UPRR Corridor Improvement Study

Opportunities and Constraints Technical Memorandum

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1. Introduction to Opportunities and Constraints

Memorandum Purpose

Analysis of opportunities and constraints is a critical step in the evaluation of the feasibility of a continuous multi-use trail along Union Pacific Railroad (UPRR) Oakland Subdivision Corridor is an analysis of the opportunities and constraints. This memorandum investigates the potential broad environmental issues along corridor as well as specific opportunities and constraints along individual segments. Opportunities and constraints include environmental concerns related to the California Environmental Equality Act (CEQA) as well as rail operations, available right-of-way, adjacent land uses, and functional characteristics supportive of a regional trail.

Opportunities are conditions that support or enhance the construction and use of the multi-use trail along the corridor. These include limited rail operations, available right-of-way width, proximity to supportive land uses, and limited roadway and grade-separated crossings.

Constraints are conditions that may hinder the construction and functionality of the trail. These include frequent or high speed rail operations, insufficient right-of-way, proximity to conflicting land uses, frequent roadway crossings and grade-separated crossings.

Memorandum Outline

The following sections of the memorandum present a summary description of opportunities and constraints for each segment. Segments have been identified based on similar rail operations, available right-of-way, land uses, and functional trail characteristics. The East Bay Greenway Concept Plan provided ownership information for the right-of-way from the Fruitvale to Hayward BART stations.

Appendix A outlines both opportunities and constraints for all corridor segments in a table format. Characteristics including general land uses, grade-separations, creek crossings, track configuration and right-of-way width are described.

2. Map 1

Figure 1 shows Map 1. Map 1 covers the City of Oakland from the Fruitvale BART Station to 105th Street near the San Leandro border. Existing and proposed bikeways, transit facilities, and rail spurs are identified.

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Figure 1: Map 1 Opportunities and Constraints

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Segment 1.1: Fruitvale BART Station to 37th Avenue

Segment 1.1, seen in **Figure 2**, is immediately adjacent to the Fruitvale BART Station and is surrounded by the Fruitvale Transit Village, a mixed-use transit-oriented development.

This segment is subject to several constraints including lack of available right-of-way precluding development of a trail. The right-of-way is occupied by the BART station parking lot where the UPRR rail lines have been removed.

Despite the lack of unoccupied right-of-way, the area is rich in supportive amenities. The adjacent land uses include residential neighborhoods, transit-oriented development, the Fruitvale commercial district, and light industrial. The surrounding area is at the heart of the development of the pedestrian oriented Fruitvale TOD, as potential attractor and generator for the trail. The Fruitvale TOD development, both Phase I and II, would tie into the development of the corridor as a multi-use trail serving as a recreational and transportation corridor.

Parallel alignment options include East 12th and San Leandro Streets. The Oakland Bicycle Plan identifies the East Bay Greenway from Fruitvale Avenue to the San Leandro border as a priority project. A Class III bike route is proposed along East 12th Street.

Segment 1.2: 37th Avenue to 47th Avenue

Segment 1.2 is defined by its industrial land uses, mid-block location and occupied right-of-way. The at-grade freight tracks have been removed. The segment is shown in **Figure 2**. The right-of-way in this segment is approximately 42 feet. BART owns the approximately 38 feet of right-of-way under its elevated tracks and UPRR owns the remaining.

Opportunities in this segment include the lack of existing at-grade rail operations and proximity to some supportive land uses. Rail operations here are limited to BART which operates on elevated tracks. The corridor is adjacent to the Fruitvale BART Station, the Fruitvale Commercial District, and nearby residential communities; all of which generate and attract pedestrians and bicycle trips.

The constraints in Segment 1.2 include available right-of-way, adjacent industrial land uses, and functional trail characteristics. The corridor at this segment runs through the interior of many blocks and provides little opportunity to use the right-of way. The right-of-way between 37th and 39th Avenues is occupied by Ascend Academy. The remainder of the corridor is intermittently occupied by industrial uses. The UPRR corridor crosses over the trestle bridge at 42nd Street.

Finally, regional trail facilities should meet certain design standards, including long block lengths and infrequent roadway crossings. As a potential multi-use trail, the block length, frequency of crossings, and center block location make this segment problematic. Nonetheless, the Oakland Bicycle Plan identifies the East Bay Greenway, which is planned for under the elevated BART tracks, as a recommended priority project. It also identifies a recommended Class III bike route parallel to the right-of-way on East 12th Street.

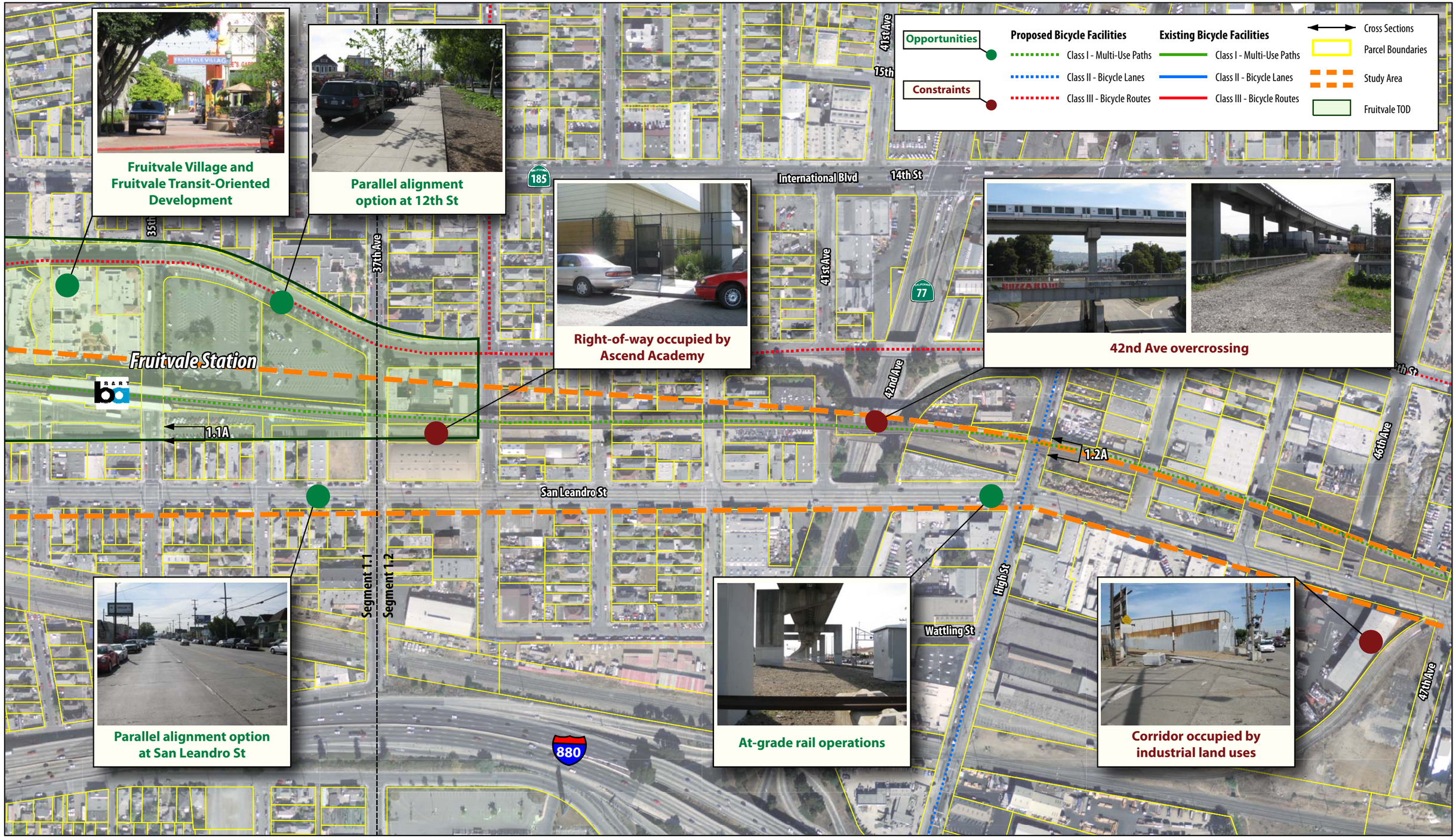

Figure 2: Segments 1.1 and 1.2

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Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/28/09

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Segment 1.3: 47th Avenue to Seminary Avenue

Segment 1.3, shown in **Figure 3**, is surrounded primarily by industrial uses with surface automobile parking, no nearby open space access, and few bicycle and pedestrian opportunities. This area does not meet MTC's Lifeline transit service objectives which were designed to ensure low-income families, seniors, and youth have access to transit when and where it is needed. Single family homes are situated to the east of the corridor.

The primary opportunities in this segment include available right-of-way and functional trail characteristics. The right-of-way in this segment is approximately 72 feet wide. An estimated eight feet belongs to the City of Oakland and 12 feet belongs to BART. The UPRR right-of-way is bound on the west by San Leandro Street and on the east by fencing that separates the industrial uses from the corridor.

The block lengths vary over the length of this segment. However there are only three roadway crossings, making this segment conducive to a regional trail. There are no existing bikeways within the immediate vicinity of the corridor. The East Bay Greenway and a Class III route on East 12th Street are proposed north/south facilities. A proposed Class III bike route on 54th Avenue would provide an east/west connector.

Constraints in Segment 1.3 include rail operations and adjacent land uses. BART operates on elevated track; however, at-grade rail operations begin at 47th Avenue where a spur from the Niles Subdivision connects to the Oakland Subdivision. In this segment, the Oakland subdivision has two at-grade tracks. There are no known current freight customers on this segment but freight operations do serve customers further south.

The industrial uses to the east of the corridor include large industrial buildings and storage yards. These industrial facilities may be an access barrier for the residential communities to the east. Additionally, the uses industrial uses themselves may pose a barrier to trail use.

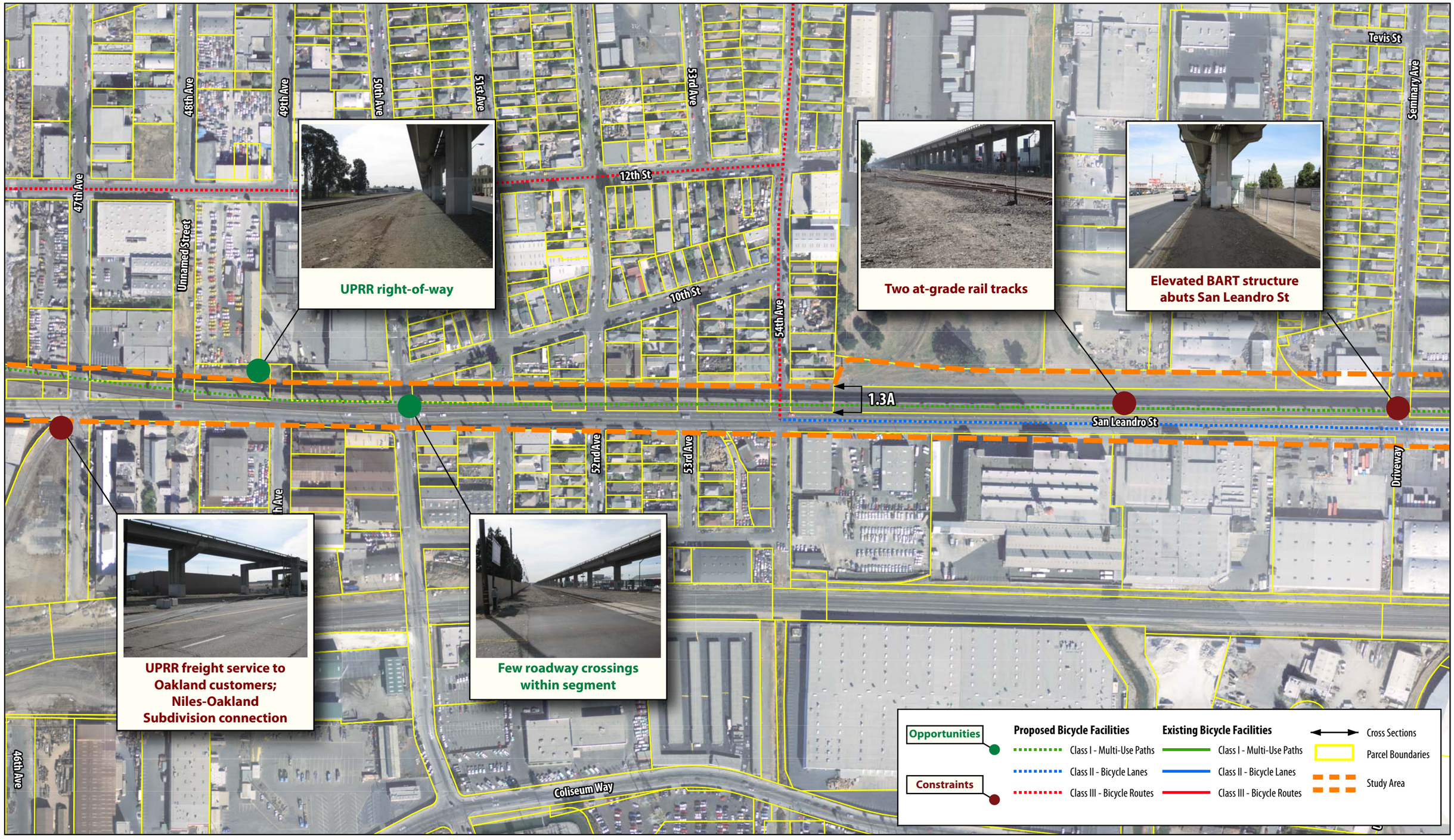

Figure 3: Segment 1.3

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
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Segment 1.4: Seminary Avenue to 81st Avenue

Segment 1.4, shown in **Figure 4**, is surrounded by TOD to the east and industrial uses to the west. The corridor is adjacent to the elevated BART tracks and runs parallel to San Leandro Street. The Coliseum BART Station, McAfee Coliseum and the Oracle Arena are the major land uses characterizing the area.

