CONNECT THE COASTSIDE

Evaluation of Recommended Alternative to Address Potential Future Transportation Deficiencies

Draft Report

Prepared for
San Mateo County

By

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EXECUTIVE SUMMARY

BACKGROUND OF WORK AND INPUT ON CONNECT THE COASTSIDE

Connect the Coastside was undertaken by San Mateo County to meet a requirement of the Midcoast Update to San Mateo County's Local Coastal Program (LCP), which was certified by the California Coastal Commission in 2012. Policy 2.53 of the Updated Midcoast LCP required San Mateo County to prepare a Comprehensive Transportation Management Plan (CTMP) that demonstrates that future development can be supported by the future transportation system and infrastructure. Connect the Coastside has been undertaken to identify and evaluate transportation improvements and changes in land-use policy that in combination would meet the requirements of the Midcoast LCP. The primary focus of Connect the Coastside has been the unincorporated portion of San Mateo County along Highway 1 and the coastline between Devil Slide and Half Moon Bay – the area covered by the Midcoast LCP. The study area was expanded to include Half Moon Bay and the reminder of the unincorporated portion of the county along SR-92 between Half Moon Bay and I-280 for a more complete assessment of how well the future transportation system will accommodated expected growth. The results of Connect the Coastside will only be binding for the unincorporated portion of the study area, however, and will only be advisory for Half Moon Bay.

The project began with a forecast of development potential within the study area based on existing zoning. This forecast of development potential, referred to as the Buildout forecast, was used to evaluate the adequacy of the existing transportation system to accommodate potential future development. Adequacy of the transportation system was evaluated on the basis of a set of roadway level of service (LOS) standards contained in the Midcoast LCP. That analysis found that the existing transportation system would not be adequate to accommodate the amount of development in the Buildout forecast and meet the Midcoast LCP LOS standards.

The next step in the project was to identify transportation improvements that could help to address the LOS deficiencies of the Buildout growth forecast. The potential transportation improvements were developed with considerable input from a Technical Advisory Committee, the Midcoast Community Council, the Half Moon Bay City Council, an on-line public survey and a public workshop. With the potential improvements, the project team identified and evaluated low-, medium- and high-cost packages of improvements as alternatives. From the results of the evaluation a "Hybrid" alternative was identified and evaluated. The Hybrid alternative addressed most but not all of the LOS deficiencies. This alternative was presented in the project report and in a round of stakeholder and public outreach.

The project team concluded from the outreach that there was not adequate support for some of the roadway-capacity projects that would be needed to meet the Midcoast LCP LOS standards. There was also concern that the use of only roadway LOS standards over-emphasized the role of the automobile, and that a new set of multi-modal standards should be recommended that would recognize the importance of walking, bicycling, and transit use in meeting the mobility needs of the future. The team also concluded that there was serious concern among the

stakeholders and public about the use of the Buildout forecast of development potential because it did not reflect all of the policies of the County and Half Moon Bay or the natural constraints that would limit future development to something less than the full Buildout.

This led to the development of a new set of transportation performance standards that included more modes and a new forecast of development potential that reflected the existing policies and environmental constraints on development on the Coastside. The alternatives standards and the forecast of development potential were documented and circulated for review in the fall of 2015. After making refinements to reflect stakeholder and public input, the new standards and forecast were used to re-evaluate the hybrid alternative. The project team was able to modify the set of projects in a way that responded to the stakeholder and public input from the spring of 2015 and produce a more context-sensitive set of solution options that also ensure an acceptable level of service by all modes. This report describes the evaluation conducted and documents the set of transportation and land-use policy improvements recommended.

CONSTRAINED FORECAST OF DEVELOPMENT POTENTIAL

The Constrained Forecast of Development Potential used the zoning-based Buildout forecast as a starting point, but then took into account the following potential constraints:

- The growth management limitations in the San Mateo County Midcoast Local Coastal Plan and the City of Half Moon Bay's Measure D;
- The market demand for new housing and non-residential development in Half Moon Bay based on the market analysis conducted in 2014 for the Half Moon Bay General Plan Update.

This Constrained Forecast of Development Potential was also a 25-year forecast, consistent with other local and regional forecasts being produced. With regard to growth control measures, Policy 1.23 in the Midcoast LCP limits residential development in the unincorporated Midcoast to 40 units per year, while Measure D limits residential growth to 1 percent annually in Half Moon Bay, or 1.5 percent Downtown. For Half Moon Bay, the Buildout forecast had already resulted in a lower level of residential development than would be allowed under Measure D. As a result, zoning would be the most limiting factor for residential development in Half Moon Bay, while the LCP's growth management protocol would be the most limiting growth factor in the unincorporated Midcoast.

The Constrained Forecast of Development Potential also takes into account projected growth rates for residential and non-residential development from the market study conducted in 2014 for the Half Moon Bay General Plan Update. These growth rates reflected the project team's best understanding of the interaction between market demand and development constraints in Half Moon Bay. The market study indicated the least amount of non-residential development in Half Moon Bay.

The results of the Constrained Forecast of Development Potential compared to the Buildout forecast were as follows:

Table E- 1 Constrained Residential Development Forecast for the CTMP (2040)

Subarea	Existing Total Units	Existing Single-Family	Existing Multi-family	Total (2040) Total Units	Total (2040) Single-Family	Total (2040) Multi-family	Percent Change
Unincorporated Midcoast	4,300	4,005	295	5,416	4,740	676	26%
Half Moon Bay	4,481	3,493	988	5,335	4,106	1,229	19%
Total	**8,781**	**7,498**	**1,283**	**10,750**	**8,846**	**1,905**	**22%**

Table E- 2 Constrained Non-Residential Development Forecast for the CTMP (2040)

Subarea	Existing Jobs	Total (2040) Jobs	Percent Change
Unincorporated Midcoast	2,551	4,994	96%
Half Moon Bay	5,334	5,704	7%
Total	**7,885**	**10,698**	**36%**

These forecasts of development potential resulted in the following changes from the Buildout forecast:

- 13 percent overall reduction in housing units with almost all of the reduction being in the unincorporated portion of the Midcoast
- 8 percent overall reduction in new commercial development with almost all of the reduction being in the city limits of Half Moon Bay.

PROPOSED ALTERNATIVE MULTI-MODAL TRANSPORTATION PERFORMANCE STANDARDS

Existing Roadway Segment Congestion Standards

The Midcoast LCP defined the roadway segment LOS standard for Highway 1 and SR 92 as LOS D, except during commuter peak periods and recreation peak periods, during which LOS E is considered acceptable. The City of Half Moon Bay's Circulation Element defines the LOS standard for Highway 1 and SR 92 as LOS C, except during the commuter peak periods and recreational

peak periods when LOS E is acceptable. Roadway segment LOS is based on the ratio between observed volume during peak periods and the capacity of the roadway segment. As such, the roadway segment LOS measure does not take into account observed congestion and delay experienced by users (as a result of intersections and other sources of increased travel time) and only offers improvements that divert significant volume to other parts of the network or that increase capacity through road widening.

Existing Intersection Congestion Standards

The *San Mateo County Traffic Impact Study Requirements* defines the intersection LOS standard for San Mateo County as LOS C with no individual movement operating at worse than LOS D. For unsignalized intersections, this represents the delay experienced by minor street traffic entering Highway 1. The City of Half Moon Bay's Circulation Element (adopted 2013) has established a desired LOS C at intersections along Highway 1 and SR 92, except during the two-hour commute periods, when LOS E is acceptable. Because the majority of intersections within the study area are unsignalized and only controlled by stop signs for minor approaches, the existing standards give priority to the delay experienced by the relatively low volumes entering Highway 1 or SR 92 over the higher volume of through traffic along Highway 1 or SR 92. In order to address long delays, signalization, roundabouts, or consolidation of access points to concentrate access to Highway 1 at specific locations would be required.

Recommended Alternative Transportation Performance Standards

To address the biases in the existing transportation performance standards and to provide a more complete coverage of all modes, a set of multi-modal standards were developed based on standards being used in the Bay Area or elsewhere in the US. New performance standards were identified for roadways, pedestrian facilities, bicycling facilities, transit facilities and services and parking facilities and each is described below.

Roadway Standards

- Delay Index – Defined as the ratio of peak period travel time on a segment to the free-flow travel time, the Delay Index was recommended as a replacement for the roadway segment LOS based on V/C ratio. For vehicle-only segments, a Delay Index of 2.0 was recommended, and for segments that support multi-modal travel, a Delay index of 3.0 was recommended.
- Intersection Level of Service – It was recommended that the intersection LOS standard be maintained for signalized intersections, but applied for unsignalized intersection only if the intersection has sufficient side-street traffic to meet a peak-hour traffic signal warrant.

Pedestrians

- Pedestrian Environmental Quality Index (PEQI) – Using an index developed by the City and County of San Francisco Department of Health as a measure of expected pedestrian

demand of volume on a segment, the standard for segments along Highway 1 with an INDEX Walking Demand Score[1] between 20 and 29 would be a PEQI score of 41 or higher. The standard for segments along Highway 1 or streets connecting Highway 1 with a beach facility with an INDEX Walking Demand Score of 30 or greater would be a PEQI score of 61 or higher. The PEQI takes into account the following aspects of pedestrian facilities:

  - Intersection Safety (presence of crosswalks, intersection lighting, refuge islands, etc.)
  - Traffic Volume (adjacent traffic volume, number of lanes, speed limit)
  - Street Design (continuity of walkways, width of walkways, curb cuts, etc.)
  - Land Use
  - Perceived Safety (pedestrian lighting, cleanliness, empty lots)

- Pedestrian Crossing Spacing – Safe pedestrian crossing locations no greater than a half mile apart in all areas with an INDEX Walking Demand Score of 20 or higher

Bicycle

- Bicycle Environmental Quality Index (BEQI) – Again using an index developed by the City and County of San Francisco Department of Health, the standard for segments along Highway 1 would be a minimum BEQI score of 61 or higher for bicycle travel. The BEQI takes into account the following aspects of bicycle facilities:
  - Intersection Safety (dashed bicycle lane, no turn on red, etc.)
  - Traffic Volume (adjacent traffic volume, number of lanes, speed limit, presence of parallel parking, etc.)
  - Street Design (striped area for bicycle traffic, width of bicycle lane, connectivity, curb cuts, etc.)
  - Safety/Other (street lighting, presence of bicycle lane or "share the roadway" signs)
  - Land Use (line of sight, bicycle parking, retail use)
- Bicycle Parking Occupancy – Bicycle parking occupancy at beach access lots or major trip generators along Highway 1 not average over 85% during peak weekday hours.

Transit

- Transit Loading Factor – standard for the transit capacity utilization of buses standing capacity within the study area not to exceed a two-hour average of 85% during the weekday commute peak period and the weekend recreational peak period.
- Stop Amenities – A bench be provided if a stop averages 25 or more boardings a day and a shelter if the stop averages 100 or more boardings per day.

[1] San Mateo County Comprehensive Bicycle and Pedestrian Plan, Appendix C: Figure C-3 includes scores for the study area

Parking

- Parking Occupancy – Parking occupancy at beach access lots not average over 85% during peak weekend hours.

