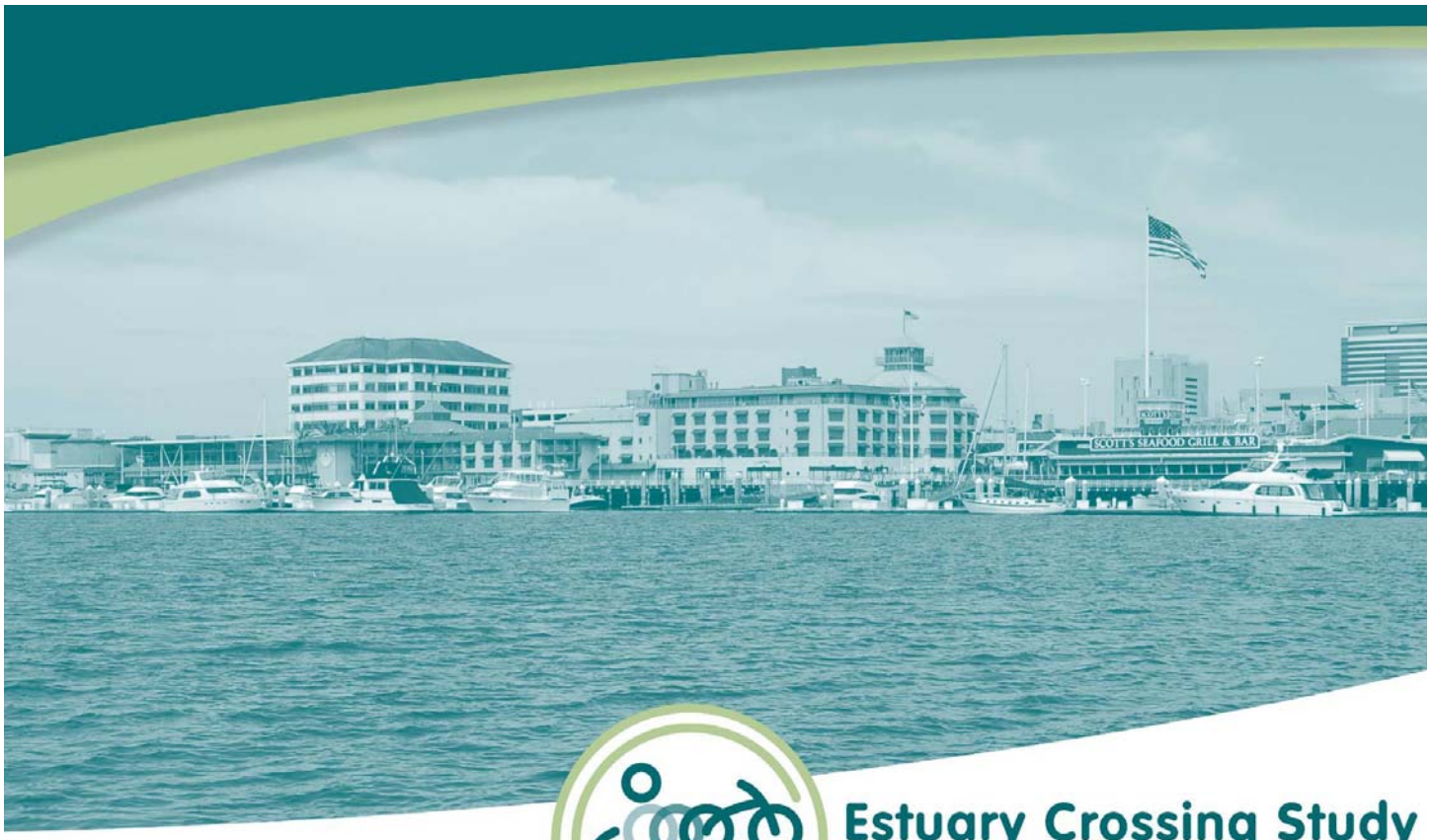
City of Alameda

Estuary Crossing Study

Final Feasibility Study Report

September 2009



Estuary Crossing Study

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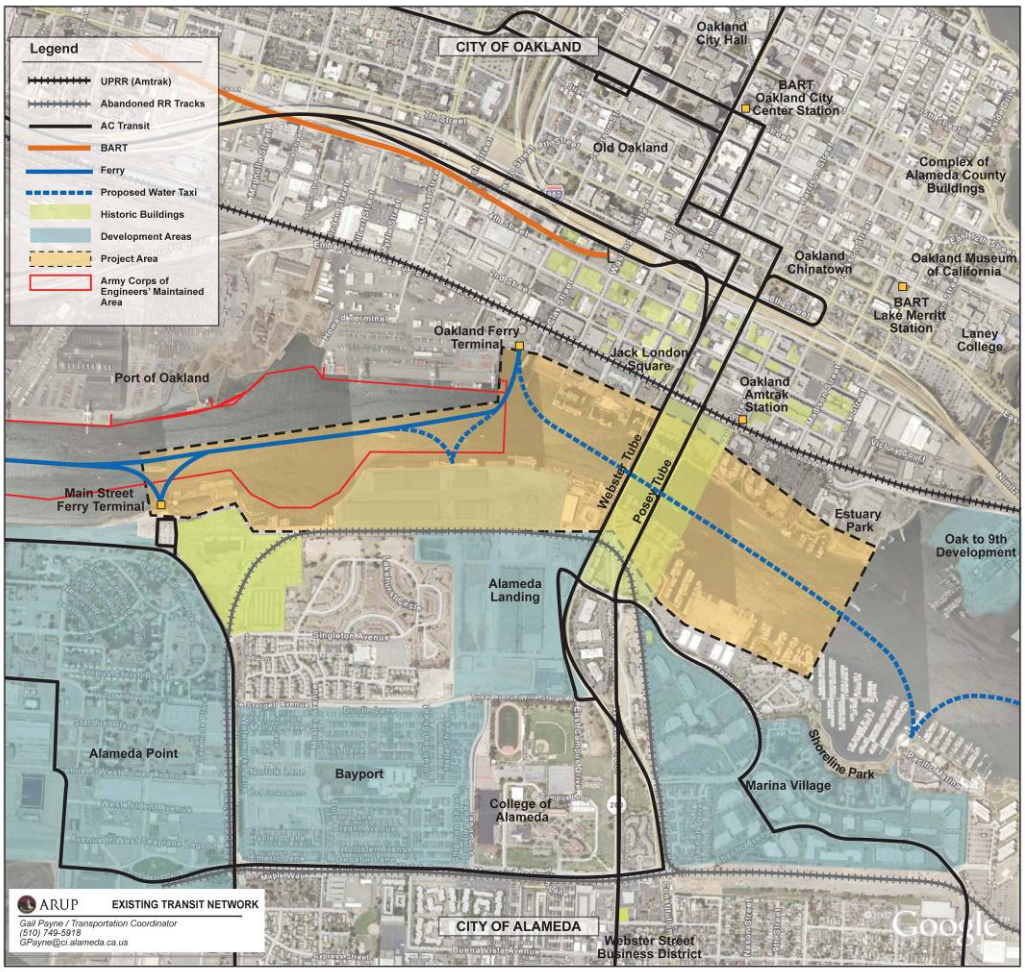
Executive Summary