Opportunities in this segment include available right-of-way, adjacent land uses and inclusion of typical functional trail characteristics.

As in the previous segment, there are existing rail operations. BART operates on elevated tracks while two freight rail tracks operate at grade. An active rail spur between 77th and 81st Avenues serves freight customers to the east of the corridor. The right-of-way in this segment is approximately 72 feet. An estimated eight feet belongs to the City of Oakland and 12 feet belongs to BART. The corridor is currently fenced in and adjacent to the back of buildings on the eastern edge from Seminary Avenue to approximately 69th Avenue. Between the Coliseum BART Station and 81st Avenue, the corridor is fenced in from the BART tracks to the industrial buildings.

This segment, in terms of block length and number of crossings, is conducive to a regional trail corridor. The block lengths are long and there are few roadway crossings.

The adjacent land uses, specifically the existing and planned transit oriented development near the Coliseum BART Station provide potential users for the trail; however, the currently the TOD development walls off the corridor. Proposed bikeways include three east/west connections via 66th Avenue, Hegenberger Road, and 75th Avenue.

The constraints in segment 1.4 include rail operations and adjacent land uses. The at-grade spur and two at-grade tracks pose potential conflict with trail operations. Adjacent land uses though in some ways are supportive, the industrial land uses, particularly those near the spur pose a constraint to the trail because of safety issues related to service activity.

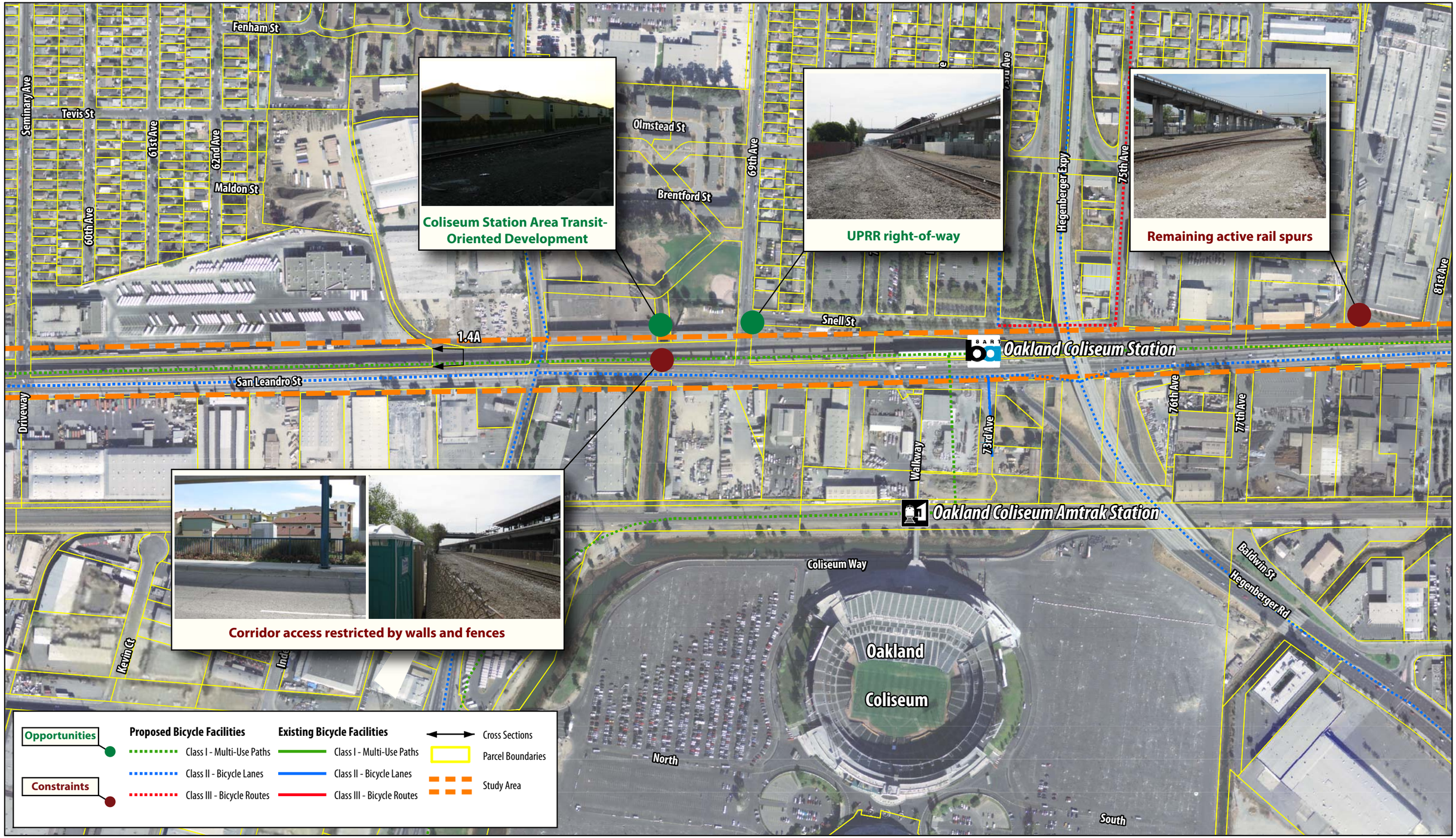

Figure 4: Segment 1.4

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Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
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Segment 1.5: 81st Avenue to 105th Avenue

Segment 1.5, shown in **Figure 5,** is immediately surrounded by commercial and industrial uses with surface automobile parking. Single family residential neighborhoods are located east of the existing commercial and industrial proprieties and immediately border the southern end of this segment. The right-of-way is occupied by elevated BART tracks and runs parallel to San Leandro Street.

Opportunities in this segment include available right-of-way and functional suitability for a regional trail facility. The total right-of-way in this segment is approximately 72 feet. An estimated eight feet is owned by the City of Oakland and 11 feet is owned by BART with the remaining owned by the UPRR. The block lengths are long and there are few roadways crossings making it conducive to a regional trial. Proposed east/west connector bicycle facilities include Class III routes on 85th and 92nd Avenues.

The constraints in segment 1.5 include rail operations, adjacent land uses, and potential crossing conflict with at-grade rail spurs. Rail operations in this segment include BART (elevated), two at-grade tracks, and three at grade rail spurs. Between 81st and 85th Avenues an at-grade spur turns east from the UPRR tracks. South of 85th Avenue, a spur turns west and crosses San Leandro Street. Finally, between 92nd and 98th Avenues another spur turns west and crosses San Leandro Street into the Oakland Foreign Trade Zone.

Adjacent land uses are industrial. The neighboring parcels are large footprint commercial and industrial structures with no corridor interaction or are used to store vehicles and shipping containers. This pattern of development limits access to the corridor for the nearby residential communities.

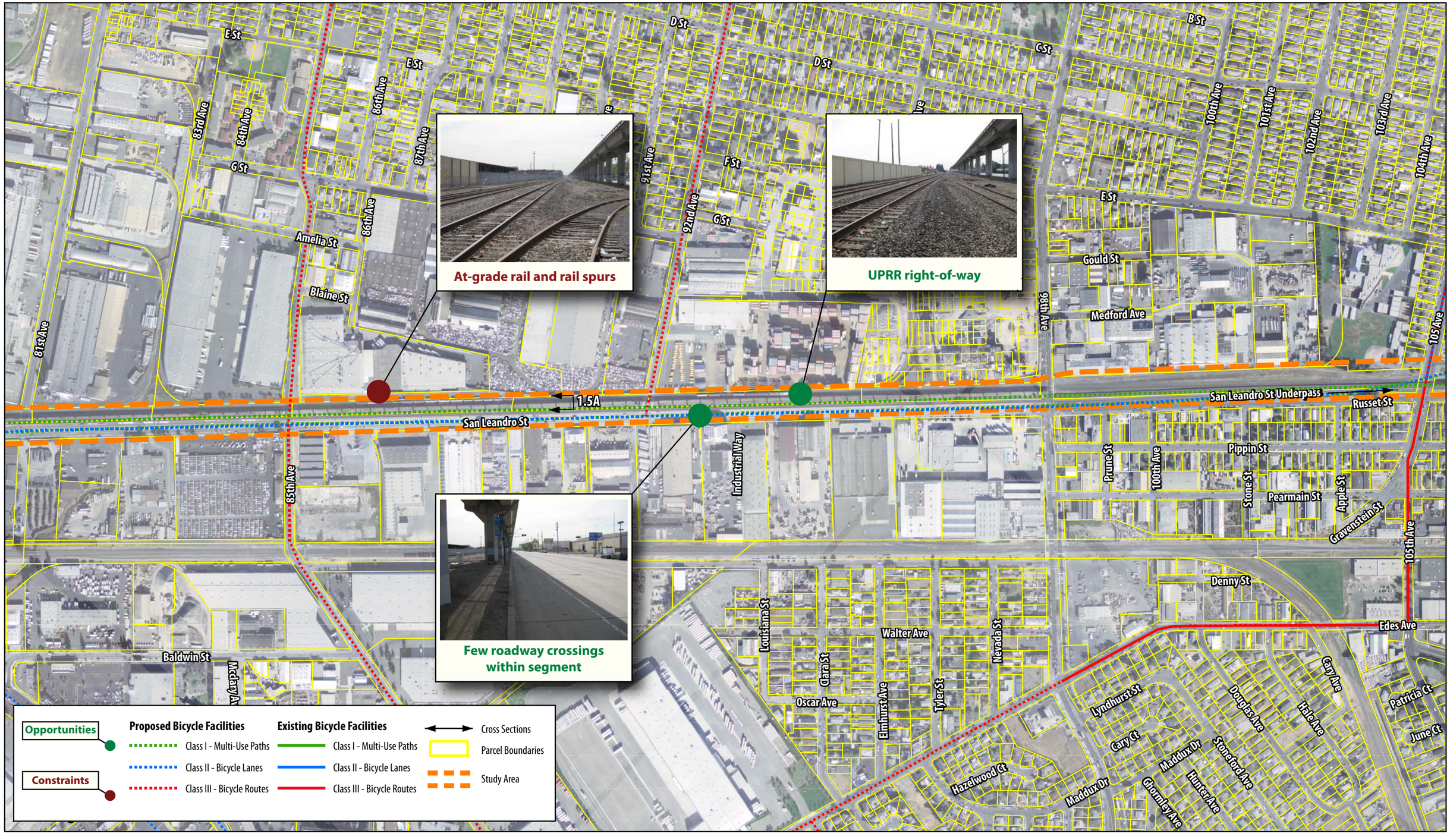

Figure 5: Segment 1.5

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Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/28/09

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Figure 6: Map 2 Opportunities and Constraints

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3. Map 2

Figure 6 shows Map 2 and its segments. Map 2 begins at 105th Street in Oakland and continues to the Bay FAIR BART Station in San Leandro. Existing and proposed bikeways, transit facilities, and rail spurs are identified.

Segment 2.1: 105th Avenue to Peralta Avenue

Segment 2.1 is predominantly bordered by single and multifamily residential communities with some commercial and industrial frontage. **Figure 7** shows the segment. The segment includes elevated BART tracks and runs parallel to San Leandro Street. At 105th Avenue, San Leandro Street switches to the eastern side of the UPRR right-of-way. Russet Street bounds the corridor to the west to Moorpark Street.

