



TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

February 10, 2020

9:00 A.M.

651 Pine Street, Room 101, Martinez

Supervisor Candace Andersen, Chair
Supervisor Karen Mitchoff, Vice Chair

Agenda Items:

Items may be taken out of order based on the business of the day and preference
of the Committee

1. Introductions
2. Public comment on any item under the jurisdiction of the Committee and not on this agenda (speakers may be limited to three minutes).
3. **REVIEW record of meeting for November 14, 2019, Transportation, Water and infrastructure Committee Meeting.** This record was prepared pursuant to the Better Government Ordinance 95-6, Article 25-205 (d) of the Contra Costa County Ordinance Code. Any handouts or printed copies of testimony distributed at the meeting will be attached to this meeting record. (John Cunningham, Department of Conservation and Development).
4. **REVIEW, REVISE as appropriate, and ADOPT the 2020 Calendar.** (John Cunningham, Department of Conservation and Development)
5. **CONSIDER referrals to the Committee for 2020 and SUBMIT recommendations to the full Board of Supervisors for approval.** (John Cunningham, Department of Conservation and Development)
6. **CONSIDER report on Local, State, Regional, and Federal Transportation Related Legislative Issues and take ACTION as appropriate.** (John Cunningham, Department of Conservation and Development)
7. **RECEIVE update on Senate Bill 743 ("SB 743") implementation, provide COMMENT and DIRECT staff as appropriate.** (Jamar Stamps, Department of Conservation and Development)
8. **RECEIVE update on the Iron Horse Corridor Active Transportation Study, CONSIDER the report, provide COMMENT and DIRECT staff as appropriate including 1) bringing the Iron Horse Corridor Active Transportation Study to the full Board of Supervisors for consideration, and 2) coordinate with Corridor stakeholders to pursue funding opportunities for implementation, as directed by the Committee.** (Jamar Stamps, Department of Conservation and Development)

9. **RECEIVE yearly update on the County's IPM Program from the IPM Coordinator, receive report on status of public comment/concerns and take ACTION as appropriate.** (Wade Finlinson, IPM Coordinator)
10. The next meeting is currently scheduled for March 9, 2020.
11. Adjourn

The Transportation, Water & Infrastructure Committee (TWIC) will provide reasonable accommodations for persons with disabilities planning to attend TWIC meetings. Contact the staff person listed below at least 72 hours before the meeting.

Any disclosable public records related to an open session item on a regular meeting agenda and distributed by the County to a majority of members of the TWIC less than 96 hours prior to that meeting are available for public inspection at the County Department of Conservation and Development, 30 Muir Road, Martinez during normal business hours.

Public comment may be submitted via electronic mail on agenda items at least one full work day prior to the published meeting time.

For Additional Information Contact:

John Cunningham, Committee Staff
Phone (925) 674-7833, Fax (925) 674-7250
john.cunningham@dcd.cccounty.us

Glossary of Acronyms, Abbreviations, and other Terms (in alphabetical order): Contra Costa County has a policy of making limited use of acronyms, abbreviations, and industry-specific language in meetings of its Board of Supervisors and Committees. Following is a list of commonly used abbreviations that may appear in presentations and written materials at meetings of the Transportation, Water and Infrastructure Committee:

AB Assembly Bill	HOT High-Occupancy/Toll
ABAG Association of Bay Area Governments	HOV High-Occupancy-Vehicle
ACA Assembly Constitutional Amendment	HSD Contra Costa County Health Services Department
ADA Americans with Disabilities Act of 1990	HUD United States Department of Housing and Urban Development
ALUC Airport Land Use Commission	IPM Integrated Pest Management
AOB Area of Benefit	ISO Industrial Safety Ordinance
BAAQMD Bay Area Air Quality Management District	JPA/JEPA Joint (Exercise of) Powers Authority or Agreement
BART Bay Area Rapid Transit District	Lamorinda Lafayette-Moraga-Orinda Area
BATA Bay Area Toll Authority	LAFCo Local Agency Formation Commission
BCDC Bay Conservation & Development Commission	LCC League of California Cities
BDCP Bay-Delta Conservation Plan	LTMS Long-Term Management Strategy
BGO Better Government Ordinance (Contra Costa County)	MAC Municipal Advisory Council
BOS Board of Supervisors	MAF Million Acre Feet (of water)
CALTRANS California Department of Transportation	MBE Minority Business Enterprise
CalWIN California Works Information Network	MOA Memorandum of Agreement
CalWORKS California Work Opportunity and Responsibility to Kids	MOE Maintenance of Effort
CAER Community Awareness Emergency Response	MOU Memorandum of Understanding
CAO County Administrative Officer or Office	MTC Metropolitan Transportation Commission
CCTA Contra Costa Transportation Authority	NACo National Association of Counties
CCWD Contra Costa Water District	NEPA National Environmental Protection Act
CDBG Community Development Block Grant	OES-EOC Office of Emergency Services-Emergency Operations Center
CEQA California Environmental Quality Act	PDA Priority Development Area
CFS Cubic Feet per Second (of water)	PWD Contra Costa County Public Works Department
CPI Consumer Price Index	RCRC Regional Council of Rural Counties
CSA County Service Area	RDA Redevelopment Agency or Area
CSAC California State Association of Counties	RFI Request For Information
CTC California Transportation Commission	RFP Request For Proposals
DCC Delta Counties Coalition	RFQ Request For Qualifications
DCD Contra Costa County Dept. of Conservation & Development	SB Senate Bill
DPC Delta Protection Commission	SBE Small Business Enterprise
DSC Delta Stewardship Council	SR2S Safe Routes to Schools
DWR California Department of Water Resources	STIP State Transportation Improvement Program
EBMUD East Bay Municipal Utility District	SWAT Southwest Area Transportation Committee
EIR Environmental Impact Report (a state requirement)	TRANSPAC Transportation Partnership & Cooperation (Central)
EIS Environmental Impact Statement (a federal requirement)	TRANSPLAN Transportation Planning Committee (East County)
EPA Environmental Protection Agency	TWIC Transportation, Water and Infrastructure Committee
FAA Federal Aviation Administration	USACE United States Army Corps of Engineers
FEMA Federal Emergency Management Agency	WBE Women-Owned Business Enterprise
FTE Full Time Equivalent	WCCTAC West Contra Costa Transportation Advisory Committee
FY Fiscal Year	WETA Water Emergency Transportation Authority
GHAD Geologic Hazard Abatement District	WRDA Water Resources Development Act
GIS Geographic Information System	
HBRR Highway Bridge Replacement and Rehabilitation	



Contra Costa County Board of Supervisors

Subcommittee Report

TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

3.

Meeting Date: 02/10/2020

Subject: REVIEW record of meeting for November 14, 2019, Transportation, Water and Infrastructure Meeting.

Submitted For: TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE,

Department: Conservation & Development

Referral No.: N/A

Referral Name: N/A

Presenter: John Cunningham, DCD

Contact: John Cunningham
(925)674-7833

Referral History:

County Ordinance (Better Government Ordinance 95-6, Article 25-205, [d]) requires that each County Body keep a record of its meetings. Though the record need not be verbatim, it must accurately reflect the agenda and the decisions made in the meeting.

Referral Update:

Any handouts or printed copies of testimony distributed at the meeting will be attached to this meeting record. Links to the agenda and minutes will be available at the TWI Committee web page: <http://www.cccounty.us/4327/Transportation-Water-Infrastructure>

Recommendation(s)/Next Step(s):

Staff recommends approval of the attached Record of Action for the November 14, 2019 Committee Meeting with any necessary corrections.

Fiscal Impact (if any):

N/A

Attachments

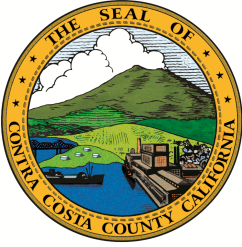
11-14-19 TWIC Sign-In Sheet

11-14-19 TWIC Draft Minutes

Transportation, Water and Infrastructure Committee Meeting November 14, 2019 SIGN-IN SHEET

Signing in is voluntary. You may attend this meeting without signing in. (If front is filled, please use back.)

Name	Representing	Phone	EMAIL
John Cunningham	TWIC/DCD	674-7833	on file
STEPHAN KOURACOSKI	PUBLIC WORKS	313-2225	SKOURA@PW.CCOWAY.US
MICHAEL NICHOLS	DIST 3		
Made Finlinson	IPM Program	925-335-3214	Made.Finlinson@cchealth.org
Jody London	DCD	925-674-7871	you have it
ANDREW SUMNER	UNIVERSITY OF CALIFORNIA		amsutherland@ucanr.edu
Carl Rowe	Public Works	312-2213	carl.rowe@pw.ccoway.us
Deborah Johnson	PW	925-313-2299	Deborah.Johnson@pw.ccoway.us
Slava Gospodnikov	PWD	925-313-2316	sgosp@pw.ccoway.us
ALLISON KROPP	PWD	313-2177	
CHRIS LAY	PWD	313-7668	
Lia Bristol	DIST 4 Mitchell	925-521-7100	lia.bristol@pw.ccoway.us



TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

**DRAFT RECORD OF ACTION FOR
November 14, 2019**

Supervisor Candace Andersen, Chair
Supervisor Karen Mitchoff, Vice Chair

Present: Candace Andersen, Chair
Karen Mitchoff, Vice Chair

1. Introductions
2. Public comment on any item under the jurisdiction of the Committee and not on this agenda (speakers may be limited to three minutes).
3. Staff recommends approval of the attached Record of Action for the October 7, 2019 Committee Meeting with any necessary corrections.

The Committee unanimously APPROVED the meeting record.

4. RECEIVE this status report on the street light service coordination effort between PG&E and the County Public Works Department and Cities for street light maintenance.

The Committee RECEIVED the report, and further DIRECTED staff to: 1) draft a letter from TWIC to PG&E (corporate) requesting that they confer with county staff to finalize the revised LOU, and 2) bring a report back to TWIC if/when appropriate.

5. RECEIVE report on the status of the 2018 recommendations to the Board of Supervisors from the Integrated Pest Management Advisory Committee, as contained in the 2018 Annual Integrated Pest Management Program Status Report.

The Committee RECEIVED the report and DIRECTED staff to: 1) report back on policies regarding how long temporary spray signage is kept up after pesticide applications, 2) provide additional detail on the process for making online complaints, 3) establish a formal process for getting pesticide application information to citizens of disparate generations, 4) draft a letter to the IPM Advisory Committee communicating that the Supervisors reviewed the concerns and provided guidance, and indicate what recommendations are not being implemented and the rationale, and 5) to provide reports and associated material to TWIC for inclusion in the packet for future items.

6. DISCUSS 2020 State and Federal Legislative Platform Development, REVISE as appropriate, and RECOMMEND that the Board of Supervisors include the revisions in the County's final 2020 State and Federal Legislative Platforms.

The Committee unanimously APPROVED the platform changes for consideration by the full Board of Supervisors.

7. CONSIDER report on Local, Regional, State, and Federal Transportation Related Legislative Issues and take ACTION as appropriate.

The Committee RECEIVED the report and DIRECTED staff to coordinate with the Contra Costa Transportation Authority relative to their consideration of Senate Bill 278 (Beall).

8. The next meeting is currently scheduled for *****Thursday, December 19, 2019, 1pm-3pm*****
(**OUTSIDE REGULAR DATE AND TIME**)
9. Adjourn

For Additional Information Contact:

John Cunningham, Committee Staff
Phone (925) 674-7833, Fax (925) 674-7250
john.cunningham@dcd.cccounty.us



Contra Costa County Board of Supervisors

Subcommittee Report

TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

4.

Meeting Date: 02/10/2020

Subject: REVIEW, REVISE as appropriate, and ADOPT the 2020 Calendar.

Submitted For: TRANSPORTATION, WATER & INFRASTRUCTURE
COMMITTEE,

Department: Conservation & Development

Referral No.: N/A

Referral Name: N/A

Presenter: John Cunningham, DCD

Contact: John Cunningham
(925)674-7833

Referral History:

REVIEW, REVISE as appropriate, and ADOPT the 2020 Calendar. (John Cunningham,
Department of Conservation and Development)

Referral Update:

The Committee should review, revise if appropriate, and adopt the 2020 draft calendar.

Recommendation(s)/Next Step(s):

REVIEW, REVISE as appropriate, and ADOPT the 2019 Calendar.

Fiscal Impact (if any):

N/A

Attachments

2020 TWIC Committee Schedule DRAFT



TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

Supervisor Karen Mitchoff, District IV, Chair Supervisor
Candace Andersen, District II, Vice Chair

2020 Meeting Schedule

DATE	ROOM	TIME
February 10	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
March 9	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
April 13	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
May 11	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
June 8	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
July 13	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
August 10	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
September 14	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
October 12	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
November 9	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.
December 14	651 Pine Street, Room 101, Martinez	9:00 to 10:00 a.m.

The TWIC Committee meets the second Monday of each month, unless otherwise noted.
The Agenda Packets will be available online prior to meeting dates.

For Additional Information Contact:

John Cunningham, Committee Staff
Direct Line: 925-674-7833
Main Transportation Line: 925-674-7209
John.Cunningham@dcd.cccounty.us



Contra Costa County Board of Supervisors

Subcommittee Report

TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

5.

Meeting Date: 02/10/2020
Subject: CONSIDER Referrals to the Committee for 2020, REVISE as necessary, and take ACTION as appropriate.
Submitted For: TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE,
Department: Conservation & Development
Referral No.: N/A
Referral Name: This is an annual administrative item of the Committee.
Presenter: John Cunningham, DCD **Contact:** John Cunningham
(925)674-7833

Referral History:

This is an annual Administrative Item of the Committee.

Referral Update:

See attached recommended referrals to the Committee for 2020.

Staff is recommending no changes to the referral list for 2020.

Recommendation(s)/Next Step(s):

CONSIDER recommendations on referrals to the Committee for 2020, REVISE as necessary, and DIRECT staff to bring the list to the full Board of Supervisors for approval.

Fiscal Impact (if any):

There is no fiscal impact.

Attachments

DRAFT 2020 TWIC Referrals

DRAFT 2020 Referrals to the Transportation, Water and Infrastructure Committee

(For Consideration by TWIC at their February 10, 2020 Meeting.)

1. Review legislative matters on transportation, water, and infrastructure.
2. Review applications for transportation, water and infrastructure grants to be prepared by the Public Works and Conservation and Development Departments.
3. Monitor the Contra Costa Transportation Authority including efforts to implement Measure J.
4. Monitor EBMUD and Contra Costa Water District projects and activities.
5. Review projects, plans and legislative matters that may affect the health of the San Francisco Bay and Delta, including but not limited to conveyance, flood control, dredging, climate change, habitat conservation, governance, water storage, development of an ordinance regarding polystyrene foam food containers, water quality, supply and reliability, consistent with the Board of Supervisors adopted *Delta Water Platform*.
6. Review and monitor the establishment of Groundwater Sustainability Agencies and Groundwater Sustainability Plans for the three medium priority groundwater basins within Contra Costa County as required by the Sustainable Groundwater Management Act.
7. Review issues associated with County flood control facilities.
8. Monitor creek and watershed issues and seek funding for improvement projects related to these issues.
9. Monitor the implementation of the Integrated Pest Management policy.
10. Monitor the status of county park maintenance issues including, but not limited to, transfer of some County park maintenance responsibilities to other agencies and implementation of Measure WW grants and expenditure plan.
11. Monitor and report on the East Contra Costa County Habitat Conservation Plan.
12. Monitor the implementation of the County Complete Streets Policy.
13. Monitor and report on the Underground Utilities Program.
14. Monitor implementation of the Letter of Understanding with PG&E for the maintenance of PG&E streetlights in Contra Costa.
15. Freight transportation issues, including but not limited to potential increases in rail traffic such as that proposed by the Port of Oakland and other possible service increases, safety of freight trains, rail corridors, and trucks that transport hazardous materials, the planned truck route for North Richmond; freight issues related to the Northern Waterfront (and coordinate with the Northern Waterfront Ad Hoc Committee as needed), and the deepening of the San Francisco-to-Stockton Ship Channel.
16. Monitor the Iron Horse Corridor Management Program.
17. Monitor and report on the eBART Project.
18. Review transportation plans and services for specific populations, including but not limited to County Low Income Transportation Action Plan, Coordinated Human Services Transportation Plan for the Bay Area, Priorities for Senior Mobility, Bay Point Community Based Transportation Plan, and the Contra Costa County Accessible Transportation Strategic Plan.
19. Monitor issues of interest in the provision and enhancement of general transportation services, including but not limited to public transportation, taxicab/transportation network companies, and navigation apps.
20. Monitor the statewide infrastructure bond programs.
21. Monitor implementation and ensure compliance with the single-use carryout bag ban consistent with Public Resources Code, Chapter 5.3 (resulting from Senate Bill 270 [Padilla – 2014]).
22. Monitor efforts at the State to revise school siting guidelines and statutes.
23. Monitor issues related to docked and dockless bike share programs.
24. Monitor efforts related to water conservation including but not limited to turf conversion, graywater, and other related landscaping issues.
25. Monitor the County's conversion to solar/distributed energy systems.



Contra Costa County Board of Supervisors

Subcommittee Report

TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

6.

Meeting Date: 02/10/2020

Subject: CONSIDER report: Local, Regional, State, and Federal Transportation Issues: Legislation, Studies, Miscellaneous Updates, take ACTION as Appropriate

Submitted For: TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE,

Department: Conservation & Development

Referral No.: 1

Referral Name: REVIEW legislative matters on transportation, water, and infrastructure.

Presenter: John Cunningham, DCD

Contact: John Cunningham
(925)674-7883

Referral History:

This is a standing item on the Transportation, Water, and Infrastructure Committee referral list and meeting agenda.

Referral Update:

In developing transportation related issues and proposals to bring forward for consideration by TWIC, staff receives input from the Board of Supervisors (BOS), references the County's adopted Legislative Platforms, coordinates with our legislative advocates, partner agencies and organizations, and consults with the Committee itself.

This report includes four sections, 1: **LOCAL**, 2: **REGIONAL**, 3: **STATE**, and 4: **FEDERAL**.

1. LOCAL

CCTA March 2020 Transportation Sales Tax

Background

On August 28, 2019, CCTA released a proposed Transportation Expenditure Plan for consideration by the Cities and County. As of October 23rd all cities and the County have approved the TEP. The Authority approved the TEP on October 30, 2019 by Authority Ordinance 19-02.

Update

None

2. REGIONAL

SB 278 (Beall): FASTER Bay Area

Summary: Enable transit in the Bay Area as one seamless network

AB 2057 (Chiu): Seamless Bay Area

Summary: Establish a seamlessly integrated regional transit system.

The initiatives above impact the nine County Bay Area proposing to reform transit service.

3. STATE

Mr. Watts will attend the February Committee meeting to provide a verbal report, his written report is attached

4. FEDERAL

No written report in February.

Recommendation(s)/Next Step(s):

CONSIDER report on Local, Regional, State, and Federal Transportation Related Legislative Issues and take ACTION as appropriate.

Fiscal Impact (if any):

There is no fiscal impact.

Attachments

February TWIC Leg Report

AB 2057 Bill Text

Press Release: AM Chiu: AB 2057

Article: AB 2057 - "Play Nice"

Watts & Hartmann, LLC.

Consulting and Governmental Relations

February 2, 2020

TO: Transportation, Water, and Infrastructure Committee
c/o John Cunningham, Principal Planner

FROM: Mark Watts

SUBJECT: Legislative Report – February TWIC Meeting

California Transportation Commission (CTC)

With the announced departure of Susan Bransen as executive director, the Commission last week completed their selection process and named Deputy Executive Director Mitch Weiss as the new agency chief.

Additionally, recently installed Commissioner Tamika Butler decided to step down due to the press of personal business. This left 1 Gubernatorial vacancy and 2 Commissioner slots whose office holders' terms expire in February.

In January 2020 Assembly Speaker Anthony Rendon appointed Dr. Lyou to the California Transportation Commission. Dr. Lyou previously served as the governor's appointee to the South Coast Air Quality Management District. The position had been vacated upon the appointment of Commissioner Christine Kehoe to a vacant Senate appointment slot.

State Budget

The Governor submitted his 2020-21 State Budget proposal to the Legislature January 10. His presentation highlighted the historic addition to the prudent reserves built into the propose budget act.

Overview (GF and Reserves)

Within an overall combined \$222.2 billion state budget consisting of federal aid and state expenditures, both General fund and Special funds, the governor is proposing \$153 billion in the state's General fund which amounts to an overall year over year increase of 2.3%.

The Budget overall sets aside a total of 221 billion in reserves. A key aspect is that the budget continues to add to the reserves in the Prop 2 (Rainy Day) Fund and assumes an additional transfer of nearly \$2 billion in 2020-21 and an additional \$1.4 billion over the next 3 years.

The Rainy-Day Fund balance is projected to be \$18 billion in 2020-21 and \$19.4 billion by 2023-24.

Watts & Hartmann, LLC.

Consulting and Governmental Relations

Big Picture for Transportation

The topline takeaway – unlike last year’s January Budget, this proposal does not attempt to modify or otherwise leverage SB 1 for non-transportation purposes.

From an overall perspective, funding for transportation reflects an ongoing commitment to the legacy base gas tax and other transportation revenues and SB 1-generated revenues.

State transportation Revenues – The proposed budget reflects an increase of about \$400 million over the current fiscal year.

The Fiscal Year 2020-21 Governor’s Budget represents the third full year of revenues from Senate Bill 1 which is expected to provide \$5 billion in the coming fiscal year (an increase of about \$400 million over the current fiscal year) for various transportation programs.

Local Streets and Roads

Update: total increase of \$120 million for local agencies.

Transit

Update: Budget reflects an increase of approximately \$37 million over the current year.

State Budget and Executive orders

Climate - In late 2019, the governor mandated an executive order which directed CalSTA to seek opportunities for advancing a transportation component of the governor’s visionary Climate Plan. As a review, the Climate Plan seeks to invest approximately \$5 billion in public transit and rail infrastructure, and \$1.1 billion for active transportation projects, to increase access to multi-modal transportation options.

Additionally, the Plan includes continued investment in High Speed Rail. This system is envisioned as an economic backbone for the Central Valley, promoting new housing and jobs near rail stations, and will also provide connectivity between Central Valley cities and, ultimately, the coasts

Homeless Executive Order -Recently issued, this new effort has a strong role for Caltrans by leveraging its property to help address the state’s homelessness crisis. The state has recently partnered with Los Angeles, San Jose, and San Francisco, to use highway underpasses and other Caltrans properties adjacent to highways and state roads for temporary homeless housing, and the Governor has directed Caltrans to share a model template with all other jurisdictions in the state to expedite additional partnerships.

Watts & Hartmann, LLC.

Consulting and Governmental Relations

Transportation Development Account (TDA) Reform

TDA of 1971 provides the basic, underlying fund source for public transportation funding in California. The TDA is an important source of funding for the state's public transit agencies, representing approximately 18 percent of their total revenue between the TDA's two revenue streams – Local Transportation Funds (LTF) and the State Transit Assistance (STA) Program.

The California Transit Association (CTA) has completed a legislatively instigated examination of the TDA and its regulations which harken back to the origins of the funding act. They have brought their TDA review forward and have begun to circulate a concept framework for possible legislative revisions to those aspects of TDA. The task force was led by County Connection General Manager, Rick Ramacier.

Governor Resiliency Bond Act – Budget Trailer Bill

In addition to SB 45 (Allen) that would enact the Wildfire Prevention, Safe Drinking Water, Drought Preparation, and Flood Protection Bond Act of 2020, to provide \$5.51 billion in GO bonds, Governor Newsom's 2020-21 budget proposal includes a \$4.5 bond act proposal with similar objectives to fund resiliency efforts and protect our man-made infrastructure as well as original habitat.

As drafted, \$50 million would be available for resiliency pilot projects for rail, roads, and ports, etc.

ASSEMBLY BILL

No. 2057

Introduced by Assembly Member Chiu
(Coauthors: Assembly Members Bonta, Levine, Ting, and Wicks)

February 3, 2020

An act relating to transportation.

LEGISLATIVE COUNSEL'S DIGEST

AB 2057, as introduced, Chiu. San Francisco Bay area: public transportation.

Existing law creates the Metropolitan Transportation Commission as a local area planning agency for the 9-county San Francisco Bay area with comprehensive regional transportation planning and other related responsibilities. Existing law creates various transit districts located in the San Francisco Bay area, with specified powers and duties relative to providing public transit services.

This bill would state the intent of the Legislature to later enact legislation relating to public transportation in the 9-county San Francisco Bay area.

Vote: majority. Appropriation: no. Fiscal committee: no.
State-mandated local program: no.

The people of the State of California do enact as follows:

- 1 SECTION 1. It is the intent of the Legislature to later enact
- 2 legislation that would do all of the following:
- 3 (a) Require future regional funds for public transportation in
- 4 the nine-county San Francisco Bay area to be conditioned on
- 5 advancing institutional reforms that improve accountability and

- 1 establish a seamlessly integrated regional transit system, so that
- 2 these funds are responsibly spent and advance state mobility and
- 3 environmental goals.
- 4 (b) Integrate all transit in the region to operate as one seamless,
- 5 easy-to-use, multimodal transit system from the perspective of the
- 6 user.
- 7 (c) Create an integrated system of transit that is simple, fair,
- 8 and affordable for users.
- 9 (d) Equitably expand and improve access to high-quality,
- 10 reliable public transportation.
- 11 (e) Prioritize institutional reforms that support the creation of
- 12 a more seamless public transportation network.

O



ASSEMBLYMEMBER

DISTRICT 17

Published on *Official Website - Assemblymember David Chiu Representing the 17th California Assembly District*
(<https://a17.asmdc.org>) (<https://a17.asmdc.org>)

Home (/) > Assemblymember Chiu Introduces Bill to Create Seamless Bay Area Transit System

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(<https://www.addthis.com/bookmark.php?v=300>) [1]

Tuesday, February 4, 2020

Legislation would take immediate action towards transit operator integration leading to a more reliable experience for riders

San Francisco, CA—Assemblymember David Chiu (D-San Francisco) introduced a bill today to create a more seamless, unified Bay Area transit system. Assembly Bill 2057 would instruct Bay Area transit agencies to implement immediate, achievable steps to move toward a more seamless rider experience, and the bill would create a task force to work towards larger, structural changes that would lead to fuller integration among transit operators.

“Navigating our disjointed transit system can be an intimidating and frustrating experience for riders, which leads to less transit ridership overall,” said Assemblymember Chiu. “We need to put riders first and take steps to make our transportation system reliable, convenient, and intuitive.”

There are currently 27 independent transit agencies operating in the nine-county Bay Area. Transit agencies utilize different fare structures, discounts, loyalty programs, wayfinding apps, mapping, branding, and capital planning processes. The fragmented nature of service leads to a confusing and often chaotic experience for Bay Area commuters, residents, and visitors.

Agencies build transportation infrastructure separately, which can make transferring from one operator to the next difficult. A lack of schedule coordination between agencies can make transferring unreliable and can leave riders stranded. Taking a new transit operator can be intimidating because a rider needs to navigate the unique fare structure, nomenclature, and wayfinding mechanisms for each individual operator.

Despite substantial investment in transportation infrastructure over several decades, transit ridership in the Bay Area has not increased. Only 12 percent of the population have used transit to commute since 1970. Between 2016 and 2018, ridership across Bay Area public transit systems fell by 5.2 percent.

In comparison, regions that have high transit ridership, like Seattle or London, have highly integrated networks of local and regional transit services, aligned routes and schedules, coordinated transfers, high-quality transit hubs, and common branding and customer information.

AB 2057 would require Bay Area transit agencies to establish a universal local bus fare, create uniform transfer and discount policies for bus trips, design a single regional transit map, standardize wayfinding mechanisms, and report real time transit data. The bill would create a taskforce to determine how transit agencies could work towards achieving

larger, structural reforms like complete fare integration, schedule coordination, capital planning, and project delivery standards. AB 2057 would also consider the use of future regional transit funds to advance reforms to establish a seamless Bay Area transit system.

AB 2057 is being sponsored by Seamless Bay Area (<https://www.seamlessbayarea.org/>) [2].

"For several decades, our region has attempted, and largely failed to coordinate different transit systems through voluntary coordination," said Ian Griffith, Seamless Bay Area's Policy Director. "During that time we've seen transit ridership stagnate and decline. The public expects their public transit to work as one seamless, affordable, integrated system, and they want to see bold reforms that will get their public agencies to do this as soon as possible. They are tired of excuses of why it's not possible. The Bay Area Seamless Transit Act is a critical first step to reforming our region's transit to work as an integrated, rational network."

AB 2057 is expected to be heard in the Assembly Transportation Committee in the spring.

###

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Source URL: <https://a17.asmdc.org/press-releases/assemblymember-chiu-introduces-bill-create-seamless-bay-area-transit-system>

Links

[1] <https://www.addthis.com/bookmark.php?v=300>

[2] <https://www.seamlessbayarea.org/>

STREETSBLOG

Lawmaker Wants Transit Agencies to Play Nice

New bill would force Bay Area operators to rationalize fares, put customers first

By Roger Rudick | Feb 4, 2020 | 3 COMMENTS



THIS POST IS SUPPORTED BY GJEL ACCIDENT ATTORNEYS




BART fare gate. Not to be confused with a Muni subway fare gate. Or any of the 27 Bay Area operator's fare/payment systems. Photo: BART

Note: [GJEL Accident Attorneys](#) regularly sponsors coverage on Streetsblog San Francisco and Streetsblog California. Unless noted in the story, GJEL Accident Attorneys is not consulted for the content or editorial direction of the sponsored content.

Transferring between the Bay Area's trains, buses, and ferries involves navigating a dizzying and irrational set of fares and rules. All of that may change one day if San Francisco Assemblymember David Chiu and advocates succeed in passing Assembly Bill 2057, the "Bay Area Seamless Transit Act," which would force the Bay Area's 27 transit

agencies to unify fares and work on creating schedules that facilitate easy transfers between systems.  

From [Seamless Bay Area](#), the lead advocacy group behind the legislation: 

Every day, hundreds of thousands of Bay Area residents and visitors navigate a public transportation system that is fragmented and unreliable, enduring long travel times, gaps in service, and uncoordinated transfers and fares. A.B. 2057, or the Bay Area Seamless Transit Act, seeks to implement key reforms and accountability measures to: 

- Create a more integrated and reliable transportation network in the Bay Area
- Make transit more efficient, easy to use, and affordable for riders
- Ensure future regional and state funds for public transportation are connected to the goals of a seamless, customer-first system
- Boost overall transit usage and reduce traffic, in line with the state of California's environmental goals

Seamless Bay Area is proud to be the main sponsor of this legislation, which is informed by our advocacy and policy reform proposals.

In [London, Zurich, Berlin, and a lot of other cities](#), transit riders purchase one pass, paying a single distance-based fare, regardless of whether they ride a bus, subway, surface train, ferry, or some combination of these. In the Bay Area, however, “navigating our disjointed transit system can be an intimidating and frustrating experience for riders, which leads to less transit ridership overall,” said Chiu at an event this morning at the Salesforce Transit Center to announce the bill. “We need to put riders first and take steps to make our transportation system reliable, convenient, and intuitive.”



This morning's legislative press event at the Transit Center. Asm. David Chiu, San Francisco Supervisor and County Transportation Authority Chair Aaron Peskin, BART Board Director Rebecca Saltzman, MTC Commissioner and Rohnert Park Vice Mayor Jake Mackenzie, and supportive transit riders. Photo: Jen Kwart

And from a release from Chiu's office:

Taking a new transit operator can be intimidating because a rider needs to navigate the unique fare structure, nomenclature, and wayfinding mechanisms for each individual operator. Despite substantial investment in transportation infrastructure over several decades, transit ridership in the Bay Area has not increased. Only 12 percent of the population have used transit to commute since 1970. Between 2016 and 2018, ridership across Bay Area public transit systems fell by 5.2 percent. In comparison, regions that have high transit ridership, like [Seattle or London](#), have highly integrated networks of local and regional transit services, aligned routes and schedules, coordinated transfers, high-quality transit hubs, and common branding and customer information. A.B. 2057 would require Bay Area transit agencies to establish a universal local bus fare, create uniform transfer and discount policies for bus trips, design a single regional transit map, standardize wayfinding mechanisms, and report real-time transit data.

The legislation promises to [follow the examples set by Zurich and other cities overseas](#) and “establish accountability metrics and deadlines for transit agencies to achieve fare and

payment integration, standardized wayfinding and mapping, and real-time transit data to improve the transit rider experience” and to “create a path for stakeholder entities to discuss institutional reforms and propose system integration opportunities, including schedule coordination and project delivery standards.”



A map of the Bay Area's 27 transit operators. Image: Seamless Bay Area

“For several decades, our region has attempted [and largely failed to coordinate different transit systems through voluntary coordination](#),” said Ian Griffith, Seamless Bay Area’s Policy Director. “The public expects their transit to work as one seamless, affordable, integrated system, and [they want to see bold reforms](#) that will get their public agencies to do this as soon as possible. They are tired of excuses of why it’s not possible. The Bay Area

Seamless Transit Act is a critical first step to reforming our region's transit to work as an integrated, rational network.”



On Feb. 19, Seamless Bay Area is throwing a [launch party](#) to share more information about the Seamless Transit Act. RSVP [here](#).



Filed Under: Transit, GJEL, Promoted

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Lawmaker Wants Transit Agencies to Play Nice

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**Chris** • 10 hours ago

This sounds terrific, but also daunting. How would a universal bus fare work financially given that the different transit districts have very different resources? For example, Muni is considering making fares free for all youth. Would other districts with very different resources be required to do the same thing? Or would Muni be prohibited from fare innovations such as that?

Also, why only a universal bus fare? Excluding rail and ferry fares seems to be contrary to the entire point of this effort.

^ | ▾ • Reply • Share ›

**JT** • 13 hours ago

The SF Bay Area has always self-Balkanized. It is one urban area but there are nine counties and dozens of cities. And they all want their own power and autonomy.

It's not just transportation that suffers but housing and anything else that would benefit from planning. And that duplication of authorities is very expensive and inefficient. Plus you get ideological extremes, from SF and Berkeley on the one hand, to the conservative unincorporated areas further out.

Ironically the one transportation mode that is unitary and seamless is the highway system.

^ | ▾ • Reply • Share ›

**thielges** • 13 hours ago

A good example of what is possible is the VRR agency providing transit for a conurbation in northwest Germany: <https://en.wikipedia.org/wiki/VRR>

The VRR covers a sprawling region about the same size, density, and population as the SF Bay area. It binds together about 30 transit agencies and 60 municipalities.



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By Roger Rudick | Jul 8, 2019

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By Roger Rudick | Sep 24, 2018

But A.B. 1184 was signed by the governor, bringing some good news to start the celebrations



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Advocates See Hopeful Future with Incoming MTC Chief Therese W. McMillan

By Roger Rudick | Jan 24, 2019

Streetsblog checked in with safe and livable streets advocates throughout the Bay Area to hear what they hope McMillan, who will replace Steve Heminger as ED, can accomplish.





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Advocates Renew Commitment to Better Transit

By Roger Rudick | Sep 9, 2019

4th Annual Transit Week Kicks off at City Hall



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Transit Week Kick Off

02-10-20 TWIC Mtg - Agenda Packet, Page 29 of 297

<https://sf.streetsblog.org/2020/02/04/lawmaker-wants-transit-agencies-to-play-nice/>



By Roger Rudick | Sep 25, 2017

It's the one time of the year "to say thanks to transit riders," said Rachel Hyden, Executive Director of the San Francisco Transit Riders (SFTR), at today's noontime Transit Week kick off event, held on the steps of San Francisco City Hall. "The transit rider contributes to SF. We lower carbon emissions, reduce congestion, and [...]"



STREETSBLOG CALIFORNIA

CA Legislators Turn Their Attention to Transit Funding

By Melanie Curry | Aug 18, 2015

California legislators held press events in Los Angeles and San Francisco on Friday to present new bills to boost transit funding as part of the special legislative session on transportation infrastructure. "Anyone who hits a pothole or sits in traffic knows that our transportation system is in crisis, but so does anyone who has to rely [...]"

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Contra Costa County Board of Supervisors

Subcommittee Report

TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

7.

Meeting Date: 02/10/2020
Subject: RECEIVE update on Senate Bill 743 ("SB-743") implementation.
Submitted For: TRANSPORTATION, WATER & INFRASTRUCTURE
COMMITTEE,
Department: Conservation & Development
Referral No.: 1
Referral Name: Review legislative matters on transportation, water, and
infrastructure.
Presenter: Jamar Stamps, DCD
Contact: Jamar Stamps
(925)674-7832

Referral History:

n/a

Referral Update:

Background

In 2013, Governor Brown signed Senate Bill ("SB") 743 (Steinberg), which creates a process to change the way that transportation impacts are analyzed under California Environmental Quality Act ("CEQA"). Specifically, SB 743 changed the way that transportation impacts are analyzed under CEQA. Automobile delay metrics (i.e. level of service or "LOS") will no longer be considered a significant impact under CEQA and the Governor's Office of Planning and Research ("OPR") recommends that jurisdictions instead use the Vehicle Miles Traveled ("VMT") metric. OPR released a "Technical Advisory" containing methodologies and thresholds for VMT, but the Technical Advisory is not regulatory, only advisory.

OPR will allow jurisdictions to retain their congestion-based standards (i.e. LOS) in general plans and for project planning purposes. Developers may therefore be required to perform two different traffic analyses. Staff will consider updated or new General Plan policies to accommodate congestion-based standards. However, staff is uncertain about the possible ramifications of requiring two sets of transportation impact analyses.

County General Plan Update

Currently, the County is undergoing a comprehensive update to the General Plan. The Growth Management Element and Transportation and Circulation Element both contain policies related to transportation evaluation, such as CEQA impact significance criteria. SB 743 implementation

will include updates to these policies.

Placeworks (consultant hired to prepare General Plan Update) with their sub-consultant Fehr & Peers (transportation planning and engineering firm) will be assisting County staff in implementing SB 743 parallel with the General Plan Update. Specifically, the consultant and County staff will be conducting the following tasks:

- Developing VMT metrics for measuring the effects of land use and transportation projects in the County;
- Developing a screening tool to determine which projects will require quantitative VMT analysis and which projects can be presumed not to cause a VMT impact (i.e. exempt from CEQA VMT analysis);
- Determining which methods should be used to calculate and forecast VMT;
- Developing CEQA significance thresholds; and,
- Developing CEQA mitigation measures.

DCD and Public Works Department (“PWD”) staff will coordinate on SB 743 implementation, which will coincide with the comprehensive General Plan update. However, statewide application of SB 743 will be mandatory by July 2020 and thus, final adoption of the County’s new transportation CEQA standards will likely precede adoption of the updated General Plan.

In the interim, the County will continue using LOS for CEQA review until new VMT significance thresholds are adopted or no later than July 2020, whichever comes first. VMT analysis of land development projects will not be required in the interim, however recently some projects have elected to (and others may) conduct VMT analysis for informational purposes.

Next Steps

DCD and PWD staff will use data provided by the consultant team to inform proposed policies and complete the tasks provided in the previous section. Policy recommendations for VMT analysis will be presented to the TWIC by Spring 2020.

Recommendation(s)/Next Step(s):

CONSIDER the report, provide COMMENT and DIRECT staff as appropriate including.

Fiscal Impact (if any):

None to the General Fund. Measure J funds staff time toward implementation of SB 743.

Attachments

No file(s) attached.



Contra Costa County Board of Supervisors

Subcommittee Report

TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

8.

Meeting Date: 02/10/2020

Subject: RECEIVE update on the Iron Horse Corridor Active Transportation Study.

Submitted For: TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE,

Department: Conservation & Development

Referral No.: 2

Referral Name: Review applications for transportation, water and infrastructure grants to be prepared by the Public Works and Conservation and Development Departments.

Presenter: Jamar Stamps, DCD

Contact: Jamar Stamps
(925)674-7832

Referral History:

12/08/2016: AUTHORIZE staff to submit project applications to the CCTA for the OBAG, TLC and PBTF Funding Programs.

Staff provided an update to various calls for projects; the Iron Horse Corridor Active Transportation Study was a candidate for the Contra Costa Transportation Authority Transportation for Livable Communities Program.

Referral Update:

Project Description

This Iron Horse Corridor Active Transportation Study ("Study") analyzes opportunities and constraints for further developing the active transportation features within the Iron Horse Corridor. The scope of the Study includes the entire length (approximately 22 miles) of the Iron Trail facility and Corridor within Contra Costa (State Route 4 to Alameda County Line). The Study was developed in collaboration with stakeholders such as the Town of Danville, the cities of Concord, Pleasant Hill, Walnut Creek, San Ramon and Dublin, East Bay Regional Park District, Contra Costa Transportation Authority, 511 Contra Costa, utility companies, and local community and advocacy organizations.

Background

August 2018, County staff and Alta + Planning and Design (consultant) initiated the Study. A summary of tasks staff and the consultant have been engaged in include:

- Receiving public input via web-based mapping tool.
- Completed technical memos, including the Existing Conditions, Corridor Analysis, Shared Autonomous Vehicle (“SAV”), Demand Analysis and Needs Analysis.
- Held public outreach events along the Iron Horse Trail in various locations.
- Define study goals and develop improvement concepts and evaluation criteria.
- Convened three Technical Advisory Committee* (“TAC”) meetings (October 2018, March and October 2019).

*TAC consists of staff representatives from each of the agencies listed in the “Project Description” section of this report.

Public Outreach

The Study benefited from public input through a comprehensive public outreach strategy that surveyed a variety of communities and disciplines. Outreach activities began immediately after initiating the Study and continued through Summer/Fall 2019.

County staff and the consultant team engaged in several public and stakeholder outreach events. On December 2, 2018 the consultant team conducted a bike ride of the entire Iron Horse Trail (within Contra Costa County) to help inform our work on the Study. TAC members and members of the public were invited to participate and during the ride were asked to consider the following:

- How you use the trail today?
- How you would like to use the trail in the future?
- Which crossings need improvement?
- How to improve access to the trail?

January 2019, County staff and the consultant team met with staff from the Center for Independent Living and the Bay Area Outreach and Recreation Program representatives to introduce the project and discuss potential project goals.

Spring/Summer 2019, the consultant and County staff held six in-person public engagement events where we received feedback from approximately 260 people. Generally, people expressed a desire for: adding amenities (e.g. lighting, shade, and bike stations), increasing access points, prioritizing trail users at road crossings, and providing user separation along the trail.

The online public engagement webmap tool, open from January to August 2019, gathered over 1,100 unique interactions (i.e. 407 comments and 769 comment likes/votes). Synthesizing this input revealed themes centered primarily around: improving mobility, increasing safety, increasing access/equity and improving the user experience.

Draft Study

An Administrative Draft Study was completed and disseminated to the TAC on November 26, 2019.

The Administrative Draft Study summarizes the data collected in the prior technical memos and defines the Study vision and goals based on feedback from the public engagement process and TAC.

Vision and Goals

The Study envisions a trail that can serve as an active transportation spine that supports the region's mobility goals and continues to provide a treasured recreational resource for users of all ages and abilities.

- Safety: Enhances trail condition and improves traffic and intersection safety.
- Mobility: Provides connections to transit, trails and on-street facilities; accommodates user demand and enhances user comfort.
- Access & Equity: Provides access to jobs, destinations, parks and open space, and health services; presents opportunities for new access points.
- User Experience: Improves trail conditions and amenities; presents opportunities for stormwater filtration, ecology, new amenities, and placemaking.
- Project Synergy: Aligns with planned projects and existing land uses and allows for future expansion of new technologies.

January 21, 2020, the updated Draft Study, which incorporated comments received during the Administrative Draft phase, was posted on the project website for public review. The review period ends on Thursday, February 13, 2020.

Potential Trail Improvements

The Corridor was divided into 15 segments (Exhibit A), each approximately 0.5 miles to 2.5 miles. Each of the seven Corridor jurisdictions (six incorporated areas and unincorporated County) contain 2 to 3 segments. Examples of the design segments are provided as Exhibits B (Contra Costa Centre/Pleasant Hill BART Station Area) and Exhibit C (Alamo).

The Study proposes projects for each segment that were developed by paring the corridor and community needs. A data driven corridor analysis documented how the trail connects to regional networks and adjacent land uses, as well as how it currently serves surrounding communities. Each segment's proposed projects intend to improve the on-trail experience (e.g. user separation), intersections, access points (existing and new), and connections to existing and planned bikeways and trails. Implementing a coordinated vision will also improve travel for higher speed cyclists by providing an efficient route for faster, long-distance travel (i.e. commuting or other utilitarian purposes).

The Study also investigates potential for emerging mobility modes, such as shared autonomous vehicles ("SAVs"), e-bikes and e-scooters. Accommodating emerging mobility options could serve as a first/last mile connection to fixed-route transit, improve mobility options and reduce vehicle miles traveled and greenhouse gas emissions. The Study also acknowledges implementing emerging mobility in the Corridor could face challenges due to limited data from such an application in other trail corridors, conflicts with existing utilities, and operation and maintenance needs. For SAVs to safely operate within the Corridor they would need to run on a facility fully separated from other non-motorized modes. The Corridor has space for this type of infrastructure in only a few areas (mainly Walnut Creek and Danville/San Ramon areas). Ultimately, additional study and extensive public outreach would be necessary to further develop this concept.

Project Prioritization/Evaluation

Five evaluation criteria (safety, mobility, access & equity, user experience) were developed by the

TAC based on the community-driven goals. Those five criteria were used to evaluate the performance of each project type per segment. The TAC provided feedback on the proposed improvements and results of the recommended prioritization.

An evaluation was conducted to project how many additional users are likely to use the trail if certain design improvements are made. This evaluation modeled three proposed improvement scenarios (improved intersections, increased/improved access, and increase in E-Bikes) and measured how each would impact future demand as well as perception of trip and travel time. Results of the evaluations indicate the following:

Improved Intersections – The Study evaluated how trail priority at all intersections would impact trail users and total bikeable trips. If arterial crossings were separated from the street, collector crossings had signals to decrease trail user waiting times, and local crossings required vehicles to stop, the trail would feel 14% shorter in length than existing conditions. Trail priority would enhance user experience and could encourage more commuters and recreational users to use the trail.

Improved Trail Access – The Study modeled better trail connections. Currently, few comfortable on-street bike facilities connect users to the trail. With the addition of comfortable low-stress bikeways leading to the trail at regular intervals, there would be a significant number of new trips to the trail (up to 23% more trips).

E-Bikes – The Study considered how the presence of e-bikes would impact trail usage. With an increase of electric bikes and scooters, trail user speeds would increase and allow for longer and faster trips. E-bikes would allow users to make trips that are 22% longer and would increase the number of bikeable trips significantly (approximately 27%).

Comments from the TAC on the Administrative Draft Study were due on December 13, 2019 and were incorporated into the Final Draft Study, which was published on January 21, 2020. After the public review period and any necessary revisions to the Final Draft Study are complete, staff anticipates a Final Study will be forwarded to the Board of Supervisors for consideration by March/April 2020.

Operation and Maintenance

An important point of discussion among TAC members was how to operate and maintain the Iron Horse Corridor if improvements are implemented. The improvements outlined in this Study will increase operation and maintenance costs significantly, and may require a new strategy.

Currently, the Corridor is owned by Contra Costa County and maintained through the Iron Horse Corridor Management Program Advisory Committee. The County has a license agreement with the East Bay Regional Park District where they (Park District) agree to maintain the 12-foot paved trail portion of the Corridor plus four feet on either side.

Section 6 of the Study discusses potential governance and revenue models. The existing management structure for the Iron Horse Trail is sufficient for the corridor as it exists today. However, a new strategy may be needed to ensure there are adequate funds available to implement and maintain the proposed projects outlined in the Study. Establishing this new strategy will require a coordinated effort between the Corridor stakeholders.

Recommendation(s)/Next Step(s):

RECEIVE update on the Iron Horse Corridor Active Transportation Study, CONSIDER the report, provide COMMENT and DIRECT staff as appropriate including 1) bringing the Iron Horse Corridor Active Transportation Study to the full Board of Supervisors for consideration, and 2) coordinate with Corridor stakeholders to pursue funding opportunities for implementation, as directed by the Committee.

Fiscal Impact (if any):

None to the General Fund. A Contra Costa Transportation Authority –Transportation for Livable Communities (Measure J) grant funded development of the Iron Horse Corridor Active Transportation Study. Staff time for recommended activities are covered under existing budgets (50% Road Fund and 50% Measure J Fund).

Attachments

Ex. A, Map 2 Design Segments

Ex. B, Map 13 CCC Segment

Ex. C, Map 15 Alamo Segment

Ex. D Study DRAFT Appendices

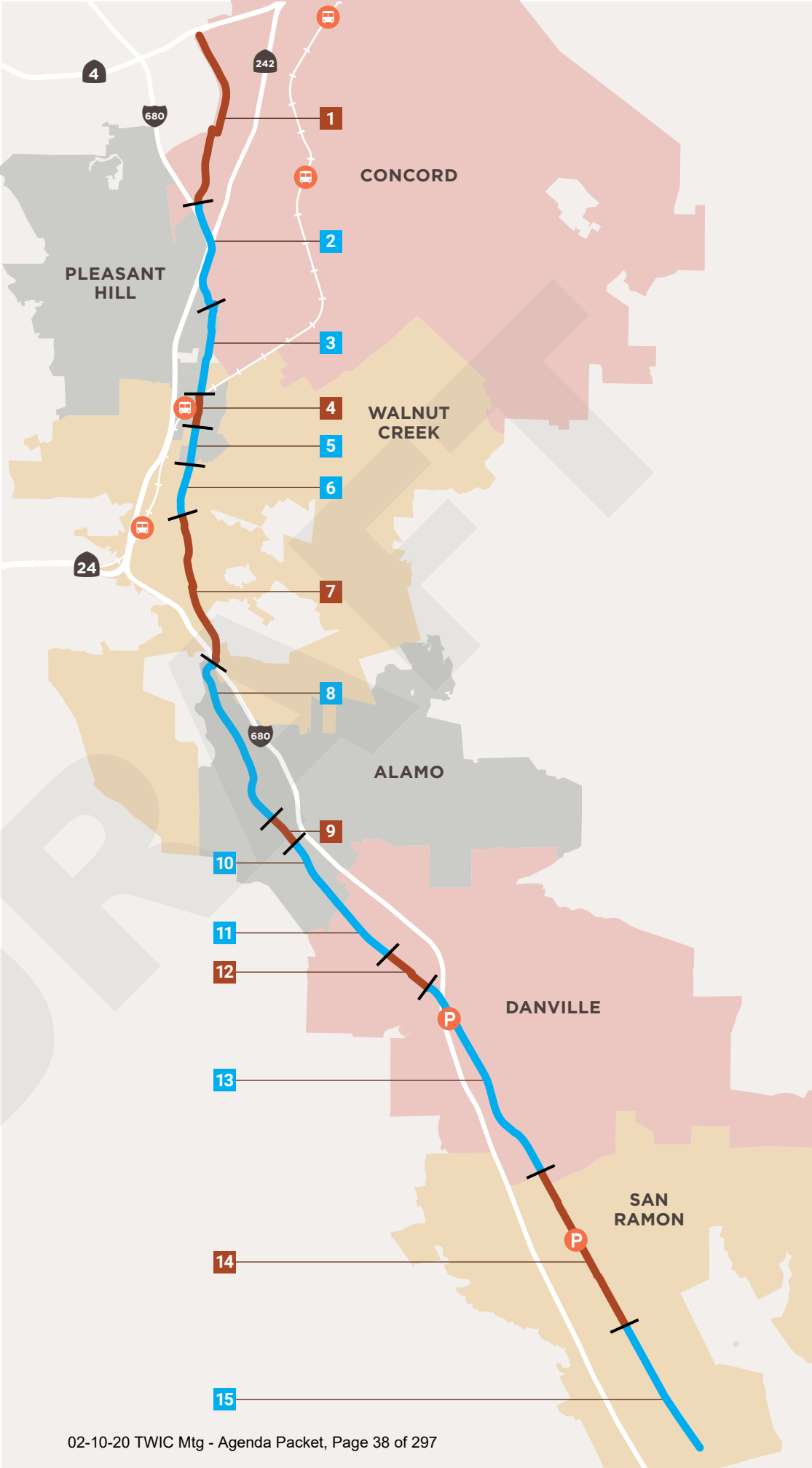
Ex E. DRAFT January 2020

IRON HORSE TRAIL DESIGN SEGMENTS

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Trail Segments by Type

- Activity Centers:**
Main Street, Commercial, Destination, Development, Transit
- Parks & Housing Segments:**
Residential, Passive, Landscape, Park
- Segment Extents
- BART Station
- Park & Ride



Segment	Start/End	Length (miles)
1. Concord B	Marsh to Willow Pass	2.47
2. Concord A	Willow to Monument	1.40
3. Pleasant Hill/CCC A1	Monument to Las Juntas	1.83
4. Pleasant Hill/CCC B	Las Juntas to Jones	0.37
5. Pleasant Hill/CCC A2	Jones to Walden	0.53
6. Walnut Creek A1	Walden to Ygnacio Valley	0.71
7. Walnut Creek B	Ygnacio Valley to Danville/I-680	2.00
8. Alamo A1	Danville/I-680 to Stone Valley	2.41
9. Alamo B	Stone Valley to South Ave	0.44
10. Alamo A2	South Ave to Wayne	0.96
11. Danville A1	Wayne to Love Lane	0.98
12. Danville B	Love Lane to San Ramon Valley	0.68
13. Danville A2	San Ramon Valley to Fostoria	2.93
14. San Ramon B	Montevideo to Fostoria	2.34
15. San Ramon A	Alcosta to Montevideo	1.85

PLEASANT HILL/CONTRA COSTA CENTRE PROJECTS

Pleasant Hill/Contra Costa Centre includes three segments that connect through the highest density of zero vehicle households in the study area and have high expected demand overall. Segment 3 could benefit from enhancements to access points around schools. The trail connects to the Pleasant Hill/Contra Costa Centre BART

station in Segment 4 and serves as a critical regional connection to transit. Segment 4 has elements of successful trail design including the Treat Boulevard overcrossing and the separated use trails through CCC Transit Village Park. Additional improvements can be seen in trail configuration to reduce user conflicts and improve connections

PROJECT TYPE IMPROVEMENTS

Trail Corridor

- Separated by User
- - Separated by Speed
- · · Separated by Experience

Intersections

- Arterial
- Collector
- Local
- Undercrossing
- Regional Trail

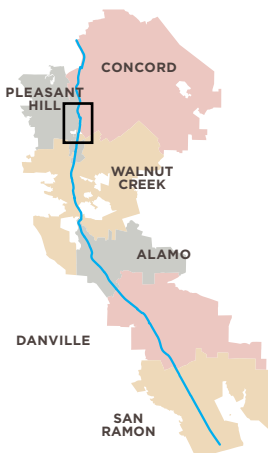
Access

- School/Open Space/Trail
- Residential/Street
- Business/Commercial/Retail

Connections

- - - Trail Connection
- - - On Street Bikeway Connection
- Existing Trail
- BART Connection
- Park and Ride Connection

KEY MAP



to BART. Segment 5 connects to the Contra Costa Canal Trail, an important regional connection, and could improve access to adjacent open space at Walden Park.

3 Segment 3: Monument to Las Juntas

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separated by experience (open space): 14ft rolling path with adjacent 6 ft pedestrian path.
Intersections	<ul style="list-style-type: none"> Improve collector intersection at Hookston Rd. Improve three local crossings at Lisa Ln, Mayhew Way, and Coggins Rd.
Access	<ul style="list-style-type: none"> Add school access point at Fair Oaks Elementary School, open space access point at Len Hester Park, and enhance one residential access point. Opportunities for community based programs including outdoor classrooms or student gardens. Incorporate micromobility such as bike share or dockless options at major intersections or destination sites.
Connections	<ul style="list-style-type: none"> Improve connection to Class II on Bancraft Rd at Hookston Rd.

4 Segment 4: Las Juntas through Jones

<i>Project type</i>	<i>Description</i>
★ Trail Corridor	<ul style="list-style-type: none"> Separated by experience (urban): 16ft rolling path with 6-10 ft pedestrian path.
★ Intersections	<ul style="list-style-type: none"> Improve two collector intersections at Las Juntas Way and Jones Rd.
Access	<ul style="list-style-type: none"> Add one commercial access point. Improve one residential access point at Honey Trail. Incorporate micromobility such as bike share or dockless options at major intersections or destination sites.
★ Connections	<ul style="list-style-type: none"> Improve trail connection to planned Class II at Treat Blvd. Improve direct connection to BART.

5 Segment 5: Jones through Walden

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separated by experience (open space): 14 ft rolling path with adjacent 6 ft pedestrian path.
Intersections	<ul style="list-style-type: none"> Improve trail crossing at Contra Costa Canal Trail. Proposed bicycle roundabout. Improve one local crossing at Walden Rd.
Access	<ul style="list-style-type: none"> Enhance one open space access point at Walden Park. Incorporate micromobility such as bike share or dockless options at major intersections or destination sites.

PROJECT TYPE IMPROVEMENTS

Trail Corridor

- Separated by User
- - - Separated by Speed
- · · Separated by Experience

Intersections

- Arterial
- Collector
- Local
- Undercrossing
- Regional Trail

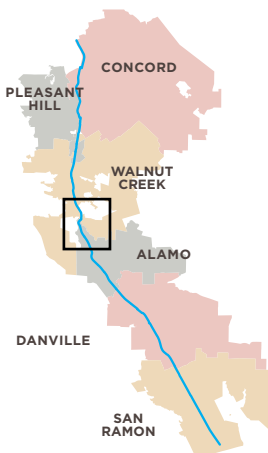
Access

- School/Open Space/Trail
- Residential/Street
- Business/Commercial/Retail

Connections

- - - Trail Connection
- - - On Street Bikeway Connection
- Existing Trail
- BART Connection
- Park and Ride Connection

KEY MAP



ALAMO PROJECTS

Alamo includes three segments of the lowest user demand in the study corridor. This is due to lower density of origins and destinations as well as limited low stress on-street bikeway connections. The local activity in Alamo is expected to be largely recreational, however, utilitarian users will pass through Alamo. Improving local intersections so that trail

users would have priority would improve trail convenience. Segment 8 has a large right-of-way with open space. There are opportunities for trail-oriented development and stronger connections to commercial activity in Segment 9. In Segment 10, access could be improved to Rancho Romero School and Hemme Station Park.

8 Segment 8: Danville/I-680 to Stone Valley

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separate users by speed with a 22' paved trail with marked shoulders.
★ Intersections	<ul style="list-style-type: none"> Improve five local crossings at Hilgrade Ave, Cervato Dr, Ramona Way, Litina Ave, and Ridgewood Rd. Improve one collector intersection at Livorna Rd.
Access	<ul style="list-style-type: none"> Add two commercial access points adjacent to Stone Valley commercial areas. Enhance Alamo/IHT Trailhead at Stone Valley Rd. Enhance planting.

9 Segment 9: Stone Valley to South Ave

<i>Project type</i>	<i>Description</i>
★ Trail Corridor	<ul style="list-style-type: none"> Separate users by speed with a 20' paved trail with marked shoulders.
Intersections	<ul style="list-style-type: none"> Improve two collector intersections at Stone Valley Rd and Las Trampas Rd.
Access	<ul style="list-style-type: none"> Enhance three existing commercial access points.
★ Connection	<ul style="list-style-type: none"> Connect trail to Class II at Stone Valley Rd.

10 Segment 10: South Ave through Wayne

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separate users by speed with a 20' paved trail with marked shoulders.
Intersections	<ul style="list-style-type: none"> Improve three local crossings at Hemme Ave, Camille Ave, and Wayne Ave.
Access	<ul style="list-style-type: none"> Enhance existing residential/street access at South Ave, existing open space access at Hemme Station Park, and existing school access at Hemme Ave for Rancho Romero Elementary School.



CONTRA COSTA COUNTY

Active Transportation Corridor Study Appendices

DRAFT | JANUARY 2020

IRONHORSE
REGIONAL TRAIL



Contents

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IRON HORSE TRAIL ACTIVE TRANSPORTATION CORRIDOR STUDY

TECHNICAL MEMORANDUM #1

EXISTING CONDITIONS

February 27, 2019

PROJECT BACKGROUND

The Iron Horse Trail Active Transportation Corridor Study is conducting an in depth analysis and evaluation of the Iron Horse Trail as an active transportation corridor. The study will evaluate how investment in the corridor, its crossings with the street network, and connections to the trail can increase the share of trips being made using active modes to get to work, school, shopping, and other utilitarian purposes. This memorandum presents existing conditions for the trail.

The Iron Horse Trail (IHT) offers tremendous potential as a transportation corridor through the heart of Contra Costa County. The full corridor is within 1.5 miles of over 340,000 residents (151,000 commuters) and only a few blocks from both the Pleasant Hill and Dublin/Pleasanton BART stations. The IHT directly connects workers to dense employment areas like Bishop Ranch in San Ramon (600 companies and growing) and Contra Costa Centre Transit Village in Walnut Creek (over 6,000 employees).

The trail is generally a 10-foot wide paved path, requiring pedestrians and bicyclists to share the same space. The trail's popularity at peak times has led some bicycle commuters to seek alternate routes. For others, the lack of low-stress on-street connections serves as an impediment to using the Iron Horse Trail for commuting and other utilitarian trips.

The IHT Corridor Study presents an opportunity to reimagine the existing trail into an active transportation mobility corridor for the future. With limited roadway space and high costs to adding new freeway or similar auto-oriented infrastructure, finding ways to create new mobility options that include active transportation, low power electric vehicles and micromobility devices, and shared autonomous vehicles is critical to improving future sustainability of the transportation system.

This memorandum summarizes the data reviewed, key trends, issues, and constraints, with a focus on the physical corridor.

CORRIDOR HISTORY AND OWNERSHIP

The existing trail corridor follows the Southern Pacific Railroad right-of-way established in 1891 and abandoned in 1978, and currently spans 32 miles, passing through the communities of Concord, Pleasant Hill, Walnut Creek, Alamo, Danville, and San Ramon, as well as Dublin and Pleasanton (Alameda County). The scope of the Study includes the entire length (approximately 22 miles) of the Iron Horse Trail within Contra Costa County (State Route 4 to County Line). While the Iron Horse Regional Trail begins in Concord near Highway 4, it should be distinguished from the Iron Horse Corridor (approximately 18.5 miles) that begins in Concord at Mayette Avenue.

The Iron Horse Trail corridor is owned by Contra Costa County, though several easements for underground utilities lie within the corridor. These utilities are a major constraint to potential upgrades to the corridor. Primary utility easements include:

- A 10 to 36-foot Contra Costa Sanitary District easement traverses the majority of the corridor
- A 10-foot gas pipeline easement, granted to SFPP/Kinder-Morgan, runs along the majority of the corridor
- Intermittent PG&E easements for underground vault access or overhead power lines are present throughout the corridor
- There are sporadic storm drain easements perpendicular to the trail and East Bay Municipal Utilities District water lines within the corridor.

TYPICAL CORRIDOR CONDITIONS

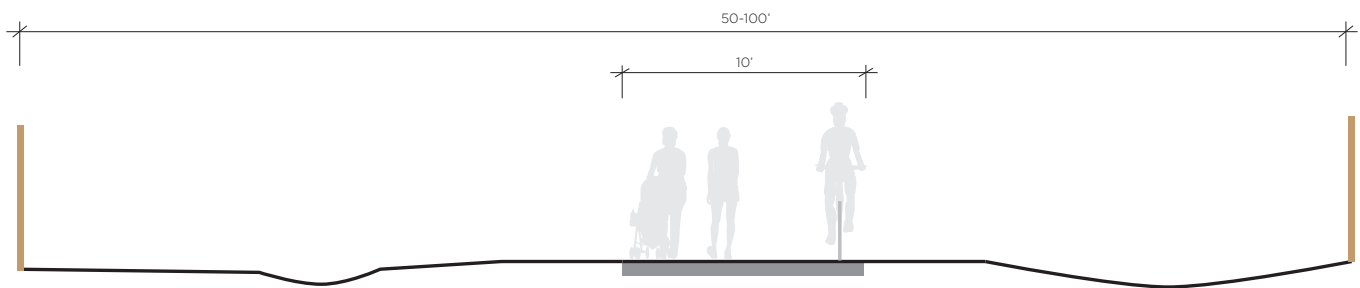
The Iron Horse Trail corridor typically ranges between 50'-100' in width as it follows the old Southern Pacific Railroad right-of-way. The trail itself is 10 feet wide and is typically an asphalt surface. Portions of the corridor include informal unpaved shoulders and connections to surrounding land uses. A few locations include separate formal pedestrian paths that are either compacted natural surface or asphalt paths ranging from 3 to 5 feet in width.

The topography along the trail corridor is generally flat as it follows the old railroad grade. Three common corridor conditions are described immediately below. Descriptions of unique conditions found in only select locations are included in the following pages. The map on page 6 summarizes these conditions.

UNCONSTRAINED CORRIDOR

2.9 miles

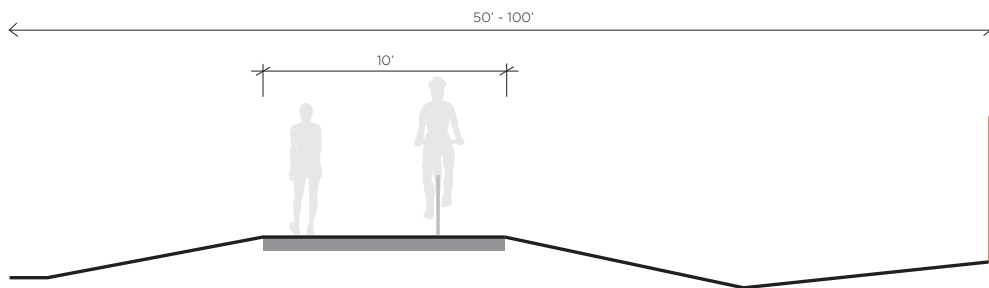
A portion of the corridor faces few constraints, with 50 to 100 feet of generally flat right of way available. Relevant sections of this type are found near Walnut Creek and Alamo.



FORMER RAIL BED

7.8 miles

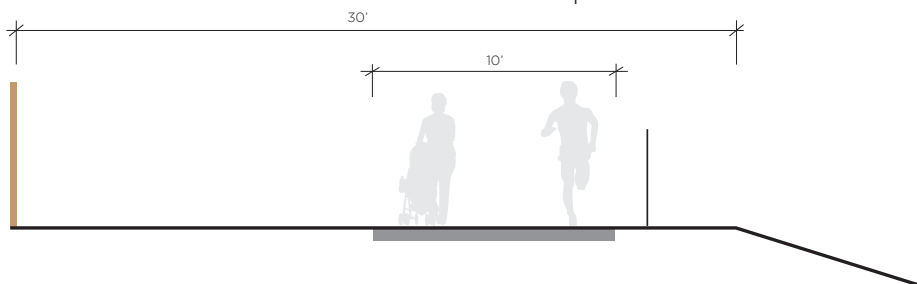
Sections of the trail run along a raised rail bed with moderate drainage ditches along portions of the corridor. These conditions are found in most of San Ramon and Danville.



TRAIL ON BERM

3.6 miles

The third common trail condition is on a raised berm. This is primarily found in the northern section of the trail near Concord where the trail parallels Walnut Creek.

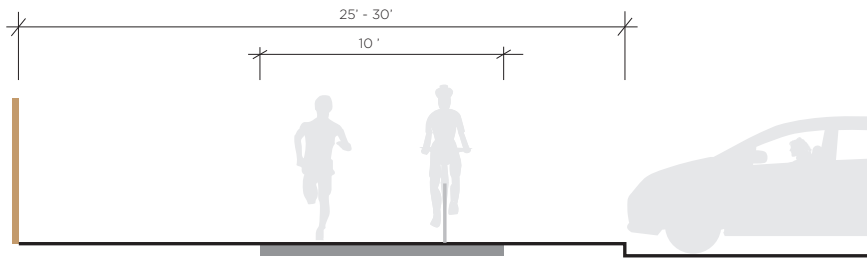


UNIQUE CORRIDOR CONDITIONS

Several areas of the corridor face constraints from adjacent commercial development, limited right of way, a channelized creek, or topography. There are also a few examples of the trail traversing through parks. The following examples illustrate these unique corridor conditions.

ADJACENT COMMERCIAL

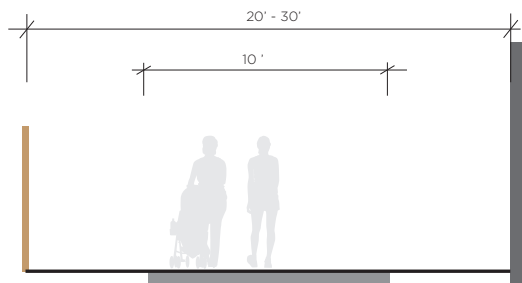
For 2.3 miles in parts of Danville and San Ramon, commercial businesses are directly adjacent to the trail. In Downtown Danville, the trail narrows to approximately 30 feet in width.



DOWNTOWN DANVILLE

LIMITED RIGHT-OF-WAY

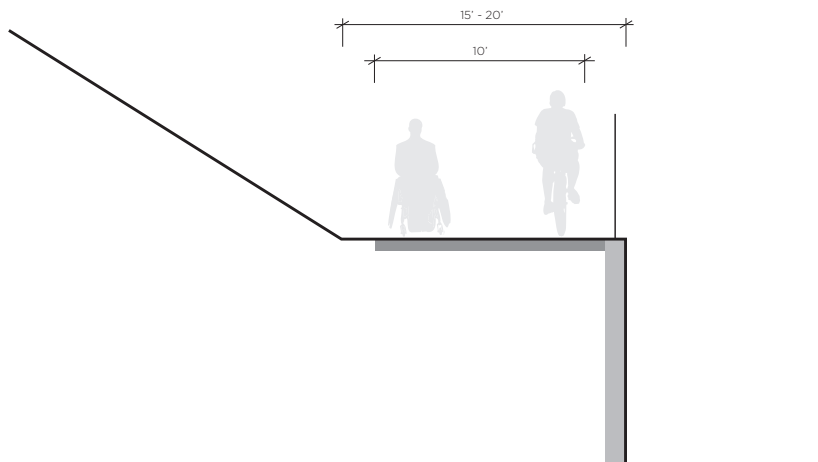
For just under a mile in south Walnut Creek, South Broadway and the adjacent soundwall narrow the trail corridor width to approximately 20 feet.



WALNUT CREEK - SOUTH
BROADWAY CORRIDOR

CHANNELIZED CREEK

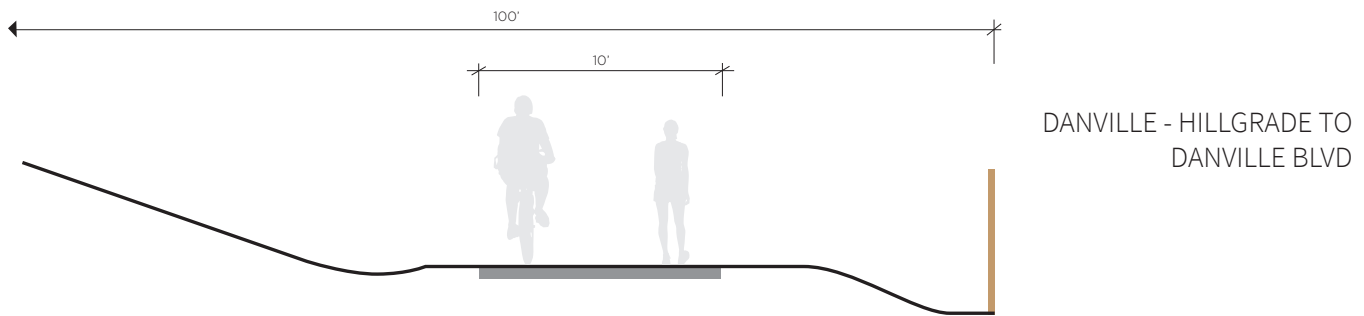
The trail corridor is approximately 25 feet wide adjacent to the channelized creek between Newell Avenue and Ygnacio Valley Road in Walnut Creek (0.7 miles).



WALNUT CREEK - NEWELL TO
YGNACIO VALLEY ROAD

ADJACENT TOPOGRAPHY

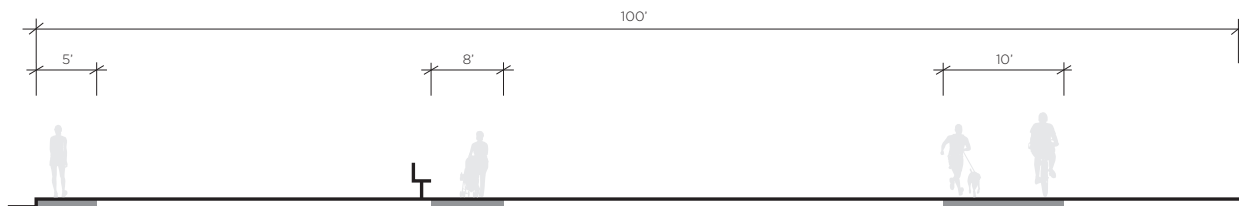
While most of the trail is in generally flat topography, a small portion (0.8 miles) in Danville is adjacent to topography that may limit any additional trail width.



TRAIL THROUGH PARK

In several locations, the trail crosses through or adjacent to a community park or other similar space, including in Pleasant Hill near the BART station and Central Park in San Ramon. The trail also traverses the San Ramon Golf club and currently includes fencing adjacent and overhead to protect users from errant golf balls.

PLEASANT HILL - CONTRA COSTA
CENTRE TO MAYHEW WAY

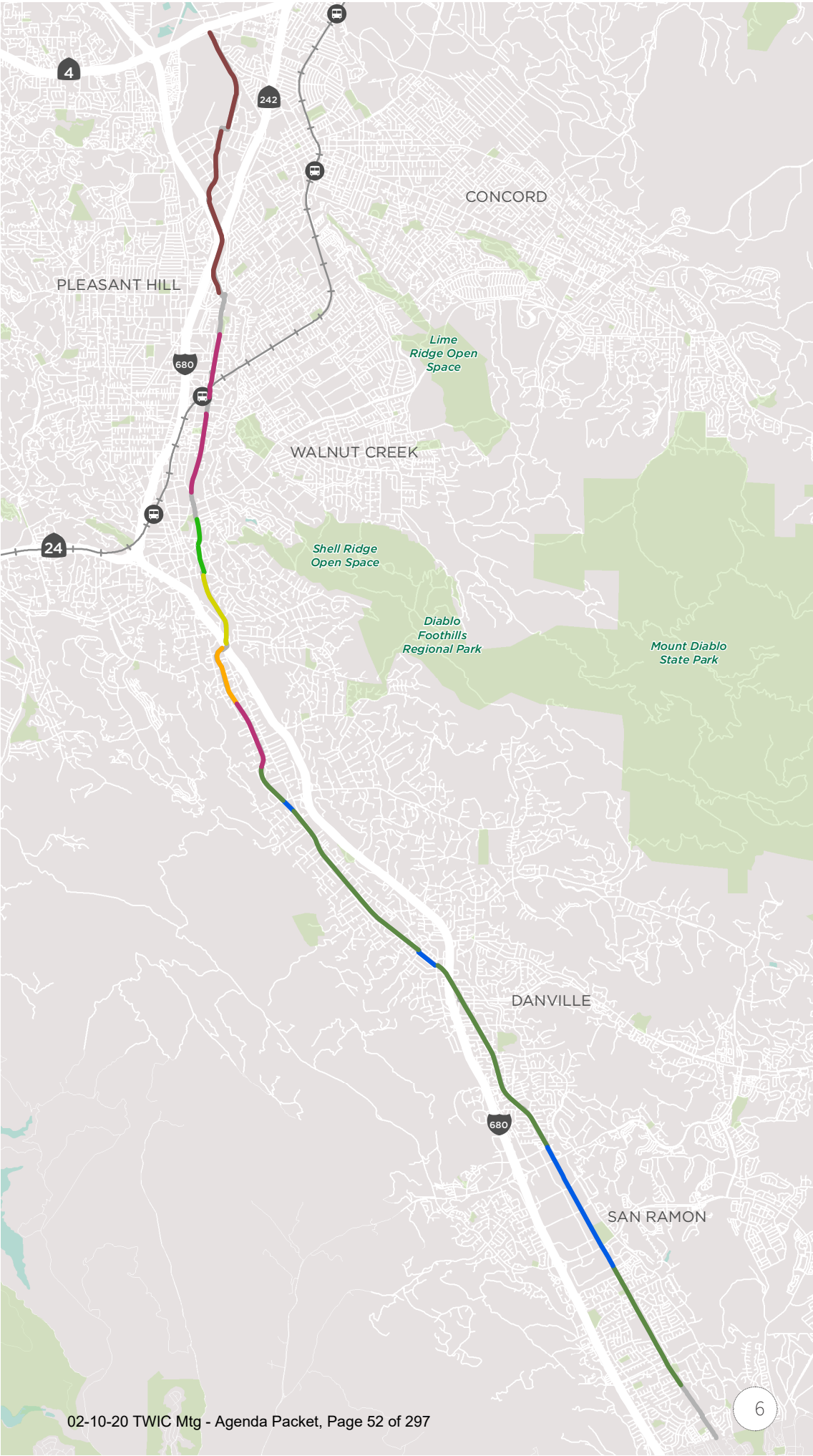


CORRIDOR CONDITIONS

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Trail Typology

- Very Wide** (2.9 miles)
- Wide:** Trail on Creek Bank (3.6 miles)
- Wide:** Rasied Rail Bed (7.8 miles)
- Narrow:** Adjacent Topography (.08 miles)
- Narrow:** Adjacent Commercial (2.3 miles)
- Constrained:** Limited Right of Way (1 mile)
- Constrained:** Channelized Creek
- Iron Horse Trail
- BART Station
- Park



TRAIL CROSSING LOCATIONS AND EXISTING CROSSINGS

The Iron Horse Trail corridor crosses 45 roadways as it traverses Contra Costa County. For the purposes of the Study, we have broken down the crossing types into 5 categories, summarized in the map on page 8.



Crow Canyon Rd, San Ramon

Arterial

Generally multi-lane high speed (>35mph) roadway. Trail crossings utilize existing traffic signals. There are 11 major arterial crossings along the corridor.



El Capitan with RRFB, Danville

Collector Controlled

Connection between local and arterial road. Moderate speed and traffic volumes. Trail crossing typically controlled by RRFB or other flashing beacon. There are 9 controlled crossings along the corridor.



Walden Rd, Walnut Creek

Collector Uncontrolled

Connection between local and arterial road. Moderate speed and traffic volumes. Trail crossing warning signage and striping only. There are 6 uncontrolled crossings along the corridor.

TRAIL CROSSING LOCATIONS AND EXISTING CROSSINGS



Ridgewood Rd, Alamo

Local

Neighborhood/residential access only. Low speed (25 mph) and low traffic volume. Trail crossing warning signage and striping only. There are 14 local crossings, many clustered together.



Treat Blvd , Walnut Creek

Grade Separated

Trail crosses under or over roadway. There are two existing overcrossings and three roadway undercrossings along the corridor.

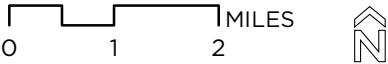
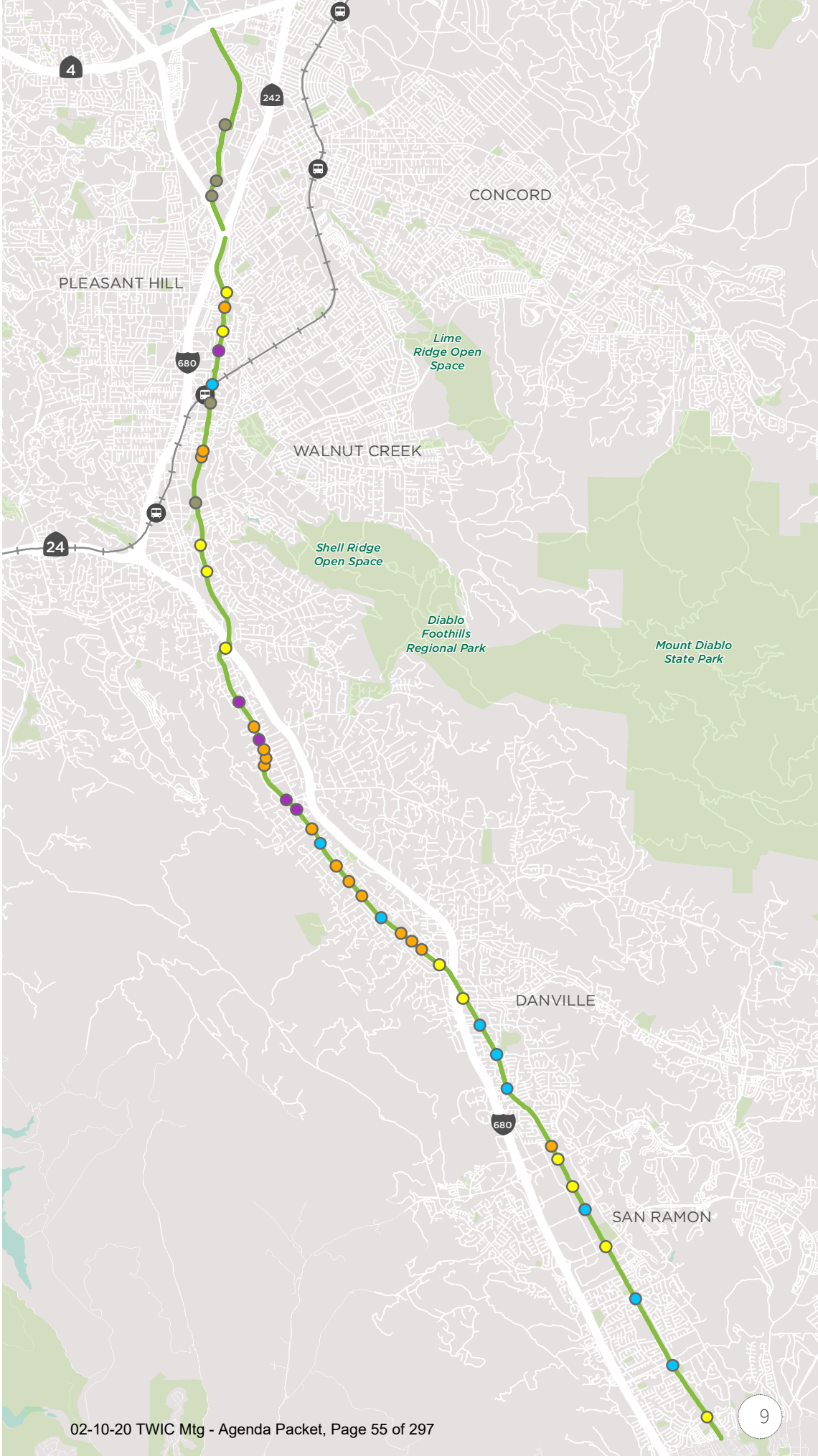
INTERSECTIONS

CONTRA COSTA COUNTY IRON HORSE TRAIL

Intersection Type

- Arterial
- Collector Controlled
- Collector Uncontrolled
- Local
- Grade Separated

- Iron Horse Trail
- BART Station
- Park



Map produced January 2018.
Sources: U.S. Census, Esri,
Contra Costa County.

ACCESS POINTS

The Iron Horse Trail has numerous access points, including formal public access points from city streets or shopping areas, areas that are permeable (where the trail passes through parks or other open land areas), informal public access points to shopping centers that do not formally open onto the trail, and informal private access points to individual homes along the trail. This Study is primarily focused on formal/public access points, though the relationship between other public and private land to the trail will also be addressed. There are 60 formal access points along the corridor that connect the trail to residential neighborhoods, retail centers, downtowns, and parks. The map on page 11 illustrates these access points.