Study Purpose

The overall vision for an improved estuary crossing is to create an easy-to-use, safe and enjoyable crossing to enhance the Bay Area's regional bicycle, pedestrian and transit networks. The goal of the feasibility study is to develop estuary crossing designs that appeal to the patron, adjacent communities, decision-makers, transit providers and funding authorities. In recent years, there have been numerous studies that have analyzed the possibility of developing additional capacity between Alameda's west end and downtown Oakland. These studies did not directly analyze potential alternatives, but rather raised various transportation alternatives as part of other feasibility, master plan and transportation strategy reports. This study is the first that directly analyzes the feasibility of new or improved estuary crossings between the two cities.

The boundaries of the study area are between the Marina Village and the Main Street Ferry Terminal on the Alameda side and the Estuary Park and the Oakland Ferry Terminal on the Oakland side (Figure 1).

Figure 1: Estuary Crossing Feasibility Study Area



Stakeholder and Public Involvement

A key aspect of this study was to establish a public involvement process at the early stages and to engage the public throughout the study. Caltrans District 4 Office of Community Planning provided on-call outreach support to develop and implement the public engagement action plan. The City also hired EnviroCom to provide outreach assistance as a facilitator at the public workshops and the stakeholder meetings.

The study was managed by the City of Alameda, with technical guidance and leadership provided by the Multi-Jurisdictional Task Force (Task Force) as well as policy guidance from the Policy Advisory Committee (PAC). The Task Force met four times – in March, April, August and December 2008. The PAC met three times – in May, August and December 2008.

In addition to Task Force and PAC meetings for this study, the City of Alameda hosted a series of community outreach workshops and spoke at key public meetings in both Alameda and Oakland. The Estuary Crossing Study Workshops were held in April, May and October 2008.

Existing Conditions

This chapter provides an overview of the existing baseline conditions in the study area, which informed the study team's understanding of the existing context, opportunities and constraints. Specifically, this chapter provides information on the below study area conditions:

- **Demographics**: Census data reveals a significant residential and employment population within a short distance of the proposed estuary crossing study limits. Within a one-mile radius of the study area, there are 19,644 residential units and 72,370 jobs according to the 2000 US Census.
- **Bikeways and Pedestrian Network**: There are two designated bikeways connecting Alameda and Oakland. One is through the Posey Tube and the other is via the Fruitvale (Miller Sweeney) Bridge. The Posey Tube path is approximately four feet in width, which is inadequate for passing cyclists and pedestrians. In addition, this link is unpleasant for users due to vehicle noise and emissions.
- **Transit Network**: The key transit services include BART, Amtrak, Alameda/Oakland Ferry and AC Transit.
- **Estimated Travel Demand**: A total of 72 cyclists and 22 pedestrians used the Posey Tube during the 13-hour survey period in 2006 according to a BikeAlameda survey. The number of one-way bus passengers traveling through the tubes on an average weekday totals over 7,000. About 55,000 vehicles per day travel through the Webster Street and Posey Tubes.
- **Potential Future Demand for Estuary Crossing**: The potential future demand for an improved estuary crossing will vary depending on future changes to land uses, the attractiveness of competing transport modes and the characteristics of the estuary crossing option chosen. When considering a crossing such as a bridge and the future expected land use developments, future demand is estimated to be 2,500 – 4,000 trips per day. This future trip demand scenario is estimated using the existing demand on the Park Street Bridge as a base and future expected land use developments in West Alameda. The demand estimate has been verified against alternate methods of trip estimation, including an analysis of potential mode shift from existing cross-estuary trips and analysis of Census data for work related trips between Oakland and Alameda.
- **Key Factors**: Key factors that guided the selection of the preferred alternatives include jurisdictional boundaries, historic buildings, emergency lifeline facility needs, policy regulations and government agency participation.

Relevant Policy Documents

Future development will alter the current landscape of Alameda and Oakland. Several master plans are either in development or being updated in and around the project area. The following relevant studies are summarized to provide an understanding of the project area:

- I-880/Broadway-Jackson Interchange Improvement Feasibility Study
- Alameda Countywide Bicycle Plan
- Alameda Countywide Pedestrian Plan
- Draft Alameda Point Station Area Plan Transit-Oriented Development Alternatives
- Alameda Point Transportation Strategy
- Alameda Seaport Access Assessment
- Alameda West End Feasibility Study - Shuttle Service and Operations Analysis
- Bayport / Alameda Landing Project Master Plan
- City of Alameda Bike Master Plan
- City of Alameda Internal Memos
- City of Oakland Bicycle Master Plan
- Cross Alameda Trail Feasibility Study
- Jack London BART Feasibility Study
- Oakland Estuary Policy Plan
- Oakland Waterfront Trail Plan
- Regional Bicycle Plan for the San Francisco Bay Area
- Regional Rail Plan for the San Francisco Bay Area

Evaluation Criteria

The project alternatives were evaluated against a set of assessment criteria to select the most appropriate alternative for further study. These criteria were developed based on project objectives, and input from the stakeholders and the community. The assessment criteria are:

- Safety
- Functionality
- Financial Impact – Short Term
- Financial Impact – Long Term
- Engineering
- Neighborhood Development
- Environmental Impact

Alternative Analysis

Project alternatives were developed based on a review of best practices and input from the City of Alameda, stakeholders and the community. Each of the project alternatives is described with an assessment of the key advantages, disadvantages and performance against the criteria. The list of project alternatives is as follows:

- Existing Service Improvement
    - Bike Shuttle Capacity Improvement
    - Ferry Service Improvement
    - Improved Traffic and Transit Management
    - Minor Modifications of Existing Tube
- Water Crossings
    - Amphibious Vehicles
    - Water Shuttles / Taxis
    - Bus and Bicycle Barges
    - User Propelled Boats / Amphibious Bikes
- Bridge, Tunnel or Elevated Structure
    - Bicycle-Pedestrian Bridge (Fixed, High Level Option)
    - Bicycle-Pedestrian Bridge (Moveable, Low Level Option)
    - Bicycle-Pedestrian Bridge (Moveable, Low Level Option) with Transit Lanes
    - Bicycle-Pedestrian Bridge (Moveable, Low Level Option) with Neighborhood Electric Vehicle Lanes
    - Transporter Bridge
    - Aerial Tramway
    - New Bicycle and Pedestrian Tube
    - Modification of Existing Tube
    - New Underground Extension to BART

Preferred Alternatives

The next step towards determining a preferred alternative was eliminating the under performing alternatives and carrying forward the remaining options for further analysis. Within each project category, the top feasible project alternatives were selected to be carried through to the next review stage (Table 1).

- Existing Service Improvements
    - Minor Modifications to Posey Tube – A short-term solution to better accommodate existing bicyclist and pedestrian demand. Potential improvements to the existing path include replacing existing plate covers, filling in grooves on the concrete path, and establishing a regular maintenance program.
- New Water Crossing
    - Water Shuttle/Taxi – An intermediate solution that will meet the project objectives with consideration of the planned developments on both sides of the estuary. The water shuttle/taxi was determined to be the high-priority alternative for bicyclist and pedestrian crossings.
- Bridge, Tunnel or Other Elevated Structure **(Potential Long-Term Alternative)**
    - Bicycle-Pedestrian Bridge (Moveable, Low Level Option) –***The bridge could be a long-term viable alternative if the following constraints are addressed***:

- The US Coast Guard allows the bridge to remain closed during peak times;
- The moveable span of the bridge, which is currently at 600 feet, is reduced to a more manageable horizontal clearance;
- The height of the bridge is reduced to a level that does not require significant closing and opening times; and
- The cost of construction could be justified for regional funding support.
- Potential inclusion of transit option

Table 1: Cost Estimates of the Preferred Alternatives

Alternative	Design	Admin	Environ-mental Review	Mitigation/ Utilities	Construc-tion	Operations / Maintenance (annual)
Short-term Alternative						
Modifications to Posey Tube	$250,000	$250,000	$35,000	None	$2.5 million	$50,000 (Caltrans)
Mid-term Alternative						
Water Shuttle / Taxi	$200,000	$200,000	$500,000 to $750,000	None	$3 million	$2.5 million (24/7 service); $1.25 million for 12 hour; $625,000 for 6 hour
Long-term Alternative (Potential)						
Bicycle/ Pedestrian Moveable Bridge	$8 million	$5 million	$500,000 to $750,000	$1 million / None expected based on preliminary analysis	$60 million	$1.5 million (assumes 24/7 operations)

Potential Project Environmental Impacts

The potential environmental constraints related to the various proposed alternatives are as follows:

- Moveable Bridge Location and Clearance
- Construction
- Earthwork
- Coastal and Flood Protection
- Water Quality
- Hazardous Materials
- Historic Buildings

The environmental review will serve as a basis for a complete environmental analysis that will occur in future phases of this project. The analysis provided here is based on the Appendix G Environmental Checklist Form from the California Environmental Quality Act (CEQA) guidelines for implementation. All determinations made in the following section are preliminary and should be noted as reference only. The final preferred alternatives will be analyzed further under a full environmental analysis as required by CEQA and the National Environmental Protection Act (NEPA).

Funding Opportunities

This section lists the funding sources that could help fund subsequent phases of the estuary crossing project. It should be noted that some funding sources have restrictions on how the monies may be spent. For example, construction and implementation only funding sources cannot be applied to planning and design.

Next Steps

The next step of the project development is the preparation of a project study report (PSR) equivalent document for the water taxi/shuttle. A PSR equivalent is an engineering report whose purpose is to document agreement on the scope, schedule and estimated cost of a project so that the project can be considered for inclusion in a future programming document such as the State Transportation Improvement Program (STIP). It is recommended that the water taxi/shuttle be carried forward in a PSR equivalent document. ***The long-term option – bicycle/pedestrian bridge – could be moved forward to a PSR equivalent document only if this option is deemed feasible.*** The City will work with stakeholders to determine if vessel restrictions during commute hours could be possible, vertical and horizontal clearances could be reduced and funding could be obtained. This follow up with stakeholders also would allow the possibility to accommodate a transit option with the bicycle/pedestrian bridge.

Staff recommends that operational characteristics of a crossing should also be studied as part of the PSR Equivalent document. In addition the PSR should also look at the user demand, destination choices, and user catchment area, so that the recommended alternative complements the existing transportation system and would allow users to make convenient intermodal transfers.

The City will coordinate with Caltrans on how to proceed with the Minor Modifications to the Posey Tube alternative. The City also will continue to work with AC Transit, Caltrans and the City of Oakland on other improvements such as the Webster Street SMART corridor project and improved bike racks on AC Transit buses.