Opportunities in this segment include limited rail operations, available right-of-way, adjacent land uses and functional characteristics conducive to a regional trail. Segment 2.1 has no at-grade rail spurs. According to the City of San Leandro staff, there is only one freight customer in the city in Segment 2.3. The right-of-way, occupied by elevated BART tracks on the western edge of the corridor and one at-grade rail track, is approximately 80 feet in total width and is owned by the UPRR. Adjacent land uses include single- and multifamily-residential communities and commercial and industrial between San Leandro Boulevard and Park Street.

At-grade roadway crossings of this right-of-way occur only at the beginning and end of the segment. Proposed bikeways include parallel facilities on E Street and San Leandro Boulevard. The City of San Leandro Bicycle Plan proposes a Class I bikeway along the BART corridor.

The constraints in segment 2.1 include the industrial use at Moorpark and Russet Streets. This facility may have rail service and have operations that cross the right of way from the tracks on the east to the facility on the west. Additionally, the corridor lacks connectivity to the residential community to the east. The corridor runs parallel to San Leandro Street, a four-lane roadway. The only connections are at 105th and Peralta Avenues.

Figure 7: Segment 2.1

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/30/09

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Segment 2.2: Peralta Avenue to Marina Boulevard

Segment 2.2, shown in **Figure 8**, is located in downtown San Leandro and is part of the Downtown San Leandro Transit-Oriented Development Strategy. The San Leandro BART Station and surface parking occupies much of this segment. Adjacent to the corridor is downtown commercial, retail, and multi-family and single-family residential land uses. The segment includes the elevated BART tracks which are on the eastern side of the right-of-way in the northern portion and the western side of the right-of-way in the south. The corridor runs parallel to San Leandro Street and contains a single freight track.

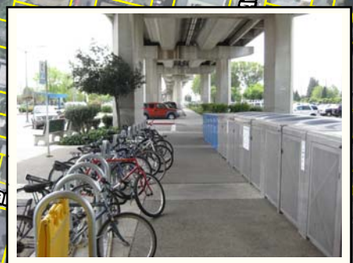
Primary opportunities along this segment include limited rail operations, available right-of-way, and supportive adjacent land uses. There are no at-grade rail spurs and no known freight customers. At-grade rail activity is likely to be infrequent. The total right-of-way width is approximately 85 feet and owned by the UPRR. It holds elevated BART tracks and one at-grade rail track. Adjacent land uses, including the transit-oriented areas surrounding the San Leandro BART Station, are conducive to generating potential trail users.

The San Leandro Bicycle Plan identifies existing and proposed bikeways along this segment. East/west connections are located on Peralta Avenue, Davis Street, and Williams Street. North/South routes (both existing and proposed) include a Class II bicycle lane on San Leandro Boulevard and a Class II/III bikeway on Alvarado Street. A Class I bikeway is proposed along the BART corridor.

The constraints in Segment 2.2 include the crossing of the UPRR tracks from the eastern to western edge of the right-of-way, a creek crossing, and numerous at-grade street crossings coupled with short block segments. Between Peralta Avenue and Antonio Street the layout of the right-of-way changes. The at-grade tracks switch from the eastern to western edge of the corridor. This switch will pose a constraint for trail users to cross as there is no at-grade crossing legally existing. Near this switch is a grade-separated crossing over San Leandro Creek. There is no existing bridge to accommodate trail users.

Finally, the segment lacks the typical characteristics of a regional trail. The block lengths are short and there are many roadway crossings. There are nine roadway or parking facility crossings in this segment, providing potential points of conflict. Two of the roadway crossings, Williams Street and Castro Street, include roadway crossings with slip turn lanes.

BART and UPRR rail crossing limits a continuous corridor



San Leandro Transit-Oriented Development

UPRR right-of-way

Williams St crossing

San Leandro Station

2.2A

Bert Ave
Peralta Ave
Bella Vista Ave
Pershing Dr
Lorraine Blvd
Lille St
Antonio St
Davis St
Estudillo Ave
Martinez St
Joaquin Ave
Parrott St
Thornton St
Washington Ave
Hays St
Clarke St
Harlan St
Estabrook St
Castro St
San Leandro Blvd
Alvarado St
Williams St
Magnolia Ln
Orchard Ave
Marina Blvd
Minerva St

Opportunities

Constraints

Proposed Bicycle Facilities	Existing Bicycle Facilities
Class I - Multi-Use Paths	Class I - Multi-Use Paths
Class II - Bicycle Lanes	Class II - Bicycle Lanes
Class III - Bicycle Routes	Class III - Bicycle Routes

Cross Sections
Parcel Boundaries
Study Area
Downtown San Leandro TOD Area

Figure 8: Segment 2.2

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Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/28/09

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Segment 2.3: Marina Boulevard to Hesperian Boulevard

Segment 2.3 (**Figure 9**) is bound by industrial uses as well as single and multifamily homes. At the northern edge of the segment San Leandro Street discontinues its parallel path to the corridor. There are no roadways immediately parallel to the corridor.

Primary opportunities along this segment include limited rail operations and available right-of-way. BART operates on elevated tracks and occupies the eastern edge of the corridor. Discussions with San Leandro City staff revealed only one potential freight customer, Preferred Freezer, served by at-grade rail in this segment. Preferred Freezer is currently constructing a new cold storage facility on Polar Way just east of the Oakland Subdivision. The total right-of-way width is approximately 80 feet. Ownership varies along the segment. UPRR owns the majority of the corridor; however, the City of San Leandro owns a portion on the eastern edge for part of the segment. Near 147th Avenue, BART owns a portion of the corridor on the eastern edge.

Proposed bikeways connecting to the corridor include three facilities. A Class II bike lane is proposed for San Leandro Boulevard as is heads west before turning north. A proposed Class III route on 143rd Avenue also provides an east/west connection. A partially existing Class II bike lane on Halcyon/Fairmont Drive will also bring users to the corridor.

The constraints in Segment 2.3 include potentially incompatible land uses and a lack compliance with desirable functional trail characteristics. Industrial land uses, bordering both the eastern and western edges of the corridor block access the corridor for the nearby residential communities. Though the segment is long compared to others in the study corridor, there are five roadway crossings, one of which is grade-separated. The corridor crosses over Washington Avenue where a bridge would be required for trail users. At Marina Boulevard, the corridor crosses over six travel lanes, two of which are slip turn lanes. Additionally, the crossing at Halcyon Drive is angled.

Figure 9: Segment 2.3

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/29/09

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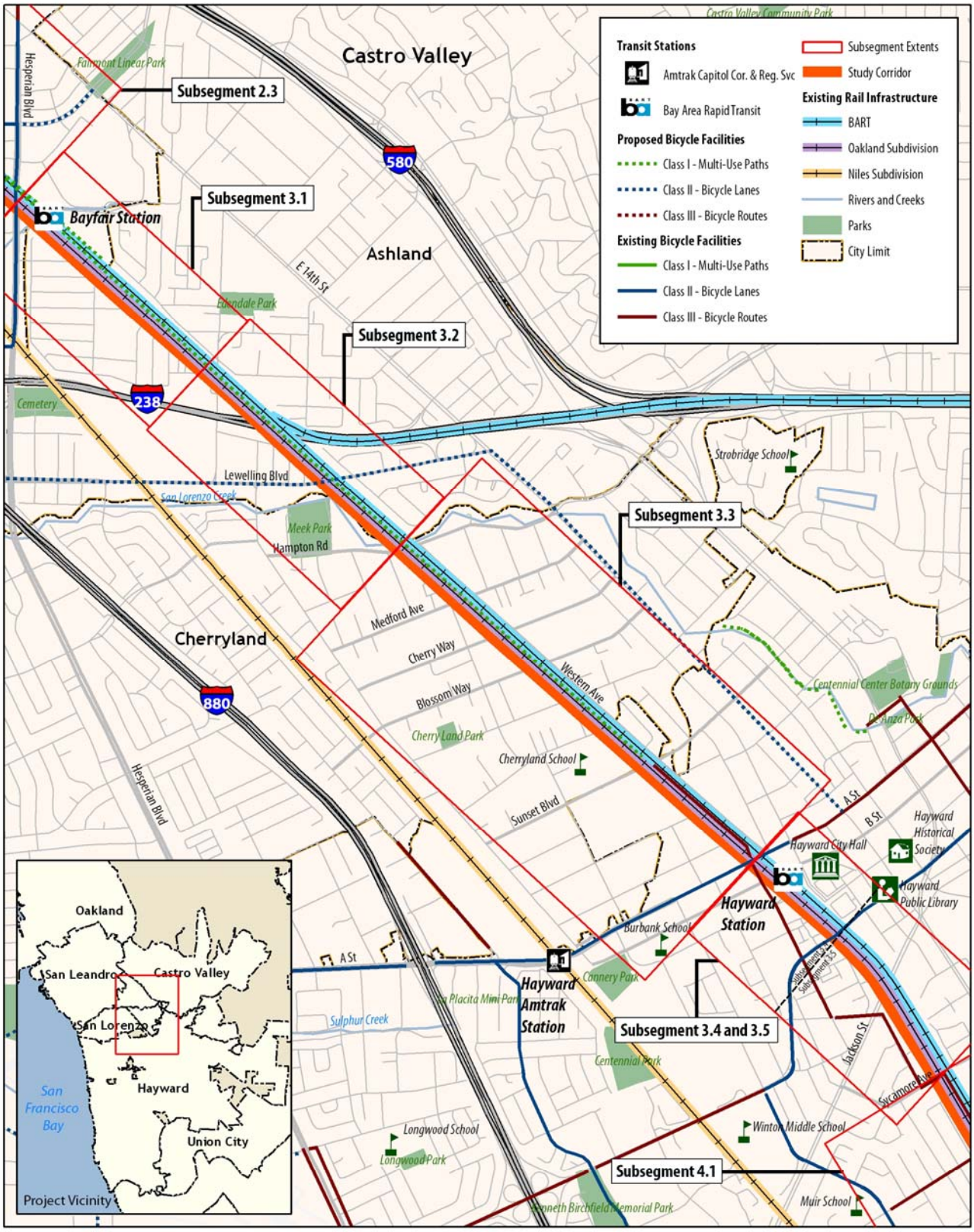

Figure 10: Map 3 Opportunities and Constraints

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4. Map 3

Figure 10 shows Map 3 and its segments. Map 3 begins at the Bay Fair BART Station in San Leandro and continues to the Hayward BART Station. It incorporates areas in Unincorporated Alameda County, City of San Leandro, and City of Hayward. This area is predominately residential throughout and the study corridor connects several schools sites and major retail destinations.

Segment 3.1: Hesperian Boulevard to Elgin Way

Segment 3.1, shown in **Figure 11**, is bound by residential uses, the Bay Fair BART Station, and the Bayfair Center. The BART tracks are elevated to the Bay Fair Station and continue at-grade to the south. The elevated BART tracks are on the eastern edge of the corridor right-of-way. There are no roadways immediately parallel to the Oakland Subdivision right-of-way.

Primary opportunities along this segment include limited rail operations, available right-of-way and adjacent land uses. At-grade rail operates on a single track in this segment and there is infrequent freight activity. There are no rail spurs.

The average total right-of-way varies but does provide available space for a trail. Near the Bay Fair Station, the right of way is approximately 100 feet wide and immediately south the total right-of-way is an estimated 200 feet wide. There is about fifty feet between the tracks and the western parcel boundary in the UPRR right-of-way. The corridor from Hesperian Boulevard to Estudillo Canal has split ownership between BART and the UPRR. South of the Estudillo Canal the right-of-way is occupied by the Bay Fair BART Station and is owned by BART.

The adjacent land uses include the Bay Fair BART Station, and residential, commercial retail land uses as well as the Hesperian Elementary School. The Hesperian Elementary School is a large school that serves approximately 700 students in kindergarten through the fifth grade. These land uses are likely to generate activities supportive of a trail corridor. Though there are no existing bikeways in this segment, a proposed Class I is located on the BART corridor.

The constraints in this segment relate to characteristics not typical to a regional trail. This segment has one angled roadway crossing at Hesperian Boulevard and two grade-separated crossings. The grade-separated crossings are over the Bay Fair access tunnel and the Estudillo Canal. Finally, the segment includes four (4) at grade tracks south of the Bay Fair BART Station.