REVISED HYBRID IMPROVEMENT PACKAGE

After review of the future transportation needs and deficiencies as determined by the recommended alternative multimodal transportation performance standards, the following set of transportation improvements were recommended by the project team:

- Roadway Improvements
  - Turn Lanes and Acceleration Lanes on Highway 1
    - Gray Whale Cove Turn and Acceleration Lanes (North of Montara)
    - Montara Lighthouse Median and Left Turn Bay (Montara)
  - Paved Shoulder and Curb (Montara, Moss Beach, El Granada, Half Moon Bay)
  - Installation of a Traffic Signal
    - Highway 1 and California Avenue (Moss Beach)
    - Highway 1 and Cypress Avenue (Moss Beach)
    - Highway 1 and Kehoe Avenue (Half Moon Bay)
    - Highway 1 and Grand Boulevard/Terrace Avenue (Half Moon Bay)
    - Highway 1 and Main Street (south end) (Half Moon Bay)
  - Installation of a Roundabout
    - SR-92 and SR-35 (east end) (East of Half Moon Bay)
  - Access Consolidation
    - Rocket Farms Access to Highway 1 (Half Moon Bay)
    - Terrace Avenue/Grand Boulevard Access to Highway 1 (Half Moon Bay)
  - Roadway Widening
    - Highway 1 at Ruisseau Francois Avenue (Half Moon Bay)
    - Widening and striping of approach on Spindrift Way at Highway 1 (Half Moon Bay)
    - Widening and striping of approach on Grandview Boulevard at Highway 1 (Half Moon Bay)
    - Highway 1 between Kelly Avenue and Main Street (south end) (Half Moon Bay)
    - Passing Lane/Climbing Lane on SR-92 (east of Half Moon Bay)
  - Traffic Calming
    - Main Street (Montara)
    - Carlos Street (Moss Beach)
  - Signage
    - Addition of stop signs where missing on stop-controlled side streets on Highway 1 (Montara, El Granada, Half Moon Bay)
    - "Trucks Keep Right" signage on SR 92 (east of Half Moon Bay)

- Pedestrian Facility Improvements
    - Coronado Street and Ave Alhambra walkway (El Granada)
    - Multi-use Trail Completion
        - Parallel Trail adjacent to Highway 1 for the entire study area
        - Coastal Trail throughout the entire study area
    - Striped pedestrian crossings of Highway 1 throughout the entire study area
    - Traffic signal upgrades to provide pedestrian detection and actuation (Half Moon Bay)
- Bicycle Facility Improvements
    - Highway 1 Class II Bicycle Lane throughout the entire study area
    - SR-92 Class II Bike Lanes (Half Moon Bay, east of Half Moon Bay)
    - Capistrano Road Class II Bike Lanes (El Granada)
    - Airport Street Class III Bike Routes (Moss Beach)
- Transit Improvements
    - Increased Weekend Samtrans service (annual operating)
    - Bus Stop Amenities (Half Moon Bay)
- Parking Improvements
    - Park and Ride Shuttle and Event service
    - Pricing strategies to maintain an 85% lot occupancy
    - Wayfinding signage
    - Montara State Beach Parking Lot Improvements
    - Upper Gray Whale Cove Parking Lot Improvements
    - Carlos Street On-Street Parking
    - El Granada Diagonal Parking

The project team also considered a number of transportation land use policies that would help to mitigate the impact of new development. Three recommended polies were as follows:

- Lot Merger Program – Establishment of a process for merging contiguous substandard parcels under the same ownership. This would apply as long as the area of at least one lot is less than 4,500 square feet (R-1 or R-3 residential districts), or less than 5,000 square feet (RM-CZ commercial districts). The program would be voluntary with incentives for 21 months and then become mandatory with a hearing and appeal process.
- Lot Retirement Program – The Coastal Commission has recently required lot retirement at a one-to-one ratio (1:1) as a condition of approval for some proposed residential subdivisions in Half Moon Bay to mitigate impacts to the transportation system and public access to the coast. There is no current program in place for the City of Half Moon Bay or San Mateo County however the Coastal Commission recommended such a program in the Midcoast LCP Update.

- Development Impact Fee Program – Such a program would collect fees for new residential and non-residential development on a per-housing-unit basis for residential and per-square-foot basis for non-residential development. The rates would be based on a specified list of projects needed to mitigate the impacts of the growth, the total estimated capital cost of those projects and the amount of new development expected. An assessment of the portion of total project need attributable to growth will determine what a legally defensible rate structure might be for a Transportation Impact Mitigation Fee Program.

EVALUATION OF THE RECOMMENDED ALTERNATIVE

The proposed set of transportation improvements was created to address deficiencies in the Buildout condition based on the standards proposed for the Midcoast LCP and general safety and circulation concerns. While the City of Half Moon Bay is not bound by the standards proposed for the Midcoast LCP, the set of proposed standards were used for evaluation across the entire study area for consistency. The proposed set of transportation improvements recommended by the project team address all of the deficiencies with a few exceptions described in the following sections.

Roadway and Intersection Standards and Deficiencies

The proposed intersection improvements and widening projects address all of the identified intersection deficiencies with the exception of the signalized intersection of SR 92 and SR 35 (east end). The intersection is forecasted to operate at a level of service F during weekday PM and weekend midday peak hours, and while the conversion of the intersection reduces the delay experienced by vehicles under all time periods, it does not reduce it to a level that would no longer be considered deficient under the current LOS standards. No other feasible improvements were identified for this location to address the deficiency.

The segment of Highway 1 between the north border of Half Moon Bay and SR 92 is considered deficient based on the Delay Index standard proposed for the Midcoast LCP with no feasible improvement identified to address the deficiency; however, the City of Half Moon Bay is not bound by the standards or improvements proposed by this study. The City of Half Moon Bay is currently looking into signal coordination to address the congestion caused by the signals north of SR 92.

Bicycle and Pedestrian Standards and Deficiencies

The proposed bicycle facilities and bicycle/pedestrian based intersection improvements result in all of the environmental quality standards being met for the study area.

The proposed improvements reduce the maximum distance between safe pedestrian crossing locations to the proposed standard of a maximum of ½ mile between pedestrian crossings in areas with the potential for pedestrian activity, with the exception of the segment between Main

Street (South) and Redondo Beach Road which has a spacing of 0.63 miles. This segment is considered deficient based on the crossing density standard proposed for the Midcoast LCP; however, the City of Half Moon Bay is not bound by the standards or improvements proposed by this study. Based on the land use along this segment and discussions with City of Half Moon Bay staff, it was determined that this location did have significant potential for pedestrian travel to warrant an additional pedestrian crossing.

Transit Standards and Deficiencies

The proposed transit improvements result in all of transit standards being met for the study area.

Parking Standards and Deficiencies

The proposed parking improvements result in all of transit standards being met for the study area.

INTRODUCTION

BACKGROUND

In 2012, the California Coastal Commission certified a package of amendments known as the Midcoast Update to San Mateo County's Local Coastal Program (LCP). Policy 2.53 of the Updated Midcoast LCP requires San Mateo County to prepare a Comprehensive Transportation Management Plan (CTMP), and ***Connect the Coastside*** is the project that will produce the CTMP. The CTMP requirement of the Midcoast Local Coastal Program is designed to respond to the potential impact that growth in the region will have on the Midcoast transportation system, which is viewed by many as insufficient to support the current and future needs of the community and visitors. The impact was identified through an evaluation of the transportation facilities within the study area under existing and forecasted buildout level of development conditions. The Midcoast LCP included transportation performance standards that were used to evaluate the impacts of growth on the whole study area and identify existing and future deficiencies caused or exacerbated by that growth. While the City of Half Moon Bay is not bound by the Midcoast LCP, the analysis included identification of deficiencies and potential improvements for the entire study area in order to serve as an advisory document for the City of Half Moon Bay.

In April 2015, the *Evaluation of Transportation Alternatives to Address Buildout Deficiencies* Report was prepared to present several alternatives that were developed to address some or all of the deficiencies identified in the *Buildout Analysis and Traffic Projections Report* for a full "buildout" of development potential under current zoning and other land use regulation. The improvements identified in each alternative were evaluated based on how well they could address the identified deficiencies as well as on their feasibility and their cost-effectiveness. The result of that report was a hybrid alternative that combined improvements from all three alternatives to create a comprehensive, cost-effective solution to address Buildout deficiencies.

PROPOSED NEW TRANSPORTATION PERFORMANCE STANDARDS FOR THE MIDCOAST LCP

Based on input from stakeholders, including the Midcoast Community Council, the City of Half Moon Bay, and residents throughout the study area; the hybrid alternative was revised to address a new set of multimodal transportation performance standards proposed for the Midcoast LCP in a memorandum[2] dated September 23, 2015. The new performance standards proposed for the Midcoast LCP include the following changes:

[2] Recommendation of Alternative Transportation Standards for the San Mateo County Comprehensive Transportation Management Plan, September 23, 2015

Roadway Standards

- Replace the roadway link level of service standard based on the ratio between volume and capacity with a Delay Index – Defined as the ratio of peak period travel time on a segment to the free-flow travel time
- Apply the existing intersection LOS standard for all signalized intersections, but only for unsignalized intersection if the intersection has sufficient side-street traffic to meet a peak-hour traffic signal warrant.

Pedestrians

- Introduce a Pedestrian Environmental Quality Index (PEQI) standard based on an index developed by the City and County of San Francisco Department of Health. The INDEX Walking Demand Score is a measure of expected pedestrian demand of volume on a segment based on land use. The standard for segments along Highway 1 with an INDEX Walking Demand Score between 20 and 29 would be a PEQI score of 41 or higher. The standard for segments along Highway 1 or streets connecting Highway 1 with a beach facility with an INDEX Walking Demand Score of 30 or greater would be a PEQI score of 41 or higher. The PEQI takes into account the following aspects of pedestrian facilities:
    - Intersection Safety (presence of crosswalks, intersection lighting, refuge islands, etc…)
    - Traffic Volume (adjacent traffic volume, number of lanes, speed limit)
    - Street Design (continuity of walkways, width of walkways, curb cuts, etc…)
    - Land Use
    - Perceived Safety (pedestrian lighting, cleanliness, empty lots)
- Introduce a pedestrian crossing density standard such that safe pedestrian crossing locations should be no greater than a half mile apart in all areas with an INDEX Walking Demand Score of 20 or higher

Bicycle

- Introduce a Bicycle Environmental Quality Index (BEQI) standard based on an index developed by the City and County of San Francisco Department of Health. The standard for segments along Highway 1 would be a minimum BEQI score of 61 or higher for bicycle travel. The BEQI takes into account the following aspects of bicycle facilities:
    - Intersection Safety (dashed bicycle lane, no turn on red, etc…)
    - Traffic Volume (adjacent traffic volume, number of lanes, speed limit, presence of parallel parking, etc…)
    - Street Design (striped area for bicycle traffic, width of bicycle lane, connectivity, curb cuts, etc…)

  - Safety/Other (street lighting, presence of bicycle lane or "share the roadway" signs)
  - Land Use (line of sight, bicycle parking, retail use)
- Introduce a bicycle parking occupancy standard such that bicycle parking occupancy at beach access lots or major trip generators along Highway 1 should not average over 85% during peak weekday hours.

Transit

- Introduce a transit loading factor standard for the transit capacity utilization of buses standing capacity within the study area not to exceed a two-hour average of 85% during the weekday commute peak period and the weekend recreational peak period.
- Introduce a stop amenities standard such that at minimum a bench be provided if a stop averages 25 or more boardings a day and a shelter if the stop averages 100 or more boardings per day.

Parking

- Introduce a parking occupancy standard such that parking occupancy at beach access lots not average over 85% during peak weekday hours.