3 Existing Conditions

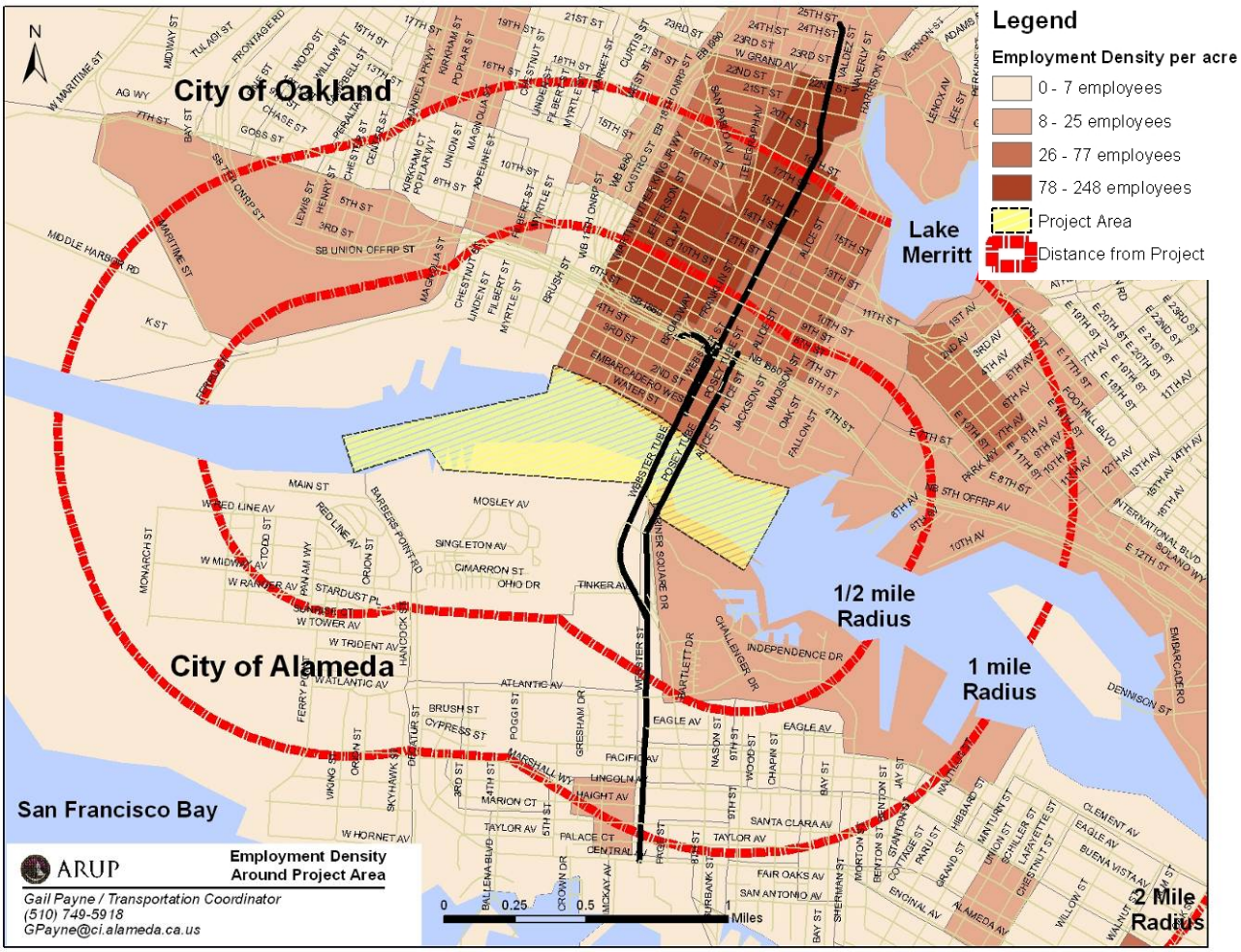
This chapter provides an overview of the existing baseline conditions in the study area, which informed the study team's understanding of the existing context, opportunities and constraints. Specifically, this chapter provides information on the study area demographics, the bicycle, pedestrian and transit networks, projected travel demand and key factors that guided the selection of the preferred alternatives such as historic buildings, emergency lifeline facility needs, related policies and jurisdictional boundaries.

3.1 Existing Demographics

3.1.1 Employment

The highest employment density within the project area is centered in downtown Oakland, with medium and low employment density surrounding downtown Oakland into Jack London Square (Figure 2). There is also a distinct employment district near the Alameda shore in Marina Village. Employment density may rise in the future from the Alameda Landing and Alameda Point projects.

Figure 2: Employment Density within Project Area



Source: Arup (2008), US Census (2000)

3.1.2 Housing

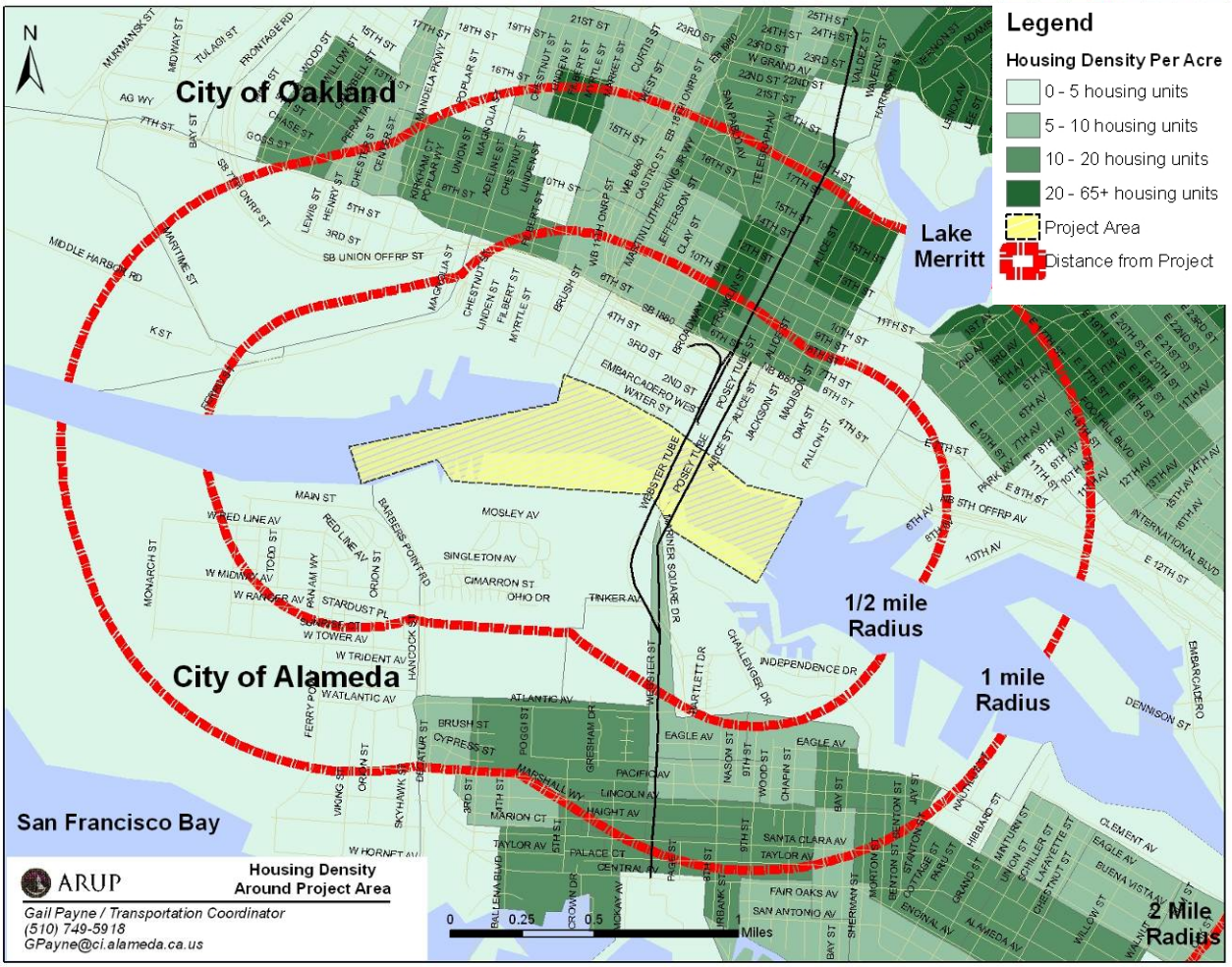
Within the study area, the City of Oakland shows a relatively high housing density; particularly around Lake Merritt and downtown Oakland with over 20 units per acre (Figure 3). Lower density housing exists in other areas of Oakland and in Alameda, in the range of 5-20 units per acre. Currently, much of the study area along the immediate shoreline in Alameda and Oakland shows low residential density, representing industrial, commercial and ex-naval land uses.