Fallen Leaf Circle, Danville

Residential

Access between trail and adjacent neighborhoods



Civic Drive, Walnut Creek

Local Street

Access between trail and local street network



Bishop Ranch, San Ramon

Business

Access between trail and office buildings or business park

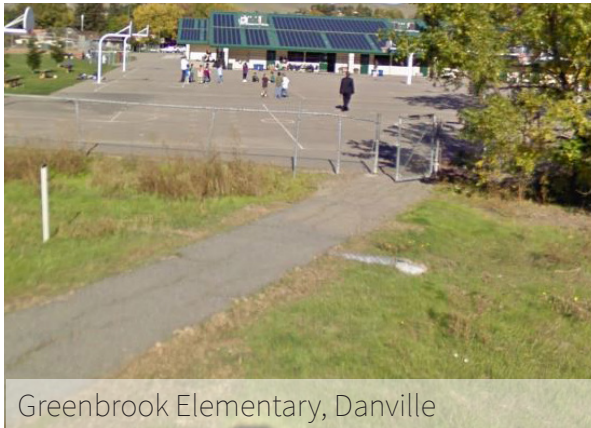
ACCESS POINTS (CONTINUED)



Willows Shopping Center, Concord

Commercial

Access between trail and nearby retail centers



Greenbrook Elementary, Danville

Open Space/School

Access between trail and park space or an adjacent school



Contra Costa Canal Trail, Walnut Creek

Trail

Intersection of the Iron Horse Trail with another trail network

ACCESS POINTS

CONTRA COSTA COUNTY IRON HORSE TRAIL

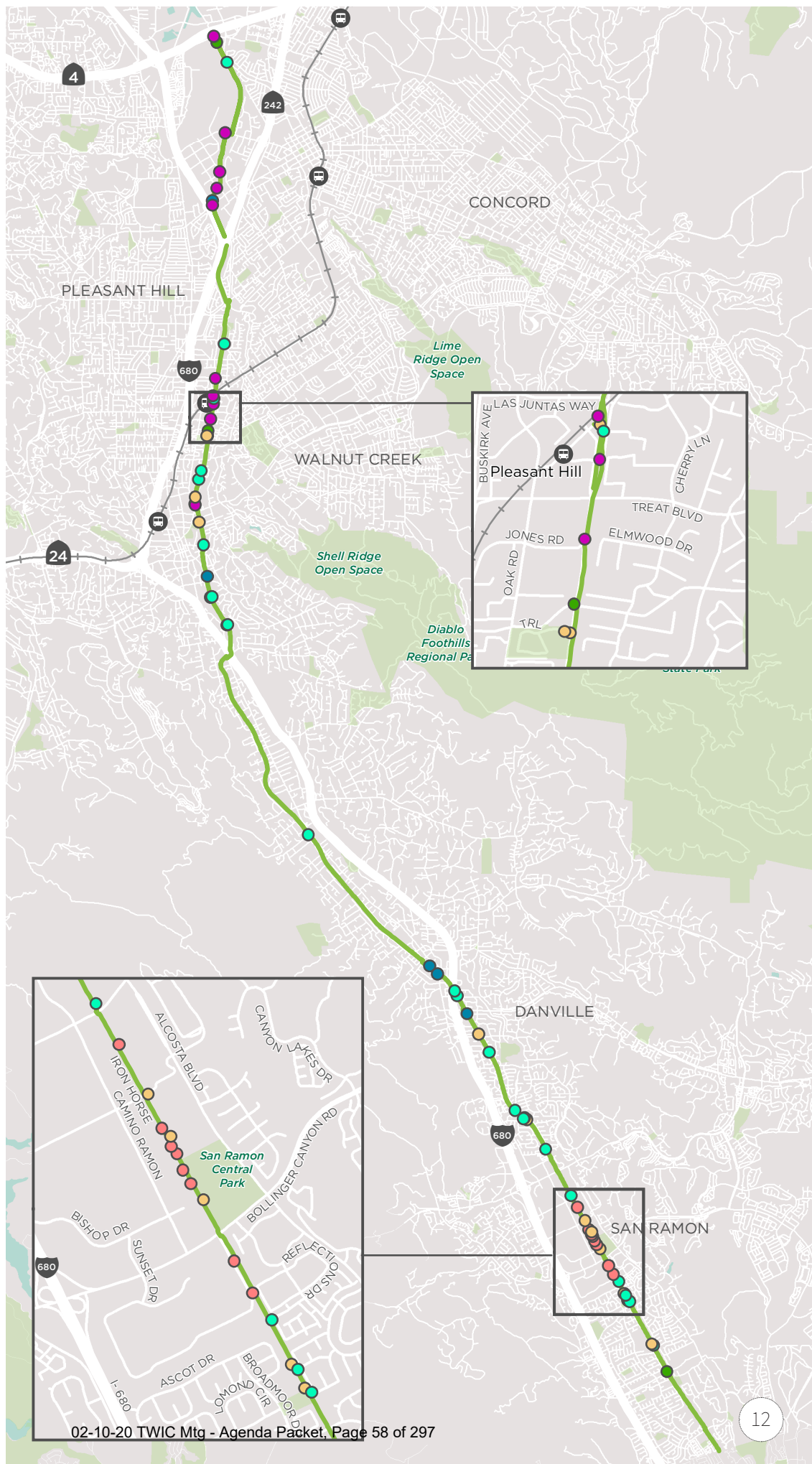
Access Type

- Business
- Commercial/Retail
- Residential
- School or Open Space
- Street
- Trail

— Iron Horse Trail

B BART Station

Park



0 1 2 MILES



EXISTING AMENITIES

While the trail connects to several city parks, schools, and downtowns, amenities along the trail itself are scarce. Small staging areas with and without parking are sporadic along the corridor. Shade structures with seating are found adjacent to the trail within San Ramon, and there is enhanced greenway and linear park space north of the Pleasant Hill BART station. The San Ramon Transit Center and Hemme Park have restrooms and water open to the public and are directly adjacent to the trail, and there are seven restrooms at public park facilities less than a quarter mile from the trail (three in San Ramon, two in Danville, and two in Walnut Creek).



Linear Park



Shade Structure with Seating



Trailhead Staging Area

IRON HORSE TRAIL ACTIVE TRANSPORTATION CORRIDOR STUDY

TECHNICAL MEMORANDUM #2

CORRIDOR ANALYSIS

June 11, 2019

PROJECT BACKGROUND

The Iron Horse Trail Active Transportation Corridor Study is an in depth evaluation of the Iron Horse Trail as an active transportation corridor. The Study will evaluate how investment in the corridor, its crossings with the street network, and connections to the trail can increase the share of trips being made using active modes to get to work, school, shopping, and other utilitarian purposes.

This memorandum describes how the corridor is used today, focusing on how it provides access to workplaces, schools, shopping, and other key destinations. This memo addresses the following questions:

- What are the demographics of the communities along the Iron Horse Trail and how are they changing?
- What active transportation networks connect to the trail today?
- What locations are accessible from the trail by foot, bicycle, and other active modes?
- Who uses the Iron Horse Trail today and how heavily is it used?
- What safety issues exist along the trail or on connections to the trail?
- How well connected to the trail are each of the communities along it?

This Study presents an opportunity to re-imagine the existing trail into an active transportation mobility corridor for the future. With limited roadway space and high costs to adding new freeway or other auto-oriented infrastructure, finding ways to create new mobility options that include active transportation, low power electric vehicles and micromobility devices, and shared autonomous vehicles is critical to improving future sustainability of the transportation system.

DEMOGRAPHICS

The Iron Horse Trail offers tremendous potential as a transportation corridor through the heart of Contra Costa County. Within three miles of the Iron Horse Trail there are over 425,000 residents (200,000 commuters). This section reviews the demographics near the trail.

COMMUTING AND MODE CHOICE

Most walk and bike commute trips occur in the northern end of the trail, near Walnut Creek, Pleasant Hill and Concord (Map 1). Overall, however, 70 percent of commuters along the Iron Horse Trail corridor drive alone to work.

This may be due, in part, to the relative wealth of the communities along the Iron Horse Trail. People who live near the trail tend to have access to multiple vehicles, with only 2% of all commuters without access to a car, and 80% of commuters having access to 2 or more vehicles. Many of these motor-vehicle commute trips are relatively short, with 39% taking less than 20 minutes.

The largest concentrations of households with zero-vehicle (Map 2) and of relatively lower median household incomes (Map 3) are in the same census tracts with lower average drive alone to work mode share.

WHERE PEOPLE WORK AND LIVE

Using data from the US Census Bureau Local Employment Household Dynamics (LEHD) Origin-Destination Employment Statistics, Map 4 illustrates the spatial densities where people live and work. Within the Iron Horse Trail study area, jobs are concentrated in Walnut Creek and San Ramon, with a smaller cluster in Concord. However, workers' homes tend to be more dispersed along the trail between Concord, Pleasant Hill, and Walnut Creek.

Notably, many of the live and work hot spots are near the trail. For workers who both live and work in the study area, the Iron Horse Trail may provide a unique opportunity for long-distance car-free commuting.

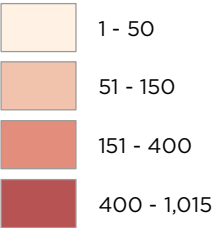
POPULATION AND EMPLOYMENT GROWTH

Within the study area, population and employment growth are expected along the trail, near BART stations, and at the Concord Naval Weapons Station redevelopment site (Map 5). The significant growth in population near the trail further suggests the need to provide improved active transportation access in this corridor.

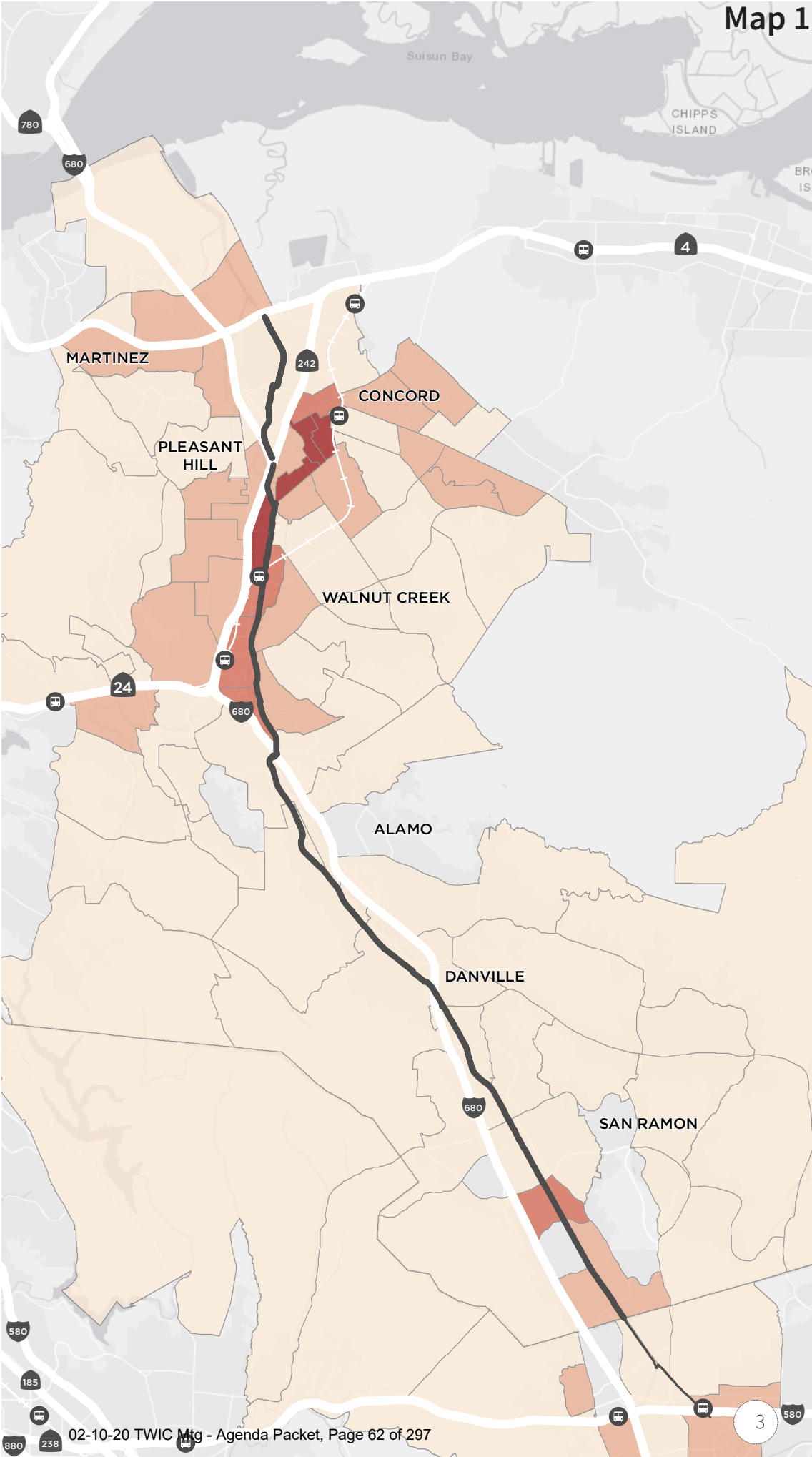
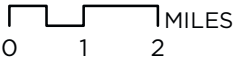
MODE OF TRANSPORTATION TO WORK

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Walking and Biking to Work per Square Mile
(Census tracts within 3 miles of Iron Horse Trail)



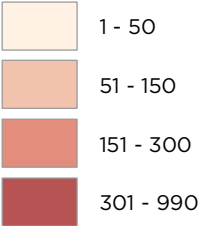
Zones not shown do not have data available.



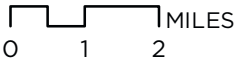
ZERO VEHICLE HOUSEHOLDS

CONTRA COSTA COUNTY
IRON HORSE TRAIL

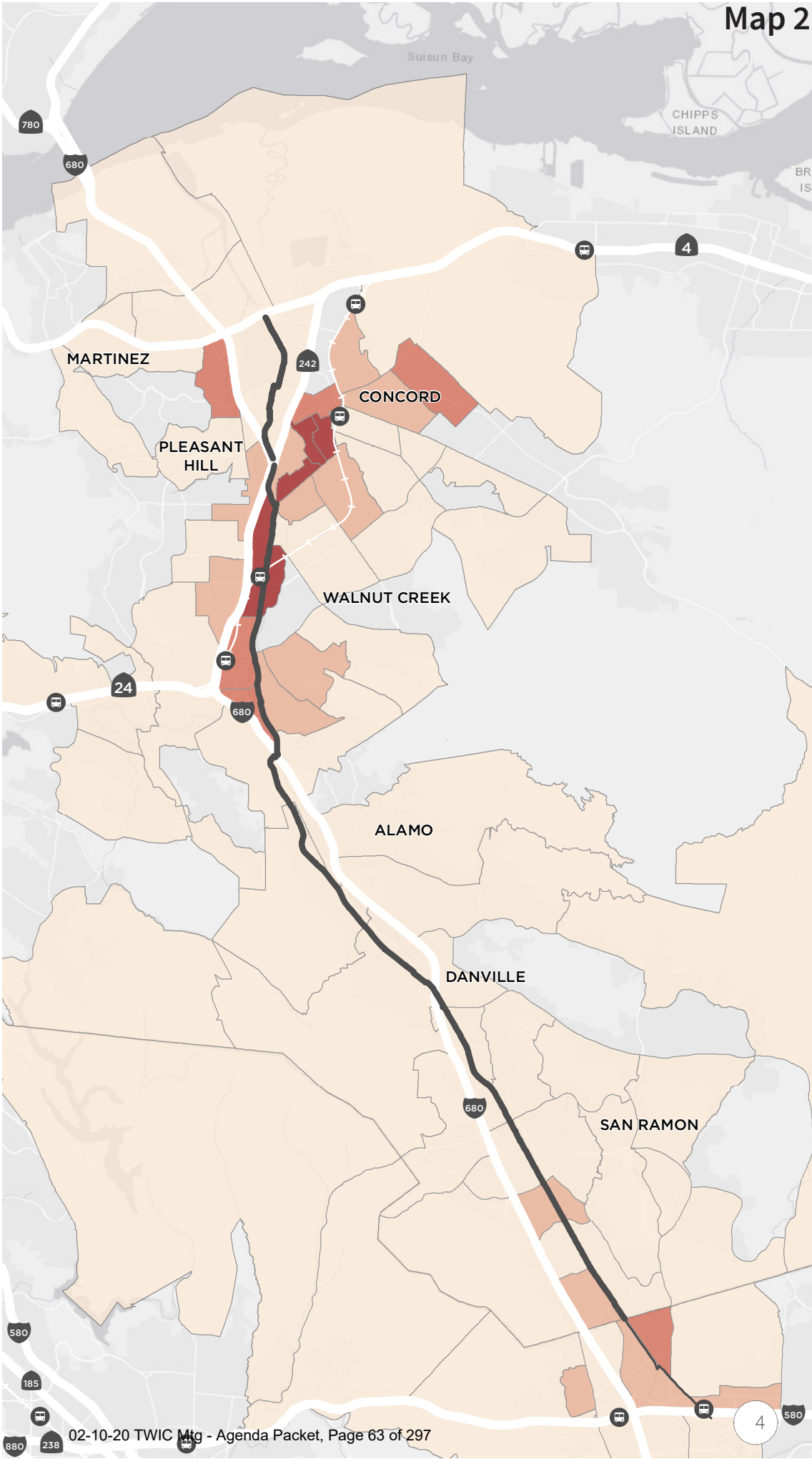
Zero Vehicle Households
per Square Mile
(Census tracts within 3
miles of Iron Horse Trail)



Zones not shown do not
have data available.



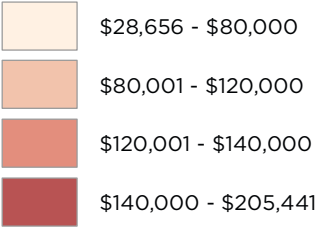
Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, ACS 2016.



MEDIAN HOUSEHOLD INCOME

CONTRA COSTA COUNTY
IRON HORSE TRAIL

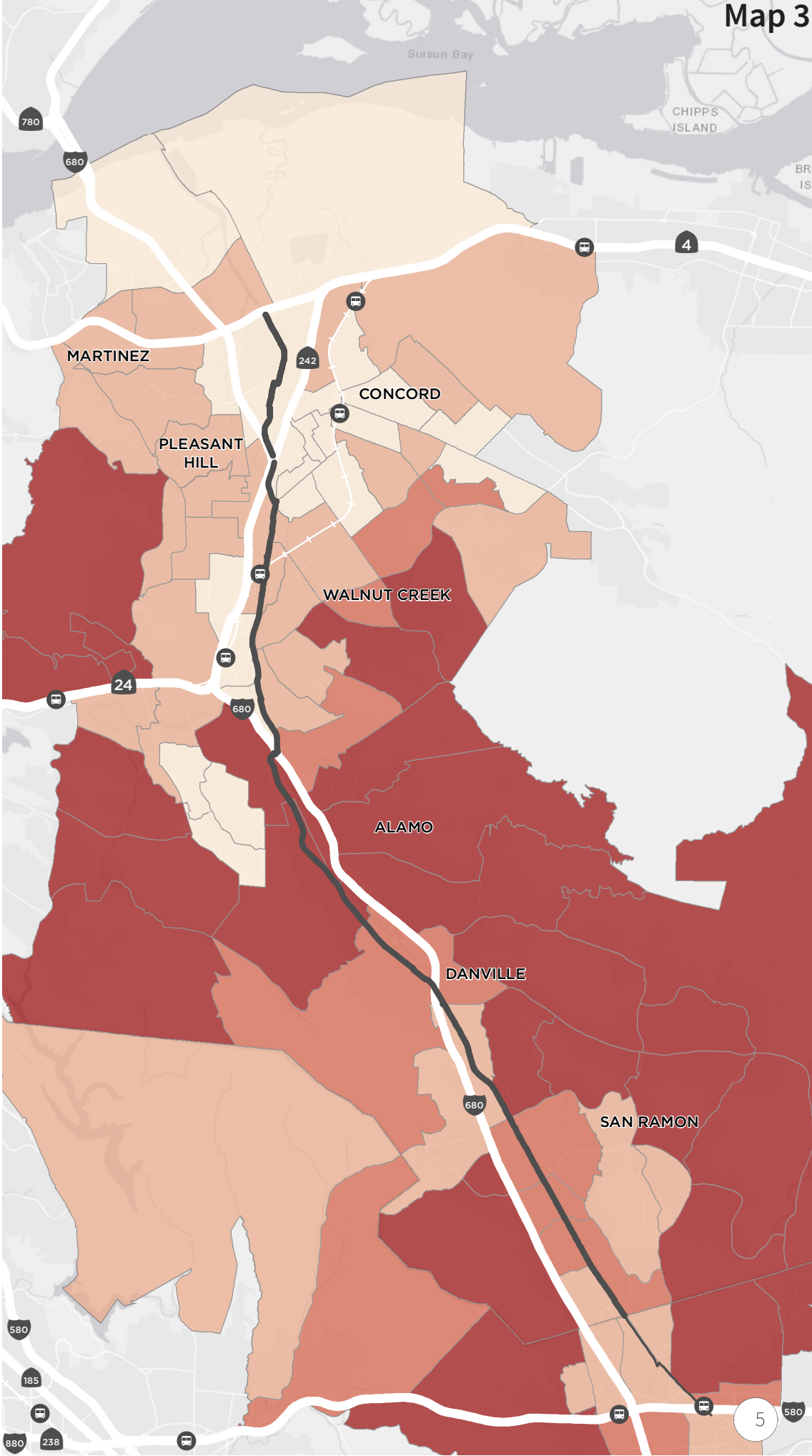
Median Household Income
(Census tracts within 3
miles of Iron Horse Trail)

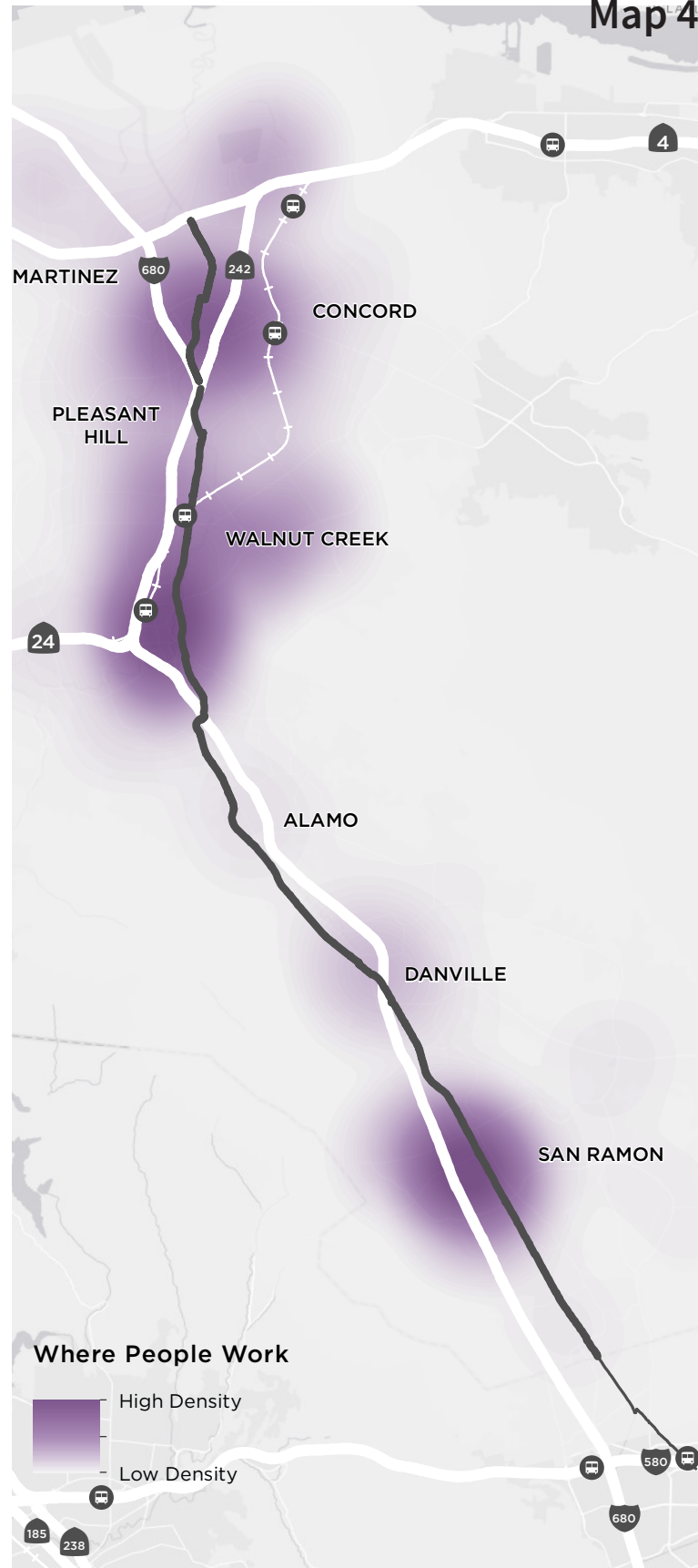
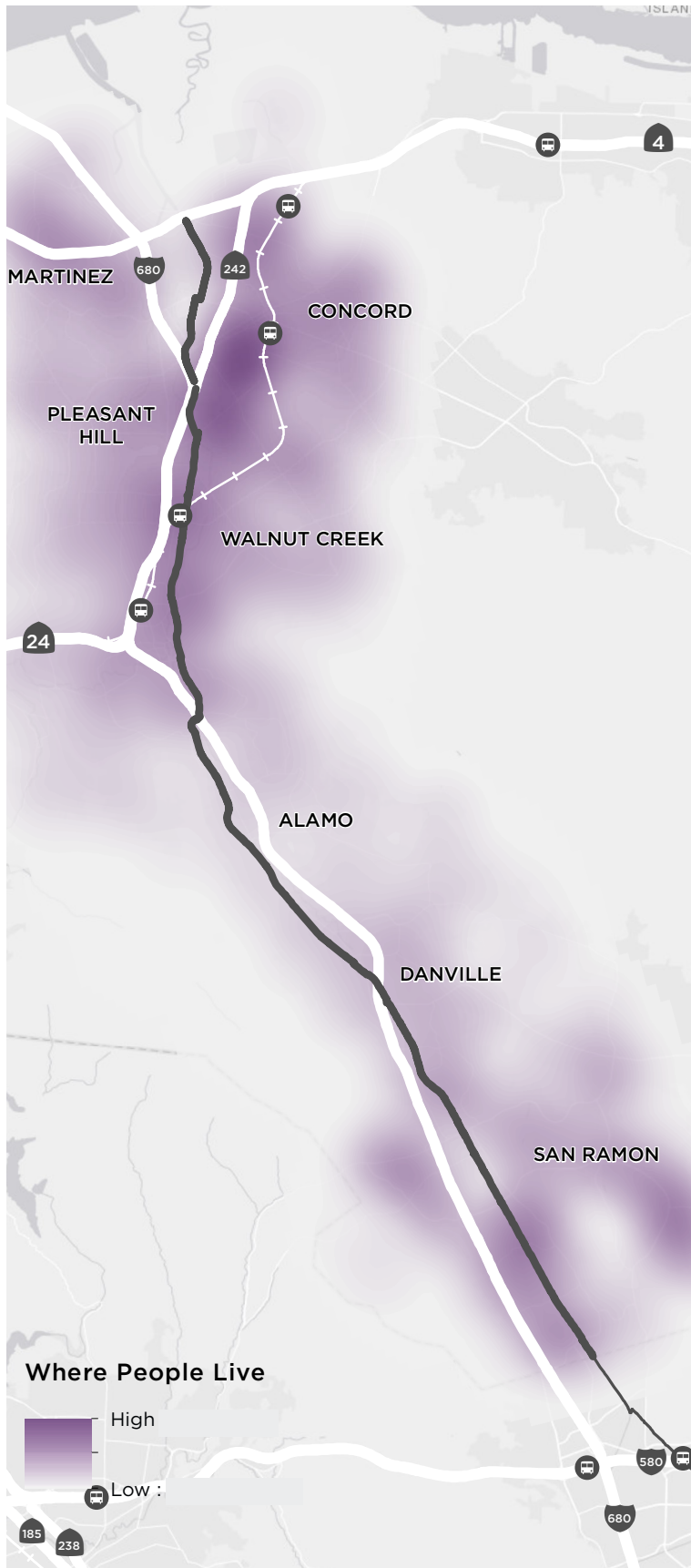


- Iron Horse Trail
- BART Station
- Iron Horse Trail (Alameda County)

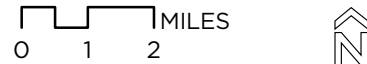


Map produced January 2019.
Sources: U.S. Census, Esri,
Contra Costa County, ACS 2016.



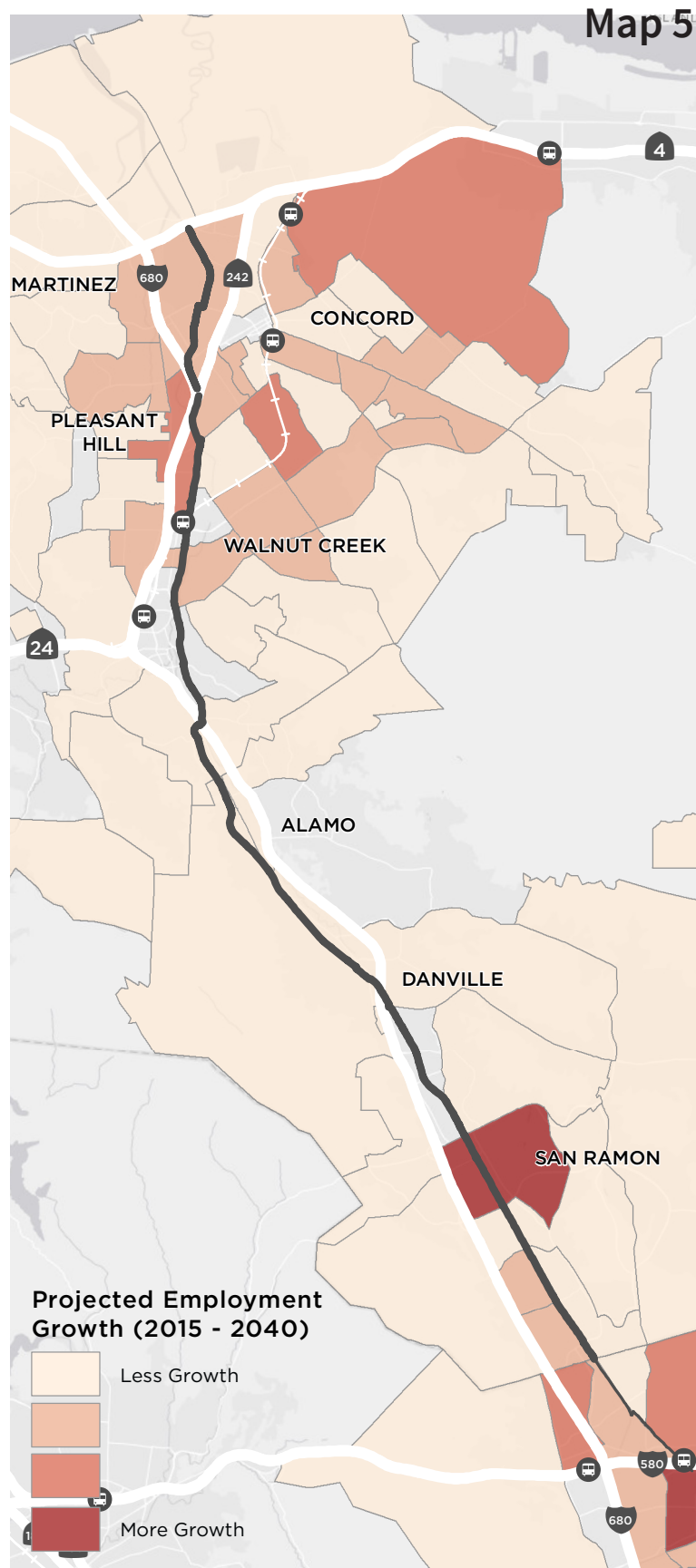
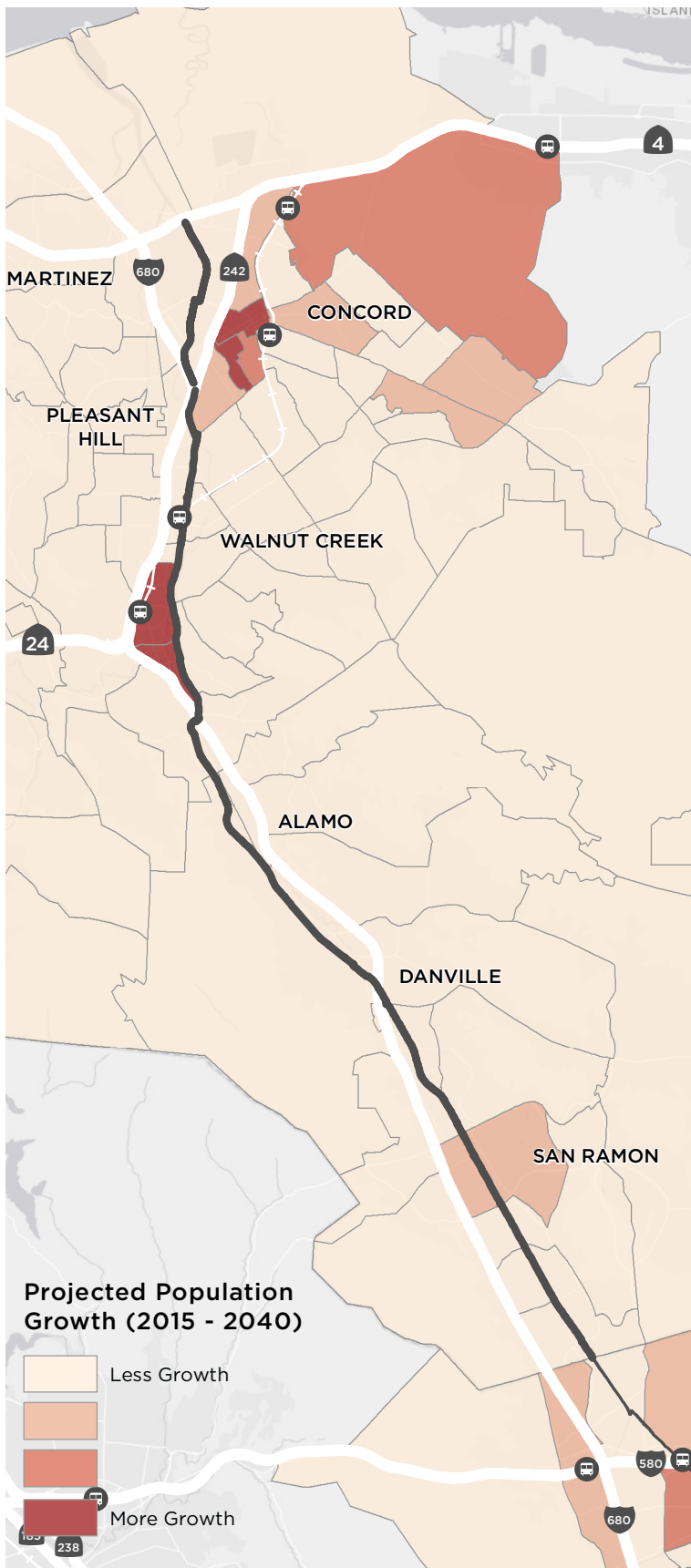


LIVING AND WORKING NEAR THE IRON HORSE TRAIL



CONTRA COSTA COUNTY
IRON HORSE TRAIL

- Iron Horse Trail
- BART Station
- Iron Horse Trail (Alameda County)



POPULATION AND EMPLOYMENT GROWTH NEAR THE IRON HORSE TRAIL

CONTRA COSTA COUNTY
IRON HORSE TRAIL



Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, MTC.

- Iron Horse Trail
- BART Station
- Iron Horse Trail (Alameda County)

0 1 2 MILES



EXISTING NETWORK QUALITY

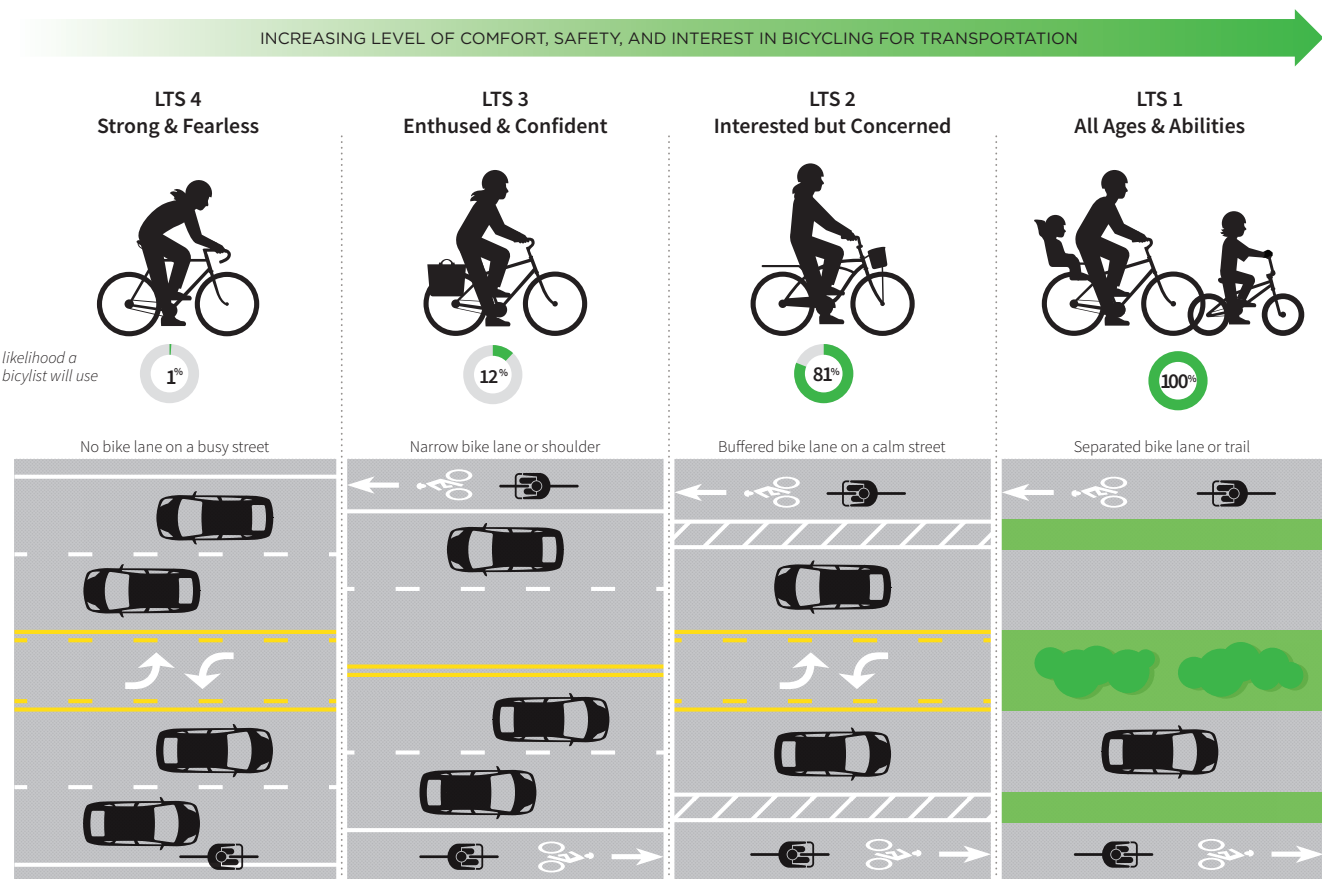
The Iron Horse Trail is a significant bicycling and walking route, but should be considered in the context of walking and bicycling infrastructure in the study area. For the purposes of analyzing how well the Iron Horse Trail supports walking and bicycling today and could support active modes in the future, a level of traffic stress (LTS) evaluation was conducted. LTS is a metric that relates the type and experience of different users to the type of bicycle facility provided (see graphic below). LTS 1 facilities (like trails) are comfortable for all users, while LTS 4 facilities (arterial roads with no bicycle accommodation) are comfortable for only the most fearless bicyclists.

For the purpose of this project, each roadway segment was coded for LTS (Map 6). In addition, intersection-level LTS barriers were also identified, specifically capturing the following situations:

- Street type crossed - arterials, collectors, and local roads
- Intersection control - no control, 2-way stop, all way stop, signalized, flashing beacon

Notably, there are many significant barriers on streets surrounding the Iron Horse Trail and on the roads the trail and many local streets cross. While the Iron Horse Trail, other trails, and local streets provide opportunities for comfortable walking and bicycling, most of these are isolated from one another.

LEVEL OF TRAFFIC STRESS



LEVEL OF TRAFFIC STRESS NEAR IRON HORSE TRAIL

CONTRA COSTA COUNTY IRON HORSE TRAIL

Level of Traffic Stress

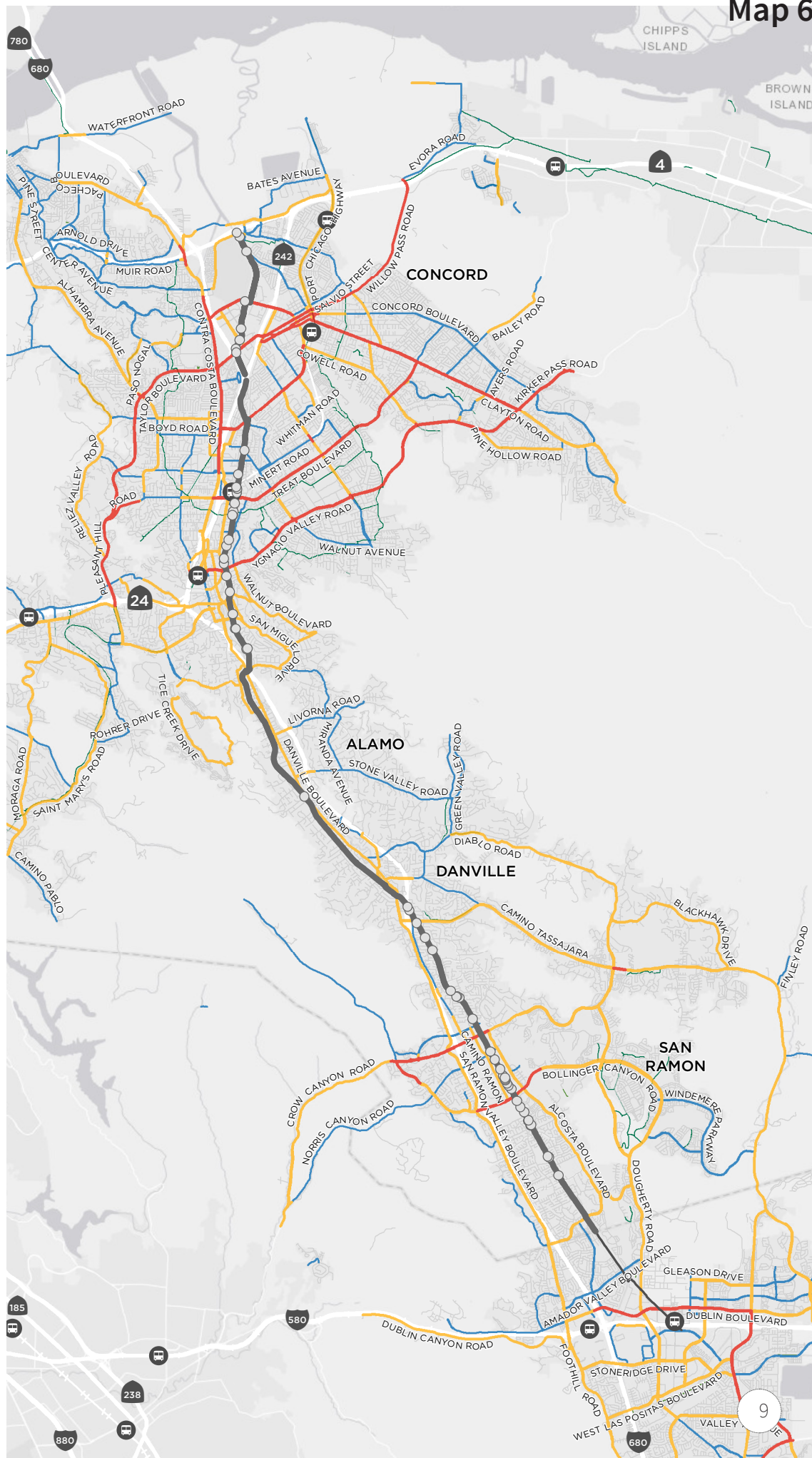
- Level 1 Trail (All Ages)
- Level 1 Residential (All Ages)
- Level 2 (Average Adult)
- Level 3 (Confident Adult)
- Level 4 (Fearless Adult)

- IHT Access Point
- Iron Horse Trail
- BART Station
- Iron Horse Trail (Alameda County)

0 1 2 MILES



Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, OSM.



DESTINATIONS

The Iron Horse Trail connects many destinations in the five cities and unincorporated County land along the corridor. To help set a baseline for access to various types of destinations, the following maps capture accessibility to select destinations using only low stress (LTS 1 and 2) routes, including the Iron Horse Trail. In addition, rather than using actual travel distance, these maps use a measure of perceived distance, building on academic research that indicates that people walking and bicycling on high volume and high speed streets perceive their travel to take longer than those on more comfortable and low stress streets. To achieve an estimate of perceived distance, the actual distance traveled is multiplied by a weight that is derived from the LTS score of a segment (see table at the right).

LTS WEIGHTS

LTS	Examples	Weight
1	Trails	0.500
1	Local streets	1.125
2	Bike facilities on low volume streets	2.000
3	Bike facilities on high volume streets	4.500
4	No bike facility	8.000

Low stress access to select destinations include:

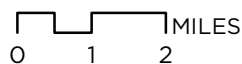
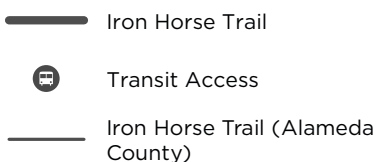
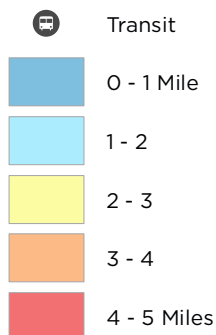
- **Transit** — the Pleasant Hill and Dublin/Pleasanton BART stations directly connect to the trail and other BART stations could be connected in the future. Several bus transit routes also have stops that may provide connections to the Iron Horse Trail. Map 7 identifies low stress access to BART stations and major bus transit or park and ride facilities in each of the communities near the corridor.
- **Schools** — 17 schools are immediately adjacent to the trail and many others are served by the trail. The Iron Horse Trail provides connectivity for 24 public schools that have catchment areas that overlap the trail in a significant way. Detailed information about school accessibility by school type is provided on page 15.
- **Parks** — 8 parks are within 1,000 feet of the trail and an additional 9 parks are within a 1/2 mile of the trail. Map 8 shows low stress accessibility to parks that are within a quarter mile of the trail and several regional parks or major open space areas.
- **Employment centers** — areas like Bishop Ranch in San Ramon (600 companies and growing, with approximately 25,000 employees) and Contra Costa Centre Transit Village in Walnut Creek (over 6,000 employees) are well served by the trail as are many smaller employment areas in the region. Map 9 identifies accessibility to major employment centers and downtowns near the trail.
- **Commercial areas** — the trail crosses through downtown San Ramon, Danville, and unincorporated Alamo. The Contra Costa Canal Trail provides a connection to downtown Pleasant Hill and connections could be made to downtown Concord and Walnut Creek. Several shopping centers lie directly adjacent to or within a short distance of the trail, providing access to services, retail business, and other similar opportunities. Map 10 identifies low stress access to these shopping areas near the trail.

Note that the maps show access to destinations regardless of whether the Iron Horse Trail is used for part of the journey. Future analysis will be compared to this basis to identify how improvements to the trail can improve accessibility and connectivity for residents and visitors wishing to travel using active transportation modes. The analysis also only considers formal trail access points, so access may look poor in areas near the trail that have informal connections.

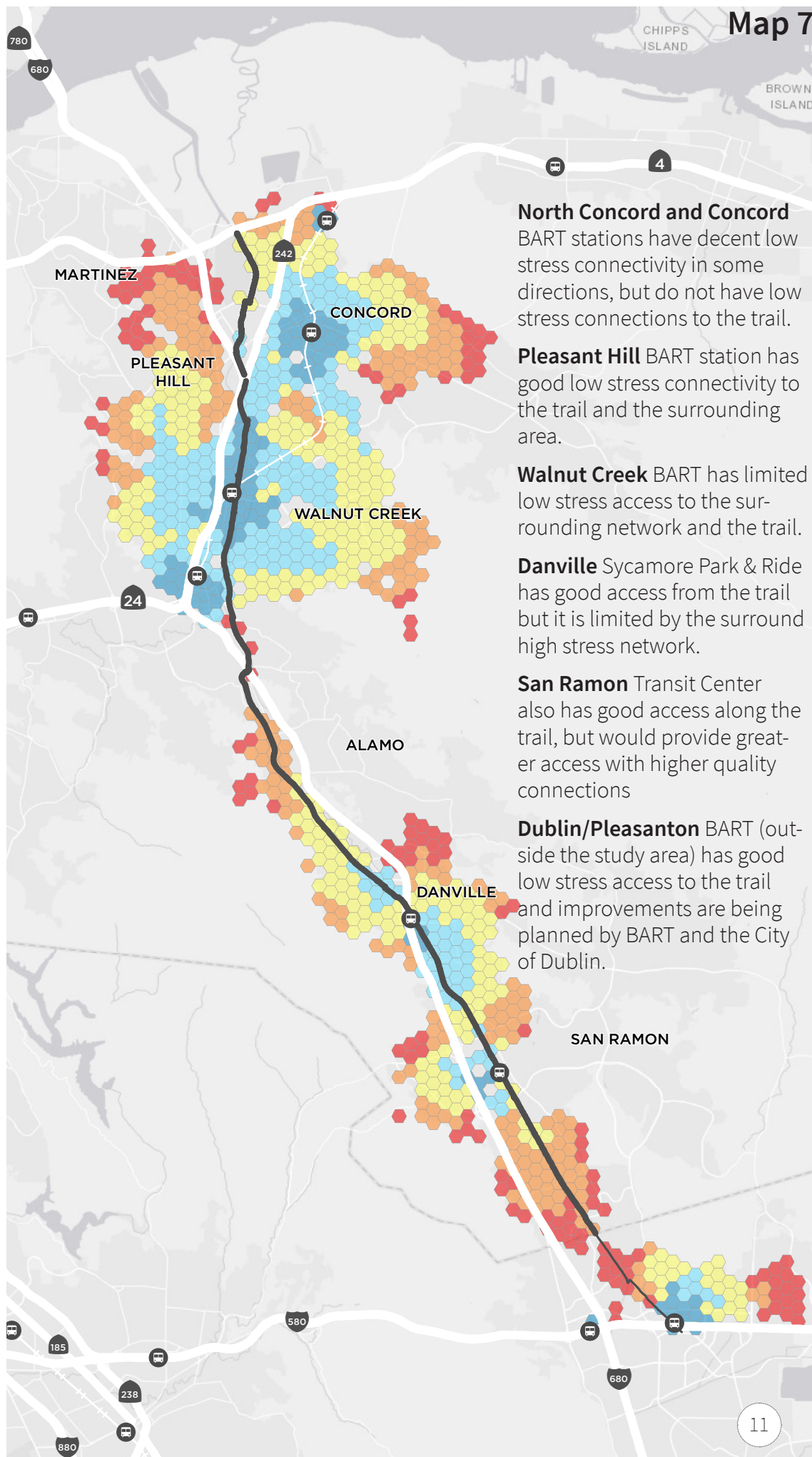
TRANSIT ACCESSIBILITY

CONTRA COSTA COUNTY IRON HORSE TRAIL

Transit Access Along Low Stress Network



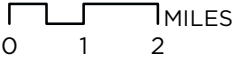
Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, OSM.



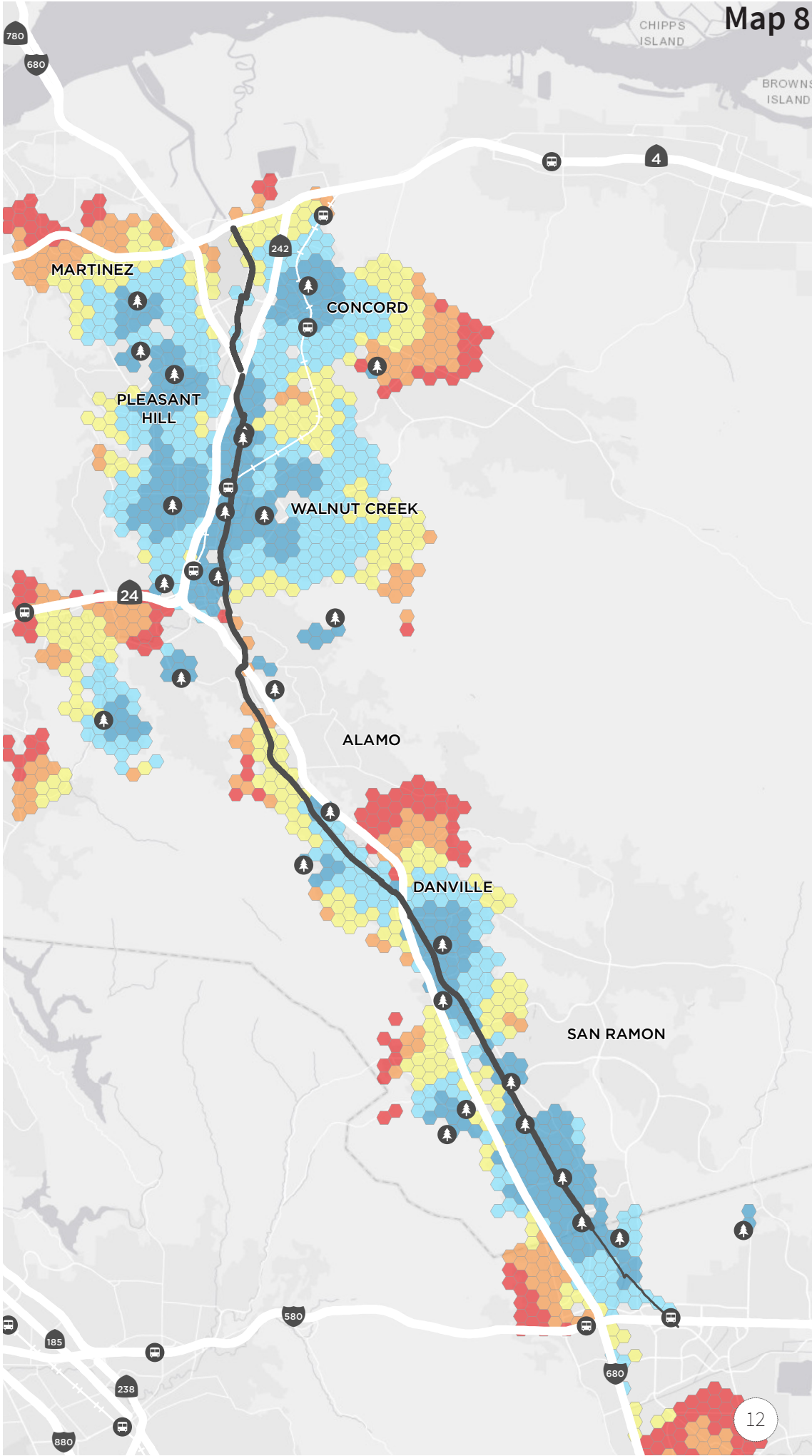
PARK ACCESSIBILITY

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Park Access Along Low Stress Network



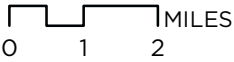
Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, OSM.



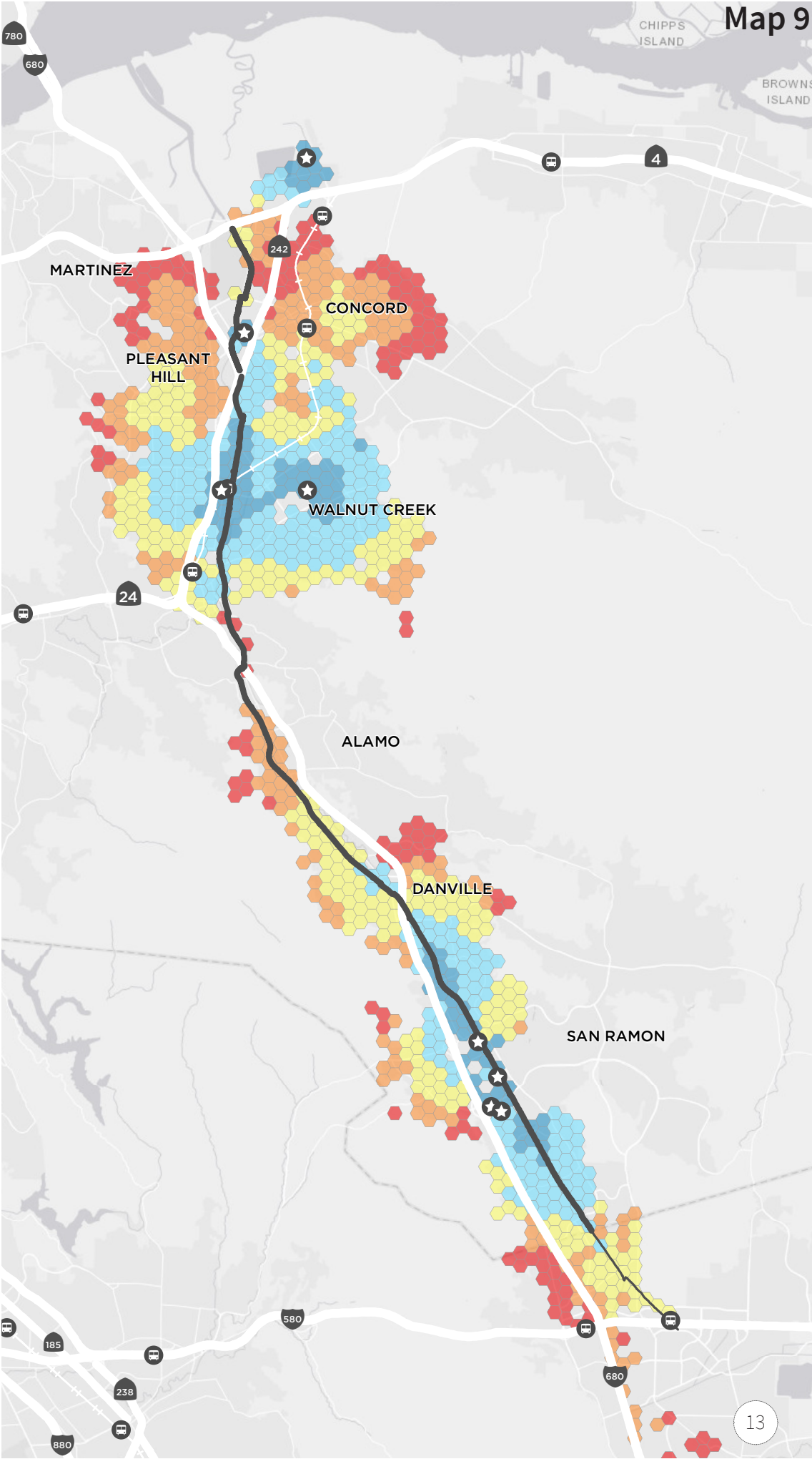
OFFICE ACCESSIBILITY

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Accessibility to Nearest Office Along Low Stress Network



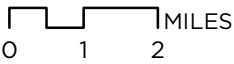
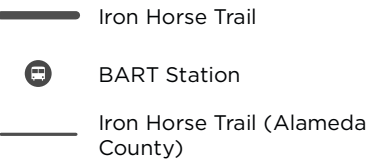
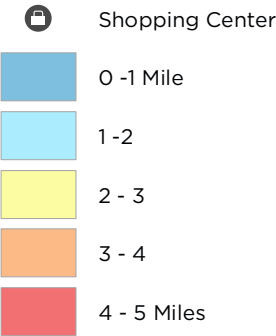
Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, OSM.



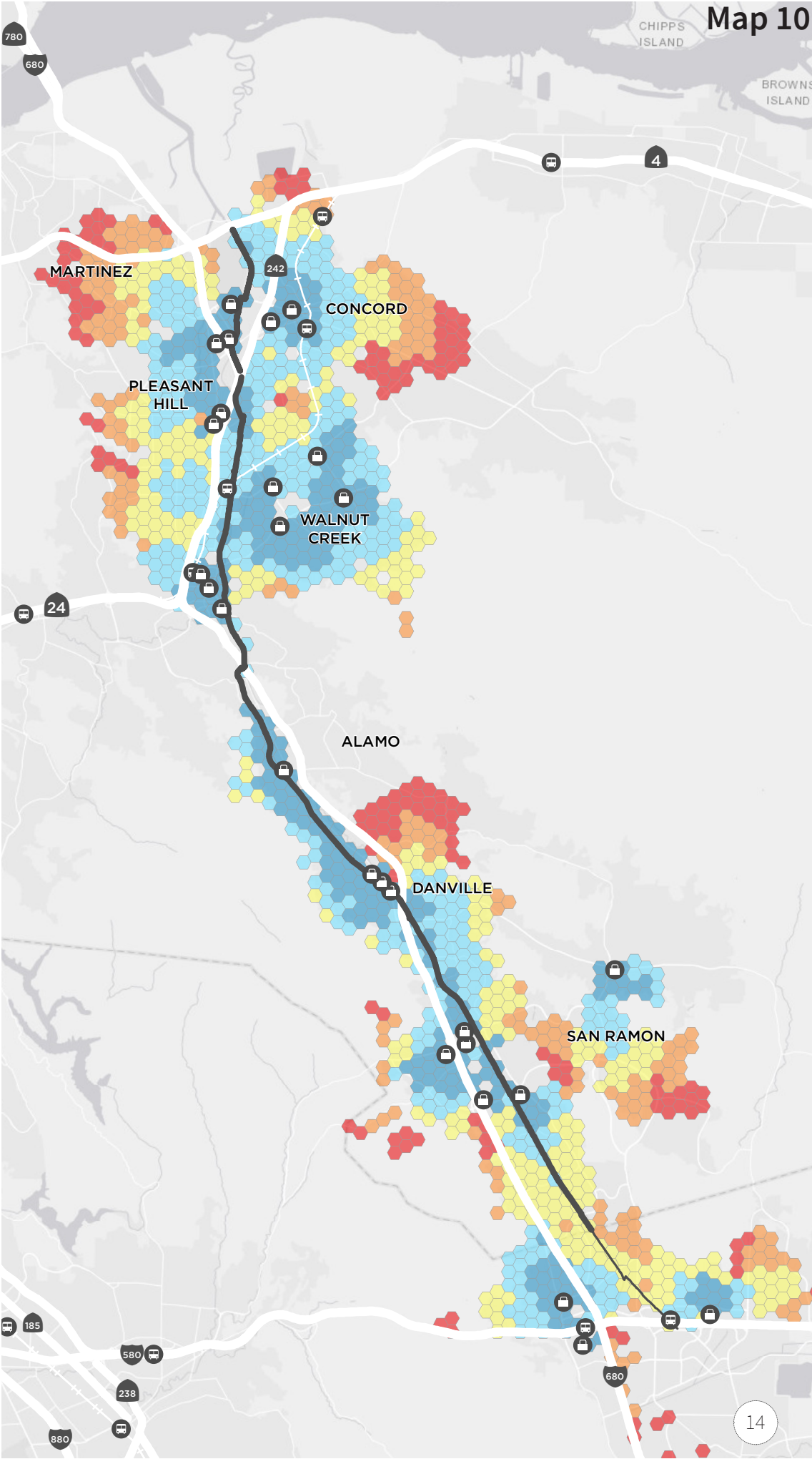
SHOPPING ACCESSIBILITY

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Accessibility to Nearest Shopping Center Along Low Stress Network



Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, OSM.



SCHOOLS

Three maps provide more detail about accessibility to schools in the Iron Horse Trail corridor, one each for elementary schools (Map 11), middle schools (Map 12) and high schools (Map 13). Each map uses the current catchment areas for these schools, recognizing that intraschool and intradistrict transfers often occur and that school catchment areas change over time. These maps show only low stress accessibility, or facilities that are comfortable for most people to use.

Elementary School Accessibility. There are eight elementary schools located directly adjacent to the Iron Horse Trail and another five schools with catchment areas that substantially overlap the trail. Elementary schools have generally smaller enrollment areas and the color ramp used in Map 11 is different from the others to reflect the different break points for the map. The Iron Horse Trail generally supports low stress accessibility for most schools immediately adjacent to it, with the exception of Walnut Heights Elementary in Walnut Creek, Murwood Elementary in Danville, and Montevideo Elementary in San Ramon, for which walking access is constrained by other, high-stress streets.

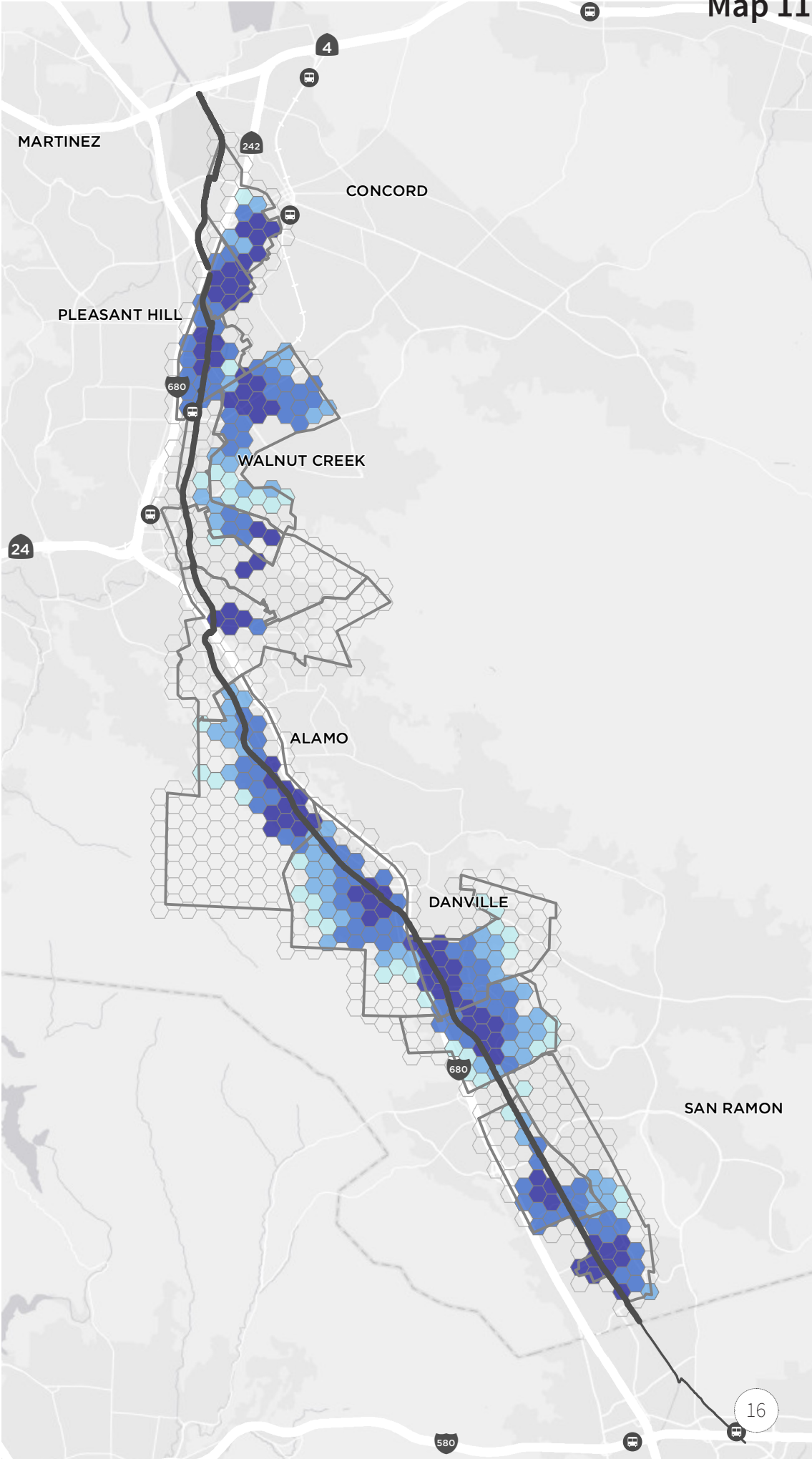
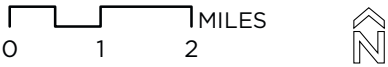
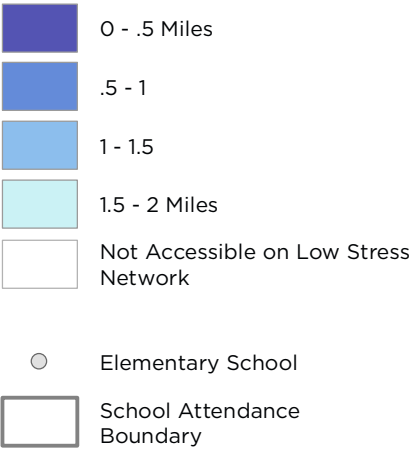
Middle School Accessibility. Two middle schools are directly adjacent to the trail and another four have catchment areas that directly overlap the trail (Map 12). While adjacent to the trail, Iron Horse Middle School in San Ramon currently has a catchment area that largely extends beyond the reach of the trail. For Walnut Creek Intermediate, the trail provides excellent connectivity to a portion of the surrounding student population, though high stress streets make access uncomfortable for many students. For two middle schools—Oak Grove in Concord and Stone Valley in Alamo—the trail does not substantially connect students to school, though improved connections to the trail could provide some additional benefits.

High School Accessibility. There are three high schools (California, San Ramon Valley, and Las Lomas) that are immediately adjacent to the trail and two others (Ygnacio Valley and Mt. Diablo) that have catchment areas that overlap the trail. High schools generally have the largest catchment areas, but also the most mobile attendees, making trail-based connectivity a real possibility for many students. Students of San Ramon Valley High and California High benefit from low stress access provided by the trail, while the trail provides limited benefit to students at Las Lomas High. Map 13 shows how the trail expands accessibility for students by providing an additional low stress network.

ELEMENTARY SCHOOL ACCESSIBILITY

CONTRA COSTA COUNTY
IRON HORSE TRAIL

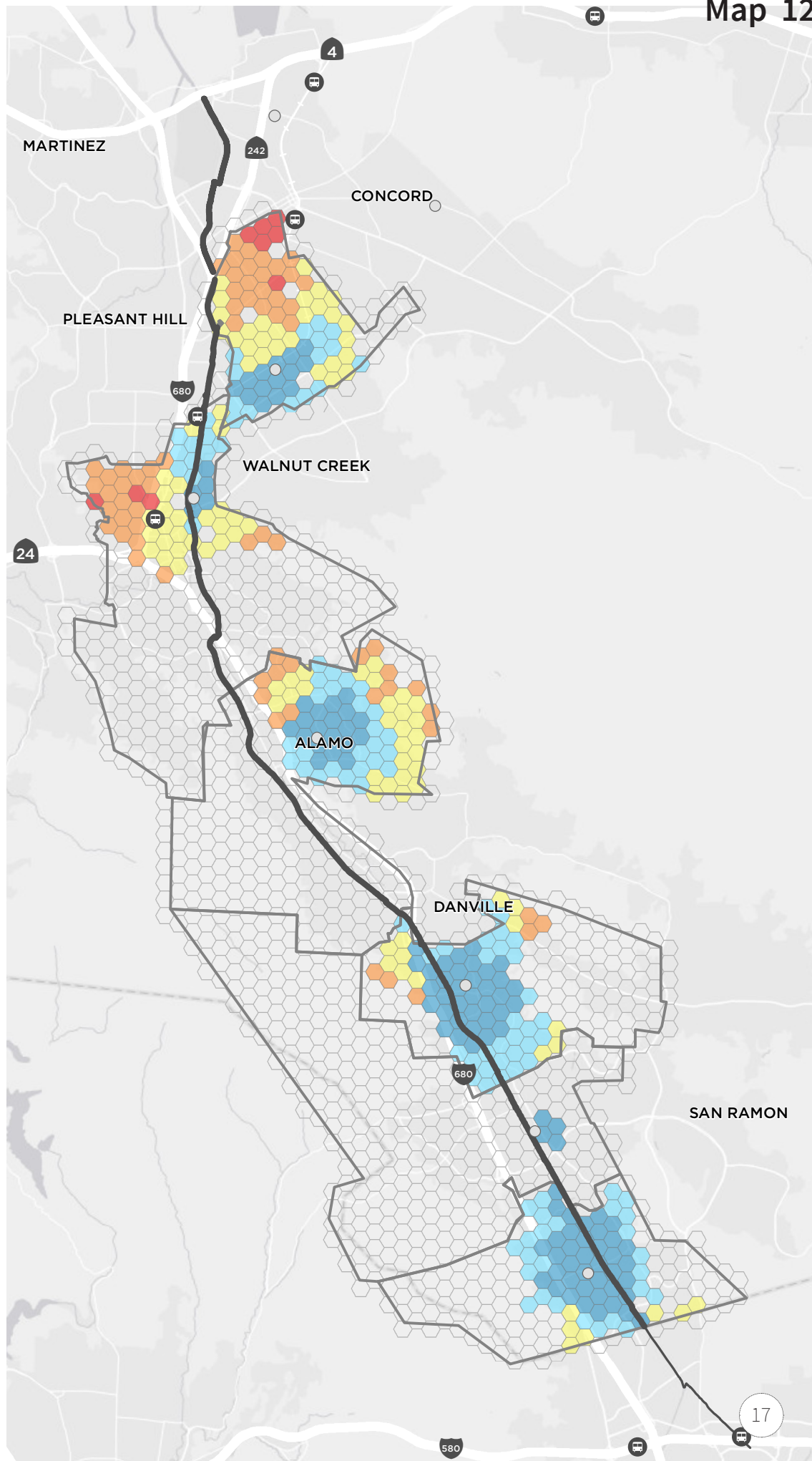
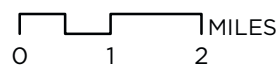
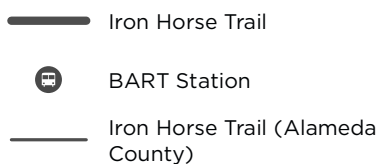
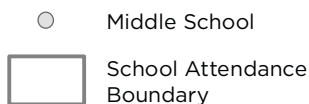
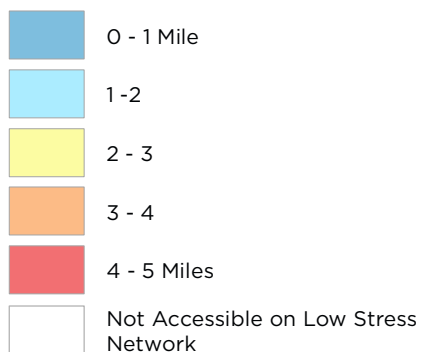
Elementary School Accessibility Along Low Stress Network



MIDDLE SCHOOL ACCESSIBILITY

CONTRA COSTA COUNTY
IRON HORSE TRAIL

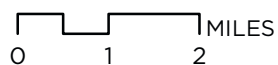
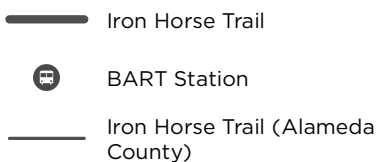
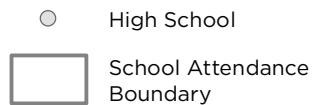
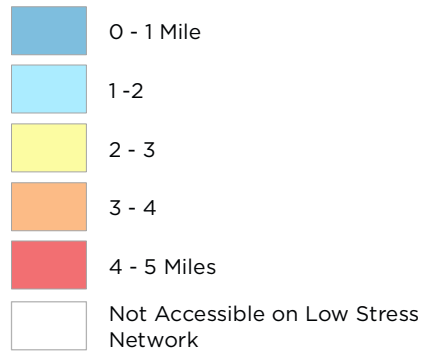
Middle School Accessibility Along Low Stress Network



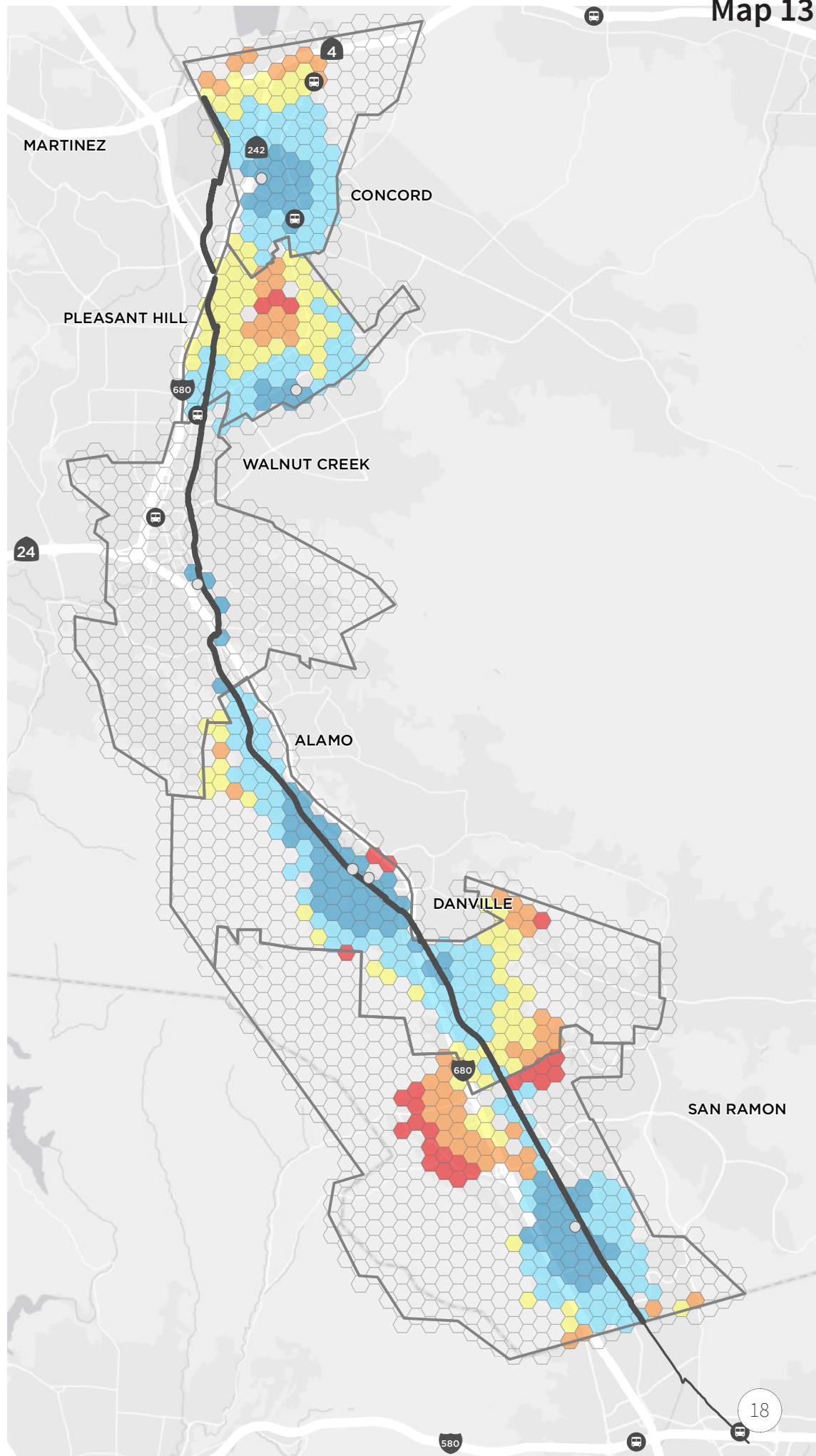
HIGH SCHOOL ACCESSIBILITY

CONTRA COSTA COUNTY
IRON HORSE TRAIL

High School Accessibility
Along Low Stress Network



Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, OSM.



USE OF THE IRON HORSE TRAIL TODAY

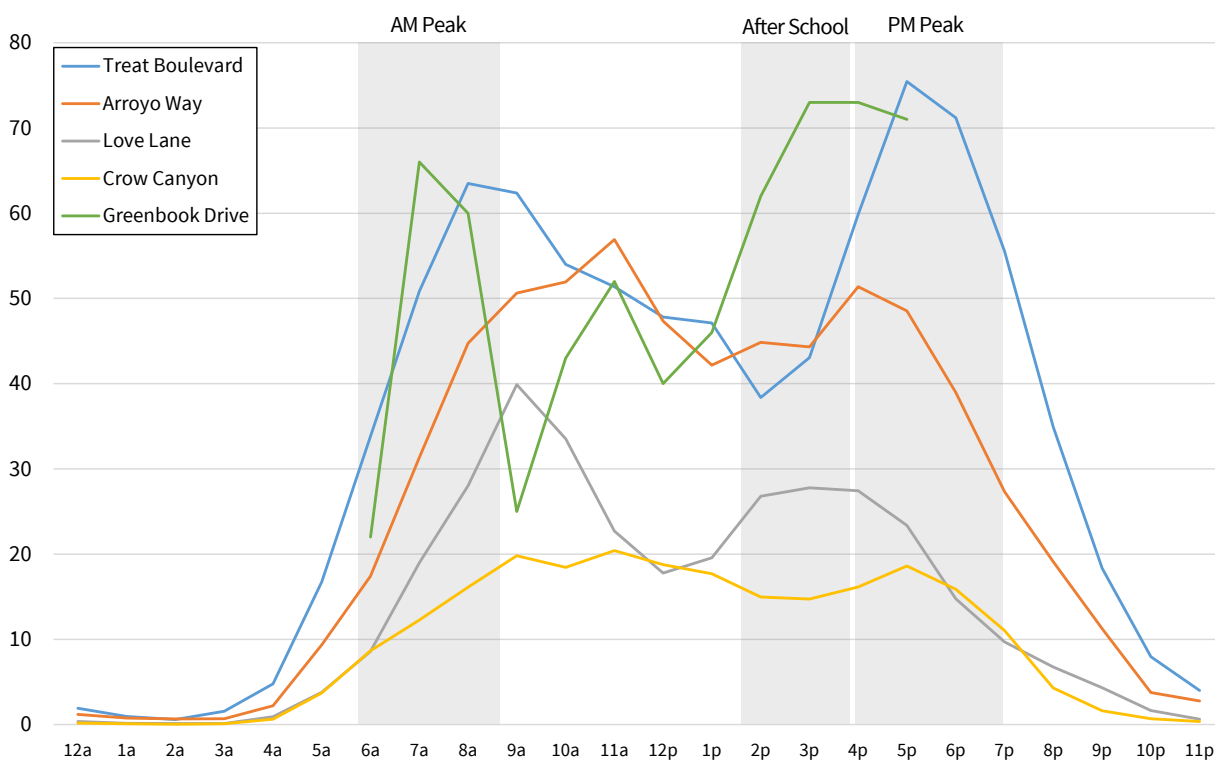
The Iron Horse Trail is heavily used today for both utilitarian and recreational purposes. The variety of destinations contributes to its multiple uses and the length and beauty of many segments of the trail attract recreational riders. To support planning for the future of the Iron Horse Trail, we consider how it is used from several perspectives, including actual numbers of users, users on crossing roads, and potential demand for the trail (i.e., people who could use the trail to access their destinations).

CURRENT USE OF THE TRAIL

The East Bay Regional Park District (EBRPD) took counts at four locations along the trail in the fall of 2017. Counts were also available at a fifth location in Danville from the fall of 2018. Map 14 presents these five counts for an average weekday (Tuesday, Wednesday, Thursday) and an average weekend day (Saturday, Sunday). The highest weekday use was near Treat Boulevard (nearly 900 users) and the lowest at Crow Canyon (239 users). Weekend counts were higher near Danville (over 900 users) and in Walnut Creek (over 730 users at Treat Boulevard and Arroyo Way). There were lower weekend counts at Love Lane and Crow Canyon Road. These five count locations do not tell the entire story, but help capture some of the current variance in use.

Variations in travel by hour and location for weekday trips are provided in the figure below. Counts at Treat Boulevard show typical AM and PM peaks, while Love Lane—adjacent to the San Ramon Valley High School—shows travel more typical of school schedules. Arroyo Way and Crow Canyon show more balanced trips during the day, suggesting use for a mix of trips for work, school, errands, and recreation.

Average Hourly Counts



ON-TRAIL COUNTS

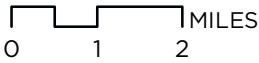
CONTRA COSTA COUNTY IRON HORSE TRAIL

On-Trail Counts

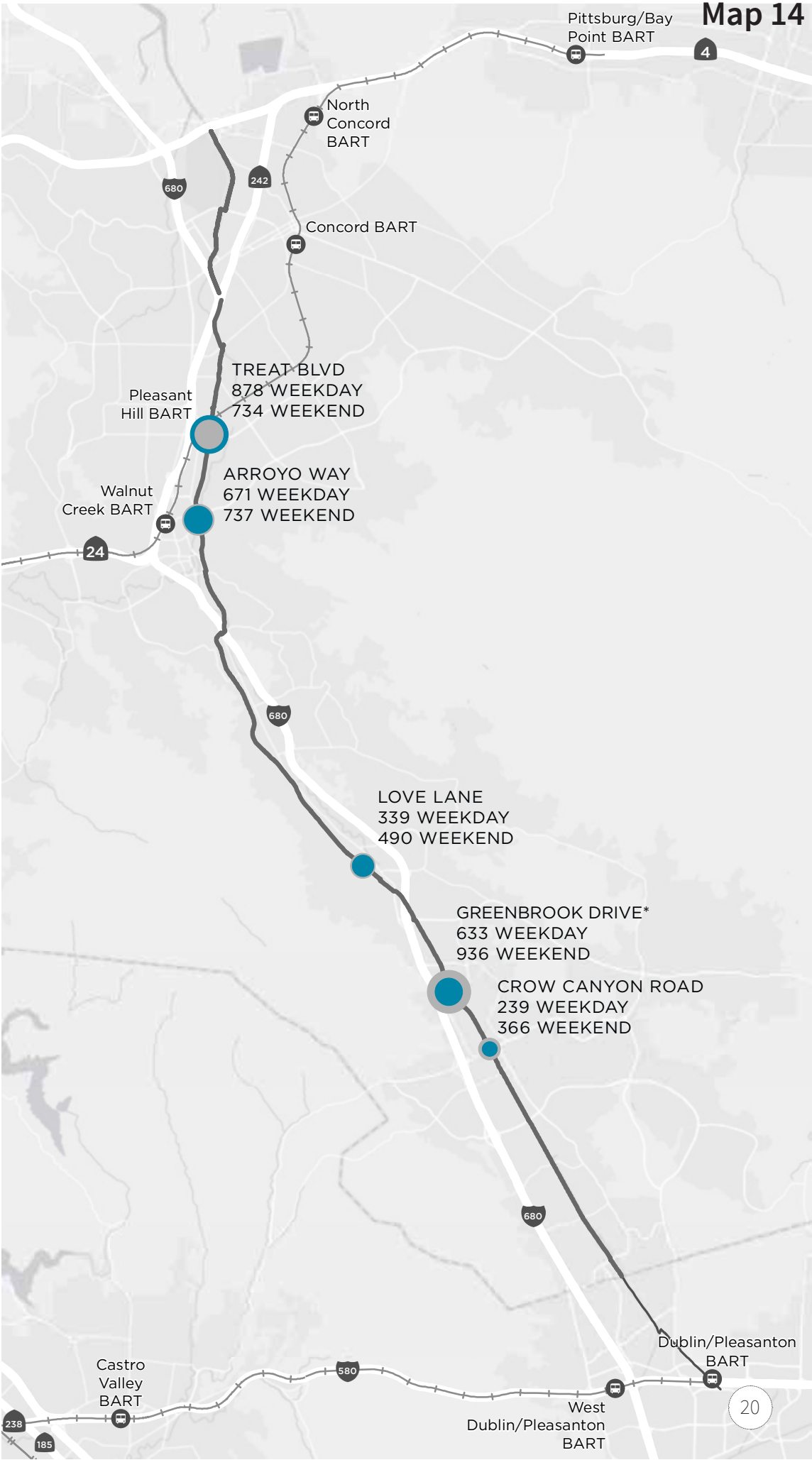
- Weekday Average Daily Count
- Weekend Average Daily Count

- Iron Horse Trail
- BART Station
- Iron Horse Trail (Alameda County)

*Note: Greenbrook Drive counts were taken in Fall of 2018. Remaining counts were taken in the Fall of 2017.



Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, EBPRD.

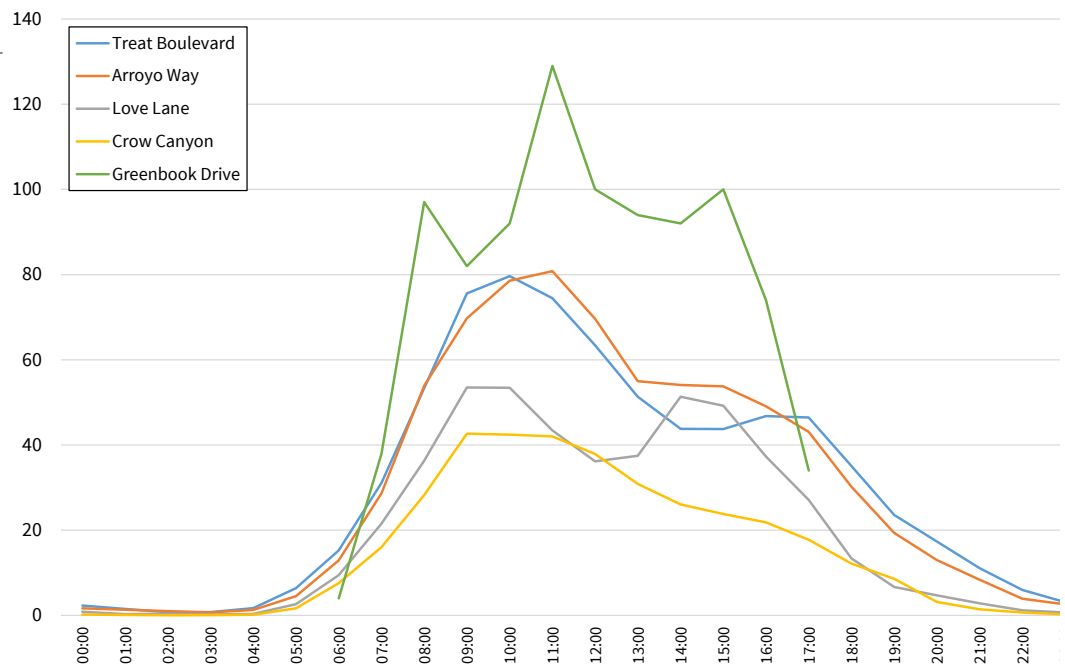


The chart at the right presents the same information for weekend trips, showing a generally common pattern across all count sites, with peaks generally in the late morning.

The Contra Costa Transportation Authority (CCTA) also provides information about pedestrians and bicyclists traveling on nearby streets (Map 15). Available counts from CCTA were clustered in the northern cities of the study area and are shown separately for bicyclists and pedestrians. Pedestrian counts were more substantial than bicycle counts and were concentrated, as expected,

around BART stations and near downtowns. Bicycle counts were higher near the Iron Horse Trail. Only peak period counts are available on street.

Average Hourly Counts - Weekend Days



POTENTIAL USE OF THE TRAIL

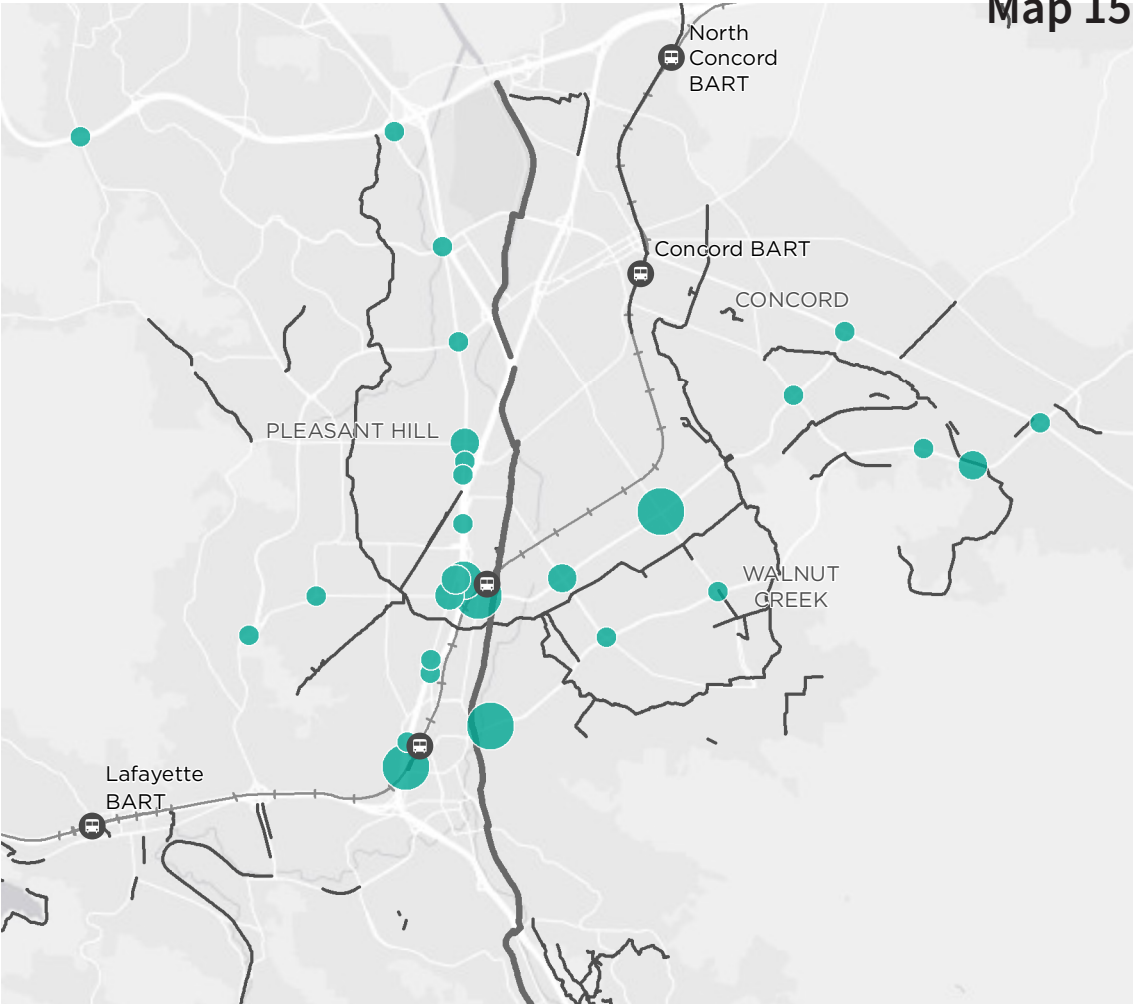
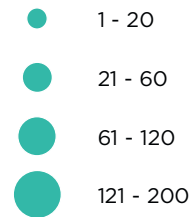
While counts tell part of the story of the use of the Iron Horse Trail, a critical question for this study is how much demand there is to use the trail. Using data from the CCTA Travel Demand Model, growth in potential bicycle and pedestrian trips was identified for each zone by calculating the number of short distance trips—those that end within the same zone or in zones within a half mile buffer of the origin for both 2015 and 2040. Map 16 presents the change from 2015 to 2040 in these short distance trips.

Zones along the trail between Walnut Creek and Concord are expected to have even more demand for short, active transportation-length trips than today. These are the same areas with low car ownership rates, high walk/bike commute rates, and low median household incomes (see Maps 1 through 3).

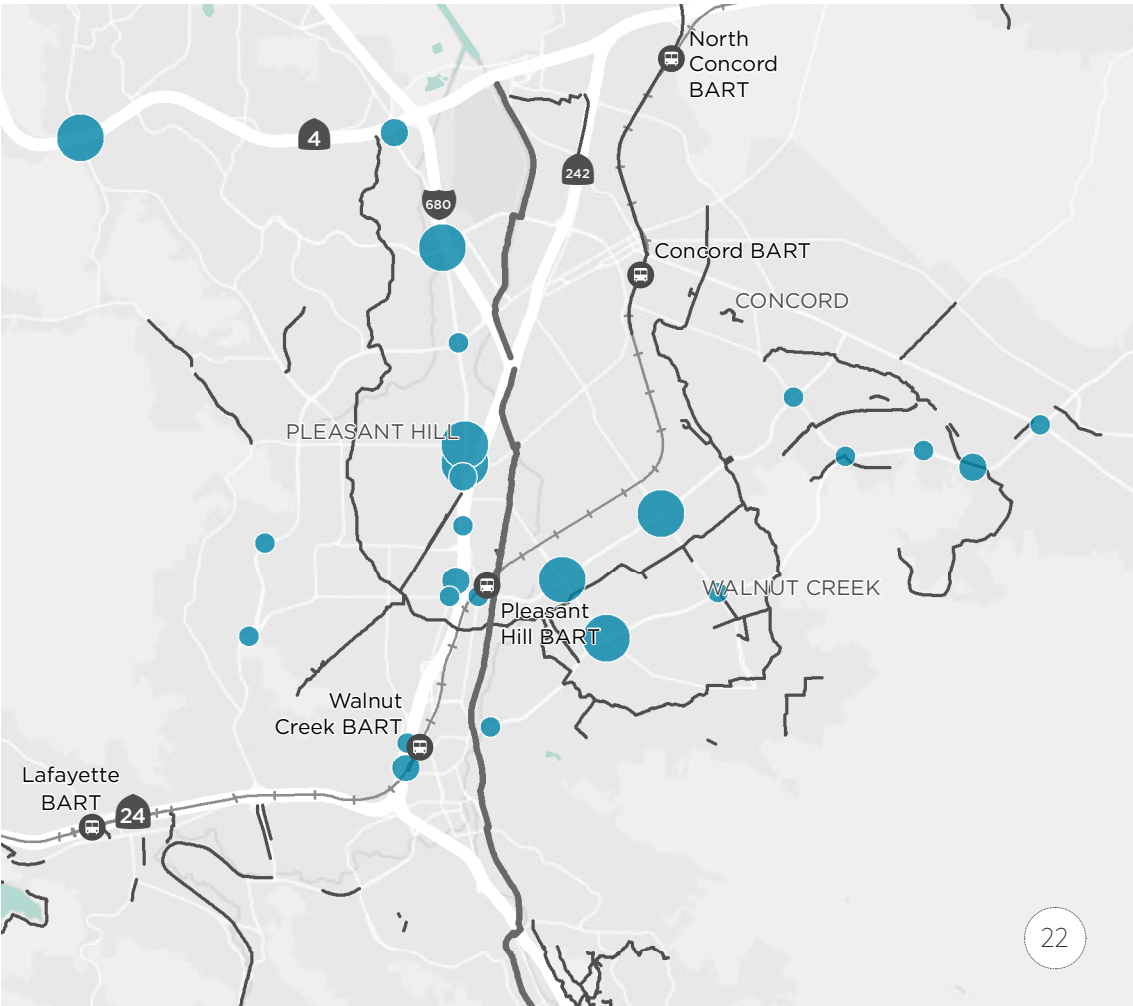
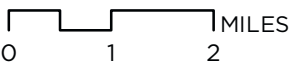
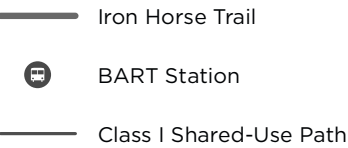
COUNTS

CONTRA COSTA COUNTY IRON HORSE TRAIL

Pedestrian AM Peak 1-Hour Counts (2017)



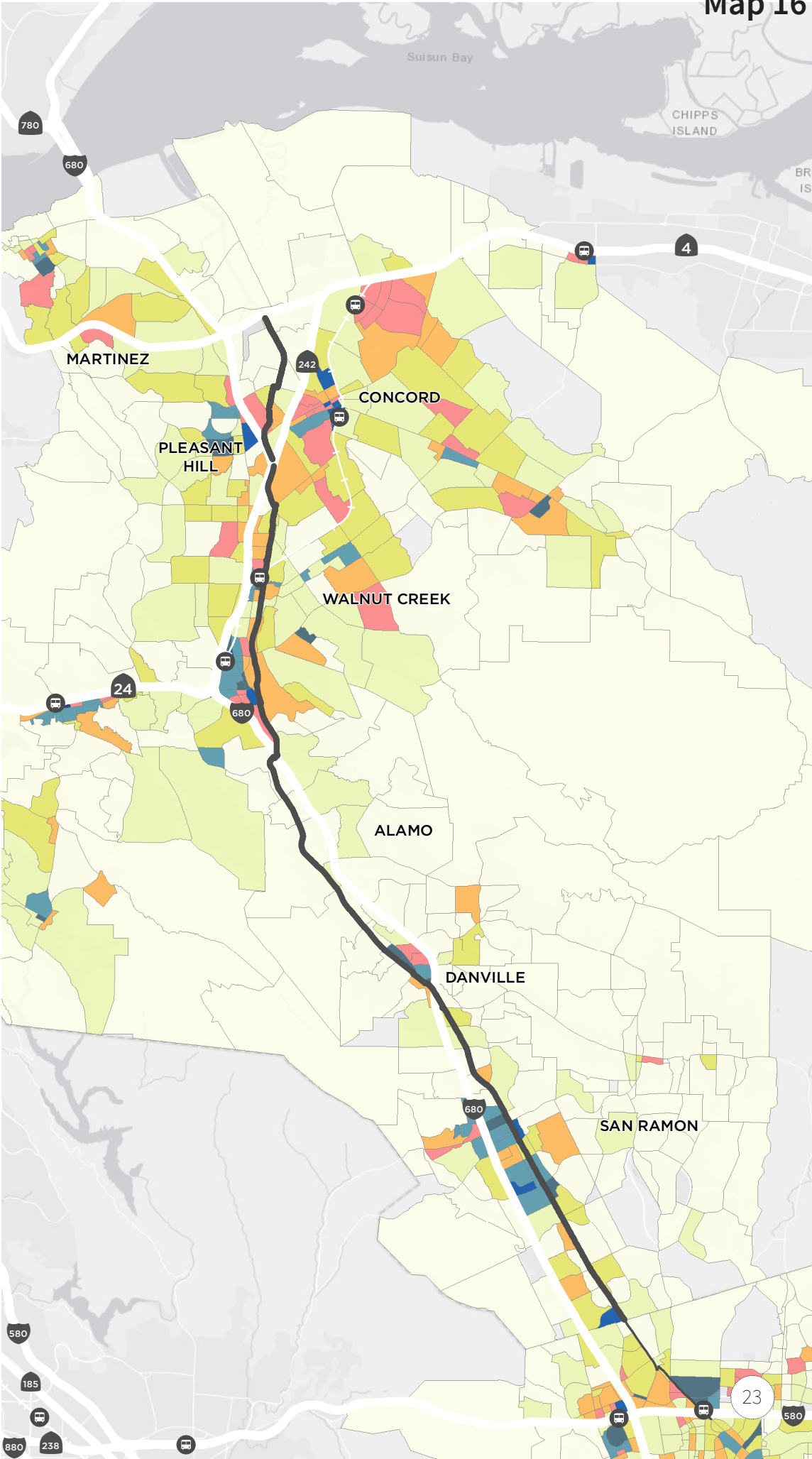
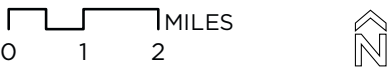
Bicycle AM Peak 1-Hour Counts (2017)



EXPECTED INCREASE IN TRIPS

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Growth in Density of Short
Distance Trips by
CCTA TAZ (2014 to 2040)



SAFETY ON AND ACCESSING THE TRAIL

Creating a high quality active transportation network can address safety challenges that exist in Contra Costa County. The Iron Horse Trail can provide an alternative to nearby high stress routes, many of which experience significant collision rates for people walking and biking.

Maps 17 and 18 present the bicycle and pedestrian collisions and fatalities, respectively, along the Iron Horse Trail. The maps also identify the location of high stress routes as a means to identify how observed safety relates to perceived safety and comfort. Notable hot spots of collisions include Walnut Creek on the west side of I-680 and downtown Concord.

In the 5 most recent years with data available (2013-2017), there were 203 bicycle and pedestrian collisions on local streets within a quarter mile of the trail and 761 within 2 miles. There were 14 bicycle and pedestrian fatalities within 2 miles of the trail. The table at the right identifies the number of bicycle and pedestrian collisions by city and distance from the trail for the five cities and unincorporated areas.

TABLE COLLISIONS

City	Miles from Trail				Total
	0.25	0.5	1	2	
Concord	35	27	108	87	257
Pleasant Hill	13	2	4	8	27
Walnut Creek	5	50	40	23	118
Danville	30	10	27	14	81
San Ramon	44	4	12	15	75
Unincorporated County	76	67	36	24	203
Total	203	160	227	171	761

Identifying the need for safer crossings and access routes to the Iron Horse Trail is a key goal of this project. Between 2013 and 2017, there were 43 injuries of bicyclists or pedestrians within 100 feet of the trail. Locations with 3 or more bicycle or pedestrian injuries are shown in the table at right, including:

- At Treat Boulevard at Jones Road (11 injuries), a separated crossing was completed prior to the collection of these data, suggesting ongoing safety concerns for individuals accessing the trail.
- Monument Boulevard at Mohr Drive (9 injuries) is a particularly challenging trail crossing, offset from the trail and requiring tight turns for bicyclists.
- South Broadway and Newell Avenue (4 injuries) requires crossing two legs of a busy, wide intersection.
- Hemme Avenue (3 injuries) is a trail crossing of a local road.
- At Sycamore Valley Road and Camino Ramon (3 injuries), trail users must travel slightly away from the trail to cross a wide road.
- At Willow Pass Road (3 injuries), the trail has a separated undercrossing, but also direct access to Willow Pass Road directly adjacent to I-680 on and off ramps.
- Ygnacio Valley Road (3 injuries) also has a separated overcrossing for the trail along with access ramps, indicating potential access concerns.

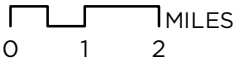
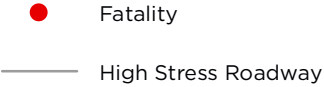
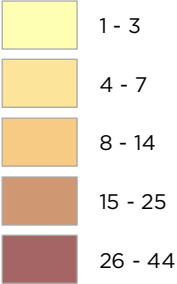
CROSSING INJURIES

Location	Injuries
Treat Blvd & Jones Rd	11
Monument Blvd & Mohr Dr	9
South Broadway & Newell Ave	4
Hemme Ave	3
Sycamore Valley Rd & Camino Ramon	3
Willow Pass Rd	3
Ygnacio Valley Rd	3

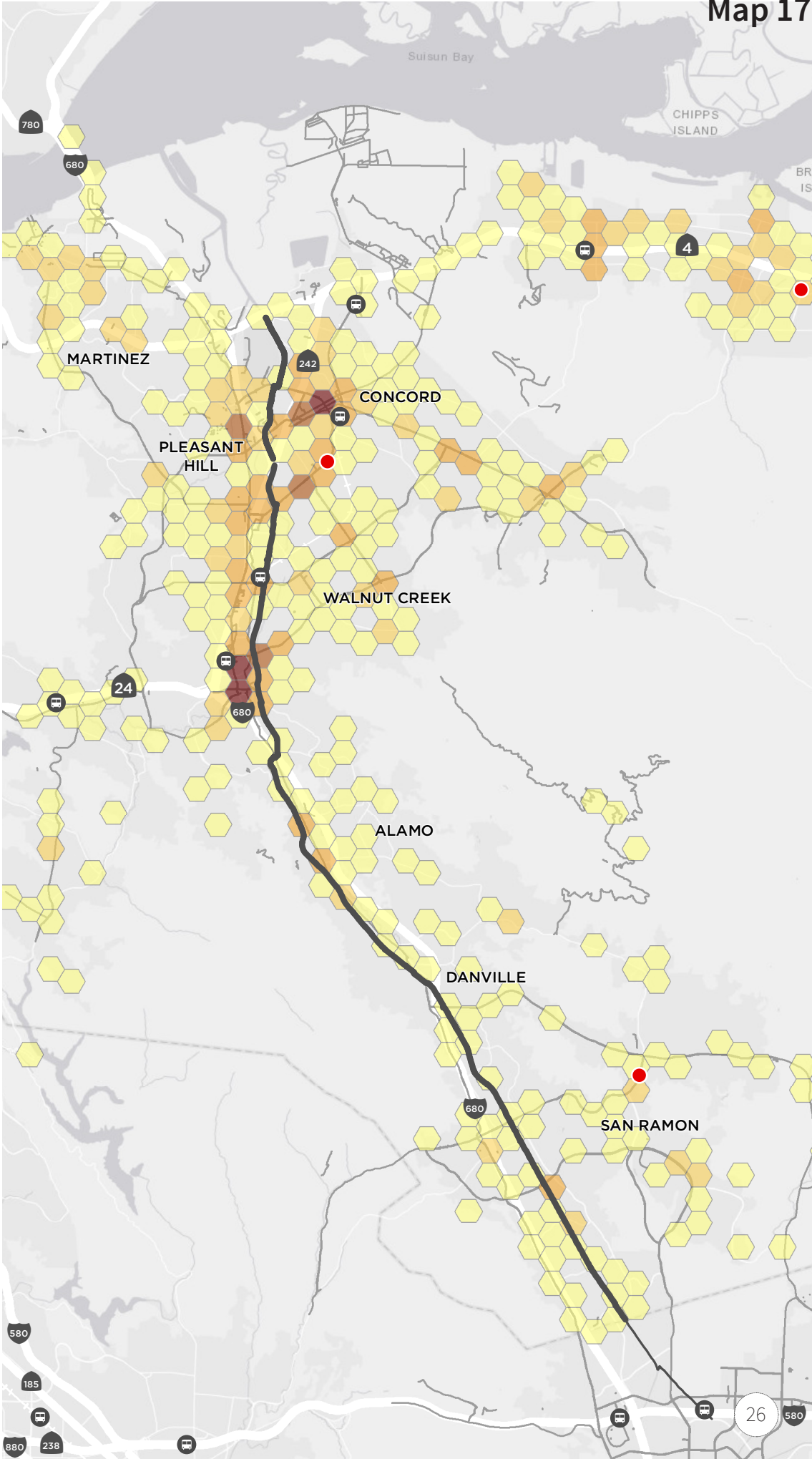
BICYCLE COLLISIONS

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Collisions per Hexagon
(2013 - 2017)



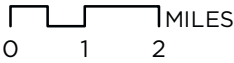
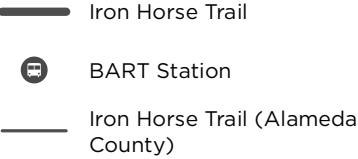
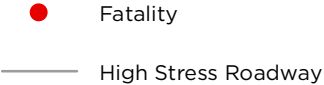
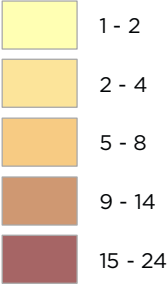
Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, TIMS UC Berkeley.



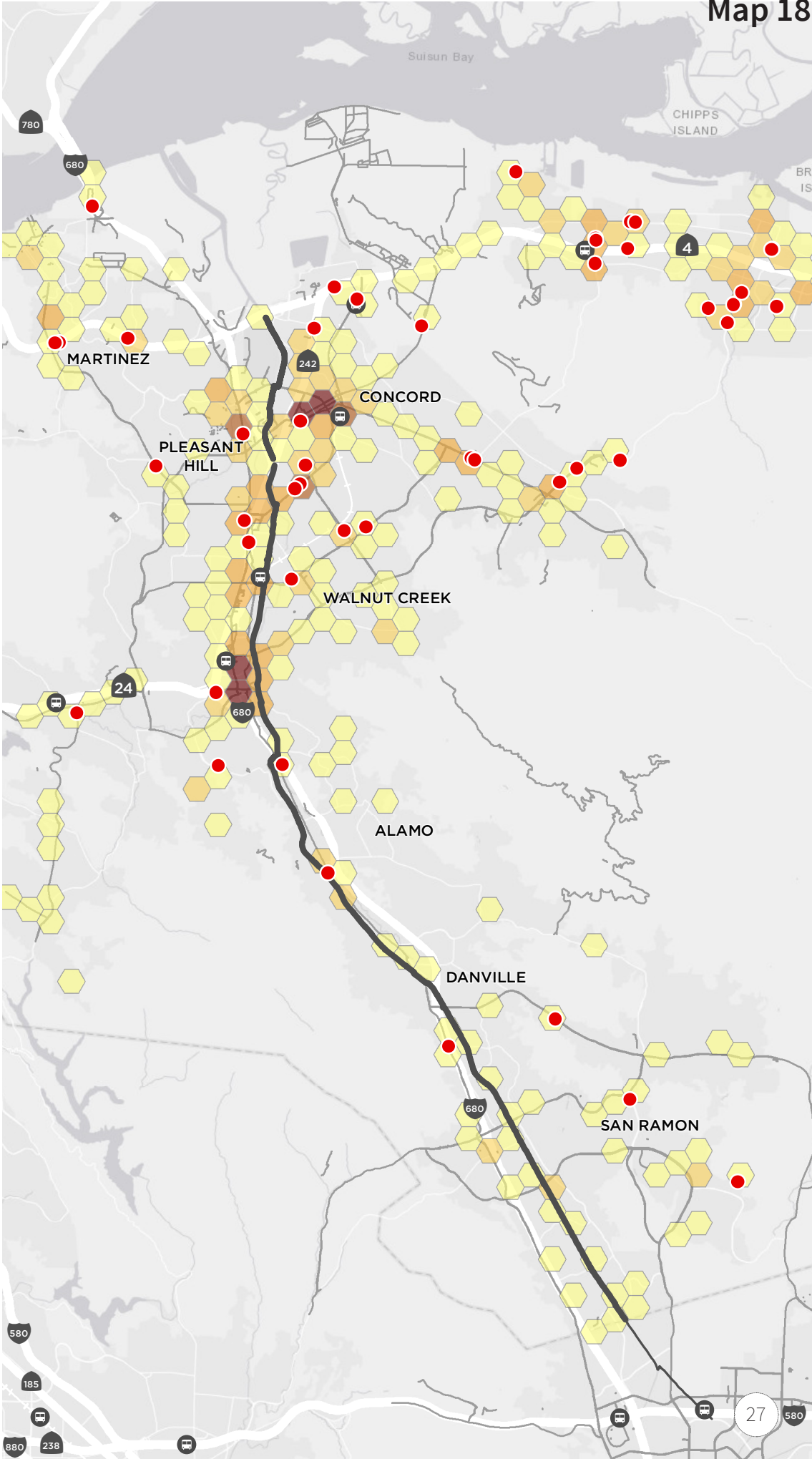
PEDESTRIAN COLLISIONS

CONTRA COSTA COUNTY
IRON HORSE TRAIL

**Collisions per Hexagon
(2013 - 2017)**



Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, TIMS UC Berkeley.



CONNECTIVITY TO THE IRON HORSE TRAIL

One of the critical questions this study seeks to address is how to increase trips along the Iron Horse Trail corridor using active modes. Combining information from the prior sections, this section provides a baseline of information about trail connectivity and describes the next steps in this analysis.

Map 19 summarizes connectivity to existing Iron Horse Trail access points considering the comfort of existing routes. Representative distances have been applied to each mode to help describe how users across the study area might access the trail. Less than half a mile to the trail is identified as walking distance, 0.5 to 3 miles is considered biking distance, and 3 - 10 miles is considered e-biking distance. As above, distances are weighted by the level of traffic stress of the streets and paths used to access the trail.

Using this analysis, only 35% of people who live in the study area are currently within comfortable walking and biking distance of the trail. In many cases, major arterials and I-680 provide significant barriers for those attempting to access the trail.

Looking forward, the next phase of the study will start to address the question of how many active transportation trips are possible with additional investment. This analysis will consider:

- The comfort and convenience of the Iron Horse Trail
- The comfort, convenience, and safety of Iron Horse Trail crossings
- The comfort, convenience, and safety of streets and paths that provide access to the Iron Horse Trail

Using Map 19 as a baseline, the next step will identify how the combination of investments in the trail, crossings, and access routes will change who has access and by what mode. It will also further explore the opportunity for alternate modes—e-bikes, low speed electric vehicles, and others—to improve access to the trail for more residents and more trip types.

IRON HORSE TRAIL ACCESSIBILITY BY MODE

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Accessibility to Nearest IHT Access Point Along Low Stress Network

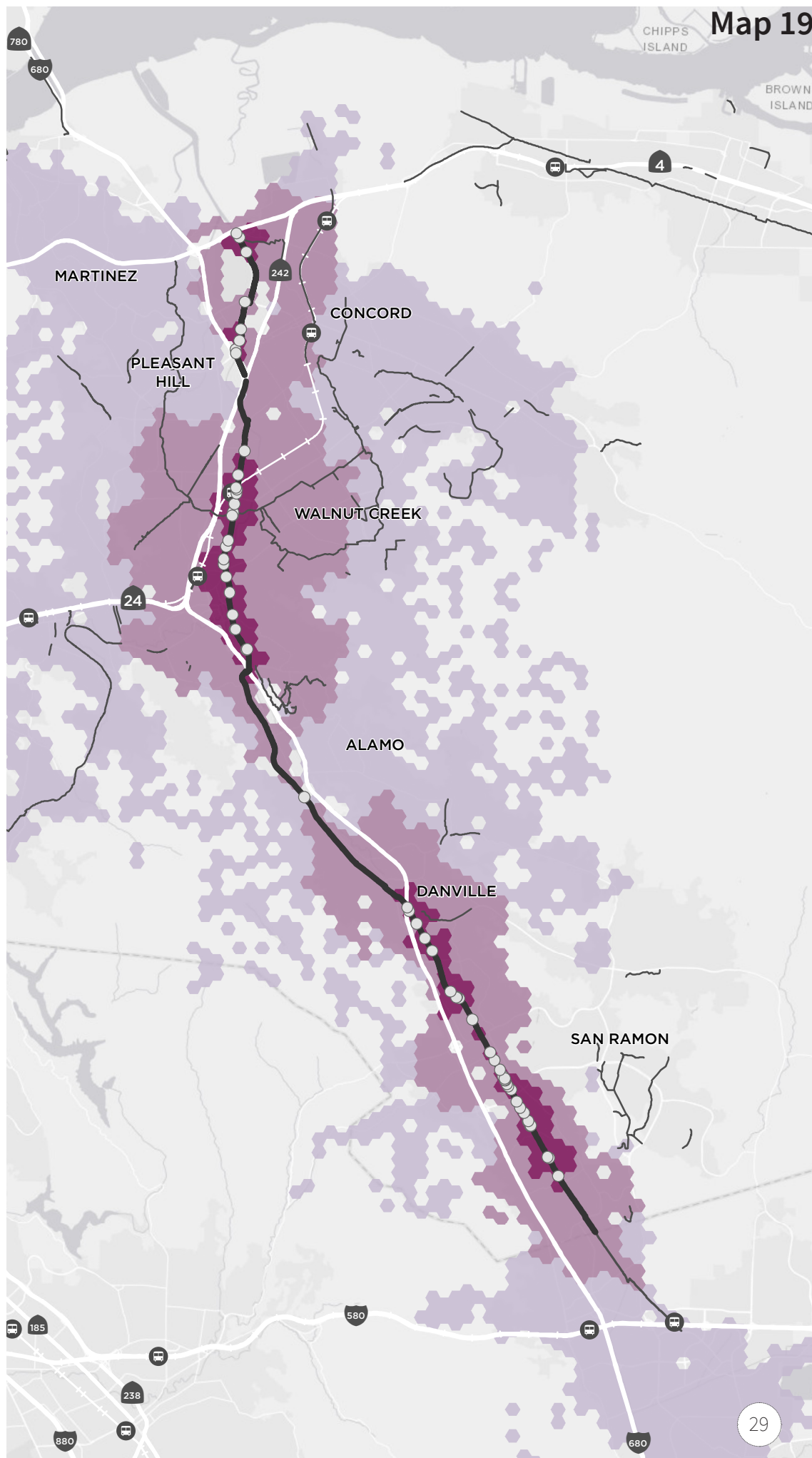
- IHT Access Point
- Walk (0 - 0.5 Miles)
- Bike (0.5 - 3 Miles)
- E-Bike (3 - 10 Miles)

- Iron Horse Trail
- 🚇 BART Station
- Class I Shared-Use Path

0 1 2 MILES



Map produced February 2019.
Sources: U.S. Census, Esri,
Contra Costa County, OSM.



IRON HORSE TRAIL ACTIVE TRANSPORTATION CORRIDOR STUDY

TECHNICAL MEMORANDUM #3
SHARED AUTONOMOUS VEHICLE
(SAV) EVALUATION SUMMARY

October 21, 2019



304 12th Street, Suite 2A
Oakland, CA 94607
(510) 540-5008
www.altaplanning.com

MEMORANDUM

To: Jamar Stamps, Contra Costa County, Department of Conservation & Development, Transportation Planning

From: Emily Duchon and Brian Burchfield, Alta Planning + Design
Radin Rahimzadeh, Advanced Mobility Group (AMG)

Date: **October 20, 2019**

Re: **Technical Memo #3: Shared Autonomous Vehicle (SAV) and Emerging Technologies Evaluation Summary**

Introduction

The purpose of this memo is to identify the mobility, safety, environmental, and economic benefits and constraints of introducing Shared Autonomous Vehicles (SAVs) and other micromobility options to the Iron Horse Trail corridor. As identified in previous memos, most walk and bike trips occur in the northern end of the trail, near Walnut Creek, Pleasant Hill, and Concord. Seventy percent of commuters along the Iron Horse Trail drive alone to work. Eighty percent of commuters have access to two or more cars. SAVs and other micromobility options could provide an alternative mode to alleviate worsening congestion patterns during peak periods as the population of residents and commuters grows in the cities along the Iron Horse Trail corridor. This memo investigates whether low-impact motorized modes such as SAVs, e-bikes, and e-scooters can be accommodated along the corridor, and provides a high-level assessment of the considerations of introducing these technology-forward options to the trail.

AB 1025

In 1978, Southern Pacific Railroad received federal permission to abandon the rail line that once ran along the Iron Horse Trail's current right-of-way. The County of Contra Costa obtained \$10.6 million in grant funding to launch a feasibility study and pay for the partial acquisition of the San Ramon Branch Corridor's right-of-way. In 1986, the County entered into a license agreement with East Bay Regional Park District (EBRPD) to operate a 10-foot-wide paved multiuse trail within the right-of-way called the Iron Horse Regional Trail. The grant funding required the County to maintain a 34-foot-wide segment of the corridor for future mass transit use.

On October 12, 2019, the Governor approved Assembly Bill 1025, relieving the County of this obligation. With this new law in effect, the County has more flexibility in planning improvements in the Iron Horse Trail corridor.

Regional and National Context

Existing SAV Pilot Programs in Contra Costa

Two SAV pilot programs in the Contra Costa region have been tested to date. The first of these programs was a two-year study (2017-2019) by the Contra Costa Transportation Authority (CCTA) of low-speed, electric and autonomous EZ10 shuttles manufactured by EasyMile. The CCTA's SAV Program operated two generations of the

EZ10 shuttles, and Phase 1 of the study piloted the SAVs at the GoMentum Station, an Autonomous Vehicle Proving Grounds in Concord. Phase 2 of the study operated the vehicles at the Bishop Ranch Business Park in San Ramon. CCTA continues to test at Bishop Ranch. CCTA was also recently awarded federal grant funds to implement an Automated Driving System Demonstration Program (ADS) in Rossmoor, Martinez, and along the I-680 corridor. The second pilot program will be deployed by the Livermore Amador Valley Transit Agency (LAVTA) to study the viability of SAVs as a first and last mile solution to connect local residents to the Dublin/Pleasanton Bay Area Rapid Transit (BART) station.

To date, SAVs in Contra Costa County have not transported general members of the public. Only pre-selected or volunteer passengers with signed waivers¹ have been able to board a SAV per the testing and demonstration agreement with the National Highway Traffic Safety Administration (NHTSA). Beyond Contra Costa, there are a number of shuttle programs that are in the pilot phase in cities such as San Jose and Sacramento.

With the continued testing of SAVs by the CCTA and LAVTA in cities that are connected by the Iron Horse Trail, there is an opportunity to collaborate and integrate these programs with the improvement recommendations developed in this Iron Horse Trail Study.

Electric Bicycles and Scooters

Electric bicycles or e-bikes are a relatively new but increasingly important mode of sustainable transportation. E-bikes benefit people who are interested in bicycling but may be limited because of physical fitness, age, disability, or because their trips are too far or the terrain too difficult to be completed by regular bicycle.

There are three key types of e-bikes:

- Class 1: E-bikes with a speed limit of 20 mph that must be pedaled to operate
- Class 2: E-bikes with a speed limit of 20 mph that can be operated by using a throttle
- Class 3: E-bikes with a speed limit of 28 mph that must be pedaled to operate

As of March 3, 2019, Class 1 and Class 2 e-bikes are allowed on select trails managed by EBRPD, including the Iron Horse Trail.

Electric scooters are also widely used on roads and trails throughout California, providing an efficient commute mode or first-last mile connection to and from transit stations. Maximum speeds typically range from 15-20 mph and maximum travel distances typically range from 15-40 miles.

Shared Micromobility

In the U.S., the three types of bike share systems commonly used are docked, dockless, and lock-to systems. E-scooter share systems are typically dockless systems. The costs to implement these systems vary by type (see Procurement + Cost).

E-bike share or scooter share systems provide users with on-demand access to e-bikes and e-scooters for one-way trips, and could present an efficient and sustainable commute option for users of the Iron Horse Trail. These systems could be implemented at shared mobility hubs, including at transit centers, BART stations, and Park and Rides.

¹ Signed waivers were required as part of the EZ10 vehicle testing study at Bishop Ranch. If the OEM is approved by the California Public Utilities Commission (CPUC) to join one of their pilot programs, the general public will be eligible to ride these SAVs if they are not charged a fee.

Currently, Bishop Ranch operates a bikesharing service entitled BRiteBikes. These bikes are allowed to be used on the Iron Horse Trail but are available to Bishop Ranch tenants only. At the northern end of the study area, Walnut Creek implemented a year-long bikeshare pilot program from January 2018 - February 2019.

Legislative and Institutional Requirements

National and State Policies and Regulations

SAVs

The Department of Transportation and National Highway Traffic Safety Administration (NHTSA) regulate autonomous vehicles on a case by case basis, and most of the regulation has been left to state governments. At the national level, if a vehicle does not meet Federal Motor Vehicle Safety Standards (FMVSS) then a waiver granting permission to test and/or transport passengers must be obtained. An additional waiver must be acquired if the vehicle is to be imported to the United States. Vehicles must acquire an additional waiver from the Environmental Protection Agency (EPA) if the vehicle is not considered to be a low-speed vehicle (weighing less than 3,000 lbs. and operating below a speed of 25 mph).

At the state level, the manufacturer must obtain a manufacturer's testing permit from the California Department of Motor Vehicles (DMV) as well as the Experimental Testing Permit from the California Air Resources Board (CARB). The California DMV also requires self-insurance by the testing manufacturer in the amount of \$5 million.² To date, SAVs are not operating for commercial use and members of the public can only voluntarily support the testing and piloting of SAVs. A select number of manufacturers are participating in the California Public Utility Commission's (CPUC) Drivered AV Passenger Service and Driverless AV Passenger Service pilot programs. Each manufacturer who has been approved for these pilot programs would be issued at least two Transportation Charter Party-Carrier authorities—a separate certificate or permit for each AV pilot program.³ Manufacturers that have obtained CPUC pilot program certification may include the general public in their testing.

It is important to note that many pilot programs have been paused or are operating within strict parameters as approved by NHTSA and the regulatory bodies of the states in which they operate. The manufacturers are required to be in direct communication with both NHTSA as well as the California DMV with updates on demonstration changes or intentions to expand demonstrations.

Micromobility

Scooter share systems first appeared in California in 2017. In the U.S., at least 17 states passed laws related to micromobility in 2019.⁴ In California, two bills aimed at regulating new micromobility devices are being considered: one that would give cities power to regulate e-scooter operations, including banning them if they conflict with CEQA, and another that would require micromobility providers to be permitted by the cities they operate in.

Existing Legislation

At the local level, Assembly Bill 1025 recommends the investigation of new mobility options that can serve the over 1 million users of the Iron Horse Trail corridor, updating prior studies that did not recommend the use of motorized

² https://www.dmv.ca.gov/portal/wcm/connect/a6ea01e0-072f-4f93-aa6c-e12b844443cc/DriverlessAV_Adopted_Regulatory_Text.pdf?MOD=AJPERES

³ <https://www.cpuc.ca.gov/uploadedFiles/CPUCWebsite/Content/Licensing/autovehicle/AV%20Application%20Instructions.pdf>

⁴ <https://micromobilitycoalition.org/news/>

modes along the trail’s right-of-way.⁵ Additional local legislation includes AB 1592, which although expired, recommended that CCTA be authorized to conduct testing of Society of Automotive Engineers (SAE) Level 4 vehicles at the GoMentum Station.⁶ AB 1444 authorizes the Livermore Amador Valley Transit Authority to conduct a SAV demonstration project to test autonomous vehicles.⁷

Assembly Bills 1112 and 1286 both aim to give cities power in regulating micromobility options. Both bills have been put on hold until informational hearings are held.

Technical Requirements

SAV Specifications

The design of shared autonomous vehicles varies, with capacity ranging from six to twenty passengers. The maximum number of passengers a driverless vehicle can accommodate is 20 passengers (14 seated positions and 6 standing positions, depending on passenger needs and configuration). SAV models vary on the inside depending on the number of seats and their arrangement. An optimal model has not yet been identified by the market or by regulators.

SAVs are designed to the traits of the SAE Level 4, do not have a steering wheel, pedal, or brake, and do not require additional infrastructure, operating autonomously following a virtual line mapped and loaded in the software of the vehicle. When batteries are fully charged, the vehicles can operate up to 14 hours. Almost all SAV designs are considered low-speed and lightweight vehicles both by national EPA standards as well as local CARB standards. Dimensions of the SAV vary slightly, but an example model’s dimensions are as follows: L13’ x W6’ x H9. SAVs may operate at a top speed of 25 mph, but typically operate at 12-15 mph during the pilot phases.



May Mobility- 6-person vehicle.



Easy Mile, EZ10 – 10 to 12-person vehicle



Local Motors, Olli – 8-person vehicle



Coast Autonomous- 14 to 20-person vehicle

SAV Requirements

Currently, the proposed SAV requirements consist of series of systems and sub-systems:

- SAV (Vehicle, hardware and software);
- Parking, covered storage and charging station for SAVs;
 - Charging requirements may vary across each SAV manufacturer. The EZ10 vehicle requires 220V 32amp.
- Fleet automation platform and apps;
- Mobility on Demand (MOD) application;

⁵ https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201920200AB1025

⁶ https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB1592

⁷ https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180AB1444

- Transit agency's Computational Aided Dispatch (CAD)/Automated Vehicle Location (AVL) systems; and
- Roadside Equipment and Necessary Adaptation for SAVs with respect to vehicle to infrastructure (V2I) and vehicle to everything (V2X).

When operating within an existing roadway, the SAV may not require additional infrastructure to operate safely along a fixed route. However, some infrastructure improvements that will need to be evaluated for the Iron Horse Trail include but are not limited to:

- Trail widening
- Installation of fiber
- Dedicated Short Range Communication (DSRC)
- Intersection/signal improvements
- Striping and Signage

If the SAV is operating on public roads, additional traffic infrastructure is needed. This includes Dedicated Short Range Communication (DSRC) which would require the deployment of tens of thousands of Roadside Units (RSUs) embedded or attached to roadway infrastructure to enable an effective network along local roads. If available, LTE and 5G can be used for these RSU functions thereby eliminating the need for highway authorities to install and maintain RSUs. In addition to the increased vehicular safety and traffic efficiencies, 5G-based V2X technologies would provide significant capital and operational cost savings. The city transportation system can gather real-time data, analyze the traffic pattern and apply deterministic traffic congestion algorithms for better road management and improved infrastructure planning.

The sensor technology used for SAVs require clearly visible pavement markings and signs when operating on trails and roadways which may require additional improvements along the Iron Horse Trail. While a human driver may be able to interpret faded or absent pavement markings and continue within the designated lane, a SAV may need to more clearly "view" where to position itself on the pavement as guided by its mix of cameras and other sensors like radar and lidar. Furthermore, with respect to the designated route selected, additional signage and stop locations may be needed to institute safe traffic conditions for SAV passengers, micromobility users, bicyclists, and pedestrians.

SAV Testing and Operation

SAVs can currently only be implemented through regulated pilot programs. A successful SAV pilot program is designed by both private and public partners and combines the necessary perspectives to create an innovative real-world mobility solution for various and nuanced segments of the corridor. The pilot program should have a defined goal—such as connecting employees to transit stops or elderly residents to services—that can help define the route and attract users to the program. Numerous stakeholders must be involved in the process and given the opportunity to share their input and provide feedback on the proposed routes.

Potential partners include:

- Public Sector
 - Contra Costa Transportation Authority (CCTA)
 - Metropolitan Transportation Commission (MTC)
 - Bay Area Rapid Transit (BART)
 - Bay Area Air Quality Management District (BAAQMD)

- County Connection
- Livermore Amador Valley Transit Authority (LAVTA)
- 511 Contra Costa
- City agencies and local county representatives
- School and parent associations
- Local law enforcement from each of the nine cities
- Private Sector
 - SAV OEM
 - Sunset Development (Bishop Ranch)
 - Chosen SAV operator

The Operational Design Domain (ODD) may include 2-4 proposed test routes to pilot the program and monitor its operations. The ODD must be approved by the California DMV and NHTSA for the period of 1 year.

Procurement + Cost

A well-defined Request for Proposals (RFP) that outlines the role, service responsibilities, and communication of a vendor(s) along with a cost estimate for infrastructure improvements, shuttle(s) operations, reporting, and media for the duration of the contract period, is critical to the success of the procurement and demonstration process.

A summary of cost estimates for operating a SAV program is included in the table below. Also included are estimated costs for operating two new mobility technologies: e-bikes and e-scooters.

System	Cost Type	Item	Cost Range	Notes
SAV	Operational	Vehicle	\$100k - \$250k	Dependent on vendor
	Operational	Storage	\$30,000	Covered storage
	Operational	EV Charging Station	\$15,000	Per station
	Operational	Maintenance	\$12,000	1 year
	Testing	Pilot program	\$120,000	1 year
	Infrastructure Improvement	Dedicated path	\$500,000	Per mile, contingent upon site context
		Fiber installation	\$300,000	Per mile
		Intersection/signal improvements	\$50,000-\$300,000	Ranges from existing signal improvements and modifications to intersection reconfiguration and utility relocation
		Pavement markings	\$25,000	Per mile
		Signage	\$5,000	Per mile

System	Cost Type	Item	Cost Range	Notes
Docked e-bike share	Operational	Charging Station w/ 8-10 bikes	\$45,000 - \$55,000	Owned by city, business, or nonprofit group
	Operational	Operations & Maintenance	\$2,000 - \$2,500 per bike annually	Usually paid for by sponsorship, user fees, and city/state grants
Dockless e-bike share	Operational	Bicycle	*No cost	Typical business model is to provide system at no cost in exchange for operator flexibility in setting prices, establishing a service area and keeping sponsor revenues. Includes charging, storage, and maintenance costs.
Lock-to e-bike share	Operational	Charging station w/ 8-10 bikes	\$20,000 - \$25,000	Owned by city, business, or non-profit group
	Operational	Operations & Maintenance	\$2,000 - \$2,500 per bike annually	Usually paid for by sponsorship, user fees, and city/state grants
Dockless e-scooter share	Operational	Scooter	*No cost	Typical business model is to provide system at no cost in exchange for operator flexibility. Includes charging, storage, and maintenance costs.

During the procurement process, it is critical to include any anticipated permits in the procurement documents to help any potential vendor set expectations early. It is also important to define all infrastructure requirements and impacts so there is an expectation and awareness of impacts that might affect the deployment schedule. All details and expectations regarding data aggregation, sharing, and reporting should be clearly defined in the proposal by the project team to ensure the procurement documents have the appropriate information.

Stakeholder Coordination

A SAV pilot program will involve coordination work with local jurisdictions, residents, community groups, and law enforcement to provide the public with adequate knowledge of the pilot program prior to initiation. It is important to identify all potential risks and mitigation processes prior to initiating the program. One such example would be to create a law enforcement and emergency response interaction plan for the corridor.

Establishing a working group structure is recommended to keep partners engaged and apprised of project developments, as well as to provide a forum with which to discuss critical decisions.

Additionally, it is important to take residents' feedback into account. The operation of SAVs may evoke contention from residents and community groups whose homes reside near the trail. This may be due to increased fast travel modes on the trail, perceived potential safety issues, increased noise pollution, or additional and new types of maintenance activity. Communication channels such as a dedicated website page to highlight project updates and provide a forum for community participation may increase project support and stakeholder buy-in.

Geometric and Right-of-Way Constraints

SAV shuttles will not be able to operate on segments of the trail that are width-constrained or poorly maintained. Improved trail infrastructure to accommodate SAVs will impact zoning requirements, especially in the realm of site design, and curbside pickup/drop-off zones will impact adjacent streets.

There are significant physical constraints for SAVs to operate end to end on the Iron Horse Trail. Some trail corridors are constrained to only 25 feet to 30 feet. With consideration of safety for all modes, creating a dedicated SAV travel lane or SAV two-way lane in these areas may limit the capacity to accommodate existing modes of travel (e.g., bicyclists, equestrians, and pedestrians). Furthermore, limited rights-of-way at road crossings create pinch points for SAVs, pedestrians, and people riding bicycles and would need significant capital improvements to be reconfigured in order to accommodate all proposed modes of transportation.

Due to physical constraints, consideration of SAVs on the Iron Horse Trail may be more applicable along targeted areas of the trail with wider rights-of-way, higher expected demand, and connection to major regional destinations such as BART stations and Bishop Ranch.

Additional Considerations

Accessible Transportation

According to a study conducted for the American Association of Retired Persons (AARP), roughly one-third of people with disabilities who never leave their home do not leave because they do not have any means of transportation available to them. Most of those with disabilities who do travel, do so in private vehicles. The most significant travel barriers for people with disabilities is related to barriers and obstacles in the built pedestrian environment. The opportunity to arrive at priority destinations, such as BART stations via SAVs could result in a mode-shift among people with disabilities.

First/Last Mile Solution

The SAV is a potential solution to providing first/last mile connections to other fixed-route services such as transit. Research shows that by solving for first/last mile challenges, travelers will be more inclined to use traditional public transit, especially fixed-route rail and bus service for regional trips due to relative convenience versus the cost of enduring traffic and congestion.

Along the Iron Horse Trail, SAVs could potentially group trips as a feeder to fixed-route travel on regional transit such as Pleasant Hill/CCC and Dublin/Pleasanton BART.

Micromobility options such as e-bikes and e-scooters can also provide first/last mile connections to transit. People using e-bikes and e-scooters could use the same lanes as those designated for other fast user groups such as adult bicyclists, providing more mobility options within the existing right-of-way.

Reduction in Vehicle Miles Traveled (VMT)

Congestion along I-680 could be reduced if SAVs provide viable connections to transit. A mode shift away from personal vehicles to active or SAV connections to transit would reduce vehicle miles traveled (VMT). This reduction would result in associated positive environmental and health benefits (i.e. reduction in GHG emissions, personal transportation cost savings, etc.).

Safety

NHTSA estimates that connected and autonomous vehicles such as the SAV could eliminate or mitigate 80% of crashes where the driver is fully attentive (i.e., not impaired, distracted, or drowsy). Furthermore, The Iron Horse Trail corridor features a number of roadway crossings, and by reducing congestion and vehicles on the road, these crossings may experience safer conditions and fewer crashes.

Limitations on SAV Multimodal Performance

The SAV has been tested to successfully navigate multimodal separated use conditions where other modes are traveling parallel to the vehicle. However, if the SAV does not operate on a linear route and is required to turn left or right in a multi-modal condition, the vehicle may not perform optimally. At this time, SAVs are undergoing testing to aggregate more statistically significant data to determine capability of successful left and right turns. If the SAV vehicle only operates on a linear path along the Iron Horse Trail, without turns, it would be able to transport travelers from one destination to the next.

The performance of the SAV is conditional based on the number of perceived obstacles on the trail. The SAV slows down when it registers a potential obstacle and comes to an abrupt stop, especially when a large object enters into its trajectory. Since SAVs have not been rigorously tested in compact shared-use multimodal environments, it is unknown at this time how the SAV will operate on the Iron Horse Trail in shared-use conditions. A dedicated route for the SAV would provide a more optimal condition for the current technology.

A potential negative outcome could be unpredictable delays. A SAV could stop for harmless nuances in the environment where the SAV incorrectly perceives a barrier and stops. Seeing as the vehicle has not been tested in a natural environment that include plants, trail debris, and wildlife, it is not yet determined what the vehicle would perceive to be an obstacle. If the vehicle is very sensitive to the environment, it would not be a viable mode of travel especially for people traveling to education or employment centers within specific time constraints.

Integration with Existing Trail Users

Integration of the SAV with existing mobility modes along the trail may prove challenging as present-day users of the trail have complained about the challenges of interactions between pedestrians and bicyclists on the trail. The addition of a larger motorized vehicle may produce further cultural differences between co-existing modes of mobility.

Preliminary Recommendations + Next Steps

Given existing technology constraints, potential SAV routes along the Iron Horse Trail were evaluated based on available right-of-way, presence of physical constraints, existing and potential user demand, and connections to key destinations such as transit and employment centers. Locations for shared mobility hubs that could store these vehicles and provide charging stations for both SAVs and micromobility devices were also considered.




Two sections of the trail were identified as potential locations for a future SAV pilot program: Monument Boulevard to Ygnacio Valley Road in the northern section of the corridor and San Ramon Valley Boulevard to the Dublin/Pleasanton BART Station in the south. These sections of the trail have available ROW to accommodate SAVs, offer connections to employment hubs, and have the ability to serve as links to transit, helping to solve first-last mile challenges along the corridor.

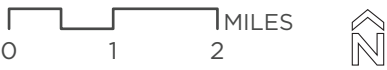
These are preliminary considerations only. Further study will be required to refine possible SAV routes and determine the most efficient use of resources in implementing a SAV pilot program for the corridor. Additionally, infrastructure improvements, including intersection improvements, would be required to implement a SAV pilot program for the Iron Horse Trail.

IRON HORSE TRAIL

CONTRA COSTA COUNTY
IRON HORSE TRAIL

Potential Early Action SAV Corridor

-  Potential SAV Corridor
-  BART Station
-  Park & Ride



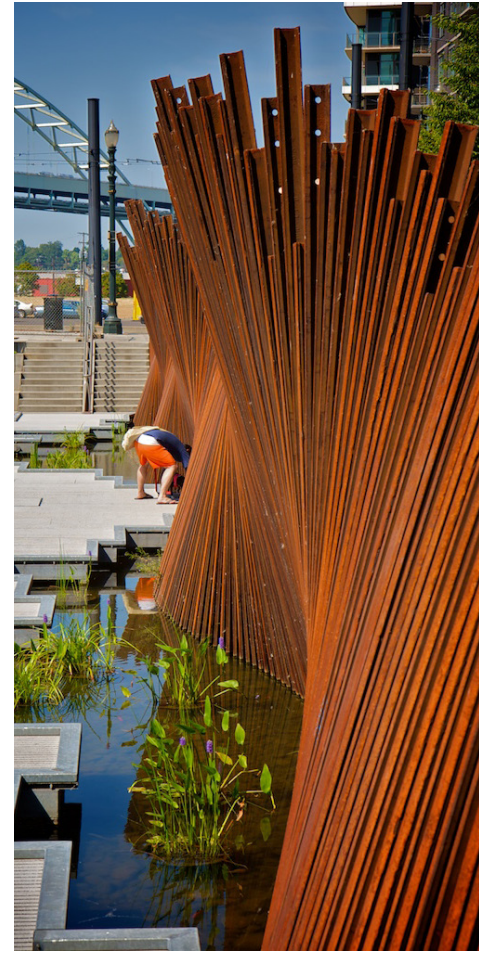
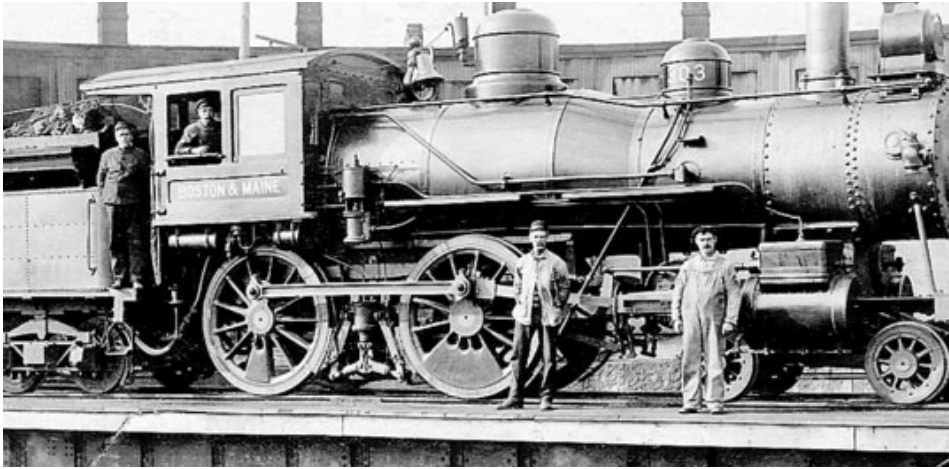
IRON HORSE TRAIL

LOGO CONCEPTS V4

CONCEPT 01

TRACKS 1

Bold illustrated monogram



CONCEPT 01: TRACKS 1

1.a



*Note: color palette, typography and illustration
may be refined in the next round of design.*

CONCEPT 01: TRACKS 1

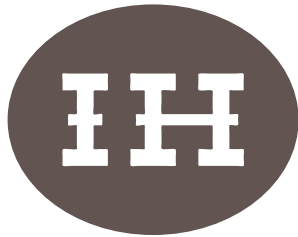
1.b knockout



*Note: color palette, typography and illustration
may be refined in the next round of design.*

CONCEPT 01: TRACKS 1

Medallions: simplified monogram-style logo suitable for pavement marking, stickers and other marketing collateral



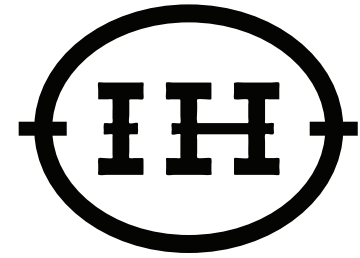
1.c



1.d



1.e



1.f

Note: color palette, typography and illustration may be refined in the next round of design.

CONCEPT 02

TRACKS 2

Iconic, elegant, interconnected, linear

CONCEPT 02: TRACKS 2



IRON
HORSE
REGIONAL TRAIL

2.a



IRON
HORSE
REGIONAL TRAIL

2.b

*Note: color palette, typography and illustration
may be refined in the next round of design.*

CONCEPT 02: TRACKS 2

IRONHORSE
REGIONAL TRAIL

2.c

IRONHORSE
REGIONAL TRAIL

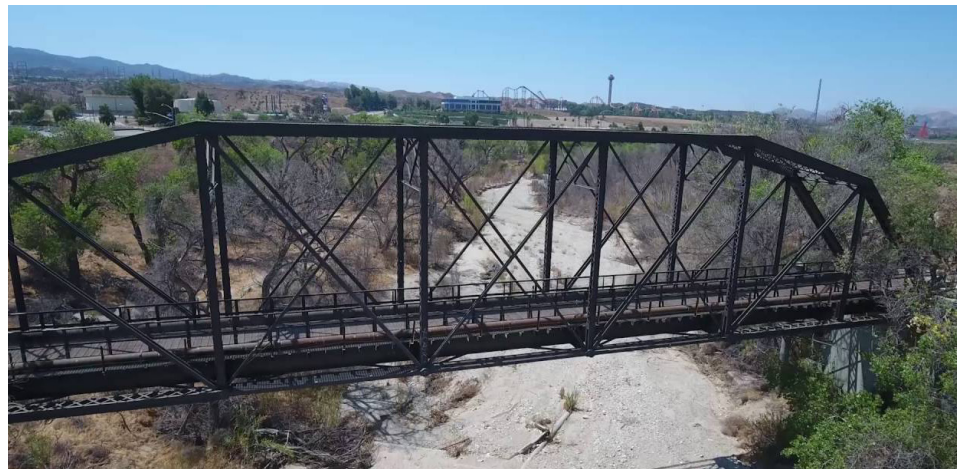
2.d

*Note: color palette, typography and illustration
may be refined in the next round of design.*

CONCEPT 03

BRIDGES

Connection, infrastructure, historic + contemporary



CONCEPT 03: BRIDGES

3.a



*Note: color palette, typography and illustration
may be refined in the next round of design.*

CONCEPT 03: BRIDGES



3.b



3.c

*Note: color palette, typography and illustration
may be refined in the next round of design.*

thank you!



CONTRA COSTA COUNTY

Active Transportation Corridor Study

DRAFT | JANUARY 2020

IRONHORSE
REGIONAL TRAIL

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*Funding for the Iron Horse Trail Active
Transportation Study was provided by the Contra
Costa County Livable Communities Grant*

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Map 1 Iron Horse Trail Context

- Iron Horse Regional Trail
- Contra Costa County Study Area



01 Why Improve the Iron Horse Trail?

The Iron Horse Trail Active Transportation Corridor Study presents an opportunity to re-imagine the existing trail into an active transportation corridor for the future.

The Iron Horse Regional Trail serves as a major regional connector, providing a 32-mile biking and walking corridor for the people of Contra Costa and Alameda counties. The majority of the trail—22 miles—lies within Contra Costa County, which is the focus of this Study. Improving the Iron Horse Trail can provide health, economic, environmental, and transportation benefits to the region.

The Iron Horse Trail corridor has the potential to serve a much greater number of people than it does today. Encouraging a shift from people making personal vehicle trips to more active transportation trips could result in lower traffic congestion, lower greenhouse gas emissions, improved air quality, and higher levels of physical activity, improving the health and wellbeing of the region's residents. Increased use of the trail for commuting and utilitarian purposes could also increase the number of transit users in the area, which could further reduce the number of vehicles on the road.

Additionally, because modes such as walking and biking provide some of the lowest-cost forms of transportation, improving the trail could have positive economic, transportation, and equity benefits for the communities surrounding the corridor.

The Trail Today

Established in 1986, the trail follows the Southern Pacific Railroad right-of-way that was abandoned in 1978.¹ In Contra Costa County, the trail runs north to south through the communities of Concord, Pleasant Hill, Walnut Creek, Alamo, Danville, and San Ramon, passing through commercial, residential, and rural areas along the way.

The Iron Horse Trail corridor lies within 1.5 miles, or a comfortable walking distance, of over 340,000 residents (151,000 commuters) and 3 miles, or a comfortable bicycling distance, of 425,000 residents (200,000 commuters). The corridor is only a few blocks from both the Pleasant Hill and Dublin/Pleasanton BART stations. The trail connects workers to dense employment areas like Bishop Ranch in San Ramon and Contra Costa Centre Transit Village in Walnut Creek, and provides recreational users with an active transportation route that is separated from vehicles.

The Iron Horse Trail is one of the largest and oldest multi-use trails in the San Francisco Bay Area, and is a treasured community asset. Because it is so well-used, the trail often runs into capacity issues as it exists today.

¹ State grants from the 1980s that facilitated the acquisition of the corridor obligated the County to 1) implement some form of mass transit and 2) set aside exclusive right-of-way for vehicle operations. On October 12, 2019, the Governor approved Assembly Bill 1025, relieving the County of these obligations. With this new law in effect, the County has more flexibility in planning improvements in the corridor.

The existing Iron Horse Trail is a 10-foot-wide shared-use trail, requiring bicyclists and pedestrians to share the same space. During peak times, this narrow configuration can lead to uncomfortable conditions in which conflicts arise between users traveling at different speeds. For some users, a lack of low-stress on-street connections prohibit them from using the trail for commuting or other utilitarian trip purposes. The Iron Horse Trail Active Transportation Corridor Study seeks to improve these conditions to make the trail safe and convenient for all users and trip types.

STUDY PURPOSE

Given the high monetary and environmental costs associated with building more auto-oriented infrastructure, the corridor offers a chance to build a sustainable alternative that can provide an efficient route for bicyclists, pedestrians, and people using shared mobility devices, improving connectivity across the region.

The scope of the Study includes the entire length (approximately 22 miles) of the Iron Horse Trail within Contra Costa County (State Route 4 to County Line). While the Iron Horse Regional Trail begins in Concord near Highway 4, it should be distinguished from the Iron Horse Corridor (approximately 18.5 miles) that begins in Concord at Mayette Avenue.

The Study provides an overview of existing corridor conditions and corridor needs to frame the context of the Iron Horse Trail today (Chapter 2). These analyses are tied together with community and stakeholder feedback and design tools to develop a new vision for the corridor—one that better accommodates pedestrians

and bicyclists of all ages and abilities, as well as users of other emerging mobility options such as e-bikes and e-scooters (Chapter 3). The Study also envisions a corridor that would not preclude the use of shared autonomous vehicles (SAVs) in the future. Chapter 3 also provides initial recommendations for a SAV pilot project.

The existing trail corridor offers a number of opportunities for improvements. These include widening the trail and separating users to enhance user comfort, improving intersections and crossings, improving access points and adding amenities such as landscape, shade, and benches, and creating connections to the existing and planned trail and bicycle networks. Recommended projects along the project corridor incorporate a number of these different improvements (Chapter 4).

Evaluating projects through a prioritization process helps to define which projects will have a greater impact in meeting the project vision. Chapter 4 also presents a goal-based evaluation process and project ranking.

Chapter 5 presents planning-level cost estimates for the proposed improvements, operations and maintenance considerations for the trail, and potential funding sources for capital improvements, operations, and maintenance. In addition, it examines the trail's existing governance structure and highlights strategies that could be used to enhance its current capacity to operate and maintain the vision set forth in this Study.

VISION AND GOALS

Vision Statement

The Study envisions a trail that can serve as an active transportation spine that supports the region's mobility goals and continues to provide a treasured recreational resource for users of all ages and abilities.



The Iron Horse Trail today

Goals

The goals of the Iron Horse Trail Active Transportation Corridor Study include:



Safety

Enhances trail condition and improves traffic and intersection safety



Mobility

Provides connections to transit, trails and on-street facilities; accommodates user demand and enhances user comfort



Access & Equity

Provides access to jobs, destinations, parks and open space, and health services; presents opportunities for new access points



User Experience

Improves trail conditions and amenities; presents opportunities for stormwater filtration, ecology, new amenities, and placemaking



Project Synergy

Aligns with planned projects and existing land uses and allows for future expansion of new technologies

The goals were developed through a community engagement process, collaboration with the Technical Advisory Committee (TAC), and through an analysis of existing conditions, existing and planned projects, and regional priorities.

These goals drive the focus of the Study to ensure that the recommended priority projects are consistent with the existing context of the trail as well as the vision presented by the community during the engagement process.

BICYCLE SUPERHIGHWAY

The future Iron Horse Trail could serve as a bicycle superhighway.

A bicycle superhighway can provide an efficient route for long-distance bicycle travel, making bicycling a comfortable option for commuting and other utilitarian purposes. Bicycle superhighways are typically characterized by long-distance routes separated from vehicles with well-maintained pavement, wide lanes, separated users, and enhanced or grade-separated crossings. Two important elements include lighting and wayfinding signage, while additional amenities can include bicycle repair shops and high-capacity bicycle parking. Bicycle superhighways offer an opportunity to highlight bicycling as a key mode by centering businesses, services, and amenities around them, prioritizing them over adjacent roadways and making them desirable destinations in themselves.

The Iron Horse Trail has the potential to become a bicycle superhighway if consistent and cohesive improvements are made. Design considerations seek to enhance the experience for existing users of the Iron Horse Trail while creating an efficient, dependable, and convenient alternative to using an automobile to get to work, school and run errands. Multi-jurisdictional coordination and collaboration would be required to establish consistent conditions along the trail that allow for and encourage its continuous, long-distance use.

Case Studies

REGIONAL

San Tomas Aquino Creek Trail in Santa Clara County serves as a regional example of a bicycle superhighway. The trail connects residential communities to employment and commercial centers via a continuous path with few at-grade crossings.



INTERNATIONAL

The Radschnellweg Ruhr (Bike Freeway) (RS1) is currently being constructed in Germany, the first stretch of which has already been completed. The route will eventually span 62 miles and connect 10 cities in northwest Germany. RS1 is characterized by a wide path, separated from pedestrians, with lighting, passing lanes, and overpasses and underpasses at intersections.





A separated path with a fast lane can provide a comfortable experience for numerous user groups. One can imagine a woman who is commuting to BART to make her way into the city and is dependent upon the new lighting because she will be commuting back home after the sun sets. A parent on an e-bike commuting from Concord to San Ramon who is able to drop their child off at daycare located along the route. Teens in groups heading to school and a morning group ride from a local bicycle club. With a dedicated lane for faster users, the trail could support e-scooters or other shared micromobility devices. The trail improvements will provide a facility for neighborhood families of all ages and abilities traveling by bike.

A side-path conjures the spirit of the existing Iron Horse trail. Here friends stroll and engage with amenities and seating areas. Even on a hot summer day the cool respite of new trees gives a grandparent and their grandchild in a stroller a moment to rest. Pedestrians would require their own lane to comfortably use the trail, while equestrians would require their own unpaved path in the right-of-way adjacent to the trail.

COMMUNITY ENGAGEMENT

The Iron Horse Trail community engagement process helped shape the vision of the Study and identified needed improvements along the trail.

The community engagement process utilized a variety of outreach methods to gather community input on the Iron Horse Trail's existing challenges and potential future improvements. These outreach methods included sharing project information via a project website, conducting stakeholder interviews, holding pop-up events along and near the trail, hosting an interactive webmap tool that enabled community members to leave site-specific comments and 'like' other users' ideas, and conducting a survey for business owners, employees, students, and residents.

In-Person Engagement

Two rounds of engagement occurred.

In the Spring of 2019, the project team hosted three outreach events to introduce the community to the project corridor as well as promote the online survey and interactive webmap. The events included:

- A food truck event outside the Pleasant Hill/Contra Costa Centre BART station, March 29, 2019
- Fair Oaks Elementary Bike to School Day in Pleasant Hill in partnership with Contra Costa 511 Safe Routes to School Program, April 30, 2019
- San Ramon Bike to Work Day at Bishop Ranch, May 9, 2019

Following the initial rounds of in-person



***Above:** On-trail pop-up engagement event in San Ramon.*

engagement, three additional pop-up events were held along the Iron Horse Trail in Summer 2019:

- San Ramon Central Park, July 27, 2019
- Contra Costa Centre (Intersection of the Iron Horse Trail and the Canal Trail), July 28, 2019
- East Bay Regional Park District (EBRPD) Trail Etiquette event, August 7, 2019

Feedback from 260 people was gathered during these three events. Community members were asked questions such as: How can we improve the trail in your neighborhood? What do you want to see addressed at intersections? Which trail type do you prefer and why? Overall, a majority of the feedback received involved the desire for:

- Adding amenities such as lighting, shade, and bike stations
- Increasing the number of access points
- Prioritizing users and user separation on the trail

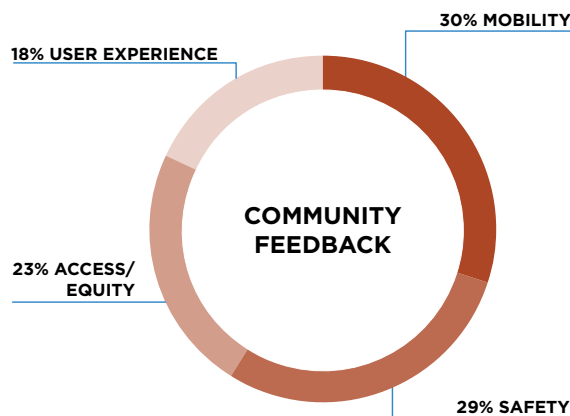
Online Engagement

An interactive webmap was available from mid-January to mid-August 2019. Community members were invited to identify locations of destinations accessible from the Iron Horse Trail, barriers preventing access or providing a high quality user experience, and routes to access the trail. They were also given the opportunity to suggest locations for trail improvements. People could then like/vote on previously posted comments.

The webmap collected 407 comments and 769 likes/votes. The majority of the comments were clustered in the northern half of the corridor.

The comments were summarized by theme and translated into draft project goals. Of the comments received:

- **30% were related to Mobility**
 - Improve network and connectivity to regional trails, BART, and other transit
 - Create priority ROW for trail users; consider overpasses at high volume corridors; facilitate direct connections and shorter wait times
- **29% were related to Safety**
 - Address intersection safety with improved signals, increased visibility, and slower traffic
 - Improve personal safety at access points; improve lighting; reduce user conflicts
- **23% were related to Access/Equity**
 - Improve connectivity to regional downtown cores, commercial hubs, schools, and open spaces



- **18% were related to User Experience**

- Improve shade, amenities, and overall user experience
- Prioritize maintenance and wayfinding

Certain locations along the corridor were repeatedly highlighted as needing specific improvements. These included Monument Boulevard (increased connectivity and overall improved intersection safety), Bollinger Canyon Road (intersection improvements), Danville Boulevard (wayfinding and intersection improvements), and Walnut Creek, Pleasant Hill, Concord (a desire to connect with BART). Repeated comments were noted and summarized by segment to highlight which trail segments were considered to be the most in need of improvement.

The results of the community engagement process were one of several factors used to identify important potential improvements along the trail and understand key community priorities that the Study can address through its recommendations.



02 What are the Corridor Needs?

In order for the Iron Horse Trail to meet the new vision, it is important to understand the current and future needs of the corridor.

A data driven corridor analysis documented how the trail connects to the regional networks and adjacent land uses, as well as how it currently serves surrounding communities. In addition, an existing conditions assessment detailed the corridor's various physical conditions, intersections, access points, and amenities.

The data gathered as part of the corridor and existing conditions analyses were combined with the feedback received from the community to identify specific corridor needs.

In order to summarize and communicate the needs of the 22 mile Iron Horse Trail study corridor, the trail was divided into 15 segments based on jurisdiction, adjacent land context, and physical conditions, as shown in Map 2. There are two types of segments, each of which have different needs.

Activity Centers are categorized as Main Streets, activity hubs, and commercial development, and contain destinations that users are likely to travel to.

Parks & Housing segments are passive, residential, or park-like, and are the areas that users are more likely to travel through.

Each jurisdiction the trail passes through has 2-3 segments, ranging from 0.5 to 3.0 miles.

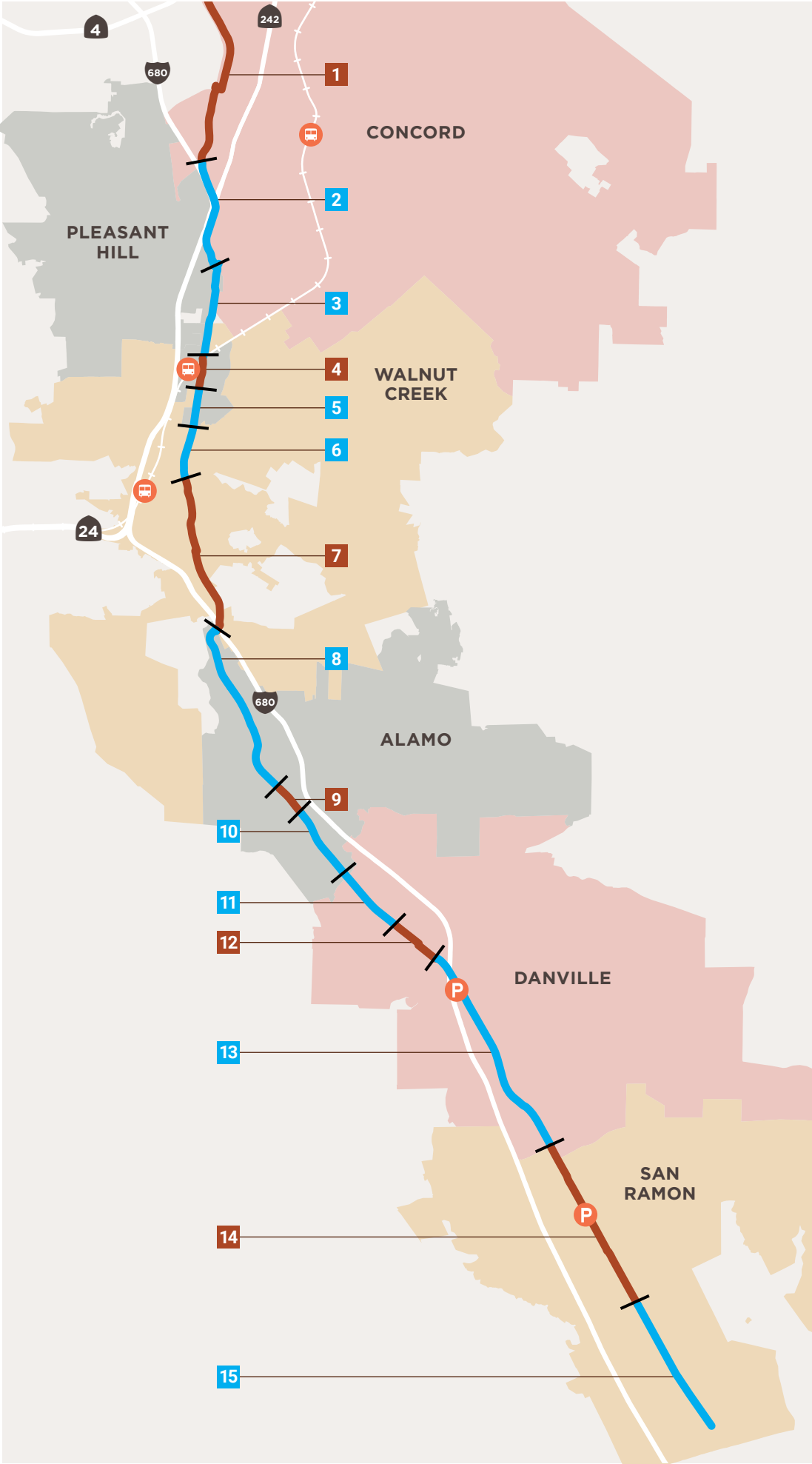
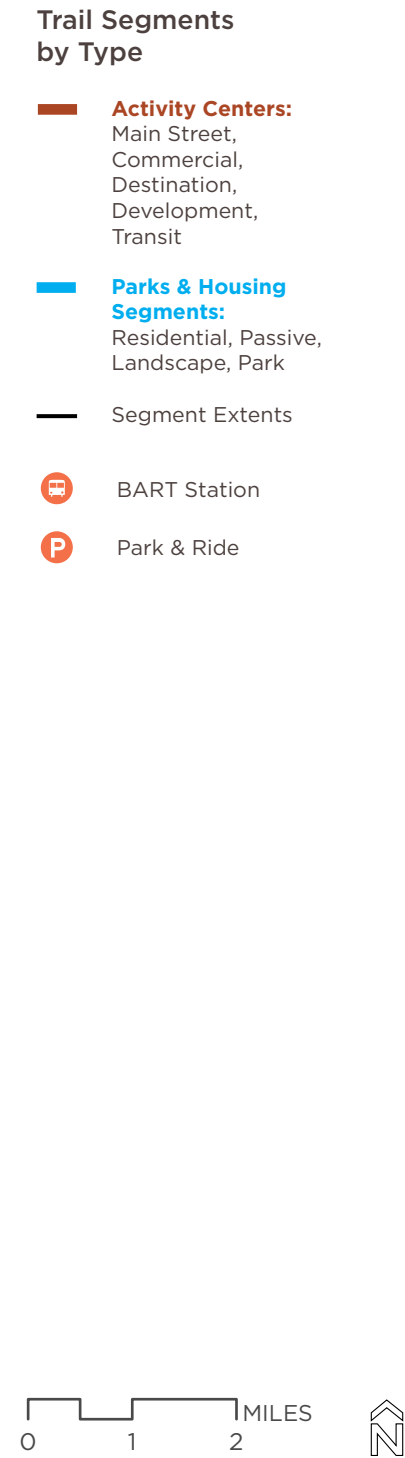
Analysis Factors

To compare and assess the needs of trail segments throughout the corridor, the segments were evaluated based on a number of factors. These factors included:

- User Demand
- Access Needs
- Connections
- Intersections
- Constraints/Barriers
- Community-Identified Needs

Each factor includes an overall scale from low to high, and each segment was ranked based on these criteria. The following pages describe each factor in greater detail and a summary comparison of all segments is shown at the end of the chapter in Table 6.

See Appendix A and B for more information on Existing Conditions and Corridor Analysis.



USER DEMAND

People Who Live Here

There are over 425,000 residents and 200,000 commuters within three miles of the Iron Horse Trail in Contra Costa County. Most walk and bike trips to work are concentrated near employment centers in the northern end of the corridor near Walnut Creek, Pleasant Hill, and Concord, with an additional concentration in the south near San Ramon. Currently, however, over 70 percent of commuters near the corridor drive alone to work.

This may be due, in part, to the relative wealth of the communities along the Iron Horse Trail. People who live near the trail tend to have access to multiple vehicles, with only 2% of all commuters without access to a car, and 80% of commuters with access to two or more vehicles. Many of these motor-vehicle commute trips are relatively short, with 39% taking less than 20 minutes. The largest concentrations of households with zero-vehicles and of relatively lower median household incomes are in the same census tracts with lower average drive alone to work mode share.

Population and employment growth are expected along the trail near BART stations and at the Concord Naval Weapons Station redevelopment site, meaning that an improved active transportation corridor will be critical for providing an efficient and sustainable transportation network for commuters in the area.

Potential User Demand

Trip demand along the Iron Horse Trail was calculated using data generated by the Metropolitan Transportation Commission's (MTC) travel demand model. Using pairs of origins and destinations, total daily trips between "traffic analysis zones" (TAZs) were simulated along the street network. Trips that utilized the Iron Horse Trail with a perceived distance of less than 5

miles were then aggregated to produce potential daily trip estimates that could be made by bicycle.

Bicycle and pedestrian mode shares were then determined by using mode share data from the MTC travel demand model as well as guidance from the FHWA Shared-Use Level of Service Calculator (SUPLOS). The typical utilitarian bicycle mode share among TAZs within the study area (1.3%) was applied to the total number of trips within bikeable distance to determine a more representative number of biking trips that would be likely to use the trail. A 40% utilitarian pedestrian mode share (the typical pedestrian mode share used by the FHWA SUPLOS tool) was applied to estimate pedestrian trips. Finally, a conservative recreational mode split (60%) was applied to account for recreational bike and pedestrian trips likely to use the trail. This percentage was determined following a review of recreational use on similar trail examples throughout the United States.

The results of the demand analysis show a range of potential demand between the segments of the trail (see Table 6). Results are shown on a scale of increasing demand. Segments that have particularly high demand (such as those in Pleasant Hill and San Ramon) would benefit from a wider trail than the existing 10-foot shared-use path to comfortably accommodate potential demand. Additionally, these high-demand areas may also benefit from separate lanes for people walking and bicycling in order to minimize conflicts between users. Segments with lower demand (such as those in Alamo) may benefit from improvements such as increased access points, network connections, and intersection improvements.

ACCESS NEEDS

Access from the Trail

The corridor was evaluated for its accessibility via low stress routes to different destinations such as transit, schools, parks, and commercial or shopping areas. Low stress routes were identified as Level of Traffic Stress (LTS) 2 or below, which is comfortable to a beginner adult bicycle rider. Low stress access was identified to select destinations including:

- **Transit:** the Pleasant Hill and Dublin/Pleasanton BART stations directly connect to the trail and other BART stations could be connected in the future. Several bus transit routes also have stops that may provide connections to the Iron Horse Trail.
- **Schools:** 17 schools are immediately adjacent to the trail and many others are served by the trail. The Iron Horse Trail provides connectivity for 24 public schools that have catchment areas that overlap the trail in a significant way.
- **Parks:** Eight parks are within 1,000 feet of the trail and an additional 9 parks are within a 1/2 mile of the trail.
- **Employment centers:** areas like Bishop Ranch in San Ramon (600 companies and growing) and Contra Costa Centre Transit Village in Walnut Creek (over 6,000 employees) are well served by the trail as are many smaller employment areas in the region.