The Bay Fair BART Station is not easily accessible by biking or walking. Two undercrossings, from Hesperian Boulevard and from the parking lot, pose constraints to access. The access from Hesperian Boulevard is a roadway shared with vehicles. The undercrossing is pinched and does not have facilities for bicycles and pedestrians. The access tunnel from the BART parking lot is problematic as well. Stakeholder interviews conducted for the Bay Fair BART Transit-Oriented Development (TOD) & Access Plan identified the lack of direct and safe access related to the parking lot access tunnel. The Bay Fair TOD planning could incorporate a connection similar to the Pleasant Hill BART connector to the Iron Horse Trail.

Figure 11: Segment 3.1

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Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/29/09

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Segment 3.2: Elgin Way to Hampton Road

Segment 3.2 (**Figure 12**) is surrounded by residential, commercial and light industrial uses. The BART tracks, on the eastern edge of the corridor are elevated immediately south of the Interstate 238 undercrossing. The BART Dublin Pleasanton line branches from the Richmond-Fremont tracks at the 238 undercrossing. The Dublin Pleasanton tunnel portal is located immediately north of the Interstate 238 deck, creating a complex sequent of grade separations.

Primary opportunities along this segment include limited freight rail operations, available right-of-way, compatible adjacent land uses, and limited roadway crossings. This segment has no at-grade rail spurs and no known freight customers. The right-of-way width is approximately 100 feet north of Interstate 238 and 70 feet to the south. The corridor contains one at-grade UPRR track and numerous at-grade BART tracks, however there is about fifty feet between the tracks and the western parcel boundary in the UPRR right-of-way.

Adjacent land uses, primarily residential with some minor commercial and industrial are conducive to generating potential trail users. Additionally, it has some characteristics supportive of a regional trail. There are only two roadway crossings. Proposed bikeways include a Class II lane serving as an east/west connector on Lewelling Boulevard. The City of San Leandro Bicycle Plan includes a Class I trail located in the BART corridor.

Segment 3.2 constraints include crossing and grade separation issues. Crossing issues are evident in this segment. The corridor contains overcrossings at Ashland Avenue and San Lorenzo creek. The crossing at East Lewelling Boulevard is angled and is located more than 500 feet from existing controlled intersections in both directions.

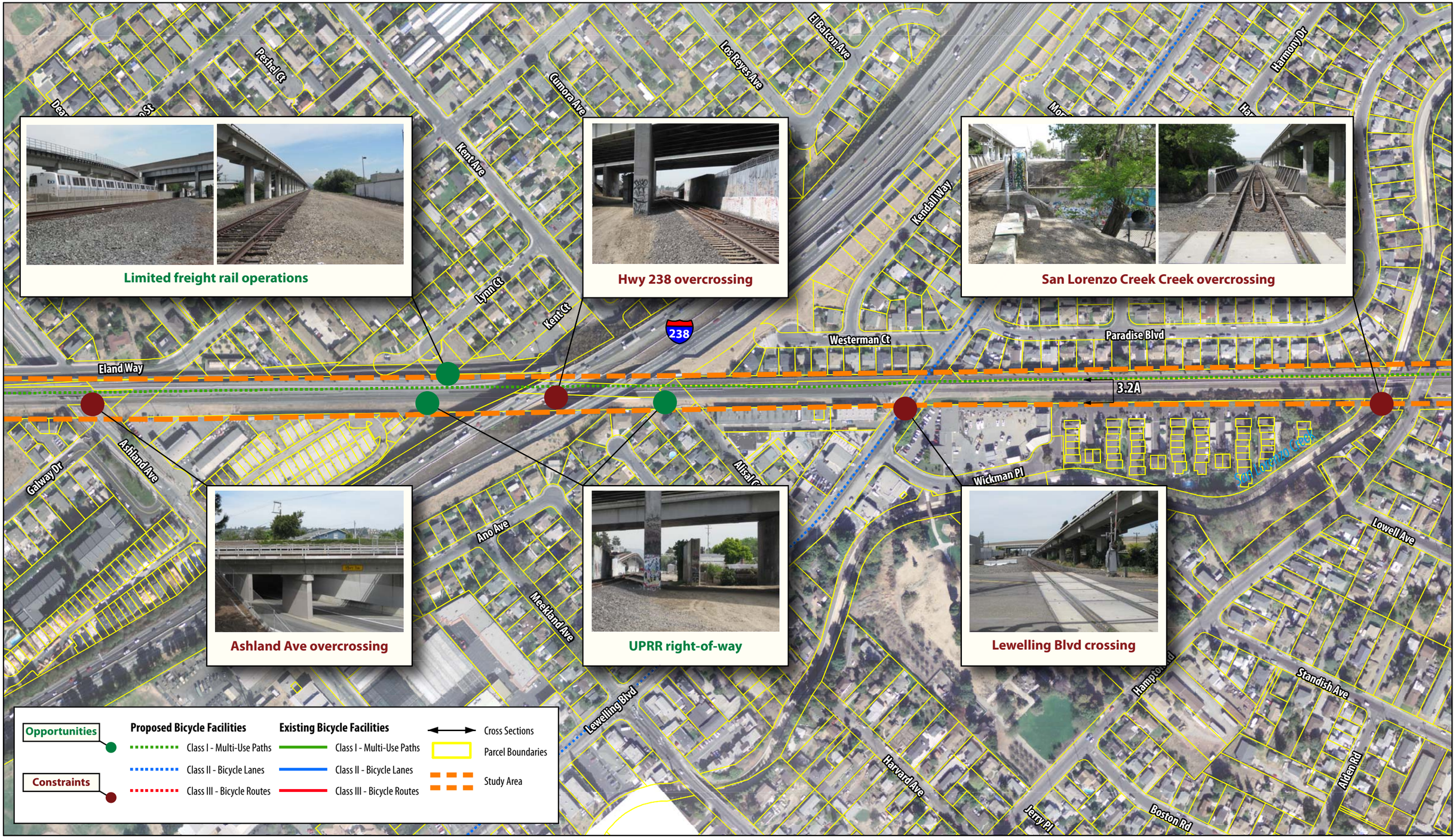

Figure 12: Segment 3.2

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 5/15/09

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Segment 3.3: Hampton Road to A Street

Segment 3.3, shown in **Figure 13**, is bound by single and multi-family residential buildings. The elevated BART tracks are on the eastern edge of the corridor right-of way. Western Boulevard parallels the Oakland Subdivision for the length of this segment.

Primary opportunities in Segment 3.3 include limited rail operations, supportive adjacent land uses, a parallel right-of-way, and excellent access to the corridor from adjacent neighborhoods via low volume residential streets. BART operates on elevated tracks. There are no at-grade rail spurs and no known freight customers. At-grade rail activity is likely to be infrequent; however, there are two at-grade rail tracks. Adjacent land uses are predominantly North Hayward single-family homes, schools and churches. These uses are conducive to generating potential trail users. There are two large school sites located immediately adjacent to the Oakland Subdivision including the Cherryland Elementary School and the Abramowitz Alternative High School.

Constraints include limited available right-of-way and numerous roadway crossings. The typical right-of-way width is approximately 80 feet and has split ownership among Alameda County, Hayward, and the UPRR. It holds elevated BART tracks and two at-grade rail lines. The roadway crossings include:

- Hampton Road
- Medford Ave
- Cherry Way
- Blossom Way
- Grove Way
- Sunset Boulevard

While this number of crossings yields block lengths of approximately 500 feet, the roadway volumes are generally low and these at grade crossings provide good access to the corridor.

Figure 13: Segment 3.3

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 5/15/09

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Segment 3.4: A Street to D Street

Segment 3.4 (**Figure 14**) is located in Downtown Hayward providing connections to the Hayward BART Station, AC Transit bus service, and numerous transit oriented development sites. The elevated BART tracks are on the eastern edge of the corridor right-of way. Western Boulevard is a parallel roadway.

Primary opportunities include adjacent land uses. The Hayward BART Station, the AC Transit hub, downtown Hayward, and the nearby residential communities are conducive to generating potential trail users. Also nearby are the Hayward Library and many retail businesses. The Class II bike lane on A Street provides an east/west connection to the corridor as well as an intermodal connection.

The constraints in Segment 3.4 include limited right-of-way and complex grade-separated crossings. There are two at-grade tracks located in the approximate 60 foot wide UPRR corridor with potentially available right-of-way located on the western edge. The existing grade-separated crossing at D Street would require development of a trail bridge.

Segment 3.5: D Street to Sycamore Avenue

Segment 3.5, also show in **Figure 14**, is bound by central Hayward residential communities and some commercial uses. The at-grade BART tracks are on the eastern edge of the corridor right-of way where there are two freight lines.

Opportunities along this segment include limited at-grade rail operations and some supportive bikeway characteristics. There are no at-grade rail spurs and no known freight customers. At-grade rail activity is likely to be infrequent. The adjacent residential and retail land uses are conducive to generating potential trail users.

This segment has few crossings, which is supportive of a regional trail. There are no immediately parallel roadways providing on-street alignment options. The existing Class II bicycle lanes from Sutro Street to Silvia Avenue and then to Alves Street does provide a route parallel to the corridor.

Constraints include available right of way, grade-separation and a disconnection from the surrounding communities. The right-of-way width is approximately 75 feet. It holds at-grade BART tracks and two at-grade rail lines. The corridor passes over Jackson Street via a bridge supporting the two rail tracks which has no width for a multi-use trail. Another constraint is related to the corridor's connection with the surrounding communities. D Street and Sycamore Avenue are the only at-grade intersection crossings of this segment. There is an existing pedestrian overcrossing at Sycamore Avenue. The corridor is walled off on both sides by back yards of single and multi-family homes.

There are no immediately parallel roadways however, Sutro Street, to Silvia Avenue, to Alves St can provide a parallel route option.

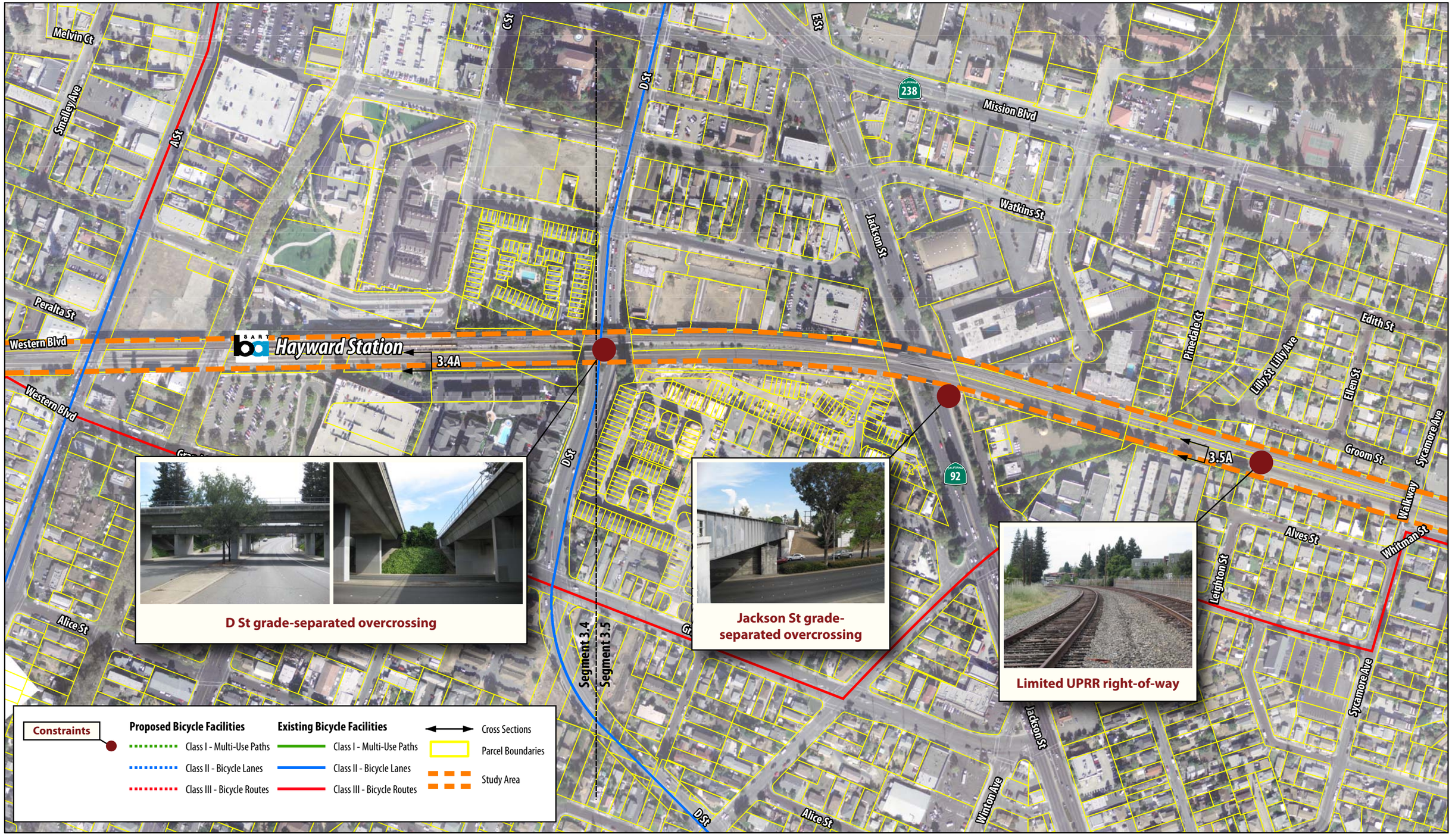

Figure 14: Segments 3.4 and 3.5

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/31/09

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Figure 15: Map 4 Opportunities and Constraints

UPRR Corridor Improvement Study

5. Map 4

Figure 15 shows Map 4 and its segments. Map 4 begins at the Hayward BART Station and continues to the Industrial Parkway in Hayward. Existing and proposed bikeways, transit facilities, and rail spurs are identified.