The current master plan efforts to redevelop Alameda Point, Alameda Landing and Alameda's northern waterfront (Marina Village to Grand Street) may bring over 4,000 new housing units to the area, representing an increase of 13 percent in housing units since the 2000 US Census.

In Oakland, the proposed Oak to 9th redevelopment would provide an additional 3,100 residential units and 200,000 square feet of ground-floor commercial space.

With these projects in the pipeline, it is increasingly important to consider alternative transportation options between Oakland and Alameda to address the expected increased demand in all modes of transportation.

Figure 3: Housing Density



Source: Arup (2008), US Census (2000)

3.1.3 Summary of Existing Employment and Housing

Census data reveals a significant residential and employment population within a short distance of the proposed estuary crossing study limits. Analysis of zones within a half-mile, one and two mile radius of the 1.5 mile long study area shows a significant catchment of residential and job density (Table 2). These numbers are likely to grow higher in the near future as major projects such as Alameda Landing and Alameda Point are realized.

Table 2: Residential Dwellings and Jobs within the Project Catchment

Distance	0.5 miles	1 mile	2 miles
Approximate residential population[1]	5,031	46,163	152,684
Residential dwelling units	2,141	19,644	64,972
Jobs	28,575	72,370	112,489

Notes: 1. Assumes average household occupancy of 2.35 residents per household, as reported for the City of Alameda in the 2000 US Census.

3.2 Existing and Planned Bicycle and Pedestrian Networks

There are two designated bikeways connecting Alameda and Oakland. One is through the Posey Tube and the other is via the Fruitvale (Miller Sweeney) Bridge. Although the Posey Tube is designated as a Class I facility, it currently provides a poor quality option for pedestrians and cyclists. The path, shown in Figure 4, is a bi-directional path within the Posey Tube on the east side of the northbound traffic lanes. The path is approximately four feet in width, which is inadequate for passing cyclists and pedestrians. In addition, this link is unpleasant for users due to vehicle noise and emissions.

Figure 4: Posey Tube Pedestrian and Bicycle Pathway

The Fruitvale Bridge is located approximately three miles southeast of the Posey Tube, and currently provides a physically separated, bi-directional path on each side of the vehicular bridge, which is also shared by pedestrians. This facility does not provide a convenient travel option for pedestrians and cyclists seeking to travel between west Alameda and downtown Oakland. Park Street and High Street provide alternate crossings for pedestrians and bicyclists near the Fruitvale

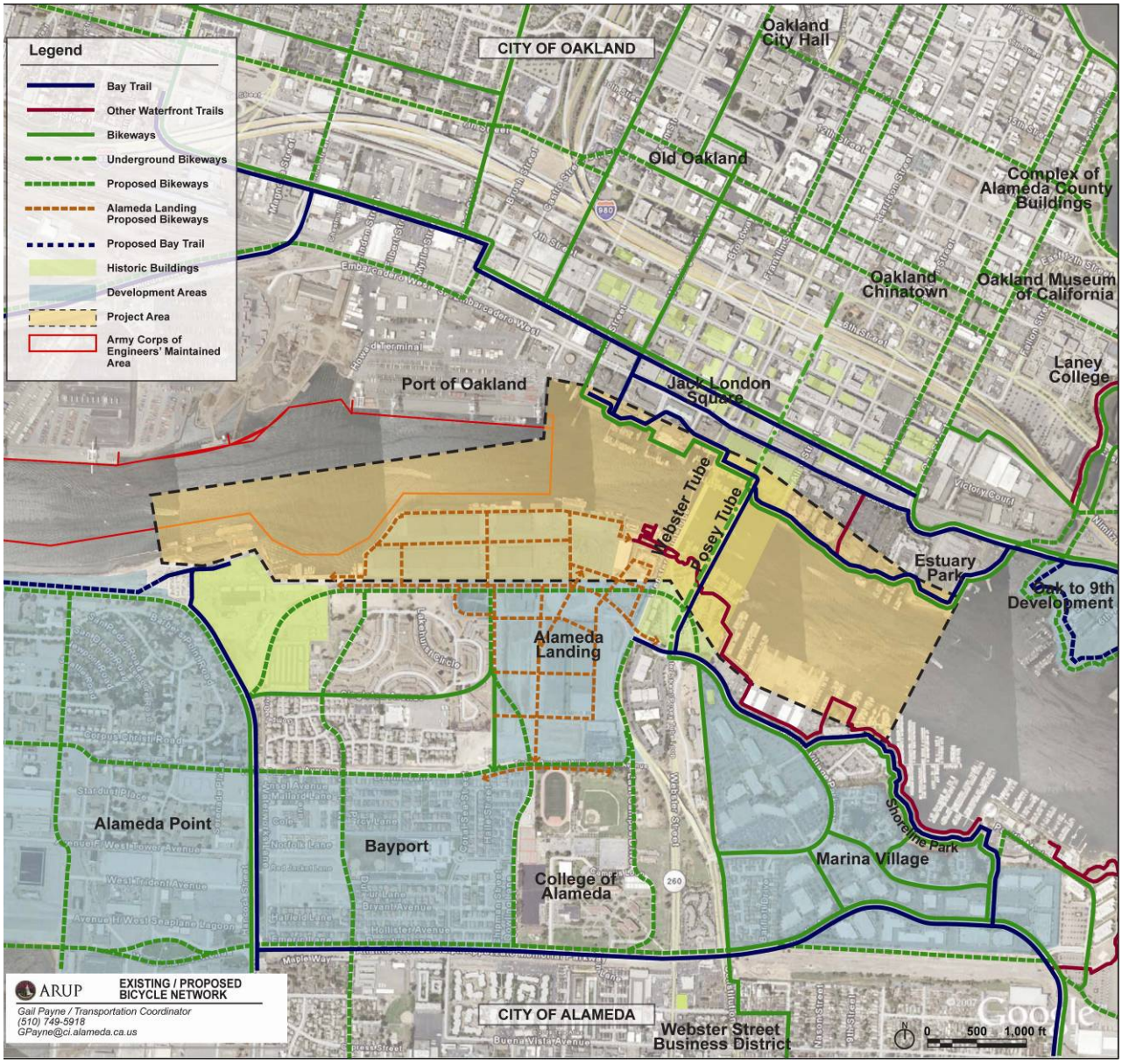
Bridge. Nevertheless, neither are designated bikeways. As a comparison, a bicyclist riding between the College of Alameda and Lake Merritt BART station would travel almost two miles using the Posey Tube and six miles using the Fruitvale Bridge corridor.