CONSTRAINED FORECAST OF DEVELOPMENT POTENTIAL RECOMMENDED FOR CONSIDERATION

An additional forecast of development potential was also developed for use in the evaluation of future needs and deficiencies (along with the Buildout forecast) referred to as the "Constrained Forecast of Development Potential." This new forecasts of development potential recognizes constraints besides zoning and existing policies that are likely to limit future development to a level below that of the Buildout condition previously analyzed. These constraints include application of the Midcoast LCP Policy 1.23 limiting new residential development to 40 units per year, and a market analysis prepared for the Half Moon Bay General Plan. The results of the Constrained Forecast of Development Potential compared to the Buildout forecast are as follows:

- 13 percent overall reduction in housing units with almost all of the reduction being in the unincorporated portion of the Midcoast
- 8 percent overall reduction in new commercial development with almost all of the reduction being in the city limits of Half Moon Bay.

The result of the constrained forecast on the transportation was a reduction in travel times along Highway 1; however the reduction was not significant enough to remove any identified deficiencies.

RECOMMENDED ALTERNATIVE LAND USE AND TRANSPORTATION ALTERNATIVE

This report presents the resulting recommended alternative and an evaluation of how the proposed improvements address deficiencies as determined by the new multimodal transportation performance measures proposed for the Midcoast LCP. The implications of the new Constrained Forecast of Development Potential for deficiencies and the need for improvements are also discussed. An environmental evaluation of the recommended alternative will be completed before the CTMP is finalized and recommended for approval. After the recommended alternative has been approved, a Comprehensive Transportation Management Plan (CTMP) will be prepared for adoption and implementation by the Board of Supervisors for the Midcoast communities of San Mateo County. The CTMP will also serve as a reference for the City of Half Moon Bay's own planning efforts.

SUMMARY OF DEFICIENCIES IDENTIFIED FOR FUTURE CONDITIONS

The *Buildout Analysis and Traffic Projections Report* provided a detailed analysis of existing transportation issues and deficiencies on the Midcoast and in Half Moon Bay. Deficiencies were identified for the Midcoast, Half Moon Bay and State Route (SR) 92 east of Half Moon Bay by comparing existing conditions to the policies and level of service (LOS) standards defined in the current Local Coastal Program[3] (LCP) and the Half Moon Bay General Plan Circulation Element Update[4]. The deficiencies identified for each area for a full "buildout" of development potential under current zoning and other land use regulation were documented in the Task 2 *Buildout Analysis and Traffic Projections Report* and summarized separately below. This report identifies deficiencies under Buildout using the new multimodal transportation performance measures. It also describes how the use of the new Constrained Forecast of Development Potential would affect the assessment of deficiencies. The results in the evaluation section are presented separately for the unincorporated Midcoast, the unincorporated area along SR 92 east of Half Moon Bay, and the area encompassed by the City of Half Moon Bay..

MIDCOAST

Deficiencies under the Buildout Condition

Intersection Level of Service

Under Buildout conditions, the projected increase in traffic along Highway 1 within the Midcoast communities will result in the majority of unsignalized intersections producing high delay for vehicles trying to enter Highway 1. The majority of unsignalized intersections connecting residential neighborhoods with Highway 1 within the Midcoast will operate worse than the existing intersection LOS standard defined in the Midcoast LCP. If the proposed intersection level of service standard is applied, only the following intersections would not meet the standard:

- Highway 1 and California Avenue
- Highway 1 and Cypress Avenue

Roadway Segment Level of Service

Under Buildout conditions, the entirety of Highway 1 within the Midcoast would not meet the existing roadway segment LOS standard as defined in the current Midcoast LCP, based on the

[3] County of San Mateo Local Coastal Program Policies, 2013, County of San Mateo, Planning and Building Department.
[4] Half Moon Bay Circulation Element, 2013, City of Half Moon Bay.

volume of traffic the roadway is designed to handle. The proposed standard for roadway segments would replace the existing standard with a Delay Index.

Table 1 provides the study segments and the forecasted Delay Index under Buildout Conditions. Using the proposed new standard for roadway segments, which is defined as any segment with a Delay Index of greater than 2 during a peak period, Highway 1 along the Midcoast between 1st Street and Mirada Road would not meet the standards. **Figure 1** shows the segments along Highway 1 where the Delay Index is deficient during at least one peak period.

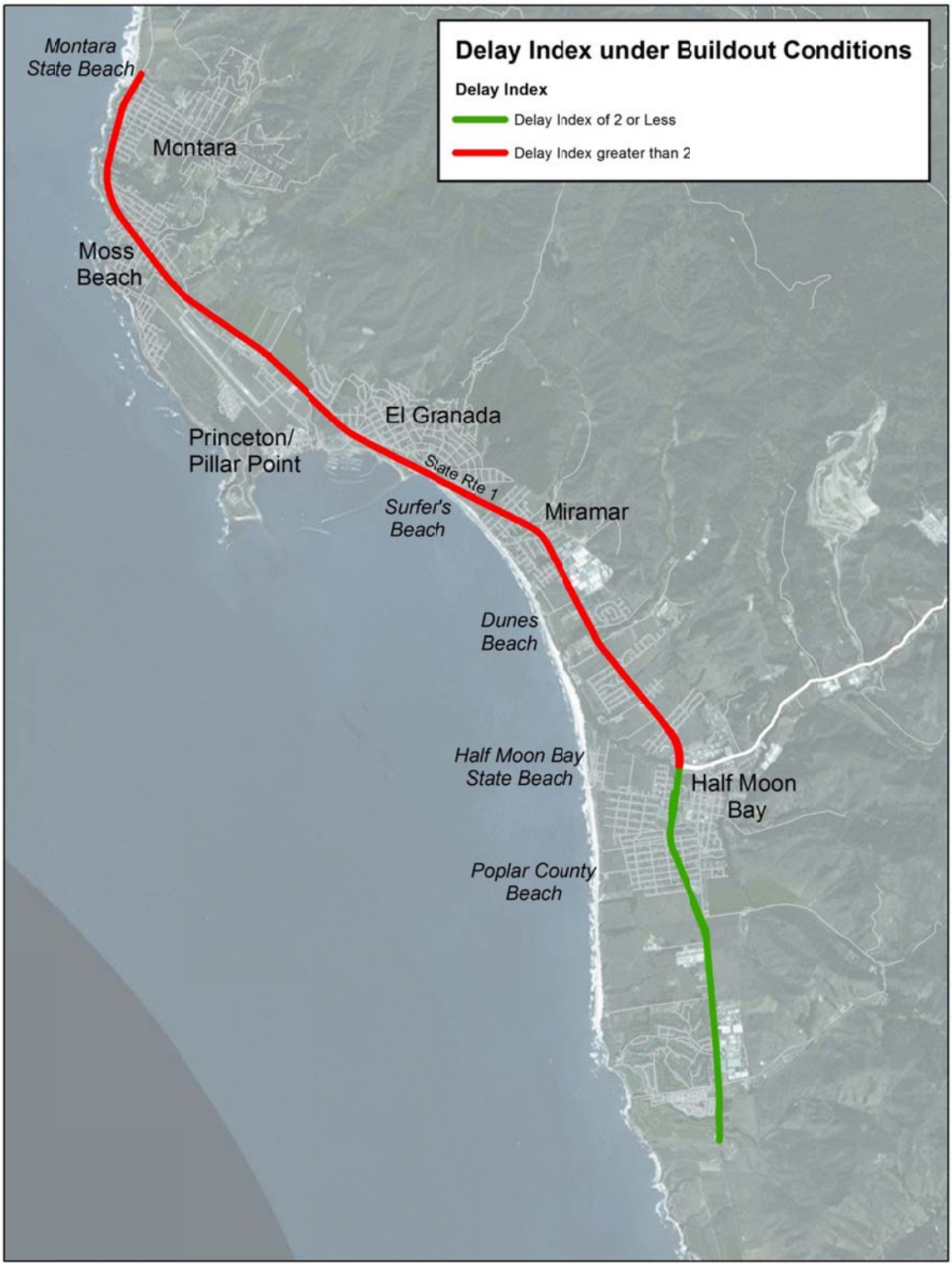

Figure 1 - Delay Index along Highway 1

Table 1 - Delay Index under Buildout Conditions

Segment	Speed Limit	Weekday AM Peak Delay Index	Weekday PM Peak Delay Index	Weekend Midday Peak Delay Index
1st Street to Mirada Road	45-55	**2.18**	**2.32**	1.95
Mirada Road to SR 92	45	**9.77**	**8.19**	**3.19**
SR 92 to Miramontes Point Road	40-50	1.02	1.03	1.95
Combined Highway 1 Segment		**3.35**	**3.13**	2.19

BOLD – Does not meet Delay Index Standard of 2.0 for a vehicle-only segment

Pedestrian Crossings of Highway 1

The layout of neighborhoods in many of the Midcoast communities inhibits mobility and often requires using Highway 1 to travel between nearby destinations. Additionally, beach access for pedestrians crossing Highway 1 is limited by infrequent crossing opportunities, heavy traffic volumes, and high vehicle speeds. Where designated crossings are located, there are often no additional pedestrian or bicycle friendly improvements such as countdown timers or bicycle detection to help pedestrians and cyclists safely cross Highway 1.

The proposed new standards set by the alternative standards document require having safe pedestrian crossing locations no greater than a quarter mile apart in all areas with a Pedestrian Demand Index of 20 or higher. **Figure 2** shows the existing and programmed pedestrian crossing locations. Within the Midcoast area, the majority of Highway 1 does not have existing crossings or has them spaced longer than a quarter of a mile. Specifically, the following segments are deficient.

1. Between 1th Street in Montara and Etheldore Street (South) in Moss Beach
2. Between Capistrano Road (North) in El Granada and the north border of Half Moon Bay

Pedestrian Environmental Quality

The proposed new standard also requires that all intersections of Highway 1 with a Pedestrian Demand Score of 30 or higher have crossing infrastructure that supports a PEQI score of 61 or higher. The signalized intersections along Highway 1 at Capistrano Road (South) and at Coronado Street, which have the area's only crosswalk, do not meet the PEQI intersection standards.

Additionally, none of the Highway 1 roadway segments within the Midcoast area meet the new PEQI Standard, with the standard defined as all segments with a Pedestrian Demand Score of 20 or higher requiring a PEQI score of 41 or higher and all segments with a Pedestrian Demand Score of 30 or higher requiring a PEQI score of 61 or higher. All Highway 1 roadway segments within Half Moon Bay must meet this requirement on at least one side of the street. No Highway 1 segments meet this requirement on both sides of the street. Highway 1 from Capistrano Road to Coronado

Street does have a pedestrian path on the west side of street and would meet the required PEQI score, but the other side is void of any pedestrian facility.

Bicycle Environmental Quality

Under the proposed standards, it is required that there are Class 2 bike lanes on both sides of Highway 1 and a Class 1 bike path stretching the entire length of the corridor. The entire length of Highway 1 within the Midcoast study area is deficient of Class 2 bike lanes and of the required Class 1 bike path.

Transit Service and Bus Stop Quality

Transit service operates at low frequencies and limited coverage. Additionally, existing bus stops lack amenities for safety and visibility and do not provide any shelter for users waiting for buses.