- **Commercial areas:** the trail crosses through downtown San Ramon, Danville, and unincorporated Alamo. The Contra Costa Canal Trail provides a connection to downtown Pleasant Hill and connections could be made to downtown Concord and Walnut Creek. Several shopping centers lie directly adjacent to or within a short distance of the trail, providing access to services, retail business, and other similar opportunities.

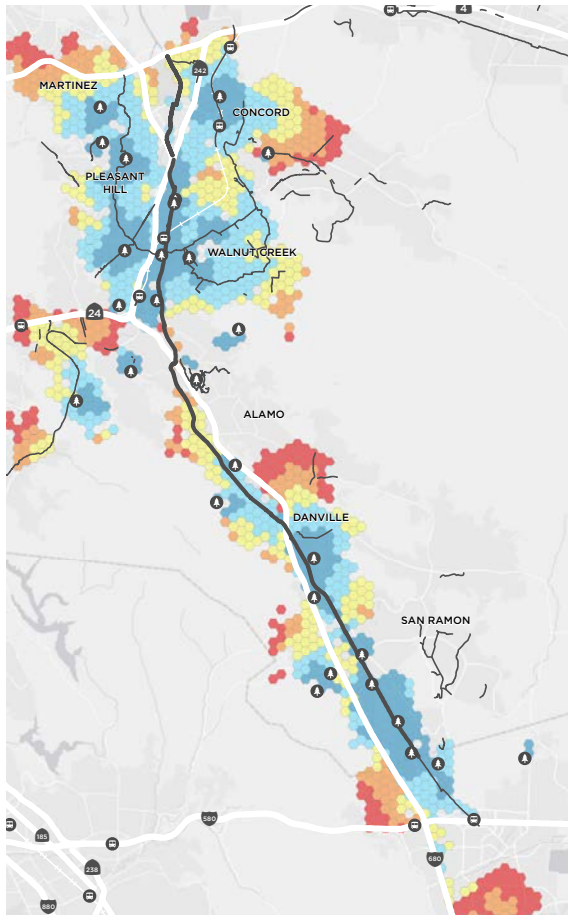
Access to the Trail

Sixty formal access points connect the trail to residential neighborhoods, retail centers, downtowns, and parks. In addition to these formal access points, numerous informal access points such as private access points to individual homes exist along the corridor.

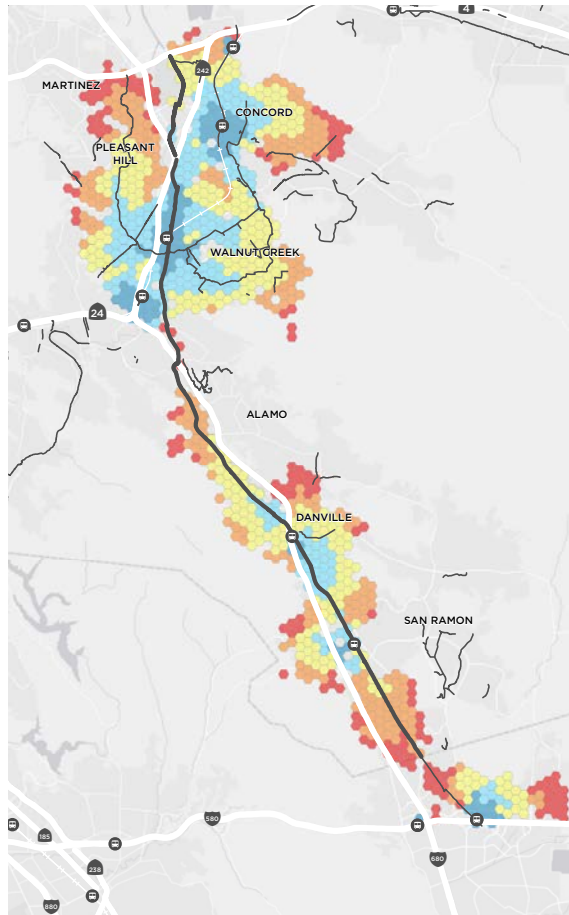
Amenities at Access Points

Amenities along the existing trail are scarce. Small staging areas with and without parking are sporadic along the corridor. Shade structures with seating are found adjacent to the trail within San Ramon, and there is enhanced greenway and linear park space north of the Pleasant Hill BART station. The San Ramon Transit Center and Hemme Park have restrooms and water open to the public and are directly adjacent to the trail, and there are seven restrooms at public park facilities less than a quarter mile from the trail (three in San Ramon, two in Danville and two in Walnut Creek).

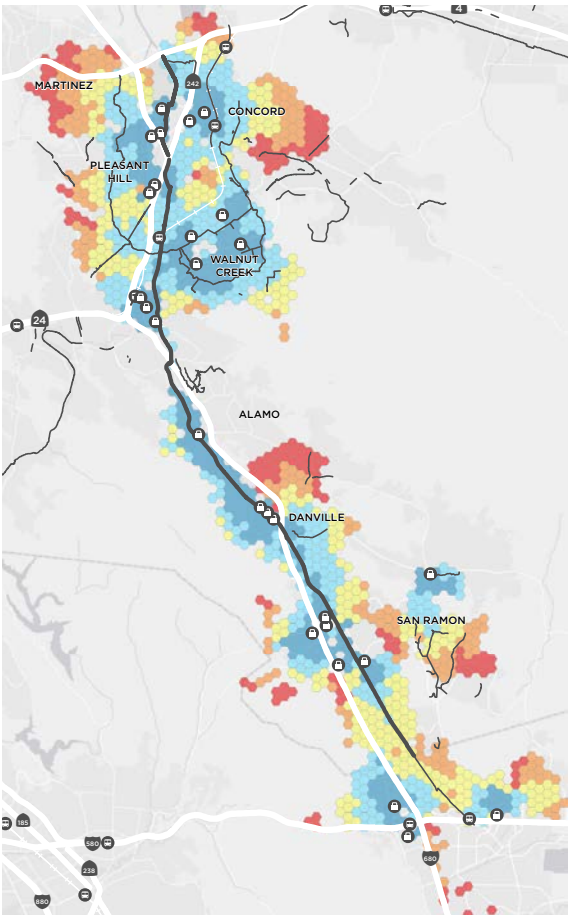
Map 3 **Park Accessibility** 🚶



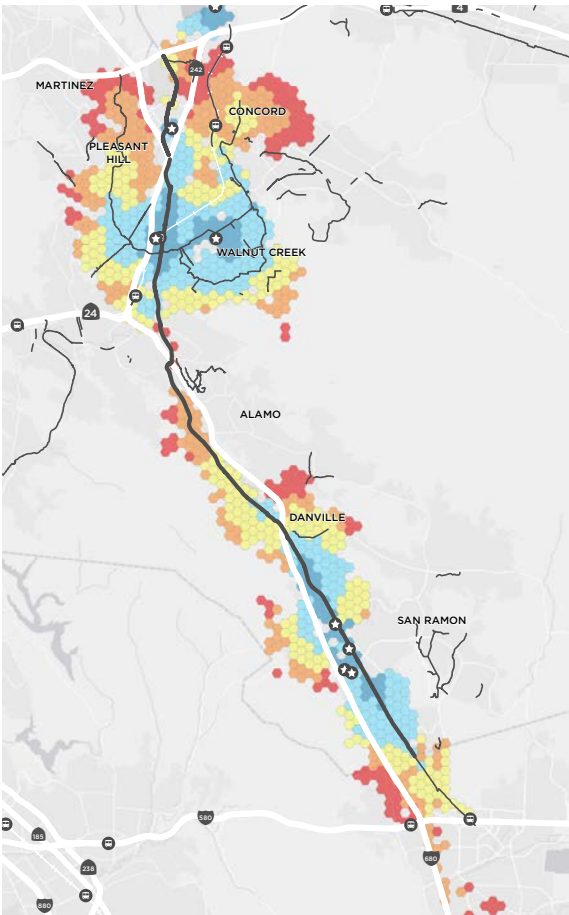
Map 4 **Transit Accessibility** 🚇



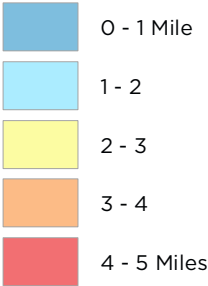
Map 5 **Shopping Accessibility** 🛒



Map 6 **Office Accessibility** ⭐



**Network Distance to
Nearest Point of Interest**



0 1 2 MILES



DESTINATION TYPES

Each segment has a variety of destination types and quantities. Identifying opportunities to enhance or add connections to education, employment, and recreation centers will build on the existing importance of the Iron Horse Trail's role in connecting the region. Understanding where and what types of destinations are along the trail, as well as where existing access points are located, will impact where and what types of new access points might be appropriate.

- **Lower need:** Segments with comparably low-density housing and few other destination types may have less need for frequent access points and amenities.
- **Medium need:** Segments with moderate density housing and other destination types may have some need for frequent access points and amenities.
- **Higher need:** Segments with high density housing, commercial, employment, educational and recreational destinations may have higher need for frequent access points and amenities.

CONNECTIONS

Reviewing the region's active transportation network reveals the importance and potential that the Iron Horse Trail holds in enhancing regional connectivity. There are a number of existing and planned regional connections along the existing trail (see Table 1 and Map 7). Segments were evaluated based on their existing regional and local bikeway connections, as well as their potential to connect to planned

bikeways. Segments with a greater number of existing and planned regional connections may have a higher priority for connectivity improvements. Segments with lower numbers of existing or planned bikeways are considered to have a higher need for improvement.

Existing and Planned Regional Connections

Segments with few or no existing or planned regional connections are categorized as having lower needs, while segments with a substantial number of connections are categorized as having higher needs.

- **Lower needs:** Few or no existing or planned regional connections
- **Medium needs:** Some existing or planned regional connections
- **Higher needs:** Several existing or planned regional connections

Existing Bikeways

Segments' existing bikeways were evaluated by frequency of existing bikeway per half mile. Since the segments have different lengths, a ratio was used to compare segments. Segments with fewer numbers of existing bikeways may be considered to have higher need for network improvements.

- **Lower need:** > 1.5 existing bikeways per half mile
- **Medium need:** > 0.5 and < 1.5 existing bikeways per half mile
- **Higher need:** < 0.5 existing bikeways per half mile

Table 1 Existing and Planned Regional Connections

Segment	Connections
1	Future trail extension to connect to Bay Trail to the north; Future trail connection to the Delta de Anza Regional Trail; Willow Pass Rd and Concord Ave future Class II improvements to connect to Downtown Concord; Concord BART and future Class I along State Route 242
2	Monument Corridor Trail (City of Concord); Walnut Creek Trail (Planned)
3	Bancroft Rd Class II, Walnut Creek Trail (Planned)
4	Pleasant Hill BART, Treat Ave Class II (Proposed)
5	Contra Costa Canal Trail
6	None
7	Ygnacio Valley Rd Class III (approved/signed sidewalk use) west to BART and east to Class III sidepath; Ygnacio Canal Trail to Contra Costa Canal Trail and Mt Diablo State Park; Lincoln Ave connection to Downtown/Main Street; Newell Ave to Mt Diablo/Olympic Blvd connection to Lafayette-Moraga Trail
8	Tice Valley Class I (Proposed) to Olympic Blvd connection to Lafayette-Moraga Trail, Danville Blvd Class II
9	Stone Valley Rd Class II, Danville Blvd Class II
10	Danville Blvd Class II
11	Danville Blvd Class II to El Cerro Blvd/Diablo Rd to Mt Diablo State Park
12	Danville Blvd/San Ramon Valley Blvd Class II
13	Sycamore Valley Class II to Camino Tassajara Class II/Class I
14	Bollinger Canyon Rd Class III/Class II (approved/signed sidewalk use), Alcosta Blvd Class III, Crow Canyon Road Class III/Class II; Norris Canyon Class II; City Center San Ramon (Transit); San Ramon Transit Center
15	Montevideo Dr Class III, San Ramon Cross Valley Trail Class I; Pine Valley Rd Class III; Alcosta Blvd Class III; Dublin/Pleasanton BART

Planned Bikeways

Segments' planned bikeways were evaluated by frequency of planned bikeway per half mile. Since the segments have different lengths, a ratio was used to compare segments. Segments with fewer numbers of planned bikeways may be considered to have a higher need for network improvements.

- **Lower need:** > 1.5 planned bikeways per half mile
- **Medium need:** > 0.5 and < 1.5 planned bikeways per half mile
- **Higher need:** < 0.5 planned bikeways per half mile

INTERSECTIONS

Trail Convenience

There are 45 roadway crossings along the length of the Iron Horse Trail corridor in Contra Costa County. These include arterial, collector controlled, collector uncontrolled, local, and grade separated crossings. Map 7 shows the locations of these crossings along the trail.

Segments of the trail with more frequent or challenging intersections are considered to be less convenient for users and may have a higher need for improvement.

A point system was developed to rate different intersection types to determine the level of need of each segment. Arterial road crossings require trail users to stop at a signalized intersection, causing delay, and have a lower degree of comfort. Therefore, arterial crossings were assigned the highest number of points (5). Collector road crossings were assigned 3 points. Local road crossings require users to make a stop but are generally comfortable, therefore they were assigned a lower value (1). Some crossings require users to divert off of the trail. Those cases were assigned an additional 1 point. Finally, grade separated crossings do not result in inconvenient use of the trail so they were assigned 0 points. Points were summed along each segment and used to rank segments by level of convenience, as described below:




-  **Most Convenient** (≤ 5 points)
-  **Convenient:** (6-10 points)
-  **Least Convenient:** (>10 points)

Table 2 Trail Convenience

Segment	# of Arterial Crossings (5 Points)	# of Collector Crossings (3 Points)	# of Local Crossings (1 Points)	# of Intersection Diversions (1 Points)	# of Grade Separated Separated Crossings (0 Points)	Trail Convenience
1				1	2	
2	1			1	1	
3	1	1	1			
4		1			1	
5			1			
6			1			
7	3			1	1	
8		2	4	1		
9		2				
10		1	3			
11		1	2			
12	1	2		1		
13	1	3	1			
14	3	1				
15	1	2				

Existing Crossing Type

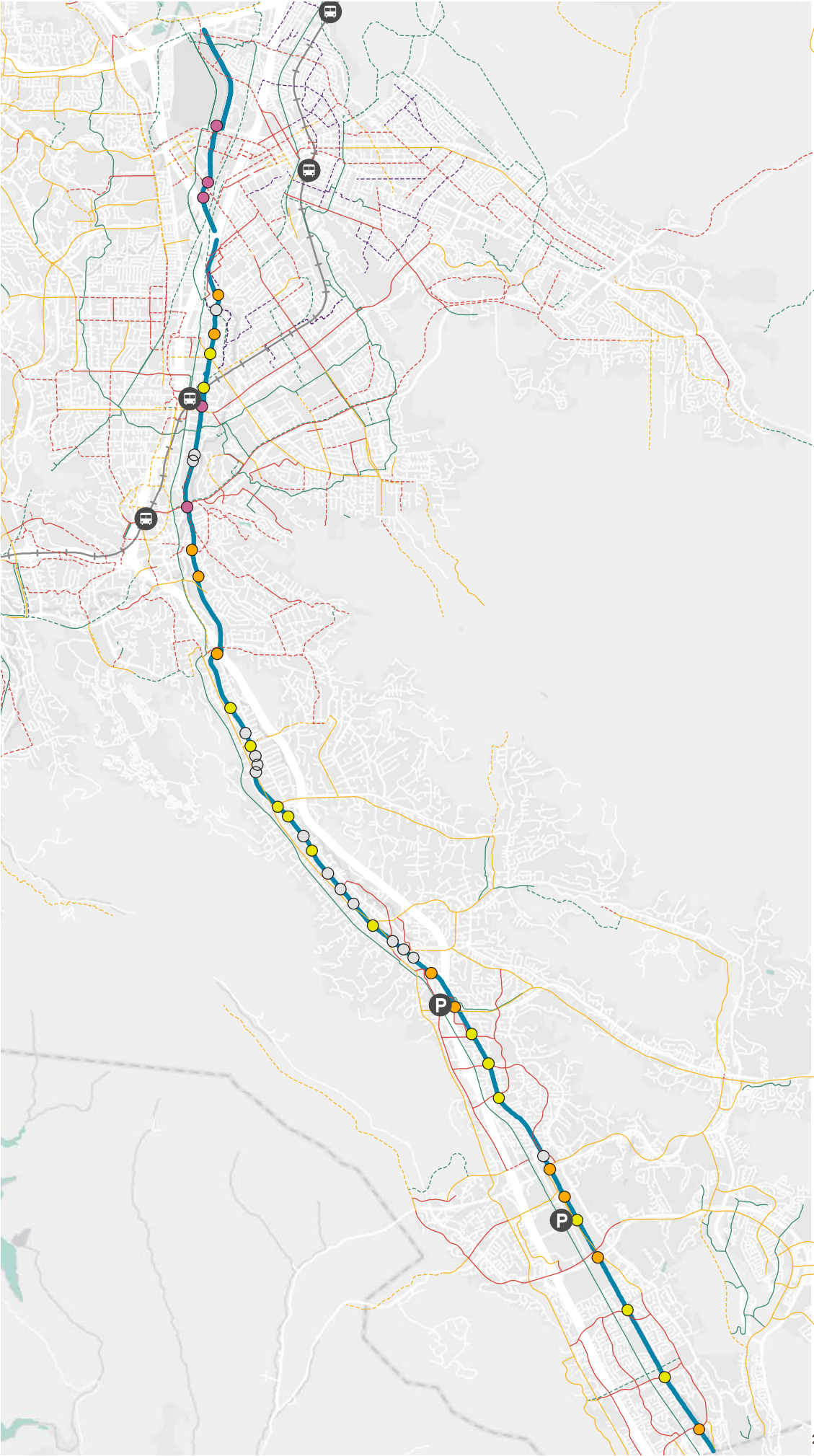
- Arterial Crossing
- Collector Crossing
- Local Crossing
- Separated Crossing
- Iron Horse Trail
- BART Station
- Park and Ride

Existing Bikeways

- Class I Shared-Use Path
- Class II Bicycle Lane
- Class III Bicycle Route

Proposed Bikeways

- Class I Shared-Use Path
- Class II Bicycle Lane
- Class III Bicycle Route
- Class IIIB Bicycle Boulevard



Intersection Safety

In the five most recent years with data available (2013-2017), there were 203 bicycle and pedestrian collisions on local streets within a quarter mile of the trail and 761 within 2 miles. There were 14 bicycle and pedestrian fatalities within 2 miles of the trail. Table 3 identifies the number of bicycle and pedestrian collisions by city and distance from the trail for the five cities and unincorporated areas.

Identifying the need for safer crossings and access routes to the Iron Horse Trail is a key goal of this project. There were 43 injuries of bicyclists or pedestrians within 100 feet of the trail. Locations with 3 or more bicycle or pedestrian injuries are shown in Table 4.

For the needs analysis, intersection safety was ranked based on the reported bicycle or pedestrian involved crossing injuries on the following scale:



- **Lower need:** Less than 3 crossing injuries
- **Medium need:** 3 to 4 crossing injuries
- **Higher need:** 5 or more crossing injuries

Table 3 Collisions

City	Miles from Trail				Total
	0.25	0.5	1	2	
Concord	35	27	108	87	257
Pleasant Hill	13	2	4	8	27
Walnut Creek	5	50	40	23	118
Danville	30	10	27	14	81
San Ramon	44	4	12	15	75
Unincorporated County	76	67	36	24	203
Total	203	160	227	171	761

Table 4 Bicycle or Pedestrian Involved Crossing Injuries

Location	Injuries
Treat Blvd & Jones Rd	11
Monument Blvd & Mohr Dr	9
South Broadway & Newell Ave	4
Hemme Ave	3
Sycamore Valley Rd & Camino Ramon	3
Willow Pass Rd	3
Ygnacio Valley Rd	3
Total	36

CONSTRAINTS/BARRIERS

Right-of-Way (ROW) Width

The ROW width that the Iron Horse Trail travels through varies throughout the corridor from nearly 300 feet in its widest area near Hookston in Pleasant Hill to less than 20 feet in its most constrained areas through the Broadway corridor in Walnut Creek. Throughout the majority of the trail the ROW width allows for room for future trail improvements. However, pinch points caused by narrow rights-of-way pose challenges to trail design continuity. A variation of cross sections are required to address the changes along the trail. ROW widths are broken down into four basic categories:

- **Constrained:** <25'
- **Narrow:** 25'-50'
- **Wide:** 50'-100'
- **Very wide:** >100'

These categories highlight whether segments have opportunities for certain trail improvements or are constrained due to lack of available space.

Physical Constraints

In addition to available ROW, certain elements along the trail present a barrier to comfortable, safe user travel, or possible impacts to future trail improvements. Examples of physical constraints include existing infrastructure, nearby water features, difficult intersections, and challenging landscape features. Different from constraints posed by narrow ROW, physical constraints can be solved through unique design solutions. Higher level constraints may require a higher



level of capital investment and coordination.

Physical constraints are summarized into three basic categories:

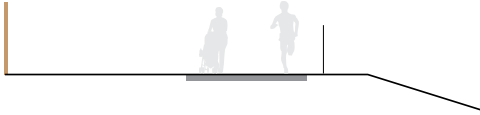
- **Major:** includes significant physical constraints such as existing infrastructure adjacent to the trail, narrow bridges, or challenging landscape features
- **Minor:** includes some physical constraints such as frequent intersections
- **Unconstrained:** does not include any physical constraints

For example, Segment 13/Danville is one that can be summarized as minimally constrained. This segment is characterized by wide ROW width, no physical obstructions, and direct approaches to roadway crossings. Segment 7/Walnut Creek, however, has many challenging constraints including the narrow ROW along the South Broadway corridor, the alignment jog at Newell Avenue, and the infrastructure surrounding the channelized Walnut Creek.



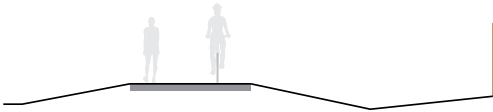
VERY WIDE

A portion of the corridor faces few constraints, with 50 to 100 feet of generally flat right of way available. Relevant sections of this type are found near Walnut Creek and Alamo.



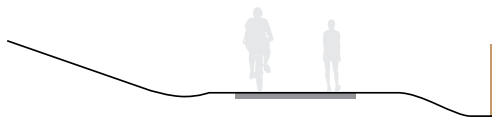
WIDE: TRAIL ON CREEK BANK

Another common trail condition is when the trail follows the top of bank along a naturalized creek. This is primarily found in the northern section of the trail near Concord where the trail parallels Walnut Creek.



WIDE: RAISED RAIL BED

Portions of the trail run along a raised rail bed with moderate drainage ditches along portions of the corridor. These conditions are found in most of San Ramon and Danville.



NARROW: ADJACENT TOPOGRAPHY

While most of the trail is in generally flat topography, a small portion (0.8) miles in Danville is adjacent to topography that may limit any additional trail width.



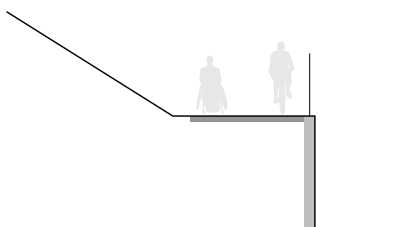
NARROW: ADJACENT COMMERCIAL

For 2.3 miles in parts of Danville and San Ramon, commercial businesses are directly adjacent to the trail. In Downtown Danville, the trail narrows to approximately 30 feet in width.



CONSTRAINED: LIMITED RIGHT-OF-WAY

For just under a mile in south Walnut Creek, South Broadway and the adjacent soundwall narrow the trail corridor width to approximately 20 feet.

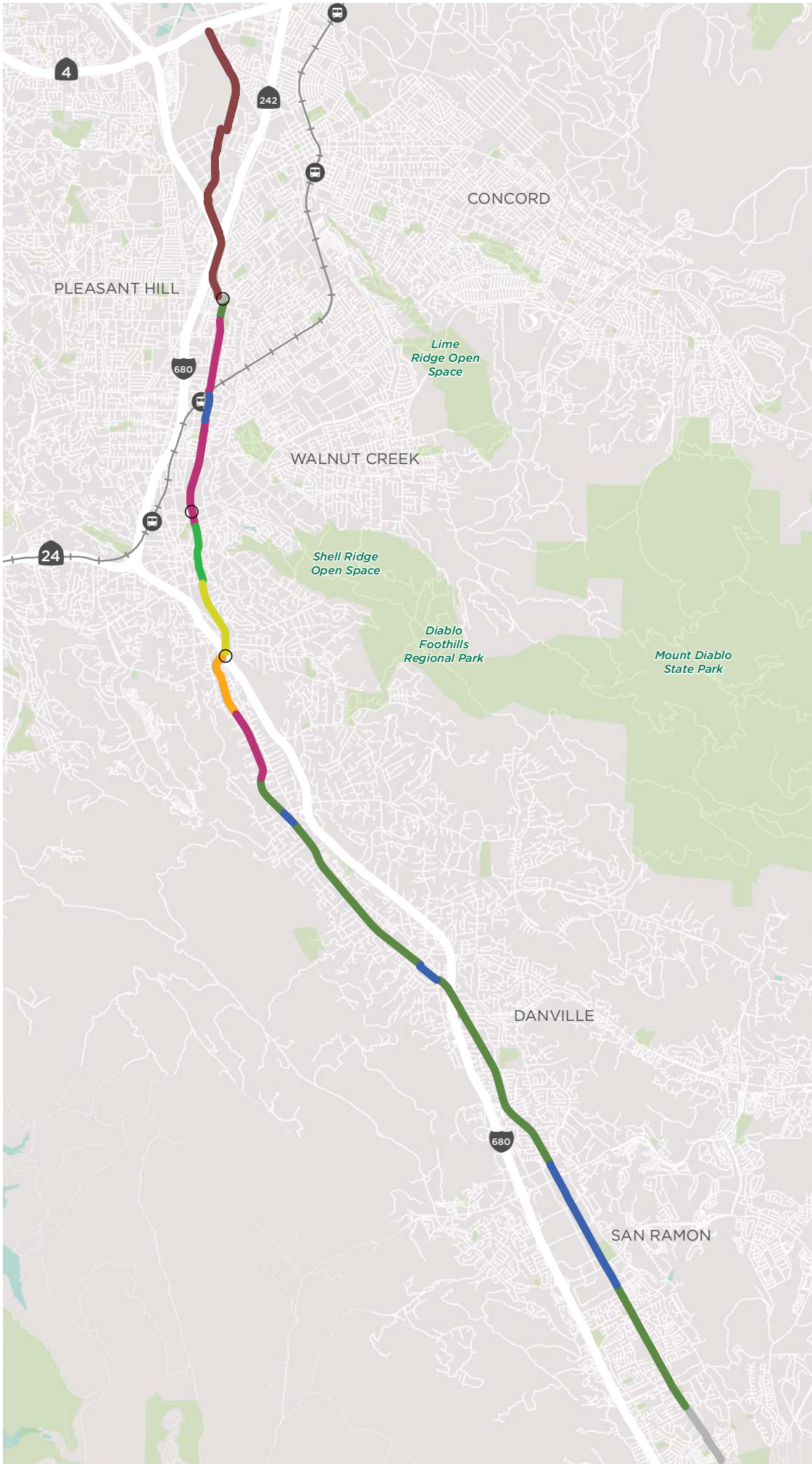


CONSTRAINED: CHANNELIZED CREEK

The trail corridor is approximately 25 feet wide adjacent to the channelized creek between Newell Avenue and Ygnacio Valley Road in Walnut Creek (0.7 miles).

Corridor Conditions

- Very Wide**
- Wide:** Trail on Creek Bank
- Wide:** Rasied Rail Bed
- Narrow:** Adjacent Topography
- Narrow:** Adjacent Commercial
- Constrained:** Limited Right of Way
- Constrained:** Channelized Creek
- Iron Horse Trail
- BART Station
- Park



Utilities

There are a number of utilities that are located within and adjacent to the Iron Horse Trail corridor. These include both overhead power lines as well as underground utilities. Primary utility easements along the corridor are highlighted below.

- A 10 to 36-foot Contra Costa County Sanitary District easement traverses the majority of the corridor.
- A 10-foot gas pipeline easement, granted to SFPP/Kinder-Morgan, runs along the majority of the corridor.
- Intermittent PG&E easements for underground vault access or overhead power lines are present throughout the corridor.
- Sporadic storm drain easements perpendicular to the trail and East Bay Municipal Utilities District water lines are present within the corridor.

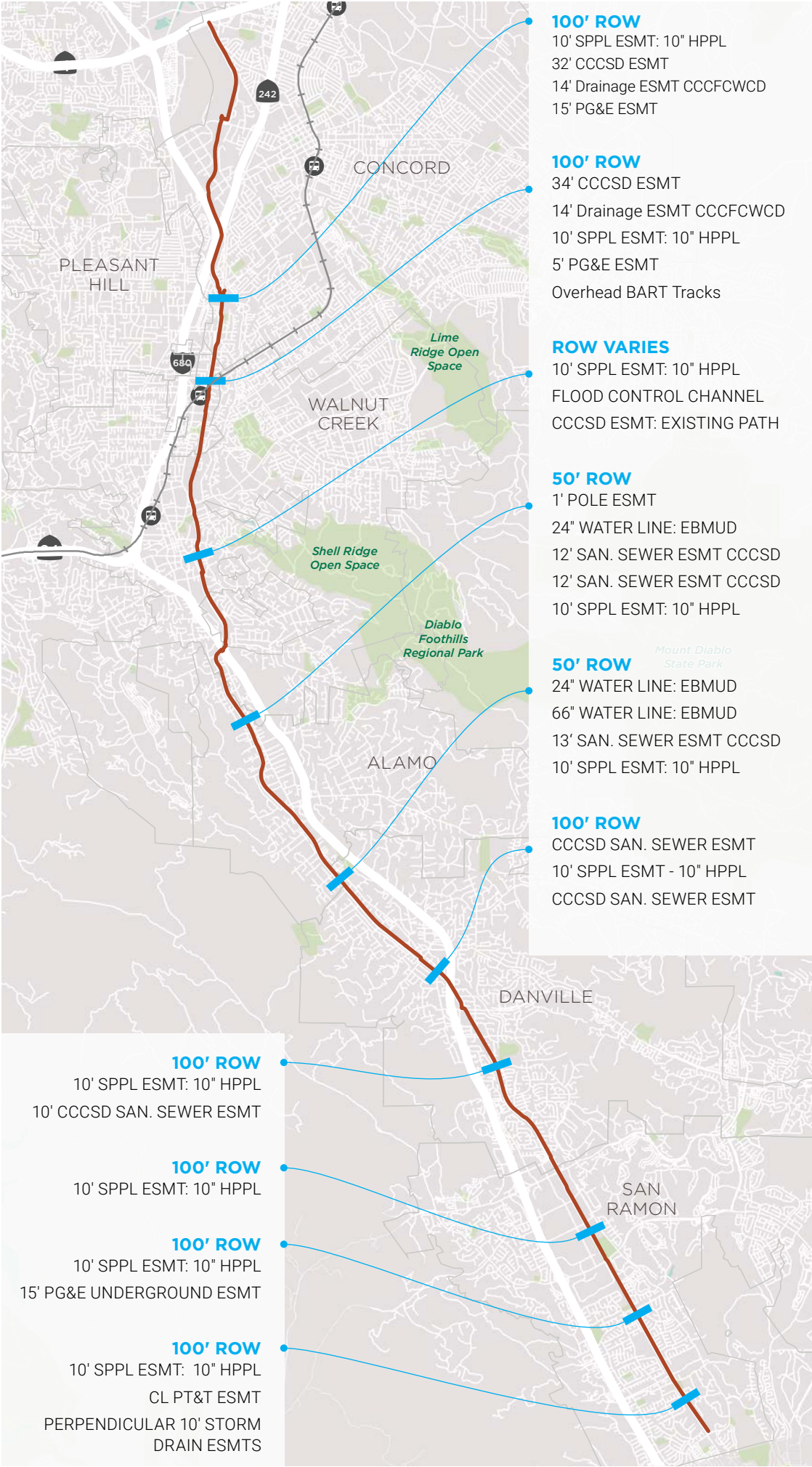
Map 9 shows example locations of the types and sizes of utilities that exist within the Iron Horse Trail corridor ROW. Available survey provides boundary information for the utilities south of Monument Boulevard, but does not provide information regarding depth. Confirmation of the depth of existing utilities requires further study.

Recommendations outlined in this Study are considered feasible based on the current understanding of the location of utilities within the corridor. Potential shallow utility conflicts could be mitigated by trail improvements built on fill to minimize excavation.

Notes: Only utilities within the ROW are listed on this map

The utilities are listed from east side of ROW to west side of ROW line

- Iron Horse Trail
- BART Station
- Park



WHAT DOES THE COMMUNITY WANT?

Community-Identified Needs

Community feedback was received throughout the majority of the corridor. In order to identify the areas along the corridor that the community felt most strongly needed improvements, comments were summarized by number of comments/likes, type, and location and organized by segment. The segments were then ranked based on the following criteria:

Less Concerned: had comments spread throughout the area, without a particular theme or trend.

Somewhat Concerned: had similar trends of comments with lower repetition.

Most Concerned: had a high frequency and repetition of comments noting where there are deficiencies along the trail, such as noting unsafe or difficult intersections to navigate.

While community-identified needs were summarized based on both in-person and online engagement results, Map 10 highlights the comments received through the interactive webmap described in Chapter 1.

Some themes that emerged include:

PROVIDE USER SEPARATION ALONG THE TRAIL

"This area provides a huge safety concern especially for the many school age children that use these access routes to go to and from numerous schools in the area"

INCREASE THE NUMBER OF ACCESS POINTS

"There is no easy access from the large park and ride and the trail. This limits people from driving part way and then using the trail either walking or biking to their destination"

PRIORITIZE TRAIL USERS AT ROAD CROSSINGS

"[Traffic] lights definitely favor cars; long, long wait times at some times of the day for lights to allow pedestrians/ cyclists to cross. Tempts people to cross against the lights rather than wait"

"There needs to be a foot bridge over Monument Blvd. Not only is this intersection dangerous, but it also impedes the flow of traffic"

ADD AMENITIES SUCH AS LIGHTING, SHADE, AND BIKE STATIONS

"This section of the trail is a very long and dark corridor confined by a concrete wall fence along the canal. Add lighting to deter people from loitering and show trail users what they are walking into. Murals along the block wall and the back of Safeway could help activate this sad looking area"

"Need better wayfinding signs that are easy to read at a distance or while riding a bike"

IMPROVE BICYCLE AND WALKING CONNECTIONS TO THE TRAIL

"I have two young children and we need a safer route to get to the trails for the bike rides we often take to enjoy the local parks and restaurants located near the trail"

Map 10 Public Input Web
Map Results

Input on Destinations,
Barriers, Routes, and
Trail Improvements

- 1 - 5
- 6 - 10
- 11 - 25
- 1 Comment
- 2 - 4 Comments
- 5 - 9 Comments
- BART Station
- Park & Ride
- Iron Horse Trail

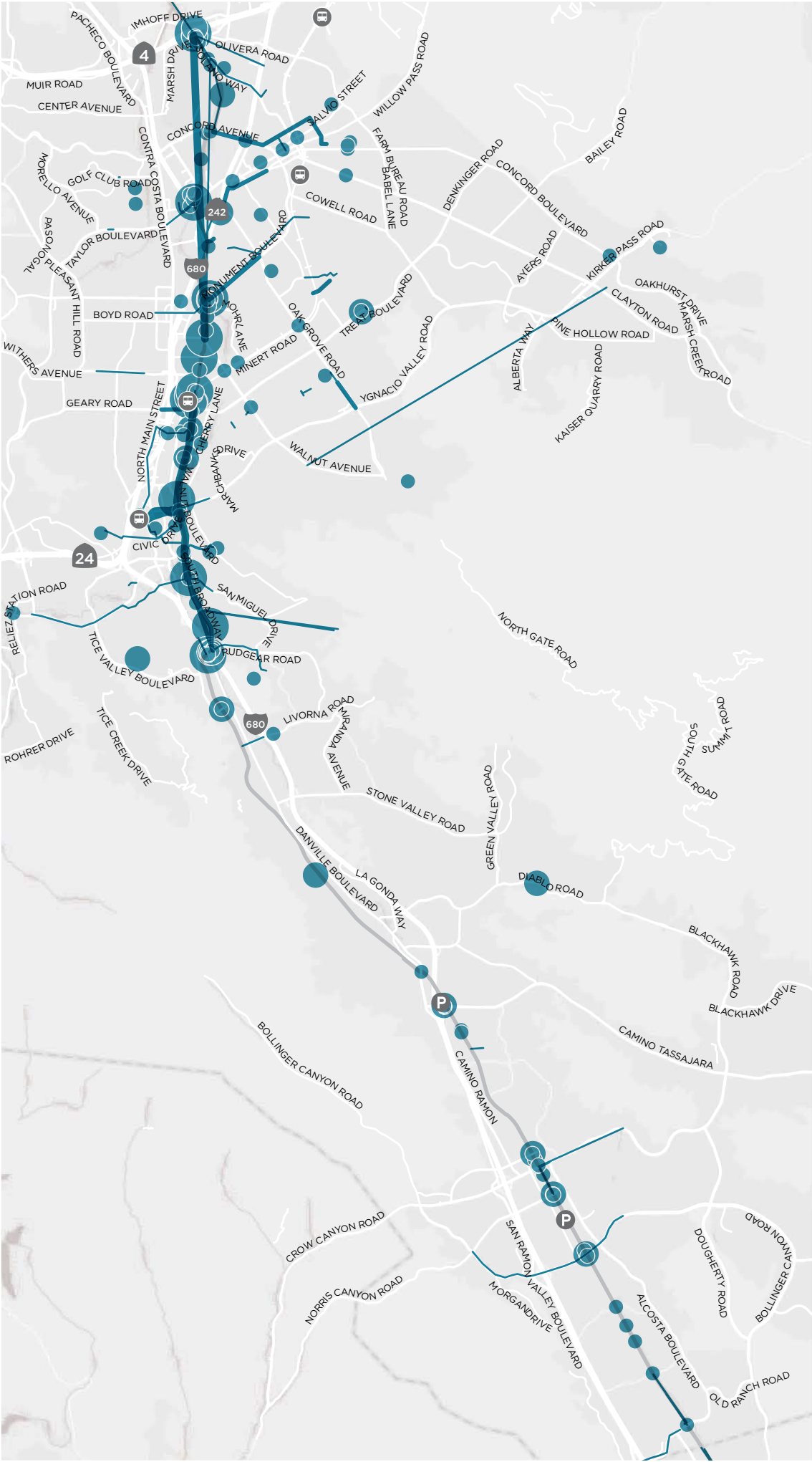

















Table 6 Needs Summary

DESCRIPTION					USER DEMAND
#	Segment	Start/End	Length (Miles)	Land Use	Estimated Daily Trip Demand
1	Concord	From Marsh Dr to Willow Pass Rd	2.50		
2	Concord	Willow Pass Rd through Monument Blvd	1.50		
3	Pleasant Hill/CCC	From Monument Blvd to Las Juntas Way	1.80		
4	Pleasant Hill/CCC	Las Juntas Way through Jones Rd	0.40		
5	Pleasant Hill/CCC	From Jones Rd through Walden Rd	0.50		
6	Walnut Creek	From Walden Rd to Ygnacio Valley Rd	0.75		
7	Walnut Creek	Ygnacio Valley Rd through Danville Blvd	1.50		
8	Alamo	From Danville Blvd to Stone Valley Rd	2.40		
9	Alamo	Stone Valley Rd to South Ave	0.50		
10	Alamo	South Ave through Wayne Ave	1.00		
11	Danville	Wayne Ave through Love Lane	1.00		
12	Danville	From Love Lane through San Ramon Valley Blvd	0.70		
13	Danville	From San Ramon Valley Blvd through Fostoria Way	3.00		
14	San Ramon	From Fostoria Way to Montevideo Dr	2.40		
15	San Ramon	Montevideo Dr through Alcosta	1.90		

LEGEND

Land Use



ACCESS NEEDS	CONNECTIONS			INTERSECTIONS		CONSTRAINTS / BARRIERS		COMMUNITY FEEDBACK
Trip Destination	Regional Connections	Existing Bikeways	Planned Bikeways	Trail Convenience	Intersection Safety	ROW Width	Physical Constraints	Public Perception
●	●	●	◐	○	○	Very wide	Major	●
○	◐	●	◐	◐	●	Very wide	Major	◐
◐	◐	●	◐	◐		Very wide	Major	◐
●	◐	◐	○	○	●	Wide	Minor	○
◐	●	◐	●	○	○	Very wide	Un-constrained	◐
●	○	●	◐	○	○	Very wide	Minor	◐
●	●	◐	○	●	●	Constrained	Major	●
◐	◐	●	●	●	○	Wide	Minor	◐
●	◐	●	●	◐	○	Narrow	Minor	◐
○	◐	●	●	◐	◐	Narrow	Minor	◐
◐	◐	●	●	○	○	Narrow	Minor	◐
●	◐	◐	●	●	○	Constrained	Major	◐
●	◐	◐	○	●	◐	Very wide	Minor	◐
●	●	●	●	●	○	Wide	Minor	●
◐	●	◐	●	●	○	Very wide	Minor	◐

Need



INCREASING NEED

Demand



INCREASING DEMAND





03 What Does the Future of the Iron Horse Trail Look Like?

There are a number of design tools that can be used to improve the physical characteristics of the trail which increase user safety and comfort while also improving connectivity and access.

These proposed design tools take into consideration ways in which the quality of the trail experience can be enhanced for existing users, as well as the way in which new users, especially those using some of the new micromobility modes, might interface with the trail.

To address the user comfort, connectivity, and access needs described in the previous chapter, potential trail improvements were categorized into three main types:

- Trail corridor improvements,
- Intersection improvements, and
- Access enhancements.

All three main types of trail improvements are impacted and informed by trail users and demand. These factors are described on the following pages.

There are a variety of ways to implement each type of improvement, and the appropriate design tools depend on the context of the segment, intersection, or access point in question. Examples of potential interventions are included in the following pages, which highlight best practices and design precedents utilized for other successful trails.

Implementing some of the design tools outlined in this chapter will help ensure the trail is designed so that it can accommodate all potential user groups—from those who use the trail today to future modes that may not yet exist.



Users & Demand

Current Trail Users

The current Iron Horse Trail is designed for users of all ages and abilities. Existing trail users include people walking, people running, people rolling (riding skateboards, rollerblading, and rollerskating), and people bicycling. Additional existing user groups of the trail include people using electric bicycles, people riding horses, and people with disabilities. These users and their needs are outlined in Table 7.

PEOPLE USING ELECTRIC BICYCLES

Electric bicycles, commonly referred to as e-bikes, are a relatively new, but increasingly important mode of sustainable transportation. E-bikes benefit people who are interested in bicycling but may be limited because of physical fitness, age, disability, or because their trips are too far or the terrain too difficult to be completed by a regular bicycle. E-bikes resemble regular bicycles, but incorporate an electric motor to assist users while pedaling. E-bikes enable users to make trips that are 22% longer than trips using regular bicycles.

As of March 3, 2019, Class 1 e-bikes with a speed limit of 20 mph that must be pedaled to operate, and Class 2 e-bikes with a speed limit of 20 mph that can be operated by using a throttle are allowed on select trails managed by the East Bay Regional Parks District (EBRPD), including the Iron Horse Trail.

PEOPLE RIDING HORSES

Equestrians travel along the corridor, typically along the land adjacent to the paved trail. Equestrians are required to clean up after their horses on paved trails.

PEOPLE WITH DISABILITIES

The term “people with disabilities” includes individuals with physical or cognitive impairment, as well as those with hearing or visual limitations. According to the Centers for Disease Control and Prevention (CDC), in 2016, one out of every four Americans had a disability that limits their mobility.









Additionally, nearly everyone will experience a disability at some point in their life, whether through injury, aging, or other circumstances. Trails that are physically separated from motor vehicle traffic, such as the Iron Horse Trail, provide a safe and comfortable place for people with disabilities to enjoy.

Potential Trail Users

PEOPLE USING MICROMOBILITY DEVICES

Micromobility devices such as e-scooters and dockless bikes and e-bikes can offer an efficient commute mode for trail users, and are popular rental options in areas with dense employment or residential centers. Micromobility devices can also be used for the first-last mile trip to and from transit stations. Maximum speeds typically range from 15-20 mph and maximum travel distances typically range from 15-40 miles. Implementing shared mobility options for the Iron Horse Trail will be most effective if they are also implemented in adjacent communities. Creating a regional e-bike/e-scooter share system will ensure that micromobility devices can provide a seamless connection between the trail and surrounding communities.

Table 7 Trail users, abilities, and needs

	User Type	Speed of Travel	Path Needs
	WALKERS	1 to 3 mph	<ul style="list-style-type: none"> • Need wider areas for traveling in groups or walking dogs. • Comfortable on sidewalks and paths that are grade separated from vehicles and fast active users.
	RUNNERS	5 to 9 mph	<ul style="list-style-type: none"> • Prefer off-street paths with consistent lighting. • Fast runners may prefer to share space with cyclists during periods of high pedestrian traffic.
	WHEELCHAIR USERS	1 to 3 mph (non-motorized) 3-5 mph (motorized)	<ul style="list-style-type: none"> • Comfortable on sidewalks and paths that are grade separated from vehicles and fast cyclists.
	EQUESTRIANS	3 to 8 mph (trot)	<ul style="list-style-type: none"> • Prefer a soft surface tread separated from people riding bicycles. • Comfortable along open space areas along the Iron Horse Trail Corridor.
	CASUAL AND NEW CYCLISTS	6 to 12 mph	<ul style="list-style-type: none"> • Prefer riding on off-street facilities. • Compared to experienced cyclists, casual cyclists are more likely to utilize rest areas.
	EXPERIENCED CYCLISTS	12 to 25 mph	<ul style="list-style-type: none"> • Very experienced cyclists may choose to use roadways over paths. • Most prefer fewer crossings, separated paths, and room to pass slower cyclists.
	E-BIKE USERS	16 to 20 mph	<ul style="list-style-type: none"> • Class I and II allowed on IHT. Electric Tricycles; Electric Cargo Bikes; and Pedal-less E-bikes • Most prefer fewer crossings, separated paths, and room to pass slower cyclists. • Opportunities for shared mobility docking stations with charging stations.
	E-SCOOTER USERS	Up to 20 mph	<ul style="list-style-type: none"> • Stand-up and seated versions, e-skateboards, hoverboards, balance board • Access to on-street corrals, racks in the furnishing zones, shared mobility parking zones

ANTICIPATING CHANGES IN TRANSPORTATION TECHNOLOGY AND SERVICES

Technology is quickly changing the way people travel. Mobile devices are making it easier to check transit status in real-time, call a ride sharing service, or access a bike share system. They will also create opportunities to integrate modes, making it easier to use more than one mode to complete a trip. Additionally, shared autonomous vehicles (SAVs) vehicles may soon be a regular part of travel options for individuals and transit services. New technologies could be used to expand travel options and reduce vehicle trips in the surrounding communities by utilizing the Iron Horse Trail Corridor.

Trail Configuration Based on User Demand

In order to properly plan for and serve different trail users, it is important to first understand potential user demand and expected use of the trail. Understanding potential user demand can guide design decisions about trail width and the potential separation of users on the trail. For example, segments of the trail that have particularly high user demand may require a wider, user separated facility than segments with lower demand in order to provide a high level of service and comfort for trail users of all ages and abilities.

Measuring the Level of Service (LOS) of a trail can be done by using the Federal Highway Administration's Shared-Use Path Level of Service (SUPLOS) Calculator, which analyzes the interplay between trail width and user demand. The tool enables planners and designers to understand the current level of service of a trail given its current use, as well as its ability to serve users in the future if user demand were to increase. With the SUPLOS model, if the expected user demand of a trail is to increase, the trail width must

increase in order to provide the same level of service for trail users. Separating users on the trail will always provide a higher level of service, and is considered to be an appropriate design option for areas with high demand.

The FHWA SUPLOS Calculator is scored on a scale of A-F, with A being considered "Excellent" and F "Failing". An "A" score indicates that the trail provides a high quality user experience, has optimum conditions for individual bicyclists, and retains enough space to accommodate more users of all modes. An "F" score signals that the trail provides a poor user experience for trail users and has frequent and significant user conflicts.

A second tool that can be used to understand trail width, user demand, and user comfort is the Level of Comfort (LOC) tool. This tool utilizes LOS as a weighted factor, but includes other additional factors that impact user comfort such as solar index, slopes, vehicle stress, context & views, and perceived crime risk. While the results of the tool still show that a wider trail will provide a higher level of service and comfort for trail users, it provides a way to improve user comfort in the event that existing corridor conditions or cost limits preclude the trail from being as wide as it should be to achieve high LOS.

Both the LOS and LOC tools can be used to develop different trail widths and configurations that serve different users. Figure 1 shows how trail width and configurations transition when expected demand and the presence of different user groups with more variable speeds change. For example, as a trail starts to see higher volumes of users, a wider trail with separated paths for people rolling and people walking is necessary to maintain an optimal LOS score. Figure 1 also shows how trail design needs change with the introduction of Neighborhood Electric Vehicles (NEV), which is not currently a projected user type of the Iron Horse Trail.

The existing Iron Horse Trail is a 10-foot-wide shared-use trail. Widening the trail and separating users based on speed, user type, or experience will allow the trail to accommodate a greater number of users, as well as users who are traveling at higher speeds such as those on electric bikes and electric scooters.

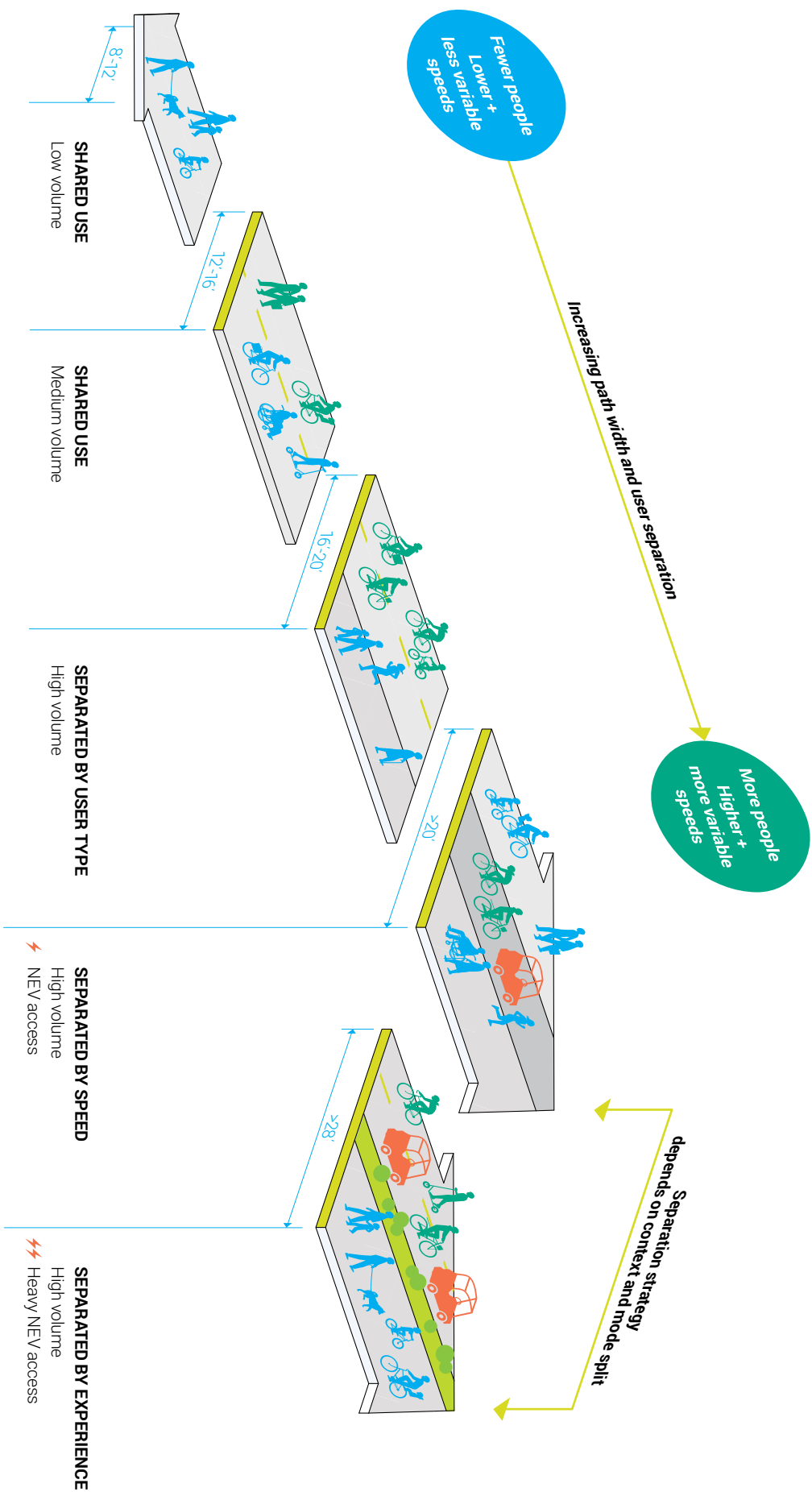


Figure 1 Path Configurations

ACCOMMODATE NEW TECHNOLOGIES

The Iron Horse Trail corridor has the potential to become a corridor for other emerging mobility modes such as SAVs. This new mode, though not yet commercial, could provide an alternative to worsening congestion patterns in the areas surrounding the Iron Horse Trail by providing a new dedicated motorized route along the corridor.

Shared Autonomous Vehicles (SAVs) Needs

There are a number of considerations and steps involved in introducing this technology-forward option to the Iron Horse Trail corridor:

1. Establish a goal for the program.

Would it be used to connect employees and employment centers to BART stations? Children to schools? Seniors or people with disabilities to key destinations and services? Having a clear goal for the SAV pilot program will help determine the appropriate route, find and allocate resources, and measure challenges and successes.

2. Understand the policy, technical, infrastructure, and operational requirements of running a SAV program.

- **Policy:** Federal and state regulations and requirements for SAV programs are constantly changing. It is important to coordinate with the National Highway Traffic Safety Administration (NHTSA), the California Public Utility Commission (CPUC), the California Department of Motor Vehicles (DMV), and the California Air Resources Board (CARB) to ensure the pilot program is adhering to all current requirements.



- **Technical requirements** include the SAV itself (vehicle, hardware, and software); parking, covered storage, and charging station; fleet automation platform and apps; Mobility on Demand (MOD) application; and a Computational Aided Dispatch (CAD)/Automated Vehicle Location (AVL) systems.
- **Infrastructure requirements** include trail widening, installation of fiber, intersection/signal improvements, striping and signage, and Dedicated Short Range Communication (DSRC).
- **Operational considerations** include the testing of the program, agency coordination, staff needs, and stakeholder partnerships.

Regional Examples

Two SAV pilot programs in the Contra Costa region have been tested to date. The first of these programs was a two-year study (2017-2019) by the Contra Costa Transportation Authority (CCTA) of low-speed, electric and autonomous EZ10 shuttles manufactured by EasyMile. The CCTA's SAV Program operated two generations of the EZ10 shuttles, and Phase 1 of the study piloted the SAVs at the GoMentum Station, an Autonomous Vehicle Proving Grounds in Concord. Phase 2 of the study operated the vehicles at the Bishop Ranch Business Park in San Ramon. CCTA continues to test at Bishop Ranch. CCTA was also recently awarded federal grant funds to implement an Automated Driving

Map 11 Potential SAV Corridor

System Demonstration Program (ADS) in Rossmore, Martinez, and along the I-680 corridor.

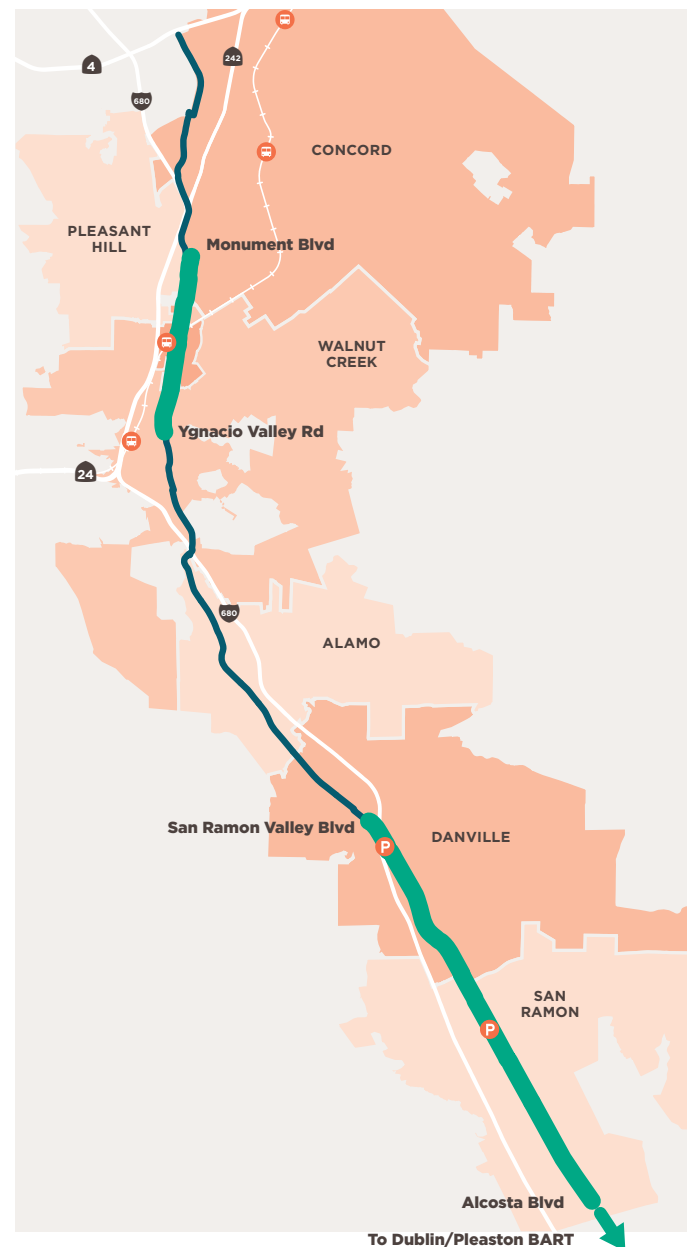
The second pilot program will be deployed by the Livermore Amador Valley Transit Agency (LAVTA) to study the viability of SAVs as a first and last mile solution to connect local residents to the Dublin/Pleasanton Bay Area Rapid Transit (BART) station.

Considerations for the Iron Horse Trail

SAVs could serve as a way to provide first/last mile connections to fixed-route transit, improve mobility options for people along the corridor, and reduce vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions. However, because it is such a new technology, there are current limitations that must be considered.

First, it is important to consider how integrating SAVs would change the existing culture and identity of the corridor. Community outreach is recommended to help identify community goals and concerns.

Second, to date, SAVs have not been tested in a naturalized environment such as the Iron Horse Trail, and could face challenges when first implemented along the corridor. Objects in their path, including other modes, are seen as a perceived obstacle and require the SAV to stop, which would increase travel time and reduce



efficiency. As the technology stands today, SAVs would require a dedicated lane to travel in.

Map 11 shows the segments along the Iron Horse Corridor that could be candidates for a pilot program. These segments connect to BART as well as employment hubs. They also have available ROW for a dedicated SAV path. Improvements to intersections would be required.

See Appendix C for more information on SAVs.

Trail Corridor

NEEDS & OPPORTUNITIES:

Trail corridor improvements greatly enhance safety, mobility, user experience, and project synergy. Wider trails with separated spaces for different user groups can make the trail feel safer and more efficient. User separated trails can accommodate increased demand and emerging technologies such as e-bikes and e-scooters, and support this Study's vision of creating a mobility spine for the region. Elements such as trail approaches to intersections, material changes, striping, and consistent lighting improve safety and user experience.

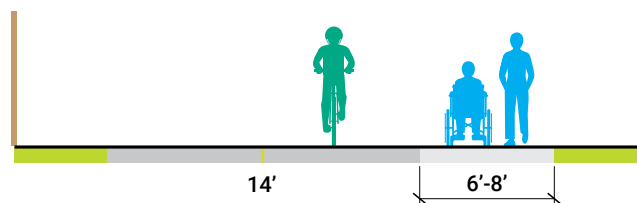
DESIGN TOOLS:

- Trail Cross-Sections
- Trail Approaches
- Cantilevered Trail
- Transitions and Mixing Zones
- Green Infrastructure and Shade Trees
- Lighting

Trail Cross-Sections

Separating users along the Iron Horse Trail could be implemented by using a range of design interventions. The trail could be separated by user, speed, or experience, enabling users of all ages and abilities to comfortably travel along the trail with minimal user conflicts.

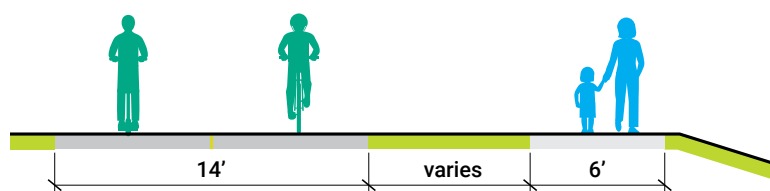
Design interventions that could be used to develop user separated facilities include signage, painting and striping, and surface material that can help inform users of the best area to travel for their speed or experience. Widening the path can also serve a similar purpose, providing more space for fast user groups to pass slower or recreational users.



SEPARATED BY USER

Creating space for people rolling and people walking can be accomplished through signs, paint, and surface material. These treatments will help inform users of the best place to travel.

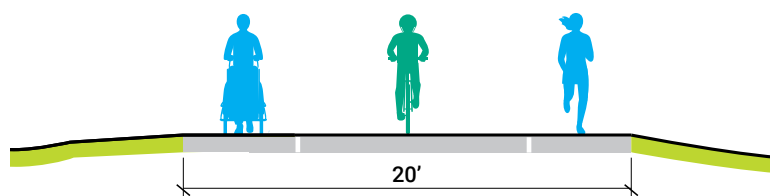
- Applicable to:**
- Physically constrained sections
 - **Activity Centers / Adjacent to Commercial**



SEPARATED BY EXPERIENCE

Parallel paths provide different user experiences creating a fast and active path and a complementary passive and leisurely path.

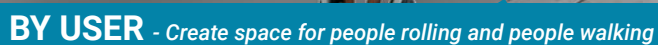
- Applicable to:**
- Areas with demands for multiple user types and minimally constrained rights-of-way
 - **Activity Centers + Parks & Housing Segments**



SEPARATED BY SPEED

The goal of this design option is to create space for people traveling at different speeds. User conflict can be reduced by providing space for safe passing (center) and relaxed travel (edges).

- Applicable to:**
- Areas with minimally constrained rights-of-way
 - **Parks & Housing Segments**



Trail Approaches

The Iron Horse Trail intersects with roads, access points and other trails. As the trail approaches these areas design tools such as mixing zones, optical speed bars, a change in pavement materials, and lighting can warn trail users to slow down and expect a crossing. The figures on the following page provide examples of these treatments. Design tools at road intersections are described in the next section of this chapter.

TRAIL APPROACH AT ROAD CROSSING

Bollards are physical barriers designed to restrict motor vehicle access to a multi-use trail. Unfortunately, physical barriers are often ineffective at preventing access, and create obstacles to legitimate trail users. Alternative design strategies use signage, landscaping and curb cut design to reduce the likelihood of motor vehicle access.

Typical Application

- Bollards or other barriers should not be used unless there is a documented history of unauthorized intrusion by motor vehicles.
- If unauthorized use persists, assess whether the problems posed by unauthorized access exceed the risks and issues posed by bollards and other barriers.

Design Features

- At intersections, split the path tread into two sections separated by low landscaping.
- Vertical curb cuts should be used to discourage motor vehicle access.
- Low landscaping preserves visibility and emergency access.
- “No Motor Vehicles” signage (MUTCD R5-3) may be used to reinforce access rules.

TRAIL APPROACH AT ACCESS POINT

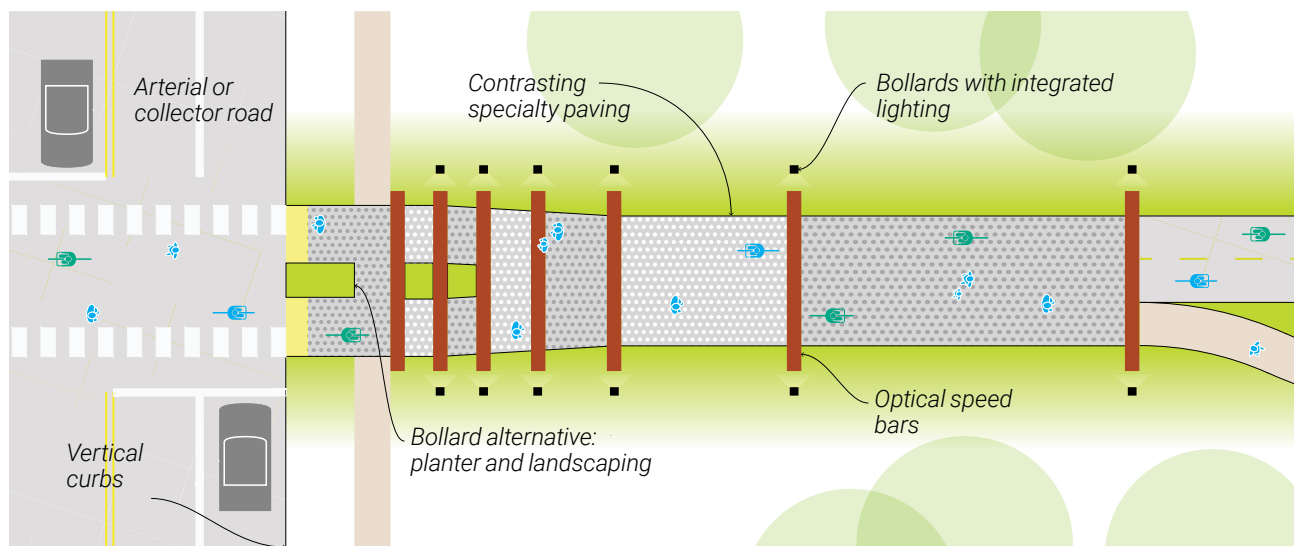
To improve visibility of access points along the Iron Horse Trail, design treatments could include mixing zones, optical speed bars and lighting.

TRAIL CROSSINGS / TRAIL ROUNDABOUTS

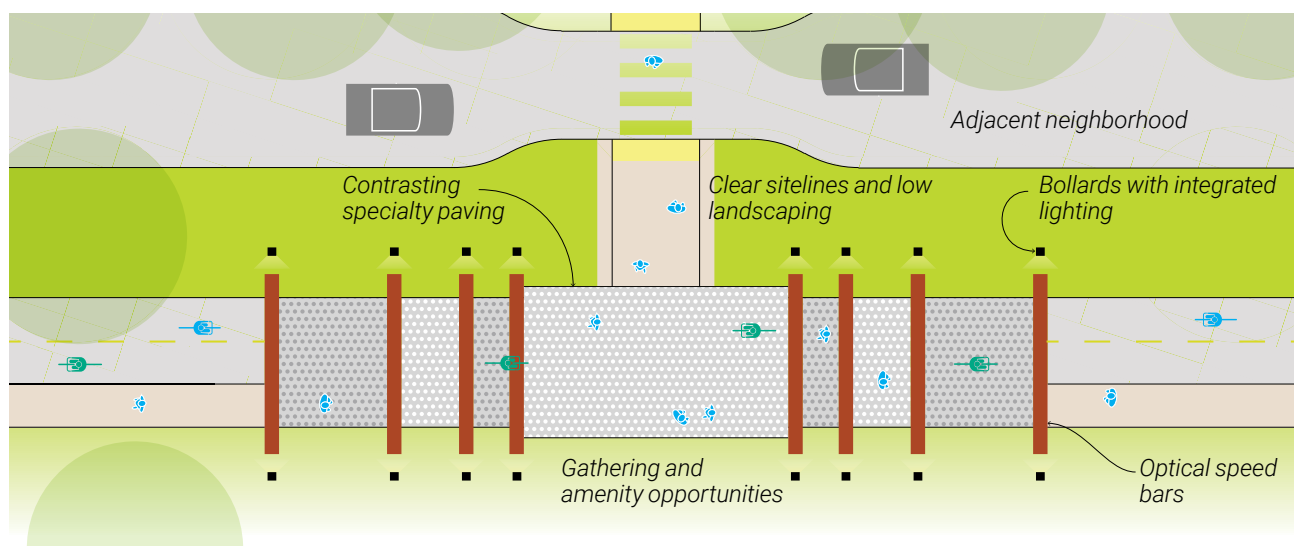
Special considerations should also be applied when the Iron Horse Trail intersects another trail. Mixing zone treatments could also be applied to the intersecting trail to warn both path users of the upcoming intersection. Bicycle roundabouts can also be applied at these crossings to minimize potential conflicts.

Bicycle roundabouts at trail intersections are used to counter safety concerns of mixing high-speed bicyclists with high volumes of pedestrians. Where space allows, a trail roundabout can minimize potential conflicts. Trail roundabout designs are based on conventional roundabout intersections, scaled to bicycle operating dimensions and speeds.

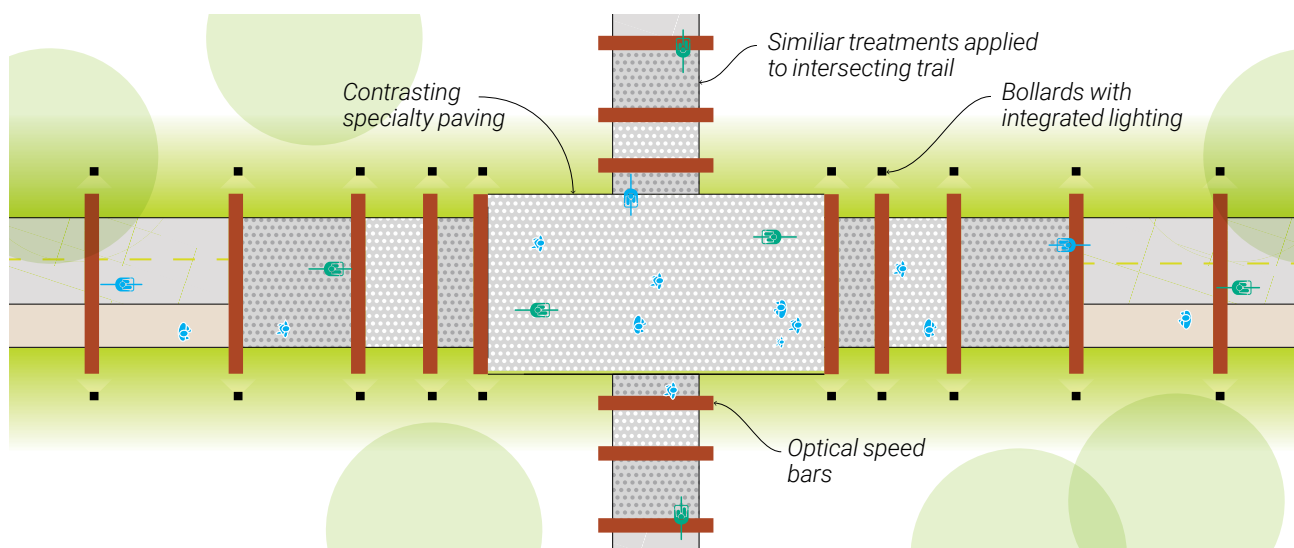
On separated use trails, user separation should be maintained and pedestrians should have crosswalks and sidewalk connections, similar to with a full-size roundabout.



Trail approach at road crossing



Trail approach at access point



Trail approach at trail crossing

Constrained Areas / Cantilevered Trail

In some locations, the Iron Horse Trail runs parallel to creek channels and the width is physically constrained by the built environment. In these areas, a cantilevered trail can be considered to meet the project vision and goals.

A cantilevered trail uses a structure that hangs over the top of the channel wall and is supported at the top-of-bank. It would have an anchored base at top-of-bank with a path superstructure that hangs over the edge of the river channel. It would be unsupported over the channel. This is a valuable approach where there is available space at top-of-bank, but less than the width needed for the desired trail width to meet future demand. The benefit of a cantilever is that it keeps the trail above the high water surface elevation, minimizing impacts to the flood control capacity and allowing the trail to be open year-round.

Transitions and Mixing Zones

Throughout the corridor there are locations that demand special attention and consideration. These include locations at the convergence of paths, where the trail transitions to a narrow bridge or at undercrossings, and at road crossings. In these locations, additional design features may be needed to create a safe and continuous trail.



MIXING ZONES

At the convergence of two or more paths, it is important to provide the user with advance warning of the changing conditions and guidance on how to move through the mixing zone. Mixing zones are locations where users will be required to interact cautiously through the space. The transition between the trail and the mixing zone where the advance warning is located may be between 50-100 feet long.

The design of mixing zones should clearly communicate yield priority, user positioning, and safe speeds. Interactions between users should be clearly managed with crosswalks, yield markings, and materials to indicate the degree of yielding or mixing expected of trail users.



OPTICAL SPEED BARS

Optical speed bars are pavement markings used to increase user awareness of an upcoming change to the physical environment and caution the user to decrease their speed. The speed bars are a series of white or colored rectangular pavement markings, 2 feet wide, placed inside both edges of the trail travel area. The markings are progressively spaced more closely together to visually narrow the lane and increase awareness of an upcoming change.



MATERIALS

Path materials may be used to indicate a change in operating conditions. Crossing areas, mixing zones, and tactile paving have all been used for this purpose. Thermoplastic rumble strips may be used in advance of transition areas or crosswalks. A change in paving materials, such as transitioning from asphalt to brick, can also warn users of an upcoming change. The use of different or contrasting materials can also differentiate use, such as constructing a soft surface pedestrian path and an asphalt bike path.

Pavement markings may include bicycle lane markings, high-visibility crosswalks, and colored concrete crosswalks. Other options include inlays or paving surface changes to signal critical areas.

Green Stormwater Infrastructure and Shade Trees

Green infrastructure treats and slows runoff from impervious surface areas such as roadways, sidewalks, and buildings. Sustainable stormwater strategies may include bioretention swales, rain gardens, tree box filters, and pervious pavements (pervious concrete, asphalt and pavers).

Bioswales are natural landscape elements that manage water runoff from a paved surface, reducing the risks of erosion or flooding of local streams and creeks, which can threaten natural habitats. Plants in the swale trap pollutants and silt from entering a river system.

Trees can be used to provide shade, manage runoff, reduce greenhouse gases, aid in carbon sequestration, and increase urban habitat.

Lighting

Trail lighting that is properly designed can improve visibility and natural surveillance, increase trail access and use, provide a sense of safety and security, and extend operating hours during shorter days. In addition, properly lit trails reduce bicycle and pedestrian collisions during night time hours.

Lighting along the Iron Horse Trail should be analyzed per segment context with full consideration for safety needs, wildlife habitat, trail function, cost benefit, and maintenance commitments. Street lighting can improve visibility of roadways at crossings and trails. Lighting may also be necessary for day-time use in underpasses.

Lighting can either be wired or solar. Wired lighting is recommended in areas except for those where utility connection is infeasible or when alternative energy sources are desired.

LIGHTING GUIDELINES

- Lighting should be at pedestrian scale. Placement, spacing, and other finish specifications depend on the fixture and optical needs/conditions.
- Lighting fixture types include bollard lights, pole mounted lights and integrated lighting (i.e. within architectural or wayfinding elements, planting beds, handrails, etc.)
- Lighting should minimize energy usage, operating costs, light trespass, light pollution and glare.
- Consider timers, sensors, and remote-control technology which can enhance the sense of security and conserve energy.
- Illuminate only the intended targeted areas and use cut-off fixtures that aim lights down instead of above or behind the fixture, which causes light pollution and trespass.
- Lighting should avoid trees and be placed outside of canopy edge.
- Consider Crime Prevention Through Environmental Design (CPTED) principles whenever lighting is introduced, such as color rendering, areas of concealment, and abstracted illumination.
- Use energy efficient lamps that comply with environmental guidelines, and that provide supreme color rendering, such as white lights.
- Solar powered lighting should be considered only where utility connection is not feasible or when alternative energy sources are desired. Daylight hours should be analyzed per season prior to specifying solar lighting.
- Avoid light fixtures at eye level that could cause glare and impair visibility.



SOLAR VS. CONVENTIONAL LIGHTING FIXTURES

BENEFITS OF SOLAR LIGHTING

- + No electrical grid connection cost
- + Avoid trenching costs
- + Reduce site disruption and restoration
- + Faster installation
- + No power outages
- + Sustainable light

CONSTRAINTS OF SOLAR LIGHTING

- Higher upfront investment
- Solar battery lifespan, need periodic replacement
- Indirect or variable sunlight conditions
- Limited aesthetic

BENEFITS OF CONVENTIONAL LIGHTING

- + Higher level of dependability for safety lighting
- + Market availability/competitiveness; lower fixture cost
- + Wider range of fixture styles and finishes
- + Flexibility in color temperature
- + Lower maintenance cost

CONSTRAINTS OF CONVENTIONAL LIGHTING

- Trenching requirement
- Availability of power source
- Operating cost

Intersections

NEEDS & OPPORTUNITIES:

Intersections that provide consistency, prioritize trail users, feature simple approaches with clear sight-lines, and encourage traffic calming can greatly improve both safety and mobility. Community members noted long wait times at signalized crossings and frequent stop signs along the Iron Horse Trail. Many suggested that trail intersections at roadways could benefit from design features that warn trail users of roadway traffic, and roadway traffic of trail users. Existing constrained and offset intersections make it challenging for bidirectional travel for all trail users, especially during heavy-use hours.

DESIGN TOOLS:

- Continuity of Crossings
- At-Grade Crossing Improvements by Road Classification
- Grade Separated Crossings

Continuity of Crossings

While the design of each intersection will vary based upon the particular context and right-of-way configuration, specific design treatments should optimize visibility, improve sight lines, and enhance user experience. The following items are recommended to improve the continuity of crossings along the Iron Horse Trail corridor:

1. Optical speedbars and standardized mixing zone design at each road crossing approach (see pages 42-43)
2. Improve sight lines and remove bollards at intersections, which may require realigning trail to provide a direct approach to the road crossing
3. Enhanced lighting and high visibility crosswalks

At-Grade Crossing Improvements

Individual jurisdictions along the corridor will prescribe the locally appropriate at-grade crossing treatments to increase awareness and visibility, reduce exposure and crossing distance, and calm traffic. The following examples are effective tools to improve at-grade crossings along the Iron Horse Trail.

REORIENT STOP SIGNS

Changing the priority of which mode stops when the trail crosses a local, low-volume road could improve convenience and comfort for trail users. This treatment could be appropriate where trail user volumes exceed traffic volumes. Traffic calming features such as raised crossings, curb extensions, or chicanes should be used in conjunction when reorienting stop signs that require vehicles to stop and trail users to yield to ensure clear sight lines and slow traffic speeds.

CROSSWALK WITH FLASHING BEACONS

Flashing beacons like Rectangular Rapid Flashing Beacons (RRFBs) and High-Intensity Activated Crosswalk (HAWK) beacons improve the visibility of marked crosswalks. Flashing lights and signage alert drivers of the upcoming crosswalk and provide greater visibility for pedestrians.

PASSIVE DETECTION AND SIGNAL ACTIVATION

Passive detection along the trail can help to shorten wait times for trail users when they approach a signalized crossing. Accessible push buttons offer trail users the opportunity to activate a signal to stop traffic thereby facilitating a safer crossing.

HIGH VISIBILITY MARKINGS

High visibility pavement markings improve driver awareness of crosswalk areas and the presence of trail users, making crossings safer.

PEDESTRIAN REFUGE ISLAND

Pedestrian refuge islands reduce the crossing distance of crosswalks by providing a dedicated space for pedestrians in the center of the roadway.

CURB EXTENSION

Curb extensions can be implemented at intersections to make crossings safer. Curb extensions visually and physically narrow the street, and can give trail users a better chance to see and be seen before crossing.



EXAMPLE APPLICATIONS BASED ON ROAD CLASSIFICATION

The road classification system—local, collector and arterial roadways—offers a convenient format for organizing potential improvements that take into consideration the differing roadway widths, travel speeds and vehicular travel utilization that often distinguishes the various road types. The table to the right provides a menu of potential design interventions.

LOCAL INTERSECTIONS

Intersections between the trail and local streets can include design improvements that enhance the comfort and safety for all users

Potential improvements include:

- Reorient stop signs
- Flashing beacons
- Raised crossing
- Median dividers
- Chicanes
- High visibility crosswalk
- Enhanced lighting
- Remove barriers and bollards

COLLECTOR INTERSECTIONS

The intersection of a collector street with the trail offers the opportunity for an enhanced collection of indicators that assist users in safely navigating through the intersection

Potential improvements include:

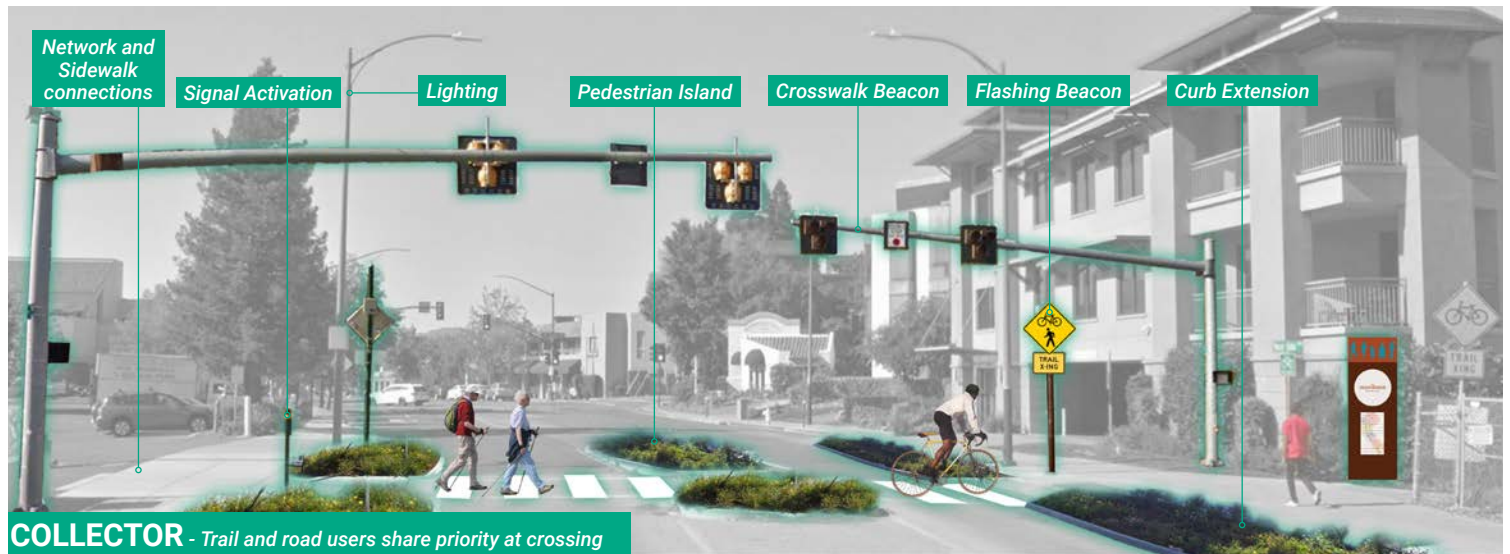
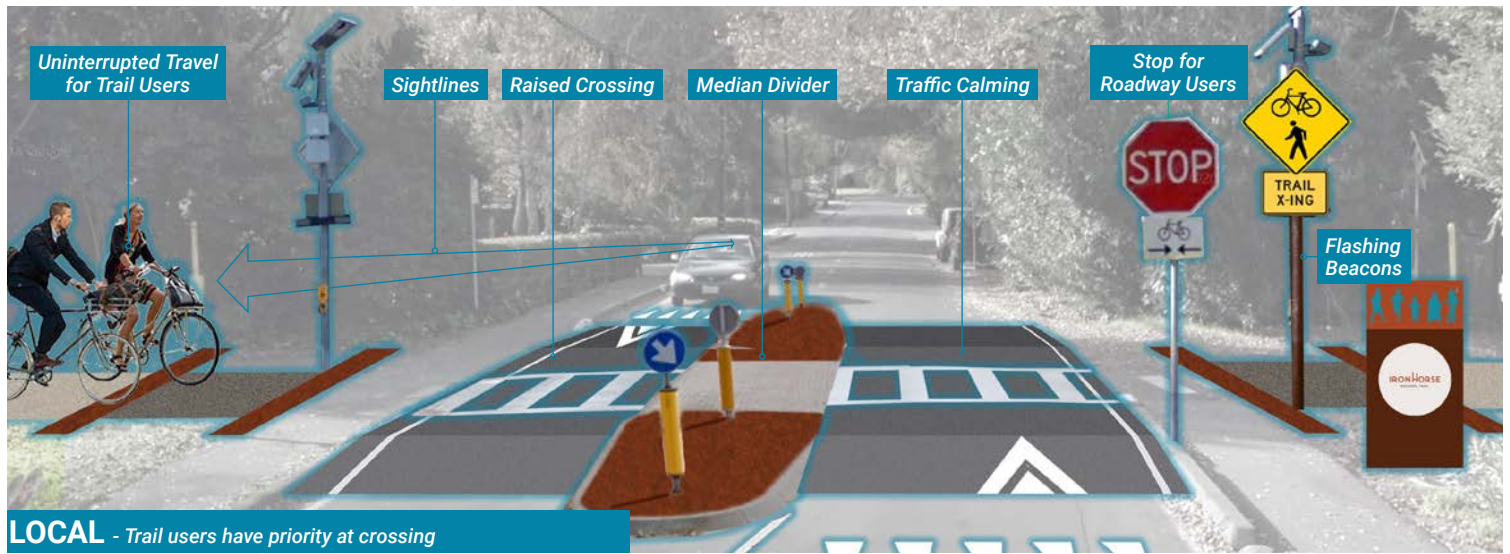
- Crosswalk beacon
- Flashing beacon
- Trail signal detection (passive and active)
- Pedestrian median island
- Curb extension
- High visibility crosswalk
- Enhanced lighting
- Remove barriers and bollards

ARTERIAL INTERSECTIONS

An intersection between an arterial street and the trail can benefit from an expanded number of design interventions to ensure that vehicles and trail users alike understand how to safely proceed through the intersection

Potential improvements include:

- Grade separated crossing
- Crosswalk beacon
- Flashing beacon
- Trail signal detection (passive and active)
- Pedestrian median island
- Curb extension
- High visibility crosswalk
- Enhanced lighting
- Remove barriers and bollards



Grade Separated Crossings

Grade separated crossings that disconnect the trail from the roadway provide trail users with an enhanced safety and convenience experience.

BRIDGES

Bicycle/pedestrian bridges allow for trail continuity or access areas separated by barriers such as high volume roads and adjacent creeks. Overcrossings at road intersections along the Iron Horse Trail could improve existing crossings where the trail alignment requires users to cross multiple intersection legs, ADT exceeds 25,000 vehicles, and where 85th percentile speeds exceed 45 miles per hour. In addition, bridges could also provide new access to the trail for communities who are currently separated by a creek or other physical constraint.

Overcrossings require a minimum of 17 feet of vertical clearance over a roadway and typically fall under the Americans with Disabilities Act (ADA), which strictly limits ramp slopes to 5% (1:20) with landings at 400 foot intervals, or 8.33% (1:12) with landings every 30 feet. Average slope, elevation change, and wind level all impact user comfort while ascending a ramp. The average slope of a ramp impacts user comfort significantly more than ramp length. Therefore, providing slopes that are lower than 5% will provide a better user experience for all ages and abilities along the core route of the Iron Horse Trail.

Bridges offer an opportunity to create a focal point which enhances the trail experience and supports community identity. Modular design and innovative materials such as lightweight composites should be considered for overcrossings.

UNDERCROSSINGS

Undercrossings along the Iron Horse Trail provide grade-separated crossings from roads and freeways. Some undercrossings could be improved to provide additional vertical clearance (minimum 8 feet, preferred 12 feet) and width for future trail use.

Undercrossings should meet the following design objectives:

- **User feels invited to pass through.** Undercrossing should maximize available natural light and supplement with artificial lighting that is integrated into the overall design. Undercrossing should be well-maintained; clear of trash and other debris.
- **Undercrossing must avoid hiding places,** and discourage lingering and loitering. Implementing sound or other sensory elements to reduce user anxieties should be considered.
- **User is protected from harm.** Railing should be integrated into design and should be transparent to maximize visibility.





Access & Amenities

NEEDS & OPPORTUNITIES:

Access improvements increase connections to trails, existing and planned bikeways, and local and regional destinations. New and improved access points better integrate the Iron Horse Trail into the regional bike and pedestrian network, and provide direct access to key destinations such as schools and transit. Amenities such as art, seating, wayfinding, and linear parks make the trail more desirable and accessible to a broader range of users. Programming, trail-oriented development, and mobility hubs help to activate the trail and improve synergy with new technologies and land uses.

DESIGN TOOLS:

- New & Improved Access Points by Context
- Amenities
- Linear Parks
- Programming
- Trail Oriented Development
- Mobility Hubs
- Wayfinding & Branding

New and Improved Access Points by Context

Access improvements can make the trail more inviting to users by improving connections to the existing network and providing amenities. These improvements may vary depending on land use context. For example, amenities appropriate for an access point in a commercial area may differ from those recommended for a residential street. However, the design tools available to make improvements are consistent throughout.

Design tools that may be used to improve trail access points include amenities such as new wayfinding signage, seating,

ACCESS IN RESIDENTIAL AREAS

Residential access areas present small-scale opportunities to serve the surrounding neighborhood.

Potential improvements include:

- Increasing the number of neighborhood access points
- Removing both visual and physical barriers to existing access points
- Accommodating different user types & speeds
- Providing amenities such as: wayfinding, lighting, and seating

ACCESS AT OPEN SPACE AREAS

Opportunities for new or improved access are located in areas with minimally constrained rights-of-way or adjacent to parks.

Potential improvements include:

- New passive uses such as: art, community gardens, and seating
- New active recreational opportunities such as: fitness equipment, mountain bike pump track, bocce, etc.
- Upgrades to existing park landscape
- Provide amenities such as: restrooms, water, and shade

ACCESS AT COMMERCIAL AREAS

Commercial areas are great opportunities to activate trail access areas.

Potential improvements include:

- Flex space for temporary programming such as: food trucks, farmers markets, and concerts
- Reorient existing businesses & services to the trail (restaurants, bike shops, cafes)
- Support future trail oriented development
- Provide amenities such as: secure bike parking, tables & chairs, and bike share

lighting, shade, landscaping, and public art. Some or all of these tools can be combined to create gathering spaces for community members, as well as spaces for events or other activities.

Additionally, design interventions can include removing existing barriers at existing or potential new access points, with the aim of increasing the number and quality of access points available to trail users.



Amenities

PUBLIC ART

Public art installations and murals contribute to and enhance a community's identity and character, creating a strong "sense of place" branding. Public art provides visual cues that the facility is "owned" and cared for by the community. Art installations also can encourage play, function as interpretive aids, or serve as a trail's primary attraction. Long-term public art installations such as public pianos or other features can also attract users to the trail. From a CPTED perspective, the use of public art in the landscape is an effective 'target hardening' strategy. Public art has the potential to deter graffiti vandalism, define path edges, improve the appearance of the community, and discourage unwanted behaviors.

INTERPRETIVE ELEMENTS

Interpretive elements can enrich the trail with a "sense of place" and enrich the experience of the trail for locals and visitors to the area. Historical and ecological inspiration is abundant, and a creative educational approach that is tied into site amenities and placemaking will highlight the beauty, ecology, and rich history of the area. Potential themes for exploration include; history of Southern Pacific Railroad, native wildlife and plant communities, and health benefits of active transportation.



LANDSCAPE AT ACCESS POINTS

Landscape design can be used at access points to highlight gateways to the communities and neighborhoods along the Iron Horse Trail, and to create a sense of place. Based on the scale and context of the access point, the landscape design should be grounded in native and drought-tolerant plants and may range from minimal accent and buffer plantings to larger plantings with sizable canopy trees. The landscape may be used to provide shade, provide green infrastructure, provide local habitat, reduce urban heat island effect, and enhance aesthetics.



SITE FURNISHINGS

Site furniture helps to ensure comfort along the trail, providing places for people to pause and rest, and for activity and shared experiences.

Seating

Public seating contributes to the user experience by making walkways and open space an enjoyable place to rest, congregate, or contemplate. Seating opportunities along the trail provide a short relief and also promote an added enjoyment of the scenic environment. Tables and chairs could be provided at access points adjacent to commercial activities.

Drinking Fountains

Drinking fountains along the trail enable a greater diversity of users to utilize the trail for longer durations without risking dehydration. Fountains should be spaced at regular intervals that correspond with key gateways and landmarks. Locating fountains with multiple heights will help accommodate a range of user ages and physical abilities, as well as pets.

Trash and Recycling

Providing places to dispose of trash and recycling may help to encourage stewardship both of the trail and the open space corridor.

Bicycle Tools and Parking

Clearly delineated and secure places to lock bicycles should be placed at access points that provide connections to community destinations. Bicycle fix-it stations typically provide tools for minor repairs.

Electric Charging Stations

Charging stations for privately owned e-scooters and e-bikes can provide micromobility users with an additional amenity along the trail.

Linear Parks

Passive Parks

Parks and open space can provide opportunities for passive uses such as contemplation and reflection, passive enjoyment of the natural environment, and community gathering. Amenities such as seating, shade, art, and community gardens can help make the spaces more attractive for residents and visitors.

Active Parks

Active parks can provide new recreational opportunities for trail users, promoting physical activity for users of all ages and abilities. Amenities could include stationary fitness equipment, playground equipment, a mountain bike pump track, or a bocce ball court, among other possibilities. Programming such as yoga or dance classes can help activate the spaces.

Programming

A range of programming activities could be implemented at access points to serve the community and attract residents and visitors to the trail. These include active programming such as yoga, dance, or other fitness classes; children's programming such as organized playtime events and storytelling; and educational programming such as outdoor classrooms and community gardens. Additionally, access points could host bicycle education workshops for community members to improve comfort and safety on the trail.



Trail-Oriented Development

Trail-oriented development presents an opportunity for economic development and growth along the corridor. With the trail serving as an active mobility spine for the region, adjacent land uses could be designated for new housing and commercial centers that would not drastically increase the number of car trips in the area. Revenue generated by the new development could be invested back into the community or used for trail enhancements, operations, and maintenance.

Mobility Hubs

Mobility hubs are a collection of transportation-oriented elements that make it easier to access the shared and active mobility network. The key elements can be mixed and matched to create a mobility hub that is customized for each access point. Mobility hubs are places where different modes, such as walking, bicycling, transit, and shared mobility services such as bike share, scooter share, car share, and TNCs, come together to provide a suite of transportation options for people. Additionally, the potential to introduce shared autonomous vehicles (SAVs) in the future is also being considered at mobility hubs.

Some access points may provide an appropriate location for mobility hubs as places where the Iron Horse Trail provides a connection to community needs. Providing additional mobility services at strategic access points will increase the connectivity and mobility options of trail users, who may combine transit, active modes, and shared mobility options found at the mobility hubs to create seamless transportation connections throughout the region.

Mobility hubs support first–last mile solutions by providing multimodal transportation services and activities around transit stations to maximize connectivity and access for transit riders.

Along the Iron Horse Trail, there are strategic locations where mobility hubs would provide important connections to the surrounding network and destinations. By providing a robust set of transportation options at mobility hubs, the unique and complex mobility needs of trail users can be met, increasing the connectivity of the system and the destinations that can be reached by non single occupancy vehicles.

Amenities that may be found at a mobility hub include, but are not limited to:

- Adequate bus stop and layover zones
- Transit shelters with real-time arrival information
- Bicycle share stations
- Scooter-share or other micromobility options
- SAV transit stops
- Car share facilities
- Taxi or ride hailing waiting/call areas
- Wi-fi service
- Bicycle storage & repair facilities
- Retail
- Open space

By providing a robust array of options at mobility hubs, a variety of different needs can be accommodated, greatly increasing the number of destinations reachable by transit.

Wayfinding for Active Mobility

Well-crafted wayfinding systems foster a sense of place and encourage people walking and bicycling to go that extra mile and explore new areas.

Places that are arranged intuitively so that we can see obvious destinations from a distance, determine pathways, and recognize areas of different character are more legible. The “legibility” of a place describes how easy it is to understand.

Legible wayfinding systems enable individuals to:

- Easily and successfully find their destination
- Understand where they are with respect to other key locations
- Orient themselves in an appropriate direction with little misunderstanding or stress
- Discover new places and services
- Feel safe (enhance the sense of safety)

The following six core principles aim to guide the placement and design of a wayfinding system in order to create a clear wayfinding experience and achieve a more navigable trail.



1. CONNECT PLACES

Effective wayfinding information should enable local residents as well as visitors to travel between destinations and discover new destinations and services. Wayfinding should help improve local economic well-being by encouraging people to utilize services along the Iron Horse Trail. Wayfinding should enhance connections within the region and to neighboring communities and expand the active transportation network.



2. PROMOTE ACTIVE TRAVEL

Wayfinding should encourage increased walking and rolling by revealing a clear and attractive system that is easy to understand and navigate. The presence of wayfinding signs should validate walking and rolling as transportation options, as well as reduce fear amongst those interested in making more trips by walking or rolling. Wayfinding should expand the awareness and use of active transportation facilities.



3. MAINTAIN MOTION

Walking and rolling require physical effort, and frequent stopping and starting to check directions may lead to frustration and discouragement. Consistent, clear, and visible wayfinding elements allow people walking and rolling to navigate while maintaining their state of motion. To help users maintain motion, wayfinding information also needs to be presented so that it can be quickly read and easily comprehended.



4. BE PREDICTABLE

Effective wayfinding systems are predictable. When information is predictable, patterns emerge, and users of the network will be able to rely on the system to provide information when they expect it. Predictability also helps users to understand new situations quickly, whether it be navigating a new intersection or traveling to a destination for the first time.

Predictability should relate to all aspects of wayfinding placement and design (i.e., sign materials, dimensions, colors, forms, and placement). Similarly, maps should employ consistent symbology, fonts, colors, and style. The system should be designed in accordance with local, state, and federal guidelines, ensuring that it can be funded through state and federal sources.



5. KEEP INFORMATION SIMPLE

For a wayfinding network to be effective, information needs to be presented clearly and logically. It is important to provide information in manageable amounts. Too much information can be difficult to understand; too little and decision-making becomes difficult.

The placement of signs and the information provided at each placement are also critical. Information should be provided in advance of where major changes in direction occur and confirmed when the maneuver is complete.



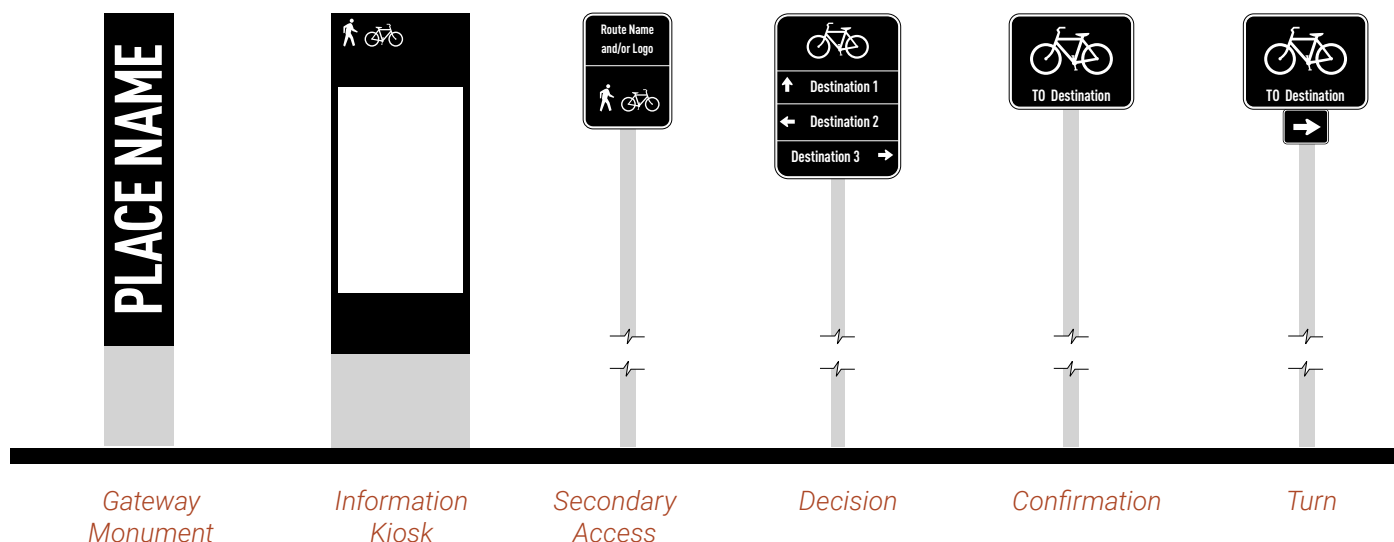
6. MAKE IT ACCESSIBLE

Wayfinding signage should be accessible and be designed to be comprehensible by a wide range of users, including people of all ages and ability levels. As wayfinding systems often relate to accessible routes or pedestrian circulation, it is important to consider technical guidance from the Americans with Disabilities Act (ADA) to implement wayfinding signs and other elements that do not impede travel or create unsafe situations for pedestrians, bicyclists, and/or those with disabilities.



ACCESS ELEMENTS

FUNDAMENTAL ELEMENTS



Wayfinding Elements

The goal of a wayfinding system is to simplify navigation in urban environments. This section describes the spectrum of elements that may be used in the Iron Horse Trail Wayfinding Signage Plan.

ACCESS ELEMENTS

Gateway Monument

Define the entry into a distinct neighborhood, or mark trailheads, access points, and landmarks. Opportunity for community-directed placemaking and integrated artwork.

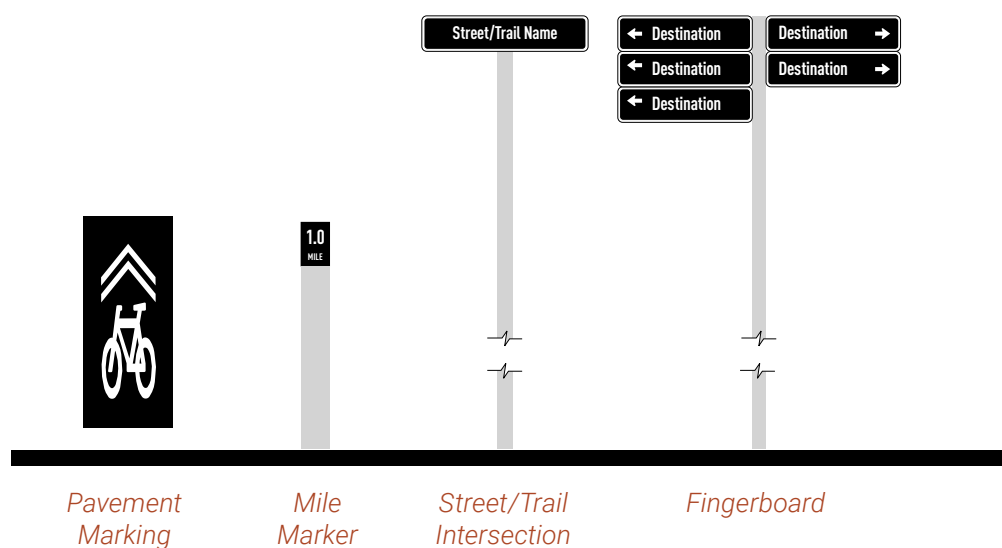
Information Kiosk

Provide system map and navigational information; most effective when placed in plazas, rest areas, or other locations where users may congregate, rest, or enter a trail or path.

Secondary Access Signage

Mark entry to trails or paths at locations where limited user traffic may not necessitate as much information as information kiosks.

ENHANCED ELEMENTS



FUNDAMENTAL NAVIGATIONAL ELEMENTS

Decision

Clarify route options where two or more routes converge, or at complex intersections.

Confirmation

Placed after a turn or intersection to reassure path users that they are on the correct route.

Turn

Placed before a turn or intersection to help users stay on the designated path.

ENHANCED NAVIGATIONAL ELEMENTS

Pavement Marking

Reinforce route direction, bicyclist positioning, intermodal cooperation, and/or system branding.

Mile Marker

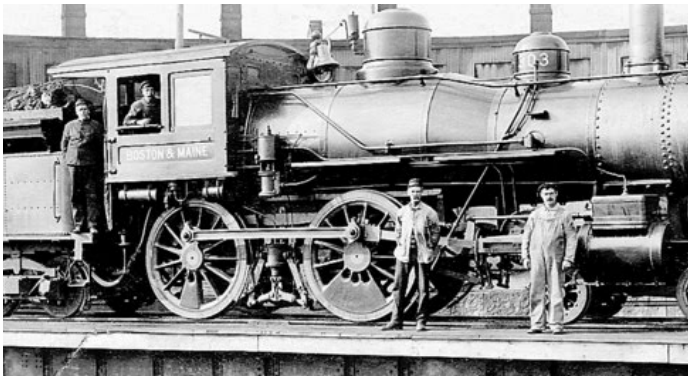
Reinforce system branding and orient users along off-street trails or paths.

Street/Trail Intersection

Orient off-street trail users at street crossings and inform vehicular traffic of trail crossing.

Fingerboard

Clarify route options where two or more routes converge, or at complex intersections.



Branding

In addition to physical design consistency of the trail, establishing unique and consistent trail branding can draw attention, attract new users, build familiarity and inspiration, and maximize the trail's potential for supporting economic development. Branding can provide a consistent voice to the project, with a visual identity that is distinct, harmonious, and memorable, reflecting the unique character of the region.

A branding exercise looks at what colors, typefaces, visual elements, forms, materials, and design features can help to define the Iron Horse Trail helping to create a connected and user-friendly experience for visitors and residents.

Branding and visual identity components may include: logos, color palette, typography, iconography, and wayfinding system signage.

A unified brand and visual identity system for the Iron Horse Trail will:

- Create a sense of place
- Provide a memorable, clear, and distinctive voice
- Build recognition and visibility for the Iron Horse Trail
- Provide consistency for familiarity
- Increase accessibility
- Prioritize clarity and legibility to help visitors and residents navigate
- Coordinate with existing landscape features and materials



Proposed Logo Concepts

Drawing from the history and geographical components of the Iron Horse Trail, a variety of inspired branding concepts were generated and presented to the project's Technical Advisory Committee (TAC).

The text-based branding options pay homage to the shape of the railroad tracks and pull geometric elements from traditional railroad stakes.

By contrast, the bridge branding options give a nod to some of the iconic and historic bridges found along the Iron Horse Trail.

See Appendix D, Iron Horse Trail Design Brief, for a summary of the TACs three preferred logo concepts for future consideration.

IRON HORSE
REGIONAL TRAIL

**IRON
HORSE**
REGIONAL TRAIL

IRON HORSE
REGIONAL TRAIL





04 How to Achieve the Vision?

The proposed projects identify improvements to help the Iron Horse Trail achieve this Study's vision of becoming an active transportation spine that supports the region's mobility goals and continues to provide a treasured recreational resource for users of all ages and abilities.

The recommendations in this chapter were developed by pairing the corridor and community needs outlined in Chapter 2 with the potential design tools described in Chapter 3 to identify improvements for

- Trail corridors;
- Intersections; and
- Access points.

In addition, projects that would create connections to existing or planned bikeways beyond the project corridor were also identified.

When there are limited capital improvement funds, a prioritization process is a useful planning tool to help understand which projects will have a greater impact in meeting the project vision. In addition, a prioritization process brings

transparency and rationality to the decision-making process. It allows the public to see how projects were ranked and why. Finally, it allows the public to influence which types of projects are prioritized to meet community needs.

This chapter describes the prioritization framework used to prioritize projects and presents three scenarios to help understand the impacts particular projects can have on future ridership. It then summarizes the recommended projects by jurisdiction and project segment, and highlights the top ranked projects based on the outcomes of the prioritization process.

PRIORITIZATION FRAMEWORK

Overview

A goal-based evaluation process was used to prioritize the proposed projects. The project goals were developed through collaboration with the project's Technical Advisory Committee (TAC) and through community input. Criteria were identified for each of the five project goals as well as for the needs identified by the community. Proposed projects were then measured against the evaluation criteria to determine how well they respond to the project goals and community needs.

The evaluation criteria were used to evaluate the performance of each project type per segment. The ratings for each trail segment do not result in a total “score” that indicates the “most important” projects, but rather they provide qualitative guidance to inform a discussion of trade-offs by the project’s TAC, local jurisdictions, community members, and elected officials. The ratings were used to create an overall ranking of all the projects.

Evaluation Criteria






Table 8 shows the project goals, relative weight, related evaluation criteria, and the types of projects prioritized by each criterion. In addition to the five project goals, projects desired by the community were also included in the evaluation process.

Each project was scored against the criteria on a score of 0 through 2, with 2 indicating the project directly met the criterion, 1 indicating the project indirectly met the criterion and 0 indicating the project did not meet the criterion.

The goals were weighted based on two factors. One factor was related to the project’s TAC. The TAC ranked the project goals based on how well the goals aligned with their jurisdiction’s goals. The second factor was related to the results of an evaluation of ‘Benefits of Improvements’ described in the following pages. The goals and weighting are as follows:

- **Community Desired Projects:** Projects identified by the community through the public engagement effort were included in the evaluation process with a weight of (1).
- **Safety:** Enhances trail condition and traffic and intersection safety. In the TAC’s overall goal rankings, Safety was given the highest ranking. Therefore, it was given the highest weight (2.5) in the evaluation process.
- **Mobility:** Provides connections to transit, trails and on-street facilities; accommodates user demand and enhances user comfort. The mobility goal was also highly ranked by the TAC. In addition, the ‘Benefits of Improvements’ evaluation showed that providing strong connections to the trail would have a positive impact on trail demand. Therefore, the Mobility goal was given the second highest weight (2) to prioritize projects that connect to transit, trails, and existing and planned bikeways in areas of higher trail demand.
- **Access & Equity:** Provides access to jobs, destinations, parks and open space, and health services; presents opportunities for new access points. This goal was also given a weight of (1).
- **User Experience:** Improves trail conditions and amenities; presents opportunities for stormwater filtration, ecology, new amenities, and placemaking. This goal prioritizes projects that bring extra amenities to the trail and was given a weight of (0.5).
- **Project Synergy:** Aligns with planned projects and existing land uses and allows for future expansion of new technologies. This goal was the lowest ranking goal by the TAC and was given a weight of (0.5).

Table 8 Evaluation Criteria

Goal	Weight	Criteria	Prioritizes Projects That:
Community Desired Project	1	Community Identified Need	Were identified by the community during the community engagement events
Safety	2.5	Traffic Safety	Provide grade-separated crossings
		Intersection Improvement	Improve the quality of at-grade crossings
		Trail User Separation	Improve separation of slow and faster user groups
Mobility	2	Connections to High Quality Transit	Provide connections to BART
		Connections to Park & Ride	Provide connections to Park and Ride facility
		Connections to Trail	Provide connections to existing or planned trails
		Connections to Existing On-Street Bikeways	Provide connections to existing on-street bikeways
		Connections to Planned On-Street Bikeway	Provide connections to planned on-street bikeways
		Trail Corridor Demand	Improve trail corridor to meet potential demand
Access & Equity	1	Access to Jobs	Provide access to high employment centers
		Access to Destinations	Provide access to high employment centers and key destinations
		Access to Schools	Provide access to schools
		Access to Parks & Open Space	Provide access to parks and open spaces
		Enhanced Connectivity	Provide new access points
User Experience	0.5	Area of Opportunity and Amenities	Provide opportunities for expanded public space, gathering areas, enhanced recreation, and for new or improved amenities
		Stormwater & Urban Ecology	Provide opportunities for green infrastructure
Project Synergy	0.5	Aligns with Key Land Uses	Synergy with planned projects and opportunities for future trail oriented development
			

BENEFITS OF IMPROVEMENTS

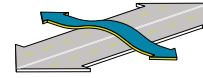
In addition to the evaluation process described in the previous pages which prioritized projects that would best meet the Study vision, the proposed improvements were also evaluated for how they would impact future use of the trail. This evaluation modeled three proposed improvements (intersections, access, E-Bikes) and measured how they would impact future demand as well as perception of trip and travel time along the trail.

The expected increase in users based on different types of improvements was considered when weighting the goals during the evaluation process. Each type of improvement relates directly to a specific goal. Intersections relate strongly to Safety and Mobility, access relates to Access & Equity and Mobility, and capacity for e-bikes relates to Mobility.

Safety and Mobility were the two highest weighted goals in the evaluation process, and both prioritize projects that would most directly increase future use of the trail.

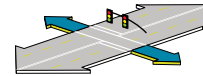
The proposed improvements outlined in the following pages all contribute to one or more of these scenarios. While recommendations are listed by segment and ranked based on the prioritization process, these scenarios illustrate the importance of implementing improvements consistently across the corridor, as their coordinated implementation would result in the greatest overall increase in users for the trail.

13 Arterial Crossings



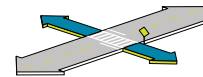
Separate trail from the street (bridge or tunnel)

15 Collector Crossings



Install traffic signals or similar improvement to minimize waiting for trail users

14 Local Crossings



Require people in vehicles to stop at trail crossings

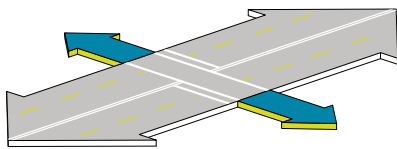
Prioritizing trail crossings could make the trail feel



"I can maintain a comfortable pace with less stopping and starting"

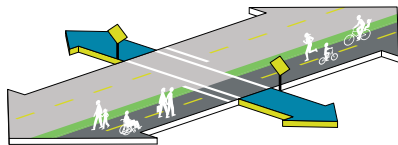
Improved Intersections Make the Trail Feel Shorter

This study evaluated how trail priority at all intersections would impact trail users and total bikeable trips. If arterial crossings were separated from the street, collector crossings had signals to decrease trail user waiting times, and local crossings required vehicles to stop, the trail would feel 14% shorter in length than existing conditions. Though the results did not indicate a large increase in the number of bikeable trips (only 1%), trail priority would enhance user experience and could encourage more bicyclists to use the trail.



Today:

Few comfortable on-street bike facilities connect to the trail



Envisioned:

Comfortable connections at regular intervals



More trips are bikeable



"I can bike from home to work to the park and beyond!"

Expanded Access to the Trail Makes Trips More Bikeable

This study modeled better trail connections. Currently, few comfortable on-street bike facilities connect users to the trail. With the addition of comfortable low-stress bikeways leading to the trail at regular intervals, 23% more trips would be bikeable.

People on e-bikes make trips that are

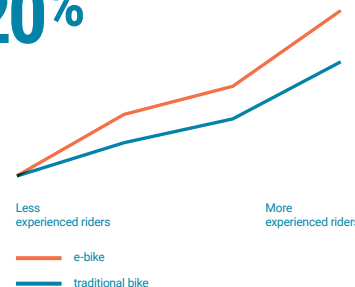
22% longer

27%

More trips are bikeable

People on e-bikes travel about 20% faster than people on traditional bikes

Greater speeds mean that people will likely travel further



"I can run errands car-free—no sweat!"

E-Bikes Allow Users to Take Longer Trips

This study considered how the presence of e-bikes would impact trail usage. With an increase of electric bikes and scooters, trail user speeds would increase and allow for longer and faster trips. E-bikes would allow users to make trips that are 22% longer and would make 27% of trips more bikeable.

PROPOSED IMPROVEMENTS

The following section provides recommendations for projects that help meet the project vision.

Meeting this vision will require multi-jurisdictional coordination and consistent implementation of the proposed projects across the Iron Horse Trail corridor. However, priority projects are identified that could provide the greatest benefit to the communities that live there today, and could bring the greatest immediate enhancement to the existing corridor. The overall ranking of projects is provided at the end of this chapter.

How to Use this Section

Figure 2 highlights how the recommendations are presented.

- 1 Proposed projects are organized by jurisdiction and segment number. (See Map 2 for an overview of all 15 segments).
- 2 Recommendations are organized into four following project types. The tables on the following pages provide detailed recommendations for each segment. Some recommendations apply to the entire corridor and are not specifically called out in the tables.

1	#	Segment #: Example
2	Project type	Description
	Trail Corridor	<ul style="list-style-type: none">• Lorem ipsi• Lorem ips
3	★ Intersections	<ul style="list-style-type: none">• Lorem ir• Lorem
	Access	<ul style="list-style-type: none">• Lor• Lore
	Connections	<ul style="list-style-type: none">• Lo• Lr

Figure 2 Example Projects by Segment Table

Trail corridor projects provide recommendations for trail configurations and widths that respond to physical conditions, adjacent land uses, and future user demand. Lighting and wayfinding improvements are recommended for the entire trail.

Lighting improvements are recommended for all corridor projects in order for the trail to serve as a dependable transportation facility.

Wayfinding along streets and corridors is recommended to help people get to the trail. In addition, wayfinding improvements along the trail are also recommended to allow users to access directional information while in motion and help users navigate along the trail.

- **Intersection improvement projects** aim to improve the safety and convenience of the trail at intersections.

Improving sight lines at crossings and replacing bollards and/or fences with alternative design solutions are recommended across the Iron Horse Trail corridor.



- **Access projects** identify locations for potential new access points as well as provide recommendations to enhance existing access points. They also all include programming opportunities and community amenities such as community gardens, creek or water restoration, or linear parks.

Access along commercial or downtown areas is recommended at 300'-500' intervals to allow permeability, and increase perceived safety and vibrancy.

Access improvements incorporate seating, shade, and amenities.

ADA parking at regular intervals (approximately every 5 miles) is also recommended along the entire corridor to improve access for people with disabilities.

- **Connection projects** identify locations to improve connectivity to existing and planned bikeways and trails.

- 3 Stars identify the three top-ranked projects per jurisdiction, based on the goal-based evaluation model. A list of the overall project rankings is provided at the end of this chapter.

NOTES

Some intersections in these segments may be within one jurisdiction but operated and maintained by another. Proposed improvements in these segments will require multi-jurisdictional coordination.

All proposed projects considered adopted studies, previous plans, and other current projects. Notable current projects are noted on Maps 12-17 as being completed by others.

Map 12 Concord

PROJECT TYPE IMPROVEMENTS

Trail Corridor

- Separated by User
- Separated by Speed
- Separated by Experience

Intersections

- Arterial
- Collector
- Local
- Undercrossing
- Regional Trail

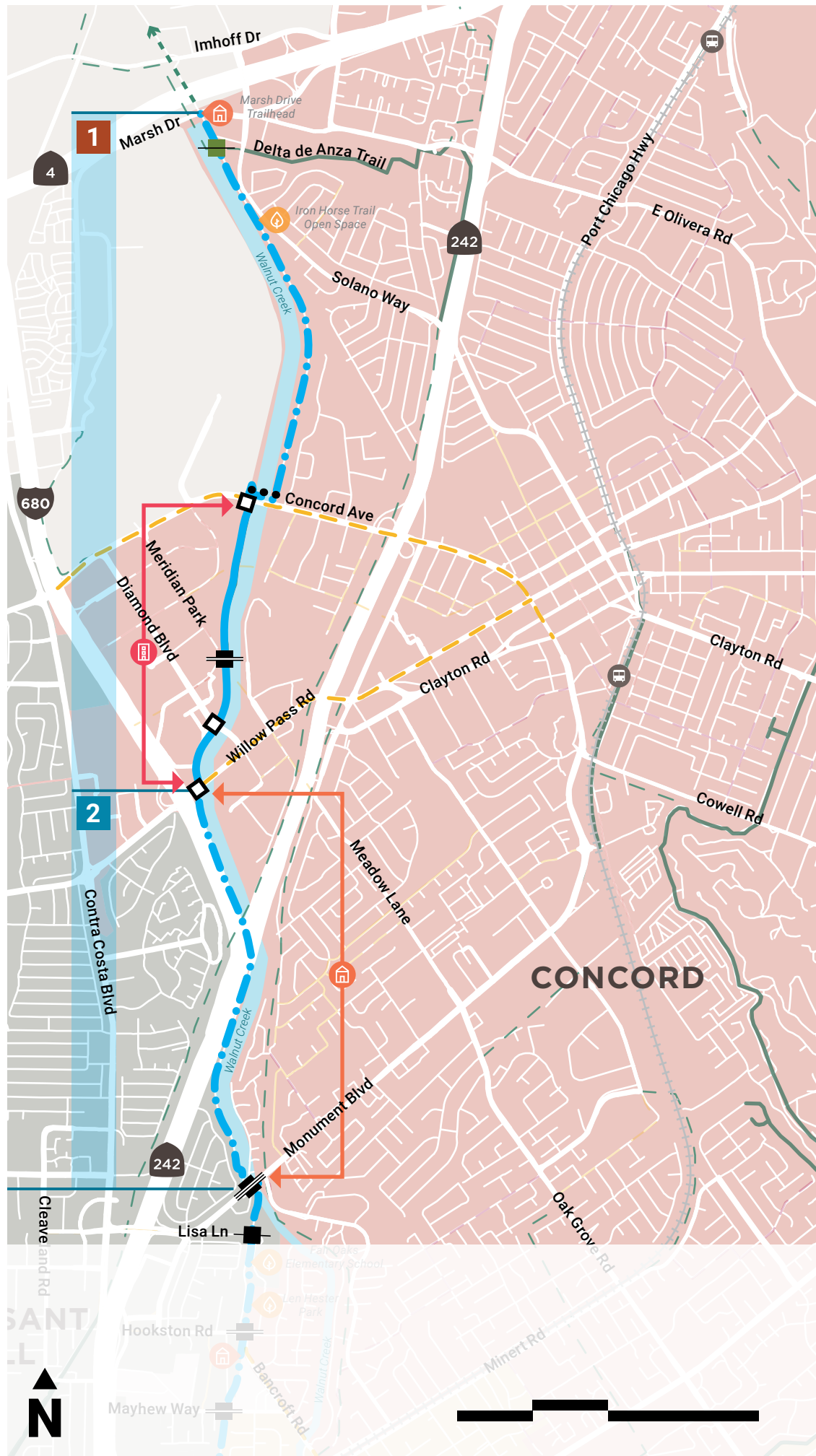
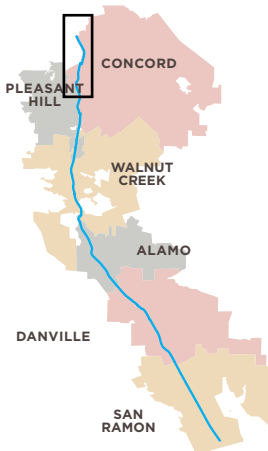
Access

- School/Open Space/Trail
- Residential/Street
- Business/Commercial/Retail

Connections

- Trail Connection
- On Street Bikeway Connection
- Existing Trail
- BART Connection
- Park and Ride Connection

KEY MAP



CONCORD PROJECTS

Concord consists of two segments. Segment 1 travels through a large commercial center, while Segment 2 is adjacent to parks and housing. Both segments have medium expected user demand and ample available ROW. Both segments have a high need to improve access.

Segment 1 could improve access to existing commercial areas and Segment 2 could provide better access to people who live on the east side of Walnut Creek and improve the multi-legged trail crossing at Monument Boulevard.

1 Segment 1: Marsh through Willow Pass

<i>Project type</i>	<i>Description</i>
★ Trail Corridor	<ul style="list-style-type: none"> • North of Concord Avenue <ul style="list-style-type: none"> » Separated by experience (open space): 14ft rolling path with adjacent 6 ft pedestrian path (optional soft surface along creek). » Improve trail connection to existing bicycle/pedestrian bridge. • South of Concord Avenue <ul style="list-style-type: none"> » Separated by user (urban): 14ft rolling path with 6 ft pedestrian path. • Retrofit two undercrossings at Concord Ave and Diamond Blvd. • Provide shade trees. • Opportunities for green stormwater infrastructure.
Intersections	<ul style="list-style-type: none"> • Improve two collector intersections at Marsh Drive and Willow Way/Meridian Park. • Improve trail crossing at Delta de Anza Regional Trail.
Access	<ul style="list-style-type: none"> • Add eight commercial access points and two office/business park access points. • Enhance existing access at Iron Horse Trail Open Space and at Marsh Drive Trailhead.
★ Connections	<ul style="list-style-type: none"> • Close four mile gap to regional Bay Trail. • Improve trail connection to planned Class II at Concord Ave.

2 Segment 2: Willow Pass through Monument

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> • Separated by experience (open space): 14ft rolling path with adjacent 6 ft pedestrian path (optional soft surface along creek). • Retrofit undercrossing at Willow Pass Rd. • Provide shade trees. • Opportunities for green stormwater infrastructure.
★ Intersections	<ul style="list-style-type: none"> • Improve crossing at Monument Boulevard <ul style="list-style-type: none"> » Alt 1: Realign trail with new overcrossing with street access to Monument Corridor Trail, and future Walnut Creek Trail. (Alt 1 used in cost estimate) » Alt 2: Improve arterial at-grade crossing by realigning trail with possible existing bridge improvements
Access	<ul style="list-style-type: none"> • New bicycle/pedestrian bridge(s) to connect the residential neighborhoods east of Walnut Creek to the trail
Connections	<ul style="list-style-type: none"> • Connect trail to planned Class II at Willow Pass Rd.

PLEASANT HILL/CONTRA COSTA CENTRE PROJECTS

Pleasant Hill/Contra Costa Centre includes three segments that connect through the highest density of zero vehicle households in the study area and have high expected demand overall. Segment 3 could benefit from enhancements to access points around schools. The trail connects to the Pleasant Hill/Contra Costa Centre BART

station in Segment 4 and serves as a critical regional connection to transit. Segment 4 has elements of successful trail design including the Treat Boulevard overcrossing and the separated use trails through CCC Transit Village Park. Additional improvements can be seen in trail configuration to reduce user conflicts and improve connections

PROJECT TYPE IMPROVEMENTS

Trail Corridor

- Separated by User
- - Separated by Speed
- • Separated by Experience

Intersections

- Arterial
- Collector
- Local
- Undercrossing
- Regional Trail

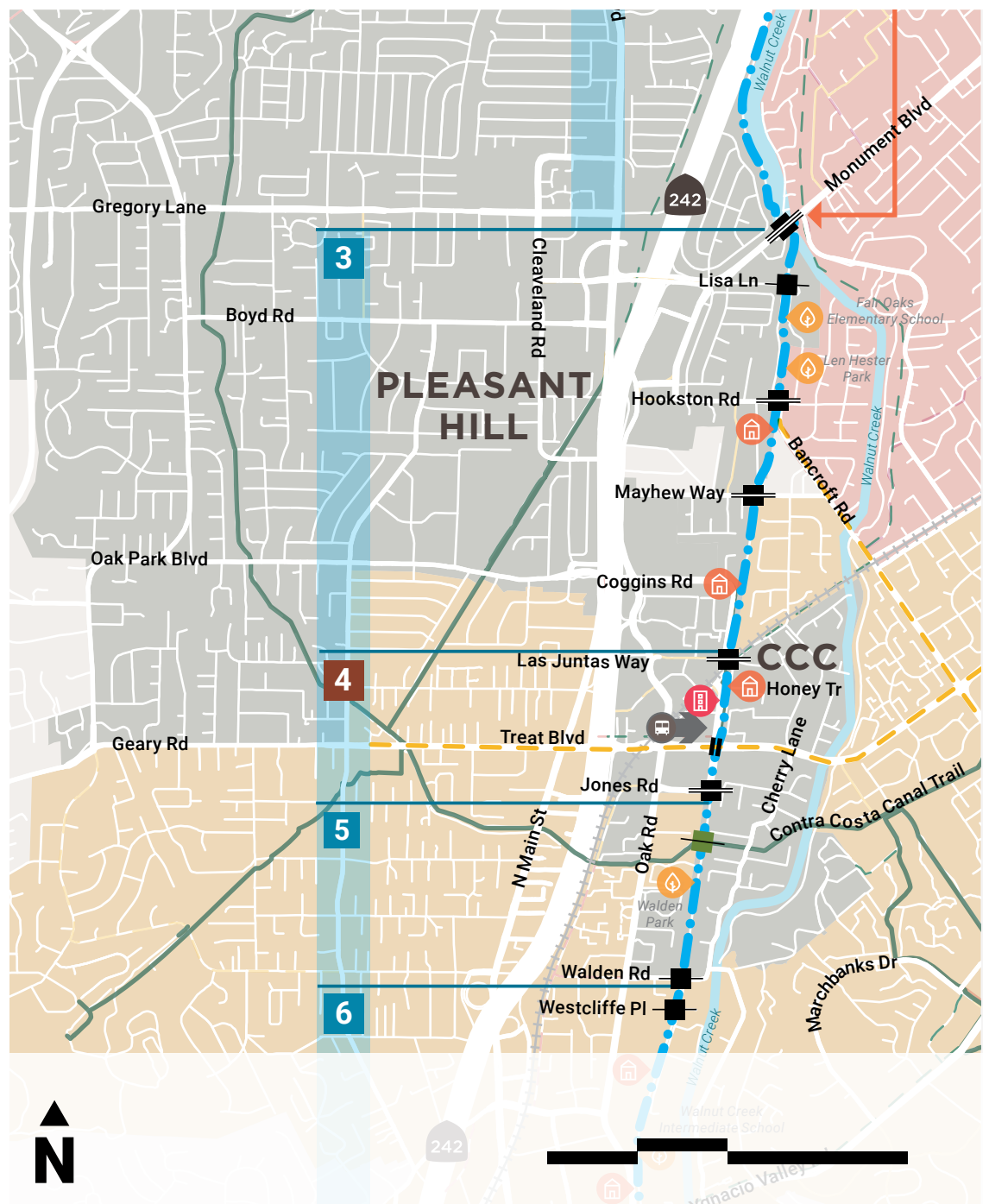
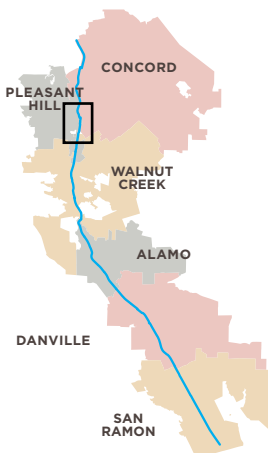
Access

- School/Open Space/Trail
- Residential/Street
- Business/Commercial/Retail

Connections

- - - Trail Connection
- - - On Street Bikeway Connection
- Existing Trail
- BART Connection
- Park and Ride Connection

KEY MAP



to BART. Segment 5 connects to the Contra Costa Canal Trail, an important regional connection, and could improve access to adjacent open space at Walden Park.

3 Segment 3: Monument to Las Juntas

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separated by experience (open space): 14ft rolling path with adjacent 6 ft pedestrian path.
Intersections	<ul style="list-style-type: none"> Improve collector intersection at Hookston Rd. Improve three local crossings at Lisa Ln, Mayhew Way, and Coggins Rd.
Access	<ul style="list-style-type: none"> Add school access point at Fair Oaks Elementary School, open space access point at Len Hester Park, and enhance one residential access point. Opportunities for community based programs including outdoor classrooms or student gardens. Incorporate micromobility such as bike share or dockless options at major intersections or destination sites.
Connections	<ul style="list-style-type: none"> Improve connection to Class II on Bancraft Rd at Hookston Rd.

4 Segment 4: Las Juntas through Jones

<i>Project type</i>	<i>Description</i>
★ Trail Corridor	<ul style="list-style-type: none"> Separated by experience (urban): 16ft rolling path with 6-10 ft pedestrian path.
★ Intersections	<ul style="list-style-type: none"> Improve two collector intersections at Las Juntas Way and Jones Rd.
Access	<ul style="list-style-type: none"> Add one commercial access point. Improve one residential access point at Honey Trail. Incorporate micromobility such as bike share or dockless options at major intersections or destination sites.
★ Connections	<ul style="list-style-type: none"> Improve trail connection to planned Class II at Treat Blvd. Improve direct connection to BART.

5 Segment 5: Jones through Walden

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separated by experience (open space): 14 ft rolling path with adjacent 6 ft pedestrian path.
Intersections	<ul style="list-style-type: none"> Improve trail crossing at Contra Costa Canal Trail. Proposed bicycle roundabout. Improve one local crossing at Walden Rd.
Access	<ul style="list-style-type: none"> Enhance one open space access point at Walden Park. Incorporate micromobility such as bike share or dockless options at major intersections or destination sites.

Map 14 Walnut Creek

PROJECT TYPE IMPROVEMENTS

Trail Corridor

- Separated by User
- Separated by Speed
- Separated by Experience

Intersections

- Arterial
- Collector
- Local
- Undercrossing
- Regional Trail

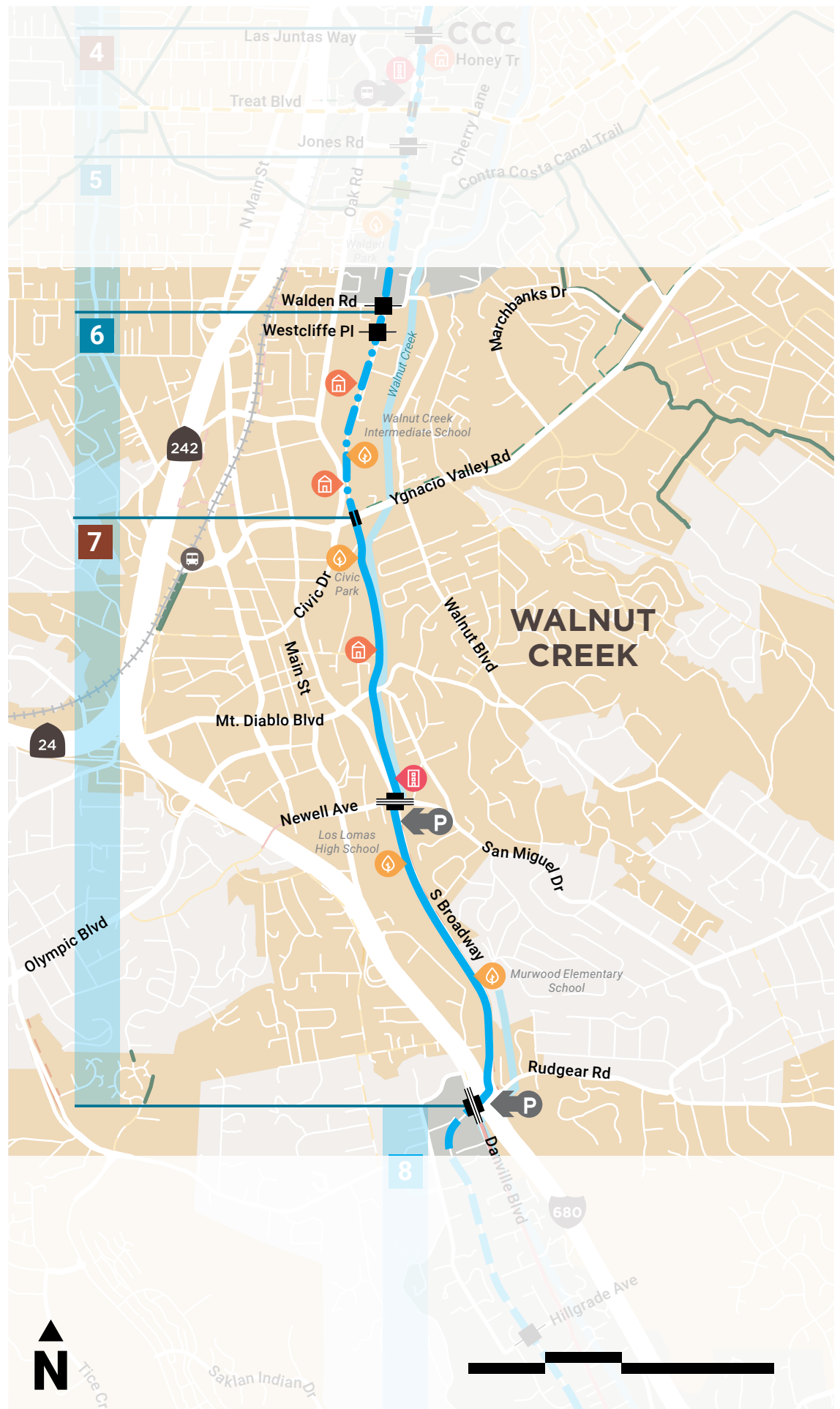
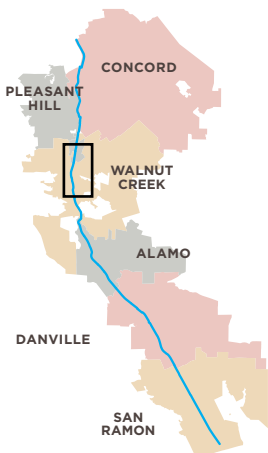
Access

- School/Open Space/Trail
- Residential/Street
- Business/Commercial/Retail

Connections

- Trail Connection
- On Street Bikeway Connection
- Existing Trail
- BART Connection
- Park and Ride Connection

KEY MAP



WALNUT CREEK PROJECTS

Walnut Creek includes the census tract with the potential for the highest population growth along the trail within the study area. There is a need to improve access along all three segments and potential for adding mobility hubs to provide first/last mile connections to the Walnut Creek BART station. Segment 7 shows the highest need for improvements to access, connectivity,

and trail convenience. The community also identified a high number of needs along this segment. This segment also has the least available right-of-way. The Study explores trail realignment alternatives in Segment 7 that address public perception of safety, improve intersection crossings, and enhance connectivity to downtown Walnut Creek and BART.

6 Segment 6: Walden to Ygnacio Valley

<i>Project type</i>	<i>Description</i>
★ Trail Corridor	<ul style="list-style-type: none"> Separate users by experience: 14 ft rolling path and 6'-8' walking path.
Intersections	<ul style="list-style-type: none"> Improve one local crossing at Westcliffe Pl.
Access	<ul style="list-style-type: none"> Enhance one residential access point, one school access point at Walnut Creek Intermediate School, and one street access point. Incorporate micromobility such as bike share or dockless options at major intersections or destination sites.

7 Segment 7: Ygnacio Valley through Danville/I-680

<i>Project type</i>	<i>Description</i>
★ Trail Corridor	<ul style="list-style-type: none"> Trail improvements from Ygnacio Valley Blvd to Newell Ave <ul style="list-style-type: none"> » Alt 1: Realign trail and separate users by expanding the trail to 12-16 ft and add 6 ft pedestrian path on east side of canal (Alt 1 used in cost estimate). » Alt 2: Separate users by providing a Class IV on-street adjacent route for cyclists. » Alt 3: Widen trail to 12-16 ft cantilevering over channelized canal. Trail improvements from Newell Ave to Danville Blvd/Rudgear Rd <ul style="list-style-type: none"> » Alt 1: Remove soundwall and widen trail to 12-16 ft with buffer/amenity zone (Alt 1 used in cost estimate). » Alt 2: Realign trail on east side of S Broadway Rd and widen trail to 12-16 ft with buffer/amenity zone.
Intersections	<ul style="list-style-type: none"> Improve two arterial intersections at Newell Ave and Danville Blvd.
★ Access	<ul style="list-style-type: none"> Enhance one residential access point, one open space access point at Civic Park, one commercial access point, and two school access points at Los Lomas High School and Murwood Elementary School.
Connections	<ul style="list-style-type: none"> Improve Park and Ride connections at Newell and S Broadway/I-680 intersection.

PROJECT TYPE IMPROVEMENTS

Trail Corridor

- Separated by User
- - - Separated by Speed
- · · Separated by Experience

Intersections

- Arterial
- Collector
- Local
- Undercrossing
- Regional Trail

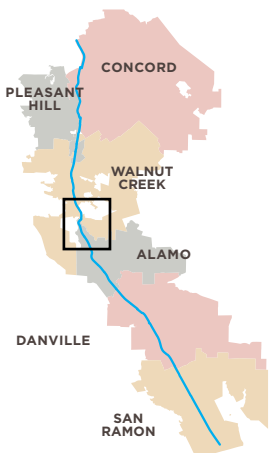
Access

- School/Open Space/Trail
- Residential/Street
- Business/Commercial/Retail

Connections

- - - Trail Connection
- - - On Street Bikeway Connection
- Existing Trail
- BART Connection
- Park and Ride Connection

KEY MAP



ALAMO PROJECTS

Alamo includes three segments of the lowest user demand in the study corridor. This is due to lower density of origins and destinations as well as limited low stress on-street bikeway connections. The local activity in Alamo is expected to be largely recreational, however, utilitarian users will pass through Alamo. Improving local intersections so that trail

users would have priority would improve trail convenience. Segment 8 has a large right-of-way with open space. There are opportunities for trail-oriented development and stronger connections to commercial activity in Segment 9. In Segment 10, access could be improved to Rancho Romero School and Hemme Station Park.

8 Segment 8: Danville/I-680 to Stone Valley

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separate users by speed with a 22' paved trail with marked shoulders.
★ Intersections	<ul style="list-style-type: none"> Improve five local crossings at Hilgrade Ave, Cervato Dr, Ramona Way, Litina Ave, and Ridgewood Rd. Improve one collector intersection at Livorna Rd.
Access	<ul style="list-style-type: none"> Add two commercial access points adjacent to Stone Valley commercial areas. Enhance Alamo/IHT Trailhead at Stone Valley Rd. Enhance planting.

9 Segment 9: Stone Valley to South Ave

<i>Project type</i>	<i>Description</i>
★ Trail Corridor	<ul style="list-style-type: none"> Separate users by speed with a 20' paved trail with marked shoulders.
Intersections	<ul style="list-style-type: none"> Improve two collector intersections at Stone Valley Rd and Las Trampas Rd.
Access	<ul style="list-style-type: none"> Enhance three existing commercial access points.
★ Connection	<ul style="list-style-type: none"> Connect trail to Class II at Stone Valley Rd.

10 Segment 10: South Ave through Wayne

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separate users by speed with a 20' paved trail with marked shoulders.
Intersections	<ul style="list-style-type: none"> Improve three local crossings at Hemme Ave, Camille Ave, and Wayne Ave.
Access	<ul style="list-style-type: none"> Enhance existing residential/street access at South Ave, existing open space access at Hemme Station Park, and existing school access at Hemme Ave for Rancho Romero Elementary School.

DANVILLE PROJECTS

Danville's adjacent Main Street district provides a unique destination along the study area. Segment 11 is a wide shaded corridor connecting residents with Del Amigo High School and downtown Danville. Segment 12

connects to downtown Danville and has opportunities for trail-oriented development, improving connections and wayfinding to connect Main Street activities and the trail. Segment 13 is a

PROJECT TYPE IMPROVEMENTS

Trail Corridor

- Separated by User
- - - Separated by Speed
- · · Separated by Experience

Intersections

- Arterial
- Collector
- Local
- Undercrossing
- Regional Trail

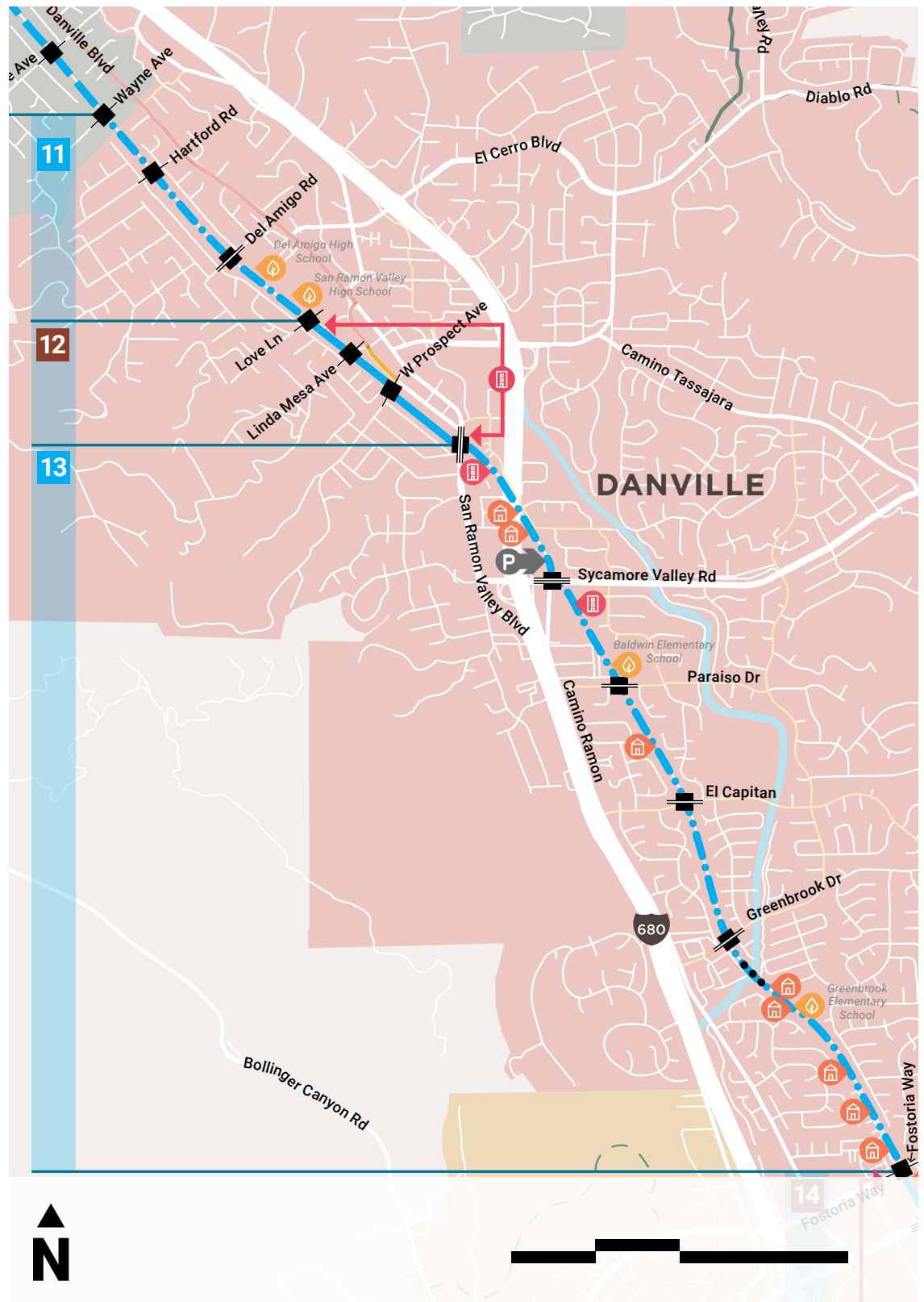
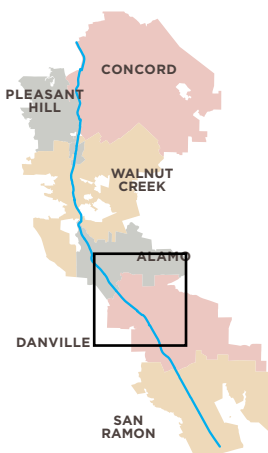
Access

- School/Open Space/Trail
- Residential/Street
- Business/Commercial/Retail

Connections

- - - Trail Connection
- - - On Street Bikeway Connection
- Existing Trail
- BART Connection
- Park and Ride Connection

KEY MAP



large unconstrained corridor with opportunities for linear park amenities. Improvements to collector and arterial intersection crossings would improve trail convenience. Access to destinations such as schools and Danville Park and Ride could also be improved.

11 Segment 11: Wayne through Love Lane

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separated by experience: 14ft rolling path with 6 ft pedestrian path. Opportunities for green stormwater infrastructure.
Intersections	<ul style="list-style-type: none"> Improve two local crossings at Hartford Rd and Love Ln. Improve collector road intersection at Del Amigo Rd.
Access	<ul style="list-style-type: none"> Add two school access points for San Ramon Valley High School and Del Amigo High School. Incorporate micromobility at major intersections or destination sites.

12 Segment 12: Love Lane through San Ramon Valley

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separated by user (urban): 14ft rolling path with 6 ft pedestrian path.
★ Intersections	<ul style="list-style-type: none"> Improve arterial intersection at San Ramon Valley Blvd. Improve trail alignment and intersection at Linda Mesa Ave and W. Prospect Ave.
Access	<ul style="list-style-type: none"> Add five new commercial access points. Incorporate micromobility at major intersections or destination sites.
Connections	<ul style="list-style-type: none"> Enhance connection to adjacent Danville Class II bikeway

13 Segment 13: San Ramon Valley through Fostoria

<i>Project type</i>	<i>Description</i>		
★ Trail Corridor	<ul style="list-style-type: none"> Separated by experience: 14ft rolling path with 6 ft pedestrian path. Improve creek overpass to accommodate higher demand <ul style="list-style-type: none"> » Alt 1: Add additional bridge or retrofit existing (Alt 1 used in cost estimate). » Alt 2: Create mixing zones, slowing users prior to pinch point. I-680 Undercrossing improvements: improve lighting, clearances and engage with potential open space such as skate parks or murals. Opportunities for green stormwater infrastructure. 		
★ Intersections	<table border="0"> <tr> <td> <ul style="list-style-type: none"> Improve local crossing at Fostoria Way. Improve three collector road intersections at Paraiso Dr, El Capitan Dr, and Greenbrook Dr. </td> <td> <ul style="list-style-type: none"> Sycamore Valley Rd <ul style="list-style-type: none"> » Alt 1: Improve trail alignment and arterial intersection at Sycamore Valley Rd (Alt 1 used in cost estimate). » Alt2: Add overcrossing at Sycamore Valley Rd. </td> </tr> </table>	<ul style="list-style-type: none"> Improve local crossing at Fostoria Way. Improve three collector road intersections at Paraiso Dr, El Capitan Dr, and Greenbrook Dr. 	<ul style="list-style-type: none"> Sycamore Valley Rd <ul style="list-style-type: none"> » Alt 1: Improve trail alignment and arterial intersection at Sycamore Valley Rd (Alt 1 used in cost estimate). » Alt2: Add overcrossing at Sycamore Valley Rd.
<ul style="list-style-type: none"> Improve local crossing at Fostoria Way. Improve three collector road intersections at Paraiso Dr, El Capitan Dr, and Greenbrook Dr. 	<ul style="list-style-type: none"> Sycamore Valley Rd <ul style="list-style-type: none"> » Alt 1: Improve trail alignment and arterial intersection at Sycamore Valley Rd (Alt 1 used in cost estimate). » Alt2: Add overcrossing at Sycamore Valley Rd. 		
Access	<ul style="list-style-type: none"> Add one new residential access point and one commercial access point. Enhance five residential access points and two school access points at John F. Baldwin Elementary School and Greenbrook Elementary School. Enhance access at Danville Park and Ride. Incorporate micromobility at major intersections or destination sites. 		

Map 17 San Ramon

PROJECT TYPE IMPROVEMENTS

Trail Corridor

- Separated by User
- Separated by Speed
- Separated by Experience

Intersections

- Arterial
- Collector
- Local
- Undercrossing
- Regional Trail

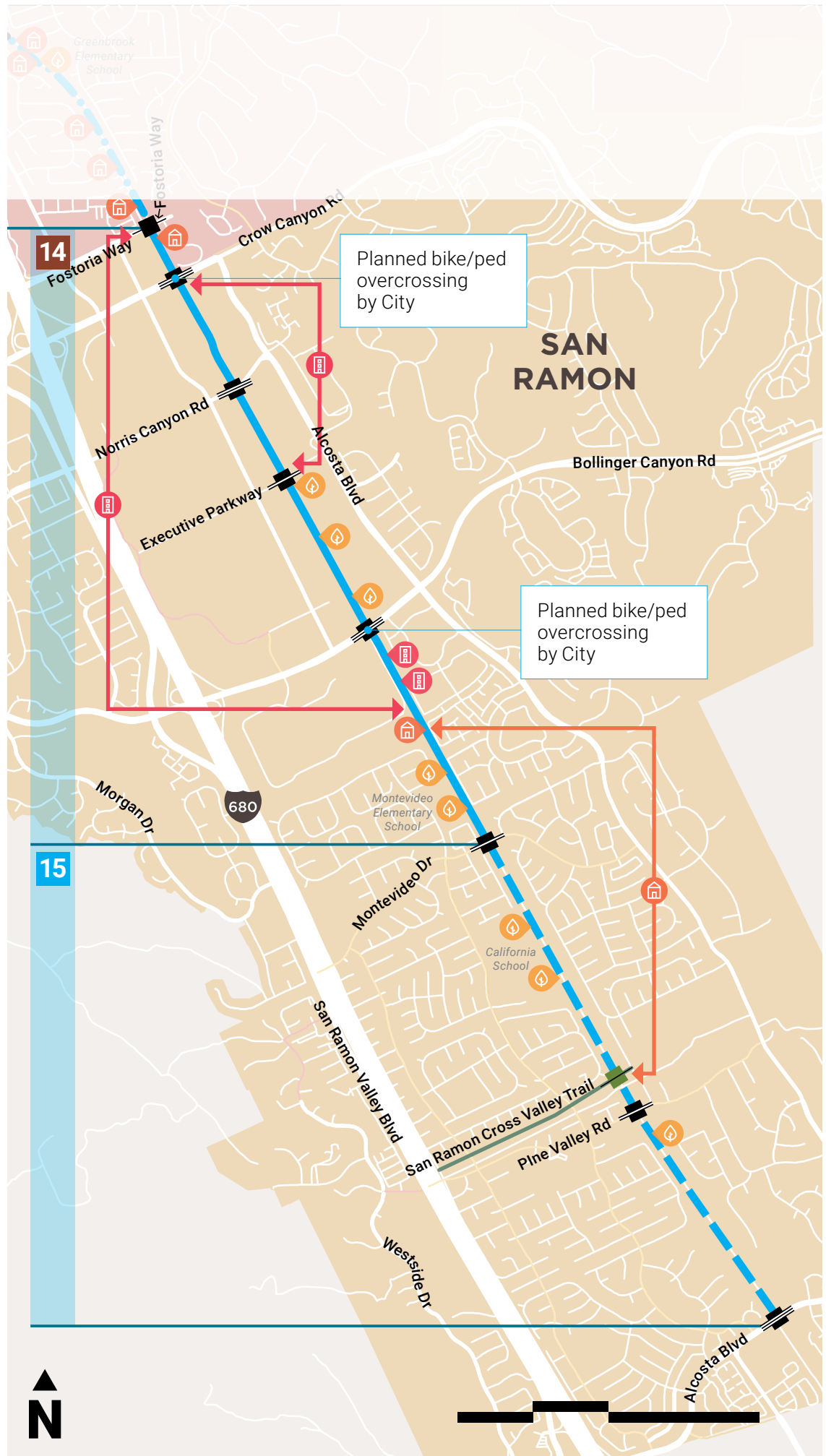
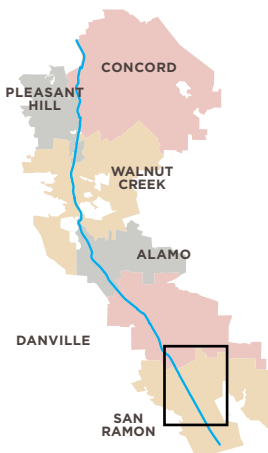
Access

- School/Open Space/Trail
- Residential/Street
- Business/Commercial/Retail

Connections

- Trail Connection
- On Street Bikeway Connection
- Existing Trail
- BART Connection
- Park and Ride Connection

KEY MAP



SAN RAMON PROJECTS

San Ramon includes two segments with high expected user demand. San Ramon has the highest projected employment growth in the study area. Segment 14 connects to the employment and commercial area around Bishop Ranch and has a high need and great potential for improving access, connectivity, and intersection improvements. Segment 15 runs through and

connects directly to neighborhoods, and shows high connectivity and intersection improvement needs. Opportunities include improving the connection to San Ramon Cross Valley Trail, and adding shade for a comfortable riding experience with additional access points to California High School and Montevideo Elementary School. Both segments have wide available ROW.

14 Segment 14: Fostoria to Montevideo

<i>Project type</i>	<i>Description</i>
★ Trail Corridor	<ul style="list-style-type: none"> Separate users by type. 14' rolling path and 6' walking path Separate users by speed and experience. Provide a 16'-20' path for fast user types and 8-12' for slow user types with 4' green infrastructure or amenity zone. Opportunity for new linear park. Implement community based programs including outdoor classrooms, student gardens, or community gardens.
★ Intersections	<ul style="list-style-type: none"> Improve two collector intersections at Montevideo Dr and Executive Pkwy. Improve arterial intersection at Norris Canyon Rd.
★ Access	<ul style="list-style-type: none"> Provide two new gateway access points to adjacent business parks, 13 new minor business park access points, one new residential access point, and one new open space access point. Enhance up to seven existing business park access points, four existing residential access points, two existing open space, and two existing school access points at Montevideo Elementary School. Incorporate micromobility such as bike share or dockless options at major intersections or destination sites.

15 Segment 15: Montevideo through Alcosta

<i>Project type</i>	<i>Description</i>
Trail Corridor	<ul style="list-style-type: none"> Separate users by speed with a 20' paved trail with marked shoulders. Shade trees. Opportunities for green stormwater infrastructure.
Intersections	<ul style="list-style-type: none"> Improve two collector intersections at Pine Valley Rd and Alcosta Blvd. Improve trail crossing at San Ramon Cross Valley Trail. Proposed bicycle trail roundabout.
Access	<ul style="list-style-type: none"> Enhance one school access point at California School and one residential access point. Add one school access point at California School, one open space access point, and one residential access point. Incorporate micromobility such as bike share or dockless options at major intersections or destination sites.

PROJECT RANKING

The results of the prioritization process provide a ranking of projects based on the goal-based evaluation model. Table 9 shows the overall ranking of projects along the corridor.

While all of the proposed projects described in the previous pages are important for ensuring a consistent and cohesive long-term vision for the Iron Horse Trail, identifying priority projects can help target improvements that can provide the greatest immediate benefit to the corridor and its surrounding communities.

The top-tier projects align with areas of greater expected demand such as Pleasant Hill, Walnut Creek, and San Ramon. Trail corridor improvements in these areas will help ensure the trail is wide enough to accommodate anticipated user demand. Implementing these specific trail corridor improvements will also benefit the corridor as a whole, as widening the trail to improve user comfort and efficiency in all locations will help enable the trail to function as a bicycle superhighway.

The communities with higher expected demand also have higher levels of destinations adjacent to the trail, and will benefit from improvements that enhance safe and convenient access to the trail. In all communities, intersection, access, and connection improvements will help connect trail users to the various points of interest along the trail.

The trail improvements have been organized into segments and improvement types to help jurisdictions build projects that align with various funding sources. Projects should be grouped together to maximize resources and provide the most comprehensive enhancements to different sections of the trail.

A long-term implementation plan for all of the proposed improvements will require multi-jurisdictional coordination and collaboration. Cost estimates for the proposed projects as well as implementation strategies and funding opportunities are outlined in the next chapter.

Table 9 Top Overall Projects

<i>Rank</i>	<i>City</i>	<i>Segment</i>	<i>Improvement Type</i>
1	Pleasant Hill	4	Trail Corridor
2	Walnut Creek	7	Trail Corridor
3	Pleasant Hill	4	Connection
4	Concord	1	Trail Corridor
5	San Ramon	14	Access
6	Danville	13	Intersection
7	Concord	2	Intersection
8	Danville	13	Trail Corridor
9	Pleasant Hill	4	Intersection
10	Pleasant Hill	3	Trail Corridor
11	San Ramon	14	Trail Corridor
12	Walnut Creek	7	Access
13	San Ramon	14	Intersection
14	Walnut Creek	6	Trail Corridor
15	Alamo	9	Connection

Continued on next spread

Map 18 Trip Demand + Activity Centers

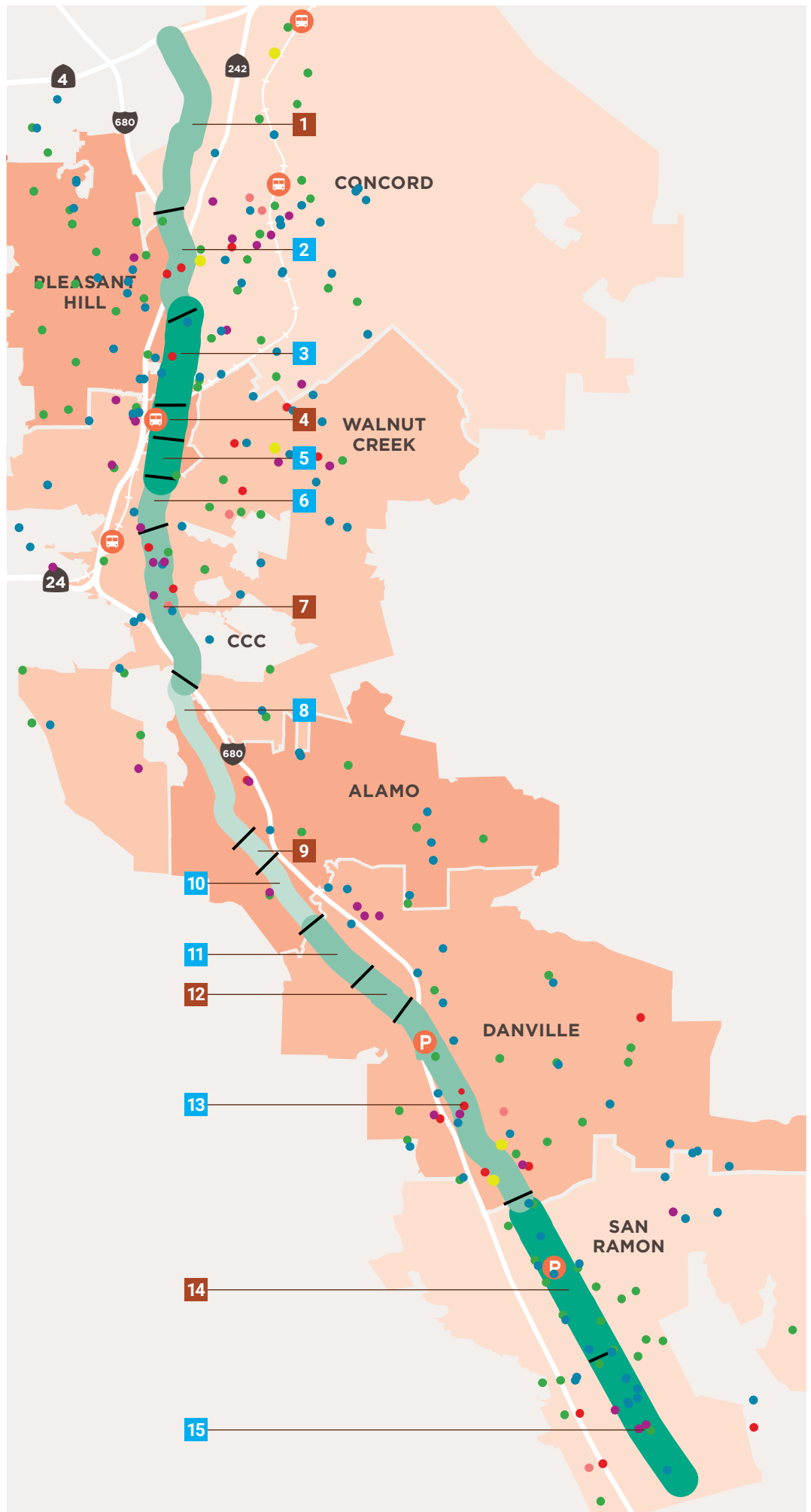
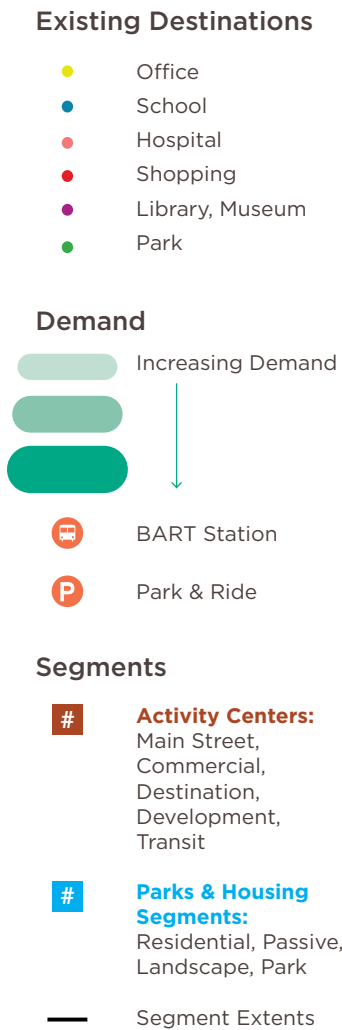
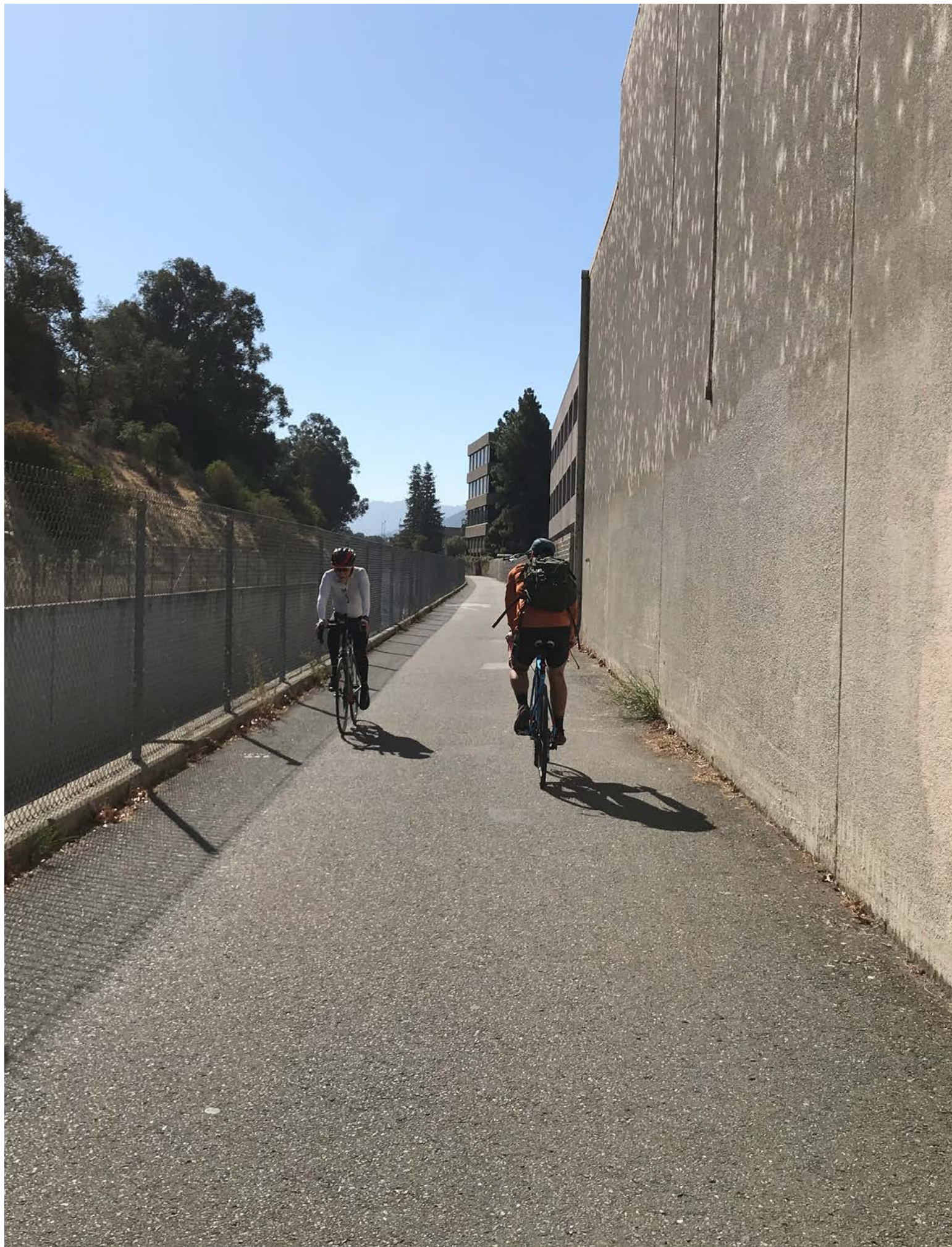


Table 9 Top Overall Projects continued

Rank	City	Segment	Improvement Type
16	Pleasant Hill	5	Trail Corridor
17	Walnut Creek	7	Intersection
18	Concord	1	Connection
19	Pleasant Hill	4	Access
20	Danville	12	Intersection
21	Danville	12	Connection
22	Danville	12	Trail Corridor
23	Alamo	9	Trail Corridor
24	Danville	13	Access
25	Alamo	8	Intersection
26	Pleasant Hill	5	Intersection
27	Concord	1	Intersection
28	Concord	2	Access
29	San Ramon	15	Intersection
30	Alamo	9	Intersection
31	Alamo	9	Access
32	Walnut Creek	7	Connection
33	Alamo	8	Trail Corridor
34	Danville	12	Access

Rank	City	Segment	Improvement Type
35	San Ramon	15	Trail Corridor
36	Pleasant Hill	3	Intersection
37	Pleasant Hill	3	Access
38	Concord	1	Access
39	Concord	2	Trail Corridor
40	Walnut Creek	6	Access
41	Concord	2	Connection
42	Walnut Creek	6	Intersection
43	Danville	11	Trail Corridor
44	Pleasant Hill	3	Connection
45	San Ramon	15	Access
46	Pleasant Hill	5	Access
47	Alamo	10	Trail Corridor
48	Alamo	10	Access
49	Alamo	8	Access
50	Danville	11	Intersection
51	Danville	11	Access
52	Alamo	10	Intersection





05 How to Implement the Proposed Projects?

This chapter presents planning-level cost estimates for the proposed improvements, operations and maintenance considerations for the trail, and potential funding sources for capital improvements, operations, and maintenance. In addition, it examines the trail's existing governance structure and highlights strategies that could be used to enhance its current capacity.

To implement the recommended improvements for the Iron Horse Trail, the projects will first need to proceed into detailed design, engineering, potential environmental review, and construction. Each of these project phases will have costs associated with their implementation. Once implemented, the improvements will require a long-term operations and maintenance plan to ensure the Iron Horse Trail remains a safe and comfortable experience for trail users.