Many of the existing bike facilities in downtown Oakland and Jack London Square are Class III facilities. The 2007 Bicycle Master Plan proposes most facilities for upgrade to Class II striped bike lanes. Key facilities are a bike path along the Jack London Square shore, the Bay Trail along Second Street (Class III bike route) and north-south connections to downtown Oakland along proposed bike lanes on Martin Luther King Jr. Way, Washington Street, Madison Street and Oak Street.

In Alameda, there are existing Class II bike lanes in the Marina Village development in addition to the Posey Tube facility. Future bike lanes will be provided within the Alameda Landing development, which will extend the bicycle network along the immediate shoreline.

Key pedestrian and bicycle facilities are shown in Figure 5.

Figure 5: Key Pedestrian and Bicycle Networks



Sources: City of Alameda, City of Oakland (2007)

6.2.2 Water Shuttles / Taxis

Description	A water shuttle between a new or modified dock in Alameda and the Jack London District, with potential for additional stops on either shore. Service headways estimated at 15 minutes. Can operate as a scheduled or on-call service. A previous service between Alameda and Oakland closed in 2005 due to a combination of reasons including expiration of dock agreement (at Jack London Square), safety concerns from developers and lack of ridership.		
Advantages	Frequent and fast service is attractive to both commuters and tourists	**Disadvantages**	Limited passenger catchment

Description of performance against preliminary assessment criteria		
Safety	◉	a) Service safety is regulated by the U.S. Coast Guard. b) Limited capacity to aid in emergency services.
Functionality	○	Offers fast and frequent service balanced against lower capacity compared to ferries. There is also flexibility in employing set schedules or picking up passengers as needed. Pick-up locations can connect to bike and pedestrian routes. There is minimum impact on other waterborne traffic. 24-hour service is assumed along with 12-hour and 6-hour service options.
Financial Impact – Short Term	○	Requires some investment in new wharves and small ferries, with an estimated capital cost of approximately $350,000 per vehicle. One water taxi will be required to maintain the 15-minute service headway. The City also will need to determine if existing docks can be used for shuttle launches, or if new docks are required.
Financial Impact – Long Term	○	The water taxi has operating and maintenance costs approximately $2.5 million annually, which assumes 24 hour, 7 days per week service; $1.25 million annually for 12 hour, 7 days per week service; $625,000 annually, which assumes 6 hour, 7 days per week service.
Engineering	◉	Requires some construction of small-scale wharves on Alameda's shore and possible new or existing docks on Oakland's shore. A water taxi on the estuary will be a visual presence for residents and travelers in the area. The vehicle, combined with several wharves along the shoreline, will act as small ferry stations that are highly recognizable.
Neighborhood Development	○	Convenient and attractive option for tourists and commuters can help stimulate the waterfront on both shores, and can provide visibility towards the shoreline for future redevelopment opportunities. There is minimum impact on private property and neighborhood.
Environmental Impact	◉	Some impact expected on the estuary due to increases in noise and engine emissions and construction of wharves. Use of small and potentially alternative fuel vessels will reduce these impacts.

7.2 Water Shuttle/Taxi

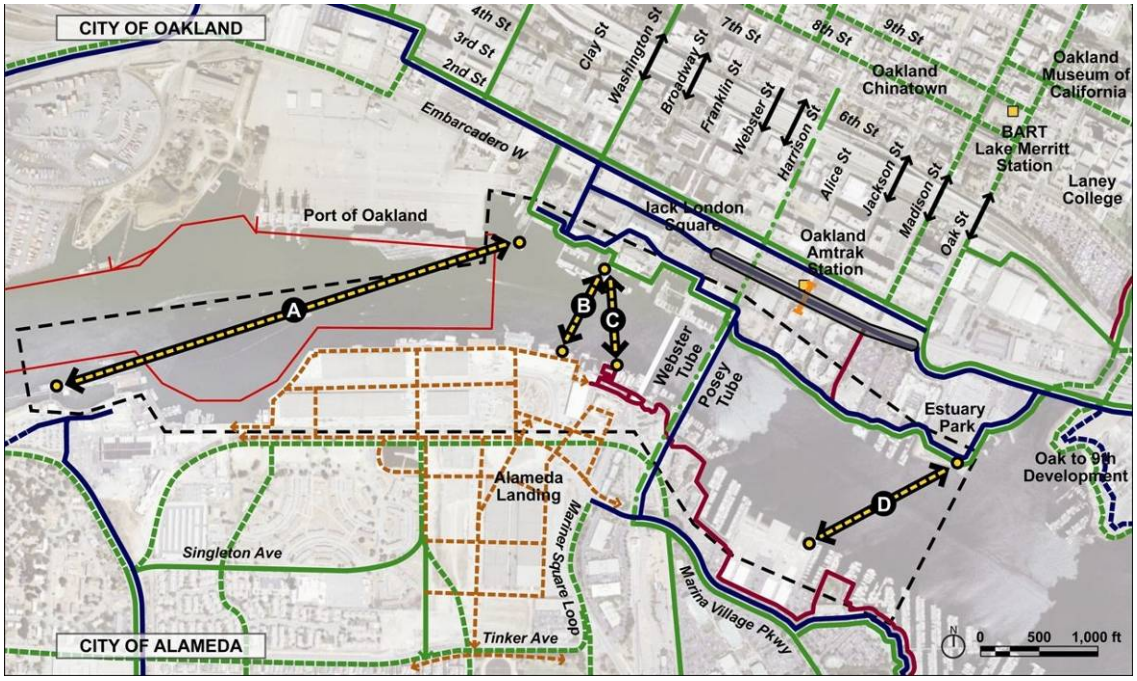
The water shuttle/taxi service will be provided between new or modified piers on the Alameda and Oakland waterfronts, with potential for additional stops on either shore. Service headways are estimated at 15 minutes. 24 hour, 7 days per week service will be provided with options for 12- and 6-hour services. The water shuttle/taxi can operate as a scheduled or on-call service.

