

Appendix A: Meeting and Workshop Notes



**Working Group Meeting #1
September 3, 2009**

Meeting Notes

Working Group Members Attended:

- Dee Swanhuysen
- Matt Tuggle
- Dan Sykes
- Brian Miller
- Eliot Hurwitz
- John Woodbury
- Keith Wayne
- Mick Weninger
- Carol Day
- Kathy Hoffman

Staff and Consultants Attended:

- Jeff Peters, Questa
- Margaret Henderson, Questa
- Robert Guerrero, STA
- Sara Woo, STA

I. Introductions

STA provided introductory remarks on purpose of the meeting and a brief overview of the project. STA staff also discussed the role of committee members in reviewing and making recommendations on the development of the plan as well as any recommendations that should be included in the plan.

Working group members exchanged introductions and provided a statement of what they thought were important issues as well as what they or their agency would like accomplished through the plan.

STA staff led a discussion on the need/importance of having this joint working group of the cities, counties, Ridge Trail, Solano Transportation Authority, Napa County Transportation and Planning Agency, and Caltrans to build consensus for the development of the project's Goals and Objectives and any identified Alignment recommendations. The group's consensus was that the unified plan will be critical in securing future funding for various improvements along the corridor.

II. Project Background/Purpose and Need

Questa provided an overview of project in a PowerPoint presentation. It was noted that despite the challenge of finding an alignment for a separated Class I trail due to physical,

environmental and ROW constraints, there are also many opportunities. Questa explained that the planning effort is to determine if an alignment is possible and to develop a joint recommendation.

III. Scope of Services

Questa discussed their role in the development of the plan and emphasized their goal to work with the agencies to develop a coordinated plan along the corridor that will assist each agency in addressing their needs for non-motorized travel along the SR12 – Jameson Canyon corridor. The following topics were also discussed:

- Questa reviewed the status of Hwy 12 improvement plans and construction schedule and summarized recent meeting with Mark Thomas Co. engineering preparing plans.
- Questa is currently working on opportunities and constraints analysis for trail alignment and requested map information and input from committee members.
- The group discussed the importance of identifying who will be responsible for patrol, maintenance, repair, etc. It was noted that although current park and recreation policies may not include maintenance of the path, it could be recommended for future implementation.
- Some discussion of project objectives, the group will need to help answer the question of whether the alignment will be a recreational trail, a bike trail for transportation purposes to get between points, or multi-use. Also noted that the Hwy 12 Road Widening project will have Class II bike lanes.
- Discussion of potential use of water lines for trail alignment. This was shown on a previous Napa County Bike Plan. This includes City of Vallejo lines on south side of Hwy 12, and State Water project lines on north side. Questa talked to City of Vallejo, who indicated that it was likely infeasible for trail alignment within their ROW as they have sub-surface easement only, surface rights only for maintenance and repair. City also knew State project ROW was sub-surface easement only. John W. and others mentioned that both City of Napa and American Canyon own property and have ROW associated with water supply.
- Discussion of likely location of Ridge Trail, along Kirkland Ranch Rd. area, which is west of what is shown on conceptual ridge Trail Plan for this area. Caltrans and Napa Sanitation District also own land in this area that should be examined.
- Discussion of rail corridor and possible use as a trail corridor. This will be challenging, as is still an active freight line. Several previous studies of corridor indicate it has some potential for consideration as ROW is wide and Caltrans indicated in study it is a good candidate for trail use, but this was a state wide study, so depth of analysis uncertain.

- Discussion on status of the two connectors, at east and west ends, including Hwy 29, and I-80/I-680. Elliot will provide information on Hwy 12/29 connection, and ped/bicycle considerations.
- Elliot mentioned Napa Co. Bicycle Plan being updated next 12-15 months.
- Regional Connections. Much discussion on need to not only show potential Jameson Class I alignments, but also regional picture, and regional trail connections. Questa will need to increase view window or have two exhibits/maps, one showing a regional view stretching from American Canyon to south City of Napa and west to Napa River. Certain key connections to Bay Trail and important Open Space areas need to be shown; Newel Park, Napa River Bay Trail, Vallejo Lakes and Green Valley Falls, Lynch Canyon, etc.
- Discussion of Large Mammal Undercrossing. Much discussion on importance of the undercrossing. Questa confirmed it is included in the design of Hwy 12 improvements. Suitable for use as a ped/bike crossing, but will likely have a natural bottom. Drainage culvert is separate. Design is only within Caltrans ROW so how connection is made to north, south, east, and west is open for discussion and may be challenging.
- Discussion of Trail surfacing; Dee S. mentioned that Ridge Trail prefers no paving for more open space experience. Others pointed out importance of firm paved surface for road bikes in long distance ride/commute mode.
- Discussion of Newel Open Space Park. Another potential key connector between Jameson Canyon and Bay and Ridge trails. City of American Canyon has a Master Plan for this area. Connection across private RXR crossing is an issue to be resolved.
- Discussion of Lynch Canyon Open Space area. Need to investigate as possible connection. Solano Land Trust owns the open space area; County Parks manages it in an agreement that runs through June 2010. Funding for patrol and maintenance is a concern.