COST ESTIMATING

Planning-level cost estimates were developed for the projects. Each project (Chapter 4) is defined by a unique set of typical design elements (Chapter 3). Each design element has a typical linear foot cost (trail configuration and trail amenities) or per unit cost (intersection and access point types) associated with it. The unique combination of design elements and associated unit costs are summed for each project to produce a planning-level cost estimate.

Unit costs were developed by calculating the hard costs and soft costs for each design element. Hard costs include material, equipment, and labor. Soft costs include consultant

contracts, project administration, and construction management. Both hard and soft costs are informed by typical costs for the region and similar project types.

Table 10 provides a description of the typical unit costs for the Iron Horse Trail Active Transportation Study, and the various features associated with each design element.

Table 10 **Unit Costs** *continues on next page*

<i>Item</i>	<i>Unit</i>	<i>Unit Cost (w/ soft costs and contingency)</i>	<i>Assumptions</i>
Trail Corridor			
20' Asphalt Trail	MI	\$1,370,000	20'-wide asphalt trail, base materials, and shoulders
14' Asphalt Trail	MI	\$960,000	14'-wide asphalt trail, base materials, and shoulders
6' Asphalt Trail	MI	\$680,000	6'-wide asphalt trail, base materials, and shoulders
6' Cantilever Pedestrian Trail	MI	\$12,550,000	6'-wide pedestrian trail, cantilever structure and footings, and railings
Undercrossings & Bridges			
Undercrossing Retrofit	EA	\$320,000	Regrading of 200 LF of existing trail, incised trail at undercrossing (does not include cost of trail surface)
Channel Crossing	EA	\$650,000	14'-wide trail, 75'-long culvert structure (average dimension)
Channel Crossing Retrofit	EA	\$180,000	6'-widening of an existing short channel crossing

Table 10 Unit Costs continued

Item	Unit	Unit Cost (w/ soft costs and contingency)	Assumptions
Trail Amenities			
Wayfinding	MI	\$20,000	Typical cost for wayfinding design and implementation along trail and at access points including gateway signs and mapboard kiosks.
Lighting	MI	\$890,000	Pedestrian-scale post lights, 30' O.C. spacing
Shade Trees	MI	\$150,000	100' O.C. average spacing, assumed to have closer spacing near amenity areas
Green Infrastructure	LF	\$300	10'-wide bioswale or rain garden
Linear Park	LF	\$400	30'-wide linear park, includes clearing and grubbing, seating, landscaping, hydration station, shade structures, and flexible lawn space
Native Plantings	LF	\$100	10'-wide planting strip, no irrigation
Intersections			
Overcrossing	EA	\$21,000,000	16'-wide overcrossing, 80ft-long roadway span, 400'-long ramps from each direction, and railings
Local Intersection	EA	\$60,000	Clearing and grubbing to open up sightlines, trail approach improvement to replace bollard with raised median and planting, pavement widening, and ADA ramps
Collector Intersection	EA	\$60,000	Clearing and grubbing to open up sightlines, trail approach improvement to replace bollard with raised median and planting, pavement widening, and ADA ramps
Arterial Intersection	EA	\$70,000	Clearing and grubbing to open up sightlines, trail approach improvement to replace bollard with raised median and planting, significant pavement widening, and ADA ramps
Connection from Trail to On-Street Bikeway / Street Access	EA	\$20,000	Specialty striping, curb cut, ADA ramp, ADA parking, and signage
Trail Crossing Improvements	EA	\$51,000	Benches, asphalt pavement, roundabout, landscape, irrigation, and decorative fence
Access Points			
New Residential/ Open Space Access	EA	\$24,000	Clearing and grubbing, boulder seating, asphalt paving, landscape, irrigation, and decorative fence
New Commercial/ Business Park Access	EA	\$115,000	Clearing and grubbing, benches, plaza paving, landscape, irrigation, and bike racks
New Access to Adjacent Parking Lot	EA	\$3,500	Clearing and grubbing, asphalt paving, and signage
New School Access	EA	\$90,000	Clearing and grubbing, benches, plaza paving, landscape, irrigation, school garden, and decorative fence and gate
Existing Access Improvements	EA	\$18,000	Clearing and grubbing, benches, asphalt widening, landscape, irrigation, and decorative fence
Access Channel Crossing	EA	\$2,160,000	12'-wide concrete trail, 250'-long bridge structure (average dimension), and railings

Project Costs

Overall project costs are shown for improvements required to achieve this Study's vision and provide a comfortable user experience. An estimated \$80 million would be required to provide for the identified trail corridor improvements, trail amenities such as lighting, wayfinding, shade trees, and landscaping, intersection improvements, and access enhancements. The average per mile cost is approximately \$2.5 million, excluding segment 2 which has a per mile cost of \$18 million because it includes a new grade separated crossing at Monument Boulevard.

Approximately \$30 million of opportunities for green infrastructure and new and enhanced linear parks along the study area were also identified. These improvements could greatly enhance user experience, recreation, water quality, and ecology, but are not critical for achieving the Study vision. These additional costs are provided as a footnote to Table 11.

Project costs are shown in Table 11 by segment and summed by jurisdiction, and the top-ranked projects per jurisdiction are starred for reference.

Table 11 Planning-Level Cost Estimates by Jurisdiction *continues on next page***Concord**

Segment	1	2
Extents	Mash through Willow Pass	Willow Pass through Monument
Length (mi)	2.5	1.5
Per Mile Cost	\$2,753,200	\$18,175,900
Total Cost	\$6,883,000	\$27,263,800
Hard Costs	\$4,779,900	\$18,933,200
Trail Corridor	★ \$2,034,490	\$1,153,200
Undercrossings & Bridges	\$442,772	\$221,400
Trail Amenities	\$1,816,932	\$1,029,800
Intersections	\$129,400	★ \$12,000
Intersection overcrossing	\$0	\$15,000,000
Access Points	\$356,280	\$1,516,800
Soft Costs	\$955,975	\$3,786,600
Contingency	\$1,147,170	\$4,544,000
Cost Per Jurisdiction	\$34,146,800	

Opportunities for \$7.1 million of green infrastructure improvements*Pleasant Hill/CCC**

Segment	3	4	5
Extents	Monument to Las Juntas	Las Juntas through Jones	Jones through Walden
Length (mi)	1.8	0.4	0.5
Per Mile Cost	\$2,343,200	\$2,607,500	\$2,474,800
Total Cost	\$4,217,700	\$1,043,000	\$1,237,400
Hard Costs	\$2,928,900	\$724,300	\$859,300
Trail Corridor	★ \$1,507,300	\$304,800	\$436,600
Undercrossings & Bridges	\$0	\$0	\$0
Trail Amenities	\$1,152,900	\$233,100	\$333,900
Intersections	★ \$176,000	\$94,000	\$76,400
Intersection overcrossing	\$0	\$0	\$0
Access Points	\$92,700	\$92,400	\$12,400
Soft Costs	\$585,800	\$144,900	\$171,900
Contingency	\$703,000	\$173,800	\$206,200
Cost Per Jurisdiction	\$6,498,100		

**Opportunities for \$3.9 million of linear park improvements*

Table 11 Planning-Level Cost Estimates by Jurisdiction continued

Walnut Creek

Segment	6	7
Extents	Walden to Ygnacio Valley	Ygnacio Valley through Danville/I-680
Length (mi)	0.75	1.5
Per Mile Cost	\$2,132,000	\$3,026,700
Total Cost	\$1,599,000	\$4,540,100
Hard Costs	\$1,110,400	\$3,152,900
Trail Corridor	★ \$584,800	★ \$1,123,400
Undercrossings & Bridges	\$0	\$900,000
Trail Amenities	\$447,300	\$951,300
Intersections	\$41,000	\$116,000
Intersection overcrossing	\$0	\$0
Access Points	\$37,300	★ \$62,200
Soft Costs	\$222,100	\$630,600
Contingency	\$266,500	\$756,700
Cost Per Jurisdiction	\$6,139,100	

*Opportunities for \$1.6 million of green infrastructure improvements

Alamo

Segment	8	9	10
Extents	Danville/I-680 to Stone Valley	Stone Valley to South Ave	South Ave through Wayne
Length (mi)	2.5	0.5	1.0
Per Mile Cost	\$2,914,800	\$2,380,800	\$2,415,600
Total Cost	\$6,995,400	\$1,190,400	\$2,415,600
Hard Costs	\$4,857,800	\$826,700	\$1,677,500
Trail Corridor	\$2,223,900	★ \$418,200	\$912,400
Undercrossings & Bridges	\$0	\$0	\$0
Trail Amenities	\$2,215,500	\$277,200	\$604,800
Intersections	★ \$246,000	\$94,000	\$123,000
Intersection overcrossing	\$0	\$0	\$0
Access Points	\$172,400	\$37,300	\$37,300
Soft Costs	\$971,600	\$165,300	\$335,500
Contingency	\$1,165,900	\$198,400	\$402,600
Cost Per Jurisdiction	\$10,601,400		

Table 11 Planning-Level Cost Estimates by Jurisdiction continued

Danville

Segment	11	12	13
Extents	Wayne through Love Lane	Love Lane through San Ramon Valley	San Ramon Valley through Fostoria
Length (mi)	1.0	0.7	3.0
Per Mile Cost	\$2,411,400	\$2,823,000	\$2,561,800
Total Cost	\$2,411,400	\$1,976,100	\$7,685,300
Hard Costs	\$1,674,600	\$1,372,300	\$5,337,000
Trail Corridor	\$807,200	\$560,100	★ \$2,413,400
Undercrossings & Bridges	\$0	\$0	\$671,400
Trail Amenities	\$617,400	\$428,400	\$1,845,900
Intersections	\$123,000	★ \$140,000	★ \$210,000
Intersection overcrossing	\$0	\$0	\$0
Access Points	\$127,000	\$243,800	\$196,300
Soft Costs	\$334,900	\$274,500	\$1,067,400
Contingency	\$401,900	\$329,400	\$1,280,900
Cost Per Jurisdiction	\$12,072,800		

*Opportunities for \$10 million of green infrastructure and linear park improvements

San Ramon

Segment	14	15
Extents	Fostoria to Montevideo	Montevideo through Alcosta
Length (mi)	2.4	1.9
Per Mile Cost	\$2,301,000	\$2,391,300
Total Cost	\$5,522,400	\$4,543,500
Hard Costs	\$3,835,000	\$3,155,300
Trail Corridor	★ \$1,927,400	\$1,540,300
Undercrossings & Bridges	\$0	\$0
Trail Amenities	\$1,474,200	\$1,375,600
Intersections	★ \$128,000	\$117,400
Intersection overcrossing	\$0	\$0
Access Points	★ \$305,400	\$122,000
Soft Costs	\$767,000	\$631,000
Contingency	\$920,400	\$757,300
Cost Per Jurisdiction	\$10,065,900	

*Opportunities for \$8.5 million of green infrastructure and linear park improvements

OPERATIONS AND MAINTENANCE (O+M)

To realize the vision set forth in this Study, the Iron Horse Trail will require a new approach to governance—one that provides a new funding stream for trail operations and maintenance (O+M).

Existing O+M

The existing Iron Horse Trail corridor is owned by Contra Costa and Alameda Counties and is maintained by several agencies, including the East Bay Regional Park District (EBRPD), the two counties, and some of the other jurisdictions along the corridor.

The formal agreement between Contra Costa County and EBRPD is a license agreement, which outlines the specific areas and tasks that each entity is responsible for maintaining.

EBRPD is responsible for maintaining the paved 10-foot wide trail and five feet of the corridor on either side of the trail, as well as specific driveway sections, access points, and other areas along the corridor. EBRPD manages weed abatement within 5 feet of the trail and maintains the pavement, gravel shoulders, gates, signs, fences, and bollards, among other tasks. The County's Public Works

Department is responsible for maintaining the remaining areas of the corridor, except those managed by other local jurisdictions.

EBRPD's maintenance funds come from a mix of sources, including Measure WW, Measure J, and revenue generated from Community Facilities Districts (CFDs). The County's maintenance funds come from easements and licenses from private entities and utilities.

An Iron Horse Corridor Management Program Advisory Committee was authorized in 1997 to assist Contra Costa County in developing a management program for the Iron Horse Corridor. The Committee typically meets four times per year to review the trail's financial resources and discuss current projects along the corridor.

COST ESTIMATE BENCHMARKING

EBRPD estimates its maintenance costs for paved trails to be approximately \$25,000/mile/year. In addition to EBRPD maintenance costs, Contra Costa County typically spends an average of \$115,000 annually on the Iron Horse Trail corridor for tree trimming, mowing, and spraying. The maintenance costs (per mile per year) of other comparable trails are shown in Table 13. The improvements outlined in this Study will increase these costs significantly, closer to that of the American River Parkway, and will require a new strategy for O+M.

Management Structures

There are several different structures that are typically used for trails and can be considered for the Iron Horse Trail. Table 14 identifies some common management structures used by trails across the United States, and lists the pros and cons associated with each type.

Table 13 O+M Cost Estimate Benchmarking

Cost/ mile/year	Length (mi)	Facility
\$10,600	2	Mill Valley to Corte Madera Trail Northern California
\$24,000	12	East Bay Greenway Northern California
\$29,390	<1	Central Marin Ferry Connector
\$7.9 mil	1.45	High Line New York City
\$1.13 mil	15	San Antonio River Walk San Antonio, Texas
\$256,500	23	American River Parkway Sacramento, CA
\$285,700	3.5	Katy Trail Dallas, TX

Table 14 Trail Management Structures

Management Structure	Pros/Cons
A single governmental organization directly oversees management of path O+M.	<ul style="list-style-type: none"> + Management structure used for paths managed by a single agency. - Not conducive to multi-jurisdictional coordination.
A non-profit organization establishes an independent group to coordinate the various jurisdictions and run O+M.	<ul style="list-style-type: none"> + Able to draw funding from a larger pool of sources, including private funding + More flexibility with program development, advocacy, and communications - No authority of an elected body or landowner - No dedicated funding source without assistance from local, state, or federal funding mechanisms
A cooperative agreement may divide the responsibilities for O+M among multiple agencies.	<ul style="list-style-type: none"> + Allows for agencies to manage the trail within their jurisdiction, while a non-profit group or authority oversees the project vision through planning, programming, and fundraising - Potential for inconsistent management throughout corridor
A Joint Powers Authority (JPA) , typically guided by a governing board, is a legal entity that allows two or more public agencies to jointly exercise common powers.	<ul style="list-style-type: none"> + Allows for one entity to oversee a trail over multiple jurisdictions + Can pursue donations and grants by establishing a nonprofit - Cost considerations for establishing and running a new entity (admin, overhead, etc.)
In a commission , governmental and non-governmental entities are part of a governing board.	<ul style="list-style-type: none"> + Governmental and non-governmental entities are part of governing board + Stable funding source from membership fees + Can pursue donations and grants by establishing a nonprofit - Membership fees are relative to population and trail length, which may result in unequal distribution across the corridor
A Special District is a public agency created to provide one or more specific services to a community.	<ul style="list-style-type: none"> + Creates a designated funding stream + Provides local accountability as board members are elected by the districts' voters - Funding requires voter approval

A NEW MANAGEMENT APPROACH

The existing management structure for the Iron Horse Trail has been successful in managing the trail as it exists today, which involves a narrow paved path and limited amenities. However, a new strategy will be needed to ensure there are adequate funds available to implement and maintain the proposed projects outlined in Chapter 4.

One consideration would be to formalize the existing management structure, in which different entities are responsible for maintaining different sections of the trail, by creating a Joint Powers Authority (JPA). The JPA would be a new separate legal entity with a shared vision and responsibility for managing and maintaining the trail.

The creation of a JPA could formalize the existing partnership between Contra Costa County, EBRPD, and other entities along the trail, enabling them to more effectively share resources and coordinate O+M tasks. It would also offer an opportunity to bring additional partners into the governance strategy for the trail. Each member agency of the JPA could allocate a portion of their funding to support the administrative and operating expenses of the new entity. Potential partners include Contra Costa and Alameda Counties, EBRPD, the Contra Costa Transportation Authority (CCTA), and the cities and other local jurisdictions along the corridor (see Table 15).

Additional funding resources for O+M could come through state and federal funding sources as well as private sources. Local bond measures may also provide a potential future funding source for the trail. While bond measures such as Measure WW have been successful in funding parks and recreation

Table 15 Iron Horse Trail O+M Structure

Existing Partners

Contra Costa County

Alameda County

East Bay Regional Park District (EBRPD)

Potential Additional Partners

Contra Costa Transportation Authority (CCTA)

Local Jurisdictions: Concord, Pleasant Hill, Walnut Creek, Alamo, Danville, San Ramon, Dublin, Pleasanton

projects in Contra Costa County in the past, they can be challenging to implement because they must have a majority approval to get on the ballot, and once there, typically require a two-thirds approval vote by county voters.

Because the trail is transitioning from a recreational resource to an active mobility corridor focused on transportation, new transportation-related funding may become available. Additionally, trail-oriented development could provide funding opportunities through new taxes, fees, and revenue generated through programming and other events.

Finally, a nonprofit group such as a "Friends of the Iron Horse Trail" could be established to help provide funding for O+M through private donations. These could include foundation, corporate, and individual donations. This nonprofit could help develop the vision of the trail through programming and events, coordinate volunteers for maintenance and restoration tasks, and increase revenue through fundraising activities. The nonprofit organization could also pursue state and federal grants.

Operations and Maintenance (O+M)

Maintenance activities for the trail may be routine or remedial, and will vary depending on the trail configuration, amenities, and specific context of different locations along the trail. Areas that have higher demand, such as those near San Ramon or Walnut Creek, may require higher levels of maintenance than those areas that have lower demand. Table 16 provides examples of typical O+M tasks for trails along with their suggested frequencies.

ROUTINE

Routine maintenance refers to the day-to-day regimen of litter pick-up, trash and debris removal, weed and dust control, path sweeping, vegetation trimming, and other regularly scheduled activities. Some routine maintenance may be conducted on a seasonal basis.

REMEDIAL

Remedial maintenance refers to repairing, replacing, or restoring major components that have been destroyed, damaged, or significantly deteriorated from normal usage and old age. Some items ("minor repairs") may occur on a five to ten-year cycle, such as repainting or replacing signage. Major reconstruction items will occur over a longer period or after an event such as a flood. Examples of major reconstruction include repaving a path surface or replacing railings and other site elements.

Table 16 O+M Tasks and Cost Estimates for the Iron Horse Trail

Task	Type	Suggested Frequency	National Averages
Path sweeping and debris removal		Weekly; after rain events	\$1,200-\$2,500
Concrete repair (periodic removals)		As needed	\$5,000-\$10,000
Re-mark pavement symbols and striping		1-3 years, as needed	\$250-\$1,500
Sign repair/replacement		1-3 years	\$200-\$800
Gates and fencing repair		As needed	\$500-\$1,500
Clearing of drainage culverts		After storm events	\$400-\$800
Structures maintenance (cyclic)		Bi-annually	\$500-\$2,000
Structures maintenance (periodic renewals)		Bi-annually	\$1,000-\$3,500
Lighting maintenance		As needed	\$1,000-\$3,000
Site furnishings		As needed	\$800-\$2,000
Graffiti removal		Immediately	\$800-\$1,500
Restroom maintenance		Daily	\$500-\$1,000
Landscaping		Weekly	\$5,000-\$8,000
Enforcement and safety		Daily	Two FTE

O+M COST CONSIDERATIONS FOR THE IRON HORSE TRAIL

By implementing the projects outlined earlier in this Study, the O+M costs for the corridor are expected to rise. Enhanced lighting and amenities would likely result in an additional need for routine maintenance along the corridor. Additionally, enhanced or new access points may require new security measures, which are not included in the trail's current O+M costs. Specialty paving at mixing zones, signage and pavement markings, and the presence of a wider trail would also require additional maintenance. A full-time trail coordinator could help ensure that all O+M needs are addressed in a timely manner, which would increase the trail's existing administrative and personnel costs.

O+M AND CAPITAL IMPROVEMENT FUNDING OPPORTUNITIES

There are several potential funding sources that can be considered for the Iron Horse Regional Trail capital improvements and O+M costs. These potential sources are outlined in the following pages. Local and private funding sources can potentially be used for both routine and remedial maintenance, while grant programs are mainly relevant for major capital improvement costs. Grant programs typically cannot be used for maintenance.

LOCAL GOVERNMENT FUNDING/TAXES/FEES

Local and regional funding opportunities may take several forms, from government budget allocation to local fees and taxes. Specific opportunities may include:

Allocation in Government Budget

General Fund

Local Bond Measures

- Measure J: Contra Costa County's Measure J program provides funding for pedestrian, bicycle, and trail facilities as well as local street maintenance and improvements.
- Measure WW: Measure WW provides funding to expand regional parks and trails in Contra Costa County, as well as to preserve local open space and recreation areas.

Utility Lease Revenue

Enhanced Infrastructure Financing Districts (EIFDs)

- EIFDs were approved by the California Legislature in 2015 to allow communities to establish specific districts in which they can collect local property tax revenues to fund local infrastructure projects.

REGIONAL SOURCES

Bay Area Air Quality Management District (BAAQMD) Grant Programs

- BAAQMD funds support bicycle facility and other greenhouse gas reduction projects.

One Bay Area Grants

- Grant program administered by the Metropolitan Transportation Commission that provides federal funds for regional transportation priorities. Eligible projects include local street and road maintenance, streetscape enhancements, and bicycle and pedestrian improvements, among others.

STATE SOURCES

State-administered programs include:

Active Transportation Program (ATP)

- The program consolidates previous existing state and federal transportation programs, including the Transportation Alternatives Program (TAP) and Safe Routes to School (SRTS) Program into a single program for improving active transportation facilities in the state of California. Eligible projects include improvements to existing bikeways and walkways which improve mobility, access, or safety for non-motorized users.

Recreational Trails and Greenways Grant Program

- The California Natural Resources Agency provides funding for non-motorized infrastructure development and improvement projects that promote access to parks, waterways, and outdoor recreational pursuits.

Parks and Water Bond Act of 2018 (Proposition 68)

- The Per Capita Program, Statewide Park Program (SPP), and Recreational Infrastructure Revenue Enhancement (RIRE) Program provide funding for projects that create or improve parks and recreation infrastructure.

FEDERAL SOURCES

Grants are one potential source of funding, typically available on a one time per cycle basis. Specific federal grant programs may include:

Recreational Trails Program (RTP)

- Annual federal funding program for recreational trails and trails-related projects. Eligible applicants include cities, counties, public agencies, and nonprofit organizations. The program is administered by the California Department of Parks and Recreation.

Highway Safety Improvement Program (HSIP)

- HSIP is a data-driven program aimed at reducing traffic fatalities and injuries on all public roads. Eligible projects include crossing treatments, traffic calming projects, and other bicycle and pedestrian safety improvements.

Rivers, Trails, and Conservation Assistance Program (RTCA)

- A National Park Service program that supports community-led natural resource conservation and outdoor recreation projects.

PRIVATE FUNDING

Private funding may come in the form of trail-oriented development, advertising opportunities, individual donations, crowdfunding, fundraising programming and events, and corporate sponsorships.

Private Donations

- A nonprofit could solicit individual and corporate private donations for the trail through various fundraising activities.

Trail-Oriented Development

- Revenue generated by new development along the trail could be used for trail enhancements, operations, and maintenance.

Events and Programming

- The trail may present opportunities for programming and events at some of its access points. Revenue generated from ticket sales, or fees collected from vendors such as pop-up stores and food trucks, can potentially be used for trail O+M.

Advertising Revenue

- Advertising opportunities may include advertisements placed on informational and wayfinding kiosks, benches and shade structures, and charging stations for e-bicycles, scooters, or other personal mobility devices. Revenue generated from these advertisements could provide funding for trail O+M.

IN-KIND

Adopt-a-Trail

- Corporate Adopt-a-Trail programs could potentially provide the trail with resources for needed maintenance work, such as keeping it free of litter and other debris. Local businesses can adopt a section of the trail, providing them with a sense of ownership and the opportunity to prominently display their names. Although this is not a comprehensive solution to trail maintenance, it serves as a way to enhance central operations and provide committed partners with a way to give back to their communities.

Table 17 Funding Sources

Source	Design & Engineering	ROW Acquisition/ Construction	O+M
Local & Regional Sources			
General Fund/Local Government Allocation			●
Local Bond Measures	●	●	●
Utility Lease Revenue			●
EIFDs			●
One Bay Area Grants	●	●	
BAAQMD Grants		●	
State Sources			
Active Transportation Program (ATP)	●	●	
Recreational Trails and Greenways Grant Program	●	●	
Proposition 68	●	●	
Federal Sources			
Recreational Trails Program	●	●	●
Highway Safety Improvement Program (HSIP)	●	●	
Rivers, Trails, and Conservation Assistance Program (RTCA)	●		
Private Funding			
Private Donations	●		●
Trail-Oriented Development	●		●
Advertising Revenue			●
In-Kind			
Adopt-a-Trail			●

NEXT STEPS

This Study envisions a long-term improvement strategy for the Iron Horse Trail corridor. Although most of the proposed improvement projects will take time to implement, there are some near term steps that can be taken to move the vision for the Iron Horse Trail forward.

The most important near term step is to seek capital improvement funds for priority projects. The priority projects identified in this Study can be selected for early implementation in a number of ways. They can either be bundled as part of a larger regional effort that sets forth improvements for the entire corridor, or they can be included in targeted efforts that prioritize specific segments or intersections of the corridor.

Additionally, the existing governance structure for the Iron Horse Trail should be evaluated to determine if it will be able to adequately manage the enhanced corridor or if the trail would benefit from a new strategy. This Study identifies typical governance structures and funding mechanisms to consider, which can be used to help identify an appropriate structure for the trail.

Finally, targeted efforts can be made to promote new mobility options within the corridor. An e-scooter pilot program could be implemented to introduce the devices to the corridor before any major policy changes are made. An additional SAV study could be conducted to develop goals for a pilot program, further evaluate corridor conditions and needs, and determine next steps for implementation.

Long term actions for the corridor include implementing the proposed projects, developing regional policy recommendations regarding micromobility devices, and establishing a SAV pilot program.



Contra Costa County Board of Supervisors

Subcommittee Report

TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE

9.

Meeting Date: 02/10/2020
Subject: Integrated Pest Management Annual Report
Submitted For: TRANSPORTATION, WATER & INFRASTRUCTURE COMMITTEE,
Department: Conservation & Development
Referral No.: 9
Referral Name: Monitor the implementation of the Integrated Pest Management Policy.
Presenter: Wade Finlinson, IPM Coordinator **Contact:** Wade Finlinson
(925)335-3214

Referral History:

TWIC has asked the Integrated Pest Management Coordinator to update the Committee yearly on the County's integrated pest management program.

Referral Update:

The IPM Coordinator will present the IPM Annual Report (see attached annual report and report on public concerns).

Recommendation(s)/Next Step(s):

ACCEPT Integrated Pest Management report, and take ACTION as appropriate.

Fiscal Impact (if any):

None

Attachments

2019 Integrated Pest Mgmt Annual Report
2000-2019 CCCPesticide Use Summary Comparison Updated 2019
2020 0131 County Staff Responses to Public Concerns

Contra Costa County Integrated Pest Management Advisory Committee

2019 Annual IPM Program Status Report

to the

Transportation, Water, and Infrastructure Committee of the Contra Costa Board of Supervisors

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Contra Costa County Integrated Pest Management Advisory Committee

2019 Annual IPM Program Status Report

to the

Transportation, Water, and Infrastructure Committee of the Contra Costa Board of Supervisors

Executive Summary

Work of the IPM Advisory Committee

The Committee produced a revised version of the *Ground Squirrel Management on Critical Infrastructure* decision document (see Appendix A).

Pesticide Use Reduction by County Operations

Since FY 00-01, County operations have reduced their pesticide use by 88%. During the same time period, they have reduced their use of “Bad Actor” pesticides by 79%. Additional information can be found on pages 18-20.

Other Internal IPM Trends

While the steady, overall reduction of pesticide use is an admirable characteristic of the IPM Program, additional trends require further exploration in the coming year. Some include the increased reliance on glyphosate for post-emergent vegetation management around facilities and airports, the growing costs of non-chemical strategies to manage vegetation on roadsides and rights-of-way, and ongoing difficulty in keeping various Public Works positions filled.

Departmental IPM Programs

Agriculture Department. Department staff acted quickly when the highly invasive peach fruit fly was detected in East County in late summer. After the first fly was found, the department increased the number of traps per square mile by a factor of 10 which helped them locate the other insects. Early detection helped prevent an infestation that could threaten agriculture in the County.

Facilities Division. A bed bug issue at a shelter in Richmond was mitigated earlier in the year. The three-lined cockroach has been invading County buildings for the last few years and continues to be problematic. Since the insect is not interested in the food attractants in currently available baits, control options are limited. Pestec, the County’s IPM contractor, spent several days thoroughly sealing Building 500 at 255 Glacier in Martinez in 2017. That effort worked well, but recent complaints regarding the cockroach triggered a botanical-based insecticide application around the outside of Building 500 in September. Pest exclusion remains the priority for this pest since it lives outside in the mulch and leaf litter around the building. Additionally, ant activity has surged in 2019 and Pestec continues to work with their distributors to identify more efficacious baits.

Grounds Division. Approximately 1,500 cubic yards of mulch was generated from grinding fallen trees, nearly doubling the amount produced last year. Grounds personnel also worked with the Probation Department to convert the grass recreation field at the Juvenile Hall to artificial turf. That transition has reduced gopher and vegetal pest pressures in that portion of the site in addition to providing projected water savings.

Special Districts. There was evidence of owls occasionally using the box in Livorna Park in Alamo, but it did not appear that they were using it for nesting. The contracted trapper also caught 14 voles and gophers at various locations throughout the year.

Vegetation Management. The Roadside and Flood Control Maintenance Division suspended herbicide applications in October 2018. That decision and closely related staffing shortages have made it difficult to manage vegetation in accordance with regulatory mandates. Goat grazing and mechanical methods are employed, but many areas remain neglected until a resolution is implemented.

2019 Recommendations to the Board of Supervisors

The IPM Committee makes the following recommendations to the Board:

1. Encourage County operations to continue to evaluate new and existing weed and ground squirrel management tactics, considering site requirements, efficacy, cost, impacts to the environment, and impacts to the community.
2. Direct departments to annually propose and prioritize potential research projects associated with emerging and innovative strategies and tactics that will improve the County's IPM program.
3. Encourage County departments to seek outside funding sources for these IPM research projects.
4. Consider establishing funding to internally support such research projects.

The IPM Coordinator makes the following recommendation to the Board:

1. Consider directing staff from multiple departments including Public Works, Agriculture, Health Services, Office of the Sheriff, Probation and others, as appropriate, to work with the IPM Coordinator to explore contracting opportunities that supplement the pest management efforts of County operations in a manner that:
 - a. allows County personnel to provide a higher level of service by focusing on core tasks,
 - b. maximizes cooperation between organized labor, community-based organizations, and employment training enterprises, and
 - c. builds on County and regional models that are financially sustainable and ecologically regenerative.

2019 Recommendations to County Staff

The IPM Committee makes the following recommendations to the Public Works Maintenance Division:

1. Allocate additional funding or establish alternative procedures whereby they may procure a contractor to provide carbon monoxide fumigation services for ground squirrels along levees, irrigation canals, and flood-control channels during the spring.
2. Conduct detailed evaluations of the vegetation management programs along County rights-of-way during the period October 2018 to present, given that no herbicides were applied. Have they met the control mandates set forth? Have they saved funds that may be used to evaluate and implement alternatives to herbicide applications along roadsides and flood control channels?

History of the IPM Advisory Committee

From 2002 to 2009, an informal IPM Task Force met to coordinate implementation of the IPM Policy that was adopted by the Board of Supervisors in November 2002. The Integrated Pest Management (IPM) Advisory Committee, a formal body, was created by the Board of Supervisors in November 2009. This report is the tenth annual status report from the IPM Coordinator and the IPM Advisory Committee.

Background on the IPM Advisory Committee

Purpose of the IPM Advisory Committee

The purpose of the Committee is to:

1. Protect and enhance public health, County resources, and the environment
2. Minimize risks and maximize benefits to the general public, staff, and the environment as a result of pest control activities conducted by County staff and contractors
3. Promote a coordinated County-wide effort to implement IPM in the County in a manner that is consistent with the Board-adopted IPM Policy
4. Serve as a resource to help the Agriculture and Public Works Departments and the Board of Supervisors review and improve existing pest management programs and the processes for making pest management decisions
5. Make policy recommendations upon assessment of current pest issues and evaluation of possible IPM solutions
6. Provide a forum for communication and information exchange among members in an effort to identify, encourage, and stimulate the use of best or promising pest management practices

Members of the IPM Advisory Committee

Currently the Committee has a total of 13 seats consisting of voting and non-voting members. In 2017, a seat for the County's Sustainability Commission replaced the seat for the Public and Environmental Health Advisory Board, which was abolished in 2016.

The 8 voting members include:

- One representative from Contra Costa Health Services
- One representative from the County Storm Water Program
- One representative from the County Sustainability Commission
- One representative from the County Fish and Wildlife Committee
- One representative from an environmental organization
- Three at-large members of the public

The 4 non-voting members include

- A representative from the Agriculture Department
- Two representatives from the Public Works Department (Facilities Division and Maintenance Division)
- One representative from the County's pest management contractor

The Committee also has one public member alternate who only votes if one or more of the three at-large public members, the Sustainability representative, or the Fish and Wildlife representative is absent from a meeting.

IPM Advisory Committee Priorities for 2019

The IPM Advisory Committee focused on the following IPM program features:

- A. IPM decision-making—documenting pest management decisions in County IPM programs
- B. Outreach and education—reviewing and/or creating educational pieces for the public and County staff

The Committee formed two subcommittees to work on these priorities, the Decision-Making subcommittee and the Outreach subcommittee.

2019 Accomplishments of the IPM Advisory Committee

Accomplishments of the IPM Committee

The IPM Advisory Committee (the Committee) held five regular meetings in 2019. The Decision-Making subcommittee met 9 times and the Outreach subcommittee did not meet. An attendance table for the Committee is below:

	1/17	3/21*	5/16	7/18	9/19	11/21	Total Absences
Larry Yost					#		0
Jerry Casey	ab		ab	ab	ab	##	4
Allison Knapp	^		^^	^^^	ab	ab	2
Carlos Agurto			ab	ab			2
Michael Kent							0
Cece Sellgren					^^^	^^^	0
Gretchen Logue/Kimberly Hazard**				ab	ab		2
Susan Heckly							0
Susan Captain	ab					ab	2
Andrew Sutherland							0
James Donnelly					ab		1
Environmental Org Seat (Vacant)	ab		ab	ab	ab	ab	5
Dennis Shusterman (alternate)	ab				ab		2
Total Present	9		10	9	7	10	
Voting Members Present	6		7	7	5	7	
Total Members of the Public attending	4		3	8	4	8	

*3/21 meeting cancelled due to lack of quorum

**appointed August 2019

^ Chris Lau filled seat

^^ Brian Louis filled seat

^^^ Teri Rie filled seat

David Hallinan filled seat

Debbie King filled seat

The full committee achieved a quorum at 5 meetings during the year and the subcommittee had a quorum at all nine of their meetings. The Environmental Organization representative seat remained vacant for the entire year. The terms for the Public Member 1 & 2 seats both end December 31, 2019. The IPM Coordinator recruited for those seats as well as the Environmental Organization seat throughout the fall.

As requested during discussions of the Committee, the IPM Coordinator arranged the following speakers in 2019:

- Chris Geiger, Ph.D., Senior Environmental Specialist with the City and County of San Francisco on glyphosate alternatives and in-house trials in San Francisco
- Naresh Duggal, IPM Manager with Santa Clara County on the Santa Clara IPM Program
- Katherine Knecht, IPM Specialist with Marin County on the Marin IPM Program

Work of the subcommittees

Priority A: IPM Decision-Making

Through the work of the Decision-Making subcommittee, the IPM Advisory Committee

1. Reviewed *Raptor Pilot Study* conducted by Ventura County Public Works Agency—Watershed Protection District.

2. Engaged Public Works staff in order to better understand their operation and gather their input on how the subcommittee's recommendations could be implemented more effectively.
3. Researched the use of carbon monoxide and carbon dioxide fumigation treatments to control ground squirrels on roadsides at other public agencies.
4. Two members of the subcommittee sat on the interview panel for the recruitment of the new IPM Coordinator.
5. Reviewed glyphosate usage by County departments which helped identify sites where post-emergent herbicide use is comparatively high. The subcommittee plans to develop site-specific decision documentation that will help to decrease the heavy reliance on this practice at some County locations.
6. Reviewed, provided suggestions for improvement to, and approved the *Decision Documentation for Ground Squirrel Management on Critical Infrastructure*.

See Appendix A for the Decision-Making subcommittee's final report and the revised ground squirrel document.

Priority B: Outreach and Education

This year, the subcommittee did not meet and ultimately chose to resume its efforts after the new year if it remains the desire of the Committee.

2019 Accomplishments of the IPM Coordinator

Longtime IPM Coordinator Tanya Drlik retired in March and was later retained as a retired annuitant to ensure a smooth transition period for the broader program. Tanya worked through the end of the year and was instrumental in steering a successful recruitment process that culminated when Wade Finlinson was appointed as her replacement in August.

Tanya began her service with the County on January 26, 2009 and had previously served as a consultant to the IPM Program while employed with the Bio-Integral Resource Center (BIRC). In short, Contra Costa County has been fortunate to have had such a credible internal expert to refine the IPM Program and set it on a principled trajectory.

Bed Bugs

The IPM program remains one of the few resources available to Contra Costa County citizens who have been afflicted with bed bugs. While various code enforcement agencies have some avenues to compel property owners and citizens to abate certain conditions that may contribute to bed bug infestations, those interactions vary among jurisdictions and are insufficient in tackling the issue. Moreover, The Contra Costa Vector Control District and Contra Costa Environmental Health typically do not respond to infestations since bed bugs do not transmit disease.

The IPM Coordinator continues to provide information for citizens—often those with the fewest resources—to make sound decisions that avoid the overuse and misuse of pesticides.

- In 2019, the IPM Coordinator received 22 bed bug calls and aided the callers. The IPM Coordinator also met in person with several citizens and circulated information on prevention and management. Additionally, the IPM Coordinator conducted multiple site visits to gain a better understanding of a given situation and performed informal mediation between tenants and property managers on some occasions.
- The IPM Coordinator:
 - Worked as a cooperator on a grant awarded to the University of California Extension called “Bed Bug IPM Education to Support Multi-unit Housing;” the Principal Investigator is Andrew Sutherland who is a member of the IPM Advisory Committee. Some of the results of that collaboration include the creation of a bed bug fact sheet for Our Water Our World

and the development of an animated online module training for tenants. Collaborators on this grant have been accepted to speak at the California Association of Code Enforcement Officers Annual Seminar in October 2020 to give a bed bug presentation. A training geared toward property owners, landlords, and property managers is also currently in development.

- Continued to organize and staff the County's Bed Bug Task Force.
- Maintained the County's bed bug website and added more information specific to various audiences. From July 1, 2018 through June 30, 2019, there were a total of 39,520 visits to the site from 17,570 unique visitors (County staff visits were excluded from this tally in order to obtain a closer approximation of the public use of the site). The total number of visits is 5,970 more than last fiscal year.
- Provided bed bug awareness training for the following:
 - Meals on Wheels Diablo Region—for in-home visitors and their supervisors
 - Brookside Shelter staff
 - Riverhouse apartments in Martinez—provided information for Eden Housing management staff
 - Behavioral Health staff

Healthy Schools Act Compliance

The IPM Coordinator updates the IPM plan for the County's Head Start program each year as required by California's Healthy Schools Act (HSA). The IPM Coordinator has identified an opportunity to assist Juvenile Hall in becoming fully compliant with the HSA in 2020. An assessment of current pest control operations at the facility is being conducted and the IPM Coordinator is working to identify and engage stakeholders in the Health Services, Public Works, and Probation Departments as well as those from Contra Costa County Office of Education.

Advice and Outreach on IPM

The IPM Coordinator

- Participated in the County's Sustainability Exchange and the Sustainability Exchange Steering Committee
- Attended bi-annual meetings of the Head Start Health and Nutrition Services Advisory Committee to report on bed bug and pest management issues
- Responded to several requests for pest management information from County staff and citizens
- Researched and compiled a notebook of information on herbicide alternatives to glyphosate for the Public Works and Agriculture Departments
- Reviewed glyphosate usage by County departments
- Provided the annual IPM update to the County's Fish and Wildlife Committee
- Provided the regular IPM program update to the Board of Supervisors through the Transportation, Water and Infrastructure Committee (TWIC)
- Assisted Alameda County and the City of Albany in the first steps of reviving their respective IPM programs
- Assisted the City and County of San Francisco in developing and reviewing preliminary drafts of *Pest Prevention by Design—Guidelines for Landscapes*
- Attended two meetings of the Bay Area IPM Coordinators group, one in Berkeley and the other in San Rafael
- Attended Tree and Landscape IPM seminar in Fairfield; sponsored by Solano County

2019 Department IPM Program Highlights and Challenges

General Information about the Departments

Each Department has been working with the IPM Decision-Making subcommittee to create documents that record how pest management decisions are made for various pests and pest situations. Between 2010 and 2013, each Department also created an IPM Plan that covers their pest management goals, sites under management, general decision-making processes, key pests and best management practices, environmental stewardship, and training requirements.

In order to help new IPM Committee members understand the workings of each department, the IPM Coordinator developed Department Overviews that cover department responsibilities in general, and pest management responsibilities in particular; funding sources and budget; pests under management and the methods used to manage them; and department challenges.

Each of the County's pest management programs must keep records of pesticides used and submit a report monthly to the County's Agriculture Department for transmission to the state Department of Pesticide Regulation. Once a year, the IPM Coordinator collates and analyzes this information for the annual report.

Agriculture Department

IPM Program Highlights

- Subcommittee work
The Department participated as a member of the Decision-Making subcommittee.
- Peach fruit fly
Department staff found five peach fruit flies in 2019. This is an A-rated* agricultural pest requiring immediate eradication action. Hundreds of additional monitoring traps were deployed around the finds to determine the extent of the infestation. Fruit trees where the pest was detected were subject to fruit stripping and an organically approved insecticide treatment in an effort to eliminate the establishment of this serious pest which could threaten our county's agricultural industry if products must be quarantined.

* The California Dept. of Food and Agriculture defines an A-rated pest as an organism of known economic importance subject to state (or commissioner when acting as a state agent) enforced action involving: eradication, quarantine regulation, containment, rejection, or other holding action.
- Other Pest Detection Efforts
In 2019, a team of 17 pest detection specialists deployed 6,394 traps throughout the county and serviced these traps a total of 82,038 times. These efforts represent the first line of defense in protecting the state's fifty-billion-dollar agricultural industry from the introduction of serious agricultural insect pests.
- Exotic pest prevention
The department continues to conduct inspections at all UPS and FedEx facilities to intercept pests that may be present on shipments of produce and plants entering our county. Infested shipments are destroyed or sent back to the shipper. Last year, approximately 10,124 packages were inspected which resulted in 25 pest interceptions.



Peach Fruit Fly (Courtesy Curtis Takahashi—CDFA)

- Artichoke thistle and purple starthistle

The department was successful in securing two CDFA grants for the continued control of artichoke thistle and purple starthistle (*Cynara cardunculus* and *Centaurea calcitrapa*, respectively). These invasive weeds are both B-rated* agricultural pests that degrade the forage value of rangeland in Contra Costa County. Individual plants are treated with a backpack sprayer containing the herbicide Milestone before they reach maturity and produce seed.

* The California Dept. of Food and Agriculture defines a B-rated pest as an organism of known economic importance subject to: eradication, containment, control or other holding action at the discretion of the individual county agricultural commissioner.



Red Sesbania

- Red sesbania

Department personnel continued control efforts of red sesbania (*Sesbania punicea*) at the Dow Wetlands site in Pittsburg. This invasive weed is a B-rated agricultural pest which displaces native vegetation in riparian corridors. The control efforts consisted of hand removal of seed pods from the plants and subsequent mechanical removal of newly established plants. No pesticides were used in the control of this invasive weed.

- Managing ground squirrels to protect critical infrastructure as a contractor of Public Works

The Department manages ground squirrels to protect critical infrastructure including levees, earthen dams, railroad beds, and roadways. The goal is to maintain a 100 linear foot buffer around the infrastructure to reduce ground squirrel damage to a tolerable level. Ground squirrel burrowing is the single biggest threat to California levees. Burrowing can compromise the earthen embankments and create pathways for water leakage that can undermine the structural integrity of levees, as well as earthen dams and railroad embankments. Burrowing and the resulting pathways for water erosion can also cause damage to, or sudden failure of, roadsides and other structures.

This year the Department worked to complete the improved *Decision Documentation for Ground Squirrel Management on Critical Infrastructure* through the Decision-Making subcommittee.

- Pesticide use

This year the Department used 26 lbs. of active ingredient (a.i.) as part of the management of noxious weeds and ground squirrels. That is down from 94 lbs. used in FY 17-18.

Agriculture Department Challenges

- Ground squirrel control alternatives

The department continues to search for alternatives to rodenticide treated grain bait. Unfortunately, raptor perches and live trapping of ground squirrels have proved to be ineffective and/or too costly. Ground squirrels are native to this area and will never be eradicated. Since the Department aims to create a fairly narrow buffer zone around infrastructure, it is inevitable that in areas with ground squirrel pressure outside of the 100 ft buffer, the animals will eventually move back into the burrows left vacant by the squirrels that have been poisoned, although this happens slowly. This necessitates a yearly management program. Altering the environment to prevent ground squirrel burrowing is difficult because of the extent of the infrastructure that must be protected and because the squirrels favor human-built infrastructure as sites for their burrows.

Public Works Facilities Division

IPM Program Highlights

- Area under management
The Facilities Division manages 147 sites that comprise almost 3.3 million sq. feet.
- Subcommittee work
A representative from Pestec, the County's structural pest management provider, participated as a member of the County's Bed Bug Task Force.
- Yellowjacket management
Pestec physically removed 27 subterranean wasp nests.
 - Materials used: OhYeah! Organic Pesticidal Soap [Exempt from registration requirements of the Environmental Protection Agency (EPA)].
 - Methodology: The pesticidal soap and water solution is injected as a wet foam into the underground chambers of the nesting wasps. The material fills the nesting chambers and covers the wasps, immobilizing them, and eventually causing death by asphyxiation and desiccation. Afterward, the brood and nesting material are physically removed and disposed of to prevent recolonization.
- Ant management
Pestec continues to use ant baiting as the primary method for managing ants throughout the county. When necessary, botanical insecticides that are exempt from registration with the EPA have been used for escalating treatments.
 - Materials used:
 - Intice Thiquid Ant Bait
 - Advion Ant Gel
 - Essentria IC3
 - Methodology:
 - Containerized ant baiting: Liquid ant baits are formulated to be highly attractive to foraging ants at all times of the year. These baits are primarily applied into bait stations and are maintained at the perimeter of buildings. Foraging ants actively feed at these stations and recruit other ants to do the same. The liquid ant bait used this year had 2.5-5% of borax as the active ingredient, a higher ratio than previous years. This higher ratio was used to reduce spoilage of the bait that was noted in previous years.
 - Crack and crevice baiting: Gel baits were applied in cracks and crevices where bait stations could not be installed for practical, aesthetic, or safety concerns.
 - Spot treatments: When large ant populations have invaded the inside of buildings or ants aren't sufficiently responding to ant baits, EPA-exempt botanical insecticides have been used as spot treatments to ant aggregations outside. Treatment areas include the base of trees, under pavers, in mulched areas, and other landscape or structural features ants use to travel on or build nests in.
 - Spot sealing: When appropriate, Pestec technicians apply small amounts of sealants to spots or minor openings to block them from entering a building.



Ant bait station

- Pest Prevention Reporting
Pestec has reported 175 pest-conducive conditions in 2019. The report is submitted to the Facilities Division, which create work orders to have those conditions addressed in-house. Pestec performed only minor pest exclusion this year to exclude ants and close a few potential mouse-sized openings. All major repairs have been addressed by Public Works Facilities personnel.
- Three-lined Cockroach Update
As of October 2019, 29 three-lined cockroaches have been caught in traps inside of Building 500 at 255 Glacier (41 in 2018). In 2017 Pestec performed extensive pest exclusion on the building by sealing cracks and crevices around the exterior to reduce the number of three-lined roaches entering the building. Five callbacks for these cockroaches were reported between July and September this year. One treatment was made in exterior areas in September with Cedarcide, a botanical insecticide with cedar oil as the active ingredient.
- IPM-related trainings and collaborative efforts
Pestec staff attends quarterly in-house training with guest speakers from the industry. Training topics this year included:
 - Rodent management station maintenance
 - Cockroach IPM in complex environments
 - City & County of SF Reduced Risk Pesticide List update and label review
 - Purdue Advanced Urban IPM: Lesson 11- Inspections for the IPM Professional
 - DPR N-Series pesticide safety training
 - Mosquito Control for Urban Areas
 - IPM Technology Hands-On Training: Burrow Rx, and Foam Applicators
 - The IPM Professional Tool-Kit
 - Safety: Slips, Trips & Falls, Ladder Safety, Driving Safety, Respiratory Protection, Heat Illness Prevention
 - Using apps to record and disseminate inspection findings

Pestec provided the following trainings:

- Carlos Agurto with Tanya Drlik: Bed Bug Management at Brookside Homeless Shelter
- Carlos and Luis Agurto Jr: Department of Pesticide Regulation Healthy Schools Act Workshop- Structural IPM (two workshops)

Pestec worked on the following IPM Collaborative Projects in 2019:

- San Francisco Department of the Environment - Pest Prevention By Design for Landscapes
- DPR Pest Management Alliance - Bed Bug IPM Education to Support Multi-unit Housing
- Pesticide use
This year Pestec used 16 pounds (a.i.) as part of the structural IPM program. That is up from 10 lbs. used in FY 17-18. However, 75% (12 lbs.) of this years' use consisted of materials considered to be minimum risk pesticides that are exempt from registration requirements of the EPA. The previous year, 31% (3.1 lbs) of the total material usage was EPA-exempt.

Facilities Division Challenges

- Pest exclusion in County buildings
Carpentry staff within the Facilities Division continue to respond to matters detected during Pestec's regular inspections of County buildings. The Division's priority is to address health, safety, and access issues, but Facilities personnel are generally quick to resolve possible pest access points.

Public Works Grounds Division

IPM Program Highlights

- Premium mulch from pallets and dead trees
This year the Grounds Division created approximately 1,500 cubic yards of woodchips from pallets, trees downed in storms, and trees killed by the drought. Considering that high quality wood chips cost at least \$32/cu. yd. delivered, this represents around \$48,000 worth of mulch that will be applied within various County landscapes.



Woodchips stockpiled at the Grounds Corporation Yard

The County's tree removal contract includes transport back to the Grounds Corporation Yard so the logs can be easily chipped. PG&E, Davey Tree, and the Public Works tree crew also deliver logs to the Corporation Yard that are too big for their chippers. Pallets come from a number of sources.



Martin Drive Mulching—Landscaping District Zone 74 in Richmond



Roadside Mulching near the Intersection of Willow Pass Road and Port Chicago Highway in Pittsburg

- Juvenile Hall Artificial Turf Project
Grounds staff helped to complete the transition of the 30,000 square foot grass recreation field at the Juvenile Hall to artificial turf earlier this year.



New Artificial Turf at Juvenile Hall in Martinez

- Pesticide use in FY 18-19

This year, staff used 310 more pounds (a.i.) of herbicide than in FY 17-18. This still represents a 30% reduction in pesticide use compared to FY 00-01 when the County started collating pesticide use records. Glyphosate accounted for 98% of the Grounds Division's total herbicide use this year. More than half of that glyphosate usage occurred at two Sheriff's Office sites where Grounds Division personnel are limited to performing reactive vegetation management tasks by request only. The Decision-Making Subcommittee plans to assist the Grounds Division and Sheriff's Office in 2020 by developing site-specific decision documentation for these locations.

At other locations throughout the County, the Division has worked to improve the condition of properties under its care in order to move away from crisis management and back to preventive maintenance. For a number of years, the lack of funding made it impossible to properly manage weed problems around County buildings and in the Special Districts. This condition is improving, but the seeds from plants that went unmanaged for years continue to produce large populations of weeds. Moreover, unusual weather events such as the comparatively large amount of rain received in mid-May, intensify vegetal pest pressures.

Grounds Division Challenges

- Staffing needs

The Grounds Division continues to have a difficult time retaining new hires. Three gardeners were hired in 2018, but three other gardeners left to accept higher paying positions with other agencies in 2019. This is on top of three existing gardener vacancies. They have one irrigation specialist presently, but really need two. The Division still lacks a Pest Specialist; the position has been vacant since the last incumbent was promoted to become Grounds Maintenance Supervisor in 2017.

Drought stress in the County

The Division continues to deal with a large number of diseased, stressed, and dying trees, although the death rate is slowing. Many redwoods in the County are partially dead, and it could take from 5 to 10 years for them to die completely. Unless failing trees pose a hazard, the Division will take them down over time since it will be easier aesthetically and financially. It has been challenging to try to drought-proof landscapes, but the woodchips the Division is producing play an important role.

Public Works Department Roadside and Flood Control Channel Maintenance Division

IPM Program Highlights

- Temporary Suspension of Herbicide Program

When the Vegetation Management Supervisor accepted a position with another public agency in 2018, the Public Works Department was left without a licensed Pest Control Advisor (PCA). That position remains vacant along with 3 or 4 other positions within the division including vegetation management technicians and maintenance workers. The effects of those vacancies have been amplified throughout the last year in the context of the decision to suspend all herbicide applications until the Public Works Department retains the services of a qualified PCA.

In California, a written PCA recommendation is required whenever pesticides are applied along roadsides, rights-of-way, in highway medians, parks, rivers, streams, ditches, ditch banks, and greenbelts. When the Public Works Maintenance Division no longer had a PCA on staff, Division leadership decided to temporarily halt all herbicide applications. Vegetation along flood control channels and roadsides has been grazed, mowed, or left untreated since October 2018.

The County has historically had a difficult time recruiting and retaining a Vegetation Management Supervisor due to unique minimum requirements that few qualify for. It is also important to consider that

the salary assigned to the classification may not be proportionate to the licensure component of the minimum qualifications. This pay disparity was demonstrated when a recent incumbent of this position left Contra Costa employment to accept a higher paying post with more generous benefits in a nearby jurisdiction whose job specification mandated lessor minimum requirements. Contra Costa's position requires a PCA license as well as a Qualified Applicators Certificate (QAC). Additionally, the class specification lists multiple pest control categories for both licenses. Regarding obtaining a PCA license, a candidate must have 42 semester units of academic coursework prior to taking any qualifying examinations.

Public Works management has met and conferred with labor representatives and all parties have agreed to fill the position with a Maintenance Supervisor. This will allow the vegetation management crew to be appropriately supervised in the field. There is an ongoing dialog regarding how the department will appropriately obtain PCA recommendations, but it is unlikely to be in place prior to the rainy season when pre-emergent herbicide applications should begin in order to prevent winter weed growth.

- Flood control vegetation and erosion management using California natives
This is the sixth year the County Flood Control District has been partnering with The Restoration Trust in a native planting experiment along Clayton Valley Drain. The site continues to meet or exceed all performance standards thanks in large part to the hundreds of volunteers that have worked alongside staff from both the Restoration Trust and Flood Control District since the project began.
- The North Orinda Shaded Fuel Break Project
Segments of County roadsides near Briones Reservoir greatly benefited from an historic effort to strategically reduce dangerous wildfire fuels in that area. CalFire, Moraga-Orinda Fire District, Contra Costa County Fire, Diablo Firesafe Council, EBMUD, East Bay Regional Parks and several other organizations collaborated to remove understory vegetation, dead trees, and combustible brush in various locations deemed Very High Fire Hazard Severity Zones by CalFire. Contracted crews commendably removed overgrown vegetation along County-owned segments of Bear Creek Road and Happy Valley Road as part of the nearly 1,100-acre first phase of the project.
- Grazing as a vegetation management tool
The Public Works Maintenance Division continues to use grazing as an effective tool for vegetation management, mainly on flood control facilities. Using grazing to manage vegetation is complicated and very dependent on site-specific conditions. Grazing is not appropriate in all situations and could not, for instance, be used on the side of County roads without endangering both the animals and motorists. Many factors raise or lower the cost per acre for grazing, including the size of the parcel (at larger sites the cost of moving the goats in and out is spread over a number of acres), whether the animals can easily enter the site, the amount of fencing necessary, how many times the animals must be moved within the job site coupled with the ease with which that can be done, whether water is available or must be trucked in, and the season in which the animals are being used (costs are lower when demand is lower, e.g., in fall and winter). Market conditions for professional grazing services have dramatically influenced the price for targeted grazing particularly over the last three years. Historic wildfires throughout the state have increased the demand for contracted herds and their handlers. Since the number of vendors providing this unique service has not grown in conjunction with demand, herders are able to select projects that are comparatively more profitable.

Roadside and Flood Control Maintenance Division Challenges

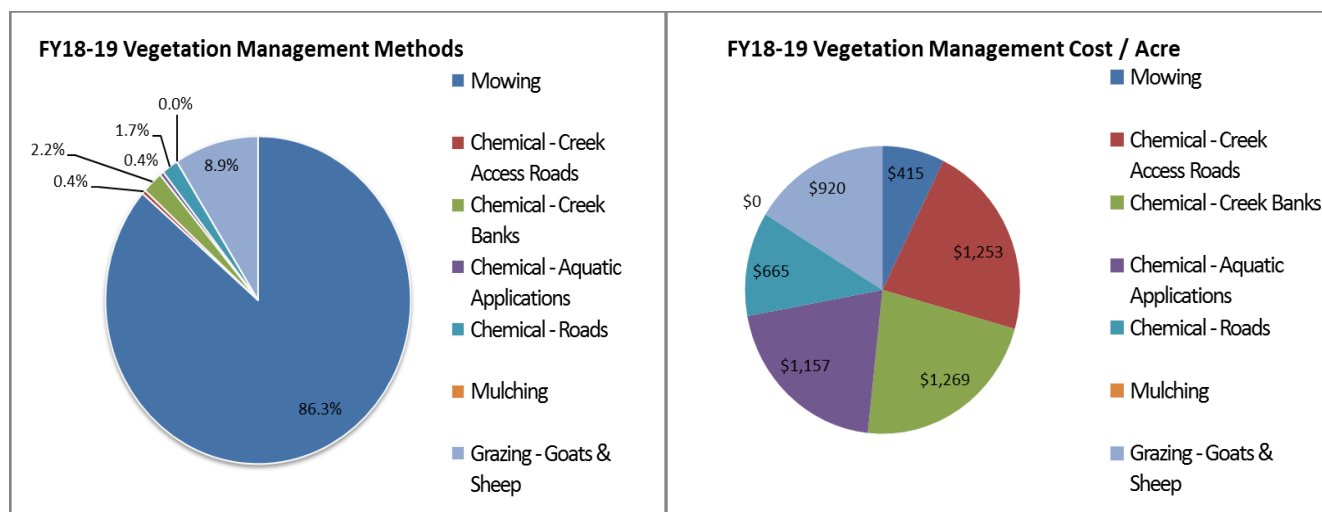
- Vegetation management crew staffing
The Division's inability to recruit and retain a vegetation management supervisor severely impacts the work the crew can complete. Additionally, multiple positions within the Vegetation Management crew remain vacant. The amount of work completed by a small number of individuals is admirable but is not sustainable.

- Weather
Mowing is dependent upon weather conditions. Sparks caused by metal mower blades striking rocks or debris can ignite tinder-dry grass in hot, dry weather. Wet conditions also limit the use of mowing.
- Declining funds for road maintenance
Road maintenance, including vegetation management, is funded solely from the gasoline tax. The County does not contribute any money from the General Fund to road maintenance except for a small amount going to specific drainage projects. Funds generated by the Road Repair and Accountability Act of 2017 (SB 1) must first be applied to bring the Average Pavement Condition Index up to 80 (Contra Costa's index is in the 60s) before any money would be available for vegetation management.
- Cost implications of various management techniques
In FY 18-19, 89.9% of the Division's expenditures on vegetation management was spent on non-chemical treatment methods, on 95% of the total acres treated (see the table below for details). The Division spent \$906,528 on non-chemical methods during the year, which is \$263,263 more than last year and \$522,084 more than FY 16-17.

A Cost* Comparison of Vegetation Management Methods for Roadsides and Flood Control Channels Fiscal Year 2018-19

Vegetation Management Method	Acres Treated	% of Total Acres Treated	Total Cost for all acres treated	Cost/ Acre	% of Total Cost for all acres treated
Chemical Treatment - Roads	36	1.8%	\$23,939	\$665	2.4%
Right of Way Mowing	1776	86.3%	\$737,188	\$415	73.1%
Chemical Treatment – Flood Control Access Roads	8.5	0.4%	\$10,654	\$1,253	1.1%
Chemical Treatment – Flood Control Banks	45	2.2%	\$57,119	\$1,269	5.7%
Grazing (mainly Flood Control facilities)	184	8.9%	\$169,340	\$920	16.8%
Chemical Treatment - Aquatic Applications	8.5	0.4%	\$9,833	\$1,157	0.9%
Mulching (flood control access roads & shoulders)	0	0.0%	\$0	\$0	0.0%
Totals	2,058		\$1,008,073		

* The cost figures above for each method include labor, materials, equipment costs, contract costs (for grazing), and overhead, which includes training, permit costs, and habitat assessment costs.



Note: The legend to the right of each pie chart identifies slices starting from 12 o'clock and continuing clockwise.

Public Works Department Airports Division

IPM Program Highlights

- **Airport Herbicide Use**

Staff from the Public Works Maintenance Division have historically provided supplemental vegetation management services to the Buchanan Field and Byron Airports. Airport Operations employees have focused on mechanical weed mitigation practices while Flood Control and Roadside technicians have conducted herbicide applications at both locations.

Since the Maintenance Division suspended all chemical controls in October 2018, Airport personnel have completed several herbicide applications. Enhanced aviation safety protocols at each airport site necessitate uninterrupted action to combat vegetal pest pressures. Problematic vegetation at these unique locations can increase hazards associated with fires, visual obstructions, and incongruous wildlife habitation. Consistent with airport safety standards and other guidance provided by the Federal Aviation Administration (FAA), airport staff acted expeditiously to abate these matters on several occasions, but additional steps are required to achieve full regulatory compliance of the practice.

The job class specifications for the Airport Safety Officer series lists the implementation of “vegetation control programs through the application of chemicals, and other weed control products and mowing” as typical tasks. The herbicides were appropriately obtained, and staff applied the chemicals in accordance with the distributors’ PCA recommendations. The IPM Coordinator will work with Airport Operations to ensure that application and reporting protocols are refined to fit within the established regulatory framework and County IPM Policy.

- **Pesticide use in FY 18-19**

This fiscal year, airport staff applied approximately 450 pounds (a.i.) of glyphosate herbicide at their two locations. Previous years’ usage would have been reported by Maintenance Division personnel as part of their roadsides and flood control maintenance program. Quantities are approximate since pesticide usage reporting protocols were not known by applicators during FY 18-19; numbers were estimated based on the amount of product purchased. Starting on July 1, 2019, accurate use records began to be kept.

Public Works Department Airports Division Challenges

- **FAA Mandates**

The IPM Advisory Committee and the IPM Coordinator hope to be a resource for Airport personnel to implement an integrated approach that ensures the safety of travelers, neighbors, and others who spend time in and around the Buchanan Field and Byron Airports.



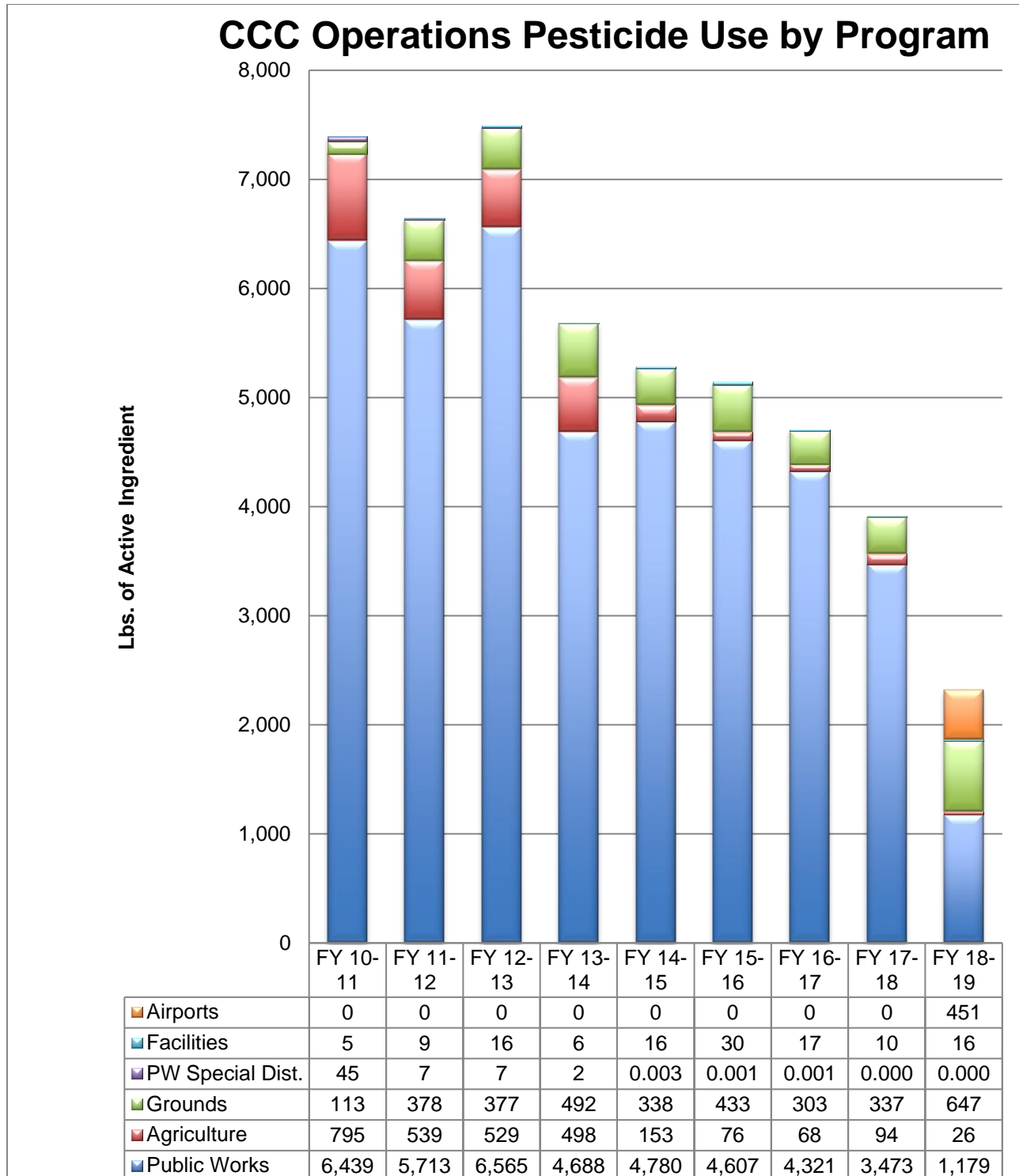
Buchanan Field Airport



Byron Airport

Pesticide Use by Contra Costa County Operations

Starting in FY 00-01, the IPM Task Force annually reported pesticide use data to the Transportation, Water, and Infrastructure Committee for the County departments involved in pest management. The IPM Coordinator has continued this task. Below is a bar chart of pesticide use over the last 9 years. For information on how pesticide use is reported in California and for more detailed pesticide use data including total product use, see Appendix B and the separate County Pesticide Use Spreadsheet.



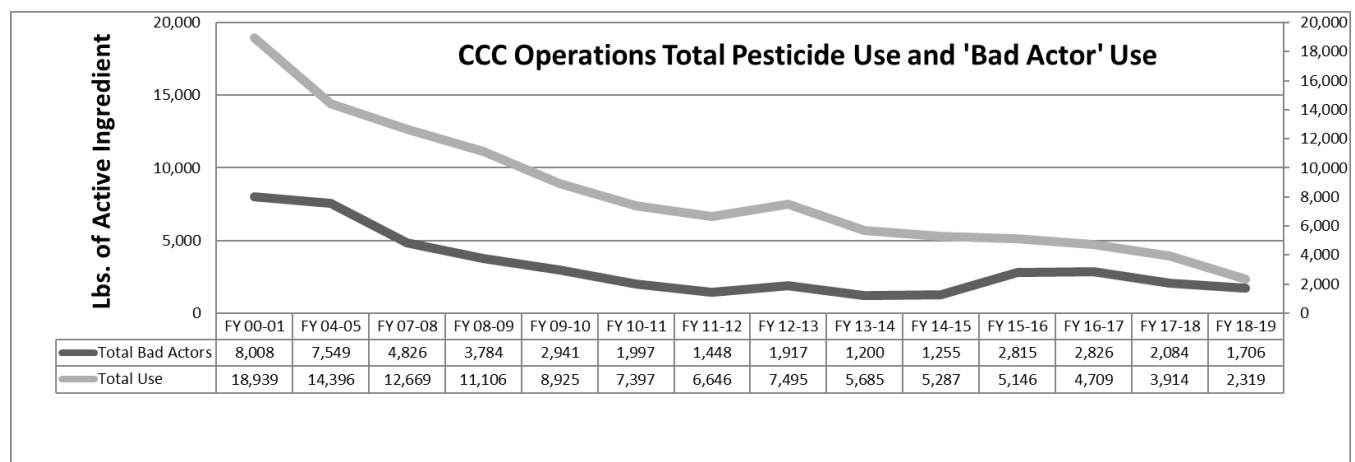
Decrease in Pesticide Use by County Operations

Since FY 00-01, the County has reduced its use of pesticide by 88%. Note that Departmental pesticide use fluctuates from year to year depending on many factors.

Concern about “Bad Actor” Pesticides

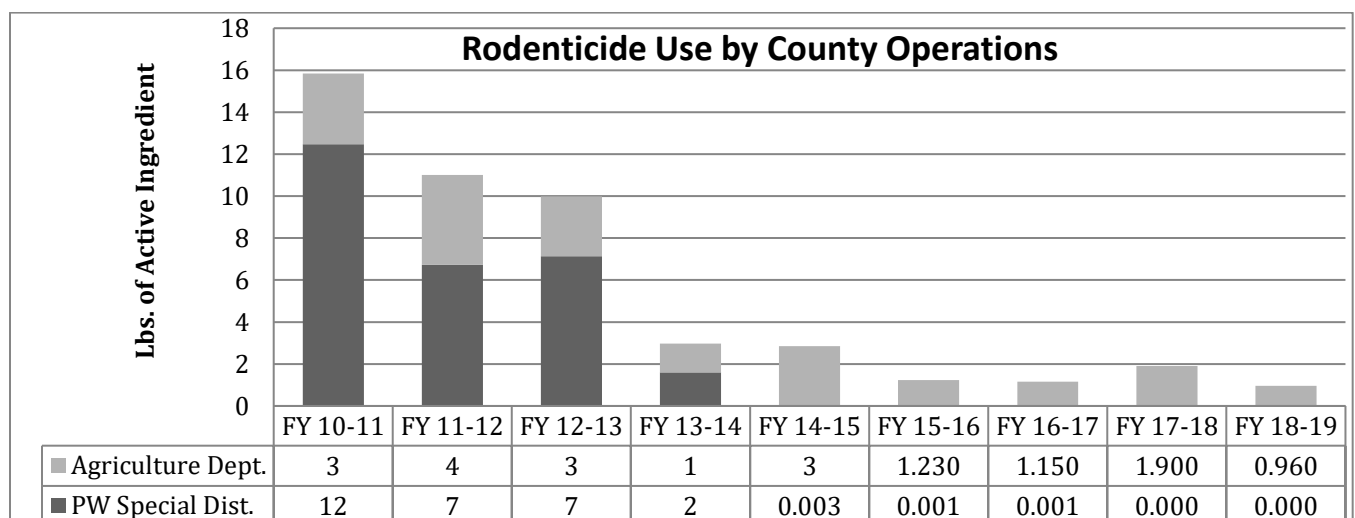
There has been concern among members of the public and within the County about the use of “Bad Actor” pesticides by County departments. “Bad Actor” is a term coined by the Pesticide Action Network (PAN) and Californians for Pesticide Reform to identify a “most toxic” set of pesticides. These pesticides are at least one of the following: known or probable carcinogens, reproductive or developmental toxicants, cholinesterase inhibitors, known groundwater contaminants, or pesticides with high acute toxicity.

The County’s use of these particular pesticides has decreased since FY 00-01 as shown in the graph below. In Fiscal Year 00-01, County operations used 8,008 lbs. of “Bad Actor” active ingredients and this year used 1,706 lbs., a 79% reduction. The uptick in 2015 represents the listing of glyphosate as a probable carcinogen by the International Agency for Research on Cancer. PAN subsequently added it to their list of “Bad Actors.”



Rodenticide Use

The Department of Agriculture uses rodenticide for ground squirrels whose burrowing threatens critical infrastructure in the County, such as roads, levees, earthen dams, and railroad embankments. The Grounds Division and Special Districts have eliminated the use of rodenticides and manage vertebrate pests with trapping and CO₂. Below is a bar chart to illustrate the decline in rodenticide use by the County.



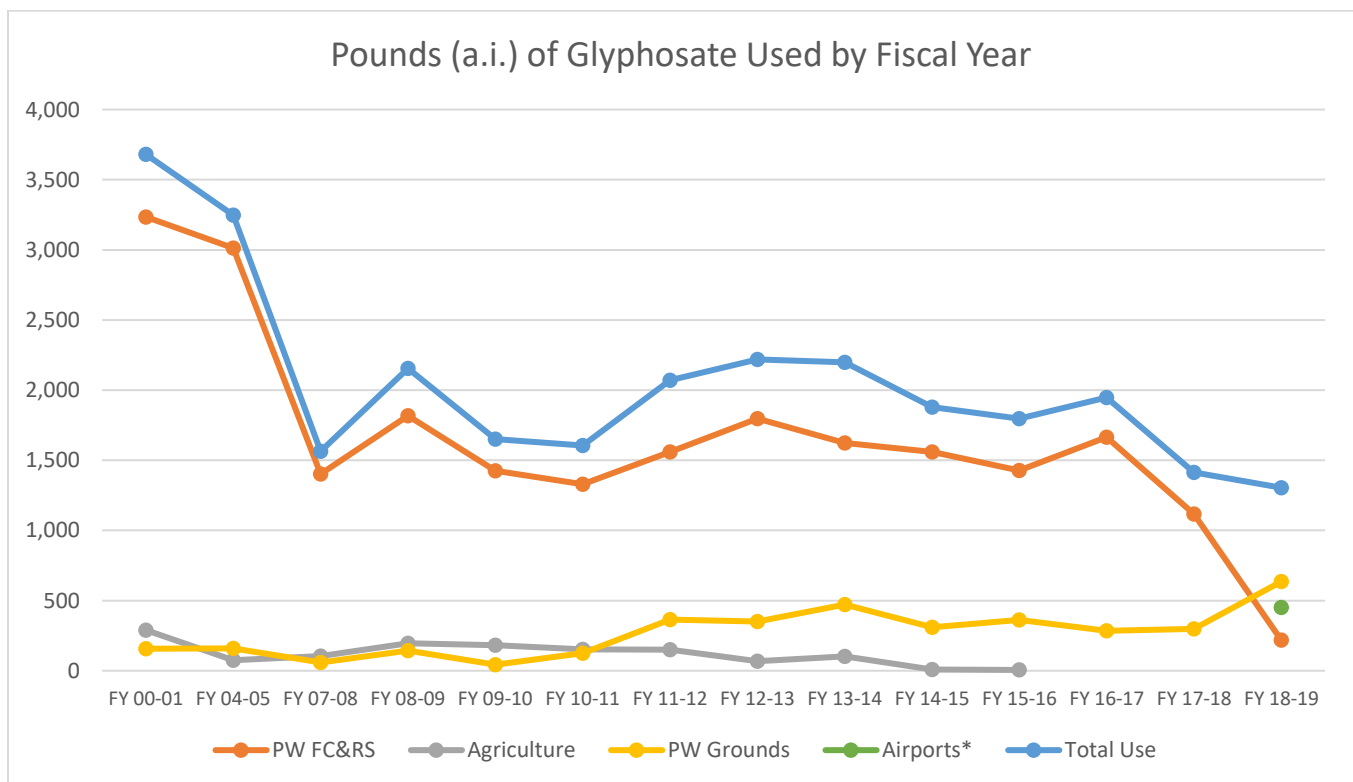
Trends in Pesticide Use

A change in pesticide use from one year to the next does not necessarily indicate a long-term trend. Long-term trends are more meaningful than short-term changes. It is important to understand that pesticide use can increase and decrease depending on the pest population, the weather, the invasion of new and perhaps difficult to control pests, the use of new products that contain small percentages of active ingredient, the use of chemicals that are less hazardous but not as effective, the addition or subtraction of new pest management projects in a department's workload, and cuts to budgets or staff that make it difficult or impossible to use alternate methods of control.

The County's pesticide use trend follows a trend typical of other pollution reduction programs. Early reductions are dramatic during the period when changes that are easy to make are accomplished. When this "low-hanging fruit" has been plucked, it takes more time and effort to investigate and analyze where additional changes can be made. Since FY 00-01, the County has reduced its use of pesticide by 88%. If further reductions in pesticide use are to be made, it will require time and additional funding for focused study and implementation.

The Public Works Maintenance Division's pesticide use during FY 18-19 may appear favorable at first glance, due to the drastic reduction. It is important to note that this decrease is primarily attributed to the Division's decision to temporarily suspend the herbicide program until the matter regarding the required Pest Control Advisor recommendations as described on pages 14 and 15 is resolved. Outside of a dramatic shift in how the Division and the infrastructure they are responsible for is managed, pesticide use will likely return to previous levels in a manner consistent with a more subtle downward trajectory once the program resumes.

Other trends were revealed as a result of a review of glyphosate use within County departments which are indicated on the chart below. This review was initiated by the IPM Advisory Committee which sought to gain a better understanding of the County's use of the product that has increasingly become notorious within the context of recent and ongoing lawsuits involving glyphosate as well as some public agencies banning or restricting its use in their respective operations. The Decision-Making Subcommittee plans to further engage individuals from various departments to help encourage an integrated approach to managing vegetation.



Departmental Integrated Pest Management Priorities For 2020

Agriculture Department Priorities for 2020

- Department goals for 2020 include expanding the artichoke thistle/purple starthistle control program to previously untreated properties. Spot spraying individual plants with a backpack sprayer prevents these noxious weeds from becoming established in rangeland which would require greater amounts of herbicides to control. The Department will also to continue to explore new methods of ground squirrel control where these methods can be safely and effectively used

Public Works Department Priorities for 2020

Facilities Division

- Continue working to fix structural deficiencies in County buildings
- Continue monitoring the bed bug situation in County buildings and providing awareness training if necessary
- Work with distributors to acquire efficacious ant baits that are more appropriate for our climate and facility portfolio

Grounds Division

- Decrease reliance on post-emergent strategies by working with the Decision-Making Subcommittee to develop a balanced approach, initially focusing on sites identified as part of the recent review of glyphosate use in County operations
- Proactively manage irrigation systems in relatively new installations to prevent die-off of preferred plants which creates an opportunity for invasive plants to take over
- Continue hand weeding wherever and whenever feasible—using mulch facilitates hand weeding
- Continue educating the public to help them raise their tolerance of weeds
- Continue working on the rejuvenation of aging County landscapes
- Continue raising the level of service on County property

Airports Division

- Work to refine pesticide use reporting protocols
- Implement the use of pre-emergent herbicides on fence lines and other suitable locations
- Gather information that will be useful in developing a comprehensive vegetation management strategy

Roadside and Flood Control Maintenance Division

- Ensure that a supervisor for the Vegetation Management Crew is hired and fill all other vacant positions
- Implement an acceptable strategy to obtain pesticide use recommendation from a licensed Pest Control Advisor
- Work to manage vegetation in a way that complies with regulatory obligations, keeps citizens and staff safe, and enhances our environmental stewardship
- Engage with the Decision-Making Subcommittee to review the possibilities of obtaining additional funding to supplement the Agriculture Department's ground squirrel efforts through other possible contractual arrangements

Appendix A.

- **Report of the Decision-Making Subcommittee to the Contra Costa County IPM Committee**
- **Decision-Making Document for Ground Squirrel Management for Critical Infrastructure**

Report of the Decision-Making Subcommittee to the Contra Costa County IPM Advisory Committee.

Prepared by Andrew M. Sutherland, Subcommittee Chair, and Tanya Drlik, IPM Coordinator - August 2019

Members

Susan Captain, Jim Donnelly, Gretchen Logue (vice chair), Andrew Sutherland (chair), Larry Yost

The Decision-Making Subcommittee, as a service to the Contra Costa County IPM Advisory Committee and the residents of the County, works to document situation-specific pest management decision-making processes and to revise existing County decision documents. The subcommittee is charged with making recommendations that may improve the County's pest management processes while preventing or minimizing associated negative impacts.

Since our last report (September 2018), the Subcommittee has met eight times: November 6, 2018 and January 8, February 21, March 11, April 25, May 30, July 11, and August 15, 2019. Elections were held on February 21, with Andrew Sutherland elected as Chair and Gretchen Logue elected as Vice-Chair, both to serve until December 2019. For this report, recent activities have been grouped into three broad themes below: ground squirrel management by the Department of Agriculture, (generalized) vegetation management programs, and methods of communication and extension for the Subcommittee's recommendations.

Ground squirrel control by the Department of Agriculture

The subcommittee continued review of this pest situation and the associated decision document *Ground Squirrel Management for Critical Infrastructure*. This program is responsible for only the County use of anticoagulant rodenticides. In FY 2018-19, 0.96 lb of the active ingredient diphacinone was applied to control ground squirrels. The nontarget issues surrounding use of anticoagulants continue to be important to the County and its residents. The review process began on April 5, 2018 and continued formally until the decision document was approved (as revised) on March 11, 2019; the document is attached here. Key findings are as follows:

- The Agriculture Department manages ground squirrels as a service for the Public Works Department and, periodically, for other County entities through on-call services and vendor agreements. The decision document *Ground Squirrel Management for Critical Infrastructure* applies to services provided to Public Works. A related document, tentatively entitled *Ground Squirrel Management: On-Call Service*, remains to be created and reviewed by the IPM Coordinator and this Subcommittee.
- Fumigation (via gas cartridges, carbon monoxide, or carbon dioxide) is considered a very important alternative to anticoagulant rodenticide applications. The Subcommittee learned about various fumigation devices and products and interviewed several manufacturers and users. The Subcommittee worked with the IPM Advisory Committee to arrange two research presentations on carbon monoxide and carbon dioxide fumigation. Fumigation is most effective in spring when soil is moist. Agriculture Department staff are committed to weed management programs during spring. This labor shortage presents a major limitation to the adoption and widespread use of these alternatives by the Agriculture Department. Because of this limitation, the County has traditionally used diphacinone-treated grain bait to manage ground squirrels around critical infrastructure. Baiting is only effective from June through October when grasses are dry.
- Trapping, burrow destruction, burrow grouting, and conservation biological control (raptor perch programs) were considered as alternative management tactics. Several municipal agencies and other users were interviewed about these tactics. None of these appear to provide stand-alone control, but all should be considered as components of a robust integrated program for ground squirrel management in the County.
- The subcommittee decided to develop a decision tree that will be associated with *Ground Squirrel Management for Critical Infrastructure*. Work on this decision tree has not yet begun.
- Additional funding for the ground squirrel program will be needed to explore and implement alternatives.

Weed management programs

The Subcommittee continued some discussion surrounding vegetation management as conducted by the Department of Public Works along County rights-of-way. These programs have come under new public scrutiny due to recent litigation and public awareness of the broad-spectrum post-emergent herbicide glyphosate as a potential carcinogen. The Subcommittee reviewed these programs in detail during 2017-2018, culminating in

approval of two revised decision documents: *Weed Management along Roadsides* and *Weed Management along Flood Control Channels*. Both programs have been significantly impacted by staffing challenges within Public Works; it was reported that no pesticide use has occurred within these programs since October 2018. The Subcommittee met with Public Works staff members several times during this review period to discuss these programs. Key findings and recommendations are as follows:

- Access roads associated with flood control channels are an integral part of the right-of-way. Therefore, pesticide use reported on flood control channels includes access roads, and the associated decision documents attempt to capture decision-making processes and management tactics chosen along those roads. Several questions about pesticide use along access roads have been posed by the community.
- The Subcommittee will continue to engage the Public Works Department in discussion about vegetation management on rights-of-way, hoping to advise and clarify based on the two documents recently revised.

Communication and Extension of the Subcommittee's Recommendations

The Subcommittee conducted several discussions about how best to communicate our recommendations to County decision makers. Our recommendations are captured within decision documents we review and in our annual reports, but we wonder if these are received and seriously considered by Department heads, the Board of Supervisors, and other decision makers. We outlined a process by which members of the Subcommittee may report directly to the Board via the Transportation, Water, and Infrastructure Committee. Several Subcommittee members expressed interest, and we may follow the process outlined in the future. During this review term, the sitting IPM Coordinator retired. The subcommittee will work with the incoming IPM Coordinator to identify processes and pathways by which we might extend our recommendations more broadly and impactfully.

Subcommittee Recommendations

The Decision-Making subcommittee recommends the following:

- The County allocate funding to the Agriculture Department to support ground squirrel management during spring, when fumigants such as carbon monoxide and carbon dioxide will be most effective. As a reminder, Department staff are all engaged in weed management programs in spring and unable to utilize these important alternatives to anticoagulants. This funding could be used to hire additional staff, purchase carbon monoxide fumigation equipment, hire a pest control contractor for springtime ground squirrel management, or to experiment with management protocols. The Subcommittee will work with the Department to determine the specific amounts that will required for these efforts and activities.
- The County allocate additional funding or establish alternative procedures whereby the Department of Public Works may procure a contractor to provide carbon monoxide fumigation services for ground squirrels along levees, irrigation canals, and flood-control channels during the spring. This would allow the Agriculture Department to continue focusing on their weed management programs during the spring.
- The County continue to evaluate new and existing ground squirrel management tactics, considering site requirements, efficacy, cost, impacts to the environment, and impacts to the community.
- The ground squirrel decision document be reviewed every three years, given ongoing development of new methods, changing environmental conditions, and potential changes to budgets.
- The County conduct detailed evaluations of the Public Works vegetation management programs along rights-of ways during the period October 2018 to present, given that no herbicides were applied. Have they met the control mandates set forth? Have they saved funds that may be used to evaluate and implement alternatives to herbicide applications along roadsides and flood control channels?
- The County continue to evaluate new and existing weed management tactics, considering site requirements, efficacy, cost, impacts to the environment, and impacts to the community.
- The roadside and flood control weed management documents be reviewed every three years, given ongoing development of new methods, changing environmental conditions, and potential changes to budgets.
- All IPM decision documents, once approved, be made publicly available.
- The County direct departments to annually propose and prioritize potential research projects associated with emerging and innovative strategies and tactics that will improve the County's IPM program.
- The County encourage departments to seek outside funding sources for these IPM research projects.

Contra Costa County DECISION DOCUMENTATION for GROUND SQUIRREL MANAGEMENT on Critical Infrastructure

Date: 7/29/2013 (last revised on 9/5/19)





















































































Department: Agriculture

Location: Countywide

Situation: Ground squirrel management to protect critical infrastructure and human health

What are the management goals for the sites?	Maintain a squirrel-free buffer area (generally 100 linear feet) around critical infrastructure (levees, earthen dams, canals, roadways, train berms, bridge abutments). Note that the size of the buffer area is site-specific.																																																												
Who has jurisdiction over the areas in question?	The Department is contracted by a number of entities to perform ground squirrel management on land under the jurisdiction of the following: CCC Public Works Department (including Flood Control), CC County Concord & Byron Airports, CC Water District, the U.S. Department of Interior Bureau of Reclamation, West County Wastewater Treatment Plant, Central Contra Costa Sanitary District, and Ironhouse Sanitation District. As a contractor, the Department is not always alerted to ground squirrel problems by the contracting agency in time to consider all control methods. Furthermore, budgets for these programs are set by the contracting agency and may preclude the Department from using some control methods.																																																												
How often are sites monitored?	Road and Flood Control crews are continually monitoring for ground squirrels throughout the year in order to alert the Agriculture Department to priority areas. These priority areas, along with sites where ground squirrels have been found historically, are monitored by Agriculture Department staff once annually prior to treatment between the months of June and October. This allows the Agriculture Department to determine where treatment is actually needed.																																																												
The problem species has been identified as the following:	<p>Ground Squirrel (<i>Spermophilus beecheyi</i>)</p> <p>Burrowing by ground squirrels can be very destructive, and they can cause severe erosion and loss of structural integrity. Ground squirrels are a problem in levees, in flood control facilities and canals, in earthen dams, on roads, on railroad berms, around foundations and retaining walls, and in landscaping where they chew on irrigation lines. In addition, California ground squirrels are known to be carriers of many transmissible diseases, including bubonic plague and tularemia.</p> <table><tr><td></td><td>WINTER</td><td>SPRING</td><td>SUMMER</td><td>AUTUMN</td></tr><tr><td>MAJOR ACTIVITY PERIODS</td><td></td><td></td><td></td><td></td></tr><tr><td>adults</td><td></td><td></td><td></td><td></td></tr><tr><td>reproduction</td><td></td><td></td><td></td><td></td></tr><tr><td>juveniles</td><td></td><td></td><td></td><td></td></tr><tr><td>MAJOR FOOD SOURCE</td><td></td><td></td><td></td><td></td></tr><tr><td>green foliage</td><td></td><td></td><td></td><td></td></tr><tr><td>seeds</td><td></td><td></td><td></td><td></td></tr><tr><td>BEST TIME FOR CONTROL</td><td></td><td></td><td></td><td></td></tr><tr><td>fumigation</td><td></td><td></td><td></td><td></td></tr><tr><td>baiting</td><td></td><td></td><td></td><td></td></tr><tr><td>trapping</td><td></td><td></td><td></td><td></td></tr></table> <p>From Roger Baldwin's presentation entitled "Developing a management plan for burrowing rodents in organic production", February 2019.</p>		WINTER	SPRING	SUMMER	AUTUMN	MAJOR ACTIVITY PERIODS					adults					reproduction					juveniles					MAJOR FOOD SOURCE					green foliage					seeds					BEST TIME FOR CONTROL					fumigation					baiting					trapping				
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<p>What is the tolerance level for this species?</p>	<p>Tolerance level: At the 2 County airports, FAA regulations require zero tolerance for grounds squirrels. For all other critical infrastructure, any activity within the desired buffer zone (generally 100 linear ft.) may warrant treatment. Ground squirrels within this area have the potential to cause damage by burrowing.</p> <p>Burrows can destroy a levee system and can also create habitat for burrowing owls. When protected species are living in burrows on the levees, the Public Works Department cannot perform maintenance or other work on the levees. The Army Corps of Engineers regularly inspects Contra Costa levees. If the County does not manage ground squirrel burrowing on the levees, the Corps could view this as lack of due diligence on the part of the County and could decertify the levee system. Decertification of a flood control facility results in the denial of emergency funds to the County in the event of a serious flood. The County would have to provide all emergency management funds alone.</p> <p>The Bureau of Reclamation inspects Contra Costa Water District canals and requires the District to manage squirrels whose burrowing can compromise the earthen canal embankments and create pathways for water leakage that can undermine the structural integrity of the canals.</p> <p>Ground squirrel burrowing is the biggest threat to California levees. The burrow of one ground squirrel can be long enough to perforate a levee. Shorter burrows may be close enough to each other to perforate a levee. Many burrows in close proximity can create voids that are prone to collapse. High water can go into burrows and compromise the structure of the levee. Even one colony of ground squirrels can cause considerable damage. The longer a ground squirrel population inhabits a levee, the more likely the burrows are to be extended. Research has shown that burrows are shorter where squirrels are regularly controlled. Squirrel populations on levees that persist at high densities over time are more likely to make longer and more interconnected burrows.</p> <p>This same burrowing and resulting pathways for water erosion can cause damage to or sudden failure of roadsides and other structures.</p>										
<p>Are these sensitive sites?</p>	<table border="1"> <tr> <td> <p>Is there known or potential habitat for any endangered or threatened species at any of the sites?</p> <p>See below.</p> </td><td> <p>Yes</p> </td></tr> <tr> <td> <p>Are any areas part of the court-ordered injunctions? (see: https://www.epa.gov/endangered-species/interim-use-limitations-eleven-threatened-or-endangered-species-san-francisco-bay)</p> <ul style="list-style-type: none"> a) The San Joaquin kit fox has not been sighted in Contra Costa County since the 1980s. The habitat quality is considered poor according to the State Department of Fish and Wildlife. Restrictions prohibit use of aluminum phosphide, chlorophacinone, diphacinone, gas cartridges (and several rodenticides not used by the Department) within 700' of known San Joaquin kit fox dens. The Endangered Species Act requires prebaiting and carcass survey in habitat areas. b) Alameda whipsnake habitat is near some areas that are treated. Use of diphacinone and gas cartridges is prohibited within 100' of coastal sage and northern coastal sage flora in these areas. c) California tiger salamander habitat is near some areas that are treated. Use of diphacinone and gas cartridges is prohibited within 200' of certain water features in these areas, as listed in the injunction. d) California red-legged frog habitat is near some treated areas. Use of gas cartridges is prohibited by the Endangered Species Act within 500' of certain water features in these areas. <p>Are there other species to be aware of?</p> <p>Burrowing owls live in abandoned ground squirrel burrows. These owls are predominantly, but not exclusively, in East County. In areas where burrowing owls are sighted, gas cartridges would only be used in ground squirrel inhabited burrows. Note that gas cartridges are rarely used by the Department because they must be used when the soil is moist and during that time, all Department staff are engaged in invasive weed control activities.</p> </td><td> <p>Yes</p> </td></tr> <tr> <td> <p>Are any of the sites in or near an area where people may walk or children may play?</p> <p>The area adjacent to the EBRPD's trail along Marsh Creek is posted before it is treated. 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	If any of the above answers is yes, follow currently established legal and procedural guidelines appropriate to the sensitive sites. See also the general pest management decision tree.																																																													
Control Methods	<p>This is not an attempt to consider all control methods available. The following identifies the many types of controls that have been reviewed and/or used by the County. It is not an exhaustive list. For more information on controls see http://www.groundsquirrelbmp.com/</p> <p>The County continues to investigate and review new control methods as they become available.</p>																																																													
Efficacy of Management Methods	<p>Management Method Efficacy California Ground Squirrels</p> <table><thead><tr><th></th><th>Time of Year</th><th>Efficacy</th><th>Cost</th><th>Labor</th><th>Restrictions</th></tr></thead><tbody><tr><td>Fumigation</td><td>Mid-Jan to Mid-May¹</td><td>HIGH</td><td></td><td></td><td> ²</td></tr><tr><td>Toxic Baits</td><td>Mid-May to Mid-Oct</td><td>HIGH</td><td></td><td></td><td> ²</td></tr><tr><td>Trapping</td><td>Mid-Jan to Mid-Oct</td><td>MODERATE</td><td></td><td></td><td></td></tr><tr><td>Burrow modification</td><td>Year-round</td><td>MODERATE</td><td></td><td></td><td></td></tr><tr><td>Shooting</td><td>Mid-Jan to Mid-Oct</td><td>MODERATE</td><td></td><td></td><td></td></tr><tr><td>Repellents</td><td>Mid-Jan to Mid-Oct</td><td>LOW</td><td></td><td></td><td></td></tr><tr><td>Habitat modification</td><td>Year-round</td><td>LOW</td><td></td><td></td><td></td></tr><tr><td>Biological control</td><td>Mid-Jan to Mid-Oct</td><td>LOW</td><td></td><td></td><td></td></tr><tr><td>Exclusion</td><td>Mid-Jan to Mid-Oct</td><td>LOW</td><td></td><td></td><td></td></tr></tbody></table> <p>¹ Management window may be longer if high soil moisture persists, particularly following substantial irrigation. ² Dependent on which fumigant or bait is used.</p> <p> = Low  = Moderate  = High</p> <p>* This table considers 'fumigation' broadly, encompassing gas cartridges, aluminum phosphide, carbon monoxide, and carbon dioxide. Efficacy, cost, labor requirements, and use restrictions may vary amongst these tactics, but the preferred application season ('Time of Year') is the same or very similar for all these fumigation tactics.</p> <p>Chart is from UC Cooperative Extension Ground Squirrel BMPs (http://www.groundsquirrelbmp.com/management-cgs.html).</p>		Time of Year	Efficacy	Cost	Labor	Restrictions	Fumigation	Mid-Jan to Mid-May ¹	HIGH			 ²	Toxic Baits	Mid-May to Mid-Oct	HIGH			 ²	Trapping	Mid-Jan to Mid-Oct	MODERATE				Burrow modification	Year-round	MODERATE				Shooting	Mid-Jan to Mid-Oct	MODERATE				Repellents	Mid-Jan to Mid-Oct	LOW				Habitat modification	Year-round	LOW				Biological control	Mid-Jan to Mid-Oct	LOW				Exclusion	Mid-Jan to Mid-Oct	LOW				
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Exclusion	Mid-Jan to Mid-Oct	LOW																																																												
Which cultural controls were considered?	<p>Planting desirable species: Research has indicated that tree cover and leaf litter have a negative influence on the probability of the occurrence of ground squirrel burrows on levees, and that the effect was significant on both the land side and the water side of the levee. This probably is the result of tall woody vegetation obscuring the view of the sky and hence of raptors that might prey on the squirrels.</p> <p>CONCLUSIONS:</p> <p>Planting desirable species is not compatible with the program due to expense. Also, at present, the Army Corps of Engineers does not allow trees on levees, but the research mentioned above may have implications for management in the future.</p>																																																													
Which physical controls were considered?	<p>Burrow modification: Ground squirrels work hard on their burrows and do not readily give them up. They continue to improve their burrows through multiple years and generations, creating complex systems that can be anywhere from 3 to 135 feet long and 2 to 4 feet deep. It has been observed that when burrows are abandoned, new squirrels will reinfest the area and occupy the old burrows. Modifying or destroying burrows can slow or prevent the reinfestation of ground squirrels.</p> <p><u>O₂/propane explosive devices (burrow exploder):</u> This method is more destructive, poses hazards to the applicator from flying debris, and would damage levees, berms and embankments. There is also the difficulty of getting the device to the burrows.</p>																																																													

"A burrow exploder uses the force from the ignition of a gaseous mixture of propane and oxygen to create a concussive blast. It is less effective than most baiting and fumigation options and also requires a lot of equipment, including personal safety gear (hard hat, heavy gloves, safety glasses, ear plugs, ear protectors, and full body protective clothing), a fire extinguisher and shovels (highly recommended), and 50-foot hoses that feed the gases into the nozzle. Depending on the size of the gas canisters that you use, you may need a hand truck, ATV, or a vehicle to carry the equipment. Initial tests have not indicated this to be an effective removal approach (around 30-35% success rate), although destruction of burrow systems may have utility in some situations." (from Ground Squirrel BMPs <http://www.groundsquirrelbmp.com/burrowmod-cgs.html>).

Cement and Bentonite Grout: This mixture has been used by the California Department of Water Resources (DWR) and local agencies to repair levee damage caused by ground squirrel burrows. Data from research on DWR- and reclamation district-maintained levees in the Sacramento area in 2013 "suggest that through the implementation of a regular, ongoing grouting program the amount of cement bentonite grout needed to fill burrows decreases over time, which would correspond to reduced maintenance effort and reductions in yearly materials and manpower costs over time....An important unknown is the long-term performance and effects of grouting on seepage and stability of a levee. After decades of injecting grout into levees, the conditions of the embankments will surely change as the levee material is replaced by grout."

The Burrow Blocker: "The Burrow Blocker system is a relatively new product. The system pumps a slurry of water and sand into ground squirrel burrows. The water is then absorbed into the soil and leaves the sand in the burrow, filling those portions of the burrow system into which the slurry can flow by gravity, thus trapping the ground squirrels underground. Research is needed to determine the efficacy of this product." (from Ground Squirrel BMPs <http://www.groundsquirrelbmp.com/burrowmod-cgs.html>)

Deep Ripping: "Deep ripping can be used to substantially slow the reinvasion of California ground squirrels once they have already been controlled in an area. However, destroying the burrow entrances without effectively controlling the ground squirrel population by other management methods significantly reduces the effectiveness of deep ripping. This method is generally unsuitable in areas that have large rocks or boulders or in orchards, where burrows are adjacent to trees. Deep ripping should reach a depth of at least 20 inches, or more if possible. Studies have shown that destruction of burrows at a depth of 12 inches did not result in a reduction in colonization time. One to three ripping shanks mounted on the hydraulic implement bar of a tractor works well. Space shanks approximately 3 feet apart." (from Ground Squirrel BMPs <http://www.groundsquirrelbmp.com/burrowmod-cgs.html>)

In an unpublished study conducted at UC Davis, it was found that of various methods of preventing reinfestation, ripping the burrows to a depth of 18 inches was a relatively effective method for reducing reinvasion into old burrows.

Burrow modification by any method can kill any other species (including rare and endangered species such as the burrowing owl, San Joaquin kit fox, California red-legged frog, California tiger salamander and Alameda whipsnake) living in the burrows and/or will destroy potential habitat for them.

Shooting: Shooting controls squirrels in small numbers. Squirrels often come to recognize this activity and become gun shy. They may learn to retreat to their burrows any time a vehicle drives into the area or they hear a gunshot. There are safety concerns, and this is a time-intensive method.

Fencing: UC Extension's Ground Squirrel BMPs (<http://www.groundsquirrelbmp.com/exclusion.html>) states the following:

"While fences can be constructed to exclude squirrels, they aren't usually practical because of their expense. Ground squirrels can readily dig beneath fences that are buried several feet deep in the soil. Sheet metal caps atop a 4-foot wire mesh fence will prevent them from climbing over. For a fence to remain squirrel-proof, the squirrels that burrow near the fence should be eliminated. Experiments with a temporary low electric fence have been shown to seasonally discourage California ground squirrels from invading research or small garden plots from outside areas."

Trapping

California ground squirrels are considered nongame animals under the Fish and Game Code. A license is not required except if ground squirrels are being trapped for profit or for hire.

Live Trapping: Trapping can be done anytime squirrels are present. Most traps require the use of bait, which may be of limited effectiveness during certain times of the year. Bait must be at least as appetizing as what the squirrels are currently feeding on. Best overall results come from trapping squirrels just before they have their young, although trapping anytime squirrels are active can be effective. Trappers with SWAT Pest Control in Santa Clara County have found that July, August, and September are best for trapping ground squirrels. They find it very difficult to entice squirrels into traps in the spring because of the abundant green vegetation, which the squirrels prefer.

Live trapping requires a method of euthanization, since it is illegal to relocate trapped squirrels. Handling the traps prior to euthanization can expose staff to fleas and ticks living on the animals.

The Department's in-house trial of live trapping (see <https://cchealth.org/ipm/program.php>) showed this method to be very expensive and time consuming. California law mandates that traps be checked, and animals removed at least once a day, which was the protocol staff followed.

	<p>Besides the high cost, The Department found a number of other problems with live trapping in the 2012 experimental study that the Department performed:</p> <ul style="list-style-type: none"> • Squirrels fought inside the traps and were bloodied and wounded by these encounters. • Four squirrels were found dead in the traps probably from either fighting or heat stress. • Anxious squirrels gnawed on the bars of the trap cutting their mouths. • The traps consistently needed maintenance and modification in order to attract squirrels. At the end of the study, the traps had to be thoroughly cleaned because of the dried blood and powerful smell. • Although signs were posted warning the public to leave traps alone, two traps were found with their tops open in what must have been an attempt by passersby to release the squirrels. This vandalism is worrisome not only because it impeded the trapping, but also because it exposed the public to bites, scratches, and zoonotic diseases. In addition, it is an indication that trapping would not be well-accepted by the public and would result in complaints. • The week after the trapping trial, ground squirrels were back using the burrows in the buffer zone. <p>Costs: The 2012 study showed that the cost for the Department to live trap ground squirrels along one linear mile of roadway was \$5,074 compared to \$220 per linear mile for the current diphacinone treatment.</p> <p>For comparison purposes, quotes were obtained from commercial pest control operators that could treat using non chemical live traps or other methods. The quotes ranged from \$90 to \$125/hr plus mileage for nonchemical ground squirrel control using live traps or other methods. At 139 hours per linear mile for the five days of trapping this would amount to \$12,524 to \$17,394 per linear mile plus mileage. The Department also received two quotes of \$20 and \$25/ground squirrel captured. These quotes on the per squirrel basis convert to a per linear mile rate of \$13,360 and \$16,700 respectively considering that the equivalent of approximately 668 squirrels were captured per linear mile in the trial.</p> <p>From UC Agriculture and Natural Resources Best Management Practices for Ground Squirrels: "Trapping is not the most effective method of control, mainly because of the high labor required to achieve good results. But it may be an ideal method to use when other methods are not appropriate."</p> <p>Kill trapping: As with live trapping, kill trapping can be done any time of year. Box and tunnel traps are baited to entice squirrels in, and Conibear traps are placed over the burrow entrance and the squirrel passes into the trap on exiting the burrow. Kill traps are very strong and can injure fingers and hands.</p> <p>CONCLUSIONS: Burrow modification: The Agriculture Department does not currently use deep ripping or burrow explosion because it is impractical in the areas the Department manages, such as next to roads and in levees and earthen dams. There is also the danger of killing or displacing rare and endangered species. Burrow destruction may damage the infrastructure the Department is trying to protect. If the area is preferred ground squirrel habitat, they would return and dig new burrow systems. The efficacy of the Burrow Blocker is untested. The County does not currently use cement bentonite grout to fill burrows.</p> <p>Shooting: The Department does not use this method. It is impractical on a cost basis and is not effective over large areas. There are also safety concerns.</p> <p>Live trapping: The Department does not currently use this method. Live trapping may be a viable option for small, especially sensitive sites that require treatment, but over large areas (in 2012, the Department surveyed 925 linear miles of critical infrastructure buffer area), the high cost of trapping makes the method prohibitive. Furthermore, the method was not found to be effective in the treatment area due to the rapid reinfestation of the burrows by ground squirrels from the surrounding area. This does not happen with baiting. There are also issues with theft and vandalism.</p> <p>Ventura County has stated that trapping would play a small role in their ground squirrel IPM plan because of the extensive labor required.</p> <p>Kill trapping: The Department does not use this method. With kill trapping, there is too much risk of capturing nontarget animals, and kill traps present a danger to children or adults who might tamper with traps. It would also be very costly, perhaps even more costly than live trapping since 1 live trap can capture numerous squirrels at a time.</p>
<p>Which biological controls were considered?</p>	<p>Biological controls available: There are a number of animals that prey on ground squirrels, including rattlesnakes, coyotes, bobcats, mountain lions, red-tail hawks, red-shoulder hawks, and golden eagles. According to UC Cooperative Extension's Ground Squirrel BMPs, "As ground squirrels and their native predators have evolved over hundreds of years, ground squirrels have developed behaviors and abilities to avoid predation. In certain habitats, ground squirrels are frequent prey of rattlesnakes, though some ground squirrels have evolved a resistance to snake venom. Owls are nocturnal and do not generally prey on diurnal ground squirrels....In the majority of situations, predators are not able to control ground squirrel populations. Dogs may discourage ground squirrels from entering yards and other small areas, but they cannot control established squirrel populations."</p> <p>Staff monitored the raptor perches that the Department erected in 3 areas in 2009 until 2011 but did not find that they attracted the larger raptors that could feed on ground squirrels in the numbers that would be required for the degree of control necessary. Ground squirrels have constructed burrows at the base of some of the perches.</p>

	<p>CONCLUSIONS: Predators can reduce the ground squirrel population, but they cannot be manipulated by humans to provide the degree of control necessary in the specific locations the Department is contracted to treat.</p>
<p>Which chemical controls were considered?</p> <p>For more information on pesticides listed here visit the National Pesticide Information Center (NPIC). This is a joint project of Oregon State University and the US EPA.</p> <p>http://npic.orst.edu/</p> <p>You can communicate with an actual person at 1.800.858.7378 or npic@ace.orst.edu</p> <p>They are open from 8:00AM to 12:00PM Pacific Time, Mon-Fri.</p>	<p>Repellents: UC Extension's Ground Squirrel BMPs (http://www.groundsquirrelbmp.com/repellents.html) states the following: "There are no effective repellents available for California or Belding's ground squirrel control. Ground squirrels are not easily driven out from their burrow or home range area. When scared, they retreat to their burrows, but it is very unlikely that they will move to a new area all together. Thus, repellents and frightening are not effective methods for ground squirrel control."</p> <p><u>Burrow fumigation methods:</u></p> <p>Gas cartridge: The cartridge (made from sodium nitrate, charcoal, and cardboard) releases carbon monoxide gas into the burrow system. This method is only effective when the soil moisture is high in either winter or spring. Gas cartridges are more effective when used prior to breeding or emergence of young. The timing, though, conflicts with other programs for which Agriculture Department staff are needed, such as the noxious weed program, the pesticide use enforcement program and the pest exclusion program. There are serious endangered species restrictions and concerns to consider prior to use.</p> <p>Aluminum phosphide: Aluminum phosphide reacts with moisture in the soil and in the atmosphere to produce phosphine gas. This fumigant is only effective when soil moisture is high and so has the same timing issues as above. Aluminum phosphide is a restricted use material and is a hazard to the applicator. There are also endangered species concerns and restrictions to consider prior to use.</p> <p>CO and CO₂: These fumigants require a CO or CO₂ generating device, which must be moved from burrow to burrow and site to site during treatment. These are most effective when soil moisture is high, and they have the same timing issues as gas cartridges and aluminum phosphide. Devices using CO, including the PERC machine, are in use and considered "highly effective" by other county and municipal programs in CA in parks and open spaces as well as along canals and flood-control channels and associated access roads (but not along roadsides). Devices using CO₂ to kill ground squirrels are not yet registered through the California Department of Pesticide Regulation.</p> <p><u>Anticoagulant treated grain bait:</u></p> <p>Diphacinone treated grain bait: Diphacinone is applied to oat kernels that are rolled and dyed blue to make them less attractive to non-target species. Treated grain baits take advantage of the ground squirrel's highly developed seed foraging abilities.</p> <p>Diphacinone is a first generation anticoagulant that prevents blood from clotting and causes death by internal bleeding. First generation anticoagulants require multiple feedings over several days to a week to kill. This is different from second generation anticoagulants that are far more toxic and can kill within days of a single feeding if enough bait is ingested.</p> <p>Second generation anticoagulants pose a greater risk to animals that eat poisoned rodents. If the rodent continues to feed on the single-dose anticoagulant after it eats a toxic dose at the first meal, it may build up more than a lethal dose in its body before the clotting factors run out and the animal dies. Residues of second generation anticoagulants may remain in liver tissue for many weeks, so a predator that eats many poisoned rodents may build up a toxic dose over time. However, even the first generation anticoagulants may be poisonous to animals that eat poisoned rodents. The first generation materials break down much more rapidly in animal tissues and have a much reduced potential for secondary kill when compared to second generation materials. To mitigate for this, the Department performs carcass surveys in all areas treated whether or not it is required by endangered species restrictions.</p> <p>CONCLUSIONS:</p> <p>Gas cartridges: The department uses these in some instances, but the cost is high, there are endangered species restrictions to consider prior to use, and staff is generally engaged in other program critical activities in winter and spring when gas cartridges can be used effectively. The Department does use this method in certain instances in late winter/spring. Major considerations for use are sensitivity of the site and available staff time. Staff are specifically trained to distinguish the difference between active and inactive ground squirrel burrows. Due to concerns over burrowing owls, staff only treat active burrows and will not use gas cartridges in sensitive areas of other endangered species that may inhabit ground squirrel burrows.</p> <p>The Department does not use other fumigation methods because they have the same limitations as gas cartridges. Gas cartridges are much safer than aluminum phosphide. CO & CO₂ devices are emerging technologies that may be impractical due to the difficulty in getting a CO or CO₂ producing device to the burrows coupled with the difficulty in determining whether endangered species are present in a burrow.</p> <p>Diphacinone is the Department's material of choice. It is both effective and is labeled "Caution" which is the least toxic pesticide label category. In certain areas there are endangered species considerations/mitigations that staff follow.</p>

<p>Which application methods are available for this rodenticide?</p>	<p>Methods available:</p> <p>Bait Station—.005% diphacinone is registered for use in bait stations (and for broadcast baiting small areas by hand)</p> <p>Broadcast—.01% diphacinone is registered for hand or mechanical broadcast baiting over larger areas</p> <p>CONCLUSIONS:</p> <p>Bait Station: The Department does use this method in a very few specific situations. In general, though, there are several concerns with this method: bait can spill or be kicked out of bait stations; cattle can damage stations resulting in spillage; children or adults may tamper with bait stations; dominant ground squirrels may gorge on bait and prevent other squirrels from eating it. Individual ground squirrels consuming large quantities of bait increases the risk of higher exposure levels to non-target predators; much larger quantities of bait are used in bait stations as compared to broadcast treatment; rain damaged or moldy bait must be disposed of as hazardous waste.</p> <p>Broadcast: This is generally the method of choice.</p> <p>The Department's typical protocol for ground squirrel baiting is as follows:</p> <ol style="list-style-type: none"> 1. Ground squirrel work is conducted beginning in June, after forage grasses have dried, and extends to early October depending on when fall rains begin. 2. On day 1, staff "prebait" by putting out untreated, clean rolled oats. This increases foraging activity so that treatment can be more highly focused, and the least amount of treated bait can be used. 3. Approximately 2 days later, staff make the 1st application of treated bait along a 12 to 15 ft. swath around/along the critical infrastructure to be protected. Applications are made only where ground squirrels are observed actively taking the "prebait." <p>Bait is spread at the labeled rate, which equates to 2-3 treated kernels per square foot. The oat kernels have been rolled and dyed which makes them less attractive to non-target animals.</p> <p>Bait applications are made using a Hurd Spreader mounted on the back of a truck or an ATV. Some smaller applications are made by hand spreading the bait. Two staff members ride in the truck so that one person can focus on looking for squirrel activity and operating the spreader while the other drives.</p> <ol style="list-style-type: none"> 4. About 2 days after the 1st bait application, staff broadcast the 2nd application of treated bait to the same 12 to 15 ft. swath. 5. Around 2 days after the 2nd application, staff perform a survey of the treated areas to remove any squirrels that may die above ground. This reduces non-target exposure potential. In 2012, on 925 linear miles of roadway, staff found only 6 squirrel carcasses. In Ventura County's 2007 Field Trial using broadcast baiting, they found no above ground carcasses at any of their 3 test sites. 6. Any heavily infested areas with continued squirrel activity are treated a 3rd time
<p>What factors were considered in choosing the pesticide application method?</p>	<p>Safety to the applicator, the environment, and nontarget species; endangered species considerations; the effectiveness of the method; and the cost to the Department.</p>
<p>What weather concerns must be checked prior to application?</p>	<p>Fumigation methods: Dry weather and dry ground greatly decreases effectiveness. At the same time the potential of starting a wildfire from this method increases.</p> <p>Dipacinone: The main concerns are rain or heavy dew that will render broadcast bait ineffective and can cause the bait in bait stations to mold.</p>
<p>Recommendations from the IPM Advisory Committee</p>	<ul style="list-style-type: none"> • Allocate additional funding and/or additional staff resources to the Department to support management during spring, when fumigants such as CO will be most effective. • Allocate funding for purchase of CO fumigation equipment and to develop associated operational protocols. • Consider contracting for ground squirrel management services, including CO fumigation, during spring. • Monitor ongoing studies involving raptor perches and grouting for ground squirrel control along levees. • Continue to review all ground squirrel management methods available for critical infrastructure considering efficacy, cost, impacts to the environment and the human community. • Encourage investigation into, and experimentation with, new methods • Review this document every 3 years

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Ground squirrel and burrow under Empire Mine Road near Antioch in eastern Contra Costa County



Ground squirrel burrows along Empire Mine Road near Antioch in eastern Contra Costa County

Appendix B.

- **Pesticide Use Reporting**

(See separate PDF for Contra Costa Operations Pesticide Use Data Spreadsheet)

Pesticide Use Reporting

(See separate PDF for Contra Costa County Operations Pesticide Use Data Spreadsheet)

History of Pesticide Use Reporting

Since the 1950s, the State of California has required at least some kind of pesticide use reporting, but in 1990, the comprehensive reporting program we have now went into effect.

California was the first state in the nation to require full reporting of all agricultural and governmental agency pesticide use. The current reporting system exempts home use pesticides and sanitizers, such as bleach, from reporting requirements. (Sanitizers are considered pesticides.)

What does “pesticide” mean?

The California Department of Pesticide Regulation (DPR) defines pesticide as “any substance or mixture of substances intended for preventing, destroying, repelling or mitigating insects, rodents, nematodes, fungi, weeds, or other pests. In California plant growth regulators, defoliants, and desiccants, as well as adjuvants, are also regulated as pesticides.”

“Adjuvants” increase pesticide efficacy and include emulsifiers, spreaders, foam suppressants, wetting agents, and other efficacy enhancers. In FY 18-19, Contra Costa County operations used a total of 2,319 lbs. of pesticide active ingredients, which included 561.3 lbs. of spray adjuvant active ingredients that were used to prevent foaming, to reduce pesticide drift, and change the pH of local water used in spraying.

How Pesticide Use is Reported to the State

Pesticide use data is reported monthly to the County Agriculture Commissioner. The data is checked and sent on to DPR, which maintains a database of pesticide use for the entire state. Although pesticide use is reported to DPR as pounds, ounces, or gallons of pesticide product, DPR reports pesticide use in its database as pounds of active ingredient.

DPR defines active ingredient as “[a]n agent in a product primarily responsible for the intended pesticidal effects and which is shown as an active ingredient on a pesticide label.” (Since adjuvants are regulated as pesticides in California, the active ingredients of adjuvants are also included in DPR’s database.)

How Pesticide Use is Reported by Contra Costa County Operations

The attached spreadsheet records pesticide use data only for County operations and not for any other agency, entity, company, or individual in the County.

Since DPR reports California pesticide use in pounds of active ingredient, Contra Costa County does the same. The County uses the same formula for converting gallons of pesticide product into pounds of active ingredient that the state uses:

Pounds of Active Ingredient =

gallons of product used X 8.33 lbs/gallon of water X the specific gravity of the product X the % of active ingredient in the product

CONTRA COSTA COUNTY OPERATIONS - PESTICIDE USE SUMMARY COMPARISON FY 00-01 to FY 18-19, Revised 11-19-2019

PESTICIDES OF CONCERN ARE SHADED (Pesticide Action Network defined "Bad Actors")

Contra Costa County Public Works-Flood Control & Roadsides

	Name of Product Applied	EPA or Calif. Registration #	Amt Used FY 00-01	Specific Gravity	% A. I.	Total Lbs A.I. Used FY 00-01	Amt Used FY 15-16	Total Lbs A.I. Used 15-16	Amt Used FY 16-17	Total Lbs A.I. Used 16-17	Amt Used FY 17-18	Total Lbs A.I. Used 17-18	Amt Used FY 18-19	Total Lbs A.I. Used 18-19
	<i>Liquid Materials</i>		(gallons)				(gallons)		(gallons)		(gallons)		(gallons)	
Adjuvant	Activator 90	36208-50014	613.88	1.040	90.000	4786.31							3.5	27.29
Adjuvant	Agri-Dex	5905-50094-AA		0.879	99.000		84.75	614.34	49.5	358.82	19.75	143.16	21	152.23
	Chemtrol	36208-50015	14.00	0.995	1.000	1.16								
Penoxulam	Cleantraxx	62719-702-AA		1.177	0.850				1.5	0.13				
Oxyfluorfen				1.177	40.310				1.5	5.93				
Sodium salt of Imazxamox	Clearcast	241-437-AA-67690		1.049	12.100		3.31	3.50			2.00	2.11	0.5	0.53
Copper ethanolamine complexes, mixed	Citrine Plus	8959-10-AA	65.00	1.206	9.000	58.78								
Dithiopyr	Dimension 2EW	62719-542-AA		1.001	24.000		0.31	0.62						
Indaziflam	Esplanade 200 SC	432-1516-AA		1.050	19.050		28.44	47.39	24.96	41.59	22.21	37.01		
Prodiamine	Evade 4FL	34704-915-AA		1.184	40.500				21.25	84.88				
Adjuvant	Foam Fighter F	36208-50015	1.25	0.995	5.000	0.52								
Dimethyl silicone fluid emulsion	Foam Fighter F	36208-50003, 72-50005-AA	0.00	1.000	10.000						0.38	0.32	0.25	0.21
Triclopyr triethylamine salt	Garlon 3A	62719-37-ZA	64.00	1.135	44.400	268.66	153.13	642.81	186.38	782.39	122.00	512.13	57	239.28
Triclopyr BEE	Garlon 4	62719-40	51.25	1.060	61.600	278.76								
Oxyfluorfen	Goal	707-174	2.00	0.990	19.400	3.20				0.00				
Oxyfluorfen	Goal Tender	62719-447-ZA	0.00	1.170	41.000		13.38	53.47						
Imazapyr, isopropylamine salt	Habitat	241-426-AA	0.00	1.068	28.700		3.55	9.07	0.39	1.00	0.47	1.20	0.75	1.92
Heavy-range paraffin based petroleum oil+nonionic emulsifiers	Helena Agri-Dex	5905-50017-AA		0.879	99.000									
Aminopyralid, tri isopropanolamine salt	Milestone	62719-519-AA		1.140	40.600		4.75	18.31	14.06	54.21	15.39	59.34	15.59	60.11
Aminopyralid, tri isopropanolamine salt	Milestone VM	62719-537-AA	0.00	1.140	40.600		8.72	33.63						
Adjuvant	M.O.C. Methylated Oil Concentrate	5905-50095-AA		0.891	100.000		2.75	20.41	2.38	17.66	2.63	19.52		
Adjuvant	MSO Conc w/Leci-Tech	34704-50053-AA		0.900	100.000									
Adjuvant	No Foam A	11656-50086-ZA & AA	0.00	1.050	90.000		121.75	958.40						
Adjuvant	No Foam A	1050775-50015-AA		1.060	90.000		0.5	3.97	131.88	1048.03	125.25	995.34	28.5	226.48
Pendimethalin	Pendulum Aquacap	241-416-AA	0.00	1.175	38.700		5.00	18.94						
Imazapyr, isopropylamine salt	Polaris	228-534-AA		1.057	27.700		0.33	0.80						
Adjuvant	Quest	5905-50076-AA		1.350	48.760						63.50	348.19	26.5	145.31
Triclopyr TEA	Renovate 3	62719-37-67690	0.00	1.140	44.400		27.63	116.52	27.5	115.97	26.00	109.64	25.75	108.59
Glyphosate,	Rodeo	524-343	221.00	1.205	53.800	1193.46								
Glyphosate, isopropylamine salt	Roundup Custom	524-343-ZC & ZG		1.206	53.800		49.19	265.86	42.5	229.70	27.75	149.98	33.75	182.41
	Roundup Pro	524-475-ZA & ZB	510.75	1.170	41.000	2041.43	36.63	146.41						

CONTRA COSTA COUNTY OPERATIONS - PESTICIDE USE SUMMARY COMPARISON FY 00-01 to FY 18-19, Revised 11-19-2019

Contra Costa County Public Works-Flood Control & Roadsides (continued)

	Name of Product Applied	EPA or Calif. Registration #	Amt Used FY 00-01	Specific Gravity	% A. I.	Total Lbs A.I. Used FY 00-01	Amt Used FY 15-16	Total Lbs A.I. Used 15-16	Amt Used FY 16-17	Total Lbs A.I. Used 16-17	Amt Used FY 17-18	Total Lbs A.I. Used 17-18	Amt Used FY 18-19	Total Lbs A.I. Used 18-19
	Liquid Materials		(gallons)				(gallons)		(gallons)		(gallons)		(gallons)	
Glyphosate, isopropylamine salt	Roundup Pro Conc.	524-529	0.00	1.199	50.200		238.63	1195.95	280.13	1403.93	192.89	966.71	7	35.08
Imazapyr, isopropylamine salt	Stalker	241-398	5.63	1.050	27.600	13.58								
Adjuvant	Silwet L-77	36208-50025	1.70	1.007	100.000	14.26								
Adjuvant	Smoke	5905-50104-AA		1.160	56.400				3.25	17.71				
Oryzalin	Surflan A.S.	62719-113	14.25	1.188	40.400	56.97								
Oryzalin	Surflan A.S.	70506-44	0.00	1.236	40.400									
Adjuvant/Surfactant	Surphtac	68891-50001-AA	39.63	1.118	53.400	197.06								
Adjuvant/Surfactant	Surphtac	11656-50093	0.00	1.180	53.400		11.56	60.68						
Adjuvant/Surfactant	Surphtac	34704-50086		1.096	33.000		9.56	28.80	23.19	69.87	0.50	1.51		
Clopyralid	Transline	62719-259	22.50	1.161	40.900	89.00								
Adjuvant	Unfoamer	34704-50062-AA		1.000	12.500		0.13	0.14						
Dicamba, diglycolamine salt	Vanquish	55947-46	230.00	1.250	56.800	1360.29								
Dicamba, diglycolamine salt	Vanquish	228-397	0.00	1.250	56.800		7.5	44.36						
Adjuvant	Weather Gard Complete	34704-50056-AA		1.010	100.000						8.25	69.41		
	Weedar 64	71368-1-264	526.75	1.160	38.900	1979.96								

	Dry Materials		(pounds)			Amt used x %AI	(pounds)		(pounds)		(pounds)		(pounds)	
Dithiopyr	Dimension Ultra 40 WP	62719-445	0.00	N/A	40.000		3.75	1.50						
	Direx 80DF	352-508-1812	2875.00	N/A	80.000	2300.00								
	Endurance	55947-43	1513.00	N/A	65.000	983.45								
Isoxaben	Gallery 75DF	62719-145	54.00	N/A	75.000	40.50								
	Gallery SC	62719-658 AA		N/A	45.450		452.50	205.66	60.00	27.27	11.25	5.11		
Sulfometuron methyl	Oust	352-401	27.38	N/A	75.000	20.53								
	Predict	55947-78	495.00	N/A	78.600	389.07								
Prodiamine	Resolute 65WG	100-834-ZE		N/A	65.000		148.00	96.20	95.00	61.75	80.00	52.00		
	Ronstar 50WSP	264-538	120.00	N/A	50.000	60.00								
	Simtrol 90DF	35915-12-60063	430.00	N/A	90.000	387.00								
Tebuthiuron	Spike 80DF	62719-107	60.00	N/A	80.000	48.00	24.00	19.20						
Chlorsulfuron	Telar	352-404	25.38	N/A	75.000	19.031								
					TOTAL:	16590.97		4607.39		4320.83		3472.69		1179.42
		"Bad Actors" w/May 2013				6927.76		2431.57		2531.99		1738.47		1016.60

CONTRA COSTA COUNTY OPERATIONS - PESTICIDE USE SUMMARY COMPARISON FY 00-01 to FY 18-19, Revised 11-19-2019

Contra Costa County Public Works-Special Districts

Name of	EPA or Calif.	Amt Used		%	Total oz. A.I	Amt Used	Total OZ. A.I.	Amt Used	Total OZ. A.I.	Amt Used	Total OZ. A.I.	Amt Used	Total OZ. A.I.
Product Applied	Registration #	FY 07-08		A. I.	Used FY 07-08	FY 15-16	Used 15-16	FY 16-17	Used 16-17	FY 17-18	Used 17-18	FY 18-19	Used 18-19

Dry Materials			(pounds)			Amt used x % AI	(pounds)		(pounds)		(pounds)		(pounds)	
Diphacinone	Diphacinone Treated Grain Rodent Bait	10965-50001-ZA	no data	N/A	0.005	no data	1.00	0.00005	10.00	0.00050				
Diphacinone	Eaton's Answer	56-57	no data	N/A	0.005	no data	17.00	0.00085	5.00	0.00025				
Diphacinone	Eaton's Bait Blocks	56-42	no data	N/A	0.005	no data	9.50	0.00048	3.00	0.00015				
Diphacinone	Gopher Getter Type 2 AG Bait	36029-23	no data	N/A	0.005	no data								
Diphacinone	Gopher Getter Type 2 AG Bait	36029-24	no data	N/A	0.005	no data								
Diphacinone	P.C.Q. Pelleted Rodent Bait	12455-50003-AA	no data	N/A	0.010	no data								
Aluminum phosphide	Weevil-cide	70506-13	no data	N/A	60.000	no data								
					TOTAL			0.00138		0.00090		0.00		0.00
					TOTAL Oz.			0.02 oz.		0.01 oz.		0.00		0.00
			w/May 2013 changes					0.00		0.00		0.00		0.00

CONTRA COSTA COUNTY OPERATIONS - PESTICIDE USE SUMMARY COMPARISON FY 00-01 to FY 18-19, Revised 11-19-2019

Contra Costa County Department of Agriculture

	Gal. used x 8.33 lbs/gal H2O x sp. Grav. x %AI			Specific Gravity	% A. I.	Total Lbs A.I Used FY 00-01	Amt Used FY 15-16	Total Lbs A.I. Used 15-16	Amt Used FY 16-17	Total Lbs A.I. Used 16-17	Amt Used FY 17-18	Total Lbs A.I. Used 17-18	Amt Used FY 18-19	Total Lbs A.I. Used 18-19	
	Name of Product Applied	EPA or Calif. Registration #	Amt Used FY 00-01												
	Liquid Materials		(gallons)												
glyphosate	Aquamaster	524-343		1.205	53.80										
Dicamba & 2.4 D	Banvel	55947-1	14.91	1.211	48.20	72.51									
	2,4-D	34704-5	5.50	1.163	46.50	24.78									
	Bivert	2935-50157-AA	0.93	0.790	100.00	6.12									
	Carbaryl ("7")	54705-4	7.95	1.100	41.20	30.01									
dicamba, diglycolamine salt	Clarity	7969-137	0.00	1.250	58.10		2.55	15.43	1.38	8.35	7.87	47.61	1.68	10.16	
Triclopyr, butoxyethyl ester	Garlon 4 Ultra	62719-527		1.110	60.45		8.85	49.47	8.44	47.17	1	5.59			
Triclopyr, butoxyethyl ester	Garlon 4	464-554	2.50	1.082	61.60	13.88									
imazapyr isopropylamine salt	Habitat	241-426	0.00	1.068	28.70	0.00									
surfactant	Hasten	2935-50160		0.900	100.00										
Drift retardant-oils	In Place	2935-50169		0.880	100.00						2.25	16.49			
Aminopyralid, trisopropanolammonium salt	Milestone	62719-519	0.00	1.140	40.60		0.98	3.78	0.62	2.39	2.23	8.60	1.43	5.51	
surfactant	Pro-Tron	71058-50008-AA		0.984	95.00		0.11	0.86	1.11	8.64	1.8	14.02	1.25	9.73	
Adjuvant	R-11	2935-50142-AA	51.00	1.020	90.00	389.99							0.0039	0.03	
Glyphosate, isopropylamine salt	Rodeo	524-343	2.50	1.205	53.80	13.50									
Glyphosate, isopropylamine salt	Roundup Pro	524-475	69.14	1.170	41.00	276.35									
Glyphosate, isopropylamine salt	Roundup Pro Conc.	524-529		1.199	50.20		1.09	5.47							
imazapyr isopropylamine salt	Stalker	241-398		1.060	27.60										
Picloram potassium salt	Tordon 22K	464-323	1.53	1.140	24.40	3.55									
Clopyralid, monoethanolamine salt	Transline	62719-259	70.28	1.161	40.90	277.99			0.01	0.04					
dicamba, diglycolamine salt	Vanquish	55947-46	50.59	1.250	56.80	299.20									
	Dry Materials		(pounds)			Amt . Used x %AI	(pounds)		(pounds)		(pounds)		(pounds)		
Diphacinone	Diphacinone .005%	10965-50001-ZA	725.00	N/A	0.005	0.04	731.00	0.03655	236.00	0.0118	620.00	0.031	600	0.03	
Diphacinone	Diphacinone .01%	10965-50003-ZA	15667.30	N/A	0.01	1.57	11888.50	1.18885	11389.00	1.1389	18665.00	1.867	9300	0.93	
Sodium nitrate, charcoal	Gas Cartridge	56228-2	0.00	N/A	81.00										
Imidacloprid	Merit 75WSP	3125-439	13.58	N/A	75.00	10.19									
Chlorsulfuron	Telar	352-522	0.00	N/A	75.00										
Picloram potassium salt	Tordon 10K	464-320	8.56	N/A	11.60	0.99									
Aluminum phosphide	Weevil-cide	70506-13	0.00	N/A	60.00				0.66	0.396					
				TOTAL:	1420.66		76.22		68.14		94.21		26.40		
				w/May 2013 changes		431.04		20.89		8.74		47.61		10.16	

CONTRA COSTA COUNTY OPERATIONS - PESTICIDE USE SUMMARY COMPARISON FY 00-01 to FY 18-19, Revised 11-19-2019

Contra Costa County Public Works-Grounds

Gal. used x 8.33 lbs/gal H2O x sp. Grav. x %AI														
	Name of Product Applied	EPA or Calif. Registration #	Amt Used FY 00-01	Specific Gravity	% A. I.	Total Lbs A.I Used FY 00-01	Amt Used FY 15-16	Total Lbs A.I. Used 15-16	Amt Used FY 16-17	Total Lbs A.I. Used 16-17	Amt Used FY 17-18	Total Lbs A.I. Used 17-18	Amt Used FY 18-19	Total Lbs A.I. Used 18-19
	Liquid Materials		(gallons)				(gallons)		(gallons)		(gallons)		(gallons)	
Clethodim	Arrow 2EC	66222-60		0.970	26.40		0.06	0.13	0.03	0.06				
Adjuvant	Crop Oil (Monterey Herbicide Helper)	54705-50001-AA		0.900	100.00									
Fluazifop-P-butyl	Fusilade II	100-1084		0.980	24.50									
	Goal	707-174	12.09	0.990	19.40	19.34								
Adjuvant	Magnify	17545-50018		1.220	51.50						0.07	0.37		
	Maintain A	400-396-AA	0.00	1.000	0.30									
Adjuvant	No Foam A (Monterey)	54705-50004-AA		1.050	90.00		0.003	0.02	0.03	0.24				
Adjuvant	No Foam A	1050775-50015-AA		1.050	90.00		0.0155	0.12						
	NuFarm Polaris	228-534-AA		1.057	27.70				0.08	0.20	0.109	0.27		
Glyphosate isopropylamine salt	RangerPro	524-517-ZB		1.169	41.00		14.62	58.37						
	Roundup Pro	524-445-ZB	44.78	1.020	41.00	156.00								
Glyphosate isopropylamine salt	Roundup Pro Conc.	524-529	0.00	1.199	50.20				39.13	196.19	59.32	297.42	126.86	636.05
Glyphosate potassium salt	Roundup Promax	524-579		1.356	48.70		55.28	304.09	16.13	88.73				
	Triclopyr 4EC	81927-11-AA		1.100	61.60									
Triclopyr BEE	Turflon	62719-258	0.36	1.060	61.60	1.96								
	Turflon Ester	17545-8-AA		1.08	60.45									
	Dry Materials		(pounds)		%AI		(pounds)		(pounds)		(pounds)		(pounds)	
Isoxaben	Gallery 75 DF	62719-145-AA	129.44	N/A	75.00	97.08	80.00	60.00	11.78	8.84	40.80	30.60		
Dithiopyr	Dithiopyr 40 WSB	73220-13		N/A	0.125 lbs ai/5 oz		5 oz (1 bag)	0.125						
	Dithiopyr 40 WSB	73220-13		N/A	40.00								5	2.00
Flumioxazin	Payload	59639-120-ZA		N/A	51.00		1.92	0.98	3.33	1.70	4.10	2.09	8.31	4.24
	Orthene	59639-88	0.69	N/A	75.00	0.52								
Sulfometuron methyl	Oust	352-401	5.13	N/A	75.00	3.85								
	Quali-Pro Dithiopyr	66222-213-AA		N/A	40.00				0.63	0.25	2.81	1.12		
Oxadiazon	Ronstar WP	264-538	1297.25	N/A	50.00	648.63								
Halosulfuron methyl	Sedgehammer	81880-1-10163		N/A	75.00		0.007	0.005						
Halosulfuron methyl	Sedgehammer	81880-24-10163		N/A	5.00		0.04	0.002						
Flumioxazin	SureGuard	59639-120		N/A	51.00		17.33	8.84	13.76	7.02	10.19	5.20	8.26	4.21
					TOTAL	927.37		432.68		303.22		337.06		646.50
				w/Nov 2019 changes		649.14		362.46		284.92		297.42		636.05

CONTRA COSTA COUNTY OPERATIONS - PESTICIDE USE SUMMARY COMPARISON FY 00-01 to FY 18-19, Revised 11-19-2019

Contra Costa County Public Works-Facilities

	Name of Product Applied	EPA or Calif. Registration #	Amt Used FY 07-08	Specific Gravity	% A. I.	Total oz. A.I. Used FY 07-08	Amt Used FY 15-16	Total OZ. A.I. Used 15-16	Amt Used FY 16-17	Total OZ. A.I. Used 16-17	Amt Used FY 17-18	Total OZ. A.I. Used 17-18	Amt Used FY 18-19	Total OZ. A.I. Used 18-19
	Liquid Materials		(fl. ounces)				(fl. Oz.)	Oz. by Wt.	(fl. Oz.)	Oz. by Wt.	(fl. Oz.)	Oz. by Wt.	(fl. Oz.)	Oz. by Wt.
Indoxacarb	Advion Ant Bait Arena	100-1485		1.09	0.10		252 ea (Net wt of Arena is 0.07 oz)	0.02	112 ea (Net wt of Arena is 0.07 oz)	0.00889	30 ea (Net wt of Arena is 0.07 oz)	0.002		
Indoxacarb	Advion Ant Gel	100-1498		1.2	0.05		143.67	0.08965	202.70	0.12648	165.70	0.103	30.63	0.02
Indoxacarb	Advion Cockroach Bait Arena	100-1486		1.09	0.50		41 ea (Net wt of Arena is 0.07 oz)	0.01627	10 ea (Net wt of Arena is 0.07 oz)	0.00397	1 ea (Net wt of Arena is 0.07 oz)	0.0004		
Indoxacarb	Advion Cockroach Gel Bait	100-1484		1.123	0.60		14.61	0.10238	60.10	0.42115	41.44	0.290	17.73	0.12
Chlorantraniliprole	Altriset	100-1503		1.094	18.4									
Chlorantraniliprole	Altriset (DuPont)	352-829		1.094	18.4				7.00	1.46543				
Abamectin	Avert Cockroach Bait Station	499-467		1.065	0.05				2 ea (Net wt of Station is 0.52 oz)	0.00058				
Cedar oil	Best Yet Insect Control Solution Cedarcide	Exempt 25b material		1.00	10.00		16.00	1.66400	76.00	7.90400	172.00	17.888	128	13.31
Cedar oil	Cedarcide PCO Choice Concentrate	Exempt 25b material		1.00	85.00		10.00	8.84000	5.08	4.49072	3.20	2.829	43.68	38.61
White pepper, mineral oil	DeTour for Rodents	Exempt		0.864	3.00				8	0.21565				
Sodium Tetraborate decahydrate	Doninant Liquid Ant Bait	64405-24		1	1.00				20.00	0.20800	673.00	6.99920		
Botanical oils: thyme, rosemary 2-phenethyl propionate	Eco Via	Exempt 25b material		0.95	42.00						6.00	2.490	24.25	10.06
Botanical oils: peppermint, rosemary, geraniol	Essentria IC3	Exempt 25b material		0.985	17.00						132.00	22.988	667	116.16
Hydrogen Peroxide 4.25%	H202 Disinfectant	exempt		1	4.25								1.28	0.06
Sodium Tetraborate Decahydrate (Borax)	Intice Thiquid Ant Bait	73079-7		1.33	1.00				1952.3	27.00421	3861.8	53.416	616	8.52
Sodium Tetraborate Decahydrate (Borax)	Intice Thiquid Ant Bait	73079-8		1.33	5.00								242.9	16.80
Fipronil	Maxforce Ant KillerBait Gel	64248-21		1.05	0.00				1.12	0.00001				
Fipronil	Maxforce FC Magnum	432-1460		1.14	0.05				1.05	0.00062				
Fipronil	Maxforce FC Select Roach Gel	432-1259		1.14	0.01								3.33	0.00039
Clothianidin	Maxforce Impact Roach gel	432-1531		1.1	1.00						33.5	0.383	15.05	0.17
Imidacloprid	Maxforce Quantum Ant Bait	432-1506		1.43	0.03		31.71	0.01415	20.2	0.00901	8.09	0.004	29.5	0.0132

CONTRA COSTA COUNTY OPERATIONS - PESTICIDE USE SUMMARY COMPARISON FY 00-01 to FY 18-19, Revised 11-19-2019

Contra Costa County Public Works-Facilities, cont.

	Name of Product Applied	EPA or Calif. Registration #	Amt Used FY 07-08	Specific Gravity	% A. I.	Total oz. A.I Used FY 07-08	Amt Used FY 15-16	Total OZ. A.I. Used 15-16	Amt Used FY 16-17	Total OZ. A.I. Used 16-17	Amt Used FY 17-18	Total OZ. A.I. Used 17-18	Amt Used FY 18-19	Total OZ. A.I. Used 18-19
	<i>Liquid Materials</i>		(fl. ounces)				(fl. Oz.)	Oz. by Wt.	(fl. Oz.)	Oz. by Wt.	(fl. Oz.)	Oz. by Wt.	(fl. Oz.)	Oz. by Wt.
Octyl Decyl Dimethyl Ammonium Chloride 1.650% Didecyl Dimethyl Ammonium Chloride 0.825% Dioctyl Dimethyl Ammonium Chloride 0.825% Alkyl (C14, 50%; C12, 40%; C16, 10%) dimethyl benzyl ammonium chloride 2.200%	Nisus DSV Dinfectant	10324-80-64405		0.85	5.5								32.00	1.56
Methyl Ethoxy Pyridine	Nyguard IGR Concentrate	1021-1603		0.939	10.00				0.6	0.05859				
Methyl Ethoxy Pyridine	Nyguard IGR Concentrate	1021-1620		0.854	1.30						0.10	0.001		
Methyl Ethoxy Pyridine	Nylar (Archer)	100-1111		0.847	1.30				3	0.03435				
Methyl Ethoxy Pyridine	Nylar IGR	11715-307-57076		0.8	1.30						1.00	0.011		
sodium lauryl sulfate	Oh Yeah	Exempt		1	7.00		78	5.67840	865.5	63.00840	70	5.096	164	11.94
coyote & fox urine	Shake Away: Fox/Coyote	80917-5		2.70	5.00				5.00	0.70200				
Imidacloprid	Temprid Ready Spray Insecticide	432-1527		1.00	0.05				10.00	0.00520				
Cyfluthrin				1.00	0.03				10.00	0.00260				
Fipronil	Termidor SC (termites)	7969-210		1.06	9.10				3.20	0.32102				
Sodium Tetraborate Decahydrate (Borax)	Terro PCO Bait stations	149-8-64405		1.00	5.40		170-0.36 oz stations	3.43699	149-0.36 oz stations	3.01242				
Sodium Tetraborate Decahydrate (Borax)	Terro PCO Liquid Ant Bait	149-8-64405		1.00	5.40				19.44	1.09175				

	<i>Dry Materials</i>		(ounces)		% A.I.		OZ. by Wt.		OZ. by Wt.		OZ. by Wt.		OZ. by Wt.	
Dinotefuran	Alpine Dust	499-527			0.25				0.11	0.0003				
Diatomaceous earth					95.00				0.11	0.1045				
Dinotefuran	Alpine WSG	499-561			0.40						0.353	0.0014		
Inoxacarb	Advion Fire Ant Bait	100-1481			0.045		3.17	0.0014			0.49	0.0002	0.39	0.00018
Inoxacarb	Advion Insect Granule	352-651			0.22				9.64	0.0212				
Amorphous silica gel	Cimexa	73079-12			100.00				5.12	5.1200	3.20	3.200	4.64	4.64

CONTRA COSTA COUNTY OPERATIONS - PESTICIDE USE SUMMARY COMPARISON FY 00-01 to FY 18-19, Revised 11-19-2019

CCC Public Works - Facilities, cont.

	Name of Product Applied	EPA or Calif. Registration #	Amt Used FY 07-08		% A. I.	Total oz. A.I Used FY 07-08	Amt Used FY 15-16	Total OZ. A.I. Used 15-16	Amt Used FY 16-17	Total OZ. A.I. Used 16-17	Amt Used FY 17-18	Total OZ. A.I. Used 17-18	Amt Used FY 18-19	Total OZ. A.I. Used 18-19
	<i>Dry Materials, cont.</i>		(ounces)				OZ. by Wt.		OZ. by Wt.		OZ. by Wt.		OZ. by Wt.	
Amorphous silicon dioxide	Concern Diatomaceous Earth	73729-1-50932			85.00		0.79	0.6715	1.29	1.0965				
Essential oil of black pepper	Havahart Critter Ridder	50932-10			0.48		458	2.1984	1371	6.5808	278.00	1.334	40	0.19
Sodium nitrate, sulfur, charcoal	Giant Destroyer gas cartridge	1055-1			97.00									
Orthoboric acid	Niban FG Mother Earth Granules Niban granular	64405-2 499-515 64405-2	3813.7600		5.00	190.69	6038.5	301.925	2886.5	144.325	940.5	47.025	632.5	31.63
OZ of A.I						335.55		485.859		267.343		164.062		253.801968
LBs of A.I.						20.97		30.37		16.71		10.25		15.86
OZ of BA						0.41		0.0582		0.0006		0.00		0.00

Contra Costa County Public Works-Airports

Gal. used x 8.33 lbs/gal H2O x sp. Grav. x %AI														
	Name of Product Applied	EPA or Calif. Registration #	Amt Used FY 00-01	Specific Gravity	% A. I.	Total Lbs A.I Used FY 00-01	Amt Used FY 15-16	Total Lbs A.I. Used 15-16	Amt Used FY 16-17	Total Lbs A.I. Used 16-17	Amt Used FY 17-18	Total Lbs A.I. Used 17-18	Amt Used FY 18-19	Total Lbs A.I. Used 18-19
	<i>Liquid Materials</i>		(gallons)				(gallons)		(gallons)		(gallons)		(gallons)	
Glyphosate isopropylamine salt	Roundup Pro Conc.	524-529		1.199	50.20								90	451.24

Bad Actor Data is included in PW totals on page 2

451.24 oz a.i. is approximate

**Contra Costa County Staff Responses to Issues Raised by the Public
Regarding the County Integrated Pest Management Program**

~~January 29~~ January 31, 2020

Date(s) Issue Raised to: TWIC = Transportation, Water & Infrastructure Committee IPM = IPM Committee or subcommittees IO=Internal Operations Committee	Issues Raised by the Public	Steps taken by the IPM Advisory Committee and County Staff from January 2009 to the present
	Using glue boards for rodents in County buildings	
11/16/16-IPM 3/16/17-IPM 1/18/18-IPM 1/17/19-IPM	<i>From Parents for a Safer Environment (PfSE)</i> "The rodent control method that is horrible in particular is the use of glue boards in the county buildings. I hope to see this deplorable practice stop before the beginning of the New Year. (11/16/16)	Pestec, the County's structural IPM contractor, used a small number of glue boards in 2016. In the past, glue boards have been used from time to time in detention facilities at the request of the Sheriff who is concerned that snap traps, the alternative, could be used by inmates as weapons. Pestec now has access to the interior space between the walls of cells where mice can roam, so technicians are able to set snap traps in those areas. Glue boards are not currently used at any facilities in the County. The County will keep glue boards as a tool for rodent control that will be used when there is no effective alternative.
	Choosing topics and speakers for the IPM Advisory Committee meetings	
1/18/18-IPM 3/15/18-IPM 5/17/18-IPM 7/19/18-IPM 1/17/19-IPM <u>5/16/19-IPM</u> <u>11/21/19-IPM</u> <u>1/16/20-IPM</u>	<i>From Parents for a Safer Environment (PfSE)</i> Speakers suggested by PfSE have not been chosen to give presentations to the IPM Committee. <u>"The Committee agreed in 2018 that a subcommittee would be created to receive recommendations and select 4 to 5 expert speakers selected to present each year. There is still no transparency on how the speakers are being selected to date and it's May, 2019...Allowing two individuals, even if it's the IPM Coordinator and the Chair, who do not disclose the process in which speakers are invited or rejected is not acceptable. This would not be an issue except that there have been speakers who provide disingenuous data like the LD50 acute toxicity charts without explaining that this does not address chronic toxicity like cancer and telling the Committee that caffeine, aspirin and salt are more "toxic" than pesticides. Also, having a speaker who has no</u>	The public has always been able to participate in suggesting speakers and topics for the IPM Committee meetings. A number of speakers and/or topics suggested by the public have been used over the years. In 2018, the IPM Committee spent several meetings on defining how speakers and topics will be chosen, with full participation of the public. The Committee now has a written policy that has been unanimously approved by the members. <u>• On 7/19/18, the IPM Advisory Committee unanimously accepted the following policy for selecting speakers:</u> <u>IPM Advisory Committee Policy on Choosing Topics and Speakers for Meeting Presentations</u> <ul style="list-style-type: none"> <u>• The Committee welcomes the participation of the public in suggesting topics for presentations. At either the November or January meeting, the Committee will discuss possible topics and solicit ideas from the public.</u> <u>• Suggested topics and/or speakers can be sent to the IPM Coordinator throughout the year.</u> <u>• The Committee prefers topics that further the work of the Committee or its subcommittees, but this does not preclude other topics of interest to the Committee.</u> <u>• The Committee chair and the IPM Coordinator will work together to choose the appropriate number of presentations for the year taking into consideration the Committee's work schedule.</u> <u>• The Committee chair and the IPM Coordinator will work together to choose suitable topics from among the suggestions from the Committee and the public, keeping in mind the mission statement in the Committee's bylaws. They will also choose presenters for each topic endeavoring to find people with the appropriate level of expertise.</u> <u>• The ultimate decisions about topics and speakers will rest with the Committee Chair and the IPM Coordinator who will endeavor to follow the priorities set by the Committee.</u>

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	<p><u>expertise in toxicology and funded handsomly [sic] by the pesticide industry invited to convince the Committee that glyphosate being categorized as a carcinogen by the WHO IARC was political and not due to the weight of the scientific evidence was not only irresponsible but unethical. Selection of the presentation committee needs to get on the agenda ASAP.” (5/16/19)</u></p> <p><u>Citizens and Committee members made recommendations for speakers to invite to address the Committee in 2020 during the November 21st IPM Committee meeting. (11/21/19)</u></p> <p><u>Citizens expressed concern about two of the speakers proposed during the January 16th IPM Committee meeting. (1/16/20)</u></p>	<p><u>The Committee Chair and IPM Coordinator met in December 2019 to discuss the proposed list and solicited citizen and committee feedback in the 1/16/20 meeting. A spreadsheet documenting the proposed speakers along with the rationale for not considering certain speakers was included in the agenda packet for that meeting. Three citizens spoke out against the proposed speaker for the November 2020 meeting and one citizen spoke out against the proposed September 2020 speaker. The IPM Coordinator met to discuss these concerns with the Committee Chair on 1/30/20. It was agreed that the IPM Coordinator would rescind the invitation for the November speaker, but still plan on the September presenter addressing the Committee at that time. This modification to the 2020 will be announced at the March meeting of the IPM Advisory Committee.</u></p>
	Herbicide spraying in a city park on Grayson Creek with no posting	
3/1/18-IPM	<p><i>From Parents for a Safer Environment (PfSE)</i></p> <p>“It was very upsetting to see these large areas treated with pesticide in such close proximity to where residents also spend time with their children and pets.”</p>	<p>This should not have happened and as soon as the Public Works Department was alerted to the issue, they did an investigation and ultimately the employee responsible was disciplined.</p>
	Using raptor perches to control ground squirrels	
1/18/18-IPM 3/1/18-IPM 3/15/18-IPM 4/5/18-IPM 7/19/18-IPM 8/2/18-1PM	<p><i>From Parents for a Safer Environment (PfSE)</i></p> <p>Ventura Co. has concluded a study showing that using perches for predatory birds reduce ground squirrel damage to levees by 50%. Contra Costa should adopt this method.</p>	<p>This was a small pilot study. Dr. Roger Baldwin, vertebrate specialist and researcher at UC Davis said he would not place a lot of weight on this study. “It is a small pilot study from which they are drawing ‘massive’ conclusions. Raptors ‘may’ be able to assist in some capacity, but they certainly aren’t going to eliminate burrowing rodents from an area.”</p> <p>In 2012, the Agriculture Department piloted the use of raptor perches in two Open Space areas. The installation of raptor perches did not seem to significantly reduce ground squirrel populations and ground squirrels undermined the footings of two of the raptor perches.</p> <p>Note that members of PfSE have been saying that the Agriculture Department used metal perches and that is why they did not work. This is not true. The perches are made of wood.</p> <p>The UC website, Ground Squirrel BMPs, says the following:</p>

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		<p>"In California, predators of ground squirrels include red-tailed hawks, eagles, and coyotes. As ground squirrels and their native predators have evolved over hundreds of years, ground squirrels have developed behaviors and abilities to avoid predation. In certain habitats, ground squirrels are frequent prey of rattlesnakes, though some ground squirrels have evolved a resistance to snake venom. Owls are nocturnal and do not generally prey on diurnal ground squirrels.</p> <p>"In the majority of situations, predators are not able to control ground squirrel populations."</p> <p><u>In 2019, an IPM Advisory Committee member corresponded with Ventura County staff to clarify various aspect of their raptor study. Copies of questions and answers to one such exchange is attached to the 2/21/19 Decision-Making Subcommittee meeting minutes.</u></p>
	Chairing the IPM Committee should be rotated; a scribe not associated with the Committee should be used to take notes	
2/17/16-IPM 1/17/19-IPM	<i>From Parents for a Safer Environment (PfSE)</i> "Chairing the IPM Advisory Committee should be rotated among members who wish to chair. A Scribe should be independent of Committee members and staff involved with the IPM Program."	<ul style="list-style-type: none"> • Every 2 years the Committee holds an election for officers. Anyone who wishes to chair the committee can nominate themselves. • The Committee elects a secretary to help take notes for the Committee's minutes which are written by staff. There is no outside person who could be a scribe.
	Staff has found no unique or innovative pesticide alternatives in the Bay Area or Nation	
11/4/15-IPM 2/17/16-IPM	<i>From Parents for a Safer Environment (PfSE)</i> "In the staff document provided titled 2015 IPM Program Accomplishments, I was very surprised to read that staff believes after reviewing programs throughout the 'Bay Area and the nation', that 'there is nothing unique or innovative in the Bay Area or the nation.'"	<ul style="list-style-type: none"> • PfSE appears to be concerned that staff has found no unique or innovative approaches to pest management. This concern seems to stem from a mis-reading of the 2015 IPM Program Accomplishments document in the section on the work history of the IPM Program Data Management subcommittee. The phrase actually reads: "Looked for data other than pesticide use to measure implementation of IPM in CCC; found nothing unique or innovative in the Bay Area or the nation"
	The IPM Coordinator does not allow the IPM Committee members and the public adequate time to review documents	
9/2/15-IPM	<i>From Parents for a Safer Environment (PfSE)</i> "People are often reluctant to admit that they have not had time to review documents before voting on minutes and other items. Committee members are likely to just go along with the majority and vote to accept documents as Staff	<ul style="list-style-type: none"> • The IPM Coordinator sends out agenda materials in accordance with the Brown Act and County policy, which is 96 hours prior to the time of the public meeting. • At the end of each meeting, the next meeting's agenda is planned so that members are aware of and can plan time for review of long or numerous documents. • Since the inception of the IPM Advisory Committee, the practice has been to distribute the minutes with the agenda materials. Because the by-laws were being updated to reflect the current designations for IPM Committee seats and to change public member terms, the IPM Coordinator proposed changing the by-

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	<p>submits them...It is more reasonable to provide at least four to six weeks of time for volunteers to fit in the review amongst a busy schedule." (9/2/15)</p> <p>"...I find it appalling that Staff would propose to totally eliminate the By-Laws language that requires a timely distribution of the meeting minutes to the IPM Advisory Committee. It has been difficult to read all the documents required for review within 5 days [from when] they are provided, which is a recent improvement to providing it 3 days prior to meetings that was practiced before my letter earlier this year...The By-Laws currently states that minutes be distributed 1 week after the meeting...I believe it's reasonable to amend [the by-laws] to distributing the materials within 2 weeks after the meeting to give staff time to prepare the meeting minutes, but eliminating this important timeline is not acceptable to the community." (9/2/15)</p>	<p>laws to reflect the current practice regarding distribution of the minutes. On 9/2/15 the IPM Committee members discussed these by-laws changes and heard comment from the public on the issue. The Committee voted to unanimously approve all the by-laws changes. The changes were approved by the full Board of Supervisors.</p>
IPM subcommittees should focus on pesticide use and not on bed bugs or removing turf		
2/16/15-IPM 2/17/15-IPM 2/20/15-IPM 3/2/15-TWIC 3/4/15-IPM 5/6/15-IPM 8/6/15-IPM 9/2/15-IPM 11/4/15-IPM	<p><i>From Parents for a Safer Environment (PfSE)</i></p> <p>Issue of the subcommittees working on bed bugs, a community problem, rather than County-only pesticide issues and working on turf removal around buildings rather than on pesticide use in rights-of-way</p>	<ul style="list-style-type: none"> • Bed bugs affect 1000s of Contra Costa residents, both in municipalities and the unincorporated areas of the County. In order to get relief, desperate citizens are using many different kinds of pesticides in the home, throughout the bedroom, and often on the bedding itself. Reports indicate that frequently pesticides are used to excess and in a manner contrary to the labeled directions. This intimate contact with, and misuse of, pesticides is very troubling. This is a serious issue of pesticide exposure and contamination as well as an issue of the well-being of Contra Costa residents that the County has an obligation to address. • There are also bed bug issues that need to be addressed in County buildings. Staff and buildings are vulnerable where the public goes in and out of offices frequently and in large numbers. Staff and supervisors need training in identifying risks, actual infestations, and opportunities for prevention. • Converting turf to drought-tolerant landscaping accomplishes several things: <ul style="list-style-type: none"> ○ Saves millions of gallons of water in this time of serious drought. ○ Reduces the need for weed control and thus for herbicides. The limited irrigation and wood chip mulch between the drought-tolerant plants is not conducive to weed growth. Few weeds sprout in the dry soil under the mulch, and those that do sprout can often be hand-pulled. ○ Addresses herbicide use near buildings, which is where people have the

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		<p>greatest chance of being exposed to these pesticides.</p> <ul style="list-style-type: none"> o Reduces maintenance hours because turf is a high maintenance plant. o Frees Grounds maintenance staff to better manage other landscapes and continue to reduce their use of pesticide. o Reduces the amount of electricity used to pump water, the amount of gas used in lawn mowers and trimmers and in trucks to travel to and from sites for maintenance, and reduces the amount of pesticide and fertilizer used in maintaining the turf. This reduces greenhouse gas emissions. o Demonstrates that the County is a leader in landscaping more wisely for the arid climate in which we live.
	County not tracking pesticide use separately for Public Works rights-of-way/roadsides, flood control channels, and County-owned parcels	
3/2/15-IPM 8/26/15-Email 3/16/16-IPM 1/17/19-IPM	<i>From Parents for a Safer Environment (PfSE):</i> <p>"We do not see any good reason why pesticide usage is not being provided to the community for each roadside and flood control program." (3/2/15)</p> <p>"Posting online of pesticide use reports from each program simultaneously as they are generated [monthly]" (1/17/19)</p>	<ul style="list-style-type: none"> • The County has always tracked pesticide use separately for roadsides, flood control channels, and County-owned parcels, but because of a recent change in the way the Department reported pesticide use to the State of California, the state Pesticide Use Reports for FY 12-13 and FY 13-14 were not separated. The database that Public Works uses to track pesticide use cannot produce reports for PfSE that are user friendly since the database was never intended to be a pesticide use reporting tool. As a courtesy to PfSE, the Department has resumed separating pesticide use for the 3 programs when it reports to the state. These Pesticide Use Reports have been provided to PfSE for FY 14-15. • There is not the staff available to post each of the monthly pesticide use reports on the IPM website, and there has been no interest for this expressed by the public except PfSE. These reports are public records and are available for anyone who wants to request them.
	Report the total amount of pesticide used not just the active ingredients	
8/26/15-Email 11/4/15-IPM	<i>From Parents for a Safer Environment (PfSE):</i> <p>"Report total amount, not just the active ingredients of pesticides used in usage spreadsheet"</p>	<ul style="list-style-type: none"> • In the spread sheet prepared by the IPM Coordinator every year for pesticide use by County operations, the total amount of pesticide product used is recorded as well as the total amount of pesticide active ingredient used for each product. • The California Department of Pesticide Regulation reports pesticide use for the state in pounds of active ingredient. The County has adopted this system so that pesticide use reporting is aligned with the state. But as noted above, the County spreadsheet also records total pounds or gallons of pesticide product used. • The spreadsheet is posted on the IPM website and attached to the annual report.
	Corrections to the minutes of the IPM Advisory Committee or its subcommittees requested by PfSE	
5/6/15-IPM 6/9/15-IPM 8/6/15-IPM 7/20/16-IPM	<i>From Parents for a Safer Environment (PfSE)</i> <p>Issue of PfSE requesting changes to the minutes and then changes are not made</p>	<ul style="list-style-type: none"> • The IPM Committee members vote on whether or not to make corrections to the minutes. The members do not always vote to make PfSE's corrections, additions, and changes. The IPM Coordinator includes written changes from PfSE (as well as other public comment) as attachments to the official record of the meeting. The official agenda, minutes, public comment, and other attachments are posted on the IPM website.
	The herbicide Roundup (active ingredient glyphosate) has been designated as a probable human	

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<p>carcinogen by the World Health Organization's International Agency for Research on Cancer (IARC)</p>		
<p>6/9/15-IPM 7/8/15-IPM 8/6/15-IPM 9/2/15-IPM 7/20/17-IPM 11/16/17-IPM 1/18/18-IPM 9/20/18-IPM 5/16/19-IPM 7/18/19-IPM</p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"Considering that RoundUp products with the active ingredient, glyphosate, is [sic] being applied at the rate of nearly 1,000 lbs annually in the Grounds Program alone, and that glyphosate has been listed as a Probable Human Carcinogen by the World Health Organization earlier this year, are there any plans by the county to eliminate this risky chemical to reduce exposure to the community and wildlife?"</p> <p>Fred Schneider, PhD, Communications Director for Parents for a Safer Environment submitted a document entitled: <i>Glyphosate & Monsanto Chronological Background Compiled from Published Reports and Media News Articles</i></p> <p>The document is attached to the IPM Advisory Committee minutes for the 5/16/19 meeting</p> <p>Sheila Hill noted that many agencies are stopping the use of glyphosate. (7/18/19)</p> <p>Mei Mei Collins from the California Public Interest Research Group (CALPIRG) wanted a clear date for stopping the use of glyphosate. (7/18/19)</p> <p>Representatives from Parents for a Safer Environment (PASE) expressed concern that so much glyphosate was being used at West County Detention Facility particularly considering ICE-detained families being exposed to it. They were glad to see the overall reduction and encouraged</p>	<ul style="list-style-type: none"> • In 2015, he IPM Coordinator attended meetings in San Francisco with IPM coordinators and city and county staff from around the Bay to discuss the Roundup issue. At this point we do not have a less hazardous product with equivalent efficacy to replace Roundup, but we continue to look for one. The Grounds Division uses Roundup as a spot treatment and uses a little as necessary. In FY 14-15 the Grounds Division used 311 lbs. of glyphosate, the active ingredient in Roundup. • The most serious risk of exposure to Roundup is to the applicator because that person is in close contact with the material, sometimes daily. The law and the County require applicators to wear personal protective equipment and to be trained annually to prevent exposure. In light of the new probable carcinogen designation, the County is looking at whether there are additional precautions that should be taken to protect workers. • IARC identifies the potential for a chemical to cause cancer but does not quantify any increased risk to people from a chemical so designated nor does it recommend a safe level of exposure. Those designations are left up to regulatory agencies around the world. The County is waiting for the USEPA to complete its review of glyphosate. • On 11/12/15, the European Food Safety Authority ruled that glyphosate probably does not cause cancer in humans despite IARC's findings. • In March 2017, the Australian government's Pesticides and Veterinary Medicines Authority (APVMA) produced its Final Regulatory Position on whether to conduct a formal reconsideration of the chemical glyphosate. They stated that "[b]ased on this nomination assessment, the APVMA concludes that the scientific weight-of-evidence indicates that: exposure to glyphosate does not pose a carcinogenic or genotoxic risk to humans." • In April 2017, Health Canada released the following statement, "Following a rigorous science-based assessment, Health Canada has determined that when used according to the label, products containing glyphosate are not a concern to human health and the environment." • The County is still waiting for the final risk assessment from the USEPA. • In November 2017, researchers updated the Agricultural Health Study, which is a 20-year study of the effects of glyphosate on over 54,000 licensed pesticide applicators from North Carolina and Iowa. They found no statistically significant associations with glyphosate use and cancer in any part of the body. However, among applicators in the highest exposure quartile, there was an increased risk of acute myeloid leukemia compared with those who had never used glyphosate, though this association was not statistically significant. The researchers noted that this association requires confirmation. • In August 2018, a San Francisco jury awarded a Benicia School District employee \$289 million in his lawsuit alleging that Monsanto's glyphosate caused his non-Hodgkin's lymphoma. In October 2018, the judge in the case reduced the award to \$78 million. Monsanto is appealing the judgment. There may be some concern in the County about liability attached to continuing to use glyphosate to manage weeds. Both County Counsel and Risk Management are aware of the lawsuit. • In their 7/18/19 meeting, the IPM Advisory Committee requested a review of glyphosate use by County operations to be part of the 9/19/19 agenda. The new IPM Coordinator presented a preliminary review of glyphosate usage at the

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	<p><u>Contra Costa County to speak with other jurisdictions such as the East Bay Regional Parks who recently voted to phase out the use of glyphosate in developed parkland. (9/19/19)</u></p> <p><u>PASE indicated that they are against bare-earth herbicide treatments and instead favor cover crops and other options. A concern was also expressed regarding unwanted glyphosate exposure of inmates, workers, deputies, and others who spend time at the locations where high glyphosate usage was reported in FY 18-19. (9/26/19)</u></p>	<p><u>9/19/19 meeting. That review and subsequent analysis noted that although current Countywide usage is trending downward, the Grounds Division use of herbicides containing glyphosate has been constant since 2011 and saw a near doubling of usage in FY 18-19 over the average of the previous seven years. The IPM Advisory Committee referred the issue to the Decision-Making Subcommittee who heard updated information in the meetings on 9/26/19 and 10/31/19.</u></p> <ul style="list-style-type: none"> <u>• The West County Detention Facility, The Marsh Creek Range, The Buchanan Field and Byron Airports, and Juvenile Hall were the sites that had the highest usage of Glyphosate in FY 18-19. The glyphosate applied at those five facilities accounted for over 60% of all glyphosate usage in the entire County.</u> <u>• The Decision-Making Subcommittee aims to help the County departments develop site-specific decision documents at these locations in order reduce the apparent reliance on post-emergent glyphosate applications and review the feasibility of managing vegetation using integrated strategies.</u> <u>• In June 2019, The Board of Trustees of the Mt. Diablo Unified School District eliminated the use of glyphosate in the District.</u> <u>• East Bay Regional Park District Board of Directors voted in July 2019 to phase out the use of glyphosate in developed park areas by the end of 2020, which will allow for the additional time to budget the purchase of new equipment and funding of additional labor.</u> <u>• In October 2019, the Clayton City Council approved a moratorium until Spring 2021 on the use of Glyphosate by their Maintenance Department. City staff estimated that an additional \$25,000 per year would be needed to pay for mechanical labor and pre-emergent and other chemical alternatives.</u> <u>• In regard to the PASE comments about ICE detainees from the 9/19/19 IPM Advisory Committee meeting, Jill Ray clarified that the Office of the Sheriff no longer has a contract with ICE and that this facility is only for adults and no children were detained.</u> <u>• In a letter dated August 7, 2019, The EPA clarified that it “disagrees with IARC’s assessment of glyphosate. EPA scientists have performed an independent evaluation of available data since the IARC classification to reexamine the carcinogenic potential of glyphosate and concluded that glyphosate is ‘not likely to be carcinogenic to humans’...EPA considers the Proposition 65 warning language based on the chemical glyphosate to constitute a false and misleading statement. As such, pesticide products bearing the Proposition 65 warning statement due to the presence of glyphosate are misbranded...” IPM program staff continue to monitor regulatory developments as well as ongoing civil litigation proceedings pertaining to glyphosate.</u> <u>• Risk Management personnel are currently undertaking a product evaluation of each of the glyphosate-based herbicides used by County departments.</u> <u>• At their meeting on 1/30/20, the Decision-Making Subcommittee reviewed the initial draft of the <i>Decision Documentation for Vegetation Management at West County Detention Facilities</i>. Part of that discussion highlighted that the reason for a near-reliance on post emergent herbicide applications are rooted in the business relationship between the Office of the Sheriff and the Public Works—Grounds Division. It was also noted that the current arrangement does not allow for the adequate monitoring of the site as it pertains to vegetation management.</u> <u>• The draft decision documentation asserts that “The management goals are to maintain site vegetation in a manner that reinforces the safety, security, and</u>