7.2.1 Proposed Alignments

During the community workshop held in October, the proposed alignments for waterborne crossing alternatives were presented. The four proposed alignments, shown below in Figure 12, offer slightly different connections between Oakland and Alameda. The main criteria behind selecting the proposed alignments include:

- Ease of access between Oakland and Alameda
- Direct connections to major trip destinations and attractions
- Open areas where docks can be constructed

Figure 12: Proposed Waterborne Crossing Alignments



Alignment A connects Oakland and Alameda along Clay Street in Oakland to the Main Street Ferry Terminal in Alameda. Although the existing ferry terminals can be modified to accommodate the water shuttle/taxi service, the Main Street Ferry Terminal is some distance away from the current or future residential and commercial centers.

Alignment B connects Oakland and Alameda along Broadway in Oakland to Alameda Landing in Alameda. It offers a direct connection between Alameda and Jack London Square with easy access to downtown Oakland. The dock in Alameda is adjacent to the future Alameda Landing development and is consistent with the Waterfront Plaza concept shown in the Bayport/Alameda Landing Project Master Plan dated December, 2006.

Alignment C connects Oakland and Alameda along Broadway in Oakland and along the waterfront trail in front of the Pasta Pelican Restaurant in Alameda. The alignment offers the same access gateway to downtown Oakland, Oakland Chinatown and the core entryway to the heart of Alameda.

Alignment D connects Estuary Park in Oakland and Marina Village Shopping Center in Alameda. Although it is connected to a popular shopping and employment center in Alameda, the other end of the alignment is farthest from downtown Oakland.

The public response garnered from the latest community workshop indicated that the proposed alignments B and C were the preferred alignments for the waterborne crossing alternative. The proposed sites of the water shuttle/taxi stops for these two alignments are shown in Figure 13. Alignment B will benefit from a bigger population after Alameda's center of gravity is shifted further west with the construction of the planned land developments on the west end of the island.

