; Kiss-and-Ride; Minor Bus Transfer Facility

OPTIONAL STATIONS TO BE BUILT BY OTHERS OR AS FUNDING IS AVAILABLE

	Station	Location	Park-and-Ride Spaces	PNR Location	Other Amenities
1.	Metro Air Park	At the intersection of Metro Air Parkway and Meister Way	250	At Meister Way adjacent to station	Minor Bus Transfer Facility (for internal shuttles); Kiss-and-Ride
2.	Greenbriar Farms	Along Meister Way in the Greenbriar Farms development	50	N/A	Kiss-and-Ride
3.	Commerce Parkway Phase II for Truxel BRT or LRT only	Along Commerce Parkway at North Park Dr.	0	N/A	Minor Bus Transfer Facility; Kiss-and-Ride
4.	American River Parkway	Along American River Parkway south of Garden Highway	0	N/A	Elevator
5.	Sequoia Pacific Boulevard @ Richards Boulevard (along RR spur for Truxel Road Alignment; along Richards Boulevard for I-5 alignment)	Truxel Alignment: North of Richards Boulevard along RR spur west of Sequoia Pacific Blvd; I-5 Alignment: Along Richards Boulevard west of Sequoia Pacific Blvd.	0	N/A	Kiss-and-Ride

STATIONS TO BE INCLUDED IN LAND USE ALTERNATIVE

	Station
1.	Sacramento Valley Station
2.	Railyards (formerly North B Street)*
3.	Richards Boulevard at 7th Street
4.	Sequoia Pacific Boulevard @ Richards Boulevard (to be determined later)*
5.	West El Camino Avenue
6.	Pebblestone Way
7.	San Juan Road*
8.	Gateway Park Boulevard/Natomas Market Place*
9.	Arena Boulevard*
10.	ARCO Arena (just south of the Arena entrance)*
11.	East Town Center*
12.	North Natomas Town Center*
13.	Commerce Parkway*
14.	Club Center Drive/North Village Center (located at East Commerce Parkway and Club Center Drive)*
15.	Metro Air Park*
16.	Sacramento International Airport

* - Land use intensity will be enhanced around these stations

DEFINITIONS

Minor Bus Transfer Facility (BRT/LRT): Provisions for curbside bus loading areas for 1-3 bus routes and/or community/neighborhood shuttles.

Major Bus Transfer Facility (BRT/LRT): Provisions for off-street bus loading area for 4 or more bus routes and/or community/neighborhood shuttles.

Kiss and Ride: Curbside lane for dedicated drop/pickup of passengers.

___ - Denotes station with shared parking using an existing or planned parking lot.

APPENDIX C

REGIONAL TRANSIT ISSUE PAPER FOR SELECTING TRUXEL ROAD LIGHT RAIL TRANSIT AS THE LPA FOR THE DNA CORRIDOR

Agenda Item No.	Board Meeting Date	Open/Closed Session	Information/Action Item	Issue Date
1	12/15/03	Open	Action	12/15/03

Subject: Selecting ~~Alternative 3:~~ Truxel Road Light Rail Transit as the Locally Preferred Alternative for the Downtown/Natomas/Airport (DNA) Corridor

ISSUE

Whether to select ~~Alternative 3:~~ Truxel Road Light Rail Transit as the Locally Preferred Alternative for the Downtown/Natomas/Airport (DNA) Corridor.

RECOMMENDED ACTION

Adopt Resolution No. 03-12-__, Selecting ~~Alternative 3:~~ Truxel Road Light Rail Transit as the Locally Preferred Alternative for the Downtown/Natomas/Airport (DNA) Corridor.

FISCAL IMPACT

None.

DISCUSSION

This issue paper provides the Board of Directors information needed to support the selection of ~~Alternative 3:~~ Truxel Road Light Rail Transit as the locally preferred alternative (LPA) for the Downtown/Natomas/Airport (DNA) Corridor. This information includes the following:

- Responses to Board information requests received during the December 8th public hearing on displacements, intersection traffic conditions, left turn lanes, and the Boston Silver Line BRT.
- PowerPoint presentation summarizing staff recommendation (Attachment A).
- Responses to public comments received during the Alternatives Analysis process. The comments and responses are categorized by subject matter, and further categorized by its submittal – i.e. letter, comments at November Board meetings, the November 20th Open House sessions and the December 8th public hearing, etc. (Attachment B).
- Errata sheets to the draft Alternatives Analysis Report (Attachment C).
- Chapter 8 "Locally Preferred Alternative Selection", to the draft Alternatives Analysis Report (Exhibit "A").

Approved:

General Manager/CEO

Presented:

Policy & Program Manager

Agenda Item No.	Board Meeting Date	Open/Closed Session	Information/Action Item	Issue Date
	12/15/03	Open	Action	12/15/03

Subject: Selecting ~~Alternative 3:~~ Truxel Road Light Rail Transit as the Locally Preferred Alternative for the Downtown/Natomas/Airport (DNA) Corridor

New Starts Project Development Process

New Start projects, like all transportation investments in metropolitan areas, must emerge from a regional multimodal transportation planning process in order to be eligible for Federal funding. Local officials must perform a corridor-level analysis of mode and alignment alternatives. This alternatives analysis provides information on the benefits, costs, and impacts of alternative strategies, leading to the selection of a locally-preferred alternative (LPA) to address the corridor's mobility needs. The approach envisions the alternatives analysis as a key-planning tool, supplemented by further project development analyses in subsequent phases, for determining appropriate solutions to transportation issues.

The decision process and the criteria on which the local decision is based will vary from place to place. In the selection of the LPA, the Board of Directors will want to consider the technical findings of the Alternatives Analysis in the context of City, County and regional objectives and values. For example, in some areas transit service is considered primarily with respect to its transportation function. In others, the visual and symbolic aspects of transit, its sense of permanence, and positive impacts on urban character and the environment may also be given considerable importance.

The Sacramento Regional Transit District (RT) has been participating in the Federal Transit Administration's (FTA) New Start project development process since early 2000. In June 2001, RT completed the first step in the process, systems planning, and locally known as the Multi-Corridor Study (MCS). At that time, the Board of Directors adopted a motion accepting the results of the MCS, and directed the General Manager to proceed with the next steps as outlined in the *System Expansion and Phasing Strategy Final Report*. One of the critical next steps identified in the MCS included the advancement of the 13 mile Downtown/Natomas/Airport (DNA) Corridor into the second step of the FTA project development process, the Alternatives Analysis (AA)/Draft Environmental Impact Statement/Report (DEIS/R) phase.

A Locally Preferred Alternative – What Is It?

A Locally Preferred Alternative (LPA) is the selected physical design concept and scope for a major corridor transit investment. In the DNA Corridor, the LPA will consist of two features: (1) the identification and description of a corridor alignment; and (2) the identification of a transit (bus, light rail) mode. The LPA will also generally describe the proposed location of stations. Refinements of the LPA will continue during subsequent Preliminary Engineering (PE) and Final Environmental Impact Statement (FEIS) phase including the operating concepts. The PE/FEIS phase will focus on developing more specific environmental and engineering information including detailed environmental testing and mitigation plans, geometric alignment design, bridges and structures, station location and design, landscaping features, access and operating strategies, drainage, right-of-way requirements, maintenance of traffic during construction, phasing of construction, and a detailed financial plan including funding commitments. Minor alignment and

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engineering adjustments to the LPA will likely occur during the final design and construction phases of the transit improvement. Subsequent to the Board action, a report will be prepared that describes the LPA in full detail as well, including the operating concepts by which transit service will be provided, and a set of specific design options to be further evaluated during the draft environmental phase.

Draft Downtown/Natomas/Airport Alternatives Analysis Report

The Alternatives Analysis (AA) process evaluated twelve alternatives for the DNA Corridor. Eight of the twelve alternatives considered would construct a new light rail transit (LRT) or bus rapid transit (BRT) guideway from downtown Sacramento, through South and North Natomas, to the Sacramento International Airport. Two alternatives considered minimum operable segments for each mode between downtown Sacramento to the Natomas Town Center. The remaining two alternatives, include the No Build and Baseline/Transportation Systems Management (TSM) alternatives.

The AA process was structured around criteria and indicators designed to reflect the study goals and objectives as endorsed by the Technical Review Panel (TRP) and Citizens Review Panel (CRP), input from the Board of Directors, and from information provided by the City of Sacramento, Sacramento County, public agencies, and the general public.

On November 6, 2003, RT formally released for a 30-day period the Draft AA Report for public review and comment. On November 10th, staff and the consultant team presented the Draft AA Report to the Board. At the Board's November 24th meeting, staff responded in detail to over 26 Director questions, and provided additional information regarding ridership and capacity/modal issues related to SACOG's draft 2050 Blueprint population and employment forecasts.

During this 30-day period, RT held an open house on November 20 at the Sacramento Convention Center, enabling the public an opportunity to review the study findings and to pose questions regarding the alternatives to District staff and the consultant team. RT also held a public hearing on December 8th in the chambers of the Sacramento County Board of Supervisors to provide the public more opportunity to provide comment on the AA Report.

Based on the technical analysis results and public comment received on the Draft AA report, staff and the consultant team have developed a LPA recommendation for the Board of Directors to consider on December 15th, 2003. Additionally, responses to public comment received on the draft AA report have been posted on the project website.

Recommendation on a Locally Preferred Alternative for the DNA Corridor

Since the mid-1980's, there has been a recognition by the public and its elected officials of the need for a major public transit investment in the DNA Corridor. Three primary factors have contributed to this vision, including:

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- Recognition that significant growth and development will continue to occur, particularly in North Natomas, in close proximity to the Airport, and in surrounding areas north and east of the corridor;

- Concern over increasing traffic congestion along I-5, and the need to provide people living and working in the corridor a transportation alternative to driving their own vehicle; and

- A desire to improve transportation mobility between the Downtown, South and North Natomas communities, and the Sacramento International Airport and to other parts of the Sacramento region.

In exploring this vision, several corridor alignments and transportation technologies have been studied extensively over this twenty year time period, including the I-5, Truxel Road, and I-5/Truxel alignments and the potential for expanding existing bus service and extending LRT service into the corridor. More recently, as part of this study, BRT has also been considered as a viable transit technology.

Each study alternative has both advantages and disadvantages. These trade-offs have been the topic of much regional and community discussion and debate, resulting in a decision by RT in 1991 to support the construction of light rail on Truxel Road. The City of Sacramento and the County of Sacramento have included the locally adopted alignment in their respective General Plans and Community Plans. The Sacramento Area Council of Governments (SACOG) has also reaffirmed the local decision, as recently as July 2002, with the adoption of the Metropolitan Transportation Plan (MTP) for 2025. The results of this current AA Report support this conclusion. Thus, it is recommended that the LPA consist of building and operating high capacity LRT service on the Truxel Road alignment from downtown Sacramento, through South and North Natomas to the Sacramento International Airport.

Preference for Alignment

Use of the Truxel Road alignment will provide the largest transportation benefit to transit users in the corridor and in the region. In summary, these benefits include the following.

- *Higher Ridership.* Across all the alternatives studied, the opportunities for the highest daily ridership occur along the Truxel Road alignment.

- *Connectivity.* Generally, the Truxel Road alignment provides better connectivity to the existing regional transit system and to the major concentration of existing and planned activity centers and destinations within the DNA corridor.

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These activity centers and destinations include: (1) the Sacramento International Airport; (2) Metro Air Park, and improved mixed use commercial/office development; (3) the soon to be built North Natomas Town Center, with a 200-acre Regional park, high school and community college campus and library; (4) Arco Arena; (5) the Natomas Marketplace commercial center; (6) Natomas High School; (7) the South Natomas Community center; (8) the redeveloping Richards Boulevard area; and (9) the Sacramento Valley Station, which is part of a 240-acre proposed master plan redevelopment project for the Union Pacific Railyards.

Moreover, the DNA corridor connection with the Sacramento Valley Station provides intermodal connections to existing and new bus services, existing and expanding Capitol Corridor intercity rail service, long distance Amtrak service, soon to be constructed Folsom Corridor LRT service, and future regional commuter rail service.

- *Transit-Oriented Development.* The Truxel Road alignment offers the greater opportunity to foster transit-oriented development, particularly in the North Natomas community, the Railyards, and Richards Boulevard areas. Land use plans in these areas propose the highest density employment and housing clustered in a mix around planned stations. The North Natomas Community Plan, in particular, was designed as a transit-oriented community with dedicated right-of-way along Truxel Road set a side for a light rail alignment as a central element. The Community Plan also allows for further increases in density and intensity in station areas once the LRT is constructed.

  The Truxel alignment provides the further opportunity to shape future land use decisions within the unincorporated area, west of State Route 99/70 and north of Elkhorn Boulevard, in the same planned vision that created the North Natomas Community Plan, if the region desires to grow in that direction.

  The total land available for development at future stations along the Truxel alignment is greater than that along the I-5 alignment. Opportunities for smart growth are curtailed by I-5, which limits pedestrian access to either side of the freeway, and hence reduces the potential for transit-oriented development opportunities.

- *Plan Consistency.* The Truxel alignment, with light rail, also offers the highest level of consistency with existing adopted community plans, the City and County general plans, current planning efforts within the Corridor, and over 15 years of prior development and infrastructure commitment in North Natomas.

  In particular, the North Natomas Community Plan set aside land use by the future light rail guideway. In addition, the Truxel Road Interchange was designed and built to structurally support a future light rail alignment. And the North Natomas infrastructure-financing plan includes a development fee structure to finance light rail station improvements. Perhaps most importantly, the Truxel Road alignment, with light rail, offers the lowest potential for physically dividing the community.

Agenda Item No.	Board Meeting Date	Open/Closed Session	Information/Action Item	Issue Date
	12/15/03	Open	Action	12/15/03

Subject:	Selecting ~~Alternative 3:~~ Truxel Road Light Rail Transit as the Locally Preferred Alternative for the Downtown/Natomas/Airport (DNA) Corridor

- *Greater Transit Accessibility.* Based on the 2000 Census and year 2025 SACOG projections, the Truxel alignment would provide the greatest transit access to corridor residents and households than either the I-5 or I-5/Truxel alignment alternatives.

  There are 21,500 residents living within ½-mile of the Truxel Road alignment, including a greater concentration of low income and transit dependent households. Likewise, there are 32,100 jobs located within ½-mile of the alignment; nearly equivalent to the number of jobs located along I-5 or the I-5/Truxel alignment alternatives. In addition, the Truxel alignment provides the best pedestrian access opportunities.

  Due to limited north-south traffic capacity in the DNA corridor, with only two bridges across the American River within a three-mile wide reach, a new bridge crossing along the Truxel Road alignment is needed to provide improved and direct transit accessibility into downtown Sacramento.

- *Improved Corridor Mobility.* While all three alignments would provide improved transit service between Downtown and the Airport, the Truxel alignment provides the shortest travel time for North and South Natomas residents. While the Truxel alignment does not have the best travel time from Downtown to the Airport, the 28 to 30 minutes of travel time is comparable to the I-5 alignment alternatives.

- *Cost-Effectiveness.* Generally, all of the Truxel Road alignment modal alternatives fair better in terms of providing the most cost-effective transit solution, using Federal Transit Administration (FTA) ratings, because they directly serve more residents and have lower construction costs.

- *Fundability.* Using long-range revenue estimates prepared by RT and SACOG, it was determined that any alternative costing $450 million or below could be funded with a combination of federal, state and local revenue as they become available. The majority of the alternatives that fall within this funding threshold occur on the Truxel Road alignment.

Preference for Mode

Use of light rail also will provide greater transportation benefits to transit users. In summary, these benefits include the following:

- *Ridership.* In the DNA corridor, light rail generally generates ten- percent higher ridership than BRT, with most of the difference resulting from airport passengers (as service continuity is a key factor for airport transit service).

Agenda Item No.	Board Meeting Date	Open/Closed Session	Information/Action Item	Issue Date
	12/15/03	Open	Action	12/15/03

Subject:	Selecting ~~Alternative 3:~~ Truxel Road Light Rail Transit as the Locally Preferred Alternative for the Downtown/Natomas/Airport (DNA) Corridor

- *Capacity for Future Demand.* There tends to be a broad capacity range suitable for BRT and LRT, and this range is not mutually exclusive. There are often overlaps between them. Conventional bus services are most suitable in satisfying lower demand volumes. At 1,000 passengers per hour, bus based systems are more cost effective in terms of cost per passenger. Light rail begins to be appropriate around 1,700 passengers/hour to justify the capital costs of the initial investment in fixed infrastructure.

  Over the next 20 years and beyond, the Natomas Basin is seen as a major new growth area for the Sacramento region. The travel corridor warrants a high capacity mode. LRT has a superior ability to respond to growth pressures by increasing capacity compared to other modes, such as BRT. Light rail can add another car to a train to carry more riders and not affect labor costs. This is a primary reason LRT is more efficient with higher ridership demand.

- *Speed.* Light rail systems generally have increased speed over bus systems (as well as the perception of being faster).

- *Technology.* LRT has higher vehicle performance technology and passenger comfort features. Light rail vehicles are more spacious and provide for a more stable ride. The guideway feature makes possible use of larger vehicles and trains of up to four cars, as well as partial signal control. The vehicles are clean, non-polluting electric propulsion. Clean-fueled buses still produce some particulate matter and nitrous oxide pollution, which is objectionable, particularly in areas with high concentrations of people. Noise produced by buses also remains a problem.

  Buses are also considerably cheaper than light rail vehicles, although the difference in their life cost is not as great as the difference in their purchase prices because light rail vehicles have 2.5 to 3 times longer lifespans. Buses last 12 years, light rail vehicles between 25-40 years. Therefore, a correct comparison must be based on life-cycle cost per unit of vehicle capacity. Such a comparison would tend to favor LRT.

- *Economic Development.* LRT is attractive, as a tool for transit-oriented development, a characteristic not convincingly displayed in the United States by bus service of any type. Light rail has a permanent infrastructure that becomes part of the urban structure. Because BRT is less capital intensive, it is more likely to be abandoned if the market were not supporting the service. It is the permanence of light rail that tells private investors and transit users that this form of transportation is here to stay.

Agenda Item No.	Board Meeting Date	Open/Closed Session	Information/Action Item	Issue Date
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- *Reduction in Auto Travel.* The highest level of traffic growth over the next 20 years will occur on I-5, between the Arena Boulevard Interchange and the I-80 junction with I-5, where a growth in traffic volumes of 100 percent is forecasted. This will result in prolonged Level of Service (LOS) "F" (failure) conditions for several hours during morning and evening peak commute periods. Even with future programmed roadway improvements in the adopted MTP, future traffic under No Build conditions will deteriorate on I-5, leading to higher traffic volumes on I-80 and parallel roadways.

  Of the alignment alternatives studied, the Truxel Road alignment offers the greatest reduction in weekday peak period auto travel to Downtown Sacramento, with the highest reduction coming from LRT, eliminating 4,700 daily person trips. Likewise, the greatest reductions in weekday parking demand in Downtown Sacramento occur with the Truxel Road alignment, with LRT eliminating the need for 2,200 parking spaces.

- *A Balanced Transportation System.* Further in a region, such as Sacramento, a single transit mode cannot provide as efficient service as several coordinated modes. A "family" of modes, operating as an integrated transport system, with buses feeding core light rail lines rather than competing with each other, is defined as a balanced transit system.

- *Service Continuity.* Light rail provides greater service continuity than BRT, with seamless service through Downtown and beyond, connecting other major activity centers. LRT can provide a "one-seat-ride" for anyone within walk access of the service, or within easy "drop off" access.

  This "one-seat-ride" service is especially critical within the DNA corridor because airport passengers respond negatively to off-airport transfers. In some situations, LRT may involve more transfers from other trains coming from the Watt/I-80 and the South Line Light rail corridors. These transfers are, however, simple – they are made at the same platform, and require little or no walking.

  LRT may also involve transfers with buses. In this situation, the transfers are organized in a timed manner so that transferring is made conveniently.

- *Service Reliability.* LRT generally has enhanced service reliability over bus-based systems due to the use of a guideway and preferential treatments, such as traffic signal prioritization. LRT service would operate at 15-minute headways throughout the DNA Corridor. BRT service would operate at varying headways within the Corridor, culminating in a combined 3.3-minute peak and 3.8-minute off-peak headway in downtown Sacramento. Without the benefit of traffic signal prioritization that is afforded to the LRT, large segments of the BRT route in downtown Sacramento would suffer reduced service reliability, due to the unavailability of sufficient "green" time to allocate a priority to BRT and still accommodate all other vehicular traffic and movements. The practical result will be substantial delays to the BRT service, long queues of buses waiting at intersections, and insufficient bus stop capacity to accommodate lines of buses.

- *Other Characteristics.* Other important characteristics that favor LRT include: frequency, durability, efficiency, simplicity, directness, and comfort. These are very desirable features for transit services. Transit services need to be aimed at attracting incidental users. The general public needs to have fixed routes, fixed (memorable) schedules, and known fares, in order to use the service.

For these reasons, LRT on Truxel Road provides the most cost-effective, superior, long-term major transit investment for the DNA Corridor. At the same time, it is recognized that many residents and commercial property owners immediately along Truxel Road, especially in the segment between Garden Highway and San Juan Road, have significant concerns with the use of Truxel Road. These concerns include station location, traffic circulation, pedestrian safety, noise, vibration, and visual impacts, property values, and resident and transit user safety. For RT to build and operate LRT service along Truxel Road, a concerted effort will be required for the District to work closely with residents, businesses, property owners, and neighborhood groups to address these very specific and important quality of life concerns.

Long-Term Transit Vision for the Corridor

In implementing a long-term transit vision for the DNA Corridor, it may be necessary to phase construction of light rail between downtown Sacramento and the Airport. This is consistent with the progression of growth and evolving development patterns within the Corridor by 2025 and beyond, the funding strategy set forth in SACOG's adopted MTP, and follows the pattern established by RT in building Phase 1 of the recently opened South Line LRT extension from Downtown to Meadowview Road as well as the construction of the Folsom LRT extension to Sunrise and ultimately to the City of Folsom.

Using this approach, Alternative 3: Truxel Road Light Rail Transit could initially be built in two phases, with full implementation by 2025 or beyond. This phased approach would ultimately, be determined during the PE phase of the project development process.

- Phase 1 (by 2012) – Implementation of Truxel LRT MOS (Alternative 3B), with light rail service between Downtown and the Natomas Town Center, with a feeder bus service connection to the Airport.

- Phase 2 (by 2015) – implementation of Truxel LRT Starter (Alternative 3A), with the extension of light rail service beyond Natomas Town Center to the Airport.

Agenda Item No.	Board Meeting Date	Open/Closed Session	Information/Action Item	Issue Date
	12/15/03	Open	Action	12/15/03

Subject: Selecting ~~Alternative 3:~~ Truxel Road Light Rail Transit as the Locally Preferred Alternative for the Downtown/Natomas/Airport (DNA) Corridor

As part of this long-term transit vision for the DNA Corridor, during the environmental phase and subsequently in PE and final design, RT will evaluate in greater detail design options that are also retained as part of the LPA. These design options will influence transit station and park-and-ride lot location, transit user accessibility, traffic flow and circulation, and pedestrian safety.

While Alternative 3 falls above the FTA user benefit threshold of $25.00, it is anticipated that additional design and engineering refinements could be achieved, thereby enhancing the eligibility of Alternatives 3 and 3A for federal funding. This could occur, for example by treating the LRT maintenance facility and bike/pedestrian path on the new American River bridge, as separate capital projects and thus paid for through other sources of funding. Under this scenario, the resulting FTA user benefits would be $24.41 and $20.36 respectively. Other types of cost savings, value engineering, and/or funding strategies will be considered in the PE phase of project development to improve this ratio. This type of separate capital project approach occurred during South Line Phase 1, with the separate funding of the Wayne Hultgren LRT station and the Florin Road grade separation project. Alternative 3B already falls well below FTA's user benefit threshold of $19.99 per hour allowing it to compete for a medium project rating in FTA's New Starts process.

Funding Strategy

A long-term commitment of local, state and federal funding will be required to build the DNA LRT extension. SACOG's MTP identifies approximately $400 million in funding available to build light rail from Downtown to the Airport. This figure is projected to increase to $450 million assuming the availability of Airport funding for airport-related transit improvements and local developer fees that are reasonable to expect based on redevelopment of the Railyards/Richards Boulevard areas. It is further assumed that:

- Project construction will be funded based on a 50 percent federal New Starts match, coupled with local and state funds, and

- Project operation assumes local funding, primarily through farebox revenues and renewal and expansion of Sacramento County's Measure A sales tax program. Critical to the construction and operation of DNA improvements will be an increase in RT's share of a renewed sales tax program, from an existing 1/6 of a cent to at least 1/3 of a cent as identified in the adopted MTP.

The phasing of project construction will be dictated, in large part, by the availability of construction and operating funds. RT will need to work closely with FTA, SACOG, and other local and state agencies to ensure that necessary funding is available when needed to maintain project momentum so that initial LRT service between Downtown and the Natomas Town Center begins by 2012 and that service is extended to the Airport no later than by 2015.

Agenda Item No.	Board Meeting Date	Open/Closed Session	Information/Action Item	Issue Date
	12/15/03	Open	Action	12/15/03

Subject: Selecting ~~Alternative 3:~~ Truxel Road Light Rail Transit as the Locally Preferred Alternative for the Downtown/Natomas/Airport (DNA) Corridor

Recommendation

Staff recommends that the Board of Directors adopt the attached resolution-selecting ~~Alternative 3:~~ Truxel Road Light Rail Transit Alternative as the locally preferred alternative (LPA) for the DNA Corridor. Chapter 8 "Locally Preferred Alternative Selection" from the AA Report is provided as Attachment C. The resolution would also direct staff to advance the LPA to the Draft Environmental Impact Statement (DEIS) and Draft Environmental Impact Report (DEIR) phase of the project development process.

RESOLUTION NO. 03-12-0277

Adopted by the Board of Directors of the Sacramento Regional Transit District on this date:

December 15, 2003

SELECTING TRUXEL ROAD LIGHT RAIL TRANSIT AS THE LOCALLY PREFERRED ALTERNATIVE FOR THE DOWNTOWN/NATOMAS/AIRPORT CORRIDOR

WHEREAS, the Sacramento Regional Transit District as the responsible local agency has conducted an Alternatives Analysis under 49 CFR Part 611 and 23 CFR part 450 to study a range of transit improvement alternatives to serve the needs of downtown Sacramento, the communities of South and North Natomas of the City and County of Sacramento and the Sacramento International Airport; and

WHEREAS, the purpose of this study is to determine which transit improvement is the most beneficial and cost-effective long-term solution for the Sacramento region; and

WHEREAS, the Alternatives Analysis process began in 2001 to evaluate a total of twelve alternatives including light rail, bus rapid transit, expanded bus service (baseline) and a no build condition; and

WHEREAS, the process was assisted by a Technical Review Panel with representatives from affected federal, state and local agencies, as well as a 40 member Citizens Review Panel which has provided public input to the process; and

WHEREAS, Truxel Road Light Rail Transit, which would extend light rail service from downtown Sacramento through the South and North Natomas communities along Truxel Road, to the Sacramento International Airport, was evaluated and determined to provide the greatest transportation benefit as an alignment to transit users in the corridor and in the region. In summary, these benefits include the following:

- Higher Ridership
- Connectivity
- Transit-Oriented Development
- Plan Consistency
- Improved Corridor Mobility
- Greater Transit Accessibility
- Cost-Effectiveness
- Fundability

WHEREAS, Truxel Road Light Rail Transit, which would provide light rail service, will also provide greater transportation benefits as a mode to transit users.
In summary, these benefits include the following:

- Ridership
- Capacity for Future Demand
- Speed
- Technology
- Economic Development
- Reduction in Auto Travel
- A Balanced Transportation
- Service Continuity
- Service Reliability
- Other Characteristics

WHEREAS, Truxel Road Light Rail Transit is the alternative, which best meets the Federal Transit Administration's evaluation criteria for New Start projects as set forth in the Transportation Equity Act; and

WHEREAS, it is the desire of this Board that the Locally Preferred Alternative for the Downtown/Natomas/Airport Corridor be designed in a manner that maximizes opportunities for transit oriented development, including residential housing, and so that existing residential housing is not eliminated; and

WHEREAS, Truxel Road Light Rail Transit is the alternative, which receives the broadest regional and community public support.

NOW, THEREFORE, BE IT HEREBY RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO REGIONAL TRANSIT DISTRICT AS FOLLOWS:

THAT, in accordance with 49 CFR Part 611 and 23 CFR Part 450, the following transit mode and alignment are hereby selected as the Locally Preferred Alternative for the Downtown/Natomas/Airport Corridor:

1. Transit Mode: Light Rail.

2. Alignment: Truxel Road Alignment, as described in attached Exhibit "A" and depicted in Figure 8.8-1 thereof.

THAT, the General Manager/CEO is hereby authorized and directed to take all such actions as are appropriate to advance the Locally Preferred Alternative for the Downtown/ Natomas/Airport Corridor to the next phase of project development, including the preparation of a Draft Environmental Impact Statement and Draft Environmental Impact Report therefor.

Don Nottoli

DON NOTTOLI, Chairman

ATTEST:

BEVERLY A. SCOTT, Secretary

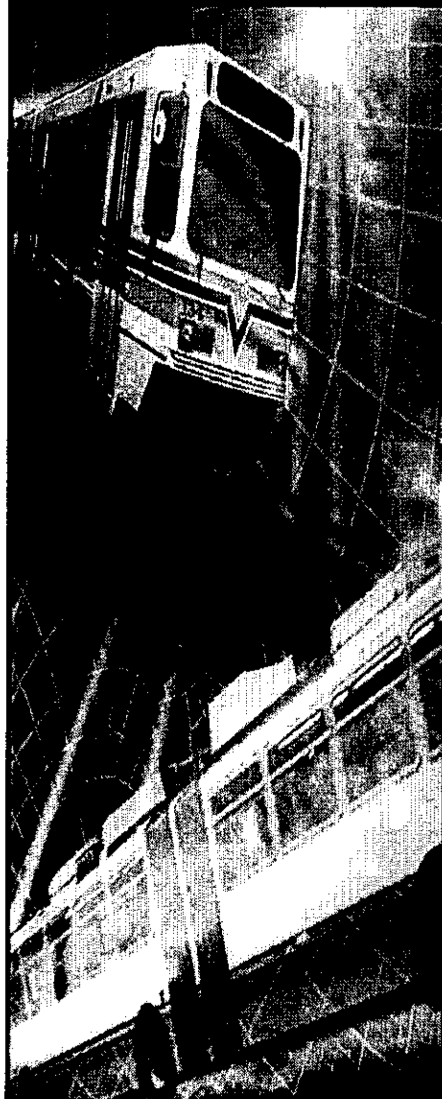
By: Cindy Brooks

Cindy Brooks, Assistant Secretary

ATTACHMENT A

POWERPOINT PRESENTATION SUMMARIZING STAFF RECOMMENDATION

ATTACHMENT A



Downtown/Natomas/Airport Alternatives Analysis

Staff Recommendation on Adoption of a Locally Preferred Alternative

Presentation to the

RT Board of Directors

Sacramento, California

December 15, 2003

Agenda

- Response to Board Questions from Hearing
- Summary of Public Comments Received
- Staff Recommendation on a DNA Locally Preferred Alternative (LPA)
- Next Steps

Downtown Natomas Airport

Response to Board Questions from Hearing

Downtown Natomas Airport

Transit Alternatives Analysis/ Draft Environmental Impact Statement and Report

RT Board Questions from Hearing

1. Develop a design option for locating a station at W. El Camino that avoids displacing the seven condos.
2. Provide supplemental letter with information on crime and property values to Al Mazaheri.
3. Clarify the issue of preventing left turns.
4. Does the City agree with RT's traffic analysis and conclusions?
5. Obtain additional information on the Boston Silver Line, which is replacing LRT with BRT.

Study Goals

1. Improve corridor mobility
2. Promote patterns of smart growth
3. Find cost-effective solutions
4. Minimize community and environmental impacts
5. Ensure consistency with other planning efforts
6. Obtain strong community support

Downtown Natomas Airport

Summary of Public Comments

Downtown Natomas Airport

Public Comment Summary

Public comments received since release of AA Report on November 6, 2003

- Total number of comments received: 172
- Total number of comments by:
  - Public Comment Log: 45 (e-mails, letters, hotline)
  - November 20, 2003 Open House: 73
  - December 8, 2003 Public Hearing: 54

Downtown Natomas Airport

Transit Alternatives Analysis/ Draft Environmental Impact Statement and Report

Public Comment Summary (Continued)

Category	Preference Expressed by Alignment and Mode				
	Alignment			Mode	
	Truxel	I-5	I-5-Truxel	LRT	BRT
Public Comment Log	+19 -12 2 Neutral	+7 -6	+1 -1 1 Neutral	+13 -7	+2 -0 1 Neutral
November 20, 2003 Open House	+25 -17	+10 -4	0	+25 -11 4 Neutral	+4 -1 2 Neutral
December 8, 2003 Public Hearing	+30 -12	+9 -2	0	+32 -8	+5 -3

Downtown Natomas Airport

Transit Alternatives Analysis Draft Environmental Impact Statement and Report

Public Comment Summary (Continued)

	Preference Expressed by Alignment and Mode				
	Alignment			Mode	
Category	Truxel	I-5	I-5-Truxel	LRT	BRT
Other:					
• 2500 Signature Petition[1]	Signers endorsed the I-5 Alignment			Petition does not state a preference	
• J.D. Franz Telephone Survey	61% of supporters prefer LRT on Truxel			57% Support LRT	
• Ray Tretheway Informal Survey	37%	30%	10%	77%	23%

1-The petition language states "We, the undersigned, do hereby oppose the Truxel Road alignment for the Downtown-Natomas-Airport transit line, due to the severe negative impacts it would have on our community, and support the alignment adjacent to I-5

Downtown Natomas Airport

Public Comment Summary (Continued)

- Displacements
- Traffic
- Quality of Life
- Crime
- Property Values
- Pedestrian Safety
- Noise and Vibration
- Cost-effectiveness

Downtown Natomas Airport

Public Comment Summary

- All public issues on the AA Report have been addressed
- Reports on public safety and property values available from RT and on www.DNART.org
- Traffic impacts on South Truxel

Downtown Natomas Airport

Transit Alternatives Analysis/ Draft Environmental Impact Statement and Report

Staff Recommendation on a DNA Locally Preferred Alternative (LPA)

Downtown Natomas Airport

DNA LPA Recommendation

Build and operate LRT service on the Truxel alignment from Downtown to the Airport (Alternative 3)

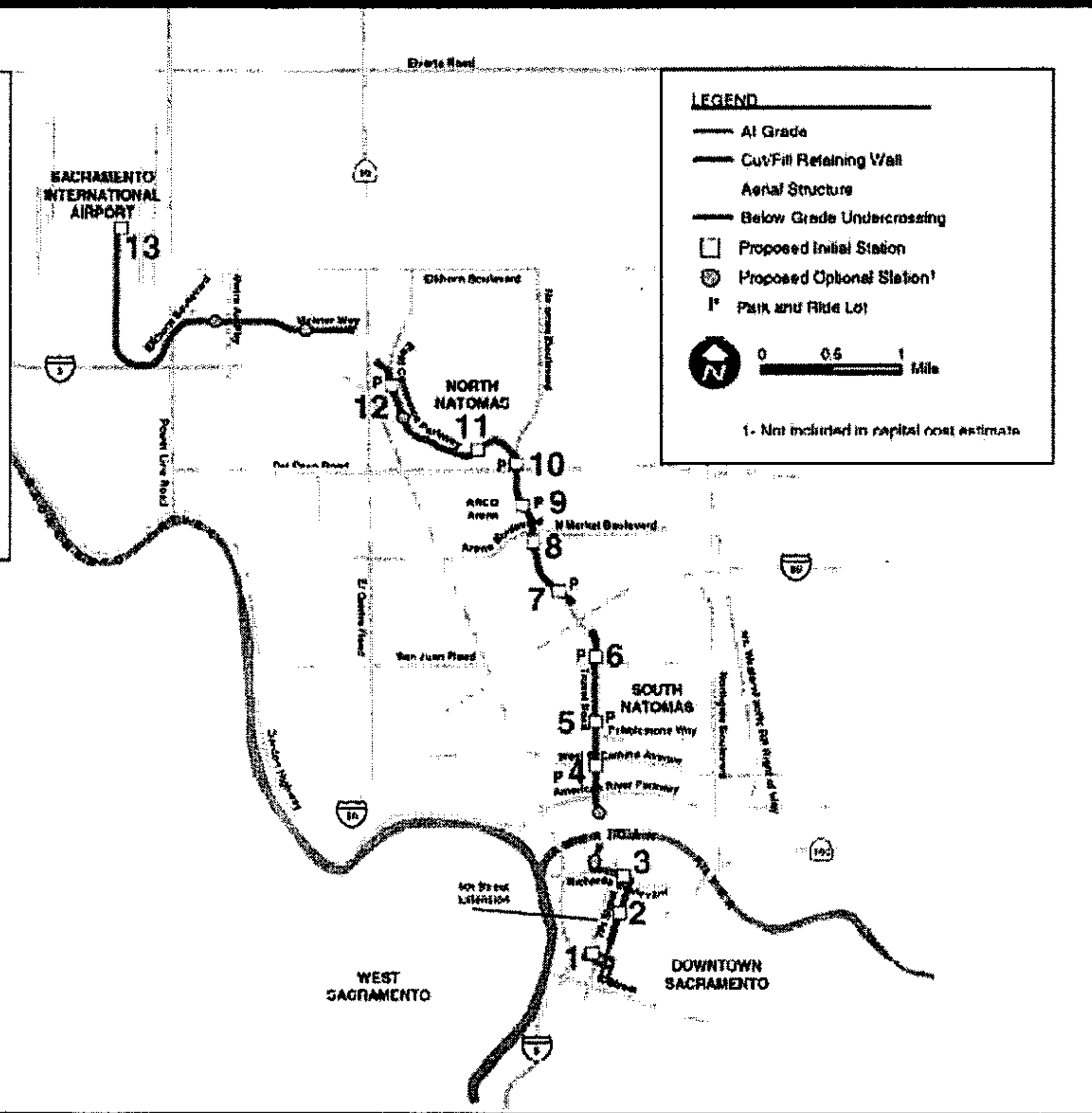
Downtown Natomas Airport

Transit Alternatives Analysis/ Draft Environmental Impact Statement and Report

DNA LPA Recommendation

Stations/Parking

1- Sacramento Valley (0)
2- Rialyards Station (0)
3- Richards Boulevard Station (0)
4- West El Camino Ave Station (P)
5- Pebblestone Way Station (P)
6- San Juan Road Station (P)
7- Gateway Park / Natomas Market Place Station (P)
8- Arco Arena Boulevard Station (0)
9- Arco Arena Station (P)
10- East Town Center Station (P)
11- North Natomas Town Center Station Station (0)
12- Club Center Drive/North Village Center Station (P)
13- Sacramento International Airport Station (0)



LPA Recommendation

Preference for Truxel LRT Alternative

- **Highest Ridership**
- **Connectivity**
- **Service Continuity**
- **Transit-Oriented Development**
- **Plan Consistency**

Downtown Natomas Airport

Transit Alternatives Analysis/Draft Environmental Impact Statement and Report

LPA Recommendation

Preference for Truxel LRT Alternative

- Reduction in Auto Travel
- Improved Corridor Mobility
- Greater Transit Accessibility
- Technology and Capacity
- Best Long-Term Investment

Downtown Natomas Airport

Long-Term Transit Vision for the Corridor

- Project to be built in phases from Downtown to the Airport
- One Approach:
  - Phase 1 (by 2012) – Construct Truxel LRT MOS, with LRT service from Downtown to the Natomas Town Center
  - Phase 2 (by 2015) – Construct extension of LRT service from Town Center to the Airport.

Summary of Traffic Analysis on Truxel Road

Downtown Natomas Airport

Transit Alternatives Analysis/Draft Environmental Impact Statement and Report

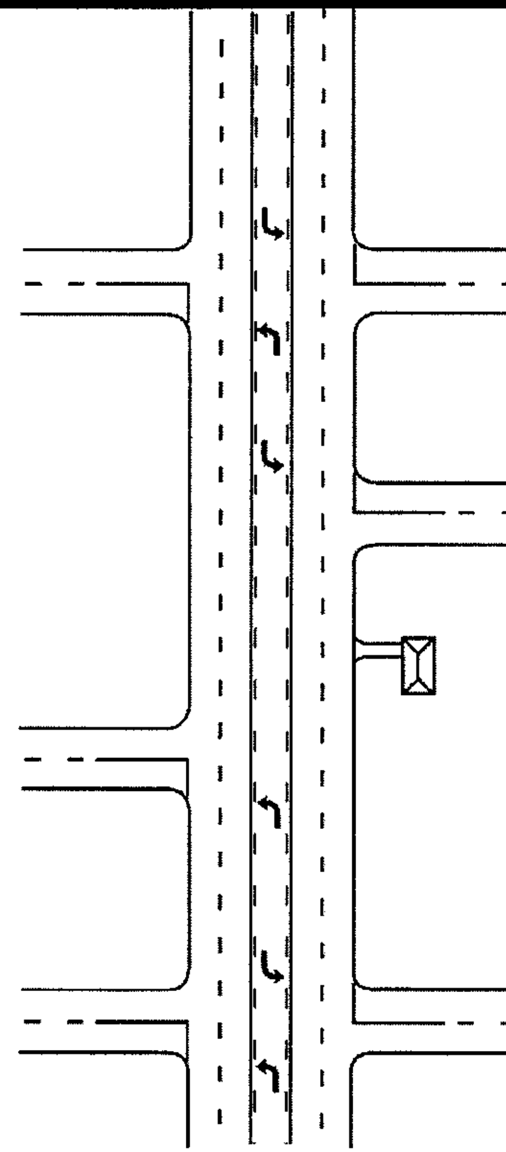
Traffic Along South Truxel

- No Alternative would remove through traffic lanes along Truxel Road
- Traffic level of service tables in AA Report show <u>unmitigated</u> conditions
- Measures that would mitigate LOS impacts have been identified at all Truxel Road intersections
- LOS range in AA Report reflects design options

Downtown Natomas Airport

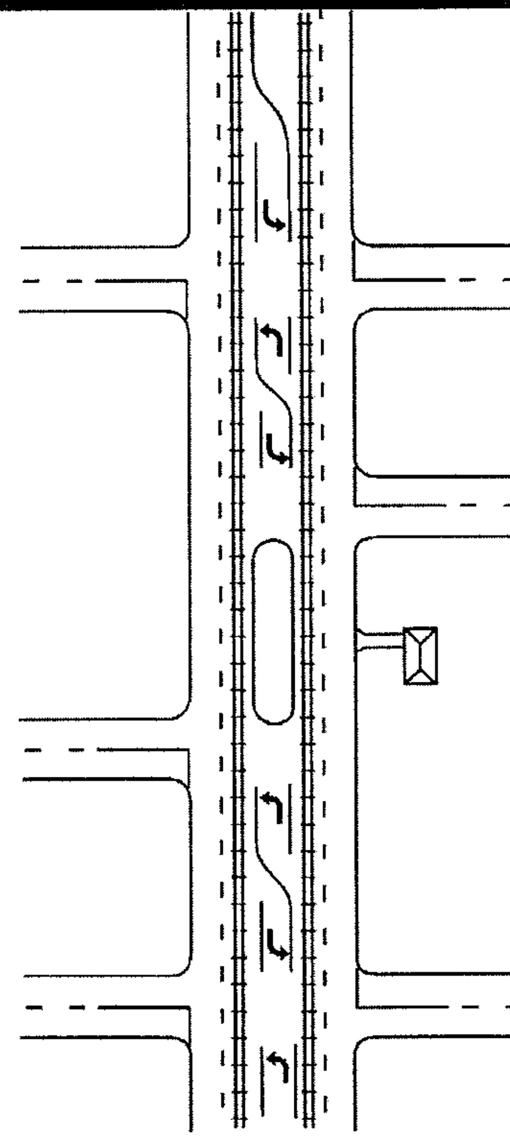
Transit Alternatives Analysis/ Draft Environmental Impact Statement and Report

No Build Alternative at Local Streets and Major Driveways



Mixed Flow Double Track LRT Option at Local Streets and Major Driveways

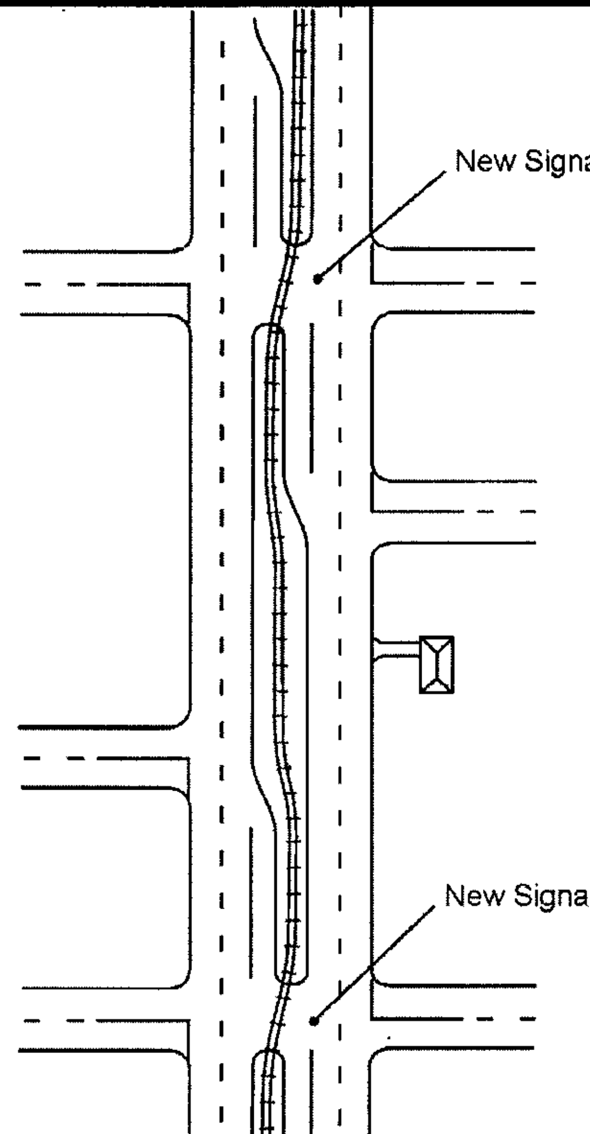
- Maintains most left turn access
- Left turn access would be eliminated at 2 to 3 local streets/major driveways
- Left turn access maintained at 15 to 16 local streets/major driveways
- U-turns required for 15 homes fronting on Truxel Road