IV. Project Schedule

Information submittals to Sara/STA by Sept. 10th

Committee members are to try to provide useful information, such as local trails and trail connections in key areas to STA by Sept. 10. Sara will contact committee members with follow up items. Electronic information such as GIS shape files is preferred.

V. Agency Objectives

The committee members expressed the importance of being able to work together to develop a plan that incorporates the ideals of each agency while accomplishing a uniform plan.

VI. Committee Member Comments and Items for Next Agenda

It was the consensus of the committee to review a draft set of goals and objectives based on current goals and objectives identified in current plans. Committee will also go over a

presentation of draft Regional Bike/Ped connections map and provide comments, but likely take no action on it, other than providing comments and input.

VII. Adjournment and Next Meeting Date

Next Committee Meeting mid- to late October.

Draft Goals and Objectives will be prepared as an Action item for Committee to review at the next meeting. Questa will have an updated map to show regional trails and open space areas as well as possible connections as an information item for review.

Follow Up Items:

Comments/Suggested Resources from Working Group Members:

1. Protected Lands Database (GIS) information – John Woodbury
2. Land ownership data (Solano County); Questa has information for the properties along the corridor only
3. Kirkland Ranch area information should be obtained from John Woodbury
4. Solano County parcel data (everything on map + ½ mile south, include piece of Ridge Trail Crossing American River) – Matt Tuggle
5. Bay Trail and Ridge Trail routes – Dee Swanhuysen
6. Any changes in Bay Trail and Ridge Trail data in Napa – Dee Swanhuysen
7. Future operational and maintenance policy questions in Solano County can be answered by Dan Skyes
8. Status of the train activity – Questa
9. City of Fairfield comments will be sent to STA staff by Brian Miller (delivered to STA staff on week of September 14th)
10. Caltrans exemption for width and design – Keith Wayne
11. Include examination of equestrian access – Questa
12. Revise “Project Description” page to a one-page “outreach” handout for working group member use in coordinating efforts – STA

Next Steps: Map, Goals and Objectives (action item, October meeting), Handout (action item, October meeting), Potential Alignments (info item, October meeting), Field Trip (TBD)



**Working Group Meeting #2
November 12, 2009**

Meeting Notes

Working Group Members Attended:

- Dee Swanhuysen, Bay Area Ridge Trail
- Matt Tuggle, Solano County Public Works
- Dan Sykes, Solano County Parks and Recreation
- Brian Miller, City of Fairfield Planning
- Eliot Hurwitz, Napa County Transportation Planning Agency (NCTPA)
- Keith Wayne, Caltrans D4 Community Development
- Glen Grant, STA BAC
- Mick Weninger, STA BAC
- Carol Day, STA PAC
- Mark Lucas, NCTPA BAC
- Rick Warren, NCTPA BAC

Staff and Consultants Attended:

- Jeff Peters, Questa
- Margaret Henderson, Questa
- Robert Macaulay, STA
- Sara Woo, STA

I. Introductions

STA provided introductory remarks on purpose of the meeting and a brief overview of the project.

II. Approval of Notes from the Previous Meeting (09/03/09)

With a motion by Dee Swanhuysen and a second by Brian Miller, the group reviewed and unanimously approved the meeting minutes.

Clarifications:

- a) Keith Wayne is *Planning and Pedestrian Coordinator*
- b) Discussed Design Exceptions; any project on Caltrans ROW must be designed in accordance with Chapter 1000 of Caltrans HDM, or there is a formal exception process
- c) Request for clarification about whether pedestrians are allowed on Class II facilities (SR12 Bike lanes); S. Woo to follow up.

III. Plan Goals and Objectives

The Plan Goals and objectives were discussed individually, and a revised copy including comments from the meeting is attached.

Place emphasis on the fact that the project should be the Jameson Canyon Corridor, not Road on all documents/plans sheets, as trail could be located within a much broader study area than the immediate road ROW.

Project purpose is safe connectivity and regional connections.

Dee stated that she would like to see the study findings get incorporated into all Plans.

There was some discussion to make sure that mountain bikes are specifically addressed as the needs and demands are different than road bikes.

There was a discussion about accessibility, S. Woo to check with Coastal Conservancy regarding ADA language.

IV. Informational Public Outreach Flyer

Hold off on public meeting schedule until advisory committee has an opportunity to visit the study area and review issues.

The committee suggested the use of the flyer as informational to the general public, remove references to road improvements, perhaps use regional trails map as base.

Field Trip

V. Regional Map for SR12 Jameson Canyon Road Bicycle and Pedestrian Plan

The working group reviewed draft regional trails map, various committee members provided comments on individual areas. The consensus of the committee was to update the map to show existing vs. planned with solid vs. dashed line work and in legend. Ridge Trail suggested the addition of showing dedicated trail areas.

The working group discussed possible group field trip and safety considerations. The group also discussed an alternative to possibly providing a map showing numbered safe stops with a key. This would enable individuals on committee to drive on their own and get out and look at specific issues in addition to a group tour for the areas requiring permission.

Follow Up Items:

Comments from working group members:

1. Revise flyer as directed
2. Identify locations and get permission for field trip (Dee will contact some property owners)

3. Revise goals and objectives (attached)
4. Identify possible date for public workshop (March 2010)
5. Next meeting to be December 10, 9 AM

Next Steps: Field Trip/Tour, update on SR12 Jameson Canyon Road Widening project schedule, Potential Alignments, public outreach strategy.



**Jameson Public Workshop
October 19, 2010**

Meeting Notes

Following introductions by Sara Woo and Robert Macaulay, Jeff Peters gave a presentation outlining the project purpose and information gathered to date:

- The purpose of the Plan is to identify a workable route(s) that will connect Solano County in the vicinity of Red Top Road with Napa Valley/Hwy 29.
- Agencies including STA, Caltrans, NCTPA, Napa County, Solano County, Fairfield and Bay Area Ridge Trail Council have partnered to sponsor the Plan, and it is envisioned that each agency will adopt the Plan and participate in implementation.
- An off-street shared use path within the Canyon is already a component of many adopted Plans. This examines potential routes, identifies opportunities and constraints for development, and identifies potential connections to the Ridge Trail and other trails.
- The area was evaluated in segments according to topography and landform, west to east and north to south.
- Opportunities and constraints include slope, landslides, flooding, sensitive plant and wildlife areas (including presence of California red legged frog in northeast portion of study area), and land ownership.
- Some properties have conservation easements that may allow trails.
- Potential alignments were mapped according to constraints:
 - Green – easy to construct
 - Yellow – moderate issues
 - Orange - difficult to construct
 - Red – not feasible, or does not meet project goals
- Class II bicycle lanes will be provided as part of the SR12 project. This study focuses on a separated shared use path outside the SR12 traveled route.
- Next steps will include alignment selection, adoption by individual agencies, environmental review and implementation of individual segments.

Bob Tuteur asked if the study includes equestrians for all of the areas. (Note: The study scope is for bicycle and pedestrian connections, with consideration of SR12 crossing options for equestrians, where feasible.)

Mr. Tuteur also noted that Jameson Canyon is sparsely populated and a bicycle/pedestrian path is not a likely transportation mode for them. The focus would be on recreational use.

A far north route was explained further (Polson/Mason Road connection). (Note: These are private roads, and it is not feasible to meet ADA guidelines for accessible trails in this area.)

There was some discussion of potential SR12 crossings, as well as the SR12 large mammal crossing. Although the crossing will be built, ramps and connections to the crossing are not part of the project.

Potential rail crossings are also an issue, as most road and trail projects require grade separation. This will occur at Red Top Road as part of the 80-680-12 project (not currently funded), but conversion of that crossing has been committed elsewhere.

It was asked if the trails and paths would be suitable for use by emergency vehicles, because that might be an incentive to the property owner to have improved emergency/fire access.

Appendix B: Special-Status Species

Table 4-13 Special-status Plant Species with Potential to Occur within the Project Biological Study Area

Scientific Name	Common Name	Status*	Habitat Description	Specific Habitat Present/Absent	Species Presence/Absence ¹	Rationale
<i>Amorpha californica</i> var. <i>napensis</i>	Napa false indigo	CNPS 1B.2	Broadleaved upland forest, cismontane woodland and chaparral. 120-2,000 m (394-6,562 ft)	Present	Absent	Low probability of occurrence. Limited broadleaved upland forest (Coast Live Oak Woodland) present in project BSA.
<i>Aster lentus</i>	Suisun Marsh aster	CNPS 1B.2	Marshes and swamps (brackish and freshwater) 0-3 m (1-10 ft)	Present	Absent	Low probability of occurrence. Wetland habitat present within project BSA.
<i>Astragalus tener</i> var. <i>tener</i>	Alkali milk-vetch	CNPS 1B.2	Alkali playa, vernal pools, valley and foothill grassland. 1-170 m (3-558 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland and very small amount of Alkali Grassland present within project BSA.
<i>Atriplex cordulata</i>	Heartscale	CNPS 1B.2	Chenopod scrub, meadows, valley and foothill grassland. 1-375 m (1-1230 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland present within project BSA; very small amount of Alkali Grassland present.
<i>Atriplex joaquiniana</i>	San Joaquin spearscale	CNPS 1B.2	Chenopod scrub, alkali meadow, valley and foothill grassland. 1-250 m (3-820 ft)	Present	Absent	Very low probability of occurrence. California Annual Grassland present within project BSA; very small amount of Alkali Grassland present.
<i>Balsamorhiza macrolepis</i> var. <i>macrolepis</i>	Big-scale balsamroot	CNPS 1B.2	Cismontane woodland, valley and foothill grassland. 35-1,000 m (115-3,281 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland present within project BSA.
<i>Blepharizonia plumosa</i>	Big tarplant	CNPS 1B.1	Valley and foothill grassland. 15-455 m (49-1,493 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland present within project BSA.

Table 4-13 Special-status Plant Species with Potential to Occur within the Project Biological Study Area

Scientific Name	Common Name	Status*	Habitat Description	Specific Habitat Present/Absent	Species Presence/Absence ¹	Rationale
<i>Brodiaea californica</i> var. <i>leptandra</i>	Narrow-anthered California brodiaea	CNPS 1B.2	Broadleaved upland forest, chaparral, lower montane coniferous forest. 110-915 m (361-3,002 ft)	Present	Absent	Low probability of occurrence. Broadleaved upland forest (Coast Live Oak Woodland) present in project BSA. No chaparral or coniferous forest present in project area.
<i>Calochortus pulchellus</i>	Mt. Diablo fairy-lantern	CNPS 1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. 200-800 m (656-2,625 ft)	Present	Absent	Low probability of occurrence. Coast Live Oak-Willow Riparian Forest and California Annual Grassland habitats present within project BSA.
<i>Centromadia parryi</i> ssp. <i>congdonii</i>	Congdon's tarplant	CNPS 1B.2	Valley and foothill grassland. 1-230 m (3-755 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland present within project BSA.
<i>Centromadia parryi</i> ssp. <i>parryi</i>	Pappose tarplant	CNPS 1B.2	Coastal prairie, meadows, seeps coastal salt marsh, valley, and foothill grassland (often alkali). 2-420 m (7-1,378 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland present within the project BSA. Limited Alkali Grassland present within project BSA.
<i>Dirca occidentalis</i>	Western leather-wood	CNPS 1B.2	Broadleaved upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast conifer forest, riparian forest, and riparian woodland. 30-550 m (98-1,804 ft)	Present	Absent	Low probability of occurrence. Limited broadleaved upland forest (Coast Live Oak Woodland) and Coast Live Oak-Willow Riparian Forest present within project BSA.
<i>Downingia pusilla</i>	Dwarf downingia	CNPS 2.2	Valley and foothill grassland, vernal pools. 1-485 m (3-1,591 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland and wetlands present within project BSA.

Table 4-13 Special-status Plant Species with Potential to Occur within the Project Biological Study Area

Scientific Name	Common Name	Status*	Habitat Description	Specific Habitat Present/Absent	Species Presence/Absence ¹	Rationale
<i>Erigeron angustatus</i>	Narrow-leaved daisy	CNPS 1B.2	Chaparral, rock outcrops. 75-1,060 m (246-3,478 ft)	Present	Absent	Low probability of occurrence. No chaparral present within project BSA. Rock outcrops present on some parcels.
<i>Erigeron biolettii</i>	Streamside daisy	CNPS 3.0	Broadleaved upland forest, cismontane woodland, and north coast coniferous forest. 30-1,100 m (98-3,609 ft)	Present	Absent (but present adjacent to BSA)	Low to moderate probability of occurrence. Found adjacent to project BSA. Limited amount of broadleaved upland forest (Coast Live Oak Woodland) present within project BSA.
<i>Eriogonum truncatum</i>	Mt. Diablo buckwheat	CNPS 1B.1	Chaparral, coastal scrub, valley and foothill grassland. 100-600 m (328-1,968 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland present within project BSA.
<i>Fritillaria liliacea</i>	Fragrant fritillary	CNPS 1B.2	Coastal scrub, coastal prairie, valley and foothill grassland. 3-410 m (10-1,345 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland present within project BSA.
<i>Fritillaria pluriflora</i>	Adobe-lily	CNPS 1B.2	Chaparral, cismontane woodland, foothill grassland; often serpentine. 55-820 m (180-2,690 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland present within project BSA. Serpentine soils are not present within the project BSA.
<i>Helianthella castanea</i>	Diablo helianthella	CNPS 1B.2	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. 25-1,150 m (82-3,773 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland and Coast Live Oak woodland present within project BSA.
<i>Holocarpha macradenia</i>	Santa Cruz tarplant	FT, SE, CNPS 1B.1	Coastal prairie, coastal scrub, and valley and foothill grassland (often clay, sandy). 10-220 m (33-722 ft)	Present	Inferred Absent	Low probability of occurrence. Extirpated from the Mare Island quadrangle. California Annual Grassland present within project BSA.

Table 4-13 Special-status Plant Species with Potential to Occur within the Project Biological Study Area

Scientific Name	Common Name	Status*	Habitat Description	Specific Habitat Present/ Absent	Species Presence/ Absence ¹	Rationale
<i>Juglans hindsii</i>	Northern California black walnut	CNPS 1B.1	Riparian forest, riparian woodland. 0-395 m (0-1,296 ft)	Present	Absent	Very low probability of occurrence. Coast Live Oak-Willow Riparian Forest present within project BSA. Few non-introduced stands exist.
<i>Lasthenia conjugens</i>	Contra Costa goldfields	FE, CNPS 1B.1	Valley and foothill grassland, vernal pools, cismontane woodland. 1-455 m(3-1, 460 ft)	Present	Inferred Present	Low probability of occurrence. California Annual Grassland and wetlands present within BSA. Known record from the Suscol Ridge, about 4 miles south of Napa, and near the western end of the BSA.
<i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	Delta tule pea	CNPS 1B.2	Freshwater and brackish marshes. 0 m (0 ft)	Present	Absent	Very low probability of occurrence. Wetlands present within project BSA.
<i>Legenere limosa</i>	Legenere	CNPS 1B.1	Vernal pools. 1-880 m (3-2,887 ft)	Present	Absent	Low probability of occurrence. Limited wetland habitat present within project BSA.
<i>Leptosiphon jepsonii</i>	Jepson's leptosiphon	CNPS 1B.2	Chaparral, cismontane woodland (usually volcanic). 100-500 m (328-1,640 ft) Chaparral.	Present	Absent	Low probability of occurrence. Limited cismontane woodland present within project BSA; volcanic substrate present.
<i>Lessingia hololeuca</i>	Woolly-headed lessingia	CNPS 3.0	Broadleaved upland forest, coastal scrub, lower montane coniferous forest, and valley and foothill grassland (clay, serpentinite). 15-305 m (49-1,001 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland and limited broadleaved upland forest (Coast Live Oak Woodland) present within project BSA.
<i>Lilaeopsis masonii</i>	Mason's lilaeopsis	CNPS 1B.1	Riparian scrub, freshwater and brackish marshes. 0-10 m (0-33 ft)	Present	Absent	Low probability of occurrence. Wetlands present within project BSA.

Table 4-13 Special-status Plant Species with Potential to Occur within the Project Biological Study Area

Scientific Name	Common Name	Status*	Habitat Description	Specific Habitat Present/Absent	Species Presence/Absence ¹	Rationale
<i>Micropus amphibolus</i>	Mt. Diablo cottonweed	CNPS 3.2	Broadleaved upland forest, chaparral, cismontane woodland, and valley and foothill grassland (rocky). 45 – 825 m (148-2,702 ft)	Present	Absent	Low probability of occurrence. Limited broadleaved upland forest (Coast Live Oak Woodland), and California Annual Grassland present in the project BSA.
<i>Monardella villosa</i> ssp. <i>globosa</i>	Robust monardella	CNPS 1B.2	Broadleaf upland forest (openings), chaparral (openings) cismontane woodland, coastal scrub, valley and foothill grassland. 100-915 m (328-3,002 ft)	Present	Absent	Low probability of occurrence. California Annual Grassland and broadleaved upland forest (Coast Live Oak Woodland) present within project BSA.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i>	Baker's navarretia	CNPS 1B.1	Cismontane woodlands, lower montane coniferous forest, meadows and seeps, valley and foothill grasslands, vernal pools/mesic. 5-1,740 m (16-5,709-ft)	Present	Absent	Low probability of occurrence. California Annual Grassland and wetlands present within project BSA.
<i>Polygonum marinense</i>	Marin knotweed	CNPS 3.1	Marshes and swamps. 0-10 m (0-33 ft)	Present	Absent	Low probability of occurrence. Wetlands present within project BSA.
<i>Rhynchospora californica</i>	California beaked-rush	CNPS 1B.1	Bogs and fens, lower montane coniferous forest, meadows and seeps, marshes and swamps (freshwater). 45-1,000 m (148-3,218 ft)	Present	Absent	Low probability of occurrence. Wetlands present within project BSA.
<i>Senecio aphanactis</i>	Rayless ragwort	CNPS 2.2	Coastal scrub, cismontane woodland. 20-575 m (66-1,886 ft)	Present	Absent	Low probability of occurrence. Limited cismontane woodland present in the project BSA.

Table 4-13 Special-status Plant Species with Potential to Occur within the Project Biological Study Area

Scientific Name	Common Name	Status*	Habitat Description	Specific Habitat Present/Absent	Species Presence/Absence ¹	Rationale
<i>Trifolium amoenum</i>	Showy Indian clover	FE, CNPS 1B.1	Coastal bluff scrub, valley and foothill grassland; sometimes serpentine soil. 5-415 m (16-1,362 ft)	Present	Inferred Absent	Inferred Absent. California Annual Grassland present within BSA. Serpentine soils are not present within the BSA. Sonoma county population extirpated (USFWS 2007). Known from only one extant occurrence in Marin County (CNDDDB 2007).
<i>Trifolium depauperatum</i> var. <i>hydrophilum</i>	Saline clover	CNPS 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. 0-300 m (0-984 ft)	Present	Absent	Low probability of occurrence. Wetlands (alkaline) present within project BSA.
<i>Viburnum ellipticum</i>	Oval-leaved viburnum	CNPS 2.3	Chaparral, cismontane woodland, lower montane coniferous forest. 215-1,400 m (705-4,593 ft)	Present	Absent	Low probability of occurrence. Cismontane woodland (Coast Live Oak Woodland) present within project area.