Segment 4.1: Sycamore Avenue to Sorensen Road

Segment 4.1 (**Figure 16**) is bound by central Hayward residential communities and some commercial uses. Commercial properties line the corridor on the east. The area has limited open space access and few bicycle and pedestrian opportunities. The at-grade BART tracks are on the eastern edge of the corridor right-of way where there is one freight tracks. Whitman Street, to the west, provides a parallel roadway.

Opportunities in this segment include available right-of-way, supportive adjacent land uses and some functional characteristics conducive of a regional trail. The total corridor right-of-way is approximately 100 feet. There is about thirty feet between the tracks and the western parcel boundary. Adjacent land uses, including residential communities are conducive to generating potential trail users. Additionally, the segment has only two roadway crossings and no active freight spurs.

Existing east/west connections include a Class III route on Orchard Avenue and a Class II lane on Harder Road. An existing Class III route on Whitman Street provides a route parallel to the corridor.

Constraints include rail operations, available right-of-way width, some unsupportive land uses, and crossing issues. BART operates two tracks at-grade and the UPRR has one at-grade track. The eastern edge is bound by commercial uses with large areas of surface parking. Land uses such as these are not likely to generate trail users. Finally, there are also crossing issues. This segment has three overcrossings. The corridor crosses over both Orchard Avenue and Harder Road. Zeile Creek, a small creek south of Harder Road, also requires an overcrossing.

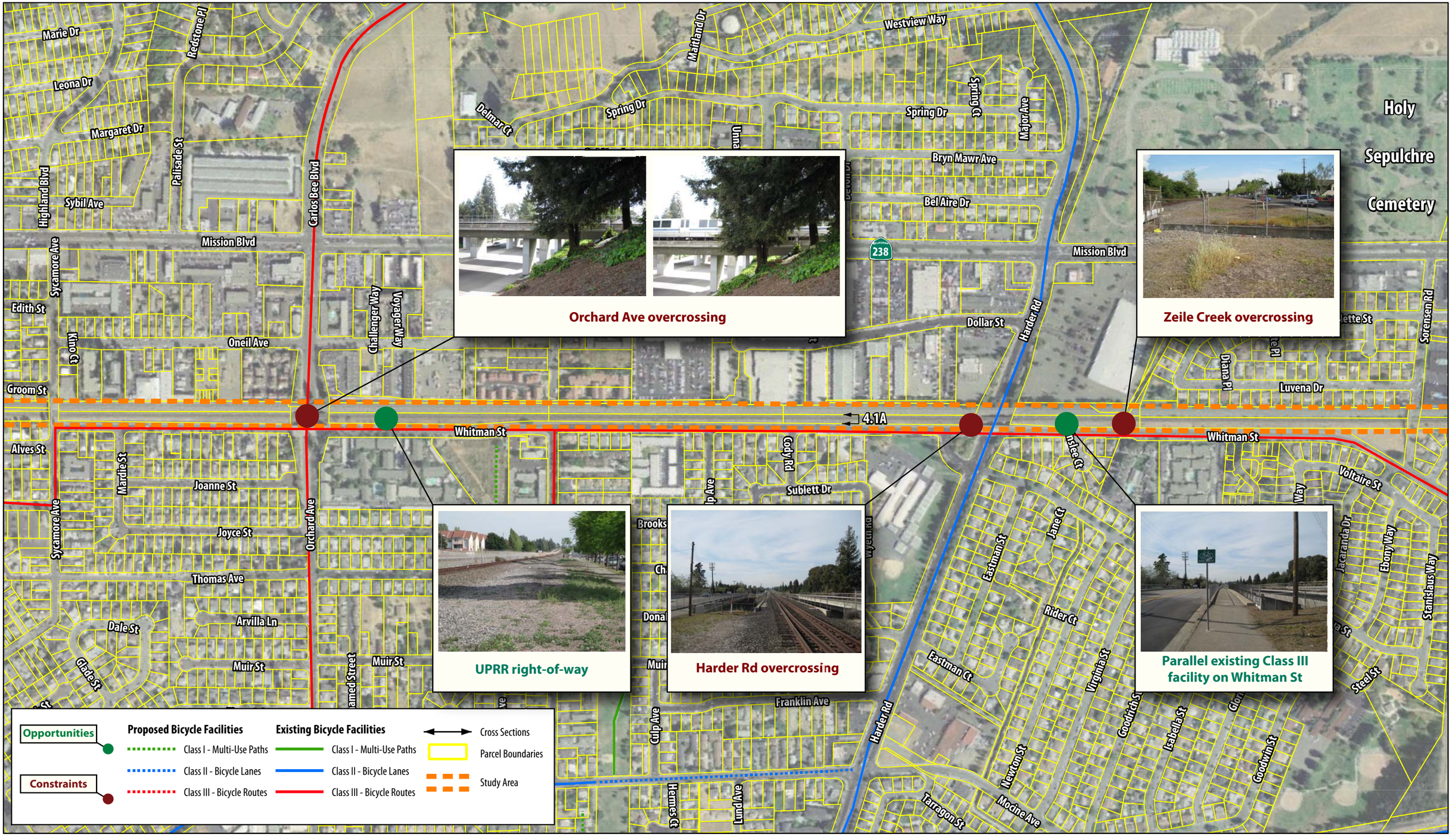

Figure 16: Segment 4.1

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/30/09

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Segment 4.2: Sorensen Road to Tennyson Road

Segment 4.2, shown in **Figure 17**, is bound by residential communities and some commercial uses at the northern edge of the segment. The at-grade BART tracks are on the eastern end of the corridor right-of way where there is one freight track. Between Jefferson Street and Tennyson Road, parallel to the corridor is an existing developed Class I trail through greenspace.

Opportunities along this segment include significant pedestrian and bicycle trip generators and attractors. The adjacent land uses include residential, retail and some schools. The Bowman Elementary School property is located immediately adjacent to the right-of-way and is currently accessible only via Mission Boulevard/SR 238. These are likely to generate potential trail users. Additionally, the corridor has no roadway crossings and no active freight spurs. The right-of-way width is approximately 100 feet for the majority of the segment with about 25-30 feet between the tracks and the western parcel boundary.

There is an existing east/west connection on the Class II bike lane on Tennyson Road. The Class III route on Whitman Street continues through this segment. In addition, 10th Street and an existing linear park setback and sidewalk parallels the southern half of this segment.

The constraints include rail operations and some characteristics not conducive to a regional trail. Rail operations include at-grade tracks for both BART and the UPRR. There are no at-grade rail spurs and no known freight customers; however, all activity occurs at-grade. Additionally, some of the corridor characteristics in this segment are not conducive to a regional trail. The street network is not connected to the corridor. A significant portion of the corridor is bordered by the back yards of single-family homes.

Figure 17: Segment 4.2

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/30/09

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Segment 4.3: Tennyson Road to Industrial Parkway

Segment 4.3 (**Figure 18**) begins at the South Hayward BART Station, continues through residential communities and ends near industrial uses. The at-grade BART tracks are on the eastern edge of the corridor right-of way where there is one freight track. There is no parallel roadway offering an on-street option for this segment.

Primary opportunities include available right-of-way, adjacent supportive land uses, limited roadway crossings and no active freight spurs. The approximate right-of-way width is 100 feet with 30 potentially available right-of-way located on the western edge.

The adjacent land uses include the South Hayward BART Station, transit-oriented development near the station, and residential communities. Though there are no existing or proposed east/west connections, there is an existing Class II lane parallel to the corridor on Dixon Street. These uses are likely to generate trail users.

In addition, immediately north of Industrial Parkway there are large undeveloped parcels contiguous to the right-of-way offering either opportunity for adjacent open space or other trail supportive land uses.

The constraints in Segment 4.3 include rail operations and functional characteristics. Both UPRR and BART operate at-grade in this segment. The segment crosses over Tennyson Road which is grade-separated. The existing BART and freight bridges do not provide crossing width for a pedestrian and bicycle facility.

Figure 18: Segment 4.3

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/30/09

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Segment 4.4: Industrial Parkway to Whipple Road

Segment 4.4, shown in **Figure 19**, is adjacent to residential communities on the east, however, the primary land use of this segment include the Niles Subdivision overcrossing and the BART layover yard. The Oakland Subdivision right-of-way is separated from the BART right-of-way for most of this segment. The at-grade BART tracks are to the east of the Oakland Subdivision right-of way adjacent to the Niles Subdivision.

There are limited multi-use trail opportunities along this segment. The single-family and multi-family neighborhoods within a half mile radius of the right-of-way have limited access. Liability and management concerns associated with BART yard operations and grade separated rail switching will maintain t this relationship.

Constraints of Segment 4.4 are numerous. They include rail operations, available right-of-way, and incompatible adjacent land uses. Rail operations necessarily limiting public access include the BART layover yard and its related activities. At the north end of this segment the Niles and Oakland Subdivisions crosses via a grade separation. This physical configuration necessitates that any trail facility must be routed north or south at Industrial Parkway in order to follow the perimeter of all rail operations. Routing to the south at Industrial Parkway offers the only opportunity to stay south of the BART years, following the Oakland Subdivision, and possibly follow the BART maintenance access road.

Figure 19: Segment 4.4

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/30/09

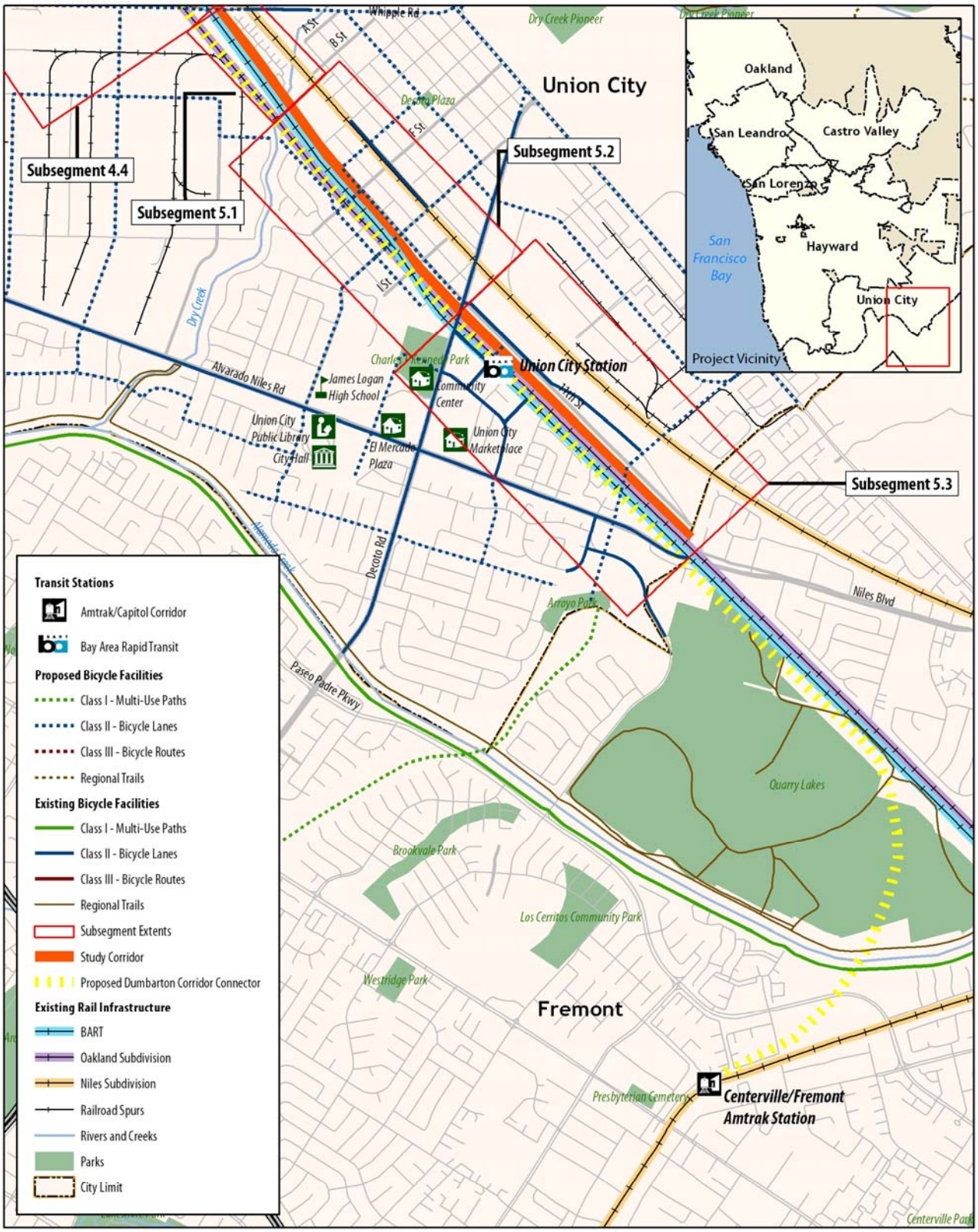

Figure 20: Map 5 Opportunities and Constraints

UPRR Corridor Improvement Study

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6. Map 5

Figure 20 shows Map 5 and its segments. Map 5 spans from the Industrial Parkway in Hayward to the Union City BART Station. Existing and proposed bikeways, transit facilities, and rail spurs are identified.

Segment 5.1: Whipple Road to Westgard Street

Segment 5.1 (**Figure 21**) passes through industrial and commercial land uses. This segment is west of the BART and Niles Subdivision tracks. East of the Niles Subdivision is a residential community. There is one active freight spur off the Oakland Subdivision serving the industrial customers to the southwest. There is no parallel public street right-of-way contiguous or immediately adjacent to the Oakland Subdivision. The area has limited open space access and few bicycle and pedestrian opportunities.

As in the previous segment, opportunities in Segment 5.1 are limited. A residential development to the east may generate some trail users; however, it is separated from the corridor by the Niles Subdivision and industrial activities. Railroad Avenue, beginning at Whipple Road offers the only public street alternative alignment in reasonable proximity to the Oakland Subdivision.

Constraints are numerous; including rail operations, available right-of-way, and adjacent land uses. This segment has two active at-grade rail tracks and active rail spurs. The right-of-way width is approximately 70 feet and has a grade-separated crossing over Dry Creek. There are no existing or proposed bikeways immediately adjacent to the corridor. The addition of Capitol Corridor (Amtrak) service to this segment of the Oakland Subdivision will further limit suitability of this segment for trail use.

Figure 21: Segment 5.1

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/30/09

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Segment 5.2: Westgard Street to Decoto Road

Segment 5.2, shown in **Figure 22**, passes through the northern Union City residential communities. The elevated BART tracks are on the eastern edge of the right-of-way until the block between H and I Streets where it crosses over to the western edge. There are no active freight spurs.

Segment 5.2 include opportunities include adjacent supportive land uses, long block lengths, and parallel on-street options. The adjacent land uses include single-family residential and planned transit-oriented development. Both types of land uses are likely to generate trail users. 11th Street (to the east) and 12th Street (to the west) provide an opportunity for parallel alignment within City of Union City street right-of-way.

Union City High School, Charles F Kennedy Park and Searles Elementary School are all located within one quarter mile of the Oakland Subdivision. A trail facility within the right-of-way could improve bicycle and pedestrian access between these public facilities and adjacent neighborhoods.

Constraints include planned rail operations and available right-of-way. Location of Capitol Corridor (Amtrak) service on the Oakland Subdivision will increase rail service frequency and speed for this segment. The layover yard may be situated north of the Intermodal Station and would use the Oakland Subdivision line.

Opportunities

Proposed Bicycle Facilities
- Class I - Multi-Use Paths
- Class II - Bicycle Lanes
- Class III - Bicycle Routes

Existing Bicycle Facilities
- Class I - Multi-Use Paths
- Class II - Bicycle Lanes
- Class III - Bicycle Routes

- Cross Sections
- Parcel Boundaries
- Study Area

Available alignment options at 12th St

UPRR right-of-way

Parallel alignment option at 12th St

5.2A

Depot Rd
Railroad Ave
Westgard St
D St
E St
F St
G St
9th St
11th St
12th St
13th St
14th St
15th St
H St
J St
Amaleo Way
Decoto Rd
Lewis St
Western Ave
Lewis Ave
Sherman Dr
Searles Elementary School
Union City High School
Charles F Kennedy Park
Colgate Dr
Meyers Dr

Figure 22: Segment 5.2

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 7/31/09

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Segment 5.3: Decoto Road to Alvarado Niles Road

Segment 5.3 (**Figure 23**) passes through the Union City Intermodal Station District. The area is defined by the Union City Intermodal Station and TOD development. Surrounding the BART station area are single- and multi-family residential communities as well as the Union Station commercial area at the intersection of Decoto Road and Alvarado Niles Road.

The primary opportunities along this segment include proximity to residential communities, retail, and intermodal transit connectivity to BART, future Capitol Corridor service, and AC Transit bus service.

Pedestrian and bicycle connectivity to the Union City Intermodal Station is regionally important given large investments in achieving joint rail and bus access to this location. 11th Street (to the east) and 12th Street (to the west) provide an opportunity for parallel alignment within City of Union City street right-of-way.

The East-West Connector Project, a capacity expansion project, provides an east-west trail connection to the south of the Union City Intermodal Station. The project is planned to include a Class I trail from Paseo Padre Parkway to Mission Boulevard.

Other opportunities include extending the trail corridor south through the Quarry Lakes to the existing Alameda Creek Trail. This extension can connect the corridor to the proposed Fremont UPRR Trail.

The constraints in this section of the corridor include the undercrossing at Alvarado Niles Road and activity associated with the Union City Intermodal Station. The undercrossing may limit available right-of-way.

The Intermodal Station, serving both BART and Capitol Corridor, will be located directly between the Oakland Subdivision and BART tracks. It will also serve the Dumbarton Rail Corridor. The Dumbarton Rail Corridor will connect to the Union City Intermodal Station from the Centerville Subdivision by via the Shinn industrial property. The project will bring commuter rail service on the Oakland Subdivision north of the Shinn connection to the Intermodal Station. Commuter rail service on the Oakland Subdivision will increase rail service frequency and speed for this segment

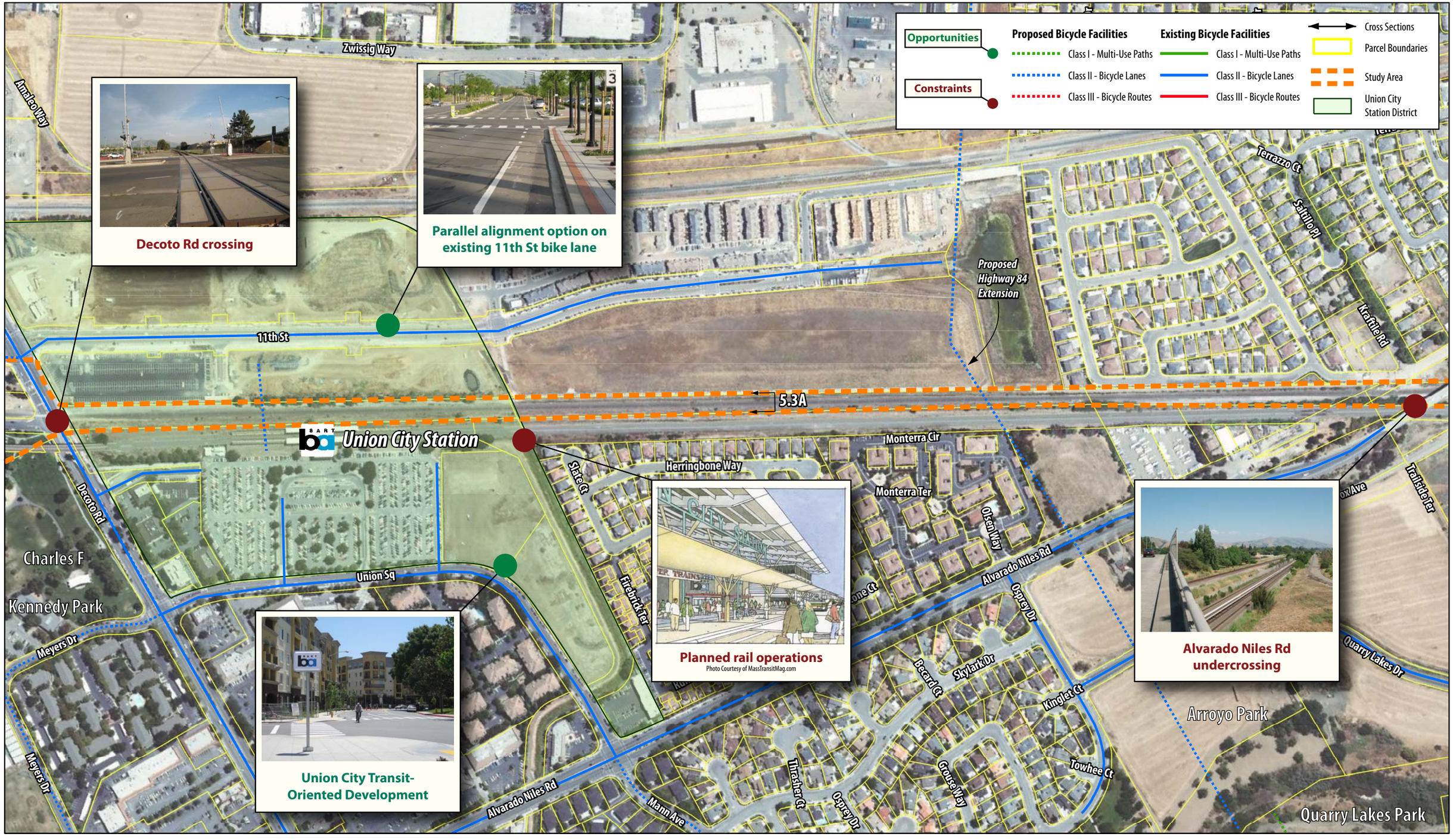

Figure 23: Segment 5.3

UPRR Corridor Improvement Study

Source: Data obtained from EBRPD, ESRI, MTC, Google Earth and the Cities of Oakland, San Leandro, Hayward, Union City and Fremont
Author: Tony Salomone
Date: 5/12/09

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7. Environmental Overview

The potential environmental concerns or issues associated with a multi-use trail facility in the UPRR Oakland Subdivision railroad corridor are summarized below. They are organized according to the standard California Environmental Quality Act (CEQA) checklist topics.

Aesthetics

Introduction of a multi-use trail within the UPRR corridor is not likely to impact existing scenic vistas or scenic resources as it would generally parallel existing rail facilities. In addition, a trail may include landscaping, signage, and trail facilities (e.g., benches, garbage cans) and may improve the existing visual character or quality of the site and its surroundings.

A multi-use trail corridor may include lighting for safety and security. In this urban area, a new source of light would not adversely affect day or night time views.

Agricultural Resources

The areas of Oakland, San Leandro, Bay Fair, Ashland, Cherryland, Hayward and Union City adjacent to the UPRR corridor are characterized as Urban and Built-up Land by the California Department of Conservation, Farmland Mapping and Monitoring Program. In addition, the project area is located in a developed area. Introduction of a multi-use trail corridor within the UPRR corridor is not likely to impact agricultural resources.

Air Quality and Global Climate Change

Air Quality

The project site is located within the San Francisco Bay air basin and is within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD's Bay Area Clean Air Plan contains BAAQMD-wide control measures to reduce carbon monoxide and ozone precursor emissions. The closest BAAQMD monitoring sites to the project site are located at 9925 International Boulevard, Oakland and at 40733 Chapel Way, Fremont. Common pollutants (carbon monoxide, particulate matter, nitrogen dioxide, ozone, and sulfur dioxide) are monitored at these sites.

The excavation and earthwork that would be required for implementation of the multi-use trail corridor would likely be confined to temporary grading, landscaping, and construction activities. Both the area of ground disturbance and (due to the developed and level nature of the corridor) the amount of construction equipment operating within the project site would be limited. In addition, the proposed project would not generate a substantial number of car trips that would increase regional carbon monoxide and ozone precursor emissions. The multi-use trail corridor would provide northwest/southeast bicycle connections between Oakland and Union City, as well as connections to other bicycle and transit facilities, allowing for more convenient bike commutes throughout the East Bay, and could reduce the use of motorized vehicles, resulting in a decrease in the emission of criteria pollutants associated with internal combustion engines. Therefore, the

proposed project is not expected to conflict with or obstruct implementation of relevant air quality plans.

As of March 2009, the San Francisco Bay air basin is under nonattainment status for ozone and particulate matter – both 10 micron (PM10) and fine (PM2.5) – per State standards. The air basin is under marginal attainment status for ozone at the federal level. Increases in PM10 and PM2.5 due to implementation of the proposed project would occur only during the construction period for the proposed project. Because earthwork would generally be confined to the footprint of the trail and its immediate surroundings, implementation of the multi-use trail corridor would not likely result in a cumulatively considerable increase in particulate matter. In addition, implementation of the BAAQMD's feasible control measures for construction emissions, including watering active construction sites, covering all trucks hauling loose materials, covering exposed stockpiles and unvegetated areas, and implementing measures to reduce emissions from construction equipment exhaust, would reduce this potential impact.

Implementation of the multi-use trail corridor would not result in the removal or disturbance of large quantities of saturated or hydric soils with high proportions of organic matter that would cause objectionable odors when the soil dries. Other components of the proposed project, including the installation of landscaping and the construction accessory uses, would not create objectionable odors. Existing sources of odor in the project vicinity, including odor from diesel exhaust from freight trains along short segments of the UPRR corridor, could expose persons using the multi-use trail corridor to objectionable odor. However, use of the corridor would consist of recreational (primarily biking) activities, thus users would experience only short-term exposure as they pass any such odor source.

Greenhouse Gas Emissions

Global climate change (GCC) is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades. Global surface temperatures have risen by 0.74°C ± 0.18°C over the last 100 years (1906 to 2005). The rate of warming over the last 50 years is almost double that over the last 100 years.[1] The prevailing scientific opinion on climate change is that most of the warming observed over the last 50 years is attributable to human activities. The increased amounts of carbon dioxide (CO_2) and other greenhouse gases (GHGs) are the primary causes of the human-induced component of warming. GHGs are released by the burning of fossil fuels, land clearing, agriculture, and other activities, and lead to an increase in the greenhouse effect.[2]

Over the last 200 years, humans have caused substantial quantities of GHGs to be released into the atmosphere. These extra emissions are increasing GHG concentrations in the atmosphere, and enhancing the natural greenhouse effect, which is believed to be causing global warming. While manmade GHGs include naturally-occurring GHGs such as carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), some gases, like hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6) are completely new to the atmosphere.

[1] Intergovernmental Panel on Climate Change (IPCC), 2007. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.*

[2] The temperature on Earth is regulated by a system commonly known as the "greenhouse effect." Just as the glass in a greenhouse lets heat from sunlight in and reduces the heat escaping, greenhouse gases like carbon dioxide, methane, and nitrous oxide in the atmosphere keep the Earth at a relatively even temperature. Without the greenhouse effect, the Earth would be a frozen globe; thus, although an excess of greenhouse gas results in global warming, the *naturally occurring* greenhouse effect is necessary to keep our planet at a comfortable temperature.

The State of California has taken the following steps to regulate and reduce GHG:

- Assembly Bill 32 (AB 32), the "Global Warming Solutions Act," was passed by the California State legislature on August 31, 2006.
- On January 18, 2007, Governor Schwarzenegger signed Executive Order S-1-07, further solidifying California's dedication to reducing GHGs by setting a new Low Carbon Fuel Standard. The Executive Order sets a target to reduce the carbon intensity of California transportation fuels by at least 10 percent by 2020 and directs the California Air Resources Board (CARB) to consider the Low Carbon Fuel Standard as a discrete early action measure.
- In June 2007 CARB approved a list of 37 early action measures, including three discrete early action measures (Low Carbon Fuel Standard, Restrictions on High Global Warming Potential Refrigerants, and Landfill Methane Capture).[3]
- Senate Bill (SB) 375, signed into law on October 1, 2008, enhances the CARB's ability to reach AB 32 goals by directing CARB to develop regional greenhouse gas emission reduction targets to be achieved from the automobile and light truck sectors for 2020 and 2035.

The 17.4 mile multi-use trail corridor being considered within the UPRR right-of-way would provide an alternative transportation route, and would connect to existing and planned bicycle and transit routes. Because no applicable numeric thresholds have yet been defined for GHGs in CEQA documentation, and because the precise causal link between an individual project's emissions and global climate change has not been developed, it is reasonable to conclude that an individual development project cannot generate a high enough quantity of GHG emissions to affect global climate change.

To ensure that the multi-use trail corridor complies and does not conflict with or impede implementation of reduction measures identified in AB 32, the Governor's Executive Order S-3-05, and other strategies to help reduce GHGs to the level proposed by the Governor, mitigation measures may be developed for the corridor. Mitigation measures may include use of locally produced and/or manufactured or "green" materials for construction of the project; use of efficient lighting systems, including light emitting diodes (LEDs), and lighting control systems; and creation of water-efficient landscapes along the project corridor. Additionally, as stated previously, construction of the multi-use trail corridor could result in a decrease in VMT and a concurrent decrease in vehicle GHG emissions.

Biological Resources

The UPRR corridor includes an active rail line as well as an active BART line on an elevated track. Vegetation within the corridor is minimal and is likely to consist of ruderal and non-native grasslands and secondary-growth scrub habitat. Landscaping changes associated with implementation of the multi-use trail corridor would likely be limited to those necessary for trail buffering and restoration of construction disturbance.

The project site has been subject to significant disturbance and is not considered a significant migratory or native wildlife corridor, or a nursery site. The plant and wildlife species that currently

[3] California Air Resources Board. 2007. *Expanded List of Early Action Measures to Reduce Greenhouse Gas Emissions in California Recommended for Board Consideration.* October.

occur within the project site have adapted to disturbed conditions and would not be adversely affected by project construction activities or the use of the project site as a bicycle route. Implementation of the multi-use trail corridor would not likely interfere with the movement of wildlife or the function of a nursery site.

However, the existing corridor crosses three creeks, and assuming freight rail and/or passenger rail use of the alignment continues, a separate multi-use trail bridge would be required north of Bay Fair BART (Estudillo Canal), Hampton Road (San Lorenzo Creek) and Whitman Street in the vicinity of Orchard Avenue (Ward Creek). The type of crossing for the creeks has not yet been determined. Potential impacts to biological resources associated with new creek crossings would need to be addressed on a site specific basis.

Cultural Resources

The multi-use trail corridor would be a transportation corridor similar in use to the historic use of the UPRR corridor. The developed nature of the corridor suggests that intact cultural resources are not likely present. The project corridor does not contain any structures, and it is unlikely that the development of a multi-use trail corridor within the UPRR corridor could impact any adjacent historical structures. The ground disturbance related to railroad construction and operation suggests that intact archaeological deposits that predate the railroad may have been disturbed by prior development.

However, the UPRR corridor includes three creek crossings, and a multi-use trail corridor may require new bridges adjacent to existing bridges. Areas adjacent to water ways are considered sensitive for prehistoric archaeological deposits. Potential impacts to archeological resources associated with new creek crossing would need to be addressed.

The corridor is generally flat, and as noted above, the ground was previously disturbed as part of the construction of the UPRR line. It is anticipate that minimal excavation or grading would be required to implement the multi-use trail corridor and it is unlikely that paleontological resources would be adversely affected.

Geology and Soils

The project corridor is located within the Coast Ranges Geomorphic Province, a relatively geologically young and seismically-active region on the western margin of the North American plate. In general, the Coast Ranges are composed of sedimentary bedrock with layers of recent alluvium filling the intervening valleys.[4] The entire San Francisco Bay Area is located within the San Andreas Fault Zone (SAFZ), a complex of active faults forming the boundary between the North American and Pacific lithospheric plates. Movement of the plates relative to one another result in the accumulation of strain along the faults, which is released during earthquakes. The multi-use trail corridor would be subject to ground shaking. It may also be subject to liquefaction, subsidence, expansive soils, settling and lateral spreading. The trail and related structures must be designed and built to withstand these hazards.

[4] California Geographic Survey (CGS), 2002, *California Geomorphic Provinces, Note 36*.

The potential for erosion and loss of topsoil and any impacts related to the construction of the trail would also need to be evaluated and addressed.

Hazards and Hazardous Materials

The proposed multi-use trail corridor is located within the UPRR right-of-way, which historically has been used for freight and other rail operations; a few rail freight customers continue to use the corridor and BART service runs through the study area on an elevated structure. The multi-use trail corridor is bordered by a variety of industrial, commercial and residential land uses. The soil and other surface media within the railroad right-of-way and adjoining areas may contain environmental contaminants from spills, leaks, or the routine use of chemicals, such as herbicides to prevent plant growth along the tracks, that occurred during the corridor's many years of rail use. Potential contaminants from rail uses include metals, petroleum products, semi-volatile organic compounds, and pesticides. In addition, rail corridors can be subject to illegal dumping.

Because the corridor is located in an urban area and often parallels nearby busy streets and highways, aerially deposited lead and lead from the erosion of paint from older buildings may occur in surface soils within the multi-use trail corridor. Leaded gasoline was used as a vehicle fuel in the United States from the 1920s until the late 1980s. Although lead is no longer used in gasoline formulations, lead emissions from automobiles are a recognized source of contamination in soils along roads in urban areas. Elevated concentrations are well-documented along portions of nearby Interstate-880.

Workers could be exposed to chemical residues in the soil during construction activities (e.g., grading or excavation) via the inhalation of dust, inadvertent ingestion of soil, or direct contact with contaminated soil. Bicyclists and pedestrians could be exposed to chemical residues that remain in surface soils after the trail is constructed. Pre-construction surveys of the corridor for hazardous materials should be conducted. If deemed necessary by the results of the surveys, soil samples should be collected and evaluated to determine whether measures are needed to protect workers during construction or if special handling and/or disposal of soil is required. The preparation of a worker health and safety plan and/or a soil management plan that considers the concentration of chemical residues in soil would reduce or eliminate the potential risk to construction workers. Any contaminated surface materials should be evaluated to determine whether they can be left in place or should be removed, capped or otherwise treated to prevent future trail users from being exposed to hazardous concentrations. Proper disposition of the soil would reduce or eliminate the potential risk to trail users.

Construction of the multi-use trail corridor could involve the use and disposal of hazardous materials, such as solvents and paints. Compliance with hazardous materials regulations would ensure that these commonly used materials would be stored, used and disposed of in a safe manner. No acutely hazardous materials would be used during construction or project operations that would present a substantial risk to on- or off-site receptors, including sensitive receptors such as schools. As an urban trail, the project would not create hazards associated with urban/wildland fires or airport operations, or interfere with emergency response plans or emergency evacuation plans.

Hydrology and Water Quality

The multi-use trail corridor would include the development of a paved bicycle trail. Because this trail would be surrounded by the unpaved railroad corridor and open space (and associated landscaping), the bicycle trail would not substantially increase runoff from the corridor site during storm events. Storm water would percolate into the unpaved portions of the corridor. In addition, bicyclists, who would be the main users of the project site, would not generate substantial quantities of hazardous materials. Implementation of the multi-use trail corridor could incrementally increase the amount of contaminants, such as dog waste, within the corridor; in addition, small quantities of fertilizers used for landscaping could infiltrate runoff from the project site. However, these substances would occur in relatively small concentrations that would not likely result in a substantial adverse effect to water quality.

Implementation of the multi-use trail corridor would include obtaining all necessary permits from the San Francisco Bay Region Water Quality Control Board (RWQCB), preparing a Stormwater Pollution Prevention Plan (SWPPP), meeting all requirements of the Alameda County Clean Water program, and submitting any grading plans to the respective jurisdictions.

Land Use and Planning Policy

The UPRR Oakland Subdivision corridor extends through the urbanized areas of Oakland, San Leandro, Bay Fair, Ashland, Cherryland, Hayward and Union City. Adjacent land uses include a mix of industrial, commercial, office and residential uses. Implementation of the multi-use trail corridor would not physically divide an established community and would result in an overall benefit to community integrity.