Parking Availability

There is generally sufficient parking supply during the weekdays; however during weekends and special events demand for parking can exceed the available capacity. The Martini Creek and Montara State Beach lots north of Montara and the Fitzgerald Marine Reserve lot in Moss Beach were observed to be at or above capacity during some peak periods. It was also noted that public parking locations are not always easily identified or signed.

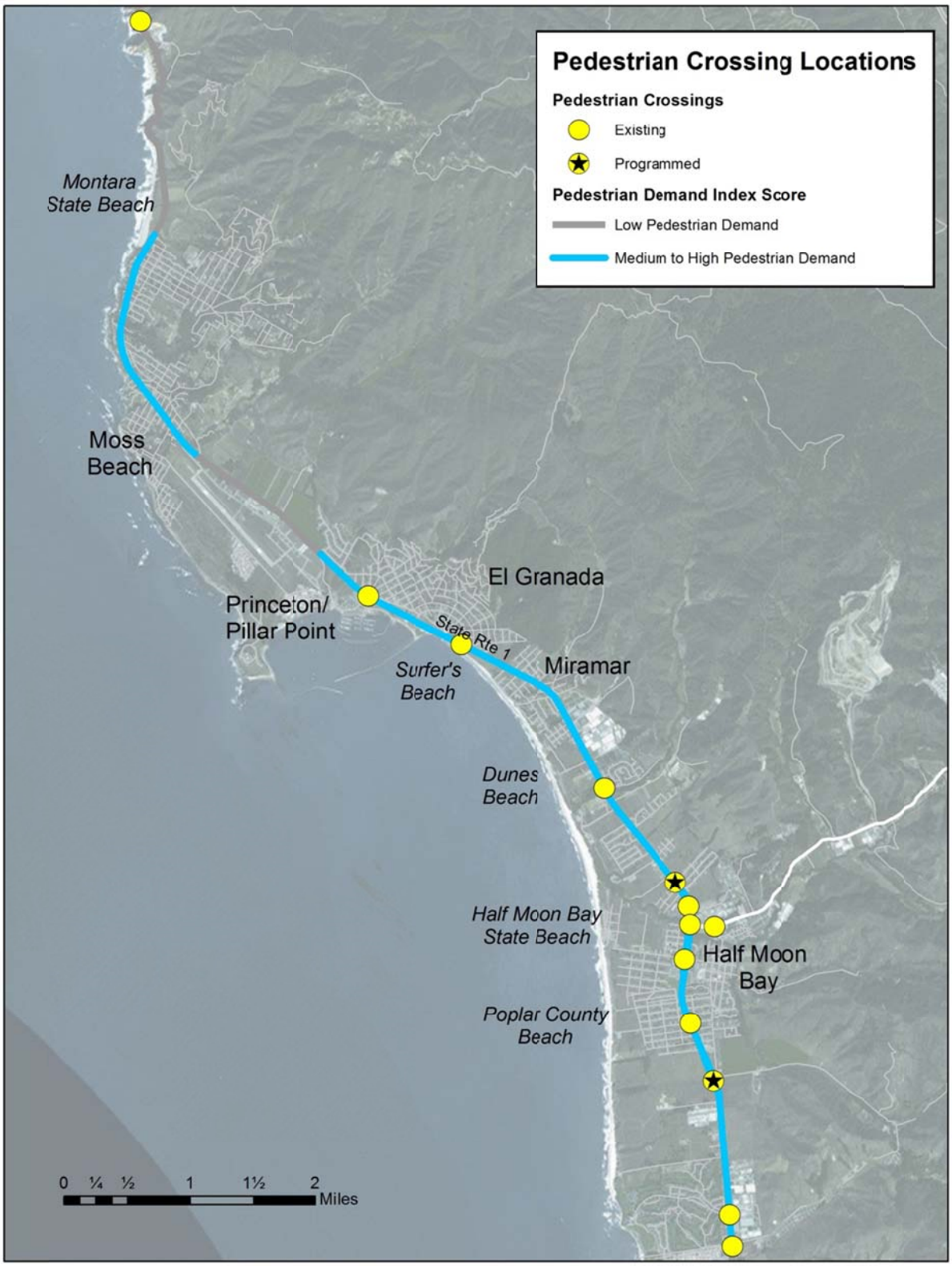

Figure 2 – Existing and Programmed Pedestrian Crossing Locations

Midcoast Deficiencies under the Constrained Forecast of Development Potential

While the majority of the deficiencies identified in the Buildout Condition do not change with the Constrained Development Potential forecast, there is a direct impact on forecasted travel times along Highway 1. **Table 2** provides the forecasted Delay Index under the Constrained Development Potential forecast as compared to Buildout Conditions. While there is no change to which segments meet the standard, the Delay Index does decrease for the segments that had the highest congestion under Buildout Conditions.

Table 2 – Comparison of Delay Index under the Constrained Forecast

Segment	Speed Limit (mph)	Weekday AM Peak Delay Index	Weekday PM Peak Delay Index	Weekend Midday Peak Delay Index
1st Street to Mirada Road	45-55	**2.03** (**2.18**)	1.69 (**2.32**)	1.95 (1.95)
Mirada Road to SR 92	45	**7.83** (**9.77**)	**5.93 (8.19)**	**3.16 (3.19)**
SR 92 to Miramontes Point Road	40-50	1.10 (1.02)	1.04 (1.03)	1.95 (1.95)
Combined Highway 1 Segment		**2.91 (3.35)**	**2.34 (3.13)**	**2.18 (2.19)**

Notes:
[1]**BOLD** – Does not meet Standard, (Buildout)

UNINCORPORATED SR 92 EAST OF HALF MOON BAY

Deficiencies under the Buildout Condition

Intersection and Roadway Segment LOS

Based on the increase in traffic along SR 92 under projected Buildout conditions, all study intersections along SR 92 will not meet the intersection LOS standards under projected Buildout conditions. The two-lane portion of SR 92 east of Main Street will not meet the roadway segment LOS standard under projected Buildout or constrained forecast conditions.

HALF MOON BAY

Deficiencies under the Buildout Condition

Based on the increase in traffic along Highway 1 under projected Buildout conditions, the majority of the unsignalized intersections as well as the signalized intersections of Ruisseau Francais Avenue and Poplar Street within the City of Half Moon Bay are expected to experience high delay and to operate worse than the intersection LOS standard defined in the Half Moon Bay Circulation Element. Highway 1 within the City of Half Moon Bay has several sections with four lanes that will operate within the roadway segment LOS standard. However, two-lane sections between Mirada Road and Grandview Boulevard, between Kelly Avenue and Seymour Street, and between Redondo Beach Road and Fairway Drive, will not meet the roadway segment LOS standard as defined in the Midcoast LCP, based on the volume of traffic the roadway is designed to handle.

The standards proposed for the Midcoast LCP as described in the alternative standards document do not apply to Half Moon Bay; however they are used in this study to provide a direct comparison to the Midcoast. The evaluation of deficiencies and proposed improvements are meant to be advisory. The proposed roadway segment standard define that any car-only segment with a Delay Index Score of greater than 2 or multimodal segment with a Delay Index Score of greater than 3 during a peak period to be deficient. Even with the portions of Highway 1 that include a parallel Class 1 multi-use path (i.e. Naomi Partridge Trail), the segment of Highway 1 north of SR 92 within Half Moon Bay would not meet these standards during any of the time periods. **Figure 1** shows the segments along Highway 1 where the Delay Index is deficient.

A lack of consistent pedestrian and bicycle trails and crossings results in decreased mobility and accessibility within and between communities within the City of Half Moon Bay. Additionally, pedestrian access along the Highway 1 corridor is limited by infrequent crossing opportunities, heavy traffic volumes, high vehicle speeds, and unimproved pedestrian facilities. There are no stop controls or treatments at uncontrolled locations to help pedestrians and cyclists safely cross the highways.

The standards proposed for the Midcoast LCP as described in the alternative standards document require having safe pedestrian crossing locations no greater than a half mile apart in all areas with a Pedestrian Demand Index of 20 or higher. **Figure 2** shows the existing pedestrian crossing locations. While Half Moon Bay provides many more crossing locations than the Midcoast, only the segments along Highway 1 between Main Street (North) and Poplar Street and between Fairway Drive and Miramontes Point Road have pedestrian crossings spaced less than a half mile apart. The programmed signalization of the intersections at Grand Boulevard/Terrace Avenue and Main Street (South) extend the coverage, however there are still large portions of Half Moon Bay without the density of pedestrian crossings identified in the proposed standard for the Midcoast LCP.

The new standard also requires that all intersections of Highway 1 within Half Moon Bay with a Pedestrian Demand Score of 30 or higher have crossing infrastructure that supports a PEQI score of 61 or higher. None of the intersections in Half Moon Bay would meet the PEQI intersection standards proposed for the Midcoast LCP.

The pedestrian environmental quality standards proposed for the Midcoast LCP includes all segments with a Pedestrian Demand Score of 20 or higher requiring a PEQI score of 41 or higher and all segments with a Pedestrian Demand Score of 30 or higher requiring a PEQI score of 61 or higher. Under existing conditions, the east side of Highway 1 from Roosevelt Boulevard to Young Avenue, the west side of Highway 1 from Young Avenue SR-92, and the west side of Highway 1 from Kelly Avenue to the southern intersection of Main St currently meet the standard for pedestrian environmental quality proposed for the Midcoast LCP. None of the Highway 1 segments meet this requirement on both sides of the street.

To meet the standard for bicycle environmental quality proposed for the Midcoast LCP would require Class 2 bike lanes on both sides of Highway 1 and a Class 1 bike path stretching the entire length of the corridor. The entire length of Highway 1 within the study area is lacking Class 2 bike lanes. The corridor is lacking a Class 1 bike path between SR-92 and Kelly Avenue and from the southern intersection with Main Street to the southern border of Half Moon Bay.

Transit service operates at low frequencies and limited coverage. Additionally, existing bus stops lack amenities and shelter for users waiting for buses.

The majority of beach access parking lots were observed to operate at close to 100% capacity during weekend midday recreational peak periods. The 85% parking occupancy standard for beach access parking lots proposed for the Midcoast LCP would not be met for any of these lots.

Deficiencies under the Constrained Forecast of Development Potential

While none of the deficiencies identified in the Buildout Condition change with the Constrained Development Potential forecast, the reduction in housing units and commercial development will affect forecasted travel times along Highway 1. **Table 2** provides the forecasted Delay Index under the Constrained Development Potential forecast. While the northern portion of Half Moon Bay still does not meet the standard, the Delay Index does decrease from Buildout Conditions.

IDENTIFICATION OF RECOMMENDED ALTERNATIVE

Improvements included in the recommended alternative were selected from a list of potential improvements compiled from TAC and community-suggested improvements, proposed projects identified in other recent planning efforts, as well as improvements suggested by the DKS team to address identified deficiencies. The recommended alternative also reflects significant public input received on the previous Hybrid alternative at a workshop on April 15, 2015 and subsequently on the *Connect the Coastside* website. To address the needs for the Buildout projections, the projects are considered for implementation over the next 25 years to respond to planned growth in the study area.

Improvements are defined by the following categories:

- Roadway and intersections/access points
- Bicycle and Pedestrian facilities
- Transit and
- Parking

Projects in the recommended alternative that were also recommended in previous planning efforts by the County or City of Half Moon Bay are bolded. New projects identified and proposed by this study are not bolded. Roadway and intersection Improvements are presented by subarea, but other improvements are presented for the study area as a whole.

ROADWAY AND INTERSECTION IMPROVEMENTS

Midcoast

Within the Midcoast area, the only intersections that are operating worse than the LOS standard and have enough side street volume to meet a signal warrant are Highway 1 and California Avenue, which acts as an access point for residential areas on either side of Highway 1, and Highway 1 and Cypress Avenue, which is the main access point for Airport Road. Both of these intersections are located in Moss Beach.

Highway 1 and California Avenue

Given the complicated nature of the intersection with Weinke Way acting as a fifth leg and Carlos Street nearby, a roundabout would not work at this location without significant study and a large footprint. Signalization of the location would improve the LOS to an acceptable level. To signalize the intersection, access to Highway 1 from Weinke Way would have to be restricted and an alternative route to Highway 1 identified. To minimize the delay to vehicles traveling along Highway 1, the signal should be actuated to only trigger with left-turn demand.

Highway 1 and Cypress Avenue

Analysis of a roundabout at this location did not show any improvement to LOS. Signalization of the location will improve the LOS to an acceptable level. To minimize the delay to vehicles travelling along Highway 1, the signal should be actuated to only trigger with left-turn demand. A northbound acceleration lane is currently included in Phase 1 of the Midcoast crossings to reduce delay for left-turning vehicles on the eastbound approach of Cypress Avenue; however that would not fully address the deficiency expected at buildout based on the forecasted volume.

Signal coordination

Proposed signals at the cross streets of California and Cypress should be coordinated using GPS clocks to guarantee a minimal delay to traffic along Highway 1.

Safety and Circulation Projects

In addition to the roadway and intersection projects identified to address deficiencies as defined by performance standards, the following proposed projects have been identified to improve safety or circulation along the Midcoast area:

- **Addition of a left-turn bay and an acceleration lane at Gray Whale Cove parking lot[4]**
- **Addition of a median with northbound left-turn bay[5] at the Lighthouse in Montara (16th Street)**
- Signage to restrict left-turning movements at the following intersections in the Midcoast and Half Moon Bay, which operate below the LOS Standard but do not meet a signal warrant:
    - Highway 1 & 2nd Street (Montara)
    - Highway 1 & 9th Street (Montara)
    - Highway 1 & Carlos Street (Moss Beach)
- The implementation of traffic calming improvements such as speed display units and speed humps along Main Street in Montara and along Carlos Street in Moss Beach
- Stop signs added to the following unsigned intersections along Highway 1:
    - Highway 1 & 1st Street (Montara)
    - Highway 1 & Seacliff Court (Montara)
    - Highway 1 & 7th Street (Montara)
    - Highway 1 & 11th Street (Montara)
    - Highway 1 & 13th Street (Montara)
    - Highway 1 & 16th Street (Montara)

[5] As proposed in the highway 1 Safety and Mobility Study: Phase 2, November 2011

  - Highway 1 & Furtado Lane (El Granada)

- Defined curb and paved shoulder for the following segments along Highway 1 will provide a consistent cross section for vehicle and pedestrian safety based on areas of highest pedestrian and bicycle activity along Highway 1:
  - Montara Segment – 1st Street and 14th Street
  - Moss Beach Segment – Carlos Street to Etheldore Street (South)
  - El Granada Segment – Coral Reef Avenue to Medio Road

Unincorporated SR 92 East of Half Moon Bay

Within the unincorporated portion of SR 92 east of Half Moon Bay, the intersection if SR 92 and SR 35 (east) operates worse than the existing Midcoast LCP LOS standard and has enough side street volume to meet a signal warrant.

SR 92 and SR 35

The intersection of SR 92 and SR 35 has been identified as an intersection with a sufficient volume and sufficient area to benefit from the installation of a double lane roundabout.

Safety and Circulation Projects

In addition to the roadway and intersection projects identified to address deficiencies as defined by performance standards, the following proposed projects have been identified to improve safety or circulation along SR 92 east of Half Moon Bay:

- Passing/Climbing lanes on the eastbound portion of SR-92 between the Landfill Road and Pilarcitos Quarry Road to allow cars to pass the high volume of trucks on this roadway segment as well as provide a passing lane to go around right-turning cars.
- Left-turn lanes at the following major businesses along SR 92 in Half Moon Bay:
  - Berta's Farm
  - Lemos Farm
  - Half Moon Bay Nursery
- Additional "Trucks use right lane" signs along the two-lane eastbound portion of SR-92

Half Moon Bay

Within the City of Half Moon Bay, the following intersections are operating worse than the existing Midcoast LCP LOS standard and have enough side street volume to meet a signal warrant:

- Highway 1 and Spindrift Way
- Highway 1 and Kehoe Avenue
- Highway 1 and Grandview Boulevard

- **Highway 1 and Terrace Avenue[6] (Grand Boulevard repositioned to align with Terrrace Avenue)**
- Highway 1 and Filbert Street
- Highway 1 and Seymour Street
- **Highway 1 and Main Street (South)[5]**

Additionally, the signalized intersections of Ruisseau Francais Avenue and Poplar Street operate at LOS F during the midday weekend peak. The City of Half Moon Bay has already begun the planning and design process to combine and signalize the intersections of Highway 1 at Terrace Avenue and Grand Avenue as well as signalize the intersection of Highway 1 and Main Street (South). In addition, the City of Half Moon Bay is looking into the effect of signal coordination on congestion in downtown Half Moon Bay.

Highway 1 and Ruisseau Francais Avenue

The signalization of Highway 1 and Ruisseau Francais Avenue resulted in increased delays to traffic along Highway 1, especially during the weekend midday peak. The widening of the northbound and southbound approach to allow for two through lanes in each direction would improve the LOS enough to address the deficiency. The four lane section should be long enough to allow the vehicles to merge back to one lane safely and without affecting the capacity of the intersection.

Highway 1 and Spindrift Way

While the intersection of Highway 1 and Spindrift Way meets the signal warrant, the majority of turning movements at these locations are right turns and the roadway striping already provides an acceleration lane for left-turning vehicles. The addition of striping and a slight widening of the approach at Spindrift Way would allow for separation of right- and left-turning vehicles so that the warrant would no longer be met. The existing acceleration lane would continue to provide a safe refuge for vehicles turning left onto Highway 1.

Highway 1 and Kehoe Avenue

Signalization of the intersection of Highway 1 and Kehoe Avenue would reduce the average delay experienced at the intersection to LOS A provided a two lane southbound approach to the intersection along with the planned two lane northbound approach already programmed. Similar to the proposed modifications at the intersection of Highway 1 and Ruisseau Francois Avenue, the two lane southbound approach should be long enough to accommodate any queuing caused by the intersection.

Highway 1 and Grandview Boulevard

While the intersection of Highway 1 and Grandview Boulevard meets the signal warrant, the majority of turning movements at these locations are right turns and the roadway striping already provides an acceleration lane for left-turning vehicles. The addition of striping and a slight widening of the approach at Grandview Boulevard would allow for separation of right- and left-turning vehicles so that the warrant would no longer be met. The existing acceleration lane would continue to provide a safe refuge for vehicles turning left onto Highway 1.

Highway 1 and Filbert Street

[6] Currently programmed by the City of Half Moon Bay and under Caltrans review

The intersection of Highway 1 and Filbert Avenue has been identified as an intersection with enough volume from both the west and east approaches on Filbert Street to meets the signal warrant. Signage to allow only right-turning movements would encourage drivers on Filbert Street to make a short diversion to the signal at Poplar Street in order to turn left on or cross Highway 1. The remaining right-turning volume would not meet a signal warrant.

Highway 1 and Seymour Street

The intersection of Highway 1 and Seymour Street has been identified as an intersection with enough volume from the east approach on Seymour Street to meet the signal warrant. Signage to allow only right-turning movements would encourage drivers on Seymour Street to make a short diversion to the either the signal at Poplar Street or proposed signal at Main Street (South) in order to turn left on or cross Highway 1. The remaining right-turning volume would not meet a signal warrant.

Highway 1 and Poplar Street

The signalization of Highway 1 and Poplar Street resulted in increased delays to traffic along Highway 1, especially during the weekend midday peak. The widening of the northbound and southbound approach to allow for two through lanes in each direction would improve the LOS enough to address the deficiency. Based on the length of road needed to allow the vehicles to merge back to one lane safely and without affecting the capacity of the intersection, the recommendation is to provide two through lanes in each direction for the entire length of Highway 1 between Kelly Avenue and Main Street (South).

Safety and Circulation Projects

In addition to the roadway and intersection projects identified to address deficiencies as defined by performance standards, the following proposed projects have been identified to improve safety or circulation in Half Moon Bay:

- Stop signs added to the unsigned intersections at Highway 1 & Young Avenue (East Side) (Half Moon Bay)
- Defined curb and paved shoulder along Highway 1 between Frenchman's Creek Road to Redondo Beach Road will provide a consistent cross section for vehicle and pedestrian safety based on areas of highest pedestrian and bicycle activity
- Consolidation of access to Highway 1 at the following locations:
    - Rocket Farms driveways between Mirada Road and Young Avenue
    - **Grand Avenue and Terrace Avenue** (Already included in Buildout analysis as a planned improvement by the City of Half Moon Bay)

BICYCLE AND PEDESTRIAN FACILITY IMPROVEMENTS

To provide a safer and more connected pedestrian and bicycle environment to the Midcoast area and Half Moon Bay the following measures are recommended. Proposed bicycle facilities

will be composed of Class I, Class II and Class III facilities. Pedestrian facilities will include off street paths, additional crossings, and intersection improvements. Both bicycle and pedestrian safety facilities will also be improved at intersections. While there was interest shown in reducing the speed limit, the recent Caltrans speed survey[7] shows no justification for a lowered speed limit.

Class 1 Multiuse Paths

Currently, a Class I multiuse path runs parallel to a few sections of Highway 1. It is recommended that this trail be extended without any gaps from 2nd St in Montara to Miramontes Point Rd at the southern end of Half Moon Bay. The proposed Class I "parallel trail" alignment would include the following segments to become continuous:

- 6.2 mile segment along Highway 1 between 2nd Street in Montara and the existing facility at the Pillar Point RV Park
- 1.1 mile segment along Highway 1 between Coronado Street and the existing bicycle facilities at Roosevelt Boulevard in Half Moon Bay
- 0.3 mile segment along Highway 1 between SR 92, where the current path turns adjacent to Oak Avenue Park to go under Highway 1 and cross Pilarcitos Creek to join up with SR 92, and Kelly Avenue
- 1.1 mile segment along Highway 1 between the existing bicycle facilities just south of Wavecrest Road and the southern bus stop just south of the Miramontes Point Road at the southern border of Half Moon Bay

Where driveway and cross streets cross the Class 1 path there should be adequate paint to alert drivers that they are entering a space designated for bicycles and pedestrians.

In addition to the Class I path, a Coastal Trail adjacent to the coastline should be extended along the entire study area. The proposed Coastal trail alignment is part of a proposed project separate from this plan and would include the following segments to become continuous:

- 1.82 mile segment along Highway 1 between the Devil's Slide Trail and 2nd Street in Montara
- Surfacing of an existing 1.69 mile dirt path along the coast in south Half Moon Bay.

These two separated paths will provide pedestrians and cyclist (commuters, tourists, and local users) with a safe separated direct connection to communities and locales along Highway 1.

Class II and Class III Bike Lanes

It is also recommended that a Class II bike lane be added to both sides of Highway 1 where the right-of-way and environmental analysis allows, potentially by slightly narrowing Highway 1 lanes in some locations where needed, based on the proposed bicycle environmental quality standard proposed for the Midcoast LCP. Currently, there is no Class II bike lane at any point along this segment of Highway 1. The proposed Class II bike lane would extend a distance of 12.3 miles from the southern border of Half Moon Bay (just south of Miramontes Point Rd, to the parking lot for North Peak Access Road, where the road cut makes any further road widening difficult. The purpose of the Class II bike lane is to separate commuting bicycle traffic

[7] Caltrans Engineering and Traffic Survey Report 4-SM-001-PM 34.60/37.12, December 10, 2014

from the recreational bicycle and pedestrian traffic that would use the parallel and coastal trail paths.

Future improvements should include the extension of the bike network to the north and south. These facilities will be part of the proposed North Coast Bikeway in the County's Comprehensive Bicycle and Pedestrian Plan (CBPP), connecting Daly City, Pacifica, and Half Moon Bay.

Additional Class II bike lanes are recommend along State Route 92 from Main Street in Half Moon Bay to SR-35[8], and Class III bicycle routes along Capistrano Road, which is currently being evaluated for Plan Princeton and was determined not to have room for Class II lanes.

Pedestrian Walkways

In addition to the bicycle improvements along roadway segments, unpaved pedestrian walkways are recommended along Highway 1 in Montara, Moss Beach, Miramar, and developed areas of Half Moon Bay that provide, at minimum, a six foot wide flat surface free of any impediments that could cause a hazard to pedestrians. (Hazards include any surface condition that could cause a pedestrian to trip or injure themselves.) These paths are needed on both sides of the highway and should be separated by a minimum of three feet from bicycle the edge of auto or bicycle travel lanes. This will provide much needed pedestrian access in the areas with the highest pedestrian demand.

Pedestrian Crossings

The lack of striped crossings throughout most of the Midcoast leads to pedestrians crossing Highway 1 at uncontrolled locations without any safety precautions. In order to also address the wishes of the community, the desired maximum distance between pedestrian crossings in areas with potential pedestrian demand would be increased to 0.5 miles. Striped pedestrian crossings with beacons to alert drivers along undeveloped portions of Highway 1 are proposed at the following locations:

- **Gray Whale Cove**
- Montara State Beach
- HMB Airport
- Quarry Road (along SR 92)
- Pilarcitos Creek Road (along SR 92)
- SR 35 (along SR 92)

Striped pedestrian crossings with beacons (except where noted) to alert drivers along developed portions of Highway 1 with potential for regular pedestrian demand are proposed at the following locations:

- **2nd Street (with pedestrian refuge south of second street and no flashing beacon)**
- **7th Street**

[8] There is discussion of a possible Class I path along this section, however it deserves its own study outside of this plan due to its cost and scope

- **Moss Beach Lighthouse (16th Street)**
- North Capistrano Road
- Surfer's Beach Parking area, near Pillar Point RV Park
- Between Magellan Avenue and Medio Avenue
- **Mirada Road**
- Purisima Way
- Redondo Beach Road

Striped pedestrian crossings are proposed as part of the proposed installation of signalized intersections and roundabouts at the following locations:

- **California Street**
- **Cypress Avenue**
- Kehoe Avenue
- **Terrace Avenue/Grand Boulevard**
- **Main Street (South)**

Traffic Signal Pedestrian Improvements

Many signalized intersections within the study area are not pedestrian friendly and should implement the following upgrades:

- Pedestrian count-down indicators on all signalized crosswalks
- Timing adjustments to be consistent with current MUTCD requirements assuming 3.5 feet per second as the walking speed of pedestrians
- Bicycle signal detection
- Pedestrian refuges on wide road crossings

Figure 3 - Existing and Future Coastal Trail and Parallel Trail Facilities

TRANSIT IMPROVEMENTS

The following transit projects are suggested to provide a safer and more connected environment to the Midcoast area and Half Moon Bay:

- More frequent weekend service for the existing SamTrans fixed routes 294 and 17 serving the study area.
- Implementation of the Coastside Beach Shuttle to reduce the parking load at beach lots with additional buses during special events.
- School bus service for Cabrillo Unified School District including a facility for storing the vehicles and maintenance.

The following transit projects are suggested to address transit deficiencies:

- Installation of benches at the following bus stop locations:
  - Highway 1 & SR-92 (average of 16 daily boardings)
  - Strawflower Shopping Center (average of 29 daily boardings)
  - Kelly Avenue & Church Street (average of 24 daily boardings)
  - Main Street & Lewis Foster Drive (average of 21 daily boardings)

PARKING IMPROVEMENTS

The following transit projects are suggested to address transit deficiencies:

- Formalized parallel parking for Montara State Beach, with a physical separation from Highway 1
- Diagonal parking for El Granada separated from Highway 1 (this is part of a proposed Highway 1 realignment, however it is suggested that given the parking need, that it be constructed independent of the approval of the larger project in El Granada)
- Implementation of the Coastside Beach Shuttle to reduce the parking load at beach lots, including the following:
  - Roosevelt Beach
  - Half Moon Bay State Beach parking lot at Kelly Avenue
- Implementation of pricing strategies to bring the deficient lots to desirable occupancy

The following parking projects are suggested to provide a safer environment to the Midcoast area and Half Moon Bay:

- Diagonal parking for Moss Beach along Carlos Street (this is part of a larger improvement, however it is suggested that given the parking need, that it be constructed independent of the approval of the larger project in Moss Beach)
- Improved wayfinding signage
- Paving and striping at the upper Gray Whale Cove parking lot

LAND-USE POLICIES

The following land-use policies are recommended to reduce transportation impacts of future development. These policies and criteria are described in further detail in **Appendix A**.

Mandatory Lot Merger Program

A lot merger program would allow contiguous parcels with the same ownership to be merged as long as at least one of the lots is underdeveloped and less than the minimum parcel size requirement. For undeveloped lots, the program would operate as a voluntary merger program for 21 months after adoption, and then become mandatory, with a process for noticing, hearing, determination, and appeals. During the voluntary period, any property owner who requests a merger would receive a non-expiring voucher that could be used for one of the following: (a) up to 250 square feet bonus floor area; (b) up to $1,500 (new unit) or $300 (existing unit) or a 5 percent reduction in building permit fees, whichever is greater; or an allowance that one parking space may be uncovered. For an affordable housing unit, additional incentives would be provided. Implementation of a mandatory lot merger program, generally following the policy adopted by San Mateo County in 2006, would reduce the number of undeveloped parcels along the Midcoast. The effect of this reduction in lots however was already accounted for in the Buildout forecast, because lot mergers were assumed to take place in the Midcoast LCP.

Mandatory Lot Retirement Program

A lot retirement program could be designed to provide flexibility to project applicants by allowing them to either:

- Directly purchase existing lots from willing sellers, and extinguish development rights;
- Donate lots to a land trust or similar organization that would do the same; or
- Pay an in-lieu fee to the City or County to acquire and retire development rights from willing sellers at a 1:1 ratio. For the in-lieu fee to function properly, an appropriate price per development credit would need to be established, periodically reviewed and updated.

Acquisition of lots for lot retirement would be through donation or purchase. No property owner would be forced to sell their land for the purposes of this program. A lot retirement program requiring one-to-one retirement of development rights on existing lots in exchange for new lots would have the effect of reducing development potential and lessen the effect of new development on the transportation network.

Traffic Fee Mitigation Program

A transportation fee mitigation program would collect fees for new residential and non-residential development on a per-housing-unit basis for residential and per-square-foot basis for non-residential development. The rates would be based on a specified list of projects needed to mitigate the impacts of the growth, the total estimated capital cost of those projects and the

amount of new development expected. Although a Transportation Impact Mitigation Fee Program is being considered as a method for funding transportation improvements needed to accommodate growth rather than as a growth management strategy, the fee program could have some impact on the total amount of new development that occurs, if they raise the cost of development.

EVALUATION OF RECOMMENDED ALTERNATIVE

The following recommended alternative was created to address deficiencies in the Buildout condition based on the standards proposed for the Midcoast LCP and general safety and circulation concerns. The improvements included in the recommended alternative were based on cost; expected impact to existing infrastructure, the environment and the surrounding communities; and the overall effect on residents of the Midcoast Communities and City of Half Moon Bay. The list of improvements proposed in this document does not represent a comprehensive list of all projects that have been programmed or planned within the study area and does not prohibit other projects from being implemented, except where directly contradicted by a proposed improvement. Additional projects that have been analyzed for potential implementation can be found in the following studies:

- Highway 1 Safety and Mobility Improvement Study Phase 1, 2010
- Highway 1 Safety and Mobility Improvement Study Phase 2, 2011
- Half Moon Bay Circulation Element Update, 2013
- Plan Princeton, ongoing
- Half Moon Bay General Plan Update, ongoing
- Half Moon Bay Local Coastal Program Update, ongoing

ROADWAY AND INTERSECTION IMPROVEMENTS

Ability to Address Deficiencies

Intersection and Roadway Standards

As shown in Table 3, the proposed improvements will address the LOS deficiencies for the following intersections:

- Signalization at Highway 1 and California Avenue in Moss Beach (LOS F to LOS A/B)
- Signalization at Highway 1 and Cypress Avenue in Moss Beach (LOS F to LOS B/C)
- Roadway widening at Highway 1 and Ruisseau Francois Avenue in Half Moon Bay (LOS C/E/F to LOS A/A/B)
- Striping at Highway 1 and Spindrift Way in Half Moon Bay will no longer meet a signal warrant
- Roundabout at Highway 1 and Kehoe Avenue in Half Moon Bay (LOS F to LOS B/C)
- Striping at Highway 1 and Grandview Boulevard in Half Moon Bay will no longer meet a signal warrant

- Signalization and consolidation at Highway 1 and Grand Boulevard/Terrace Avenue in Half Moon Bay (Already included in Buildout analysis as an intersection planned to be signalized by the City of Half Moon Bay) (LOS F to LOS B)[4]
- Signage at Highway 1 and Filbert Street in Half Moon Bay (LOS F to LOS C/D)
- Roadway widening at Highway 1 and Poplar Street in Half Moon Bay (LOS D/F to LOS B/C)
- Signage at Highway 1 and Seymour Street in Half Moon Bay (LOS F to LOS C/E)
- Signalization at Highway 1 and Main Street (South) in Half Moon Bay (Already included in Buildout analysis as an intersection planned to be signalized by the City of Half Moon Bay) (LOS E to LOS A)
- Roundabout at SR 92 and SR 35 east of Half Moon Bay (Midday weekend peak remains LOS F, however AM and PM peak improve from LOS F to LOS E)

Table 3 - Effect of Proposed Improvements on Intersection LOS under Buildout Conditions

Street Names	Midcoast LCP LOS Standard[1]	Existing Control Type[2]	Proposed Improvement	AM Peak Hour LOS		PM Peak Hour LOS		Midday Peak Hour LOS	
				No Project	Project	No Project	Project	No Project	Project
Hwy 1 / California Avenue	D	TWSC	Add signal/block Weinke Way	**F**	A	**F**	A	**F**	B
Hwy 1 / Cypress Avenue	D	TWSC	Add signal	**F**	B	**F**	C	**F**	B
Hwy 1 / Ruisseau Francais Avenue	E	Signalized	Highway 1 Widening	E	A	C	A	**F**	B
Hwy 1 / Spindrift Way	E	TWSC	Striped split approach	**F**	**F**[3]	**F**	**F**[3]	**F**	**F**[3]
Hwy 1 / Kehoe Avenue	E	TWSC	Convert to roundabout	**F**	C	**F**	B	**F**	C
Hwy 1 / Grandview Boulevard	E	TWSC	Striped split approach	**F**	**F**[3]	**F**	**F**[3]	**F**	**F**[3]
Hwy 1 / Terrace Ave/Grand Ave	E	TWSC	Add signal/ consolidate Terrace and Grand	B	B	A	A	A	A
Hwy 1 / Filbert Street	E	TWSC	Minor Street right-turn only	**F**	C	**F**	D	**F**	D
Hwy 1 / Poplar Street	E	Signalized	Highway 1 Widening	D	C	D	B	**F**	C
Hwy 1 / Seymour Street	E	TWSC	Minor Street right-turn only	**F**	C	**F**	C	**F**	E
Hwy 1 / Main Street (South)[4]	E	TWSC	Add signal	-	A	-	A	-	A

Street Names	Midcoast LCP LOS Standard[1]	Existing Control Type[2]	Proposed Improvement	AM Peak Hour LOS		PM Peak Hour LOS		Midday Peak Hour LOS	
				No Project	Project	No Project	Project	No Project	Project
SR 92 / SR 35	E	Signalized	Convert to roundabout	D	C	**F**	**E**	**F**	**F**

[1] Standard is given for an individual approach (stop controlled)
[2] TWSC – two-way stop controlled
[3] Despite remaining LOS F, the intersection is no longer considered deficient because the split flow
[4] Signal already programmed, so there is no "No Project" condition

With the addition of the proposed Class II bicycle lane along Highway 1 along the Midcoast, the Delay Index no longer is considered deficient. The City of Half Moon Bay is currently looking into signal coordination to address the congestion caused by the signals north of SR 92. While the segment of Highway 1 is considered deficient based on the Delay Index standard proposed by this study, the City of Half Moon Bay is not bound by the standards or improvements proposed by this study.

The addition of passing/climbing lanes on the eastbound portion of SR-92 between Landfill Road and Pilarcitos Quarry Road will allow cars to pass the high volume of trucks on this roadway segment and provide a passing lane to go around right-turning cars. The cost estimate does not however include any right-of-way acquisition or any large scale earthwork that may be identified with a full design.

Safety and Circulation

- Addition of a left-turn bay and an acceleration lane at Gray Whale Cove parking lot will improve circulation and prevent turning vehicles from restricting flow along Highway 1 in a cost-effective way
- Addition of a median with northbound left-turn bay at 16th Street will improve circulation in Montara and provide a crossing refuge for pedestrians
- The implementation of traffic calming improvements such as speed display units and speed humps along Main Street in Montara and along Carlos Street in Moss Beach is a cost-effective way to slow traffic and improve safety for bicyclists and pedestrians
- Stop signs added to unsigned intersections along Highway 1 and a defined curb and paved shoulder for the following segments along Highway 1 will provide a consistent cross section for vehicle and pedestrian safety based on areas of highest pedestrian and bicycle activity along Highway 1:
    - Montara Segment – 1st Street and 14th Street
    - Moss Beach Segment – Carlos Street to Etheldore Street (South)
    - El Granada Segment – Coral Reef Avenue to Medio Road
    - Half Moon Bay Segment – Frenchman's Creek Road to Redondo Beach Road
- Consolidation of access to Highway 1 at the following locations will reduce the number of vehicle conflicts along Highway 1 and improve circulation:
    - Rocket Farms driveways between Mirada Road and Young Avenue
    - Grand Avenue and Terrace Avenue (Already considered a planned improvement by the City of Half Moon Bay)

- Left-turn lanes at major businesses along SR 92 in Half Moon Bay would be a cost-effective solution to address a circulation issue commonly identified by the community. The main impediment would be acquisition of the required right-of-way at the desired locations. The following locations are suggested:
    - Berta's Farm
    - Lemos Farm
    - Half Moon Bay Nursery

Feasibility Concerns

There were no serious feasibility concerns identified for any of the proposed roadway and intersection improvements, although it is possible that potential environmental impacts may be identified in the environmental review and these may require mitigation. The following design considerations were identified:

- It is recommended access to Wienke Way be blocked at the intersection of Highway 1 and California Avenue if the intersection is signalized. A fifth leg would complicate signalization of the intersection and Wienke Way currently has potential line-of-sight problems for vehicles trying to turn left onto Highway 1. Access to Highway 1 for residents in that area would still be provided at Vallemar Street and the church located at the corner of Weinke Way and California Avenue has an access point directly on California Avenue.
- Adequate vehicle storage length for the proposed southbound left-turn bay at the Gray Whale parking lot should be included for the expected demand in order to minimize the potential for queue spillback.
- Given the topography of the land adjacent to Highway 1, some locations may prove expensive to provide paved shoulders and curb.
- Widening the roadway at Ruisseau Francois Avenue will require 600 feet of the four-lane section in both directions to accommodate the queue and allow traffic leaving the intersection to safely merge without impacting the intersection. South of Ruisseau Francois, the extra southbound lane can transition into a right-turn lane for Venice Avenue, with signage to alert drivers that through traffic should stay left. The existing multi-use path may need to be moved or combined with the proposed Class II bicycle lane through this portion of Highway 1.
- Any left-turn pockets for businesses along SR-92 should have adequate storage lengths to minimize their impact on traffic operation along SR-92.

A listing of feasibility and design considerations is included in **Appendix B**.

Cost Estimates

A summary of the cost of the recommended alternative roadway and intersection improvements is included in **Table 4**. The cost estimate calculations are included in **Appendix C**.

Table 4 - Cost of Recommended Roadway and Intersection Improvements

Project #	Improvement	Cost Estimate
R1	Gray Whale Cove Turn and Acceleration Lanes	$ 440,000
R2	SR-1 Side-Street Stop Signs	$ 18,000
R3A	SR-1 Paved Shoulder and Curb Phase A (Central)	$ 2,302,000
R3B	SR-1 Paved Shoulder and Curb Phase B (Intermediate)	$ 2,841,000
R3C	SR-1 Paved Shoulder and Curb Phase C (Periphery)	$ 820,000
R4	California Avenue Signal	$ 767,000
R5	Cypress Avenue Signal	$ 640,000
R6	Main Street (South) Signal	$ 530,000
R7	Montara Lighthouse Median and Left Turn Bay	$ 170,000
R8	Rocket Farms Access Consolidation	$ 2,926,000
R9	Widening of Highway 1 at Ruisseau Francois Avenue	$ 2,587,000
R10	Terrace Avenue/Grand Boulevard Access Consolidation and Signalization	$ 1,270,000
R11	Widening and striping of approach at Spindrift Way	$ 79,000
R12	Kehoe Avenue Signal	$ 640,000
R13	Widening and striping of approach at Grandview Boulevard	$ 220,000
R14	Signage to allow only right turns from Filbert Street and Seymour Street	$ 2,000
R15	Widening of Highway 1 to four lanes between Kelly Avenue and Main Street (South)	$ 5,732,000
R16	SR-92/SR-35 Roundabout	$ 1,177,000
R17	Main Street Traffic Calming	$ 522,000
R18	Carlos Street Traffic Calming	$ 306,000
R19	SR-92 Left Turn Lanes	$ 418,000
R20	SR-92 Passing/Climbing Lanes[9]	$ 1,519,000
R21	"Trucks Keep Right" signage on SR 92	$ 3,000
	Roadway and Intersection Total Cost	$ 25,929,000

[9] The cost estimate does not include any right-of-way acquisition or any large scale earthwork which may be identified with a full design.

BICYCLE AND PEDESTRIAN FACILITY IMPROVEMENTS

Ability to Address Deficiencies

Bicycle and Pedestrian Standards

The "Parallel Trail" adjacent to Highway 1 and the Coastal Trail adjacent to the coastline (including Airport Street) provides a safe and cost-effective alternative route for pedestrians and recreational bicycles away from the heavier traffic on Highway 1. This addition will raise the Bicycle Environmental Quality Index (BEQI) score on segments without the Class I path from a score of 21 to a score of 49 – 55, depending on the density of driveways and cross streets crossing the segment.

The addition of a Class II Bike path on Highway 1, which would provide bicycle access on both sides of the street (preventing the need to cross), will bring the BEQI score to the minimum recommended score of 61. In addition to meeting the bicycle standard, the addition of a Class II bicycle lane along Highway 1 will meet the multimodal criteria for a higher Delay Index standard. While the Delay Index under Buildout Conditions would still not meet the revised multimodal standard, under the Constrained Development Potential forecast, the standard would be met for the segment between 1st Street in Montara and Etheldore Street in Moss Beach as shown in **Table 2**. The Delay Index standard would also be met for traffic travelling the entire study segment.

Figure 4 provides the location of proposed pedestrian crossings. The proposed improvements reduce the maximum distance between safe pedestrian crossing locations to the revised standard of a maximum of ½ mile between pedestrian crossings in areas with the potential for pedestrian activity, with the exception of the segment between Main Street (South) and Redondo Beach Road which has a spacing of 0.63 miles. Based on the land use along this segment and discussions with City of Half Moon Bay staff, it was determined that this location did have significant potential for pedestrian travel to warrant an additional pedestrian crossing. The density standard and locations of proposed pedestrian crossings was decided based on balancing the needs of providing locations for pedestrians to cross Highway 1 with a desire not to over delay the progress of traffic along Highway 1. As the area continues to develop, the standards may incentivize the implementation of additional crossing locations to mitigate increasing pedestrian demand.

Currently none of the intersections meet the minimum recommended PEQI score. The following proposed improvements to existing signals will improve the PEQI score.

- Pedestrian count-down indicators on all signalized crosswalks
- Timing adjustments to be consistent with current MUTCD requirements assuming 3.5 feet per second as the walking speed of pedestrians
- Bicycle signal detection
- Pedestrian refuges on wide road crossings

Along Highway 1 there are minimal pedestrian facilities, resulting in a low PEQI score. The proposed ADA compliant walking paths in the following locations would provide a more continuous walking path for pedestrians:

- Along Highway 1 in Montara, Moss Beach, Miramar, and developed areas of Half Moon Bay
- Along Coronado Street and Avenue Alhambra in El Granada

These locations were selected due to the potential for pedestrian traffic. By providing a flat obstruction free path that is at least 6 feet wide and has pedestrian scale lighting (not street lighting) the recommended PEQI score would be met. A full listing of BEQI and PEQI scores and recommended improvements needed to meet the standards is included in **Appendix D**.

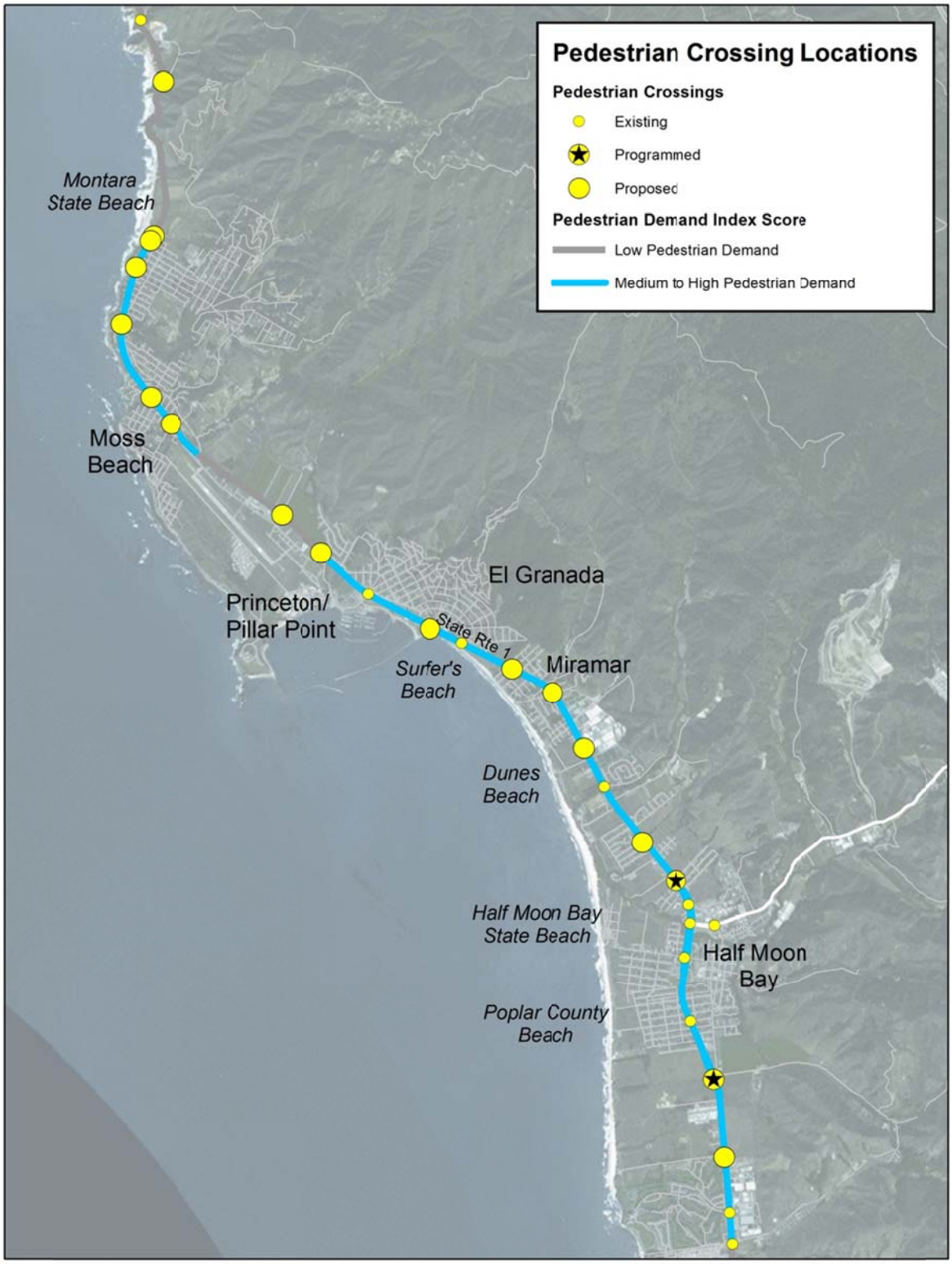

Figure 4 - Proposed Pedestrian Crossing Locations

Safety and Circulation

The following improvements were identified as solutions to provide a safer and more connected environment to the Midcoast area and Half Moon Bay, but they carried a larger price tag. They are suggested if the funding is available.

- A Class II bicycle lane along SR-92 would greatly improve connectivity for bicyclists between San Mateo and Half Moon Bay, however the large cost would make it necessary to perform a demand study to determine if the potential volume of bicyclists who would use the route would make it worth the cost.
- A Class II bike lane along Airport Street would provide another alternate route for bicyclists, however given the cost and the proposed path and lanes along Highway 1 (which have greater priority) we recommend a demand study to determine if the potential volume of bicyclists deem a need for an additional bicycle route.

Feasibility and Design Concerns

There were no serious feasibility concerns identified for any of the proposed pedestrian and bicycle facility improvements, although it is possible that potential environmental impacts may be identified in the environmental review and these may require mitigation. The following design considerations were identified:

- The beach access crosswalk at the Gray Whale Cove parking lot should be placed at a location that would accommodate the southbound storage lane.
- The Parallel Trail would be expected to have an uneven profile and may carry a high engineering cost. Additionally it may encumber significant environmental impacts that could require mitigation.
- Lane width should be narrowed along the proposed Class II bike lanes on Capistrano Road and Airport Street in order to enhance the traffic calming effect.
- While there is a consistent shoulder along Highway 1 for the majority of the study area that could be easily converted to a Class II bicycle lane, intersections with heavy right turning volumes would need to be restriped to allow for a floating bicycle lane to minimize car/bicycle interactions.

A listing of feasibility and design considerations is included in **Appendix B**.

Cost Estimates

Cost estimates for proposed bicycle and pedestrian improvements have been calculated based on standard unit costs and are listed in **Table 5**. Cost estimates include contract items as well as mobilization, construction engineering, designs, permits, and contingency. Calculation of costs is included in **Appendix C**.

Table 5 - Cost of Recommended Bicycle and Pedestrian Improvements

Project #	Project Name	Cost
B1	Striped Pedestrian Crossing with Beacons	$ 2,250,000
B2A	Hwy 1 walkway (Phase A)	$ 1,008,000
B2B	Hwy 1 walkway (Phase B)	$ 1,213,000
B2C	Hwy 1 walkway (Phase C)	$ 1,059,000
B3	Coronado Street and Ave Alhambra walkway	$ 749,000
B4	Parallel Trail adjacent to Highway 1 for the entire study area	$ 11,037,000
B5	Coastal Trail throughout the entire study area	$ 5,251,000
B6	Traffic Signal Updates	$ 1,624,000
B7	Capistrano Road Bicycle Facilities	$ 866,000
B8	Airport Street Class III Bike Lanes	$ 239,000
B9	SR-92 Bike Lanes	$ 20,959,000
B10	Hwy 1 Class II Bicycle Lane	$ 2,724,000
	Bicycle and Pedestrian Total Cost	**$ 48,979,000**

TRANSIT IMPROVEMENTS

The majority of the transit improvements will depend on discussions and negotiations with SamTrans or private bus companies as well as required acquisition and ongoing costs. A more comprehensive recommendation will require a demand study to determine need and want for the variety of services listed here.

Ability to Address Deficiencies

Transit Standards

While only the bus stop at Strawflower Shopping Center meets the 25 daily boarding threshold of the standard, the following bus stops represent locations that have a future level of boardings of 25 or more if better transit service is provided:

- Highway 1 & SR-92 (average of 16 daily boardings)
- Strawflower Shopping Center (average of 29 daily boardings)
- Kelly Avenue & Church Street (average of 24 daily boardings)
- Main Street & Lewis Foster Drive (average of 21 daily boardings)

Neither the SamTrans Route 294 nor Route 17 is running at 85% utilization and therefore there is no deficiency based on transit utilization.

Safety and Circulation

One of the main concerns regarding transit raised by project stakeholders is that demand for transit is not high because of the current lack of transit services. The following improvements address the perceived deficiency in transit service.

- More frequent weekend service for the existing SamTrans fixed routes serving the study area.
- The City of Half Moon Bay has submitted a grant application for a Coastside Beach Access Shuttle that would coordinate with SamTrans Route 17 and Route 294 to bring users to over-capacity parking lots. This shuttle could be modified to support a park-and-ride lot (One potential lot could be Half Moon Bay High School).
- School bus service for Cabrillo Unified School District including a facility for storing the vehicles and maintenance.

Feasibility and Design Concerns

There were no feasibility or design concerns identified for any of the proposed transit improvements.

A listing of feasibility and design considerations is included in **Appendix B**.

Cost Estimate

Cost estimates for proposed transit improvements have been calculated based on standard unit costs and are listed in **Table 6**. Cost estimates include contract items as well as mobilization, construction engineering, designs, permits, and contingency. This cost estimate does not include the cost of school bus service for Cabrillo Unified School District. Calculation of costs is included in **Appendix C**.

Table 6 - Cost of Recommended Transit Improvements

#	Improvement	Cost Estimate
T1	Bus Stop Amenities	$ 3,000
T2	Increased Weekend Samtrans service (annual operating)	$ 525,000

PARKING IMPROVEMENTS

Ability to Address Deficiencies

The lack of capacity for the large amount of weekend recreational parking demand results in a spillover of demand into community parking. There is a need for additional parking in the Midcoast and Half Moon Bay.

Parking Standards

To address the high demand of parking, the following improvements are proposed to mitigate a lack of supply at parking lots with over 85% utilization during peak recreational times:

- Formalized parallel parking for Montara State Beach, with a physical separation from Highway 1
- Diagonal parking for El Granada separated from Highway 1 (this is part of a proposed highway 1 realignment, however it is suggested that given the parking need, that it be constructed independent of the approval of the larger project in El Granada)
- Implementation of the Coastside Beach Shuttle to reduce the parking load at beach lots including the following:
    - Roosevelt Beach
    - Half Moon Bay State Beach parking lot at Kelly Avenue
- Implementation of pricing strategies to bring the deficient lots to desirable occupancy

Safety and Circulation

- Diagonal parking for Moss Beach along Carlos Street (this is part of a larger improvement, however it is suggested that given the parking need, that it be constructed independent of the approval of the larger project in Moss Beach)
- Improved wayfinding signage
- Paving and striping at the upper Gray Whale Cove parking lot

Feasibility and Design Concerns

There were no serious feasibility concerns identified for any of the proposed parking improvements, although it is possible that potential environmental impacts may be identified in the environmental review and these may require mitigation. The following design considerations were identified:

- The proposed parking lot for Montara State Beach should include a left-turn bay for northbound traffic.

A listing of feasibility and design considerations is included in **Appendix B**.

Cost Estimate

Cost estimates for proposed bicycle and pedestrian improvements have been calculated based on standard unit costs and are listed in **Table 7**. Cost estimates include contract items as well as mobilization, construction engineering, designs, permits, and contingency. Calculation of costs is included in **Appendix C**.

Table 7 - Cost of Recommended Parking Improvements

Project #	Project Name	Cost
P1	Montara State Beach Parking Lot Improvements	$ 557,000
P2	Upper Gray Whale Cove Parking Lot Improvements	$ 1,052,000
P3	Wayfinding signage	$ 303,000
P4	Coastside Beach Shuttle (annual cost)	$ 70,000
P5	Carlos Street On-Street Parking	$ 34,000
P6	El Granada Diagonal Parking	$ 54,000
	Parking Improvement Capital Cost	**$ 2,000,000**
	Parking Improvement Operating Cost (annual)	**$ 70,000**

LAND USE POLICIES

Lot Merger Program

Spatial analysis determined that the proposed lot merger program could reduce development potential in the unincorporated portion of the Study Area by an estimated 216 lots. The majority of development potential reduction would occur in residential districts, reducing the number of vacant substandard lots by 40 percent. Most of the lot mergers (165 lots) would occur in residential districts, with a smaller number (51 lots) in the Resource Management (RM-CZ) district. The effect of this reduction in lots is already assumed in the Buildout Condition and the Constrained Development Potential Forecast.

Lot Retirement Program

Under the potential lot retirement program, development potential could be reduced in the unincorporated portion of the Study Area by an estimated 148 units (each retired lot in non-residential districts is assumed to equal one unit). In the unincorporated area, these lots are located in the Resource Management-Coastal Zone and Planned Agricultural districts; the analysis does not include lots in residential districts in order to prioritize infill development.