¹ Note: not all parcels have been surveyed due to access restrictions; rare plants could occur on parcels not surveyed in 2006-2007.

* Federal and State Status:
FE = Federal endangered

FT = Federal threatened

FC = Federal candidate

SE = State endangered

ST = State threatened

California Native Plant Society Designations:

1B = Plants rare, threatened or endangered in California and elsewhere.

2 = Plants rare, threatened or endangered in California, but more common elsewhere.

3 = Plants for which more information is needed – a review list.

4 = Plants of limited distribution – a watch list.

California Native Plant Society Rank Threat Extensions:

.1 = Seriously endangered in California.

.2 = Fairly endangered in California.

.3 = Not very endangered in California.

? = Represents uncertainty regarding the rank threat.

Table 4-13 Special-status Plant Species with Potential to Occur within the Project Biological Study Area

Scientific Name	Common Name	Status*	Habitat Description	Specific Habitat Present/Absent	Species Presence/Absence ¹	Rationale
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Sources:

California Native Plant Society (CNPS). 2006. Inventory of Rare and Endangered Plants of California. Online edition, v7-06c. California Native Plant Society. Sacramento, CA. September 14, 2006. <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>

California Natural Diversity Database (CNDDDB). 2006. RareFind 2.0, Version 3.5. (September 2006 update). Sacramento, CA: California Department of Fish and Game. Sacramento, CA.

United States Fish and Wildlife Service, Endangered Species Branch. September 14, 2006. Official Species List for the Cuttings Wharf and Cordelia USGS 7.5 minute topographic quadrangle maps. Species data from the areas represented on these quadrangle maps and the surrounding Sonoma, Napa, Mt. George, Fairfield North, Fairfield South, Sears Point, Petaluma Point, Mare Island, Benicia, and Vine Hill topographic quadrangle maps. Information obtained September 14, 2006. http://www.fws.gov/sacramento/es/spp_list.htm

Note:

CNPS List 4 species are not included in this table.

Table 4-14 Special-status Animal Species with Potential to Occur within the Project BSA

Scientific Name	Common Name	Status*		Habitat Requirements	Specific Habitat Present/Absent	Species Presence/Absence	Rationale
		USFWS	State (CDFG)				
Invertebrates							
<i>Branchinecta conservation</i>	Conservancy fairy shrimp	FE	--	Vernal pools in grasslands	Potential	Potential	Low potential to occur. Poor quality suitable habita may be present in parcels where access has not been granted to conduct surveys; however, no local occurrences are reported in the examined databases.
<i>Branchinecta lynchi</i>	vernal pool fairy shrimp	FT	--	Endemic to the grasslands of the Central valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone depression pools and grassed swales, earth slump, or basalt-flow depression pools.	Present	Inferred present	May occur within the project area. None have been observed during protocol surveys of accessible areas within the BSA. Local occurrences are reported in the examined databases. Critical habitat unit 17 is present approximately 1.25 miels from the project's BSA.

Table 4-14 Special-status Animal Species with Potential to Occur within the Project BSA

Scientific Name	Common Name	Status*		Habitat Requirements	Specific Habitat Present/Absent	Species Presence/Absence	Rationale
		USFWS	State (CDFG)				
<i>Lepidurus packardii</i>	vernal pool tadpole shrimp	FE	--	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud bottomed and highly turbid.	Present	Potential	Low potential to occur. Poor quality suitable habitat may be present in parcels where access has not been granted to conduct surveys; however, no local occurrences are reported in the examined databases.
Amphibians							
<i>Rana aurora draytonii</i>	California red-legged frog	FT	(SSC)	Grasslands, ponds, marshes, and slow-moving areas of streams and lakes.	Present	Probable	Expected to occur. Known occurrences are adjacent to the project BSA and suitable habitat is present within the in the project BSA. BSA is within the Fagan-Jameson-Napa River core recovery area for this species.
<i>Rana boylei</i>	foothill yellow-legged frog	--	(SSC)	Rocky streams in a variety of habitats, including valley-foothill, hardwood, valley-foothill hardwood-conifer, valley-foothill riparian, ponderosa pine, mixed conifer, coastal scrub, mixed chaparral, and wet meadow types.	Present	Inferred Present	May occur. Project BSA contains suitable habitat and is within current known range.

Table 4-14 Special-status Animal Species with Potential to Occur within the Project BSA

Scientific Name	Common Name	Status*		Habitat Requirements	Specific Habitat Present/ Absent	Species Presence/ Absence	Rationale
		USFWS	State (CDFG)				
Reptiles							
<i>Actinemys (Clemmys, Emys) marmorata marmorata</i>	northwestern pond turtle	--	(SSC)	Slack or slow water with low gradient; dense vegetation for hatchlings.	Present	Inferred Present	May occur. Project BSA contains suitable habitat and is within current known range.
<i>Actinemys (Clemmys, Emys) marmorata pallida</i>	southwestern pond turtle	--	(SSC)	Slack or slow water with low gradient; dense vegetation for hatchlings.	Present	Inferred Present	May occur. Project BSA contains suitable habitat and is within current known range.
Birds							
<i>Accipiter cooperii</i>	Cooper's hawk (Nesting)	--	(SSC)	Forages, roosts, and shelters in dense stands of live oak, riparian deciduous or other forest habitats near water, also utilizes urban habitats for nesting and foraging.	Present	Inferred Present	May occur. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.
<i>Aquila chrysaetos</i>	golden eagle (Nesting and Wintering)	--	(SSC, fully protected)	Rolling foothills, mountain areas, sage-juniper flats, desert habitats are the preferred foraging grounds. Nests on cliffs of all heights and in large trees in open areas.	Present	Present	Known to occur. Observed in the project BSA during field studies. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.

Table 4-14 Special-status Animal Species with Potential to Occur within the Project BSA

Scientific Name	Common Name	Status*		Habitat Requirements	Specific Habitat Present/Absent	Species Presence/Absence	Rationale
		USFWS	State (CDFG)				
<i>Buteo swainsoni</i>	Swainson's hawk (Nesting)	--	ST	Grassland, riparian, oak savannah in Central Valley, juniper-sage flats are used for foraging and nesting. Often nest peripherally to riparian systems of the valley as well as utilizing lone trees or groves of trees in agricultural fields.	Present	Inferred Present	May occur. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.
<i>Circus cyaneus</i>	northern harrier (Nesting)	--	(SSC)	Annual grassland, native grassland, wetland, moist meadow. low woody, or herbaceous vegetation used for nesting and hunting.	Present	Inferred Present	May occur. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.
<i>Elanus leucurus</i>	white-tailed (=black shouldered) kite (Nesting)	--	(fully protected)	Open groves, river valleys, marshes, grassy areas. Nests are usually located near an open foraging area.	Present	Present	Known to occur. Observed in the project BSA during field studies.

Table 4-14 Special-status Animal Species with Potential to Occur within the Project BSA

Scientific Name	Common Name	Status*		Habitat Requirements	Specific Habitat Present/Absent	Species Presence/Absence	Rationale
		USFWS	State (CDFG)				
<i>Asio flammeus</i>	short-eared owl (Nesting)	--	(SSC)	Annual and perennial grassland, prairies, dunes, meadows, irrigated lands, freshwater and saline emergent wetlands. Nests on dry ground in open grassland habitats that is concealed by vegetation.	Present	Inferred Present	May occur. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.
<i>Athene cunicularia hypugaea</i>	western burrowing owl (Burrow sites and Wintering Observation)	--	(SSC)	Found in open grasslands, prairie, farm, and airfields. Both natural and artificial burrows provide protection, shelter, and nests for burrowing owls.	Present	Present	Known to occur. Observed in the project BSA during field studies. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.
<i>Chaetura vauxi</i>	Vaux's swift (Nesting)	--	(SSC)	Forages in open sky over woodlands, lakes and rivers. Hollow trees are its favored nesting and roosting sites (chimneys are used on occasion).	Present	Inferred Present	May occur. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.

Table 4-14 Special-status Animal Species with Potential to Occur within the Project BSA

Scientific Name	Common Name	Status*		Habitat Requirements	Specific Habitat Present/Absent	Species Presence/Absence	Rationale
		USFWS	State (CDFG)				
<i>Amphispiza belli belli</i>	Bell's sage sparrow	--	(SSC)	Chaparral and coastal scrub; semi-open habitats with shrubs 1-2 m (3-7 ft) high. Nests are found within or under shrubs. Nest shrub is generally higher than average height of surrounding vegetation.	Present	Inferred Present	May occur. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.
<i>Lanius ludovicianus</i>	loggerhead shrike (Nesting)	--	(SSC)	Utilizes semi-open country with posts, wires, trees, and scrub for foraging and breeding. builds nests on stable branches in densely foliated shrubs or trees, usually well-concealed.	Present	Present	Known to occur. Observed in the project BSA during field studies. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.
<i>Agelaius tricolor</i>	tricolored blackbird (Nesting Colony)	--	(SSC)	Forage in open grasslands and wetland habitats. They nest in freshwater marshes dominated by cattails or bulrushes and some colonies have been found in willows, blackberries thistles, and nettles.	Present	Inferred Present	May occur. Pre-construction nest surveys will be conducted for this species within the project BSA. Potential nesting habitat within the project footprint will be removed during the non-nesting season.