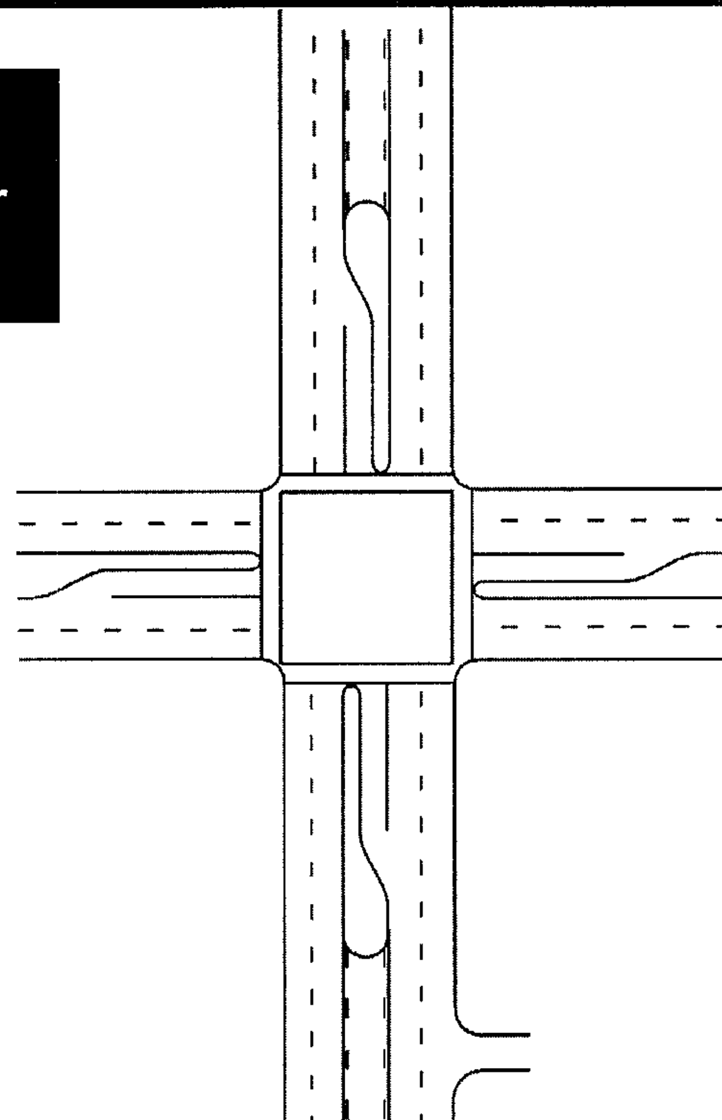
Downtown Natomas Airport

Exclusive Single Track LRT Option at Local Streets and Major Driveways

- Left turn access eliminated at 9 to 10 local streets/major driveways
- 3 to 4 new signals added along Truxel Road (U-turns allowed)
- Left turn access maintained at 9 local streets/major driveways
- U-turns required for 15 homes fronting on Truxel Road



No Build Alternative at Major Intersection

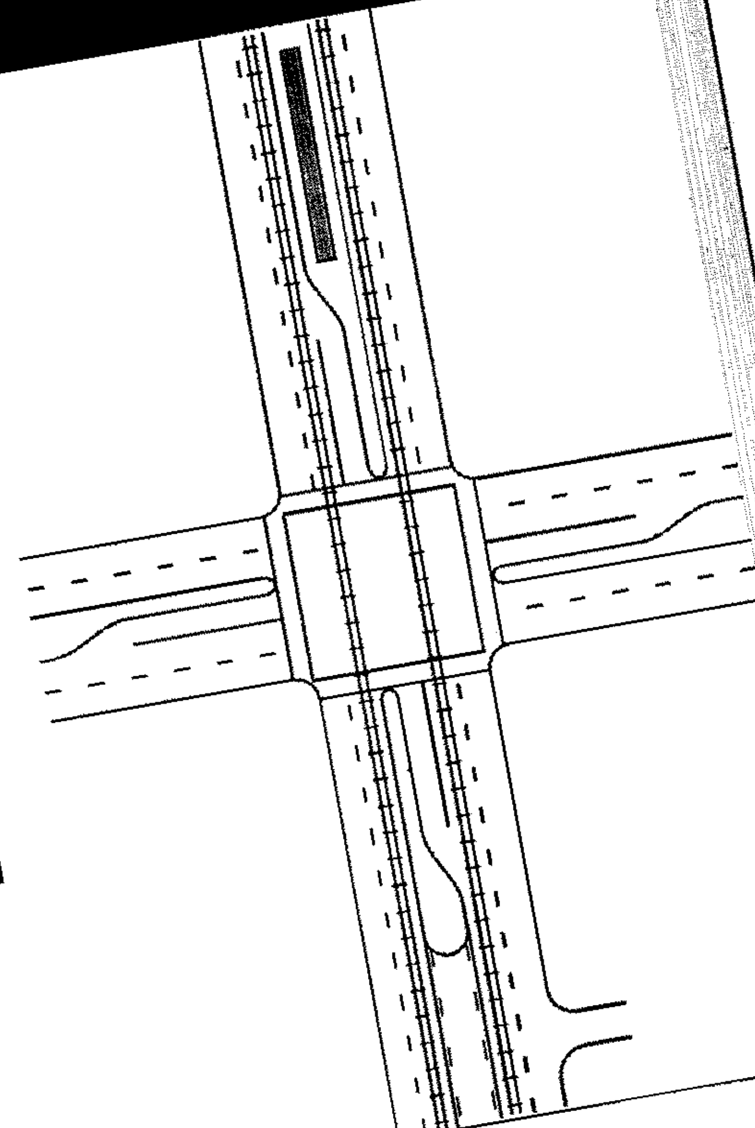


Downtown Natomas Airport

Transit Alternatives Analysis Draft Environmental Impact Statement and Report

Mixed Flow Double Track LRT Option at Major Intersection

- Increases average delay on Cross Streets and left turns by 10 to 20 seconds
- Decreases delay for North/South traffic on Truxel Road
- Mitigation measures identified for all impacted Truxel intersections

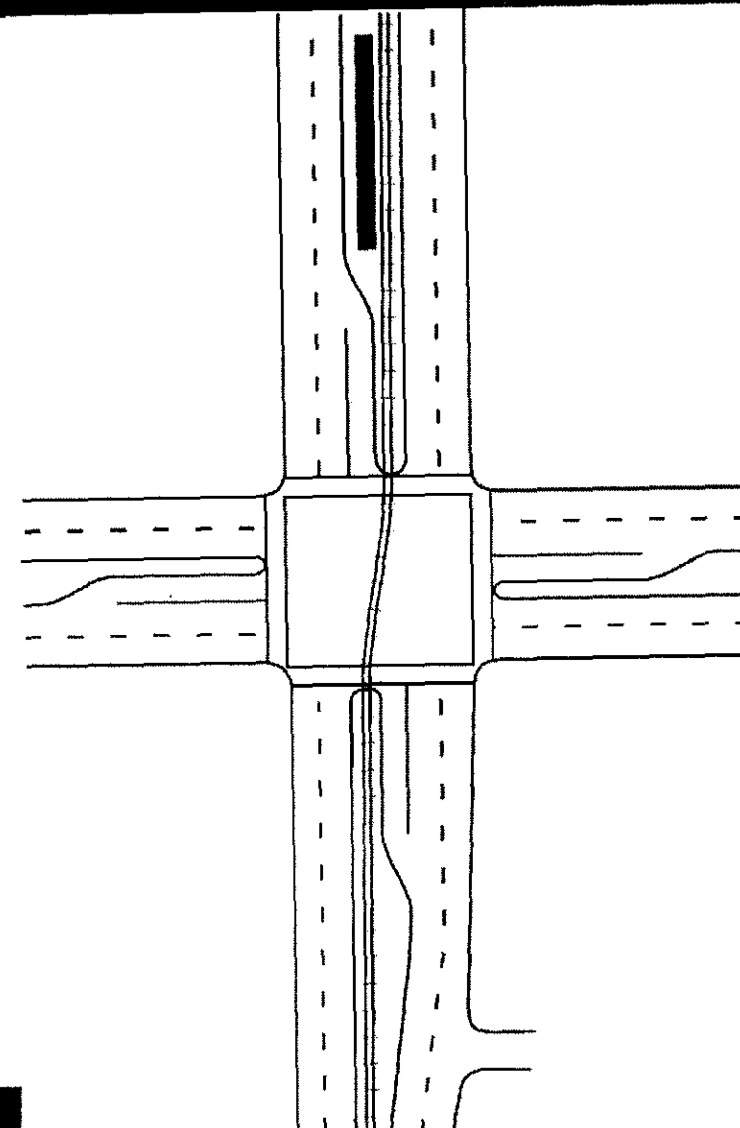


Exclusive Single Track LRT Option at Major Intersection

- Increases average delay on Cross Streets and left turns by 5 to 10 seconds

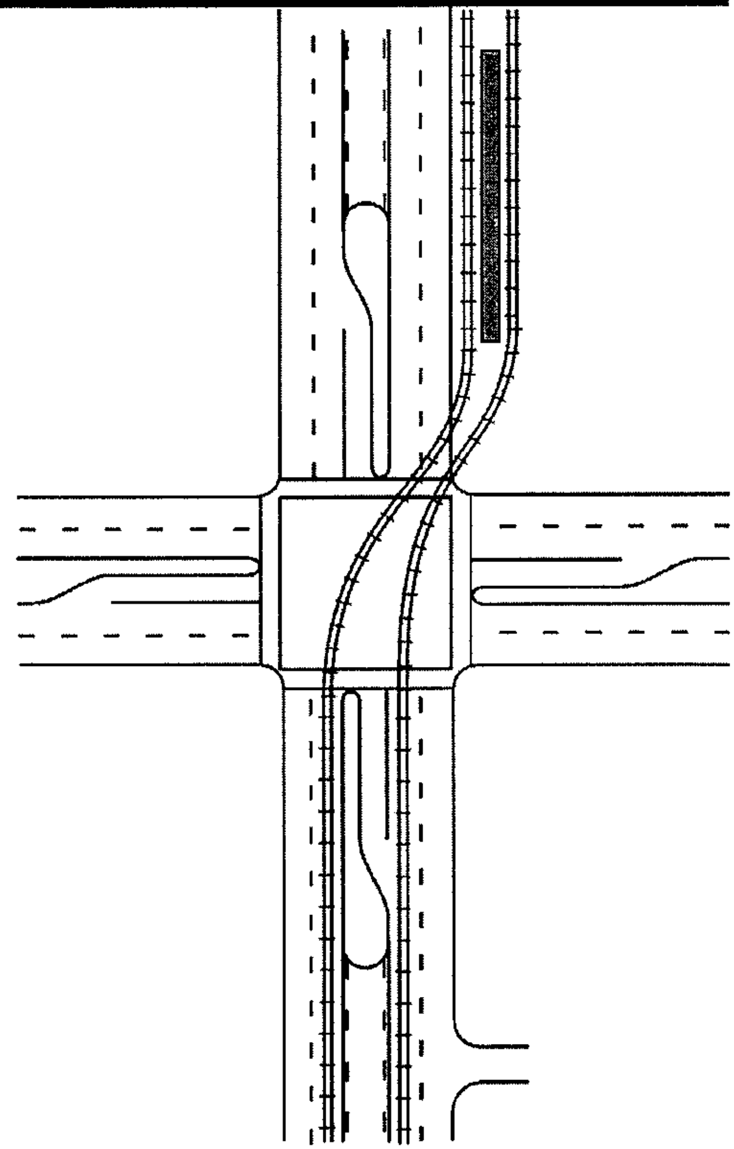
- Decreases delay for North/South traffic on Truxel Road

- Mitigation measures identified for all impacted Truxel intersections



Median to Side Running LRT Option at Major Intersection

- Increases average delay on Cross Streets and left turns by 10 to 30 seconds
- Mitigation measures identified for all impacted Truxel intersections



Next Steps

Downtown Natomas Airport

Next Steps

- Complete Draft Environmental Clearance Process (DEIS/R/FEIR)..Fall 2004
  - Public Input
    - Alignment options, station locations, mitigation
- FTA New Starts Submittal........................Summer 2004
- Complete PE/FEIS...................................Fall 2006
  - Public Input
    - Agreement on mitigation measures for Final Design
- Complete Final Design and Engineering.......Fall 2008
  - Public Input
    - Assure mitigation measures and public input is incorporated into construction specification and drawings
- Complete LPA Construction.....................Fall 2011
- Opening Day of Service..........................Spring 2012

Downtown Natomas Airport

ATTACHMENT B

CHAPTER 8 "LOCALLY PREFERRED ALTERNATIVE SELECTION"

EXHIBIT A

8.0 LOCALLY PREFERRED ALTERNATIVE SELECTION

Chapter Summary

A Locally Preferred Alternative (LPA) is the selected candidate physical design concept and scope for a major corridor transit investment. In the Downtown/Natomas/Airport (DNA) Corridor, the LPA will consist of two features: the identification and description of a corridor alignment and the identification of a transit (bus, light rail) mode. The LPA will also generally describe the proposed location of stations, the operating concepts by which transit service will be provided, and a set of specific design options to be further evaluated during the draft environmental phase. Refinements to the LPA will continue during subsequent Preliminary Engineering (PE) and the Final Environmental Impact Statement (FEIS) phase.

The PE/FEIS phase will focus on developing more specific environmental and engineering information including detailed environmental testing and mitigation plans, geometric alignment design, bridges and structures, station location and design, landscaping features, access and operating strategies, drainage, right-of-way requirements, maintenance of traffic during construction, phasing of construction, and a detailed financial plan including funding commitments. Minor alignment and engineering adjustments to the LPA will likely occur during final design and construction phases of the transit improvement. Subsequent to the Preliminary Engineering (PE) phase of LPA development, minor alignment and engineering adjustments to the LPA will likely occur during PE, final design, and construction of the transit improvement.

8.1 Selection Process

Earlier chapters of this report provided a systematic comparison of 12 conceptual alternatives, including a No-Build, a Baseline/TSM, five light rail transit (LRT) alternatives and five bus rapid transit (BRT) alternatives. It was structured around criteria and indicators designed to reflect the study goals and objectives as endorsed by the Technical Review Panel (TRP), Citizens Review Panel (CRP), the Sacramento Regional Transit District (RT) Board of Directors, and from information provided by the City of Sacramento, Sacramento County, public agencies, and the general public.

On November 6, 2003 RT formally released for a 30-day period the Draft Alternatives Analysis (AA) Report for public review and comment. On November 10, the RT Board of Directors was presented with a summary of the Draft Report. RT then convened a community workshop on November 20 at the Sacramento Convention Center, enabling the public an opportunity to review the study findings and to pose questions regarding the alternatives to agency staff and the consultant team. RT also held a public hearing on December 8 in the chambers of the Sacramento County Board of Supervisors to provide the public more opportunity to provide comment on the AA Report.

Based on the technical analysis results and public comment received on the Draft AA report, agency staff has developed an LPA recommendation for the RT Board of Directors to consider on December 15, 2003 At this meeting, the Board of Directors will have the opportunity to accept, modify or reject the LPA recommendation. Figure 8.1-1 illustrates the decision-making process RT will have used to select an LPA for the DNA Corridor.

Decision Tree

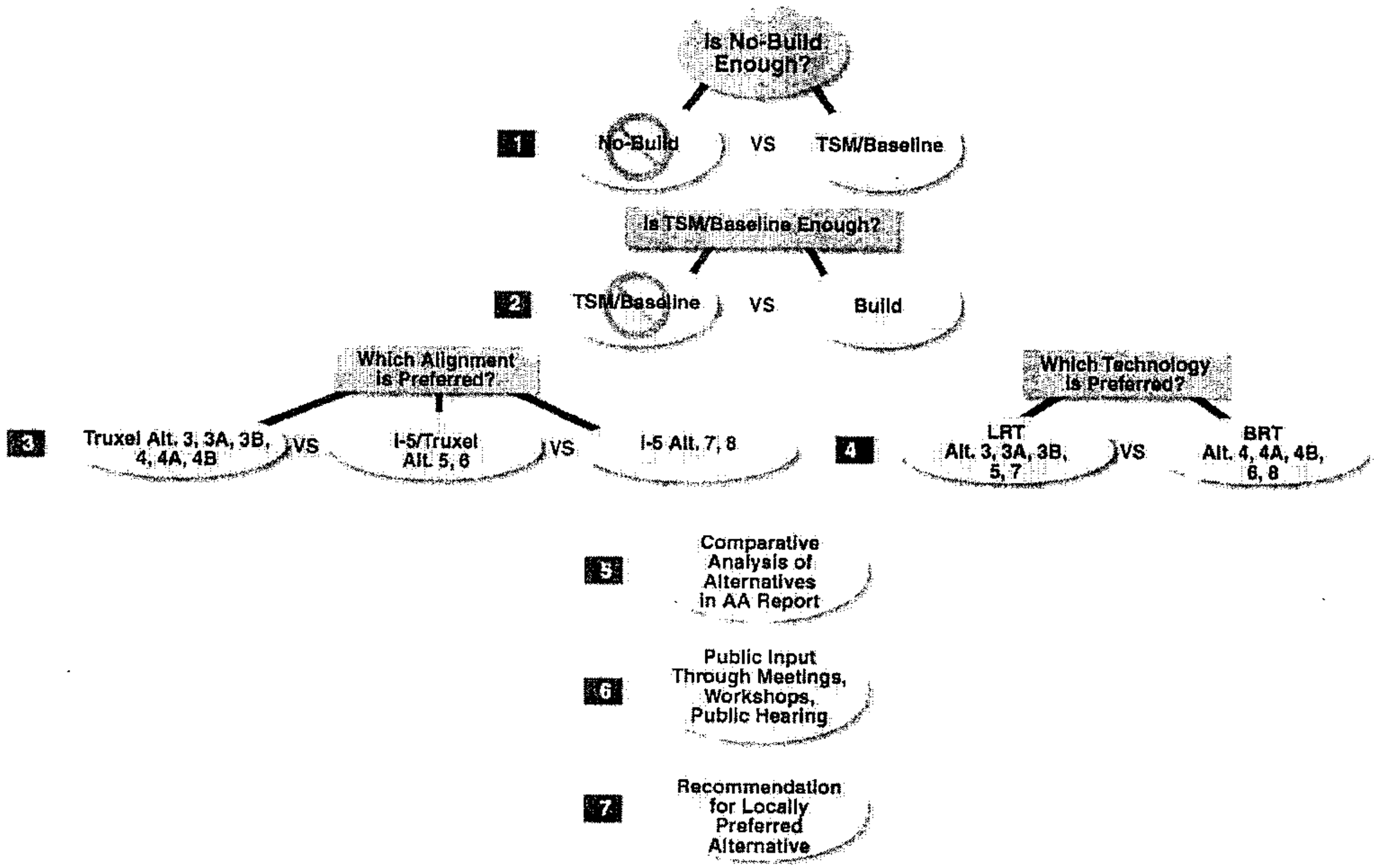


FIGURE 8.1-1
DECISION TREE SUMMARY

8.2 Recommendation on a Locally Preferred Alternative

Since the mid-1980's, there has been an increasing recognition by the public and its elected officials of the need for a major public transit investment in the DNA Corridor. Three primary factors have contributed to this vision, including:

1. Recognition that significant growth and development will continue to occur, particularly in North Natomas, in close proximity to the Airport, and in surrounding areas north and east of the corridor;
2. Concern over increasing traffic congestion along Interstate (I-5), and the need to provide people living and working in the corridor a transportation alternative to driving their own vehicle; and
3. A desire to improve transportation mobility between the Downtown, South and North Natomas Communities, and the Sacramento International Airport and to other parts of the Sacramento region.

In exploring this vision, several corridor alignments and transportation technologies have been studied extensively over time, including the I-5, Truxel Road, and I-5/Truxel alignments and the potential for expanding existing bus service and extending LRT service into the Corridor. More recently, as part of this study, BRT has also been considered as a viable transit technology. It is clear, however, that when considering future ridership, costs, and impacts to the local community and region, each study alternative has both advantages and disadvantages.

These trade-offs have been the topic of much regional and community discussion and debate, resulting in a decision by RT in 1991 to support construction of light rail on Truxel Road. The City of Sacramento and County of Sacramento have included the locally adopted alignment in their respective general plans and community plans. The Sacramento Area Council of Governments (SACOG) has consistently reaffirmed the local decision, as recently as July 2002, with the adoption of the Metropolitan Transportation Plan (MTP) for 2025. The results of this current AA Report support this conclusion.

8.3 Preference for Alignment

Use of the Truxel Road alignment will provide the largest transportation benefit to transit users in the Corridor and in the region. In summary, these benefits include the following:

- **Improved Corridor Mobility**. While all three alignments would provide improved transit service between Downtown and the Airport, the Truxel alignment provides the shortest travel time for North and South Natomas residents. While the Truxel alignment does not have the best travel time from Downtown to the Airport, the 28 to 30 minute travel time is comparable to the I-5 alignment alternatives.

- **Greater Transit Accessibility**. Based on the 2000 Census and year 2025 SACOG projections, the Truxel alignment would provide the greatest transit access to corridor residents and households than either the I-5 or I-5/Truxel alignments.

  There are 21,500 residents living within ½-mile of the Truxel Road alignment, including a greater concentration of low income and transit dependent households. Likewise, there are 32,100 jobs located within ½-mile of the alignment; nearly equivalent to the number of jobs located along I-5 or the I-5/Truxel alignment alternatives. In addition, the Truxel alignment provides the best pedestrian access opportunities.

Due to limited north-south traffic capacity in the DNA Corridor, with only two bridges across the American River within a three-mile wide reach, a new bridge crossing along the Truxel Road alignment is needed to provide improved and direct transit accessibility into Downtown Sacramento.

- **Connectivity**. Generally, the Truxel Road alignment provides better connectivity to the existing regional transit system and to the major concentration of existing and planned activity centers and destinations within the DNA Corridor.

  These activity centers and destinations include: (1) the Sacramento International Airport; (2) Metro Air Park, an improved mixed use commercial/office development; (3) the soon to be built North Natomas Town Center, with a 200-acre Regional Park, high school and community college campus and library; (4) ARCO Arena; (5) the Natomas Marketplace commercial center; (6) Natomas High School; (7) the South Natomas Community Center; (8) the redeveloping Richards Boulevard area; and (9) the Sacramento Valley Station, which is part of a 240-acre proposed master plan redevelopment project for the Union Pacific Railyards.

  Moreover, the DNA Corridor connection with the Sacramento Valley Station provides intermodal connections to existing and new bus services, existing Capitol Corridor intercity rail service, long distance Amtrak service, soon to be constructed Folsom Corridor LRT service, and future regional commuter rail service.

- **Potential for Transit-Oriented Development**. The Truxel Road alignment generally offers the greater opportunity to foster transit-oriented development, particularly in the North Natomas community and the Railyards/Richards Boulevard area. Land use plans in these two areas propose the highest density employment and housing clustered in a mix around planned stations. The North Natomas Community Plan, in particular, was designed as a transit-oriented community, with dedicated right-of-way along Truxel Road set aside for a light rail alignment as a central element. Opportunities also exist for further increases in density and intensity in station areas once the LRT is constructed.

  The Truxel alignment provides a further opportunity to shape future land use decisions within the unincorporated area, west of State Route 99/70 and north of Elkhorn Boulevard, in the same planned vision that created the North Natomas Community Plan, if the region desires to grow in that direction.

  The total land available for development at future stations along the Truxel alignment is greater than that along the I-5 alignment. Opportunities for smart growth are curtailed by I-5, which limits pedestrian access to either side of the freeway, and hence reduces the potential for transit-oriented development opportunities.

- **Plan Consistency**. The Truxel alignment, with light rail, also offers the highest level of consistency with existing adopted community plans, the City and County general plans, current planning efforts within the Corridor, and over 15 years of prior development and infrastructure commitment in North Natomas.

  In particular, the North Natomas Community Plan set aside land use by the future light rail guideway. In addition, the Truxel Road Interchange was designed and built to structurally support a future light rail alignment. And the North Natomas infrastructure-financing plan includes a development fee structure to finance light rail station improvements.

Perhaps most importantly, the Truxel Road alignment, with light rail, offers the lowest potential for physically dividing the community.

- **Higher Ridership**. Across all the alternatives studied, the opportunities for the highest daily ridership occur along the Truxel Road alignment.

- **Cost-Effectiveness**. Generally, all of the Truxel Road alignment modal alternatives fair better in terms of providing the most cost-effective transit solution, using Federal Transit Administration ratings, because they directly serve more residents and have lower construction costs.

- **Fundability**. Using long-range revenue estimates prepared by RT and SACOG, it was determined that any alternative costing $450 million or below could be funded with a combination of federal, state and local revenue as they become available. The majority of the alternatives that fall within this funding threshold occur on the Truxel Road alignment.

8.4 Preference for Mode

Use of light rail also will provide greater transportation benefits to transit users. In summary, these benefits include the following:

- **Ridership**. In the DNA Corridor, light rail generally generates ten percent higher ridership than BRT, with most of the difference resulting from airport passengers (as service continuity is a key factor for airport transit service).

- **Capacity**. Over the next 20 years and beyond, the Natomas Basin is seen as a major new growth area for the Sacramento region. The travel corridor warrants a high capacity mode. LRT has a superior ability to respond to growth pressures by increasing capacity compared to other modes, such as BRT. Light rail can add another car to a train to carry more riders and not affect labor costs. This is a primary reason LRT is more efficient with higher ridership demand.

- **Speed**. Light rail systems generally have increased speed over bus systems (as well as the perception of being faster).

- **Technology**. LRT has higher vehicle performance technology and passenger comfort features. Light rail vehicles are more spacious and provide for a more stable ride. The guideway feature makes possible use of larger vehicles and trains of up to four cars, as well as partial signal control. The vehicles are clean, non-polluting electric–propulsion powered. Clean-fueled buses still produce particulates and nitrogen oxides emissions, which is objectionable, particularly in areas with high concentrations of people. Noise produced by buses also remains a problem.

  Buses are also considerably less expensive than LRT vehicles, although the difference in their life costs is not as great as the difference in their purchase prices because light rail vehicles have 2.5 to 3.0 times longer life spans. Buses last 12 years, while light rail vehicles last between 25 and 40 years. Therefore, a current comparison must be based on life cycle costs per unit of vehicle capacity. Such a comparison would tend to favor LRT.

- **Economic Development**. LRT is attractive as a tool for transit-oriented development, a characteristic not convincingly displayed in the United States by bus service of any type.

Light rail has a permanent infrastructure that becomes part of the urban structure. Because BRT is less capital intensive, it is more likely to be abandoned if the market were not supporting the service. It is the permanence of light rail that tells private investors and transit users that this form of transportation is here to stay.

- **Reduction in Auto Travel.** The highest level of traffic growth over the next 20 years will occur on I-5, between the Arena Boulevard Interchange and the I-80 junction with I-5, where a growth in traffic volumes of 100 percent is forecasted. This will result in prolonged Level of Service (LOS) "F" (failure) conditions for several hours during morning and evening peak commute periods. Even with future programmed roadway improvements in the adopted MTP, traffic under No Build conditions will deteriorate on I-5, leading to higher traffic volumes on I-80 and parallel roadways.

  Of the alignment alternatives studied, the Truxel Road alignment offers the greatest reduction in weekday peak period auto travel to Downtown Sacramento, with the highest reduction coming from light rail, eliminating 4,700 daily person trips. Likewise, the greatest reductions in weekday parking demand in Downtown Sacramento occur with the Truxel Road alignment, with LRT eliminating the need for 2,200 parking spaces.

- **A Balanced Transportation System.** Further, in a region, such as Sacramento, a single transit mode cannot provide as efficient service as several coordination modes. A "family" of modes operating as an integrated transport system, with buses feeding light rail lines rather than competing with each other, is defined as a balanced transportation system.

- **Service Continuity.** Light rail provides greater service continuity that BRT, with seamless service through Downtown and beyond, connecting other major activity centers. LRT can provide a "one-seat-ride" for anyone within walk access of the service, or within easy "drop off" access.

  This "one-seat-ride" service is especially critical within the DNA Corridor because air passengers respond negatively to off-airport transfers. In some situations, LRT may involve more transfers from other trains coming from the Watt/I-80 and the South Line light rail corridors. These transfers are, however, simple—they are made at the same platform and require little or no walking.

  LRT may also involve transfers with buses. In this situation, the transfers are organized in a timed manner so that transferring is made conveniently.

- **Service Reliability.** LRT generally has enhanced service reliability over bus-based systems due to the use of a guideway and preferential treatments, such as traffic signal prioritization. LRT service would operate at 15-minute headways throughout the DNA Corridor. BRT service would operate at varying headways within the Corridor, culminating in a combined 3.3-minute peak and 3.8-minute off-peak headway in downtown Sacramento. Without the benefit of traffic signal prioritization that is afforded to the LRT, large segments of the BRT route in downtown Sacramento would suffer reduced service reliability, due to the unavailability of sufficient "green" time to allocate a priority to BRT and still accommodate all other vehicular traffic and movements. The practical result will be substantial delays to the BRT service, long queues of buses waiting at intersections, and insufficient bus stop capacity to accommodate lines of buses.

- **Other Characteristics**. Other important characteristics that favor LRT include: frequency, durability, efficiency, simplicity, directness, and comfort. These are very desirable features for transit services. Transit services need to be aimed at attracting incidental users. The general public needs to have fixed routes, fixed (memorable) schedules, and known fares, in order to use the service.

  For these reasons, LRT on Truxel Road provides the most cost-effective, superior, long-term major transit investment for the DNA Corridor. At the same time, however, it is recognized that residents and commercial property owners along Truxel Road, especially in the segment between Garden Highway and San Juan Road, have significant concerns with the use of Truxel Road. These concerns include station location, traffic circulation, pedestrian safety, noise, vibration, and visual impacts, property values, and resident and transit user safety. For RT to build and operate LRT service along Truxel Road, a concerted effort will be required for the District to work closely with residents, businesses, property owners, and neighborhood groups to address these various specific and important quality of life concerns.

8.5 A Long-Term Transit Vision for the Corridor

In implementing a long-term transit vision for the DNA Corridor, it may be necessary to phase construction of light rail between downtown Sacramento and the Airport. This is consistent with the progression of growth and evolving development patterns within the Corridor by 2025 and beyond, the funding strategy set forth in SACOG's adopted MTP, and follows the pattern established by RT in building Phase 1 of the recently opened South Line LRT extension from Downtown to Meadowview Road as well as the construction of the Folsom LRT extension to Sunrise and ultimately to the City of Folsom.

Using this approach, Alternative 3: Truxel Road Light Rail Transit could initially be built in two phases, with full implementation by 2025 or beyond. This phased approach would ultimately, be determined during the PE phase of the project development process.

- Phase 1 (by 2012) – implementation of Truxel LRT MOS (Alternative 3B), with light rail service between Downtown and the Natomas Town Center, with a feeder bus service connection to the Airport.

- Phase 2 (by 2015) – implementation of Truxel LRT Starter (Alternative 3A), with the extension of light rail service beyond Natomas Town Center to the Airport.

As part of this long-term transit vision for the DNA Corridor, during the environmental phase and subsequently in PE and final design, RT will evaluate in greater detail design options that are also retained as part of the LPA. A listing of these design options is shown in Table 8.8-1. These design options will influence transit station and park-and-ride lot location, transit user accessibility, traffic flow and circulation, and pedestrian safety.

While Alternative 3 falls above the FTA user benefit threshold of $25.00, it is anticipated that additional design and engineering refinements could be achieved, thereby enhancing the eligibility of Alternatives 3 and 3A for federal funding. This could occur, for example by treating the LRT maintenance facility and bike/pedestrian path on the new American River bridge, as separate capital projects and thus paid for through other sources of funding. Under this scenario, the resulting FTA user benefits would be $24.41 and $20.36, respectively. Other types of cost savings, value engineering, and/or funding strategies will be considered in the PE phase of project development to improve this ratio. This type of separate capital project approach occurred during South Line Phase 1, with the separate funding of the Wayne Hultgren LRT station and the Florin Road grade separation project. Alternative 3B already falls well below FTA's user benefit threshold of $19.99 per hour allowing it to compete for a medium project rating in FTA's New Starts process.

8.6 Funding Strategy

A long-term commitment of local, state and federal funding will be required to build the DNA LRT extension. SACOG's MTP identifies approximately $400 million in funding available to build light rail from Downtown to the Airport. This figure could potentially increase to $450 million assuming the availability of Airport funding for airport-related transit improvements and local developer fees that are reasonable to expect based on redevelopment of the Railyards/Richards Boulevard areas. It is further assumed that:

- Project construction will be funded based on a 50 percent federal New Starts match, coupled with local and state funds, and

- Project operation assumes local funding, primarily through farebox revenues and renewal and expansion of Sacramento County's Measure A sales tax program. Critical to the construction and operation of DNA improvements will be an increase in RT's share of a renewed sales tax program, from an existing 1/6 of a cent to at least 1/3 of a cent as identified in the adopted MTP.

The phasing of project construction will be dictated, in large part, by the availability of construction and operating funds. RT will need to work closely with FTA, SACOG, and other local and state agencies to ensure that necessary funding is available when needed to maintain project momentum so that initial LRT service between Downtown and the Natomas Town Center begins by 2012 and that service is extended to the Airport no later than by 2015.

8.7 Recommendation

Thus it is recommended that the LPA consist of building and operating high capacity LRT service on the Truxel Road alignment from Downtown, through South and North Natomas to the Sacramento International Airport. Figure 8-8.1 shows the location of the alignment, while Table 8.8-2 identifies design options that are recommended to be dropped from further study.

LEGEND

- At Grade
- Cut/Fill Retaining Wall
- Aerial Structure
- Below Grade Undercrossing
- Proposed Initial Station
- Proposed Optional Station[1]
- P Park and Ride Lot

0 0.5 1 Mile

1- Not included in capital cost estimate

Stations/Parking

1- Sacramento Valley (0)
2- Rialyards Station (0)
3- Richards Boulevard Station (0)
4- West El Camino Ave Station (P)
5- Pebblestone Way Station (P)
6- San Juan Road Station (P)
7- Gateway Park / Natomas Market Place Station (P)
8- Arco Arena Boulevard Station (0)
9- Arco Arena Station (P)
10- East Town Center Station (P)
11- North Natomas Town Center Station Station (0)
12- Club Center Drive/North Village Center Station (P)
13- Sacramento International Airport Station (0)

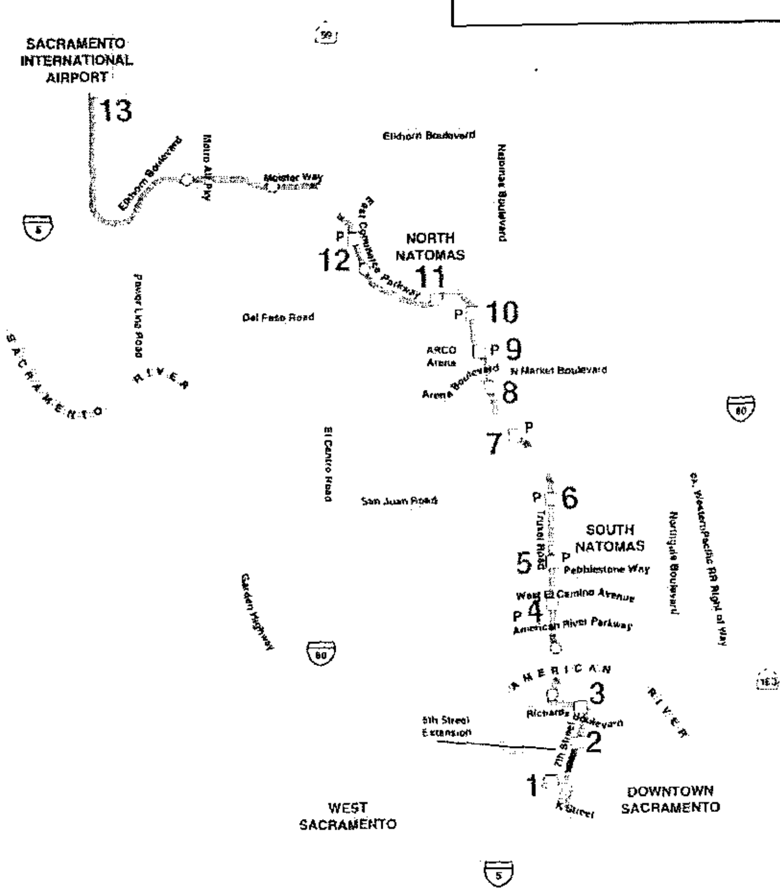


FIGURE 8.8-1
LOCALLY PREFERRED ALTERNATIVE

TABLE 8.8-1
DESIGN OPTIONS TO BE CARRIED FORWARDED AS PART OF THE LOCALLY PREFERRED ALTERNATIVE

	Design Option	Description
Downtown to Richards Boulevard		
1	North 5th Street, Mixed Flow Grade-separation	Double-track mixed flow guideway through grade-separation of relocated Union Pacific Railroad (UPRR) tracks; Double-track in exclusive median of new 5th/6th Street north of UPRR
2	North 5th Street, Exclusive Grade-Separation	Double-track exclusive guideway in median of proposed 5th/6th Street grade-separation of relocated UPRR tracks; Double-track exclusive guideway in median of new 5th/6th Street north of UPRR
3	North 6th Street, Exclusive Grade-Separation	Double-track exclusive guideway in median of proposed 6th Street grade-separation of relocated UPPR tracks; Double-track exclusive guideway along 6th Street alignment north of UPRR
4	7th Street, Exclusive Single Track **(Starter Line and Minimum Operable Segment [MOS])**	Single-track exclusive guideway in 2-lane 7th Street extension undercrossing, Single track exclusive guideway along 7th Street north of UPRR
5	7th Street, Exclusive Double Track	Single track exclusive guideway in 7th Street extension undercrossing; Double-track exclusive guideway along 7th Street north of UPRR
6	7th Street, Mixed Flow Double Track/Exclusive Guideway	Double-track mixed flow guideway in 2-lane 7th Street extension undercrossing; Double-track exclusive guideway along 7th Street north of UPRR
7	7th Street, Two-Phased Under-crossing Construction	Phase One: Single-track exclusive guideway in existing 2-lane 7th Street extension undercrossing, Phase Two: Double-track exclusive guideway in new 4-lane 7th Street undercrossing Phase One and Two: Double-track exclusive guideway along 7th Street north of UPRR
8	7th Street, east-side running (North B Street to Richards Boulevard)	Double- or single-track exclusive guideway using city-owned land on the east side of 7th Street between North B Street and Richards Blvd.
9	Sequoia Pacific Boulevard Station	Light Rail Transit (LRT) station on abandoned railroad spur west of Sequoia Pacific Boulevard

Text in **Bold** type indicates the primary design option in a particular geographic segment

TABLE 8.8-1
DESIGN OPTIONS TO BE CARRIED FORWARDED AS PART OF THE LOCALLY PREFERRED ALTERNATIVE (CONTINUED)

	Design Option	Description
Crossing of the American River		
10	Truxel Bridge Crossing **(All Alternatives)**	Transit only crossing along an abandoned railroad spur west of Sequoia Pacific Boulevard, with a direct connection to Garden Highway at Truxel Road
11	North 5th Street Bridge Crossing	Transit only crossing from the end of North 5th Street with a direct connection to Garden Highway at Truxel Road
Through South Natomas		
12	Mixed Flow, Double-Track in Traffic Lanes **(Truxel LRT)**	Double-track exclusive guideway in mixed flow travel lanes on Truxel Road;
13	Exclusive Median Single-Track **(Truxel LRT Starter Line/MOS)**	Single track exclusive guideway would operate in the median of Truxel Road, with double track sections at selected locations
14	Exclusive Median Single-Track with Single-Track Mixed Flow	Single track exclusive guideway would operate in the median of Truxel Road, with a second track located in an adjacent mixed flow lane
15	West El Camino Avenue Station South Site	LRT Station located on Truxel Road south of West El Camino Avenue
16	San Juan Road Station North Site	LRT Station located north of San Juan Road in the median of Truxel Road with parking west of Truxel Road adjacent to the Truxel/I-80 interchange
Crossing of Interstate 80		
17	New East Side Double Track Aerial Structure **(Truxel LRT)**	New aerial structure over I-80 located on the east side of the Truxel Road overcrossing
18	Mixed Flow Double Track Aerial Structure **(Truxel LRT Starter Line/MOS)**	Double-track mixed flow guideway on the existing I-80 overcrossing
19	New I-80 Double Track Aerial Structure to the West Side of Truxel Road	New aerial structure over I-80 with an elevated transition to the west side of Truxel Road just north of the Natomas Marketplace

Text in Bold **type indicates the primary design option in a particular geographic segment**

TABLE 8.8-1
DESIGN OPTIONS TO BE CARRIED FORWARDED AS PART OF THE LOCALLY PREFERRED ALTERNATIVE (CONTINUED)

	Design Option	Description
Through North Natomas		
20	Arco Arena Spur	Operation of LRT along a spur to Arco Arena for special events; Light rail vehicle storage for MOS alternative
21	Gateway Park Boulevard and Truxel Road – West Side	Station located along the west side of Truxel Road adjacent to the Natomas Marketplace
22	Gateway Park Boulevard and Truxel Road – Center **(Truxel LRT Starter Line/MOS)**	LRT Station in the median of Truxel Road north of Gateway Park Boulevard.
23	Gateway Park Boulevard and Truxel Road – East Side **(Truxel LRT)**	LRT Station along the east side of Truxel Road north of Gateway Park Boulevard
24	Commerce Parkway Station	LRT Station along the east side of East Commerce Parkway at North Park Drive
25	Greenbriar Farms Station	LRT Station along future extension of Meister Way
26	Metro Air Park Station	LRT Station along Meister Way just west of Metro Air Parkway
Access into the Airport		
27	Single Station	Locate an LRT station between existing Terminals A and B.
28	Rental Car Station	Locate an LRT station at the Rental Car Facility south of the terminals.
29	Rental Car/Terminals A & B	Locate LRT stations at the Rental Car Facility and between existing Terminals A and B
30	Two Stations	Locate LRT stations at Terminals A and B
31	Terminal A, East Side **(All Alternatives)**	Locate an LRT station along the east side of Terminal A with an alignment along the eastern side of Airport Boulevard
32	Station Immediately North of I-5	Locate a station immediately north of I-5 (near former oxidation ponds) that would serve future airport development between I-5 and Crossfield Drive
Maintenance Facility Options		
33	Maintenance Facility at Metro Air Park **(Truxel LRT/LRT Starter Line)**	Locate a light rail vehicle maintenance facility near Meister Way at Metro Air Park

Text in **Bold** type indicates the primary design option in a particular geographic segment

TABLE 8.8-2
DESIGN OPTIONS TO BE DROPPED FROM THE LOCALLY PREFERRED ALTERNATIVE

Design Option		Description
Crossing of the American River		
1	Urrutia Bridge Crossing	Continue north on 7th Street to a crossing of the American River just east of Discovery Park
2	I-5 East Bridge	A new bridge crossing immediately adjacent to the existing I-5 Bridge
Through South Natomas		
3	Exclusive Median Double-Lane/Double-Track BRT/LRT Guideways	Double-lane or double-track guideway in the median of Truxel Road (See Figure 5.4-11)
4	Exclusive East Side BRT/LRT Guideways	Double-lane or double-track guideway on the east side of Truxel Road
Through North Natomas		
4	Sports Parkway Alignment	Operation of either LRT along Sports Parkway past Arco Arena to Town Center Drive
Maintenance Facility Options		
5	Maintenance Facility at the Airport	Locate a light rail vehicle maintenance facility on airport property south of I-5

ATTACHMENT C

RESOLUTION OF THE LOCALLY PREFERRED ALTERNATIVE FOR TRUXEL ROAD ALIGNMENT

RESOLUTION NO. 03-12-0277

Adopted by the Board of Directors of the Sacramento Regional Transit District on this date:

December 15, 2003

SELECTING TRUXEL ROAD LIGHT RAIL TRANSIT AS THE LOCALLY PREFERRED ALTERNATIVE FOR THE DOWNTOWN/NATOMAS/AIRPORT CORRIDOR

WHEREAS, the Sacramento Regional Transit District as the responsible local agency has conducted an Alternatives Analysis under 49 CFR Part 611 and 23 CFR part 450 to study a range of transit improvement alternatives to serve the needs of downtown Sacramento, the communities of South and North Natomas of the City and County of Sacramento and the Sacramento International Airport; and

WHEREAS, the purpose of this study is to determine which transit improvement is the most beneficial and cost-effective long-term solution for the Sacramento region; and

WHEREAS, the Alternatives Analysis process began in 2001 to evaluate a total of twelve alternatives including light rail, bus rapid transit, expanded bus service (baseline) and a no build condition; and

WHEREAS, the process was assisted by a Technical Review Panel with representatives from affected federal, state and local agencies, as well as a 40 member Citizens Review Panel which has provided public input to the process; and

WHEREAS, Truxel Road Light Rail Transit, which would extend light rail service from downtown Sacramento through the South and North Natomas communities along Truxel Road, to the Sacramento International Airport, was evaluated and determined to provide the greatest transportation benefit as an alignment to transit users in the corridor and in the region. In summary, these benefits include the following:

- Higher Ridership
- Connectivity
- Transit-Oriented Development
- Plan Consistency
- Improved Corridor Mobility
- Greater Transit Accessibility
- Cost-Effectiveness
- Fundability

WHEREAS, Truxel Road Light Rail Transit, which would provide light rail service, will also provide greater transportation benefits as a mode to transit users.
In summary, these benefits include the following:

- Ridership
- Capacity for Future Demand
- Speed
- Technology
- Economic Development
- Reduction in Auto Travel
- A Balanced Transportation
- Service Continuity
- Service Reliability
- Other Characteristics

WHEREAS, Truxel Road Light Rail Transit is the alternative, which best meets the Federal Transit Administration's evaluation criteria for New Start projects as set forth in the Transportation Equity Act; and

WHEREAS, it is the desire of this Board that the Locally Preferred Alternative for the Downtown/Natomas/Airport Corridor be designed in a manner that maximizes opportunities for transit oriented development, including residential housing, and so that existing residential housing is not eliminated; and

WHEREAS, Truxel Road Light Rail Transit is the alternative, which receives the broadest regional and community public support.

NOW, THEREFORE, BE IT HEREBY RESOLVED BY THE BOARD OF DIRECTORS OF THE SACRAMENTO REGIONAL TRANSIT DISTRICT AS FOLLOWS:

THAT, in accordance with 49 CFR Part 611 and 23 CFR Part 450, the following transit mode and alignment are hereby selected as the Locally Preferred Alternative for the Downtown/Natomas/Airport Corridor:

1. Transit Mode: Light Rail.

2. Alignment: Truxel Road Alignment, as described in attached Exhibit "A" and depicted in Figure 8.8-1 thereof.

THAT, the General Manager/CEO is hereby authorized and directed to take all such actions as are appropriate to advance the Locally Preferred Alternative for the Downtown/ Natomas/Airport Corridor to the next phase of project development, including the preparation of a Draft Environmental Impact Statement and Draft Environmental Impact Report therefor.

Don Nottoli

DON NOTTOLI, Chairman

ATTEST:

BEVERLY A. SCOTT, Secretary

By: Cindy Brooks

Cindy Brooks, Assistant Secretary

EXHIBIT A

CHAPTER 8 "LOCALLY PREFERRED ALTERNATIVE SELECTION"

EXHIBIT A

8.0 LOCALLY PREFERRED ALTERNATIVE SELECTION

Chapter Summary

A Locally Preferred Alternative (LPA) is the selected candidate physical design concept and scope for a major corridor transit investment. In the Downtown/Natomas/Airport (DNA) Corridor, the LPA will consist of two features: the identification and description of a corridor alignment and the identification of a transit (bus, light rail) mode. The LPA will also generally describe the proposed location of stations, the operating concepts by which transit service will be provided, and a set of specific design options to be further evaluated during the draft environmental phase. Refinements to the LPA will continue during subsequent Preliminary Engineering (PE) and the Final Environmental Impact Statement (FEIS) phase.