Figure 13: Proposed Landings for Waterborne Crossings

View of Alameda site, alignment B

View of Oakland site, alignment B

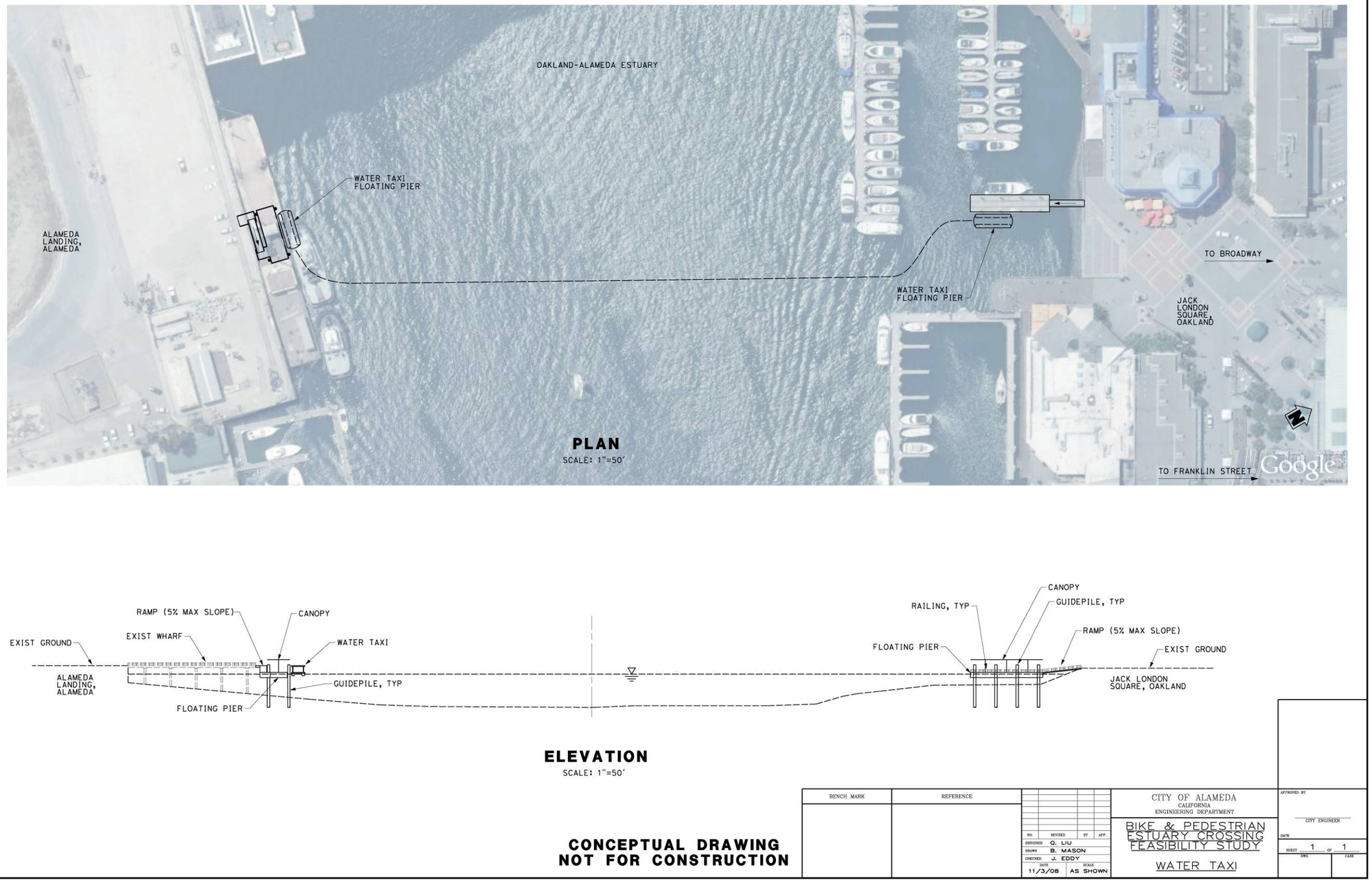
View of Alameda site, alignment C

View of Oakland site, alignment C

7.2.2 Engineering Layout/Conceptual Designs

To provide a water shuttle/taxi service across the waterway, floating piers with ADA compliant ramps are proposed on both sides of the estuary (Figure 14). A new pier adjacent to the future Alameda Landing development will be provided similar to what is proposed in the Bayport/Alameda Landing Project Master Plan dated December, 2006. The existing pier with access ramp to the Jack London Square Pavilion Plaza and Stage in Oakland will be modified for water shuttle/taxi use.

Figure 14: Conceptual Plan for Water Shuttle/Taxi



7.2.3 Cost Estimates

Order of magnitude costs are given for various items with brief explanations on the basis of the estimates.

- **Right-of-way**: None
- **Design**: The cost of design is $200,000.
- **Administration**: The budget for the administrative work is estimated to be $200,000.
- **Contingencies**: Contingencies are 25 percent of the construction cost and have been included as part of the construction cost.
- **Environmental Review**: $500,000 to $750,000 for a full environmental impact study.
- **Mitigation**: None
- **Utility**: None. Utility relocation is not anticipated.
- **Public Outreach**: $150,000 to $200,000 excluding the cost of the public outreach program that is required for the Environmental Impact Review process.
- **Construction**: $3 million including costs for water shuttle/taxi procurement and infrastructure construction (refer to Table 9 for details). Note that a new vessel recently purchased by Caltrans for the Ryer Island Ferry costs $4.3 million. It will have the capacity to carry up to 8 vehicles and 100 passengers, which is larger than the vessels expected for this water taxi service.
- **Operation and Maintenance**: $2.5 million annually if 24 hour, 7 days per week service is provided, $1.25 million if 12 hour, 7 days per week service is provided and $625,000 if 6 hour, 7 days per week service is provided (refer to Table 10 for details). The operations and maintenance costs were validated by the Ryer Island Ferry service in the Delta, which has similar parameters. It costs $2.5 million annually to operate two ferries in the Delta on a 24 hour, 7 days per week schedule. Operational challenges include the need for two employees per vessel – a Master and a crew, difficulty in finding qualified and licensed employees, complex employee scheduling issues, fuel costs and continual maintenance issues.

Table 9: Construction & Procurement Costs for Water Shuttle/Taxi Crossing

BIKE & PEDESTRIAN ESTUARY CROSSING FEASIBILITY STUDY

NAME: OAKLAND-ALAMEDA ESTUARY WATER TAXI CROSSING **RTE:** LOCAL
TYPE: MARITIME VESSEL AND PIER **CO:** ALA

LENGTH: 80.00 **WIDTH:** 20.00 **AREA (SF)=** 1,600

 # OF STRUCTURES IN PROJECT : 02 **EST. NO.**
PRICES BY : Q. LIU **COST INDEX:**
PRICES CHECKED BY : B. MADDEX **DATE:** 10/23/2008
QUANTITIES BY: Q. LIU **DATE:** 10/23/2008

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	FLOATING PIER		SF	1,600	$200.00	$320,000.00
2	RAMP		SF	2,560	$200.00	$512,000.00
3	WATER TAXI		EA	1	$700,000.00	$700,000.00
4	RAILING		LF	640	$200.00	$128,000.00
5	CANOPY		SF	1,600	$50.00	$80,000.00
6						
26						
27						
28						
29						
30						

SUBTOTAL		$1,740,000
TIME RELATED OVERHEAD		$174,000
MOBILIZATION (@ 10 %)		$212,667
SUBTOTAL BRIDGE ITEMS		$2,126,667
CONTINGENCIES	(@ 25%)	$531,667
TOTAL COST		$2,658,333
COST PER SQ. FOOT		$1,661.46
GRAND TOTAL		$2,658,333
BUDGET ESTIMATE AS OF		**$2,658,000**
USE		**$3,000,000**

COMMENTS:

Table 10: Annual Operation and Maintenance Costs for Water Shuttle/Taxi Crossing

BIKE & PEDESTRIAN ESTUARY CROSSING FEASIBILITY STUDY

BRIDGE:	OAKLAND-ALAMEDA ESTUARY WATER SHUTTLE/TAXI CROSSING	**RTE:**	LOCAL
TYPE:	MARITIME VESSEL AND PIER	**CO:**	ALA

LENGTH: 80.00 **WIDTH:** 20.00 **AREA (SF)=** 1,600

# OF STRUCTURES IN PROJECT :	01	**EST. NO.**	
PRICES BY :	QL	**COST INDEX:**	
PRICES CHECKED BY :	BM	**DATE:**	10/23/2008
QUANTITIES BY:	QL	**DATE:**	10/23/2008

	CONTRACT ITEMS	TYPE	UNIT	QUANTITY	PRICE	AMOUNT
1	CREW		Hours	8,760	$80	$700,800
2	CAPTAIN		Hours	8,760	$120	$1,051,200
3	MECH/ELEC SERVICING & FUELING		Lump Sum	1	$20,000	$20,000
4	STRUCTURAL INSPECTION		Lump Sum	1	$20,000	$20,000
5	STRUCTURAL MAINTENANCE		Lump Sum	1	$100,000	$100,000
6						
7						
		SUBTOTAL				$1,892,000
		TIME RELATED OVERHEAD				
		MOBILIZATION				
		SUBTOTAL BRIDGE ITEMS				$1,892,000
		CONTINGENCIES	(@ 25%)			$473,000
		TOTAL COST				$2,365,000
		COST PER SQ. FOOT				$1,478.13
		GRAND TOTAL				$2,365,000
		BUDGET ESTIMATE AS OF				**$2,365,000**
		USE				**$2,500,000**

COMMENTS: