CALIFORNIA HIGH-SPEED TRAIN

Program Environmental Impact Report/Environmental Impact Statement

REVISED DRAFT

Los Angeles to San Diego via Orange County

CONVENTIONAL IMPROVEMENTS SCREENING REPORT

June 2003

Prepared for:

California High-Speed Rail Authority

U.S. Department of Transportation
Federal Railroad Administration

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1.0 INTRODUCTION

1.1 BACKGROUND

In its Business Plan adopted in June 2000, the California High-Speed Rail Authority (Authority) recommended that the state proceed with implementation of a statewide high-speed train system by initiating the formal state and federal environmental review process through the preparation of a state program-level Environmental Impact Report (EIR) and a federal Tier I Environmental Impact Statement (EIS) or Program EIR/EIS. The Authority is the lead agency for the California Environmental Quaity Act (CEQA), and the Federal Railroad Administration is the lead agency for the National Environmental Policy Act (NEPA). As part of the Program EIR/EIS, the Authority and the FRA have jointly completed a scoping process, the evaluation of numerous options for routes and stations, and a screening process. The approval of the "Screening Report" (April 2002) was a major milestone in the program-level EIR/EIS process. The Authority has greatly reduced the number of alignments, station locations and types of high-speed trains to be further investigated. More detailed engineering and environmental impact analyses are currently being carried out on the remaining alignments and station locations

One of the key conclusions of the Authority's Sceening Report was that only non-electric steel-wheel-on-rail train technology should be further investigated from Irvine to San Diego. This type of technology would link Los Angeles Union Station to San Diego via Orange County (LOSSAN) and represent an upgrading of the existing conventional rail "Surfliner" service. This non-electric service provides service to coastal communties and would act as a "feeder" service to the statewide electrified high-speed train, but would require a transfer for trips north of Los Angeles Union Station (see Figure 1).

The California Department of Transportation (Department) is responsible for overseeing, maintaining and improving the state supported "Surfliner" service. The Authority, the FRA, and the Department have been cooperatively studying a series of improvements to the LOSSAN rail corridor, used by Amtrak, Metrolink, Coaster and the Burlington Northern and Santa Fe Railway. The Department is financing the portion of the Authority's technical studies that pertain to non-electric (conventional) rail improvements in the LOSSAN corridor. The Department will use these technical reports to create a corridor-specific program EIR/EIS for the LOSSAN corridor.

Figure 1
Map highlighting LOSSAN Corridor Non-Electric Train Service

1.2 SCREENING OF ALTERNATIVES IN KEY LOCATIONS

Screening is the process by which the Authority and the FRA determine which alternatives and options should be carried forward in the Environmental review process. The Authority has identified system alternatives (No-Build, Modal, and High-Speed train) and design options for rail improvements. The screening process involves reviewing the range of options which have been identified at key locations. In these areas, the number of design options is sufficiently broad to allow removing from further consideration those options which, due to significant technical, environmental, and/or economic factors, would not serve to reasonably and feasibly meet the objectives, purpose and need for the proposed system. Those options remaining represent a range of the most reasonable and feasible means of responding to the project's objectives, purpose, and need. These are the alternatives which will receive detailed consideration in the program EIR/EIS. This screening report serves to document the significant reasons for removing certain options from further consideration. There are at least two viable design options for the entire corridor, except in where clear and documented data was available to limit the options to a single design option. All of the screening recommendations were developed with extensive input and cooperation from both the FRA and Department. In addition, these recommendations were developed with input from the transportation agency review committees established by the San Diego Association of Governments (SANDAG) and Orange County Transportation Authority (OCTA).

There are five locations within the LOSSAN corridor where the range of design options under consideration is sufficiently broad to allow for the screening of options. Those options screened out will be documented in the Program EIR/EIS process as "Alternatives considered and eliminated from further study". This screening will save time, effort, and resources that would be otherwise required to study alternatives that are later determined to be infeasible and inferior to other alternatives.

Locations where such screening opportunities exist are shown in Figure 2, on the following page:

- San Diego County – Del Mar, and Encinitas
- South Orange County – San Clemente, Dana Point, and San Juan Capistrano

Most notably, there is enough technical data and public input to warrant eliminating the design options along the Del Mar Bluffs, on the beach at San Clemente, and through the historic district at San Juan Capistrano. Each of these alternatives would result in significant environmental impacts and is burdened by severe public and agency opposition.

Figure 2
Locations for Screening

All the design options in this corridor being investigated by the Authority were considered at a consistent level of analysis and were evaluated using standardized engineering, environmental, and financial criteria for the application of uniform methodologies. Data from the technical studies that have contributed to this report are included as Appendix "A". This technical data, combined with public and agency input has provided the Authority and the FRA the necessary information to direct further studies for the program EIR/EIS on a range of alternatives which could attain the following objectives established by the Authority:

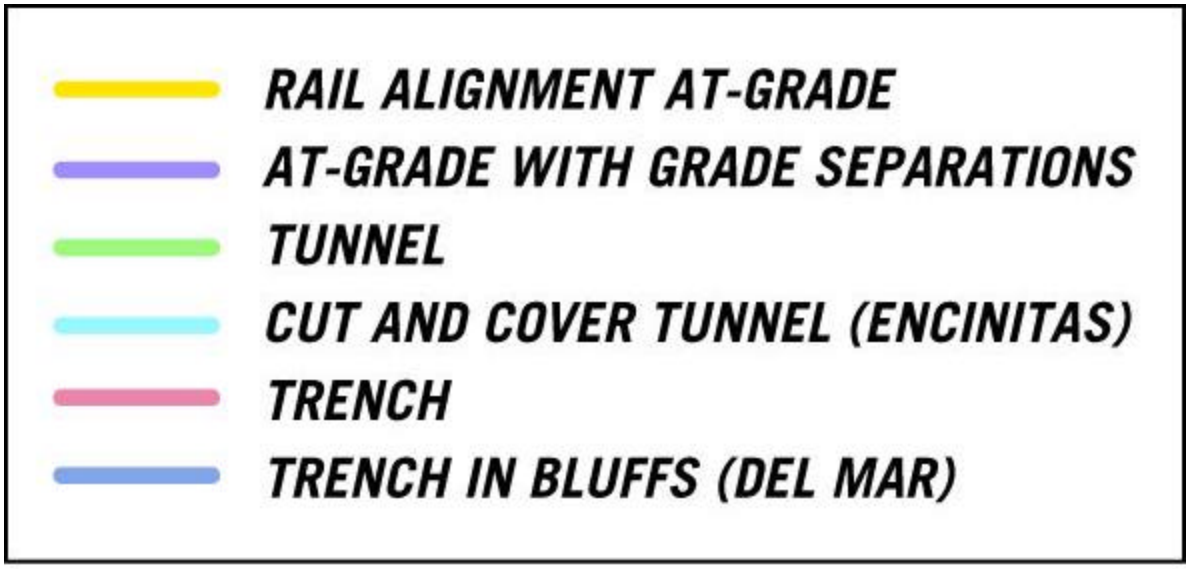
- Maximize Ridership/Revenue Potential
- Maximize Connectivity and Accessibility
- Minimize Operating and Capital Costs
- Maximize Compatibility with Existing and Planned Development
- Minimize Impacts to Natural Resources
- Minimize Impacts to Social and Economic Resources

- Minimize Impacts to Cultural Resources
- Maximize Avoidance of Areas with Geological and Soils Constraints
- Maximize Avoidance of Areas with Potential Hazardous Materials

The screening criteria used for this report are based on and consistent with the Authority's approved screening criteria, but focus more specifically on the elements that differentiate design options at Del Mar, Encinitas, San Clemente/Dana Point, and San Juan Capistrano. In Del Mar for example, the key natural resources that differentiate the design options are potential impacts to coastal bluffs and lagoons. Appendix "B" further defines the screening criteria used to evaluate the design options. Summary sheets are also provided in Appendix "B" with rankings for either positive benefits or negative impacts for all of the criteria for each design option included in this report.

Figure 3 (below), provides a legend to help understand the various alternatives associated with each option. In some instances, the rail corridor will need to transition from an at-grade alignment to a trench or a tunnel. The colors used in the figures provide a consistent showing of the alternative associated with each option.

Figure 3
Legend showing alternatives for each option as shown in subsequent figures



1.3 PRELIMINARY OPTIONS NOT CARRIED FORWARD

The community and environmental sensitivities and engineering challenges in the Cities of Del Mar, Encinitas, San Clemente and San Juan Capistrano are distinctive and sometimes unique to one community. Nevertheless, the four share one common constraint: an environment of high pedestrian traffic, where the railway acts as an impediment to access between the majority of the community and a desirable community resource, and yet the railway is accessible enough that people are not channelled to designated crossing points featuring gates and warning devices.

In these areas, simple at-grade double-tracking was considered early in the definition of alternatives. However, introducing extensive sections of double-track in such environments, without providing a significant expansion of the ability for pedestrians to safely cross over or under the tracks, greatly increases safety risks. Crossing two tracks, where trains could come in either direction on either track, and where the presence of a train on one track could screen the view of another train on the second track, is significantly more dangerous than crossing a single track. Beyond the safety issues, the implication is also that speeds through the segment most likely could not be increased, negating much of the benefit of double-tracking.

For these reasons, simple at-grade double-tracking was considered early in the definition of alternatives, but quickly rejected. Introducing extensive sections of double-track in such environments, without providing a significant expansion of the ability for pedestrians to safely cross over or under the tracks, greatly increases safety risks. Crossing two tracks, where trains could come in either direction on either track, and where the presence of a train on one track could screen the view of another train on the second track, is significantly more dangerous than crossing a single track. Beyond the safety issues, the implication is also that speeds through the segment could not be increased and may even need to be decreased, negating much of the benefit of double-tracking.

While the concept of simple at-grade double-tracking was rejected, it was used as a starting point in defining alternatives along the existing alignment in the four communities. This process is described below.

Del Mar: An at-grade alternative along the coastal bluffs in Del Mar would face the factors noted above. In addition, since the bluffs are undergoing continuous erosion, it was apparent that any double-tracking alternative in this location would require significant excavation work to stabilize the bluff-top. This excavation would in-effect create a partial trench, so the at-grade concept was modified to improve pedestrian access and reduce speed restrictions by featuring a cut-and-cover trench in the bluff, which would provide for pedestrian movements over the covered portions.

Encinitas: In Encinitas, the at-grade alternative was expanded to feature two key vehicular and pedestrian grade-separations at Leucadia Boulevard and Birmingham, as well as several pedestrian-only underpasses. While final locations of the underpasses would be determined in future project-specific work, they would be located in Leucadia, where the rail separates a residential area to the east with the local shopping district and the coast to the west, and in Cardiff-by-the-Sea, where the rail separates the community from the ocean.

San Clemente: The track at San Clemente is **on** the beach. As a result, trespassing onto the rail right-of-way and crossing the rails away from designated crossing points is commonplace, with clear safety implications. To address these safety issues, train operating speeds are greatly reduced, leading to significant capacity and performance penalties in these areas. An at-grade alternative along the beach segment was modified to provide for easier pedestrian access through a cut-and-cover trench in the Pier Bowl area, the area of highest pedestrian activity. New pedestrian underpasses would also be provided to

the south. A second alternative contemplated a cut-and-cover trench along the entire beachfront segment.

San Juan Capistrano: Up until the 1960's, downtown San Juan Capistrano featured a second passing track. This was removed by the Santa Fe Railroad, which saw it as an unnecessary maintenance burden in a time when intercity passenger travel was on the decline and commuter rail was decades away. While room is available to restore the second track at-grade, doing so would not provide any speed improvements in the highly-pedestrianized Franciscan Plaza area, as discussed above. Further, the presence of the Los Rios Historical District immediately to the west, with its sensitive adobe structures, eliminates the possibility of a grade-separation along the existing alignment, either by taking the rail below-grade, or by building a pedestrian underpass. The at-grade concept was therefore modified to feature a grade-separation under the Franciscan Plaza, to the east of the existing station to provide a greater buffer to the Los Rios District.

Due to physical constraints, visual and environmental issues, and community concerns, elevated railway viaduct structures (except at water crossings) along the beachfront and in the San Juan Capistrano historical area were also not investigated.

1.4 ORGANIZATION OF THIS REPORT

The remainder of this report is divided into the following sections:

2.0 Del Mar

3.0 Encinitas

4.0 San Clemente/Dana Point

5.0 San Juan Capistrano

Appendix A: Technical Reports Summary Tables and Text

Appendix B: Screening Recommendation Summary Sheets

2.0 DEL MAR

A number of options exist in the Del Mar area, including the "No-Build" (maintaining the status quo) option, a trench option, and three tunnel options, as shown below:

- No-Build
- Trench-in-Bluffs
- Camino del Mar Tunnel #1
- Camino del Mar Tunnel #2
- Penasquitos Lagoon Bypass Tunnel

The following subsections provide descriptions of the each of the options in Del Mar (except for the No-Build option), and the recommendation of whether the option be carried forward for further evaluation or screened. (It is important to note that the "No-Build" option represents the status quo and will always be carried forward for further consideration)

2.1 ALIGNMENT AND STATION LOCATION OPTIONS CARRIED FORWARD FOR FURTHER EVALUATION

Based on information obtained through the technical evaluations and public input, the following alignment options are recommended for further evaluation (see Figure 4):

Camino del Mar Tunnel #1: The Camino del Mar Tunnel would provide an alternative to retaining the rail line on Del Mar's sensitive bluffs by relocating the tracks into a tunnel which would run under Camino del Mar.

The Camino del Mar Tunnel #1 option would improve train performance and would reduce environmental impacts from the existing conditions – providing considerable benefits to the environment and community.

Relative to the no-build condition, the Camino del Mar option #1's double track layout would increase track capacity, and its fully grade-separated profile and smoother curves would provide for reduced running times. Safety and reliability would also improve, as would the operations and maintenance of rail services. There would be construction issues associated with the tunnel, and the cost associated with the tunnel alternative would be significant. However, the cost-effectiveness of this option is assessed as good, because the tunnel costs are about the same as those of the Trench-in-Bluffs option, and the improvements to train performance are considerably greater.

The Camino del Mar Tunnel #1 option would have community benefits and reduce environmental impacts, as the rail line would be removed from the Del Mar Bluffs. The Tunnel option also includes an opportunity for reduced lagoon impacts, as the rail line could be placed on an open-cell structure through Penasquitos and San Dieguito Lagoons, allowing for the removal of fill and increased tidal flow. Coastal access and barrier issues would be greatly reduced as a result of this Tunnel option. Although careful design and construction is required to avoid disruption to commercial and residential properties on either side of Camino del Mar, this Tunnel alternative would not likely require tunneling directly under any structures. Further, properties located adjacent to the existing rail line would see a benefit from the Tunnel option, as the rail was removed from the bluffs and noise and vibration would be generally greatly reduced as a result of the tunnel.

The Camino del Mar Tunnel #1 option has received a considerable amount of support from the community and State and Federal resource agencies that would like to see the existing track removed from the bluffs.

Penasquitos Lagoon Bypass Tunnel: This option would relocate the rail line on Del Mar's sensitive bluffs into a tunnel which would run under I-5. The tunnel would begin approximately midway along the existing alignment through Penasquitos Lagoon, where the line would shift eastwards into the I-5 right-of-way. It would follow I-5 in a tunnel configuration under the centerline to north of Del Mar Heights Road. As it approaches the San Dieguito Lagoon, this option would turn northwestward and emerge from the tunnel, skirting the southern edge of the San Dieguito Lagoon and the Del Mar Fairgrounds in a combination of at-grade and elevated profiles, until rejoining the existing LOSSAN alignment at the crossing of the San Dieguito River.

The Penasquitos Lagoon Bypass Tunnel would have the same positive benefits to the Del Mar bluffs and community as the Camino Del Mar Tunnel. However, this option would be considerably more expensive to construct than the Camino Del Mar Tunnel #1 (estimated $250 million more) because the topography of this alignment requires a tunnel about twice as long as the Camino Del Mar Tunnel #1 option.

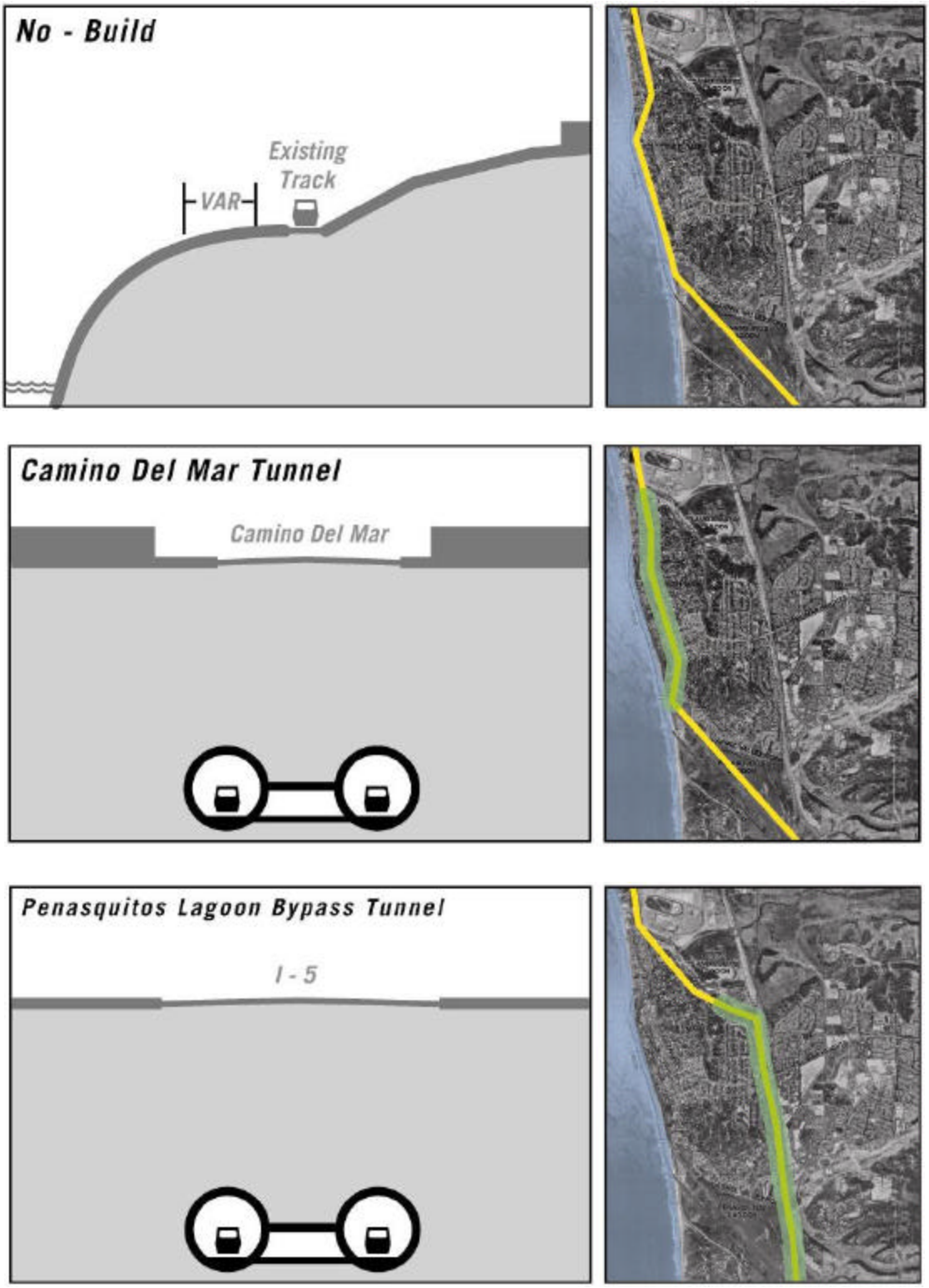
The primary additional benefit of this option is that it would further reduce lagoon impacts by creating an alignment that avoids much of Penasquitos Lagoon. It would also have the least noise and vibration impacts. However, this option would have more property impacts and constructability issues than the Camino Del Mar #1 Tunnel alternative.

State and federal resource agencies have indicated that they believe this option should be investigated as part of the program EIR/EIS process. It is likely to have considerable community support since, like the Camino Del Mar Tunnel #1 option, it would result in the removal of the existing track along the bluffs.

A more northerly return to the existing LOSSAN corridor was examined, one which could further reduce potential impacts to San Dieguito Lagoon. There are challenges associated with taking this option further north, past the San Dieguito River. These challenges include:

- Extremely tight rail curves would be required to transition back to the existing corridor – much tighter than the standard for new construction, and even tighter than the current alignment through Del Mar. The reductions in train performance to negotiate these curves would effectively negate the benefits of double tracking in this area.
- Crossing the Del Mar Fairgrounds (owned and operated by the 22nd District Agricultural Association) either at-grade or on a structure would have serious repercussions on their operations, as well as potential 4(f) resource issues. A tunnel alignment would avoid these impacts, however, this is not a practicable alternative. Much of the Fairgrounds is in low-lying terrain in the 100-year floodplain, requiring a very deep tunnel to ensure appropriate soil stability. To maintain grades that would be negotiable by freight trains, the transition out of such a deep tunnel would require a dramatic re-profiling of the LOSSAN alignment through most of Solana Beach, significantly below the current profile which is already below-grade.
- Similar to possible impacts to residential areas in the south of Del Mar (as discussed with the Camino del Mar Tunnel #2 option below), there would be impacts to residential areas in southern Solana Beach as a result of a more Northern alignment.

Figure 4
Options to Be Retained for Further Study in Del Mar



2.2 ALIGNMENT AND STATION LOCATION OPTIONS TO BE ELIMINATED FROM FURTHER EVALUATION

Based on information obtained through the technical evaluations and public input, the following alignment options are recommended to be eliminated from further evaluation (see Figure 5):

Trench-in-Bluffs: The Trench-in-Bluffs (Trench) option would follow the existing rail alignment, but would provide two mainline tracks in a concrete trench (partially covered) along the Del Mar Bluffs. In order to do so, significant bluff stabilization efforts would be required, including tie-backs at the top of the Bluffs, a seawall at the base of the bluffs, and retaining walls within the trench itself.

The "Trench-in-Bluffs" alignment alternative would have severe construction impacts and would introduce major environmental impacts due to the required bluff stabilization.

The Trench option offers very significant constructability challenges, most notably because of the nature of bluffs themselves (see Figure 6). Attempting to stabilize the fragile coastal bluffs would require major construction efforts, including a 10-20 foot high seawall at the base of the bluffs, retaining walls within the trench itself, and tie-backs at the top of the bluffs, resulting in drastic changes to the existing environment. The use of heavy construction equipment in this sensitive environment would also be problematic. Moreover, the constrained space available for construction of the trench and the need to maintain rail service during construction would create significant impacts.

The Trench option would have the highest environmental impacts. In areas where the trench would be covered, community impacts and barrier issues would be reduced, however, in other areas where the trench was either open or the alignment was at-grade, these impacts would be exacerbated because of the double-track width of the trench. The Trench option would not remove the rail line from the bluffs, but rather would submerge it into the bluffs, creating new, different impacts (including the need for the stabilization methods noted above). The stabilization of the bluffs would result in the highest impacts on natural resources, and the bluffs have major geological and soils constraints. Construction on the bluffs would have high impacts to erodible soils, unstable slopes, and aesthetics and visual quality. Property impacts with the Trench option would include the likely need to acquire property during the construction period in order to stage equipment and materials.

Public and agency input has been nearly unanimous in favor of removing the track from the fragile bluffs. The concept of major stabilization and trench-and-cover construction along this highly environmentally sensitive area would be strongly opposed by both the community and the state and federal resource agencies.

Camino del Mar Tunnel #2: The Camino del Mar Tunnel would relocate the rail line on Del Mar's sensitive bluffs into a tunnel which would run under Camino del Mar. The Camino del Mar Tunnel #2 Option is a variation of the Camino del Mar Tunnel #1 Option, where curve straightening included in this option would take the tunnel beneath a residential area at the southern end of Del Mar and the northern edge of San Diego.

This design option would be more costly and create more community and potential environmental impacts than the Camino del Mar Tunnel #1 while providing only minimal travel time benefits due to the curve straightening.

As a result of the curve straightening at the south end of Del Mar, there would be some significant property impacts (acquisitions and easements) in the tunnel transition areas, and where the tunnel passed beneath residential property. In addition, the curve straightening would cross Penasquitos

Lagoon at a new location, causing additional impacts and disruption to this environmentally sensitive area. Furthermore, it is estimated that this option only improves running times by about 20 seconds as compared to the Camino del Mar Tunnel #1 alternative.

Community acceptability for the Camino del Mar Tunnel #2 option is generally negative, with the community greatly preferring the Camino del Mar Tunnel #1 alternative which stays under the public right-of-way of Camino del Mar.

Figure 5
Options to Be Screened from Further Consideration in Del Mar

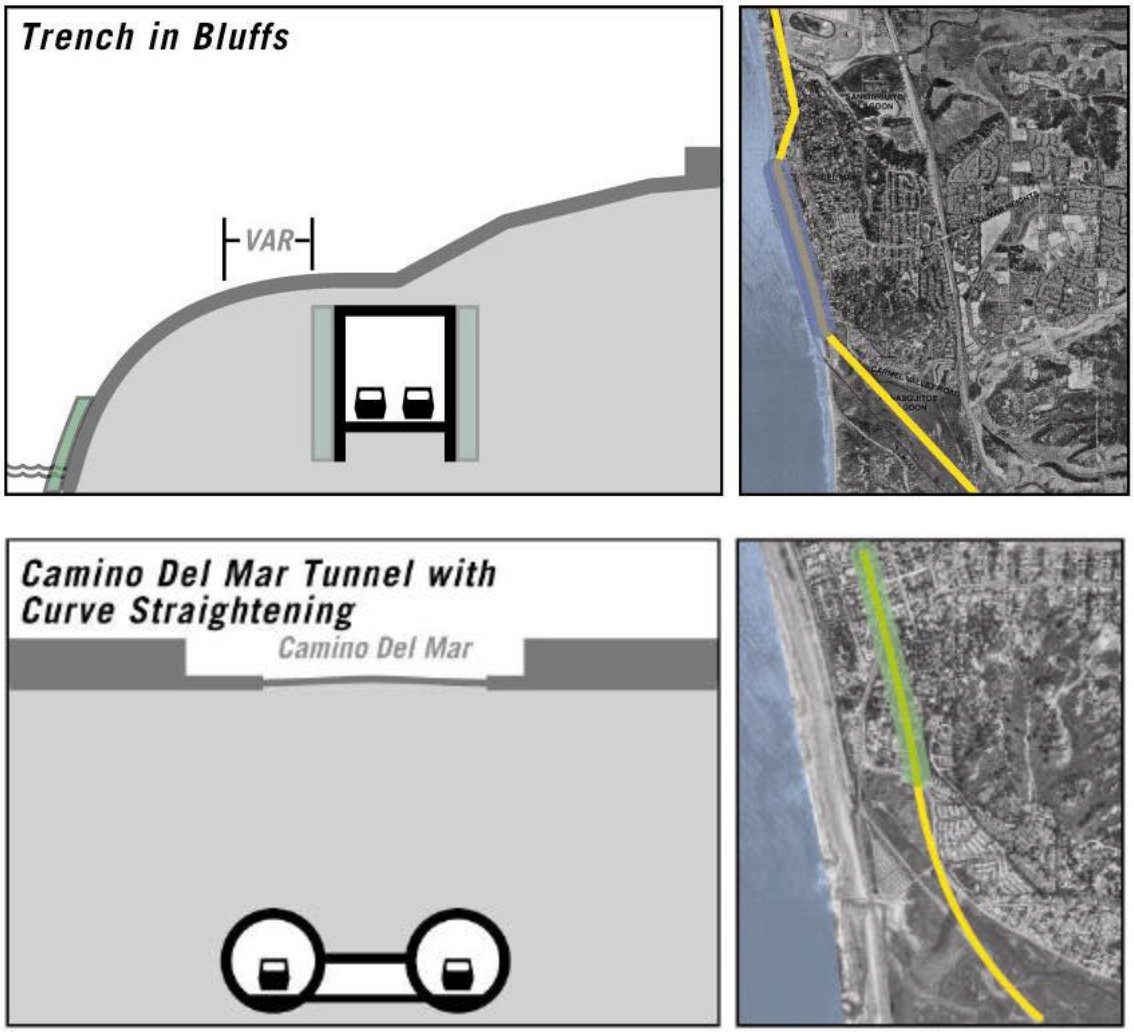


Figure 6
Train passing along Del Mar Bluffs

3.0 ENCINITAS

A number of design options exist in Encinitas, including the "No-Build" (maintaining the status quo) option, an upgraded version of the status quo, and two trench options, as shown below:

- No-Build
- At-Grade with Grade Separations (Note: All the build options in Encinitas include the Grade Separations)
- Short Trench
- Long Trench

The following subsections provide descriptions of the each of the options in Encinitas (except for the No-Build option), and the recommendation of whether the option be carried forward for further evaluation or eliminated. (It is important to note that the "No-Build" option represents the status quo and will always be carried forward for further consideration)

3.1 ALIGNMENT AND STATION LOCATION OPTIONS CARRIED FORWARD FOR FURTHER EVALUATION

Based on information obtained through the technical evaluations and public input, the following alignment options are recommended for further evaluation (see Figure 7):

At-Grade with Grade Separations: This option would provide double-tracking throughout Encinitas with new grade separations at Leucadia Blvd. at Pacific Coast Highway/Vulcan Dr., and Birmingham Drive at San Elijo. Additionally, new pedestrian crossings would be provided.

Train capacity would greatly improve as a result of the double-tracking provided as part of the "At-Grade with Grade Separations" option. Safety would be significantly improved, as the opportunities for interaction between pedestrians and trains would be diminished with the grade separations at Leucadia Blvd. and Birmingham and pedestrian crossings. The risk of accidents with cars would also be diminished with the two major grade separation projects and reliability and traffic circulation would also improve with this option.

This option would not provide the full grade separation benefits of the Short Trench concept, leaving the crossings of D and E streets at-grade. However, this option would be considerably less expensive (estimated at $150 million less) than the Short Trench concept.

Although this concept does not have as much as support from the community as the Short Trench option, the grade-separations at Leucadia Blvd. and Birmingham Drive are supported and would provide significant benefits to the community.

Short Trench: This option would locate a double-tracked cut and cover tunnel in the downtown area (approximately 1.5 miles), and grade separations at Leucadia Blvd. at Pacific Coast Highway/Vulcan Dr., and Birmingham Drive at San Elijo. Additionally, new pedestrian crossings would be provided in the Leucadia and Cardiff communities.

The Short Trench option would improve train performance and would reduce environmental impacts from the existing conditions – providing considerable benefits to the environment and community.

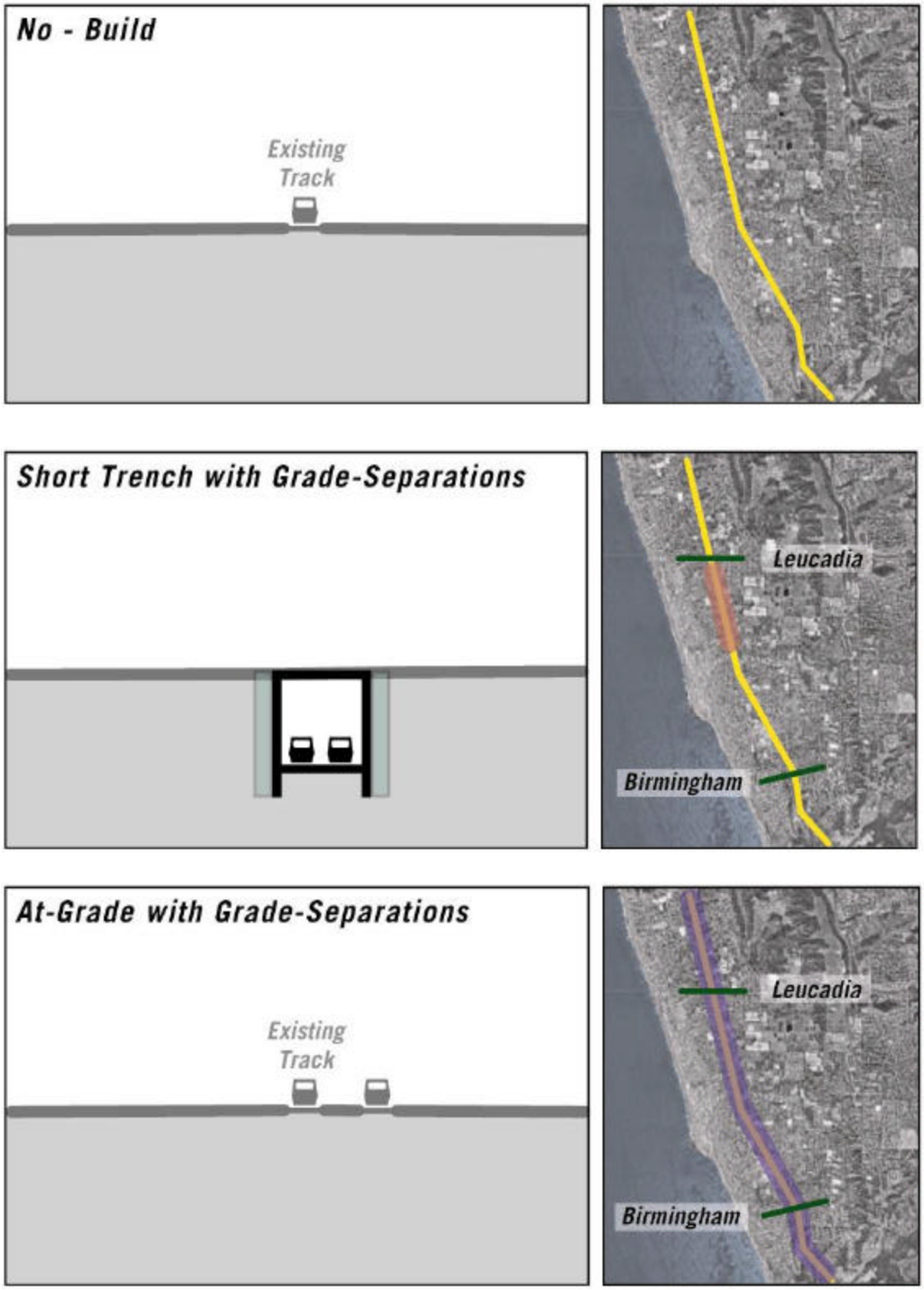
Train capacity would greatly improve as a result of the double-tracking provided with the Short Trench option. Safety would be significantly improved, as the opportunities for interaction between

pedestrians and trains would be diminished, and the grade separations at Leucadia Blvd. and Birmingham, as well as D & E Streets downtown, would eliminate the risk of accidents with cars at these crossings. Reliability would also improve with this alternative. An additional benefit of this alternative is that it could be constructed in phases, where the grade separations at Leucadia Blvd. and Birmingham Drive and new pedestrian crossings could be made prior to securing the funding for the actual trench and cover construction through downtown Encinitas.

Environmental impacts from existing rail services would be reduced with the implementation of the Short Trench option. The Short Trench option would improve community cohesion and coastal access opportunities would also increase. Noise and vibration would be reduced as a result of the Short Trench and traffic circulation would improve as a result of the two grade separations included in this option.

Public acceptability for the Short Trench Option has been very positive.

Figure 7
Options to be Retained for Further Study in Encinitas



3.2 ALIGNMENT AND STATION LOCATION OPTIONS TO BE ELIMINATED FROM FURTHER EVALUATION

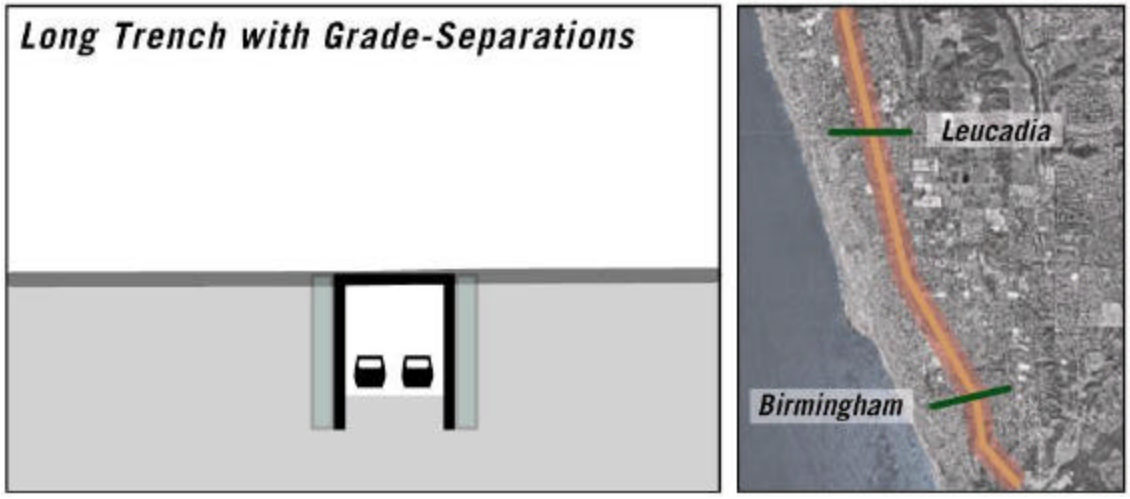
Based on information obtained through the technical evaluations and public input, the following alignment option is recommended to be eliminated from further evaluation (see Figure 8):

Long Trench: This option would consist of a double-tracked open trench that would extend the length of the City. The trench would be covered through the downtown area, and new pedestrian crossings would be provided at other locations. The Long Trench option would be considerably longer than the Short Trench in that the trench would run through the extent of Encinitas (approximately 7-miles), rather than just the downtown area.

The majority of the train performance and community benefits associated with the Long Trench would also be provided with the Short Trench option. However, the Long Trench option would have much higher costs and considerably more construction impacts/issues associated with the construction of a 7-mile long trench. The Long Trench is expected to cost at least $250 million more than the Short Trench option. Moreover, the at-grade crossings at Leucadia Blvd and Birmingham Drive would remain until the Long Trench was fully-funded and constructed.

The Long Trench's cost-effectiveness is rated negatively because of the significant construction issues and much higher cost associated with the construction of the Long Trench – with only minimal additional community and environmental benefits over the Short Trench option. Although there has been considerable public support for this concept in the past, its high cost and constructability issues makes this option considerably less feasible than, and certainly inferior to the Short Trench option.

Figure 8
Option to Be Eliminated from Further Consideration in Encinitas



4.0 SAN CLEMENTE/DANA POINT

A number of design options exist in the the San Clemente/Dana Point area, including the "No-Build" (maintaining the status quo) option, two trench options, and three tunnel options, as shown below:

- No-Build
- Short Trench (along the existing alignment)
- Long Trench
- Short Tunnel – I-5
- Long Split Tunnel (with station)
- Long Single Tunnel (without station)

The following subsections provide descriptions of the each of the options in San Clemente and Dana Point (except for the No-Build option), and the recommendation of whether the option be carried forward for further evaluation or eliminated. (It is important to note that the "No-Build" option represents the status quo and will always be carried forward for further consideration)

4.1 ALIGNMENT AND STATION LOCATION OPTIONS CARRIED FORWARD FOR FURTHER EVALUATION

Based on information obtained through the technical evaluations and public input, the following alignment options are recommended for further evaluation (see Figure 9):

Short Tunnel – I-5: This option would straighten the Dana Point curve, and double-track the corridor along the existing right-of-way until just north of the San Clemente Metrolink station, where the alignment would begin to enter into a trench and then turn inland, tunneling just north of Avenida Pico, where a new station would be provided in an open trench. The alignment would remain in a twin-bored tunnel beneath the Interstate 5 right-of-way, leaving the right-of-way just north of Basilone Road and exiting the tunnel and returning to grade level at San Onofre Creek, and rejoining the existing LOSSAN corridor.

The Short Tunnel option would improve train performance and would reduce environmental impacts from the existing conditions – providing considerable benefits to the environment and community.

The Short Tunnel option would provide increased train capacity, and would improve running times, safety, and reliability, due to the extensive grade-separated segment from Avenida Pico to the southern city limits. In addition, operational and maintenance costs would be reduced – by getting the tracks away from the beach. This alternative would require a twin-bore tunnel over 6 miles in length, and therefore would be considerably more costly than the Short Trench alternative (an estimated $500 million more). Nevertheless, in spite of its cost, the Short Tunnel is assessed to have a positive cost-effectiveness because of the train performance benefits that result from this option.

The Short Tunnel option would have community benefits and reduce environmental impacts. The Short Tunnel option would reduce the "barrier effect", improve coastal access and beach aesthetics, and significantly reduce noise and vibration issues and coastal bluff impacts by resulting in the removal of the track along the beach at San Clemente. However, this option could have property impacts on as many as 15 acres of non-residential land, as acquisition of underground right-of-way easements from property (mostly commercial) would be required for the short tunnel segment beneath the transition from I-5 to the LOSSAN corridor near Avenida del Pico, and the development of a new station.

Although there are potential property impacts associated with Short Tunnel, the public is generally supportive of this concept to remove the existing track from the beach in San Clemente. However, the City of Dana Point has indicated its opposition to this option due to its potential effects on a planned desalination facility, as well as the city's continuing concerns about double tracking of the alignment along Coast Highway.

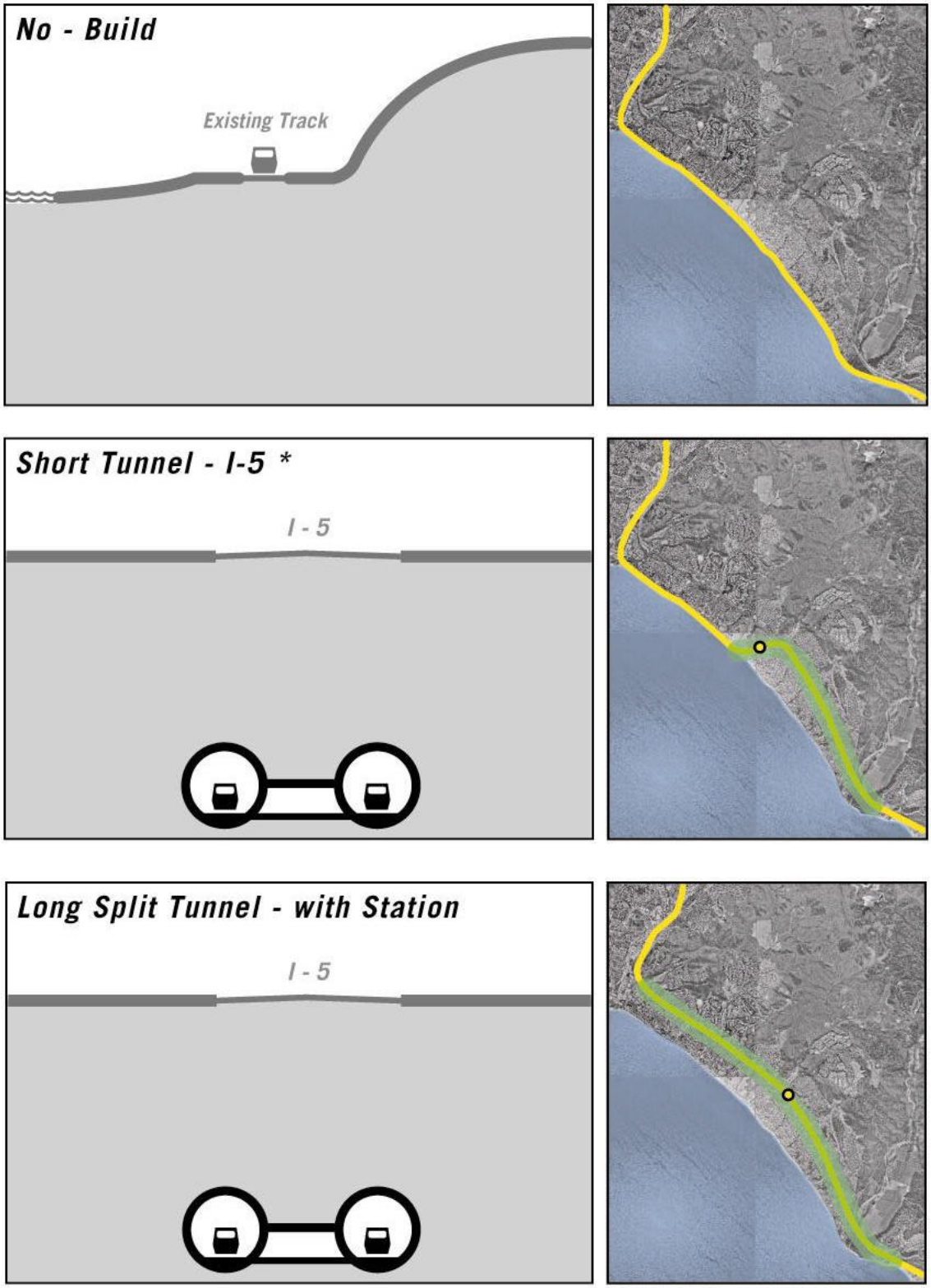
Long Split Tunnel - with Station: This option is similar to the Interstate 5 Long Tunnel option, except it would utilize two tunnels (rather than a single tunnel), which allows for a station in San Clemente. This option bypasses both the sharp curve in Dana Point and the coastal environmental and pedestrian concerns in San Clemente. This option would transition from the existing right-of-way into a trench approximately 500 feet south of Avenida Aeropuerto in San Juan Capistrano, entering into a tunnel just before coming under the right-of-way of Interstate 5. The option would continue beneath Interstate 5, leaving the right-of-way just north of Basilone Road, exiting the tunnel and returning to grade level at San Onofre Creek, then rejoining the existing railroad right-of-way.

The Long Split Tunnel option would have the same performance benefits as the Short Tunnel option and even greater environmental and community benefits since this option would result in the complete removal of tracks from the coast. However, there are very significant construction challenges incumbent in this option that would require two tunnel segments (both twin-bore tunnels) exceeding 5-miles in length. Furthermore, this option is expected to cost over $300 million more than the Short Tunnel option.

The Long Split Tunnel option would remove the existing rail line from the coastline, resulting in greatly improved coastal access and reduced barrier issues. Bluff impacts from trains would be eliminated. This option could displace up of eight acres of non-residential property, primarily in the area of the north portal in San Juan Capistrano, and between the tunnel segments at the station site. This option allows for a replacement rail station, near Avenida del Pico that could support both Metrolink and Amtrak service in San Clemente. The Long Split Tunnel option would greatly reduce noise and vibration impacts associated with rail service, and improve beach aesthetics.

Public Acceptability for alignment options that would avoid the sensitive coastal areas has been strongly positive. Although it is a costly option, the Long Split Tunnel option is particularly attractive to the region since it would remove the tracks completely along the coast, through both San Clemente and Dana Point.

Figure 9
Options to be Retained for Further Study in San Clemente/Dana Point



4.2 ALIGNMENT AND STATION LOCATION OPTIONS TO BE ELIMINATED FROM FURTHER EVALUATION

Based on information obtained through the technical evaluations and public input, the following alignment options are recommended to be eliminated from further evaluation (see Figure 10):

Short Trench: This option provides for double-tracking while following the existing railroad right-of-way. A short trench would be constructed through the San Clemente pier area to allow for safe pedestrian access across the tracks. Additional pedestrian under-crossings would also be constructed along the section of the corridor traveling at-grade on the beach.

The Short Trench option has severe construction impacts and high negative impacts to the environment and the community, yet offers only a marginal improvement to train service and performance.

Although the Short Trench option would increase track capacity (due to double tracking), it would provide no change in running times, no net improvements to safety, and no change to reliability. The Short Trench option offers significant constructability challenges, most notable the construction of the trench in the Pier Bowl and construction around Mariposa Point, while simultaneously maintaining access to the San Clemente Pier and existing rail service. The construction of the Short Trench option would also impact San Clemente businesses, which depend upon visitors to the beach. It has been assessed to have a low cost-effectiveness (based upon the benefits it provides and the impacts it imposes, compared to its cost).

The Short Trench option poses very significant constructability challenges, most notably because of the nature of the beach itself and the coastal bluffs (particularly at Mariposa Point – see Figure 11). Attempting to stabilize the beach and fragile coastal bluffs would require major construction efforts, including a 10-20 foot high seawall at the base of the bluffs, retaining walls within the trench itself, and tie-backs at the top of the bluffs, resulting in drastic changes to the existing environment. The use of heavy construction equipment in this sensitive beach and coastal bluff environment would also be problematic. Moreover, the constrained space available for construction of the trench and the need to maintain rail service during construction would create significant impacts.

The Short Trench option would have the highest environmental impacts. The covered portion of the trench would improve coastal access and reduce the barrier effect of the rail corridor in the Pier Bowl area. Other areas, where the trench was open or in transition, would have greatly reduced access opportunities. Coastal access during construction would be greatly constrained in the Pier Bowl area. The Short Trench option reduces the barrier effect of the existing rail corridor through the downtown area, by providing a covered trench. However, this option would do little to reduce or remove the impact of the rail corridor on adjacent residential uses. Additionally, the barrier effect between residential and recreational uses would increase as a result of the trench. The Short Trench option would impact beach aesthetics by imposing new concrete structures (the trench and its transitions) on the beach. The Short Trench option would not remove the rail line from the beach, but rather would submerge it into the beach, creating new, different impacts (including the need for the stabilization methods noted above). The beach and bluff impacts of the Short Trench concept would result in the highest impacts on natural resources and have major geological and soils constraints. Construction on the beach and bluffs would have high impacts to erodible soils, unstable slopes, and aesthetics and visual quality. Property impacts with the Short Trench option would include the likely need to acquire property during the construction period in order to stage equipment and materials.

The public is strongly opposed to any increased rail presence on the beach in San Clemente, and to any new construction/structures on the beach.

Long Trench: This option is similar to the Short Trench in that it would also remain largely within the existing railroad right-of-way, and would include curve straightening at Dana Point. The option would begin a bored tunnel through Mariposa Point, just south of the existing Metrolink station (at Avenida Pico and El Camino Real), then transition north of the pier into a cut-and-cover trench, which would continue until approximately 1,600 feet north of the San Diego County line.

Although the Long Trench option offers significant improvements to train service and performance, it has severe construction impacts and high negative impacts to the environment and the community, as well as high construction costs.

Like the Short Trench option, the trench's double track would provide increased train capacity. Unlike the Short Trench, the Long Trench option would improve running times, safety, and reliability, due to the extensive grade-separated segment from Mariposa Point to the southern city limits. The construction of the Long Trench option would also impact San Clemente businesses, which depend upon visitors to the beach. While more costly than the Short Trench option (estimated $150 million additional cost), the Long Trench is assessed to have a positive cost-effectiveness as a result of the benefits to train performance.

The Long Trench option would reduce the "barrier effect", due to the covered trench and tunnel section. However, there would be access issues during the construction phase, especially along the beach and in the Pier Bowl areas. Coastal impacts would result from the Long Trench option, as tunneling under the bluffs at Mariposa Point would be required. Impacts to residential properties would be the highest with the Long Trench, with an estimated 30-35 housing units potentially displaced. Underground easements would also be required for the tunnel segment beneath the residential subdivision at Mariposa Point. Noise and Vibration issues would be minimized as a result of the trench (and greatly reduced in the tunnel segment of the Long Trench).

The Long Trench option poses significant constructability challenges, most notably because of the nature of the beach itself and the coastal bluffs (particularly at Mariposa Point – see Figure 11). The use of heavy construction equipment in this sensitive beach and coastal bluff environment would also be problematic. Moreover, the constrained space available for construction of the trench and the need to maintain rail service during construction would create significant impacts.

The Long Trench option would have high environmental impacts. The covered portion of the trench would improve coastal access and reduce the barrier effect of the rail corridor in the Pier Bowl area. Other areas, where the trench was open or in transition, would have greatly reduced access opportunities. Coastal access during construction would be greatly constrained in the Pier Bowl area. The Long Trench alternative would impact beach aesthetics by imposing new concrete structures (the trench and its transitions) on the beach. The Long Trench option would not remove the rail line from the beach, but rather would submerge it into the beach, creating new, different impacts (including the need for the stabilization methods noted above). The beach impacts of the Long Trench concept would result in high impacts on natural resources and have major geological and soils constraints. Construction on the beach and bluffs would have high impacts to erodible soils, unstable slopes, and aesthetics and visual quality. Property impacts with the Long Trench option would include the likely need to acquire property through the residential community at Mariposa Point and during the construction period in order to stage equipment and materials.

The public is very opposed to any increased rail presence on the beach in San Clemente, and consequently strongly opposes the Long Trench option.

Long Single Tunnel (No Station): This option is similar to the Interstate 5 Long Tunnel with station, except it would utilize a single (rather than split) tunnel, which does not allow for a station in San Clemente. Like that alternative, the new alignment bypasses both the sharp curve in Dana Point and the coastal environmental and pedestrian concerns in San Clemente. This option would leave the existing right-of-way in a trench approximately 500 feet south of Avenida Aeropuerto in San Juan Capistrano, entering into a tunnel just before coming under the right-of-way of Interstate 5. The option would continue beneath Interstate 5, leaving the right-of-way just north of Basilone Road, exiting the tunnel and returning to grade level at San Onofre Creek, then rejoining the existing railroad right-of-way.

The Long Single Tunnel option would have many of the benefits and impacts as the Long Split Tunnel option. However, there are very significant additional construction challenges incumbent in this option. A single tunnel more than 6 miles in length is much more expensive, and difficult to construct than the split tunnels proposed in the Long Tunnel (with station) option. The Long Single Tunnel option, that requires a single twin bore tunnel exceeding 11 miles, is expected to cost at least $400 million more than the Long Split Tunnel option. Furthermore, this extremely long tunnel would require several large ventilation shafts to the surface and may require cross-overs to be constructed between the two twin bore tunnels.

Public Acceptability for alignment options that would avoid the sensitive coastal areas has been strongly positive, however this option would offer no opportunity for rail service in San Clemente.

Figure 10
Options to Be Eliminated from Further Consideration in San Clemente/Dana Point

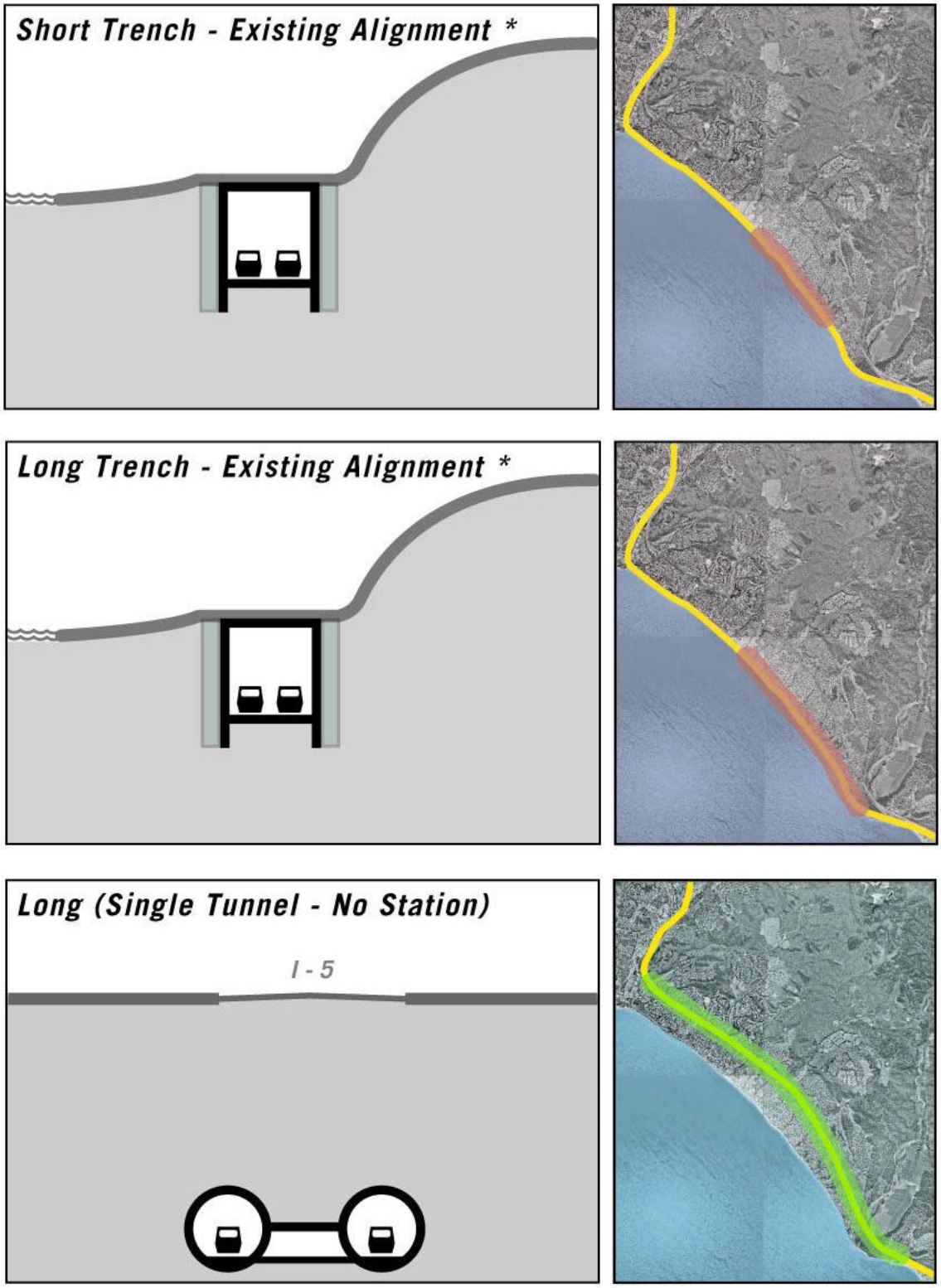


Figure 11
Existing Rail Corridor at Mariposa Point

5.0 SAN JUAN CAPISTRANO

A number of design options exist in the city of San Juan Capistrano, including the "No-Build" (maintaining the status quo) option, two covered trench (Cut-and-Cover tunnel) options, and one tunnel option, as shown below:

- No-Build
- Downtown Cut-and-Cover Tunnel
- Trabuco Creek Cut-and-Cover Tunnel
- Interstate 5 Tunnel

The following subsections provide descriptions of the each of the options in San Juan Capistrano (except for the No-Build option), and the recommendation of whether the option be carried forward for further evaluation or eliminated. (It is important to note that the "No-Build" option represents the status quo and will always be carried forward for further consideration)

5.1 ALIGNMENT AND STATION LOCATION OPTIONS CARRIED FORWARD FOR FURTHER EVALUATION

Based on information obtained through the technical evaluations and public input, the following alignment options are recommended for further evaluation (see Figure 12):

I-5 Tunnel: This option would bypass the downtown area of the City of San Juan Capistrano completely by realigning the railroad right-of-way beneath Interstate 5. The new alignment would begin near State Route 73, where the tracks would begin entering a trench. The alignment would then leave the existing right-of-way, entering a twin-bored tunnel. The alignment would then pass beneath Trabuco Creek, Camino Capistrano and Junipero Serra Road before proceeding beneath the Interstate 5 right-of-way. The alignment would leave the right-of-way of Interstate 5 at San Juan Creek Road, passing beneath Camino Capistrano and exiting the tunnel north of Avenida Aeropuerto, where it would rejoin the existing LOSSAN corridor. This option accommodates the possibility of retaining the existing single-track line and service through downtown San Juan Capistrano.

The I-5 Tunnel option provides major benefits to train performance and could benefit historical resources by moving at least the intercity and freight services away from the downtown historical district.

The I-5 Tunnel option would greatly increase track capacity, due to double tracking. This tunnel concept would reduce running times, improve safety, and increase reliability due to its completely grade-separated configuration. However, this option has significant constructability challenges with a 3-mile twin bore tunnel configuration under I-5, and is expected to cost about $400 million more than a Downtown Cut and Cover Tunnel option. For these reasons, it has been given a negative cost-effectiveness rating. There would not be an intercity station provided along the I-5 tunnel bypass of San Juan Capistrano.

The public acceptability of this option, as determined by comments and feedback from previous public meetings, is mostly positive. The City of San Juan Capistrano has requested that this alignment option alignment continue to be considered, but has also requested that this option maintains the existing rail line as a spur track to retain local service.

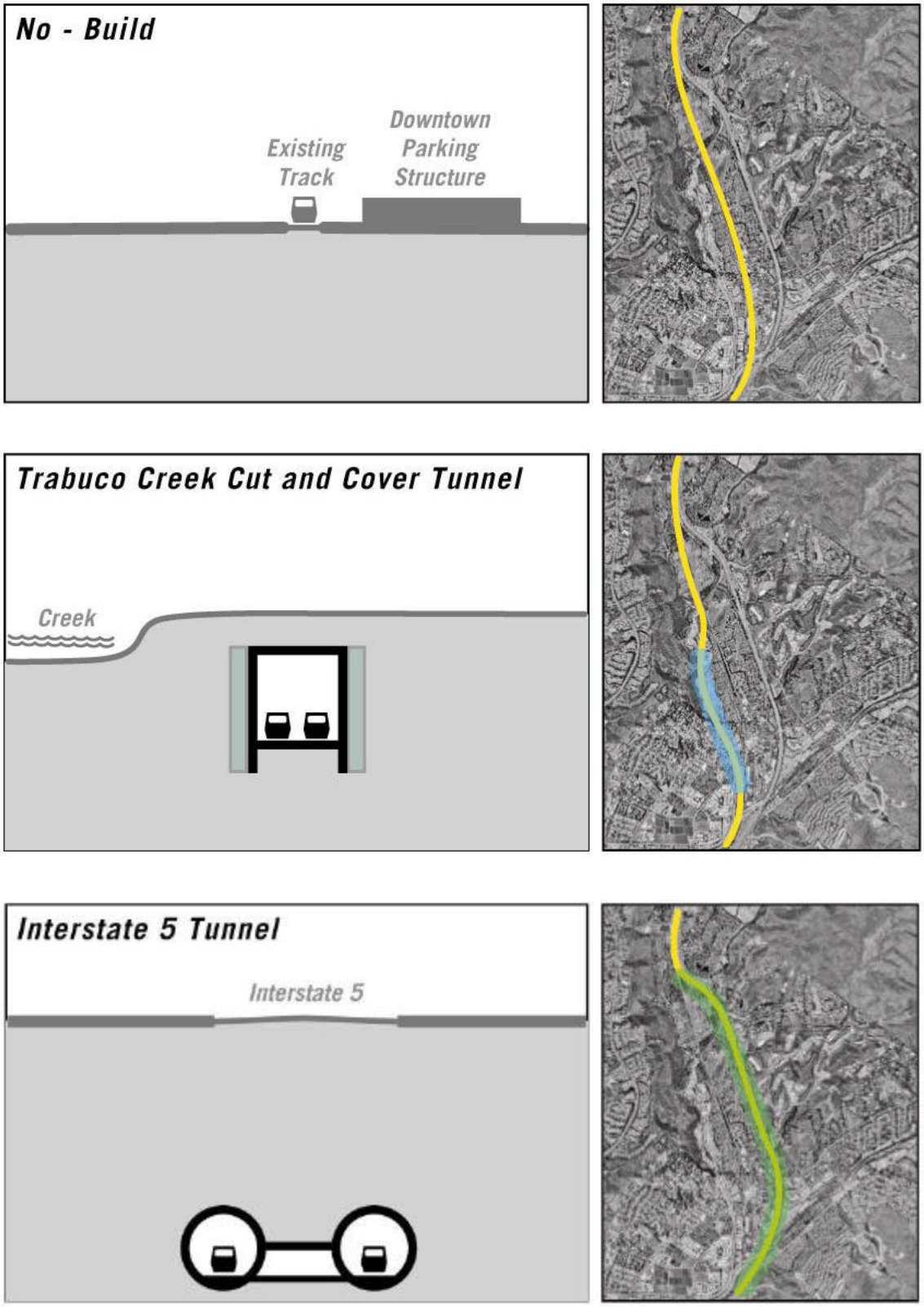
Trabuco Creek Cut and Cover Tunnel: This option would realign the existing alignment through San Juan Capistrano's downtown to the west, loosely following the east bank of Trabuco Creek. Starting

approximately at Junipero Serra Road, the alignment would veer west away from the existing alignment. It would then transition into a covered trench and provide a replacement station due west of the existing station, before proceeding under Del Obispo. From here, the option would transition back to grade, either by remaining on the east bank of Trabuco Creek or by turning back to the existing LOSSAN alignment, before crossing San Juan Creek.

The Trabuco Creek Cut and Cover Tunnel option was suggested for investigation by the City of San Juan Capistrano as a design refinement of the Downtown Cut-and-Cover Tunnel option, at the March 4, 2003 OCTA agency meeting for the LOSSAN technical studies. This option provides the benefits of the Downtown Cut and Cover Tunnel option (increased track capacity, reduced running times, improved safety, and increased reliability), while at the same time it would move construction of the cut-and-cover tunnel to the extreme western edge of San Juan Capistrano's historic district reducing the potential for construction impacts, as well as eliminating the need for the demolition and reconstruction of the downtown parking garage adjacent to the existing depot. This option would also provide for the construction of a new passenger rail station (and possible multimodal facility) in downtown San Juan Capistrano. This option would include a grade separation at Del Obispo Street, removing a major traffic network bottleneck that can occur when trains are passing through the intersection.

Public acceptability of this option is positive, as determined by comments and feedback from recently held public workshops. The conceptual engineering plans and profiles have been developed for this option and are available for public review. The environmental analysis has been carried out for this design option and is included along with that for other options in Appendix A.

Figure 12
Options Retained for Further Consideration in San Juan Capistrano



5.2 ALIGNMENT AND STATION LOCATION OPTION TO BE ELIMINATED FROM FURTHER EVALUATION

Based on information obtained through the technical evaluations and public input, the following alignment option is recommended to be eliminated from further evaluation (see Figure 13):

Downtown Cut-and-Cover Tunnel: This option would construct a cut and cover tunnel through San Juan Capistrano's downtown. Near Junipero Serra Road, the alignment would enter a double-tracked open concrete trench. North of the existing San Juan Capistrano Depot, the trench would become a covered trench. The covered trench would pass beneath an existing downtown parking structure, and then would become an open trench again. Near San Juan Creek, the alignment would return to grade. This option would also include curve straightening the alignment just south of the San Juan Creek crossing.

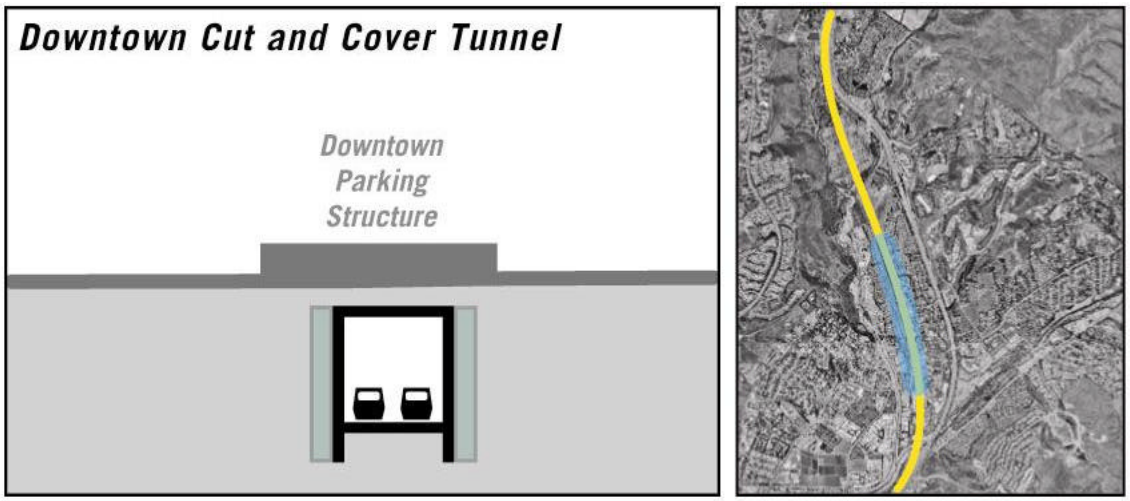
The Downtown Cut-and-Cover Tunnel would have severe construction impacts and property impacts on Downtown San Juan Capistrano and the historic district, and would have negative impacts on the community, and historical resources.

This option would increase track capacity, reduce running times, improve safety, and increase reliability. However, this option would have major constructability impacts, because of limited available right-of-way in the historic district, the close proximity of sensitive historic and cultural resources (including the historic downtown station), the need to maintain rail service during construction, and the need to demolish and replace the existing downtown parking structure and surface parking facilities (causing significant disruption to the downtown business community during construction). For these reasons, it has been given a negative cost-effectiveness rating.

Historical resources could be directly impacted with this option, largely during construction. Property impacts would be very high in this option, as property would need to be acquired for right-of-way, and businesses would be impacted during construction, particularly as a result of the demolition of the parking structure (which would be rebuilt after the covered trench had been constructed). There would be noise and vibration impacts, both during construction, and in areas of open trench after construction.

The public acceptability of this option, as determined by comments and feedback from previous public meetings, is extremely negative. The City of San Juan Capistrano is on record as being opposed to this option, and has asked that it be eliminated from further consideration. They believe the construction of this option would have long-term detrimental effects on the community. For reasons of cost, constructability, cost-effectiveness, potential impacts to historical resources and property, as well as public acceptability, it is recommended that this option be eliminated.

Figure 13
Option to Be Eliminated from Further Consideration in San Juan Capistrano



6.0 PUBLIC COMMENTS ON SCREENING RECOMMENDATIONS

Keeping the public informed and involved in the development of the screening recommendations contained in this Screening Report has been an integral part of the screening process. Elements of this public outreach and information effort included:

- Five Public Workshops held in conjunction with the California Department of Transportation (the Department) as part of the Department's LOSSAN Corridor Strategic Business Plan
- Opportunity for Public Comment at the Authority's March 25, 2003 Board meeting in San Diego
- Through the Authority's website
- Through individual and working group meetings held with corridor cities, rail owners and operators, and other involved agencies and organizations

Details about each of these outreach elements are provided in the following subsections.

6.1 STRATEGIC BUSINESS PLAN PUBLIC WORKSHOPS

As part of the Department's Strategic Business Plan's development, five Public Workshops were held. The workshops provided the public with an overview of the corridor and the rail improvements under study, including information on:

- The purpose and goals of the Strategic Business Plan
- The need for improvements to the corridor
- Current and projected weekday train volumes
- Corridor facts, including rail owners and operators and details on Freight services
- Types of rail services provided (Intercity Rail, Commuter Rail, and Freight)
- The Strategic Business Plan timetable
- Ranges of costs, rail performance issues, and community/environmental issues of projects throughout the corridor
- Design options and alternatives at four key locations along the corridor where the range of options was sufficiently broad to allow the screening out of some options, the recommendations for screening, and the rationale and criteria used to reach the recommended screening decisions.
- The Planning Process, including timelines for the completion of the Strategic Business Plan, and both the Department and Authority's Draft Program-level Environmental Impact Reports/Environmental Impact Statements.

Public Workshops were held over five evenings, in the following locations, according to the schedule listed below:

City	Date	Time	Location
City of Encinitas	March 25, 2003	6:00 – 8:00 p.m.	Community & Senior Center, 1140 Oakcrest Park Dr.
City of San Diego	March 26, 2003	6:00 – 8:00 p.m.	Caltrans District 11, 2829 Juan Street
City of Anaheim	March 27, 2003	6:00 – 8:00 p.m.	City Hall West, 201 South Anaheim Boulevard
City of San Clemente	April 2, 2003	6:30 – 8:30 p.m.	Community Center, 100 North Calle Seville
City of Norwalk	April 3, 2003	6:00 – 8:00 p.m.	Norwalk Marriott, 13111 Sycamore Drive

Public turnout at the workshops was good, with attendees totaling more than 500 persons, the bulk of them at the April 2nd San Clemente meeting. Attendees were asked to complete surveys, designed to assess their issues and concerns regarding the proposed LOSSAN corridor improvements and the recommended options screening. A total of 326 surveys were completed and returned (again, largely from attendees at the San Clemente meeting, and thus reflecting the issues of that community).

While concerns continue to be expressed about individual options, survey responses were generally positive and supportive of the screening recommendations, and reflected the concerns of the communities at which the Public Workshops were held. At the San Clemente meeting, for example, surveys shown strong support for a tunnel option that would relocate the tracks off the beach. Respondants at the Encinitas meeting indicated the importance of grade separations and lagoon restoration.

The goals of the Public Workshops were to provide the public with information and facts about the corridor, its types of rail service, current and projected levels of weekday train volumes, and the proposed rail improvement projects, timing, potential impacts and benefits, and recommendations for screening, and to solicit their involvement and opinion. This goal was clearly met, based on the number of surveys completed and returned. As well, while some concerns remain about remaining options and project timelines (particularly in the South Orange County area), as the Strategic Business Plan and Program-level EIR/EIS move forward, it appears that the public is “on board” with the recommendations made.

MARCH 25TH AUTHORITY BOARD MEETING

On March 25, 2003, the Authority presented to its Board the LOSSAN Corridor Screening Recommendations as an information item.

A substantial number of persons spoke on behalf of the recommendations at the meeting, including San Diego County Supervisor Pam Slater, the mayor and vice-mayor of San Clemente, Dana Point city manager, as well as representatives from the Surfrider Foundation, Del Mar Lagoon Committee, Orange County Transportation Authority, and San Diego Association of Governments (SANDAG).

Supervisor Slater noted that alternatives have been presented which have met the concerns of communities along the corridor, helping to achieve consensus and support for the project.

San Clemente Mayor (and Co-Chair of the South Orange County Rail Working Group - SOCRWG) Stephanie Dorey stated the group's support for the proposed screening recommendations, particularly the Long-Split Tunnel option, as well as for the elimination of any coastal alignment. San Clemente Vice-Mayor Susan Ritschel echoed her colleague's remarks, adding that SOCRWG opposes the Short Tunnel option in South Orange County because of its potential impacts in the city of Dana Point. Vice-Mayor Ritschel also expressed support for the Strategic Business Plan timeline, which calls for project-specific environmental review of projects in South Orange County in the short-term, within three years of the release of the Program-level EIR/EIS.

The Long-Split Tunnel is the preferred choice of the City of Dana Point, according to City Manager Doug Chotkevys. Dana Point continues to seek the elimination of the Short Tunnel option, whose realignment of a curve under Mariposa Point would impact a planned water desalination plant.

Surfrider Foundation Executive Director Christopher Evans expressed his support for the recommended elimination of the coastal alignment, and his organization's concern about severe environmental impacts to the coast that could result from improvements there.

Solana Beach Councilmember Joe Kellejian (Member of SANDAG's High-Speed Rail Task Force and the LOSSAN Board of Directors) spoke in support of the Short Trench Option in Encinitas and tunneling options in Del Mar.

Del Mar options were also addressed by Bill Michalsky of the Del Mar Lagoon Committee, who noted his concern over potential community and traffic impacts associated with either tunnel option, as well as called for more information regarding construction impacts. Michalsky observed that the Penasquito lagoon avoidance option would shift impacts from one lagoon to another, as well as adding new impacts to residential areas, suggesting instead a sweeping curve through the 22nd District Agricultural Association's property.

Shohreh Dupuis of Orange County Transportation Authority supported the Authority's screening recommendation in Orange County, particularly the elimination of coastal alignment options.

In addition to the Public Workshop surveys and comments received at the March Board meeting, nearly one hundred postcards and letters have been received by the Authority, expressing support for the screening recommendations as presented at the Public Workshops and March 27th CHSRA Board meeting.

The Screening Report has been posted on the Authority's website for public review and downloading. The website address for the report is:

http://www.cahighspeedrail.ca.gov/eis_eir/lax/index.html

6.2 MEETINGS WITH WORKING GROUPS, INDIVIDUAL CITIES, AND ENVIRONMENTAL RESOURCES AGENCIES

The Authority's screening recommendations have been developed in consultation with and through meetings held with representatives of cities along the corridor, transportation agencies and rail operators/owners. In Orange and San Diego Counties, Working Groups of stakeholders were formed. The Working Groups met regularly to discuss the design options under consideration, to review the issues associated with each option, the criteria used to evaluate the options, and the draft screening recommendations. Meetings were also held with individual cities and city staff, keeping them apprised of the status of the Authority's project progress.

Lastly, environmental resources agencies at both the state and federal level were involved at every stage in the development of the Authority's Screening Report, providing their comments and feedback on the criteria to be used in the evaluation of options and the screening recommendations. The resource agencies are supportive of the screening recommendations contained in this report.