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		<p><u>restorative beauty of the facility. Innovative and regenerative strategies are prioritized and are consistent with the stated mission of each department as follows:</u></p> <p><u>"Public Works employees deliver cost effective, safe, reliable and sustainable projects, programs and quality services with a focus on our communities and provide support services that are competitive, attentive, responsive, efficient and safe to enable County Departments to provide high quality services to the public."</u></p> <p><u>"The Office of the Sheriff works in partnership with our diverse community to safeguard the lives, rights and property of the people we serve. With unwavering dedication we provide innovative professional law enforcement services to our community. We accomplish this mission by maintaining our Core Values (Honor—Courage—Commitment—Leadership—Teamwork) while always conducting ourselves with the highest ethical standards."</u></p> <ul style="list-style-type: none"> • <u>One focus of the draft document involves alternative site programming, asserting that the facility was "designed to operate as a co-educational, program-oriented facility." A deeper exploration of potential strategic partnerships that will maximize land-asset utilization is warranted. The 2011 Public Safety Realignment Act (Assembly Bill 109) placed additional responsibility for Counties to house low level offenders locally, provide post-incarceration supervision, and allocate associated revenues from the state. The current landscape maintenance arrangement between the Office of the Sheriff and Public Works may not have the capacity to manage the site beyond the reactive methods currently employed. However, existing reentry partnerships could be enhanced—and potentially funded—through AB 109 sources. Some County-stated objectives in this regard aspire to 'create linkages between the incarcerated person and various needed services and community programs,' and to 'Explore options to maximize use of local jail facilities to serve the needs of the AB 109 population.' There are multiple regional programs and community-based organizations in the region that may inform potential collaborative strategies."</u>
	<p>Questions posed during public comment for items not on the agenda are not answered by the IPM Committee</p>	
<p>8/6/15-IPM 7/20/16-IPM 9/21/16-IPM 3/16/17-IPM 11/16/17-IPM 1/11/18 Email 1/18/18-IPM</p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"...please allow ample time for answering and discussing these 6 questions as listed in order of priority at the next meeting agenda. Community members have been waiting patiently since last year for most of these questions to be addressed."</p>	<ul style="list-style-type: none"> • The IPM Committee does not take up and discuss issues that are not on the published agenda for the meeting as this would be a violation of the Brown Act. • Members of the Committee can request to have public concerns put on the agenda for a future meeting.
	<p>IPM Committee members should RSVP for each meeting</p>	
<p>6/9/15-IPM 7/8/15-IPM 8/6/15-IPM 11/16/17-IPM</p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"I attended the April 14, 2015 meeting when we waited for over 30 minutes for staff and</p>	<ul style="list-style-type: none"> • IPM Committee members alert the IPM Coordinator when they know they will be late or will be missing a meeting of either the full committee or a subcommittee. Unfortunately, unexpected circumstances do arise from time to time. • The Weed subcommittee meeting on April 14, 2015 was the first meeting of the full IPM Committee or any of its subcommittees that had to be cancelled for lack of

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	<p>community members on the [Weed sub] Committee to arrive to no avail. Staff had to regretfully cancel the meeting due to lack of a quorum.consider asking for a heads-up from committee members if they cannot attend a future IPM meeting." (6/9/15 and 7/8/15)</p> <p>"Would the county request Committee members to provide in writing, anticipation of absenteeism so that those who arrive at meetings are not waiting for an hour only for the meeting to be cancelled due to lack of a quorum." (8/6/15)</p>	<p>a quorum since the IPM Advisory Committee was formed in 2010.</p>
Quorums have been disregarded in previous subcommittee meetings		
6/9/15-IPM 7/8/15-IPM	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"According to Shirley Shelangoski who had attended all subcommittees between 2012-2014, quorums were <i>not</i> considered in subcommittees until the recent year. Before, subcommittee meetings were held regardless of a lack of quorum."</p>	<ul style="list-style-type: none"> • All subcommittees consider whether or not there is a quorum before proceeding with a meeting. Attendance is tracked in each set of minutes.
Absences on the IPM Committee		
8/6/15-IPM 8/26/15 Email 1/17/19-IPM	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"Will the county track absenteeism and provide the data annually so that those who missed more than two in a given year be considered for removal from membership as stated in the By-Laws?"</p> <p>Grounds Division rep is absent from meetings.(1/17/19)</p>	<ul style="list-style-type: none"> • Absences are tracked in the minutes of every meeting of the full IPM Committee and each of its subcommittees. Attendance at meetings is reported annually to the Board of Supervisors. • The Grounds Division itself does not have a seat on the IPM Committee. Facilities and Grounds is represented by Jerry Casey of Facilities.
Pesticide Use around the Hazardous Materials Office and Co. Admin Bldg in Martinez		
2/20/15-IPM 8/615-IPM 2/17/16-IPM	<p><i>From Parents for a Safer Environment (PfSE)</i></p> <p>Issue of members of PfSE observing pesticide use around</p>	<ul style="list-style-type: none"> • The Hazardous Materials Program rents space from ERRG, a company that occupies the top floor of the building. They and not the County are responsible for maintaining the building and the property. • The County's posting policy does not require private owners of buildings to post

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11/16/16-IPM 1/17/19-IPM	<p>the Hazardous Materials Office at 4585 Pacheco Blvd. in Martinez without posting</p> <p>"Currently, pesticides are used outside the auspices of the County IPM program in many buildings, including the Hazardous Materials building and the County Administration building." (2/17/16)</p>	<p>their pesticide use.</p> <ul style="list-style-type: none"> On 8/6/15, PfSE videoed a Clark Pest Control technician spraying around the building at 4585 Pacheco Blvd. Clark, the contractor for ERRG, was using a pesticide called indoxacarb for ants that had been invading the building, particularly the top floor. Indoxacarb is listed as a "reduced risk" pesticide by the USEPA and is used by Pestec, the County contractor, in baits for cockroaches and ants. Hazardous Materials staff who experienced ant problems were educated by the IPM Coordinator, all food debris was removed, and boric acid baits were used in the two Hazardous Materials offices with ants trailing through. No pesticides are being used in or around the County Administration building at 651 Pine Street that are not applied by Pestec, the County contractor, as part of the County IPM program. We are not aware of any pesticides being used at other County buildings that are not applied by Pestec. If PfSE has specific evidence of this happening, we would gladly investigate.
IPM Contract Language and reviewing contracts		
11/6/13-IPM 12/5/13-TWIC 2/26/14-IPM 3/5/14-IPM 3/6/14-TWIC 8/26/15-Email 2/17/16-IPM 9/15/16-IPM 1/17/19-IPM	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"the county still does not have IPM language in its contracts with pest control contractors"</p> <p>"Contractors conducting pest control should be evaluated annually by the IPM Advisory Committee and contracts bid upon and assessed for a strong IPM track record." (2/17/16)</p> <p>"The Public Works Dept's Special District currently has on its payroll, a contractor who did not have to bid with IPM experience as a criteria and uses only rodenticides, including 2nd generation [sic] in public parks." (2/17/16)</p> <p>Concerns about the letter from Special Districts to its contractors explaining the IPM approach expected of them. (9/15/16)</p>	<ul style="list-style-type: none"> 2009: the IPM Coordinator and County staff added IPM language to the contract for pest management in & around Co. buildings. The contractor emphasizes education, sanitation, and pest proofing as primary solutions. Insecticides, mainly in the form of baits, are used as a last resort. For the control of rats and mice in and around County buildings, the County only uses sanitation, education, and trapping. Special Districts currently hires only 1 contractor for pest control. He is employed by means of a purchase order, which is not an appropriate vehicle for IPM contract language; however, <ul style="list-style-type: none"> as a condition of his employment, he is required to abide by the Public Works "Landscape Design, Construction, and Maintenance Standards and Guidelines"¹ which contain language outlining the IPM approach. This also applies to any other contractor hired by Special Districts. this has been explained to PfSE several times. Spring 2012: to reinforce the IPM standards, the Special Districts Manager sent a letter to each Special Districts' contractor detailing the IPM approach expected of them. This is an on-going practice and any new contractors will receive the same letter to emphasize the County's IPM principles. On 11/28/12, Susan JunFish asked for Special Districts contracts and purchase orders; on 11/29/12 the IPM Coordinator sent her the contracts, purchase orders, and letters mentioned above that were sent out by Special Districts. On 2/14/13, Susan JunFish asked again for copies of the letters and was sent them on 2/15/13. The Grounds Division occasionally hires a contractor to apply pesticides that the Division does not have staff or equipment to apply itself. The IPM Coordinator considers that these contracts or purchase orders do not require IPM language because the contractor is hired for a specific pesticide application and not to perform IPM services or make any IPM decisions. In these cases the Grounds Division has already gone through the IPM decision making process and has

¹ <http://www.co.contra-costa.ca.us/index.aspx?nid=2147>

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		<p>decided the specific work ordered is appropriate.</p> <ul style="list-style-type: none"> • Reviewing contracts has not been in the purview of the IPM Advisory Committee. • The 1 contractor hired by Special Districts for pest control (see also the 2nd bullet, above) uses mostly trapping for vertebrate pests. In FY 15-16, he used 0.02 ounces of the rodenticide active ingredient diphacinone (a 1st generation anticoagulant). He does not use any 2nd generation anticoagulants. • Since the IPM Program began reporting data on pesticide use in Special Districts in FY 08-09, no 2nd generation anticoagulants have been used. • The concerns expressed by Susan JunFish on 9/15/16 about the clarity and detail of the letter to contractors are valid and the Decision-Making subcommittee will take up these concerns.
Unprofessional Behavior by County Staff		
11/6/13-IPM 11/13/13-IO 12/5/13-TWIC 2/26/14-IPM 3/5/14-IPM 3/6/14-TWIC	<i>From Parents for a Safer Environment (PfSE):</i> “serious pattern of hostile and unprofessional treatment to the community by County staff” “continued name-calling, shouting, and put-downs by county staff and Committee members at IPM meetings” “require staff to take training in order to learn how to work productively in public meetings”	<ul style="list-style-type: none"> • Staff disagree with the assertions that staff have been hostile or unprofessional toward members of PfSE or that staff have engaged in name-calling, shouting, or put-downs in any committee meetings. However, without reference to specific incidents on specific dates, it is impossible for staff to respond in detail. • Members of the public have always had ample opportunity (within defined limits) to participate in all aspects of IPM Committee meetings. • Starting in 2014, IPM full committee and subcommittee meetings will strictly adhere to the Ground Rules adopted unanimously by the IPM Committee on May 5, 2010. The IPM Coordinator will distribute Committee Ground Rules with each agenda packet. This will make public participation more fair and prevent one or a few individuals from dominating public comment. This course of action should limit the potential opportunities for improper discourse.
Make Audio and/or Video Recordings of IPM Committee Meetings		
3/6/14-TWIC 3/2/15-TWIC 2/17/16-IPM 1/17/19-IPM	<i>From Parents for a Safer Environment (PfSE):</i> “record meetings with a camcorder” “The Community requested to have IPM related meetings recorded to achieve accurate meeting minutes that reflect what actually happened at the meetings and to encourage professional behavior.”	<ul style="list-style-type: none"> • Vince Guise, Agricultural Commissioner in 2013, suggested that meetings be audio recorded (no video). The issue may be taken up at a future IPM Committee meeting. • No other advisory bodies video or audio record their meetings. If the public wishes to record meetings, they may do so and should announce their intention at the beginning of the meeting. • It appears that PfSE is recording all IPM Committee meetings on a laptop, so they will be able to reference those recordings if need be. • At the January 18, 2018 IPM Committee meeting, Carlos Agurto, representative from Pestec, the County's structural IPM Contractor, volunteered to be secretary to the Committee. He will make audio recordings of the meetings and provide the IPM Coordinator with a transcript. With audio recordings, video is not necessary.
Intimidation of a member of Parents for a Safer Environment by the IPM Coordinator		
2/12/14-TWIC 3/5/14-IPM 3/6/14-TWIC 2/17/16-IPM	<i>From Parents for a Safer Environment (PfSE):</i> “we ask that in the future, [County] staff not contact the community and pressure them to retract their	On November 13, 2013, Margaret Lynwood submitted a written public comment to the Internal Operations Committee. In the comment, she stated that she had “been attending pesticide related meetings and [had] discovered a serious pattern of hostile and unprofessional treatment to the community by county staff.” Since Ms. Lynwood did not provide specific details, and the IPM coordinator had no record of her

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	public comments"	attending and did not remember seeing her in the last 4 years at any IPM Committee or subcommittee meetings, but only at TWIC and IO meetings, she contacted Ms. Lynwood by phone to understand her concerns and ask her if she felt that County Supervisors or other staff in TWIC or IO meetings had exhibited unprofessional behavior. She said, "No," and was unable to cite a specific instance when she had witnessed such behavior. The IPM Coordinator did not ask her to retract her public comment.
Use of Pre-Emergent Herbicides		
11/6/13-IPM 12/5/13-TWIC	<i>From Parents for a Safer Environment (PfSE):</i> "The Community wants to be assured that the Public Works Dept does not use pesticides along the Flood Control District that has [sic] residual activity before a forecasted rainstorm."	This is an issue about pre-emergent herbicides and was discussed in a subcommittee meeting on 10/29/13 and again in the Advisory Committee meeting on 11/6/13. Both meetings were attended by both Susan JunFish and Shirley Shelangoski of PfSE. The following points were made: <ul style="list-style-type: none"> • Pre-emergent herbicides have residual activity by design because they are meant to prevent the germination of weeds over an extended period of time, sometimes a number of weeks. • Pre-emergent herbicides are used by Public Works as part of their herbicide rotation program to prevent the development of herbicide-resistant weeds. Herbicide rotation is one of a number of best practices strongly recommended by the University of California and many other researchers to prevent herbicide resistance². Creating herbicide-resistant weeds is considered an extremely serious problem by weed scientists throughout the world. • Pre-emergent herbicides are not applied on flood control channel banks; they are used on flood control access roads above the banks. • Pre-emergent herbicides need irrigation or rainfall shortly after their application, typically within a few days to several weeks, to carry them shallowly into the soil where they become active. Because there is no irrigation on flood control access roads, pre-emergent herbicides must be applied prior to a rain event. • The Department follows all label requirements for the application of pre-emergent herbicides (and all other herbicides). Note that a pesticide label is <u>law</u> and must be strictly followed. • The use of pre-emergent herbicides can reduce the total amount of herbicide needed to control weeds in the County because it takes a smaller amount of pre-emergent herbicide to control weeds in an area than it would using a post-emergent herbicide.
Use of Garlon 3A® (triclopyr) herbicide on flood control channel slopes without considering its half-life		
3/5/14-IPM 3/6/14-TWIC	<i>From Parents for a Safer Environment (PfSE):</i> "We want the Public works	<ul style="list-style-type: none"> • Staff has reviewed EPA documents for triclopyr reregistration; information on triclopyr in the Nature Conservancy's <i>Weed Control Methods Handbook</i>; information on triclopyr in the Weed Science Society of America's <i>Herbicide</i>

² 2012. Norsworthy, Jason K., et al. Reducing the Risks of Herbicide Resistance: Best Management Practices and Recommendations. *Weed Science* 2012 Special Issue:31-62.

2000. Prather, Timothy S., J.M. DiTomaso, and J.S. Holt. Herbicide Resistance: Definition and Management Strategies. University of California, Division of Agriculture and Natural Resources Publication #8012. 14 pp.

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8/26/15-Email	Department to consider the residual activity (or half-life) of pesticides prior to application. Particularly along the Flood Control District before a forecasted rain that can wash pesticides into the channels and contaminate the water that flows to the Bays"	<p><i>Handbook</i>; and the CA Department of Pesticide Regulation's "Environmental Fate of Triclopyr" (January 1997); and has found that triclopyr:</p> <ul style="list-style-type: none"> ○ Is practically non-toxic to birds, fish, and crustaceans ○ Is of very low toxicity to mammals and is rapidly absorbed and then rapidly excreted by the kidneys, primarily in unmetabolized form ○ Has an average half-life in soil of 30 days (considered short persistence) ○ Would have little toxicological hazard to fish and wildlife as currently used in forestry (CCC's use is similar, although the County uses less product per acre than studies cited) ○ Has a low K_{oc}, which indicates mobility in soil; however, studies show that triclopyr is only somewhat prone to lateral movement and is practically not prone to vertical movement. In addition, triclopyr is fairly immobile in the sub-surface flow. ○ Could be used without harm to nearby streams in forestry applications if buffer zones are used around streams and ephemeral drainage routes. <ul style="list-style-type: none"> • CCC Public Works Vegetation Management uses Garlon 3A as follows: <ul style="list-style-type: none"> ○ Garlon 3A is a broadleaf contact herbicide with no pre-emergent qualities. It does not kill grasses, so it is often used with Roundup (glyphosate), which does kill grasses. ○ Generally Garlon 3A is not used during the rainy season. ○ It is used on roadsides, flood control channel slopes, and flood control channel access roads. ○ On flood control channel slopes, Garlon 3A is sprayed down the slope no further than the toe of the slope. Flood control channels are trapezoidal in cross section, and the toe of the slope is where the slope meets the flat part of the channel. Depending on the site, the water in the channel is from 10-50 ft. from the toe. ○ If there is a chance of the herbicide getting into the water, Public Works uses Renovate 3, which has the same active ingredient (triclopyr), but is labeled for aquatic use.
Posting for pesticide use		
11/6/13-IPM 12/5/13-TWIC 2/20/14-IPM 2/24/14-IPM 2/26/14-IPM 3/5/14-IPM 3/6/14-TWIC 4/2/14-IPM 12/4/14-TWIC 2/17/15-IPM 3/2/15-TWIC 8/26/15-Email	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"The county staff are still not posting when applying pesticide in parks, along hiking trails, major intersections of rights of ways, along flood control districts where many people, children and their pets frequent."</p> <p>"Posting online of pesticide applications"</p> <p>"Posting online of pesticide use reports from <i>each</i> program as they are generated on a monthly basis [for fulfilling reporting requirements with the state</p>	<ul style="list-style-type: none"> • In 2009 the Departments developed a pesticide use posting policy. The policy does not require posting in "rights-of-way or other areas that the general public does not use for recreation or pedestrian purposes". • The CCC posting policy, including the provision mentioned above, is consistent with, and very similar to the posting policies of Santa Clara and Marin Counties and with the City of San Francisco. • The policy was reviewed and discussed by the IPM Committee when it was first developed, and in 2012 was revised to allow web posting and allow permanent signs in certain areas. • County Departments have verified that they abide by the posting policy. • The County's website for online posting of pesticide applications (for the areas required by the CCC posting policy) was up and running as of 3/10/15. • Pesticide use reports that are generated for the California Department of Pesticide Regulation are provided yearly to Parents for a Safer Environment. Monthly reports

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11/4/15-IPM 2/17/16-IPM 11/16/16-IPM 11/16/17-IPM 6/18/18-IPM 9/20/18-IPM 1/17/19-IPM <u>5/16/19-IPM</u>	<p>Department of Pesticide Regulation]"</p> <p>Provide a list of where pesticide applications were posted for each IPM program and how many signs were used in 2013. (4/2/14)</p> <p>"The County's Posting Policy states that posting is required where there is foot access by the public or where the area is used for recreation...PfSE has shown you photos of children walking along these access trails...These access roads look just like walking trails along often idyllic looking creeks that the community use on a daily basis." (12/4/14)</p> <p>Concerns about pesticide posting (2/17/15)</p> <p>"Posting is still not done in most treated areas where people have foot access and where they recreate per the CC County's Posting Policy." (3/2/15)</p> <p>"I'd also like to see that posting is being done per policy." (11/16/16)</p> <p><u>"...it's clear that pesticide treatments that can expose people are not all being posted online as the policy instructs. This Committee can also include this topic on the agenda and work with the county programs to see how to streamline the posting online by staff since there are hundreds of treatments annually, with a significant fraction occurring where people recreate or have foot access per the county's policy to post." (5/16/19)</u></p>	<p>are available if the public wishes to view them.</p> <ul style="list-style-type: none"> • In the 5/27/14 IPM Transparency subcommittee meeting, the IPM Coordinator presented a chart with a list of pesticide application postings and the number of posting signs used during the 2013 calendar year. • Note that the County Posting Policy states that posting is "Not required in locations that the public does not use for recreation or pedestrian purposes" Recreation is defined as "any activity where significant physical contact with the treated area is likely to occur". • On Pinole Creek, in the photo submitted by PfSE, the Public Works Department does not treat the paved path next to the school that the children are shown walking on. • Most of the County's Flood Control access roads are within locked gates with signs saying "Property of Contra Costa. No Trespassing". No one should be jogging or walking along these roads. • If PfSE can provide the County with information on specific access roads and specific times when people have been exposed to pesticide spraying, the County will investigate immediately. • Without information on specific locations, the County is unable to investigate this concern about not posting "in most treated areas where people have foot access and where they recreate..." • The IPM Committee has formed a Task Force to review the County's posting policy and compliance with that policy. (11/16/17) • <u>The Posting Task Force met six times throughout the spring and summer of 2018 and revised the posting sign and policy with public input at every meeting. The suggestions for revisions have been sent to the Public Works Department for review.</u> • <u>There is validity about the concern expressed on 5/16/19 regarding online postings. The Public Works Department has yet to finally approve the revised posting policy, and it may contain ambiguities that need to be reviewed further regarding what constitutes an exemption to online posting. The Posting Task Force will reconvene in early 2020 for this purpose and to implement TWIC recommendations on this topic given in the 11/14/19 meeting.</u>
	Adopting an IPM ordinance	
9/4/13-IPM 11/6/13-IPM 2/26/14-IPM 3/5/14-IPM 3/6/14-TWIC 3/2/15-TWIC	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>Issue of adopting an IPM ordinance for the County</p>	<ul style="list-style-type: none"> • In 2009, Susan JunFish proposed the need for an IPM Ordinance to the BOS. The Board directed the Committee to investigate the issue. • In 2009, County Counsel wrote an opinion recommending the use of an administrative bulletin to supplement the County's IPM Policy. • County Counsel continues to stand by their 2009 opinion. • At several meetings in 2010 and 2011, the IPM Committee studied the issue and heard presentations from PfSE and from other counties. In 2011 the Committee

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2/17/16-IPM 1/19/17 IPM 1/17/19-IPM		<p>concluded unanimously that the County should adopt an IPM Administrative Bulletin to supplement the IPM Policy that the County adopted in 2002. In CCC an administrative bulletin serves to direct staff and carries consequences for non-compliance.</p> <ul style="list-style-type: none"> • The IPM Committee found no advantage to adopting an IPM ordinance. • In April of 2013, the IPM Administrative Bulletin was adopted. • In the fall of 2013, the IPM Committee again reviewed the issue of adopting an IPM Ordinance. For the second time, the Committee saw no advantage to developing an ordinance and once again voted unanimously to recommend the continued use of the IPM Policy supplemented by the IPM Administrative Bulletin.
Reporting “Bad Actor” pesticides		
11/6/13-IPM 12/5/13-TWIC 2/12/14-TWIC 3/5/14-IPM 3/6/14-TWIC 2/17/15-IPM 3/2/15-TWIC 8/26/15-Email 9/2/15-IPM 3/11/19-IPM	<p><i>From Parents for a Safer Environment (PfSE):</i> Disagreement on how the County should report “Bad Actor”³ pesticides in the IPM Annual Report</p> <p><u>County staff has not identified all the Bad Actor pesticides. Susan JunFish is willing to make a presentation to the Committee on Bad Actors. (3/11/19)</u></p> <p><u>Would like the IPM Committee to look at establishing approved, limited, and restricted categories of pesticides as other counties have adopted to make it easier for staff to choose materials. (3/11/19)</u></p>	<ul style="list-style-type: none"> • Since FY 00-01, the County has been publishing pesticide use figures that include use figures for “Bad Actors”. • Note that <u>all</u> pesticides used by County operations are reported in the IPM Annual Report, regardless of the toxicity or hazards of the pesticide. At issue is the categorization of pesticides in the report, not whether all use is reported. • Susan JunFish, of Parents for a Safer Environment (PfSE), has been asking that additional pesticides be reported as “Bad Actors”. To resolve this issue, the IPM Committee heard presentations from Susan JunFish and held a special meeting of the Data Management subcommittee on March 25, 2013 devoted exclusively to this issue. Dr. Susan Kegley⁴ was invited to speak, as requested by Ms. JunFish. • After hearing Dr. Kegley’s presentation and discussing the issue with her and with representatives of PfSE, the subcommittee members concluded that the County should report as “Bad Actors” only those that are designated as such in the Pesticide Action Network database. • June 26, 2013: The IPM Committee voted unanimously to make changes to the 2012 IPM Annual to reflect the recommendation from the Data Management subcommittee, as noted above. The IPM Coordinator continues to report pesticides as “Bad Actors” only if they are designated as such in the PAN database. • <u>This year’s Pesticide Use Summary Comparison chart classified all products containing glyphosate and dicamba as bad actors. Since it is unclear when PAN listed them as bad actors, the chart was amended to include dicamba since 2000 and glyphosate since 2015, since the latter was likely listed after the IARC designation. If a pesticide is discovered to have been classified as a bad actor, the comparison chart is revised.</u> • <u>The IPM Advisory Committee has requested that the IPM Coordinator provide an overview of what classification systems are in place in other public agencies. The Committee has expressed an interest in forming a subcommittee to review how chemicals are classified in County operations and may do so after other subcommittees of the IPM Advisory Committee has completed other pursuits.</u>

³ “Bad Actor” is a term coined by 2 advocacy groups, Pesticide Action Network (PAN) and Californians for Pesticide Reform, to identify a “most toxic” set of pesticides. These pesticides are at least one of the following: known or probable carcinogens, reproductive or developmental toxicants, cholinesterase inhibitors, known groundwater contaminants, or pesticides with high acute toxicity. The pesticides designated as “Bad Actors” can be found in the PAN database on line: <http://www.pesticideinfo.org/>

⁴ Ph.D. Organic/Inorganic Chemistry; Principal and CEO, Pesticide Research Institute; former Senior Staff Scientist for Pesticide Action Network (PAN); instrumental in the development of the PAN database.

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Use of Paraquat and Other Bad Actors for Aquatic Weed Control by the Department of Agriculture		
2/17/15-IPM	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"Use of paraquat for Aquatic Weed Control and other broad applied Bad Actor Pesticides by the Department of Agriculture." (Particular mention of South American sponge plant in the Delta was made.)</p>	<ul style="list-style-type: none"> • The Agriculture Department has not used paraquat in any aquatic weed applications and does not apply herbicides to the Delta for aquatic weeds. In the past, the Department has treated purple loosestrife in County waterways that feed into the Delta, but from this point forward they will not be treating any aquatic weeds. • The State Department of Boating and Waterways (DBW) has treated various areas in the Delta for invasive aquatic weeds over the years, and in September 2012, Governor Brown signed legislation authorizing DBW to add South American sponge plant to the list of weeds they treat. • State weed science experts judged that South American sponge plant posed a serious threat to the ecosystems in California waterways. This was based on research, the biology of the plant, and the rapid rate of its spread in California. • Judicious use of herbicide to eliminate small infestations before they take over and completely clog Delta waterways is an excellent use of herbicide and will prevent huge expenditures of labor and herbicide in the future. This kind of preventive use of a pesticide to reduce the necessity to use large amounts of pesticide when the pest has built to great numbers is a recognized and legitimate IPM tactic.
Providing comments on the kestrel study, and rodenticides use concerns		
11/6/13-IPM 12/5/13-TWIC 2/20/14-IPM 2/24/14-IPM 3/5/14-IPM 3/6/14-TWIC 8/26/15-Email 7/20/16-IPM	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"We have asked the Dept of Ag and the IPM Advisory Committee to provide comments on the Kestrel study and PfSE's Draft LD50 document in the past two years."</p> <p>In conjunction with this research paper, PfSE has brought up its concern about the rodenticides used by County operations.</p> <p>"Contractors [in Special Districts] use pesticides [rodenticides] before demonstrating alternatives first." (8/26/15)</p> <p>"I would like to first point out that the Special District program of Public Works is still using rodenticides in the county parks...It would be helpful to see the decision making tree on the way rodenticides are chosen instead of traps or asphyxiation methods using safer gases like carbon dioxide." (3/16/16)</p> <p>"The Public Works Special District program is using about 50 lbs. of</p>	<ul style="list-style-type: none"> • On 9/18/12 Susan JunFish circulated to members of the IPM Committee the abstract from the kestrel study mentioned at left. On 2/4/13, the IPM Coordinator circulated the actual research paper to all the members of the IPM Committee. • On November 22, 2013, Vince Guise, Agricultural Commissioner, sent a formal response to Susan JunFish regarding the kestrel study. (TWIC and the IPM Committee Chair and IPM Coordinator were cc'ed on this communication.) • On January 7, 2014, Vince Guise re-sent the formal response to Susan JunFish and Shirley Shelangoski. On January 16, 2014, Shirley Shelangoski confirmed having received the document. • Susan JunFish asked the Committee to comment on the study, and the formal response was provided by the Agriculture Dept. • Regarding "PfSE's Draft LD50 document", neither the Committee nor County staff can comment on data calculated by Susan JunFish that have no references or clear calculation methods. This was conveyed to PfSE in the Department of Agriculture's Kestrel response letter. • Note that as part of the Department of Agriculture's ground squirrel program, the Department surveys ground squirrel treated areas for ground squirrel carcasses (or any other carcasses). Staff rarely find dead ground squirrels above ground, which is consistent with U.C. research in the state and the experience of other agencies. Staff has never found secondary kill, such as raptors or predatory mammals, in areas the Department treats. This does not mean, nor does the County claim, that no secondary kill ever occurs in the course of the County's treatment program. • The IPM Committee did not discuss the research paper specifically; however, the Committee and County staff took the following steps regarding the rodenticide issue: <ul style="list-style-type: none"> ◦ In 2012, the Agriculture Dept. conducted an in-house trial of live-trapping of ground squirrels as a possible alternative to rodenticides treatment. See

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	rodenticides in parks." (7/20/16)	<p>below for more detail.</p> <ul style="list-style-type: none"> ○ At their January 2013 meeting, the Committee heard a presentation from the Agriculture Dept on the trapping study and heard a presentation from the State Department of Fish and Wildlife on secondary poisoning of raptors and other predators and the state's efforts to restrict use of the more toxic 2nd generation anticoagulant rodenticides (CCC does not use 2nd generation anticoagulants because of their toxicity and their hazards to non-target animals that consume poisoned rodents). ○ At their March 2013 meeting, the Committee heard a presentation from Dr. Jim Hale on wildlife issues in CCC that included discussion of the impacts of rodenticides. ○ At their May 2013 meeting, the Committee heard a presentation from Mt. Diablo Audubon on their campaign to curb the use of 2nd generation rodenticides. ○ The Agriculture and Public Works Departments jointly prepared a map of the County marking where rodenticides are used by the Agriculture Dept. This map was presented in separate meetings to Supervisors Gioia, Mitchoff, and Andersen, and to Susan JunFish & Shirley Shelangoski of PfSE. In these meetings the Agricultural Commissioner explained the Department's ground squirrel program and the live trapping study. ○ The Agriculture Dept. prepared a very detailed decision making document for ground squirrel management in the County to record their decision making process and explain the complexities involved in their decisions, including biology, safety, efficacy, cost and the goals of the program. This document was discussed extensively in a subcommittee meeting and again in a regular Committee meeting. PfSE members were present and participated in the discussion. ○ In 2013, the Agriculture Dept revised its ground squirrel baiting methodology to make it safer for staff, to make applications more precisely targeted, and to reduce the amount of bait used each season. The amount of bait used by the Department has been reduced by over 50% since 2011. Use has gone from 35,915 lbs in 2011 and 14,271 lbs in 2013. 14,271 lbs of bait is 1.4 lbs. of actual diphacinone. ○ In February and again in August of 2013, the IPM Coordinator investigated rodenticides use by contractors to Special Districts. She presented her findings to the Committee at the 9/4/13 meeting. ○ On 3/5/14, the IPM Committee heard an update from the California Department of Fish and Wildlife on the regulations concerning 2nd generation anticoagulant rodenticides and on secondary poisoning of raptors and mammalian predators by anticoagulant rodenticides. ○ The Special Districts' contractor has reduced his use of anticoagulant bait from 188 lbs in FY 12-13 to 88 lbs in FY 13-14 and to 53.5 lbs in FY 14-15. The amount of actual anticoagulant active ingredient in 53.5 lbs is 0.0027 lbs (0.04 oz). The contractor has increased trapping and is not using any of the more toxic and dangerous 2nd generation anticoagulants. ○ In FY 15-16 the Special Districts vertebrate pest manager used 27.5 lbs. of rodent bait, which is 0.0013 lbs. (0.02 oz.) of diphacinone. 9.5 lbs. of that rodent bait was used in a park (Livorna Park). This is 0.0076 oz of diphacinone. As noted above, the County is no longer using rodenticides in Livorna or any other park. In FY 16-17 the Special Districts vertebrate pest

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		<p>manager used 18 lbs. of rodent bait, which is 0.0009 lbs. (0.01 oz.). In FY 17-18, no rodenticides were used in Special Districts. The vertebrate pest manager used only trapping.</p> <ul style="list-style-type: none"> o As of May 2016, Special Districts is no longer baiting with diphacinone for rats in Livorna Park. The shrubs that were being damaged by rat gnawing have recovered and are thriving. The contractor will continue to monitor at Livorna for rat damage. o In the spring of 2016, the IPM Decision-Making subcommittee asked the IPM Coordinator to create a decision-making document for gopher management in the County. The document was finished in June 2016. In the Grounds Division, the gopher manager uses only carbon dioxide asphyxiation and traps to control gophers in County landscaping. The Special Districts' contractor uses trapping and diphacinone, a 1st generation anticoagulant rodenticide, for gophers in Livorna Park. He uses trapping in Livorna wherever it is safe to do so, i.e., where children are unlikely to find and play with the traps. He uses diphacinone in the Hidden Pond and Driftwood landscaping zones because the budgets in these two Special Districts will not cover trapping, which is more labor intensive. Both those landscaping zones are frontage property. The only other location where the Special Districts' contractor manages vertebrate pests is the Alamo School field, where he is using traps. • In 2018, the IPM Committee had presentations on ground squirrel management and rodenticide hazards.
<p>Trapping for ground squirrels</p>		
<p>12/5/13-TWIC 2/20/14-IPM 2/24/14-IPM 3/5/14-IPM 3/6/14-TWIC 10/9/14-TWIC 1/14/15-IPM 8/26/15-Email 2/17/16-IPM 7/20/16-IPM at several IPM Decision Making Meetings throughout 2018 1/17/19-IPM</p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"[PfSE] asked TWIC to instruct the Department of Agriculture and Public Works Dept to use trapping methods [for ground squirrels]"</p> <p>"Santa Clara spends only \$25/ground squirrel trapping & removal"</p> <p>"Isn't it worth the effort to learn how the other counties are doing using only trapping for ground squirrel control?" (10/9/14)</p> <p>"One cannot compare efficiency of our [County] staff applying rodenticides and compare that to them trapping and stacking up overtime costs during the learning curve...A good-faith comparison would have been to utilize expert trappers vs our staff applying rodenticides, and then comparing costs." (10/9/14)</p> <p>"[The IPM Coordinator] states that</p>	<ul style="list-style-type: none"> • In 2012, the Agriculture Department ran an extensive, in-house ground squirrel live trapping trial to determine the feasibility of using live traps to protect critical County infrastructure from ground squirrel burrowing. <ul style="list-style-type: none"> o The trapping was successful in that staff were easily able to capture 152 ground squirrels in the 1,200 linear foot trial area along a County road over the 5 day trial period. o The squirrels were euthanized on site by the California Department of Fish and Wildlife. o Unfortunately, squirrels from the surrounding area quickly moved into the vacant burrows. <u>This makes trapping ineffective in areas with surrounding pressure from ground squirrels.</u> o When the Department uses rodenticide bait, the squirrels do not move back into the vacant burrows for an extended period of time. The Department surmises that because baited squirrels die mostly in their burrows, the carcasses repel any newcomers. o The Department found that live trapping would be prohibitive. It would cost \$5,074/linear mile compared to \$220/linear mile using bait. The Department treats around 925 linear miles of roadway each year. o Note that along roadsides, the Department spreads bait in a 12 to 15 ft wide swath at a rate of 2 to 3 oat kernels per square foot only in areas where ground squirrels are active. This treatment method takes advantage of the natural foraging habit of the ground squirrel, an animal that is highly adapted to finding individual seed kernels on the ground. o The Department verified the expense by contacting 2 pest control contractors.

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	<p>the county would incur a charge of \$16,720 per linear mile for ground squirrel control if we paid a contractor who charges \$25/squirrel trapped. This is very speculative and we would like to see the county take bids from trappers and share the proposals with the Committee." (1/14/15)</p> <p>"Pilot Trial of rodenticides vs trapping done in 2012, biased & scientifically indefensible." (8/26/15)</p> <p>"Cost of trapping inflated." (8/26/15)</p> <p>"Trapping [for ground squirrels] costs about 50% more according to a Ventura County Ag Dept report, or approximately \$80,000 more for CCC." (7/20/16)</p>	<p>Using their fees per hour or per squirrel trapped, the Department estimated that the cost to use a contractor to trap ground squirrels would be between \$12,524 and \$16,700 per linear mile. This does not compare favorably to the Department estimate of \$5,074/linear if work were done by Department staff.</p> <ul style="list-style-type: none"> ○ <u>Note that at the \$25/squirrel rate quoted by PfSE, it would cost the County \$16,720/linear mile if the ground squirrel catch rate were similar to the 152 squirrels/1,200 linear feet.</u> This is 3 times more than it cost for Agriculture Department personnel to trap over a linear mile, so using a contractor would not save money, even if this method were effective. ○ We are assuming that Susan JunFish's 7/20/16 comment on the cost of trapping ground squirrels comes from the IPM plan for Rodent Control for Flood Control Facility Protection approved by the Ventura Board of Supervisors in December 2006. PfSE provided a copy of this IPM plan to the IPM Committee a number of years ago. In a table in that IPM plan, the county summarizes the costs for various treatments for grounds squirrels. The table makes it clear that the costs are "estimates [for] one treatment event for a typical [flood control] facility." The Ventura IPM plan estimates the cost of trapping to be almost 100% more than the cost of broadcasting diphacinone bait (\$1700 for baiting vs. \$2900 for trapping). Note that the report does not define the "typical facility", so it is not possible to compare their estimates to the actual costs experienced in Contra Costa County. Note also that Ventura did not run a trial prior to adopting their IPM plan to determine the real costs of trapping or whether that strategy could be effective within the 3 "treatment events" the IPM plan recommends. It is not clear how Ms. JunFish calculated the \$80,000 extra needed to trap ground squirrels in Contra Costa County. ○ One of the pest control contractors who was contacted for an estimate said he had also observed the ineffectiveness of trapping in areas with surrounding ground squirrel pressure. ○ The Department also observed some other unexpected outcomes: <ul style="list-style-type: none"> ▪ Traps were checked daily, but staff found squirrels bloodied and wounded from fighting with each other or trying to chew their way out of the traps. ▪ Traps were vandalized by the public even though large signs warned people to leave the traps alone. This exposed the public to health risks from bites and scratches and from transmissible diseases carried by ground squirrels. ○ In certain small areas that have a limited number of ground squirrel colonies, live trapping may be a viable alternative. • Santa Clara County Regional Parks find live trapping effective for their limited use of the method. They trap squirrels around Regional Park buildings to prevent undermining of foundations. This is a very small area compared to the hundreds of miles of roads involved in CCC. Park rangers are close by to educate the public and to observe the traps continually. This reduces vandalism and allows park personnel to have squirrels dispatched soon after they are trapped, which prevents harm to the squirrels from fighting or gnawing the cage. • In March 2006, the Ventura County Board of Supervisors directed county staff to avoid the use of anticoagulant rodenticides within county-owned properties and facilities. To address these concerns, the county hired a consultant and formed an ad hoc committee. The County developed an IPM program and as a result of a subsequent study, the ad hoc committee <i>and</i> the Board recommended broadcast

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		<p>baiting with diphacinone as the primary control method for ground squirrels. The Board approved this program in December 2006.</p> <ul style="list-style-type: none"> • The CCC Agriculture Department has also evaluated kill traps but has chosen not to use that method for many reasons, including the increased risk of taking non-target animals, the risk of injury to curious children, and the expense.
	<p>Burrowing rodent control</p>	
<p>1/20/17-IPM 11/16/17-IPM 1/17/19-IPM 2/21/19-IPM 3/11/19-IPM 4/25/19-IPM</p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>The IPM Committee should investigate the use of carbon monoxide for controlling burrowing rodents.</p> <p><u>"Dr Baldwin of the UC IPM Cooperative extension did a field trial on 120 acres of an almond orchard w/ serious ground squirrel problem in 2015 or 2016. Within a week, he concluded 100% kill rate. CO usage this way has been legal in CA since 2012 only. He believes that it is the most effective fumigant in dry soil conditions.</u></p> <p><u>In moist soil, aluminum phosphide works best although it is much more toxic when breathed in has more restrictions and permitting requirements that are required prior to usage. He found CO not as effective for gophers for some reason.</u></p> <p><u>I spoke with Alan Hurlburt@cot.net the proprietor of HMGophercontrol.com they sell PERC. 530-667-5181 based on the border of OR & CA & willing to give a talk. He recommends the \$10K model for our purposes. He sells the smaller \$5400 model too & willing to present a minimum of 20 min presentation. He will not haul a big apparatus down for a demo. There are service providers in our area that can do that as listed below. The county may want to have a pilot treatment conducted by one of these contractors prior to purchasing a</u></p>	<p>In 2017, the IPM Committee heard a presentation on the use of carbon monoxide and carbon dioxide for burrowing rodents.</p> <p>Dr. Roger Baldwin, from UC Cooperative Extension, gave the presentation on carbon monoxide (CO) and made the following points:</p> <ul style="list-style-type: none"> • His research was done in alfalfa fields, but it probably relates fairly well to rights-of-way. (In CCC, the greatest amount of rodenticide is used on rights-of-way to reduce damage from ground squirrels. A tiny amount of rodenticide is used in Special Districts for gophers, and no rodenticides are used in County grounds.) • Using CO in rights-of-way will cost more than it did in his alfalfa fields. Efficacy still varies tremendously from site to site. It works best when soil is moist and not sandy. • It takes 3-4 minutes to treat each burrow, and other openings must be covered with soil, so the gas does not escape. It would be difficult to try to dig up hard packed clay in the summer to cover burrow openings. Sand bags might work, but they are heavy and time-consuming to load, unload, and carry to and from the truck to each hole. <p>The Grounds Division Vertebrate Pest Manager already uses carbon dioxide to kill gophers and moles in County landscaping, in addition to trapping. In the summer of 2017, the Grounds Division hosted a demonstration of the carbon monoxide machine, which they are considering purchasing.</p> <p>Using either CO or CO₂ along County roads would likely be very costly due to the many miles of road and the many ground squirrel burrows along some sections of road. It would be most effective in the winter or spring when the soil is wet and prevents gasses from leaking out. The Agriculture Department, the entity that manages ground squirrels for the Public Works Department, is engaged in invasive weed control and other duties during that time of year and could not attend to ground squirrels as well. In August when the Department has traditionally handled ground squirrels, the soil is dry and hard. Gasses leak out in dry soil, and as mentioned above, covering holes would be challenging.</p> <p><u>In 2019, IPM Committee members spoke with staff at Los Vaqueros Reservoir about their ground squirrel management program which includes on-site relocations and grouting (burrow destruction). The reservoir staff does not use fumigation because of potential effects on nontarget animals inhabiting burrows. They also contacted staff from Modesto Irrigation District, Santa Barbara County Parks, Orange County Parks, and Clark Pest Control who employ carbon monoxide fumigation techniques. Committee members heard positive reviews from each of the agencies contacted but were not able to locate an operation who has experience deploying the system along roadsides.</u></p> <p><u>Wade Finlinson, Larry Yost, and Tanya Drlik met with John Gingrich from Gingrich Horticulture Services in early October to discuss his experience with a Pressurized Exhaust Rodent Controller (PERC®) machine. He initially purchased the device with</u></p>

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	<p><u>\$4.8K or \$10K equipment.</u></p> <p><u>This method is relatively new but reportedly working well. Not one has asked for a refund. It's also the only method that is approved by the U.S. Humane Society according to one of the contractors who use PERC.</u></p> <p><u>He claims that CO works even in porous soil b/c it takes less to kill than CO2 that does not work in porous soil. CO is cheaper than tanks of CO2. CO works in most any conditions.</u></p> <p><u>Over 1,000 Pressurized Exhaust Rodent Control PERC units were sold in North America, including 400 units in CA. Also being used by state agencies in OR, Idaho, WA, and Nevada. City of San Diego has 15...</u></p> <p><u>... I followed up with H&M Gopher Control Manufacturing and had the chance to speak with Alan Hulbert, the proprietor who is now 78 years old. He developed PERC or Pressurized Exhaust Rodent Controller... Their device is selling so well by word of mouth particularly by central valley public agencies who are using them along levees, tht he said he cannot kee up with the demand... One is Modesto Irrigation District who purchased many units for 208 miles of canals and pipelines... They had used the scatter rodenticide baits in the past that killed a dog that created very bad press after getting in the papers... using PERC is more time efficient than all the time it took to build the T bait stations and scatter baits then using PERC...</u></p> <p><u>...H&M claims that CO works well in porous soil since it does not require saturation like CO2 to kill and Dr. Roger Baldwin of the UC IPM Cooperative Extension presented this same result to the full IPM Advisory Committee</u></p>	<p><u>the aim of using it for gopher control at sensitive sites such as schools. That demand never materialized and the machine hasn't been utilized as much as they initially hoped. Mr. Gingrich verified that it was an effective tool whenever they had an opportunity to use it but was skeptical about its efficacy for treating ground squirrels near roadsides. He also raised caution about staff exposure to fleas when walking slowly around fields in addition to the hazards of staff breathing the fumes from the machine.</u></p> <p><u>During the Decision-Making Subcommittee meeting on 10/31/19 the Agriculture Department representative confirmed that it is not feasible or cost effective for them to provide CO services for ground squirrel abatement. The Subcommittee is now working to engage the Public Works Maintenance Division in discussing the possibility of implementing an early spring fumigation program—even if only on a pilot-basis—to supplement the Agriculture Department's current baiting practices along roadsides and Flood-Control channels.</u></p>

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	<p><u>several years ago and said he found 100% effectiveness using PERC for ground squirrel control in a highly valuable orchard that was over 100 acres..." (2/21/19)</u></p> <p><u>According to Roger Baldwin, a combination of approaches works best for controlling ground squirrels. The PERC machine is for large areas and there are models that cost \$6K, \$10K, and \$17K. The Burrow Rx costs \$2K and is for smaller areas. The County should have contractors come in and do trials. The County could buy a machine and rent it out to make money. (3/11/19)</u></p> <p><u>The County should contact other counties that have done their own cost estimates for the machines. (3/11/19)</u></p> <p><u>Susan JunFish offered to provide contact information for manufacturers of fumigation equipment. (4/25/19)</u></p>	
	<p>CCC is the only Bay Area county using rodenticides for ground squirrels</p>	
<p>12/5/13-TWIC 10/9/14--TWIC 7/20/16-IPM 1/17/19-IPM</p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"[Contra Costa is] currently the only Bay Area county to continue to use the archaic and non-specific to target pest method of rodenticides to kill grounds squirrels"</p> <p>"It's great that the Agriculture Department has decreased usage of rodenticides from 36,615 pounds [of treated grain] applied two years ago to 14,391 pounds [of treated grain] applied in the most recent fiscal year. However it is still 14,301 pound [sic] more of bait applied than all Marin, San Francisco, and Santa Clara</p>	<p>Note that CCC uses diphacinone-treated bait to protect critical infrastructure in the County from damage caused by ground squirrel burrowing. Diphacinone is a 1st generation anticoagulant that is less toxic and less persistent in animal tissues than 2nd generation anticoagulants. The Agriculture Department endeavors to maintain a relatively ground squirrel-free 100 ft buffer along various County roads (mainly in East County), along levees and railroad embankments, and around earthen dams and bridge abutments. To maintain this buffer, the Department treats a 12 to 15 ft. swath.</p> <ul style="list-style-type: none"> o Alameda County engages in a ground squirrel treatment program using diphacinone bait that is very similar to CCC. They treat roadsides and levees and Zone 7 Water District sites and use a similar amount of diphacinone-treated bait. • The City and County of San Francisco does not have ground squirrel problems to contend with; however, as of February of 2016, their IPM program allows the use of bromadiolone bait (a 2nd generation anticoagulant rodenticide) for rats at the SF Airport and by commercial lessees on city properties that are not adjacent to natural areas. Second generation anticoagulants are more toxic and more persistent in the tissues of poisoned animals than 1st generation anticoagulants, such as the diphacinone that CCC Department of Agriculture uses. Bromadiolone

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	counties combined that do not use any rodenticides at all in open space." (10/9/14)	<p>persists in liver tissues for 248 days compared to 90 days for diphacinone which makes sub-lethally poisoned animals walking hazards for predators much longer.</p> <ul style="list-style-type: none"> Note that as of February 2016, San Francisco allows the use of diphacinone for baiting rats in areas with high public health concerns and where trapping is infeasible. CCC uses only trapping to control rats and mice in and around County buildings. But note also that CCC is far less urbanized than San Francisco, and therefore does not have the same kind of severe pest pressure from rats. Marin and Napa County Public Works Departments reported that they have nowhere near the kind of ground squirrel populations that East Contra Costa County has, and consequently, they don't do anything about the few ground squirrels along their roads.
	The County should use volunteers and free labor	
12/5/13-TWIC 3/6/14-TWIC 2/17/16-IPM 11/16/17-IPM 1/17/19-IPM	<i>From Parents for a Safer Environment (PfSE):</i> The County should use free labor programs	<ul style="list-style-type: none"> This could be particularly helpful around County buildings. The Grounds Manager would welcome Parents for a Safer Environment (PfSE) volunteers to pull weeds at particular sites, but PfSE would first need to negotiate with the County to determine if PfSE volunteers would be permitted work on County landscaping. If the work were approved, PfSE would need to organize and supervise the volunteers. Note that County unions have protested the use of inmate labor for jobs that could be filled by union members. The union recently won a grievance against the Sheriff's Department regarding the use of inmate labor for grounds maintenance work. The union has filed a grievance against the fire department regarding the use of inmate labor to clear brush. The Grounds Manager does not anticipate that PfSE volunteers pulling weeds would precipitate these kinds of union actions. In the County's other IPM programs, using volunteers is more difficult. <ul style="list-style-type: none"> "Free" labor involves considerable County resources including outreach to solicit volunteers, planning and organizing work sessions, staff time for training volunteers, transportation of volunteers, equipment for volunteers and staff time for supervision. Almost all of the Agriculture Department's noxious weed program involves activity on private land or on lands that are not owned or managed by the County. Use of volunteer help in these areas would involve liability for those land owners or managers. Much of the Public Works Department's creek and roadside vegetation management involves work in dangerous areas such as roadsides or steep and rocky slopes and requires the use of hazardous equipment such as chain saws and brush cutters. County liability for volunteers performing this kind of work would be extremely high. The County's structural IPM program is not suited to the use of volunteer labor. Note that the County does use volunteers, most notably in creek restoration and clean up, for creek water quality monitoring and for outreach to the public about creek water quality and the value of healthy creeks and watersheds.
	Grazing has no significant impact on water quality	
12/4/14-TWIC 8/26/15-Email	<i>From Parents for a Safer Environment (PfSE):</i>	<ul style="list-style-type: none"> The County is aware that grazing does not have a significant impact on water quality. Economics and not water quality is the limiting factor in the vegetation management situations in the County. Public Works continues to expand its

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	<p>"...[I]n each of the four case studies, grazing had NO significant impact on water quality. It is my hope that this research can provide decision makers with confidence that managed grazing is an effective, economical and safe vegetation management tool along watercourses."</p> <p>"Small PfSE Pilot Trial in 2009 showed no contaminants downstream of grazing." (8/26/15)</p>	<p>grazing program where it is most appropriate and/or cost-effective, and grazing has become a permanent tool in the County's IPM Toolbox.</p>
<p>The County should expand goat grazing and competitive planting</p>		
<p>12/5/13-TWIC 3/5/14-TWIC 2/17/15-IPM 8/26/15-Email 7/20/16-IPM 5/11/17-IPM 11/16/17- IPM 1/17/19-IPM</p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"The County should expand the competitive planting and goat grazing programs"</p> <p>"[One decision-making document] asserts that goat grazing costs much more than herbicide spraying; however it appears the cost of grazing during the in-season are [sic] being compared with herbicide usage. Other case studies we are evaluating show that grazing is cost effective and even cheaper than herbicide usage." (2/17/15)</p> <p>Grazing costs are inflated and cost of herbicide use is deflated. (8/26/15)</p> <p>"With evidence that grazing causes no more damage and can be less expensive in the short term and also less risk to public health and the environment, we need to expedite moving away from herbicide usage and utilize more grazing." (7/20/16)</p>	<ul style="list-style-type: none"> • The County Flood Control District is partnering with Restoration Trust, an Oakland-based non-profit, in a native planting experiment along Clayton Valley Drain (near Hwy 4 adjacent to Walnut Creek). The study involves planting 2 species of native sedge and 1 species of native grass. These are perennial species that stay green year round and are resistant to fire. The plants are compatible with flood control objectives because they do not have woody stems, and during flood events, they would lie down on the slope, thus reducing flow impedance. They are not sensitive to broadleaf herbicides that will be needed to control weeds at least until the plants have spread enough to outcompete weeds. County volunteers installed the first plantings on December 7, 2013 • Note that it is conceivable that herbicides may always have to be used on these plantings to prevent the area from being overrun with weeds because the surrounding weed pressure is very high. • Restoration Trust will be monitoring the test plots through 2018 to assess the survival of the native plants and their degree of successful competition with non-native annual species. The County will gather information over the same time period to determine whether, how, and where to expand this kind of planting. The County cannot expand this project without data on its costs and viability. • Over the last 3 years, the Public Works Department has expanded its use of goat grazing considerably. In FY 12-13 they grazed 74 acres, in FY 13-14 they grazed 183 acres, and in FY 14-15 they grazed 367 acres. It is now a regular management tool for the Department. Every site the County manages differs in the ease with which goats can be used and their suitability for managing vegetation. The Department uses goats where they are appropriate and cost effective, and continues to gather data on costs and long-term effectiveness at individual sites. Cost is affected by many factors: <ul style="list-style-type: none"> ○ The size of the site—loading and unloading the animals is a fixed cost, so small sites cost more per acre than large sites ○ The ease of access to the site—the harder it is to get the goats into an area, the more expensive it is ○ The availability of water—if water must be trucked in, the cost is greater ○ The security of the site—the more fencing that is required and the more the fences must be taken down and erected within the site both increase the cost ○ The time of year—because of the law of supply and demand, cost is greater during the peak grazing season

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		<ul style="list-style-type: none"> ○ The presence of endangered species—sites with endangered species and other restrictions from the State Dept. of Fish and Wildlife are good candidates for grazing regardless of the cost • Although the cost of off-season grazing is less expensive than during the peak grazing season, Public Works cannot effectively manage all the weeds that grow in the Flood Control District only with off-season grazing. • In 2016 Public Works continued to use grazing wherever possible and to allow the grazer to stage goats on various channels and in detention basins in exchange for free vegetation management from the goats. • In FY 15-16 the County used goats to graze a total of 315 acres which included 158 free acres. Without the staging arrangement with the grazer, the County would have paid around \$950/acre for grazing. With the free acres, the cost came down to \$470/acre. This is twice what it costs to treat creek banks with herbicide (\$222/acre).
<p>Considering least-toxic alternatives before choosing pesticides</p>		
<p>12/5/13-TWIC 2/26/14-IPM 2/17/15-IPM 8/6/15-IPM 8/26/15-Email 11/4/15-IPM 2/17/16-IPM 11/16/17-IPM 1/17/19-IPM</p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>“Staff has still not demonstrated that for <i>each</i> pest control problem, least toxic alternatives were evaluated prior to choosing pesticides.”</p> <p>Estimates for costs of herbicide applications need to include cost of permits, tracking requirements, storage of chemicals, licensing, training, etc.</p> <p>“The IPM Advisory Committee has not yet reviewed several key data in the [decision-making documents] that justify using broadcast herbicide spraying along Right of Ways and rodenticide usage in open space.” (2/17/15)</p> <p>“Also, has the county investigated least toxic methods in accordance with the IPM Policy?” (8/6/15)</p>	<ul style="list-style-type: none"> • In 2012, the IPM Committee developed a form for recording IPM decisions made by the Departments. In 2013, each IPM program in the County produced at least 1 decision-making document for a specific pest or pest management situation (the Agriculture Department produced 2 documents that year). • These documents show which least-toxic alternatives are considered and tested, which are being regularly employed, which are not, and why. • In 2013, 2014, 2015, 2016 & 2017, each new decision-making document was extensively reviewed by the Decision-Making subcommittee with PfSE members in attendance. • Recording the thought processes and decision-making path for each pest or pest management situation takes considerable time (approximately 40 hours of work per document). • In 2014, the Decision-Making subcommittee reviewed and, after numerous revisions, accepted 4 more decision-making documents. These discussions were conducted in public with members of PfSE in attendance. • In 2015, the Weed subcommittee reviewed and revised 1 more decision-making document which covered how the County decides to use grazing as a management tool. • In 2014, the Cost Accounting subcommittee chose to research the costs associated with altering landscapes around County buildings to require less maintenance, less water, and less herbicide. The subcommittee concluded that this is a very worthy goal, but more complicated to achieve than expected. Sites must be considered individually because one plan will not fit all, and in the midst of severe drought, it is not the time to begin replanting. The subcommittee also explored the idea of replacing lawns with artificial turf, but decided that it is not the answer except in very specific, limited situations. Artificial turf has high up-front costs, still requires maintenance, can become infested with weeds growing in soil that accumulates on top of the mat, and has environmental consequences at the end of its life, • Herbicide treatment costs reported in IPM Annual Reports from 2013 onward include all associated costs mentioned by PfSE. When costs are compared in future documents, every effort will be made to include all related costs for both

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		pesticides and alternatives.
Excessive pesticide use in CCC		
<p>12/5/13-TWIC 2/26/14-IPM 12/4/14-TWIC 3/10/15-IPM 2/17/16-IPM 3/16/16-IPM 7/20/16-IPM 11/16/17-IPM 1/17/19-IPM <u>3/11/19-IPM</u></p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>Contra Costa County uses more pesticide than any other Bay Area County (or, than several Bay Area Counties combined)</p> <p>"lack of progress is evident in that the county has not significantly altered their use of pesticide since 2009"</p> <p>"The single most underlying problem I see in the IPM Program is that there is little to no leadership in guiding the County to reduce pesticides. (12/4/14)</p> <p>"Compare the quantity and the type of pesticides being used by neighboring counties of Marin, S.F., and Santa Clara Counties [sic] for the same pest problems." (2/17/16)</p> <p>"...I am concerned about the exponential increase of herbicides being applied by the Grounds program in the last fiscal year [FY 14-15]." (3/16/16)</p> <p>"The Right of Ways program of Public Works alone used over 10,200 lbs of pesticides last fiscal year, using 20 herbicides...These [sic] program needs review of why so much pesticides are required and at such high rates." (3/16/16)</p> <p>"...CCC Ag Dept's usage of the active ingredient diphacinone rodenticides in the last 5 years increased by 15% in open space, with a 90% increase between the last 2 years." (7/20/16)</p> <p>"The Public Works Department's Grounds Program in the last 5 years increased their herbicide usage by 73%. CCC Grounds program used 700% more herbicides than the counties of Santa Clara and Marin combined last year [presumably 2015] (600</p>	<ul style="list-style-type: none"> • The assertion that CCC uses more pesticide than any other Bay Area County, or other counties combined, is hard to evaluate since staff have not seen current pesticide use figures for County operations in other Bay Area Counties. • This could be researched, but would take time. It is difficult to compare counties, all of which vary greatly in their size, their budgets, their staff, their pests, their weather, and the kinds of responsibilities they choose to undertake. Staff feel that comparing pesticide use in various counties is not particularly relevant to how well Contra Costa County operations are implementing IPM. • In 2012 and 2013, the IPM Data Management subcommittee undertook to find additional metrics to evaluate the County's IPM programs. This proved to be a difficult task, and the committee's research did not discover any unique or innovative measures for evaluating IPM programs in other Bay Area counties, or across the U.S. • The subcommittee agreed that pesticide use data do not reveal whether the County is implementing IPM, and so in 2012, the subcommittee developed the IPM Priority Assessment Tool. This is a compilation of IPM best management practices (BMPs). The subcommittee asked the Departments to fill out the form in 2012 and 2013 and report the percentage of implementation of each of the BMPs. • It is important to understand that pesticide use can increase and decrease from year to year depending on the pest population, the weather, the invasion of new and perhaps difficult to control pests, the use of new products that contain small percentages of active ingredient, the use of chemicals that are less hazardous but not as effective, the addition or subtraction of new pest management projects to a department's workload, and cuts or increases to budgets or staff that change priorities or workload. • From FY 00-01 through FY 17-18, the County has reduced its pesticide use by 79% --from 18,931 lbs of active ingredient in FY 00-01 to 3914 lbs of active ingredient in FY 17-18. • Since FY 00-01, each Department has been evaluating its pesticide use and researching options for eliminating or reducing pesticide use. By 2015 County operations had eliminated the use of 24 of the 31 "Bad Actor" pesticides that they had been using and had reduced the lbs of "Bad Actor" active ingredients by 84%. • By 2018 County operations had reduced the lbs of "Bad Actor" active ingredients by 90.5%. • The County's pesticide use trend follows a trend typical of other pollution reduction programs. Early reductions are dramatic during the period when changes that are easy to make are accomplished. Once this "low-hanging fruit" has been plucked, it takes more time and effort to investigate and analyze where additional changes can be made. The County is entering this period, and if further reductions in pesticide use are to be made, it will require time for focused study and additional funding for implementation. • Note that County operations use about 2% of all the pesticide (active ingredients) that is required to be reported in the County. The total reported to the state does not include homeowner use, which researchers suspect is a considerable amount. • In FY 14-15, the Grounds Division used only 1/3 of the pesticide it used in FY 00-01. The amount used in FY 14-15 was 154 lbs. of active ingredient less than in FY

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	<p>lbs vs 100 lbs) even when Santa Clara county has at least 50% more grounds requiring management." (7/20/16)</p> <p>The Public Works Department's Facilities program manages pests in buildings and has been doing great until last year when insecticide usage inside building(s) [sic] went up past 8 lbs." (7/20/16)</p> <p><u>The Grounds Division needs to improve. What are they doing around clinics and Head Starts? (3/11/19)</u></p>	<p>13-14.</p> <ul style="list-style-type: none"> • In FY 14-15 the Public Works Roadside and Flood Control Channel Maintenance Division (the "Right of Ways program" that PfSE refers to) used 4,780 lbs. of pesticide active ingredients. This is a little more than ¼ of the pesticide they used in FY 00-01. • In FY 14-15 the Agriculture Department used 346 lbs. less of the anticoagulant diphacinone than the previous year. In FY 15-16, the Department reduced its use even further. In FY 14-15 the Department used 154.7 lbs of diphacinone and in FY 15-16 it used 76 lbs. Over the last 5 years, this is a dramatic decrease of 86% and a decrease of 95% from the 1420.7 lbs. used by the Department in FY 00-01. • The Grounds Division use of herbicide has indeed increased over the last 8 years. The Recession and its attendant budget cuts, along with decisions by the former Grounds manager to stop almost all herbicide use, contributed to several years of minimal use. Weeds and their seeds were not managed effectively for several years resulting in large weed and weed seed loads at many County properties. Over the last 6 years, the current Grounds Manager and his crew have been working very hard to reduce the weed pressure and improve the aesthetics of County landscaping. This has included the application of prodigious amounts of woodchip mulch and reducing irrigation to prevent weeds, but it has also meant the use of more herbicide. Inadequate budgets and staffing problems have made the recovery of County properties slow. Currently (2016) the Division is in much better shape and has enough money and almost enough staff to properly maintain County landscaping. As the crew reduces the weed load, they can more easily maintain relatively weed-free landscapes with physical methods such as hand-pulling and mulching. • Pestec, the County's structural pest management contractor that manages pests in and around buildings, has been battling very large ant populations the last 3 (2015-2018) years, and this has increased the amount of insecticide used. Insecticides for ants are all in the form of baits and pose very little exposure for County staff and wildlife. • <u>The Grounds Division does not apply herbicides around Head Start facilities. They have an internal procedure that relies on mechanical and cultural methods to manage nuisance vegetation. Head Start locations fall under the Healthy Schools Act (HSA), and their IPM plan is annually reviewed. Unless a clinic is housed in the same facility as a daycare or school, it is not subject to the HSA. IPM Program staff are currently convening a team of stakeholders to make sure Juvenile Hall is compliant with all aspect of the HSA.</u>
	<p>CCC should do more IPM training and outreach to County staff and the public</p>	
<p>12/5/13-TWIC</p> <p>2/17/16-IPM</p> <p>3/16/16-IPM</p> <p>11/16/16-IPM</p> <p>3/16/17-IPM</p> <p>1/17/19-IPM</p> <p><u>11/21/19-IPM</u></p>	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"the County IPM Coordinator and the IPM Advisory Committee [should] provide annual IPM training and outreach programs to both county staff and the public"</p> <p>The County should "provide training and conferences such as those conducted by Santa Clara</p>	<ul style="list-style-type: none"> • The IPM Committee is an advisory body to the Board of Supervisors and does not have a budget, nor does it have the staff or the mandate to provide outreach and training. • There is no need to duplicate San Francisco and Santa Clara's regional IPM conferences, and it would be impossible for the IPM Coordinator to do so without staff and budget. • In 2012, the IPM Coordinator partnered with cities in CCC to provide a half-day landscape IPM training to City and County staff and will probably do so again in the future.

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	<p>and San Francisco counties which train hundreds of interested participants.”</p> <p>“I would like to see Contra Costa County, with more resources than [Parents for a Safer Environment], facilitate some training for municipalities in our county for some of the toughest problems that trigger pesticide usage...” (11/16/16)</p>	<ul style="list-style-type: none"> • The IPM Coordinator provides extensive education in person and over the phone to County staff and Contra Costa citizens on bed bug awareness and an IPM approach to managing bed bugs. The IPM Coordinator produces educational materials on bed bugs for professionals and lay people. Materials are housed on the Health Services bed bug website (cchealth.org/bedbugs). • The Departments provide annual training to County staff that includes IPM. • County staff attend numerous trainings and conferences that include IPM training in order to stay current on pest management research and to maintain their various licenses. • The Department of Agriculture has a biologist on-call from 8 AM to 5 PM each weekday to answer questions from the public about pests and pest management. Biologists base their responses on IPM principles and on materials and resources from the U.C. Statewide IPM Program. • Every day in the course of their work, County staff from Public Works, Health Services and the Department of Agriculture engage citizens in dialog about the pest management work the County does and the IPM principles the County employs. • The Department of Agriculture provides many training sessions each year on pesticide safety (including IPM issues) to growers, farm workers, agencies, and the pest control industry. • The Department of Agriculture is a member of the <i>Egeria densa</i> Integrated Pest Management Committee and developed the Contra Costa Delta/Discovery Bay Region Brazilian Waterweed (<i>Egeria densa</i>) Integrated Pest Management Plan. • The County Clean Water Program sponsors an annual Bay Friendly Landscaping training for County staff and professional landscapers throughout the county. This training includes information about IPM and about reducing inputs into and outputs from landscaping activities to prevent pollution in creeks and the Bay. • The County Clean Water Program provides support for watershed coordinators and friends of creeks groups that coordinate volunteers to conduct general outreach to the community about water quality in creeks and the value and importance of wildlife habitat, watersheds, and creek restoration. • The County Clean Water Program provides support to the Bringing Back the Natives Garden Tour which educates the public about the many benefits of gardening with California native plants. • The County Clean Water Program supports the Our Water, Our World Program in Contra Costa County (a program originally developed by CC Central Sanitary District). This program provides in-store IPM education directly to consumers who are purchasing pesticides. IPM training is also provided for nursery and hardware store employees. • In 2014 the County Clean Water Program launched 3 other IPM and pesticide public education programs. • The Contra Costa Master Gardener Program trains volunteers with a curriculum that includes IPM. Master Gardener volunteers are available Monday through Thursday from 9 to Noon to answer gardening and pest management questions from the public. Advice is based on materials and resources from the U.C. Statewide IPM Program. Master Gardeners also provide presentations on gardening and IPM to a broad cross section of Contra Costa citizens. • The IPM Coordinator accepts many speaking engagements throughout the County

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		<p>and the region to provide training on IPM and especially on bed bug issues.</p> <ul style="list-style-type: none"> • The IPM Coordinator and other County staff have been working closely with cities to provide guidance on the bed bug infestations they are experiencing. • The IPM Coordinator is working with Code Enforcement in the City of Richmond to develop bed bug training for Code Enforcement officers throughout the state. • Every month the IPM Coordinator spends a significant number of hours talking with citizens about least-hazardous bed bug control. • The Agricultural Department represents the California Agricultural Commissioner's and Sealer's Association as the sitting member of the California Invasive Species Advisory Task Force. • In October 2013, County staff attended a Parents for a Safer Environment's IPM workshop and found it informative. Parents for a Safer Environment can provide a useful community service by hosting more such workshops. • In April 2014, the IPM Coordinator provided an in-person IPM tutorial for the Grounds Division's new spray technician. • In May 2014, the IPM Coordinator arranged an IPM workshop given by Pestec, the County's Structural IPM Contractor, for the County's Head Start Home Base educators. Pestec presented information on how to prevent pests in the home and simple, non-toxic strategies for low income families to use to combat pest invasions. Home Base educators provide in-home education to Head Start families. • In May 2014, the Contra Costa Environmental Health Division sponsored a workshop on IPM for bed bugs for County Environmental Health Inspectors and code enforcement officers in Contra Costa municipalities. • In July 2014, the County hosted a presentation by the U.C. Horticultural Advisor on how landscapes should be managed during drought and how to plan landscapes for what is likely to be continual droughts. County staff, both administrators and maintenance personnel, along with park personnel from the city of Danville attended. • In July 2014, the IPM Coordinator provided a bed bug awareness training for the residents of Meadow Wood at Alamo Creek, a senior living facility in Danville, along with subsequent consultation with individual residents and staff. • In September 2014, the IPM Coordinator provided the Greater Richmond Interfaith Program with assistance for a bed bug infestation at their Family Housing Program. • In February 2015, the IPM Coordinator met with staff at the Bay Area Rescue Mission in Richmond to discuss bed bug prevention. • In June 2015, the IPM Coordinator completed an IPM Guidance manual for municipalities in Contra Costa County with help from Beth Baldwin of the County Clean Water Program and Stephen Pree of the City of El Cerrito. The three had worked for 2 years to develop IPM guidance for cities on implementing IPM and to develop standard operating procedures for various pests. The three presented an IPM workshop for municipal staff that included information on how to use the manual and resources available to them within the County. • In November 2015, the IPM Coordinator and Luis Agurto from Pestec provided a bed bug training for County Adult Protective Services staff who have been encountering bed bug problems in their clients homes more frequently.

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		<ul style="list-style-type: none"> • In April 2016, the IPM Coordinator helped arrange a County-sponsored Bay Friendly Landscaping refresher training at the Pittsburg Civic Center open to all Bay Friendly certified landscaping professionals in the County. • In April 2016, the IPM Coordinator and Luis Agurto from Pestec provided a bed bug awareness training for staff from the Behavioral Health Division. • In May 2016, the IPM Coordinator arranged a talk on mosquitoes as vectors of disease by Dr. Steve Schutz of CC Mosquito and Vector Control for the IPM Advisory Committee. • In May 2016, the IPM Coordinator gave a class in home and garden pests at the Gardens at Heather Farms for the general public. • In May 2016, the IPM Coordinator helped arrange a talk at the Richmond Civic Center on vertebrate pest management for County and municipal staff and professional landscapers. • In May 2016, the IPM Coordinator provided a bed bug prevention training to the County's Discovery House staff. • In June 2016, the IPM Coordinator and Carlos Agurto from Pestec provided a bed bug prevention refresher training to the Concord Homeless Shelter and Calli House youth shelter staff. • In July 2016, the IPM Coordinator provided bed bug prevention trainings for both Adult Mental Health and Older Adult Mental Health staff. • In August 2016, the IPM Coordinator provided bed bug prevention trainings for the Behavioral Health safety coordinators and for a group of board and care owners and managers. • In October 2016, the IPM Coordinator provided a bed bug prevention talk for homeless care providers, worked with the City of Richmond to create a plan for managing bed bugs in their city, and talked to staff at 1650 Cavallo about preventing ant infestations. • In January 2017, the IPM Coordinator gave a presentation on bed bugs for a group home in Antioch. • In February 2017, the IPM Coordinator provided the IPM presentation for the Bay Friendly Landscaping training in Concord. • In February 2017, the IPM Coordinator gave a bed bug talk at a home for HIV patients in El Cerrito. • During the spring of 2017, the IPM Coordinator consulted on a project of the Alameda County Healthy Homes program to create a three-part online training series on IPM for landlords and property owners. • In May of 2017, the IPM Coordinator participated in a bed bug investigation of a motel in Richmond and helped to educate the owner about bed bug prevention. • In August, the IPM Coordinator gave a bed bug awareness presentation to WIC staff. • During the summer of 2017, the IPM Outreach subcommittee of the IPM Advisory Committee developed a short presentation on pest management in homes for County in-home visitors. The subcommittee has three presentations scheduled through the end of 2017, and will be contacting additional groups for presentations in the new year. As of November 2018, the subcommittee had given 14 presentations which trained 233 in-home visitors about the risks of pests and pesticides in the home and explained prevention and control measures for

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		<p>common pests.</p> <ul style="list-style-type: none"> • In August of 2017, the IPM Coordinator and Carlos Agurto from Pestec, the County's structural pest management contractor, provided a bed bug prevention training for Calli House Youth Shelter staff. In September, the IPM Coordinator provided a bed bug prevention presentation for WIC staff. In January and March 2018, Pestec and the IPM Coordinator provided additional training for all staff from all of the County shelters. They had provided this training in the past, but will now provide it at least annually to make sure new staff understand the threat, how to take precautions, and how to prevent infestations. • During 2018, the IPM Coordinator and members of the IPM Advisory Committee gave outreach presentations to 235 County staff and volunteers to help them assist their clients with pest management issues in the home. • <u>In early February 2020, the IPM Coordinator convened a carbon dioxide injector demonstration of a device that may help reduce problematic populations of ground squirrels around County Facilities. Personnel from the Public Works and Agriculture Departments were present, and received two hours of continuing education units from the California Department of Pesticide Regulation.</u> • <u>The IPM Coordinator will be requesting continuing education units for several IPM Committee meetings and other training events scheduled for 2020.</u>
Violations of the Brown Act		
12/5/13-TWIC 3/2/15-TWIC 8/6/15-IPM 2/17/16-IPM	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"continued violations of the Brown Act including repeated disposal of original meeting minutes, repeated failure to provide public records at all or much later than 10 working day, and meeting minutes that do not accurately reflect comments made or not made by participants"</p> <p>"our county's IPM policy and the Public Records Act have been violated at least on a quarterly basis by staff since 2009." (3/2/15)</p> <p>"We are still waiting to learn where Fusilade II Turf and Ornamental herbicide had been applied by the Grounds Program in the past years" (8/6/15)</p>	<ul style="list-style-type: none"> • Staff always respond within 10 days to public records requests. In almost all cases staff respond within 1 to 3 days. The only reason for delay has been to find and collect documents that have been requested. • The County takes public records requests seriously and responds promptly to each one. • Hand written meeting minutes are recycled after official minutes have been typed up. Official minutes, once approved by the IPM Committee, are posted on the IPM website. • The IPM Committee approves the minutes for each meeting. The public is provided time to comment on the minutes, and as the IPM Committee sees fit, the minutes are corrected. • Staff are ready to respond to any specific instances or claims of Brown Act violations. Staff maintain written logs of all public records requests. • On July 8, 2015 Susan JunFish formally requested information about Fusilade use by the Grounds Division. On July 16, 2015 the IPM Coordinator provided her with a chart, created for her, showing how much and where Fusilade was used (0 used in FY 12-13 and FY 14-15 and 0.1 pound used once in a parking lot in FY 13-14).
Financial incentives to serve on the IPM Committee/Conflict of interest on the IPM Committee		
12/5/13-TWIC 1/14/15 IPM 3/2/15-TWIC 2/17/16-IPM	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>The County should "discourage financial incentives of [IPM Committee] applicants by providing a minimum of a 5 year moratorium for those who serve to</p>	<ul style="list-style-type: none"> • Staff disagree that there are any kinds of financial incentives to serve on the IPM Advisory Committee, but will defer to the Board of Supervisors on whether to impose such a moratorium. • If the public has evidence of financial incentives for serving on the IPM Committee, we request that they bring that evidence forward. • Michael Baefsky was not a member of the IPM Advisory Committee when he was asked to contract with General Services to advise the County on non-chemical

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	<p>be eligible for receiving a county contract or any funding"</p> <p>"In 2009, Michael Baefsky, a community representative of the IPM Advisory Committee received a contract with the former General Services Department according to a document from Terry Mann, former Deputy Director of the General Services Dept. After receiving that contract, Mr. Baefsky's behavior on the Committee changed significantly."</p>	<p>methods to manage weeds on the Camino Tassajara medians in 2009. His contract ended in 2009. That year he attended meetings of the IPM Task Force, an informal body with no official appointees. The IPM Advisory Committee was not created until 2010, and he was appointed by the Board to an At-Large seat in 2010. He has held no contracts with the County since 2009.</p> <ul style="list-style-type: none"> The IPM Committee bylaws state the following in sections III.B.2&3: <ul style="list-style-type: none"> "Contractors who provide pest management services to the County may not serve on the Committee. The exception is A.1.d., above, the Current Structural Pest Management Contractor with General Services Department. "If a member's work status or residence changes, he/she must notify the Committee in writing, within thirty (30) days of their change in status. The Chair will review the change of status and determine if the member is still eligible for membership according to these by-laws. If they are found to be ineligible, the member will be asked to resign his/her position."
Monetary compensation or gifts from pesticide salespeople		
12/5/13-TWIC 3/2/15-TWIC	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>"We are requesting that TWIC require that all staff involved in ordering pesticides from salespersons fill out a form disclosing any monetary compensation or any other forms of gifts from pesticide salespersons"</p>	<ul style="list-style-type: none"> County staff do not receive (and have not been offered) gifts or compensation in any form from pesticide salespeople or any other salespeople. Accepting gifts or compensation would be against County policy⁵ and would subject staff and their departments to disciplinary action If the public has evidence of County staff taking bribes, we urge the public to provide that evidence for investigation.
IPM Committee did not accept all of Parents for a Safer Environment's priorities as their own		
2/12/14-TWIC 11/16/17-IPM 1/17/18-Email 1/18/18-IPM	<p><i>From Parents for a Safer Environment (PfSE):</i></p> <p>The IPM Committee is planning to include only 70% of PfSE's priorities as the Committee's priorities for 2014</p> <p>Taking PfSE's priorities into consideration (11/2017 & 1/2018)</p>	<ul style="list-style-type: none"> The IPM Committee devoted more than an entire meeting to the discussion of its work priorities for 2014. The public was fully involved in the discussion and PfSE provided documents and testimony detailing their own priorities. The Committee had a thorough discussion and then voted on which priorities to pursue. The IPM Committee continues to hear from PfSE about, and involve them in, setting priorities for the Committee (11/2017 and 1/2018).

⁵ California Government Code § 1090 prevents county employees and officials from being "financially interested" in any contract made by them in their official capacity, or by anybody or board of which they are members.

California Government Code § 81000 et seq., known as the Political Reform Act, requires, among other things, that certain public employees perform their duties in an impartial manner, free from bias caused by their own financial interest. See Cal Gov Code § 81001(b). It also prevents certain employees from using their positions to influence county decisions in which they have a financial interest. See Cal Gov Code 87100. The Act also requires certain employees and officers to file a Form 700, Statement of Economic Interests (the CCC Agricultural Commissioner, the managers in Public Works and the IPM Coordinator fill out this form) See Cal Gov Code 89503.

CCC Administrative Bulletin 117.6, paragraph 6, can be read to prevent employees from accepting any gift which "is intended, or could reasonably considered as tending to influence business or applications pending before the Board of Supervisors."

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IPM Coordinator references statements by members of Parents for a Safer Environment that were never made		
3/2/15	<i>From Parents for a Safer Environment (PfSE):</i> “PfSE members also feel a lack of goodwill and collaboration when the IPM Coordinator references statements by members that were never made. For example, in the Response Table, it states that a PfSE member stated at the February 12, 2015 [sic] TWIC meeting that ‘The IPM Committee is planning to include only 70% of PfSE’s priorities as the Committee’s priorities for 2014.’ We would be thrilled if this was the case...”	<ul style="list-style-type: none"> • In her written public comments to TWIC on February 12, 2014, Susan JunFish states: “We believe that the Committee is planning to address about 70% of the priority issues the community has raised, so we are hopeful. The two areas where there has been no plan to address are columns 4 and 5 of the table.”
The IPM Committee needs a non-voting facilitator		
2/12/14-TWIC 3/2/15-TWIC	<i>From Parents for a Safer Environment:</i> “an impartial, non-voting facilitator would make the meetings run smoother and become more viable”	<ul style="list-style-type: none"> • Staff believe that meetings are run effectively and efficiently. • The new IPM Committee chair has been very effective at running the 2014 and 2015 IPM Committee meetings and allowing the public ample opportunities to provide comment.
Parents for a Safer Environment disagrees with responses to “unresolved” issues in the Triennial Review Report		
11/6/13-IPM 2/12/14-TWIC 3/5/14-IPM 3/2/15-TWIC	<i>From Parents for a Safer Environment:</i> Disagreement with the response by staff to “unresolved issues” in the Triennial Review Report for the IPM Advisory Committee	<ul style="list-style-type: none"> • The response in dispute refers to the question in Section VIII of the Triennial Review report to the Board of Supervisors from the IPM Committee: “The purpose of this section is to briefly describe any potential issues raised by advisory body members, stakeholders, or the general public that the advisory body has been unable to resolve.” • The response given to this question in the report accurately reflects the response intended by the IPM Committee as agreed at their November 6, 2013 meeting. • The Triennial Review Report has been accepted by TWIC and the BOS, and the IPM Committee cannot go back and change the report. • The issue in question for the IPM Committee was whether to describe in Section VIII only issues that the Committee had been unable to resolve, or to also include a discussion of issues that PfSE felt were still unresolved. The Committee debated this and decided to also include a discussion of issues that PfSE felt were unresolved. However, it was completely clear from the discussion at the meeting that the Committee agreed that the issues described in this section (with the exception of the two that were noted as ongoing) had previously been given due consideration by the Committee, and that the Committee had addressed the issues. The Committee directed the IPM Coordinator to meet with the Committee

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		<p>Secretary to compile Committee and staff responses to the “unresolved” PfSE issues to include in the report and then to submit the report.</p> <ul style="list-style-type: none"> Note that in the IPM Committee’s extensive planning sessions for 2014 work, the Committee did not identify any of the “unresolved” issues as priorities for 2014.
	<p><u>The IPM Website is not current.</u></p>	
<p><u>5/16/19</u></p>	<p><u>From Parents for a Safer Environment (PASE):</u></p> <p>“Currently the county’s IPM website is far behind in being current. Specifically, there is no annual report, whether the 2018 report that was recently approved, or any of the older reports. As Shirley Shelangoski has presented several times in the past years, the website is far from being transparent and informative. Please place this item on the agenda so that there could be clear delineation of the timing and what documents should be on the IPM website for the new IPM Coordinator. Second, the most recent pesticide usage by county depts. Is dated as FY 14-15. We need to upload the FY 17-18 usage spreadsheet. It’s sad that even PASE’s website has that document uploaded. It took only 5 minutes and there’s no reason to not have these documents on the website as agreed in past IPM Advisory Committee meetings. Third, all the pesticide use reports can easily be uploaded as one pdf file. They should be available for the community to see.” (5/16/19)</p>	<ul style="list-style-type: none"> <u>The 2018 annual report was added to the website shortly after this concern was expressed. The IPM Coordinator acknowledges that many website updates are needed and plans to prioritize these updates in the coming months.</u>
	<p><u>Request for Public Works Maintenance Division to Report on non-chemical Vegetation Management</u></p>	
<p><u>5/30/19-IPM</u></p>	<p><u>From Parents for a Safer Environment (PASE):</u></p> <p>Susan JunFish requested that the Maintenance Division provide a report on the efficacy of weed management without pesticides during 2018 (5/30/19)</p>	<ul style="list-style-type: none"> <u>The Decision-Making Subcommittee made a similar recommendation in their annual report and that recommendation to the Public Works Department is also included in the in the annual report which was approved by the IPM Advisory Committee on 11/21/19.</u>

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	<p><u>Request for Public Works Maintenance Division to Report on non-chemical Vegetation Management</u></p>	
<p><u>9/26/19-IPM</u></p>	<p><u>From Parents for a Safer Environment (PASE):</u></p> <p>Karolina Park referenced comments made by Public Works Staff in the 8/8/19 Subcommittee meeting regarding the eradication of <i>Dittrichia</i> in roadways by hand not being feasible or cost effective. She requested that an article by Chuck Morse published in the Cal-IPC News be added to the record for the 9/26/19 meeting. The article was from the Spring 2013 issue and described the efforts of the Mendocino County Department of Agriculture to control the spread of <i>Dittrichia graveolens</i> (stinkwort) in that jurisdiction.</p>	<ul style="list-style-type: none"> • The article was included in the meeting minutes of the Decision-Making Subcommittee meeting of 9/26/19. Additionally, the IPM Coordinator spoke with Mendocino County Department of Agriculture staff to find out the current status of the program. While the first few years of this effort seemed to initially slow the spread of stinkwort in Mendocino County, the species' coverage in the county has increased. They no longer use hand-pulling as a major form of control. • The topic of <i>Dittrichia</i> was discussed at a Regional IPM Coordinator's meeting on 11/22/19. Representatives from multiple public agencies throughout the Bay Area indicated that it is becoming a major problem and hand-pulling is not considered a viable solution at the jurisdictional scale, although some agencies have successfully contained populations at some parks and open space areas though the efforts of volunteer groups.