The PE/FEIS phase will focus on developing more specific environmental and engineering information including detailed environmental testing and mitigation plans, geometric alignment design, bridges and structures, station location and design, landscaping features, access and operating strategies, drainage, right-of-way requirements, maintenance of traffic during construction, phasing of construction, and a detailed financial plan including funding commitments. Minor alignment and engineering adjustments to the LPA will likely occur during final design and construction phases of the transit improvement. Subsequent to the Preliminary Engineering (PE) phase of LPA development, minor alignment and engineering adjustments to the LPA will likely occur during PE, final design, and construction of the transit improvement.

8.1 Selection Process

Earlier chapters of this report provided a systematic comparison of 12 conceptual alternatives, including a No-Build, a Baseline/TSM, five light rail transit (LRT) alternatives and five bus rapid transit (BRT) alternatives. It was structured around criteria and indicators designed to reflect the study goals and objectives as endorsed by the Technical Review Panel (TRP), Citizens Review Panel (CRP), the Sacramento Regional Transit District (RT) Board of Directors, and from information provided by the City of Sacramento, Sacramento County, public agencies, and the general public.

On November 6, 2003 RT formally released for a 30-day period the Draft Alternatives Analysis (AA) Report for public review and comment. On November 10, the RT Board of Directors was presented with a summary of the Draft Report. RT then convened a community workshop on November 20 at the Sacramento Convention Center, enabling the public an opportunity to review the study findings and to pose questions regarding the alternatives to agency staff and the consultant team. RT also held a public hearing on December 8 in the chambers of the Sacramento County Board of Supervisors to provide the public more opportunity to provide comment on the AA Report.

Based on the technical analysis results and public comment received on the Draft AA report, agency staff has developed an LPA recommendation for the RT Board of Directors to consider on December 15, 2003. At this meeting, the Board of Directors will have the opportunity to accept, modify or reject the LPA recommendation. Figure 8.1-1 illustrates the decision-making process RT will have used to select an LPA for the DNA Corridor.

Decision Tree

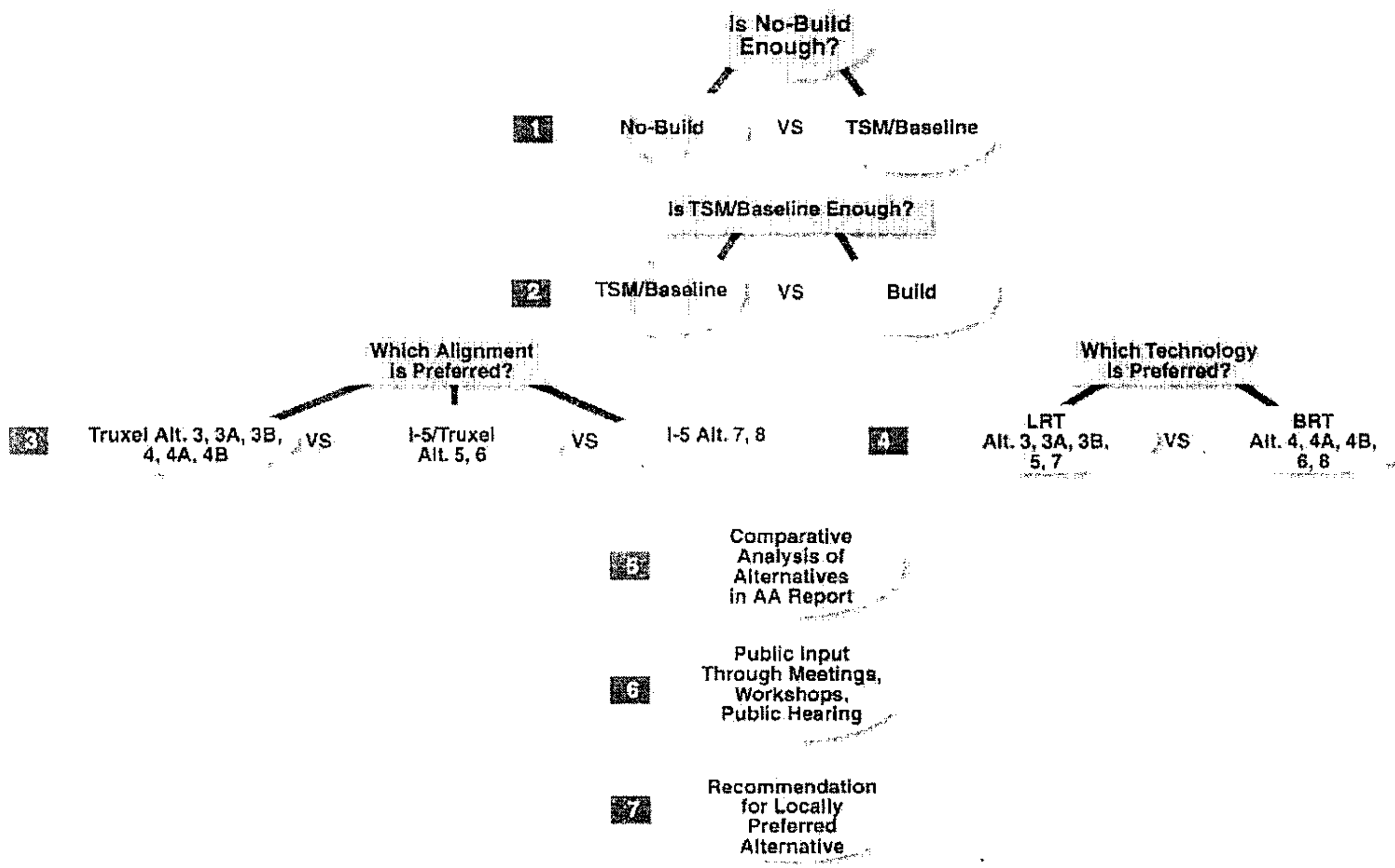


FIGURE 8.1-1
DECISION TREE SUMMARY

8.2 Recommendation on a Locally Preferred Alternative

Since the mid-1980's, there has been an increasing recognition by the public and its elected officials of the need for a major public transit investment in the DNA Corridor. Three primary factors have contributed to this vision, including:

1. Recognition that significant growth and development will continue to occur, particularly in North Natomas, in close proximity to the Airport, and in surrounding areas north and east of the corridor;
2. Concern over increasing traffic congestion along Interstate (I-5), and the need to provide people living and working in the corridor a transportation alternative to driving their own vehicle; and
3. A desire to improve transportation mobility between the Downtown, South and North Natomas Communities, and the Sacramento International Airport and to other parts of the Sacramento region.

In exploring this vision, several corridor alignments and transportation technologies have been studied extensively over time, including the I-5, Truxel Road, and I-5/Truxel alignments and the potential for expanding existing bus service and extending LRT service into the Corridor. More recently, as part of this study, BRT has also been considered as a viable transit technology. It is clear, however, that when considering future ridership, costs, and impacts to the local community and region, each study alternative has both advantages and disadvantages.

These trade-offs have been the topic of much regional and community discussion and debate, resulting in a decision by RT in 1991 to support construction of light rail on Truxel Road. The City of Sacramento and County of Sacramento have included the locally adopted alignment in their respective general plans and community plans. The Sacramento Area Council of Governments (SACOG) has consistently reaffirmed the local decision, as recently as July 2002, with the adoption of the Metropolitan Transportation Plan (MTP) for 2025. The results of this current AA Report support this conclusion.

8.3 Preference for Alignment

Use of the Truxel Road alignment will provide the largest transportation benefit to transit users in the Corridor and in the region. In summary, these benefits include the following:

- **Improved Corridor Mobility.** While all three alignments would provide improved transit service between Downtown and the Airport, the Truxel alignment provides the shortest travel time for North and South Natomas residents. While the Truxel alignment does not have the best travel time from Downtown to the Airport, the 28 to 30 minute travel time is comparable to the I-5 alignment alternatives.

- **Greater Transit Accessibility.** Based on the 2000 Census and year 2025 SACOG projections, the Truxel alignment would provide the greatest transit access to corridor residents and households than either the I-5 or I-5/Truxel alignments.

  There are 21,500 residents living within ½-mile of the Truxel Road alignment, including a greater concentration of low income and transit dependent households. Likewise, there are 32,100 jobs located within ½-mile of the alignment; nearly equivalent to the number of jobs located along I-5 or the I-5/Truxel alignment alternatives. In addition, the Truxel alignment provides the best pedestrian access opportunities.

Due to limited north-south traffic capacity in the DNA Corridor, with only two bridges across the American River within a three-mile wide reach, a new bridge crossing along the Truxel Road alignment is needed to provide improved and direct transit accessibility into Downtown Sacramento.

- **Connectivity**. Generally, the Truxel Road alignment provides better connectivity to the existing regional transit system and to the major concentration of existing and planned activity centers and destinations within the DNA Corridor.

  These activity centers and destinations include: (1) the Sacramento International Airport; (2) Metro Air Park, an improved mixed use commercial/office development; (3) the soon to be built North Natomas Town Center, with a 200-acre Regional Park, high school and community college campus and library; (4) ARCO Arena; (5) the Natomas Marketplace commercial center; (6) Natomas High School; (7) the South Natomas Community Center; (8) the redeveloping Richards Boulevard area; and (9) the Sacramento Valley Station, which is part of a 240-acre proposed master plan redevelopment project for the Union Pacific Railyards.

  Moreover, the DNA Corridor connection with the Sacramento Valley Station provides intermodal connections to existing and new bus services, existing Capitol Corridor intercity rail service, long distance Amtrak service, soon to be constructed Folsom Corridor LRT service, and future regional commuter rail service.

- **Potential for Transit-Oriented Development**. The Truxel Road alignment generally offers the greater opportunity to foster transit-oriented development, particularly in the North Natomas community and the Railyards/Richards Boulevard area. Land use plans in these two areas propose the highest density employment and housing clustered in a mix around planned stations. The North Natomas Community Plan, in particular, was designed as a transit-oriented community, with dedicated right-of-way along Truxel Road set aside for a light rail alignment as a central element. Opportunities also exist for further increases in density and intensity in station areas once the LRT is constructed.

  The Truxel alignment provides a further opportunity to shape future land use decisions within the unincorporated area, west of State Route 99/70 and north of Elkhorn Boulevard, in the same planned vision that created the North Natomas Community Plan, if the region desires to grow in that direction.

  The total land available for development at future stations along the Truxel alignment is greater than that along the I-5 alignment. Opportunities for smart growth are curtailed by I-5, which limits pedestrian access to either side of the freeway, and hence reduces the potential for transit-oriented development opportunities.

- **Plan Consistency**. The Truxel alignment, with light rail, also offers the highest level of consistency with existing adopted community plans, the City and County general plans, current planning efforts within the Corridor, and over 15 years of prior development and infrastructure commitment in North Natomas.

  In particular, the North Natomas Community Plan set aside land use by the future light rail guideway. In addition, the Truxel Road Interchange was designed and built to structurally support a future light rail alignment. And the North Natomas infrastructure-financing plan includes a development fee structure to finance light rail station improvements.

Perhaps most importantly, the Truxel Road alignment, with light rail, offers the lowest potential for physically dividing the community.

- **Higher Ridership**. Across all the alternatives studied, the opportunities for the highest daily ridership occur along the Truxel Road alignment.

- **Cost-Effectiveness**. Generally, all of the Truxel Road alignment modal alternatives fair better in terms of providing the most cost-effective transit solution, using Federal Transit Administration ratings, because they directly serve more residents and have lower construction costs.

- **Fundability**. Using long-range revenue estimates prepared by RT and SACOG, it was determined that any alternative costing $450 million or below could be funded with a combination of federal, state and local revenue as they become available. The majority of the alternatives that fall within this funding threshold occur on the Truxel Road alignment.

8.4 Preference for Mode

Use of light rail also will provide greater transportation benefits to transit users. In summary, these benefits include the following:

- **Ridership**. In the DNA Corridor, light rail generally generates ten percent higher ridership than BRT, with most of the difference resulting from airport passengers (as service continuity is a key factor for airport transit service).

- **Capacity**. Over the next 20 years and beyond, the Natomas Basin is seen as a major new growth area for the Sacramento region. The travel corridor warrants a high capacity mode. LRT has a superior ability to respond to growth pressures by increasing capacity compared to other modes, such as BRT. Light rail can add another car to a train to carry more riders and not affect labor costs. This is a primary reason LRT is more efficient with higher ridership demand.

- **Speed**. Light rail systems generally have increased speed over bus systems (as well as the perception of being faster).

- **Technology**. LRT has higher vehicle performance technology and passenger comfort features. Light rail vehicles are more spacious and provide for a more stable ride. The guideway feature makes possible use of larger vehicles and trains of up to four cars, as well as partial signal control. The vehicles are clean, non-polluting electric–propulsion powered. Clean-fueled buses still produce particulates and nitrogen oxides emissions, which is objectionable, particularly in areas with high concentrations of people. Noise produced by buses also remains a problem.

  Buses are also considerably less expensive than LRT vehicles, although the difference in their life costs is not as great as the difference in their purchase prices because light rail vehicles have 2.5 to 3.0 times longer life spans. Buses last 12 years, while light rail vehicles last between 25 and 40 years. Therefore, a current comparison must be based on life cycle costs per unit of vehicle capacity. Such a comparison would tend to favor LRT.

- **Economic Development**. LRT is attractive as a tool for transit-oriented development, a characteristic not convincingly displayed in the United States by bus service of any type.

Light rail has a permanent infrastructure that becomes part of the urban structure. Because BRT is less capital intensive, it is more likely to be abandoned if the market were not supporting the service. It is the permanence of light rail that tells private investors and transit users that this form of transportation is here to stay.

- **Reduction in Auto Travel**. The highest level of traffic growth over the next 20 years will occur on I-5, between the Arena Boulevard Interchange and the I-80 junction with I-5, where a growth in traffic volumes of 100 percent is forecasted. This will result in prolonged Level of Service (LOS) "F" (failure) conditions for several hours during morning and evening peak commute periods. Even with future programmed roadway improvements in the adopted MTP, traffic under No Build conditions will deteriorate on I-5, leading to higher traffic volumes on I-80 and parallel roadways.

  Of the alignment alternatives studied, the Truxel Road alignment offers the greatest reduction in weekday peak period auto travel to Downtown Sacramento, with the highest reduction coming from light rail, eliminating 4,700 daily person trips. Likewise, the greatest reductions in weekday parking demand in Downtown Sacramento occur with the Truxel Road alignment, with LRT eliminating the need for 2,200 parking spaces.

- **A Balanced Transportation System**. Further, in a region, such as Sacramento, a single transit mode cannot provide as efficient service as several coordination modes. A "family" of modes operating as an integrated transport system, with buses feeding light rail lines rather than competing with each other, is defined as a balanced transportation system.

- **Service Continuity**. Light rail provides greater service continuity that BRT, with seamless service through Downtown and beyond, connecting other major activity centers. LRT can provide a "one-seat-ride" for anyone within walk access of the service, or within easy "drop off" access.

  This "one-seat-ride" service is especially critical within the DNA Corridor because air passengers respond negatively to off-airport transfers. In some situations, LRT may involve more transfers from other trains coming from the Watt/I-80 and the South Line light rail corridors. These transfers are, however, simple—they are made at the same platform and require little or no walking.

  LRT may also involve transfers with buses. In this situation, the transfers are organized in a timed manner so that transferring is made conveniently.