The UPRR Corridor Improvement Study, Existing Conditions Technical Memorandum includes a discussion on Background Policy Review. This section includes relevant policies from regional transportation and recreation agencies, Alameda County and the cities through which the corridor extends. The Study noted that there are several important themes identified in the planning documents reviewed and summarized; these themes include:

- The UPPR Oakland Subdivision is identified in regional transportation planning documents as a corridor for potential future rail expansion
- The UPRR Oakland Subdivision is identified in County and regional transportation planning documents as a corridor for a potential greenway or pedestrian and bicycle facility
- Local planning and land use documents consistently support the use of the corridor for a greenway or pedestrian and bicycle facility

It is therefore likely that a multi-use trail corridor within the UPRR corridor would be consistent with relevant plans and policies.

Mineral Resources

As the project site is located in a developed urban area, it is assumed that there are no known mineral resources on or in the vicinity of the project site. As such, the implementation of a multi-use trail corridor would not be expected to affect mineral resources.

Noise

A multi-use trail corridor is being considered within the UPRR right-of-way. This land uses would encourage bicycle access and would not result in the generation of high noise levels. No long-term increase in ambient noise levels is expected as a result of implementation of the multi-use trail corridor.

The UPRR corridor extends through urbanized areas, and adjacent land uses include a mix of industrial, commercial, office and residential uses. Some of these adjacent land uses may contain stationary noise sources. In addition, implementation of the multi-use trail corridor within the UPRR corridor may expose trail users to high levels of rail noise. However, use of the corridor would consist of recreational and commuting bicycling activities, thus users would experience only short-term exposure as they pass any adjacent stationary noise sources or trains pass by.

Construction of the multi-use trail corridor would require minor excavation and earthwork activities. Although these activities could result in infrequent periods of high noise, this noise would not be sustained and would occur only during the temporary construction period.

Metropolitan Oakland International Airport (OAK) is located approximately 1.3 miles west of the UPRR corridor and the Hayward Executive Airport is located approximately 1.6 miles west of the UPRR corridor, exposing trail users to airplane noise. Due to the distance from these two airports and the orientation of the runways and flight patterns, the corridor does not lie within the 55 dBA CNEL noise contours of either airport.

Population and Housing

Implementation of the multi-use trail corridor would result in the development of a bicycle route within an existing UPRR corridor and would not directly or indirectly induce population growth and would not remove existing housing.

Public Services

Multi-use trails in an urban or suburban environment similar to the East Bay Regional Park District trails existing in Alameda and Contra Costa counties typically require one hour of police personnel time per day for every 5 miles of trail.[5] Therefore, it is not expected that implementation of the proposed project would result in the need for a substantial increase in police or fire department staff. The proposed project includes no housing or permanent residences and so would not affect school enrollment or library use.

[5] Alta Transportation Consulting, 2001. Union Pacific Rail Feasibility Study. EBRPD. October 15.

In addition, as noted above in the project description, safety elements for the multi-use trail corridor will be developed in subsequent stages of the project. It is recommended that the multi-use trail project develop a public safety plan that includes: proper design and use of space to minimize crime and trespassing; incorporation of strong and damage-resistant construction materials; coordinated patrol and emergency response to the corridor; frequent sources of lighting, emergency reporting call-boxes, and other monitoring devices; and that events are frequently hosted along the trail corridor.

Recreation

Implementation of the multi-use trail corridor would result in a net increase of recreational space in Alameda County. The communities along the UPRR corridor currently lack access to recreational opportunities and open space, and the multi-use trail corridor may increase the ratio of parkland per 1,000 residents. Because the proposed project does not include any new residences or employment-generating uses, it would not increase the use of other parks such that the parks would undergo physical deterioration.

Transportation, Circulation, and Parking

Implementation of the multi-use trail corridor would ultimately allow for increased bicycle access through areas of Oakland, San Leandro, Bay Fair, Ashland, Cherryland, Hayward and Union City. Development of the multi-use trail corridor would offer a transportation alternative to driving, and could reduce regional car trips. In addition, the bicycle route is anticipated to be used mostly by commuters and neighborhood residents; it is not expected to result in substantially increased car visitation. Therefore, the proposed project would not cause an increase in car traffic which is substantial in relation to the existing traffic load and capacity of the street system.

As noted in the project description, primary design standards considered for any multi-use trail include setback from operating railroads, barrier separation between the trail and operating railroad, trail-roadway crossings, trail-railroad crossings, signage, and other multi-use trail design standards. It is assumed that the design standards for the multi-use trail corridor developed in subsequent stages would ensure the safe access to and circulation along the multi-use trail corridor. In addition, it is assumed that any at-grade roadway crossings and bridges would be designed to safely accommodate additional pedestrians and bicycles.

The multi-use trail corridor currently under consideration does not include the provision of parking or identify the need for removal of existing parking adjacent to the corridor. As design of the corridor is developed, adequate parking capacity for the facility and/or adjacent land uses may need to be considered.

Utilities

Implementation of the multi-use trail corridor would not generate substantial quantities of wastewater or require the use of substantial quantities of water. Minimal water would be used for landscape irrigation and trail maintenance.

The proposed project would not alter existing storm water facilities, including culverts that extend under the surface of the project site. Implementation of the proposed project would preserve most

of the UPRR corridor as unpaved open space. Runoff from the trail would percolate into the unpaved portion of the project site and is not expected to overburden existing storm drain facilities or require the construction of new storm drain facilities.

Appendix A: Opportunities and Constraints Table

Map Reference	Segment	From	To	Segment Name/ Characteristics	Contiguous Parallel Roadways	Land Use	Grade Separations	Freight Track Configuration	BART Track Configuration	Spur Tracks	Creek Crossings	ROW Width	Roadway Crossings
Oakland (Map 1)	1.1	Fruitvale BART	37th Avenue	Fruitvale TOD Station Area	NA	Fruitvale TOD	NA	NA	Elevated on western edge of ROW	NA	NA	44	NA
	1.2	37th Avenue	47th Avenue	South of Fruitvale Industrial	NA	Industrial	42nd Avenue overcrossing	NA	Elevated on western edge of ROW	NA	NA	42	37th Avenue 39th Avenue 40th Avenue 41st Avenue 42nd Avenue High Street 44th Avenue 45th Avenue
	1.3	47th Avenue	Seminary Avenue	Oakland Industrial	San Leandro Avenue parallel to ROW on West side	Industrial	NA	Single and double track	Elevated on western edge of ROW	NA	NA	72	47th Avenue 50th Avenue 54th Avenue
	1.4	Seminary Avenue	81st Avenue	Coliseum TOD; BART Area	San Leandro Avenue parallel to ROW on West side	Coliseum TOD; Industrial	NA	Double track	Elevated on western edge of ROW	79th Ave	NA	72	Seminary Avenue 66th Avenue 69th Avenue 75th Avenue
	1.5	81st Avenue	105th Avenue	South of Coliseum Area Industrial	San Leandro Avenue switches W to E side of ROW at 105th	Industrial	NA	Double track	Elevated on western edge of ROW	Oakland Foreign Trade Zone spur, Bay Area Warehouse spur, 81st/83rd Ave spur	NA	73	81st Avenue 85th Avenue 92nd Avenue 98th Avenue
San Leandro (Map 2)	2.1	105th Avenue	Peralta Avenue	North San Leandro	San Leandro Avenue parallel to ROW on East side	Single- and multi-family residential	NA	Single track	Elevated on western edge of ROW	NA	NA	80	105th Avenue
	2.2	Peralta Avenue	Marina Boulevard	San Leandro TOD/Downtown	San Leandro Avenue parallel to ROW on East side	Mixed Use	San Leandro Creek overcrossing	Single track	Elevated on western and eastern edge of ROW	NA	San Leandro Creek	85	Peralta Avenue Davis Street W Estudillo Thornton Street Williams Street Castro Street Harian Street Estebrook Street
	2.3	Marina Boulevard	Hesperian Boulevard	San Leandro Industrial	San Leandro Avenue parallel ends at north end this segment	Mixed industrial/residential;	Washington Avenue overcrossing	Single and double track	Elevated on eastern edge of ROW	NA	NA	80	Marina Boulevard Washington Avenue 139th Avenue 143rd Avenue Halcyon Drive

Map Reference	Segment	From	To	Segment Name/ Characteristics	Contiguous Parallel Roadways	Land Use	Grade Separations	Freight Track Configuration	BART Track Configuration	Spur Tracks	Creek Crossings	ROW Width	Roadway Crossings
Central Alameda/Downtown Hayward (Map 3)	3.1	Hesperian Boulevard	Elgin Way	Bay Fair BART/Bayfair Neighborhood	NA	Station Area/Residential/ Commercial	Estudillo Canal overcrossing; Bay Fair Access overcrossing	Single track	Elevated on eastern edge of ROW Dublin line branches to the east	NA	Estudillo Canal	31	Hesperian Boulevard
	3.2	Elgin Way	Hampton Road	Cherryland	NA	Residential, Minor Commercial/Light Industrial	Ashland Avenue overcrossing; SR238 undercrossing; San Lorenzo Creek overcrossing	Single track	At-grade on eastern edge of ROW	NA	San Lorenzo Creek	71	Ashland Avenue E Lewelling Boulevard
	3.3	Hampton Road	A Street (Hayward)	North Hayward Residential	Western Boulevard public street parallel both side of ROW	Residential	NA	Single and double track	Elevated on eastern edge of ROW	NA	NA	80	Hampton Road Medford Ave Cherry Way Blossom Way Grove Way Sunset Boulevard
	3.4	A Street	D Street	Downtown Hayward TOD/Station Area	NA	Mixed Use	D Street overcrossing	Double track	Elevated on eastern edge of ROW	NA	NA	62	A Street B Street
	3.5	D Street	Sycamore Avenue	Central Hayward Residential	NA	Residential	Jackson Street overcrossing	Single and double track	At-grade on eastern edge of ROW	NA	NA	55	D Street Jackson Street
South Hayward (Map 4)	4.1	Sycamore Avenue	Sorensen Road	Central Hayward Residential	Whitman Street public ROW immediately parallel UPRR ROW to West	Residential	Orchard Avenue overcrossing; Harder Road overcrossing; Zeile Creek overcrossing	Single track	At-grade on eastern edge of ROW	NA	Zeile Creek	50	Orchard Avenue Harder Road
	4.2	Sorensen Road	Tennyson Road	South Hayward	Existing parallel greenspace on East side with wide sidewalk/ Class I; Two-track maintenance access road on West side	Residential	Tennyson Road overcrossing	Single track	At-grade on eastern edge of ROW	NA	NA	64	Pedestrian overcrossing at Sorensen Road
	4.3	Tennyson Road	Industrial Parkway	South Hayward BART Station Area; TOD	NA	Mixed Use	Industrial Parkway overcrossing	Single track	At-grade on eastern edge of ROW	NA	NA	64	Tennyson Road
	4.4	Industrial Parkway	Whipple Road	Oakland Subdivision/Niles Subdivision Crossover; Yard	BART maintenance access road parallels tracks to the West, paved surface	Industrial loading, Switching and Layover Yard	Niles Subdivision overcrossing, Sandoval Way overcrossing)	Niles: Single track; Oakland: Single and double track	At-grade on eastern edge of ROW	Between Industrial and BART Yard.	NA	73	Industrial Pkway Sandoval Way

Map Reference	Segment	From	To	Segment Name/ Characteristics	Contiguous Parallel Roadways	Land Use	Grade Separations	Freight Track Configuration	BART Track Configuration	Spur Tracks	Creek Crossings	ROW Width	Roadway Crossings
Union City (Map 5)	5.1	Whipple Road	Westgard Street	South of Whipple Area	NA	Residential on east side, Warehouse/ logistics west side	Dry Creek overcrossing	Double track	At-grade	1 Spur south of Whipple Rd. Active. Serves industrial park.	Dry Creek	94	Whipple Road
	5.2	Westgard Street	Decoto Road	North Union City Residential	11th Street separated by single row residential; 12th Street parallel approaching Decoto Road	SFR both sides of ROW	NA	Single track	Elevated On eastern and western edge of ROW	NA	NA	47	F Street H Street I Street
	5.3	Decoto Road	Alvarado Niles Road	Union City Station Area/TOD	11th Street parallel to north serves as primary TOD access parallel to ROW	Mixed-Use, Town Home/Condo/ SFR	NA	Single track	Elevated	NA	NA	75	Decoto Road Niles Boulevard