- **Service Reliability**. LRT generally has enhanced service reliability over bus-based systems due to the use of a guideway and preferential treatments, such as traffic signal prioritization. LRT service would operate at 15-minute headways throughout the DNA Corridor. BRT service would operate at varying headways within the Corridor, culminating in a combined 3.3-minute peak and 3.8-minute off-peak headway in downtown Sacramento. Without the benefit of traffic signal prioritization that is afforded to the LRT, large segments of the BRT route in downtown Sacramento would suffer reduced service reliability, due to the unavailability of sufficient "green" time to allocate a priority to BRT and still accommodate all other vehicular traffic and movements. The practical result will be substantial delays to the BRT service, long queues of buses waiting at intersections, and insufficient bus stop capacity to accommodate lines of buses.

- **Other Characteristics.** Other important characteristics that favor LRT include: frequency, durability, efficiency, simplicity, directness, and comfort. These are very desirable features for transit services. Transit services need to be aimed at attracting incidental users. The general public needs to have fixed routes, fixed (memorable) schedules, and known fares, in order to use the service.

  For these reasons, LRT on Truxel Road provides the most cost-effective, superior, long-term major transit investment for the DNA Corridor. At the same time, however, it is recognized that residents and commercial property owners along Truxel Road, especially in the segment between Garden Highway and San Juan Road, have significant concerns with the use of Truxel Road. These concerns include station location, traffic circulation, pedestrian safety, noise, vibration, and visual impacts, property values, and resident and transit user safety. For RT to build and operate LRT service along Truxel Road, a concerted effort will be required for the District to work closely with residents, businesses, property owners, and neighborhood groups to address these various specific and important quality of life concerns.

8.5 A Long-Term Transit Vision for the Corridor

In implementing a long-term transit vision for the DNA Corridor, it may be necessary to phase construction of light rail between downtown Sacramento and the Airport. This is consistent with the progression of growth and evolving development patterns within the Corridor by 2025 and beyond, the funding strategy set forth in SACOG's adopted MTP, and follows the pattern established by RT in building Phase 1 of the recently opened South Line LRT extension from Downtown to Meadowview Road as well as the construction of the Folsom LRT extension to Sunrise and ultimately to the City of Folsom.

Using this approach, Alternative 3: Truxel Road Light Rail Transit could initially be built in two phases, with full implementation by 2025 or beyond. This phased approach would ultimately, be determined during the PE phase of the project development process.

- Phase 1 (by 2012) – implementation of Truxel LRT MOS (Alternative 3B), with light rail service between Downtown and the Natomas Town Center, with a feeder bus service connection to the Airport.

- Phase 2 (by 2015) – implementation of Truxel LRT Starter (Alternative 3A), with the extension of light rail service beyond Natomas Town Center to the Airport.

As part of this long-term transit vision for the DNA Corridor, during the environmental phase and subsequently in PE and final design, RT will evaluate in greater detail design options that are also retained as part of the LPA. A listing of these design options is shown in Table 8.8-1. These design options will influence transit station and park-and-ride lot location, transit user accessibility, traffic flow and circulation, and pedestrian safety.

While Alternative 3 falls above the FTA user benefit threshold of $25.00, it is anticipated that additional design and engineering refinements could be achieved, thereby enhancing the eligibility of Alternatives 3 and 3A for federal funding. This could occur, for example by treating the LRT maintenance facility and bike/pedestrian path on the new American River bridge, as separate capital projects and thus paid for through other sources of funding. Under this scenario, the resulting FTA user benefits would be $24.41 and $20.36, respectively. Other types of cost savings, value engineering, and/or funding strategies will be considered in the PE phase of project development to improve this ratio. This type of separate capital project approach occurred during South Line Phase 1, with the separate funding of the Wayne Hultgren LRT station and the Florin Road grade separation project. Alternative 3B already falls well below FTA's user benefit threshold of $19.99 per hour allowing it to compete for a medium project rating in FTA's New Starts process.

8.6 Funding Strategy

A long-term commitment of local, state and federal funding will be required to build the DNA LRT extension. SACOG's MTP identifies approximately $400 million in funding available to build light rail from Downtown to the Airport. This figure could potentially increase to $450 million assuming the availability of Airport funding for airport-related transit improvements and local developer fees that are reasonable to expect based on redevelopment of the Railyards/Richards Boulevard areas. It is further assumed that:

- Project construction will be funded based on a 50 percent federal New Starts match, coupled with local and state funds, and

- Project operation assumes local funding, primarily through farebox revenues and renewal and expansion of Sacramento County's Measure A sales tax program. Critical to the construction and operation of DNA improvements will be an increase in RT's share of a renewed sales tax program, from an existing 1/6 of a cent to at least 1/3 of a cent as identified in the adopted MTP.

The phasing of project construction will be dictated, in large part, by the availability of construction and operating funds. RT will need to work closely with FTA, SACOG, and other local and state agencies to ensure that necessary funding is available when needed to maintain project momentum so that initial LRT service between Downtown and the Natomas Town Center begins by 2012 and that service is extended to the Airport no later than by 2015.

8.7 Recommendation

Thus it is recommended that the LPA consist of building and operating high capacity LRT service on the Truxel Road alignment from Downtown, through South and North Natomas to the Sacramento International Airport. Figure 8-8.1 shows the location of the alignment, while Table 8.8-2 identifies design options that are recommended to be dropped from further study.

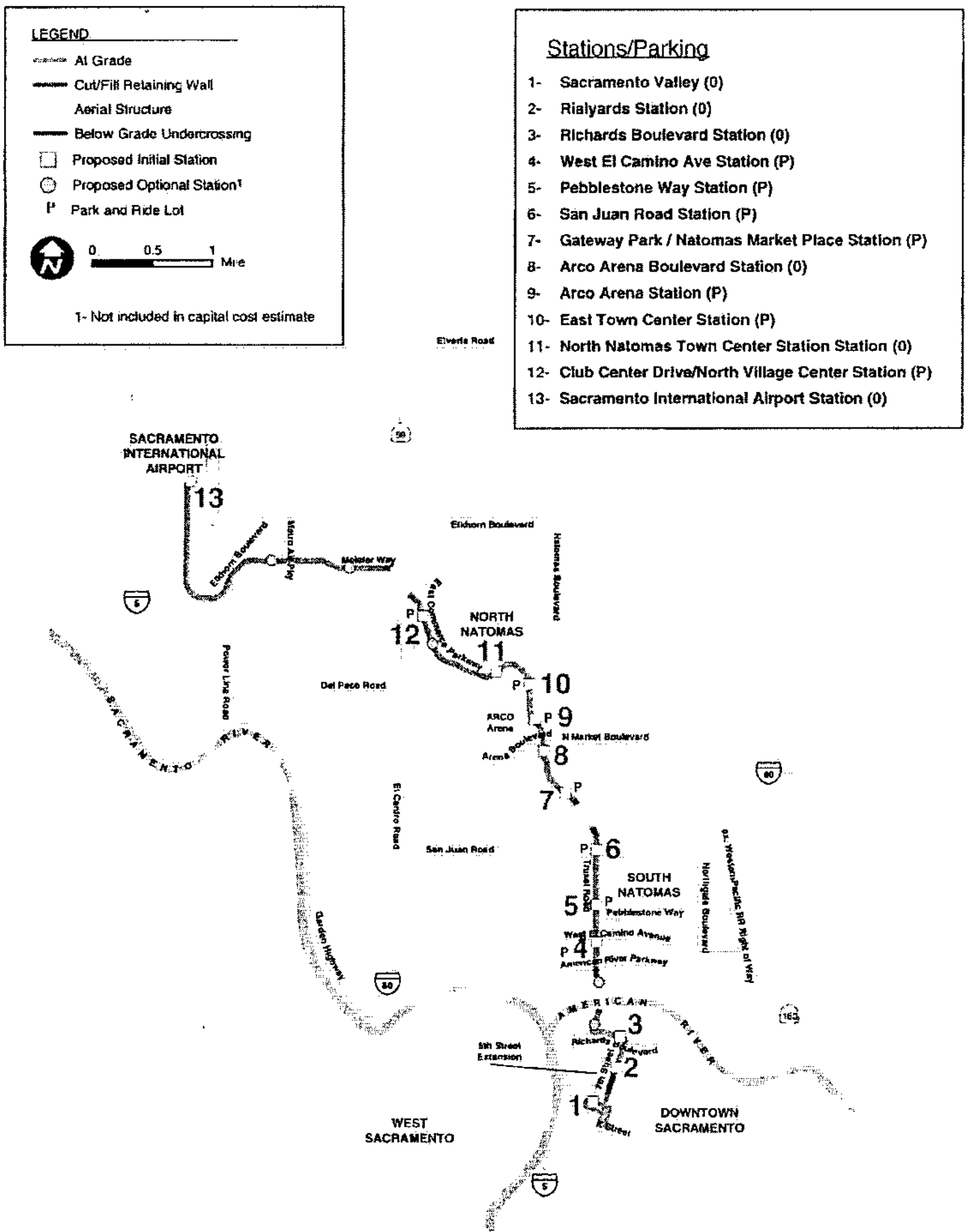


FIGURE 8.8-1
LOCALLY PREFERRED ALTERNATIVE

TABLE 8.8-1
DESIGN OPTIONS TO BE CARRIED FORWARDED AS PART OF THE LOCALLY PREFERRED ALTERNATIVE

Design Option		Description
Downtown to Richards Boulevard		
1	North 5th Street, Mixed Flow Grade-separation	Double-track mixed flow guideway through grade-separation of relocated Union Pacific Railroad (UPRR) tracks; Double-track in exclusive median of new 5th/6th Street north of UPRR
2	North 5th Street, Exclusive Grade-Separation	Double-track exclusive guideway in median of proposed 5th/6th Street grade-separation of relocated UPRR tracks; Double-track exclusive guideway in median of new 5th/6th Street north of UPRR
3	North 6th Street, Exclusive Grade-Separation	Double-track exclusive guideway in median of proposed 6th Street grade-separation of relocated UPPR tracks; Double-track exclusive guideway along 6th Street alignment north of UPRR
4	7th Street, Exclusive Single Track **(Starter Line and Minimum Operable Segment [MOS])**	Single-track exclusive guideway in 2-lane 7th Street extension undercrossing, Single track exclusive guideway along 7th Street north of UPRR
5	7th Street, Exclusive Double Track	Single track exclusive guideway in 7th Street extension undercrossing; Double-track exclusive guideway along 7th Street north of UPRR
6	7th Street, Mixed Flow Double Track/Exclusive Guideway	Double-track mixed flow guideway in 2-lane 7th Street extension undercrossing; Double-track exclusive guideway along 7th Street north of UPRR
7	7th Street, Two-Phased Under-crossing Construction	Phase One: Single-track exclusive guideway in existing 2-lane 7th Street extension undercrossing, Phase Two: Double-track exclusive guideway in new 4-lane 7th Street undercrossing Phase One and Two: Double-track exclusive guideway along 7th Street north of UPRR
8	7th Street, east-side running (North B Street to Richards Boulevard)	Double- or single-track exclusive guideway using city-owned land on the east side of 7th Street between North B Street and Richards Blvd.
9	Sequoia Pacific Boulevard Station	Light Rail Transit (LRT) station on abandoned railroad spur west of Sequoia Pacific Boulevard

Text in **Bold** type indicates the primary design option in a particular geographic segment

TABLE 8.8-1
DESIGN OPTIONS TO BE CARRIED FORWARDED AS PART OF THE LOCALLY PREFERRED ALTERNATIVE (CONTINUED)

	Design Option	Description
Crossing of the American River		
10	Truxel Bridge Crossing **(All Alternatives)**	Transit only crossing along an abandoned railroad spur west of Sequoia Pacific Boulevard, with a direct connection to Garden Highway at Truxel Road
11	North 5th Street Bridge Crossing	Transit only crossing from the end of North 5th Street with a direct connection to Garden Highway at Truxel Road
Through South Natomas		
12	Mixed Flow, Double-Track in Traffic Lanes **(Truxel LRT)**	Double-track exclusive guideway in mixed flow travel lanes on Truxel Road;
13	Exclusive Median Single-Track **(Truxel LRT Starter Line/MOS)**	Single track exclusive guideway would operate in the median of Truxel Road, with double track sections at selected locations
14	Exclusive Median Single-Track with Single-Track Mixed Flow	Single track exclusive guideway would operate in the median of Truxel Road, with a second track located in an adjacent mixed flow lane
15	West El Camino Avenue Station South Site	LRT Station located on Truxel Road south of West El Camino Avenue
16	San Juan Road Station North Site	LRT Station located north of San Juan Road in the median of Truxel Road with parking west of Truxel Road adjacent to the Truxel/I-80 interchange
Crossing of Interstate 80		
17	New East Side Double Track Aerial Structure **(Truxel LRT)**	New aerial structure over I-80 located on the east side of the Truxel Road overcrossing
18	Mixed Flow Double Track Aerial Structure **(Truxel LRT Starter Line/MOS)**	Double-track mixed flow guideway on the existing I-80 overcrossing
19	New I-80 Double Track Aerial Structure to the West Side of Truxel Road	New aerial structure over I-80 with an elevated transition to the west side of Truxel Road just north of the Natomas Marketplace

Text in Bold **type indicates the primary design option in a particular geographic segment**

TABLE 8.8-1
DESIGN OPTIONS TO BE CARRIED FORWARDED AS PART OF THE LOCALLY PREFERRED ALTERNATIVE (CONTINUED)

	Design Option	Description
Through North Natomas		
20	Arco Arena Spur	Operation of LRT along a spur to Arco Arena for special events; Light rail vehicle storage for MOS alternative
21	Gateway Park Boulevard and Truxel Road – West Side	Station located along the west side of Truxel Road adjacent to the Natomas Marketplace
22	Gateway Park Boulevard and Truxel Road – Center **(Truxel LRT Starter Line/MOS)**	LRT Station in the median of Truxel Road north of Gateway Park Boulevard.
23	Gateway Park Boulevard and Truxel Road – East Side **(Truxel LRT)**	LRT Station along the east side of Truxel Road north of Gateway Park Boulevard
24	Commerce Parkway Station	LRT Station along the east side of East Commerce Parkway at North Park Drive
25	Greenbriar Farms Station	LRT Station along future extension of Meister Way
26	Metro Air Park Station	LRT Station along Meister Way just west of Metro Air Parkway
Access into the Airport		
27	Single Station	Locate an LRT station between existing Terminals A and B.
28	Rental Car Station	Locate an LRT station at the Rental Car Facility south of the terminals.
29	Rental Car/Terminals A & B	Locate LRT stations at the Rental Car Facility and between existing Terminals A and B
30	Two Stations	Locate LRT stations at Terminals A and B
31	Terminal A, East Side **(All Alternatives)**	Locate an LRT station along the east side of Terminal A with an alignment along the eastern side of Airport Boulevard
32	Station Immediately North of I-5	Locate a station immediately north of I-5 (near former oxidation ponds) that would serve future airport development between I-5 and Crossfield Drive
Maintenance Facility Options		
33	Maintenance Facility at Metro Air Park **(Truxel LRT/LRT Starter Line)**	Locate a light rail vehicle maintenance facility near Meister Way at Metro Air Park

Text in **Bold** type indicates the primary design option in a particular geographic segment

TABLE 8.8-2
DESIGN OPTIONS TO BE DROPPED FROM THE LOCALLY PREFERRED ALTERNATIVE

Design Option		Description
Crossing of the American River		
1	Urrutia Bridge Crossing	Continue north on 7th Street to a crossing of the American River just east of Discovery Park
2	I-5 East Bridge	A new bridge crossing immediately adjacent to the existing I-5 Bridge
Through South Natomas		
3	Exclusive Median Double-Lane/Double-Track BRT/LRT Guideways	Double-lane or double-track guideway in the median of Truxel Road (See Figure 5.4-11)
4	Exclusive East Side BRT/LRT Guideways	Double-lane or double-track guideway on the east side of Truxel Road
Through North Natomas		
4	Sports Parkway Alignment	Operation of either LRT along Sports Parkway past Arco Arena to Town Center Drive
Maintenance Facility Options		
5	Maintenance Facility at the Airport	Locate a light rail vehicle maintenance facility on airport property south of I-5