Table 4-14 Special-status Animal Species with Potential to Occur within the Project BSA

Scientific Name	Common Name	Status*		Habitat Requirements	Specific Habitat Present/Absent	Species Presence/Absence	Rationale
		USFWS	State (CDFG)				
Mammals							
<i>Antrozous pallidus</i>	pallid bat	--	(SSC)	Inhabits rocky, outcrop areas where they commonly roost in rock crevices, caves, and mine tunnels but they also roost in the attics of houses, under the eaves of barns, behind signs, in hollow trees.	Present	Inferred Present	May occur. Project BSA contains suitable habitat and is within known current range. Preconstruction roost site surveys will be conducted for this species within the project BSA.
<i>Corynorhinus (=Plecotus) townsendii townsendii</i>	Pacific western big-eared bat	--	(SSC)	Occurs in a variety of habitats, from desert shrub to deciduous and coniferous forests at a wide range of elevations. Also occurs in abandoned mines and both unoccupied and actively used old buildings. It is probable that hollow cavities in large trees or snags may constitute an important undocumented resource for maternity colonies of this species.	Present	Inferred Present	May occur. Project BSA contains suitable habitat and is within known current range. Preconstruction roost site surveys will be conducted for this species within the project BSA.

Table 4-14 Special-status Animal Species with Potential to Occur within the Project BSA

Scientific Name	Common Name	Status*		Habitat Requirements	Specific Habitat Present/Absent	Species Presence/Absence	Rationale
		USFWS	State (CDFG)				

Notes:

*** Federal and State Status**

- FE Federal endangered
- FPE Federal proposed endangered
- FT Federal threatened
- FPT Federal proposed threatened
- FC Federal candidate
- X Federal critical habitat is designated
- FD Federal Delisted - species will be monitored for 5 years.
- FP Federal vacated by a court order Not currently in effect. Being reviewed by the Service.

- SE State endangered
- SSC State species of concern
- ST State threatened

Sources:

California Native Plant Society (CNPS). 2006. Inventory of Rare and Endangered Plants of California. Online edition, v7-06c. California Native Plant Society. Sacramento, CA. September 14, 2006. <http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi>

California Natural Diversity Database (CNDDB). 2006. RareFind 2.0, Version 3.5. (September 2006 update). Sacramento, CA: California Department of Fish and Game. Sacramento, CA.

United States Fish and Wildlife Service, Endangered Species Branch. September 14, 2006. Official Species List for the Cuttings Wharf and Cordelia USGS 7.5 minute topographic quadrangle maps. Species data from the areas represented on these quadrangle maps and the surrounding Sonoma, Napa, Mt. George, Fairfield North, Fairfield South, Sears Point, Petaluma Point, Mare Island, Benicia, and Vine Hill topographic quadrangle maps. Information obtained September 14, 2006. http://www.fws.gov/sacramento/es/spp_list.htm

Note: CNPS List 4 species are not included in this table.

*** California Native Plant Society (CNPS) Status Codes:**

- 1B Plants rare, threatened or endangered in California and elsewhere.
- 2 Plants rare, threatened or endangered in California, but more common elsewhere.
- 3 Plants for which more information is needed – a review list.
- 4 Plants of limited distribution – a watch list.

*** CNPS Rank Threat Extensions:**

- .1 Seriously endangered in California.
- .2 Fairly endangered in California.
- .3 Not very endangered in California.
- ? Represents uncertainty regarding the rank threat.

Appendix C: Detailed Analyses of Trail Route Options

Appendix C: Detailed Analysis of Trail Route Options

This section discusses the feasibility of each alignment option in detail, in this order:

- Options 1 (Far North) and 6 (Far South) -- distant from SR12 and the railroad, and relatively simple
- Option 2 (Highway) within the Western segment
- Options 2 (Highway), 3 (Railroad), and 4 (South Foothills) through the Confluence, Central, Canyon and Eastern segments
- Option 3 (Railroad) within the Western segment
- Option 5 (Golf Courses), which exists only in the Western segment

Alignment Option 1: Far North

Alignment Option 1, "Far North", encompasses all potential east-west routes through the hills at a substantial distance north of SR12. Such routes would be far from the area affected by the SR12 widening project.

The area has steep hills and tributary valleys, and is within an area of high landslide activity on the landslide map. To maintain a reasonable grade, any path would need to follow terrain, and would traverse substantial additional distance compared to a straight line. Such a route could be attractive as recreational route, but would not serve as a transportation corridor.

No public roads connect across this area. West of the hills, Polson Road begins as a public road at Kirkland Ranch Road and runs north for a short distance before continuing north and east as a private road. East of the hills, Mason Road originates as a public street at Green Valley Road and proceeds west, becoming a private road beyond a gate. A conceptual alignment connecting Polson Road to Mason Road would tie in to the Green Valley residential area at its east end, but would not connect directly to Red Top Road.

Alignment Option 6: Far South

Alignment Option 6, "Far South", encompasses potential east-west routes through the hills at a substantial distance south of SR12, plus a midpoint connection to SR12. Except for this midpoint connection, routes associated with this option would be far from the area affected by the SR12 widening project.

Like the area covered by Alignment Option 1, "Far North", this area has steep hills and tributary valleys. To maintain a reasonable grade, any path through it would need to follow terrain contours, and would traverse substantial additional distance compared to a straight line. Such a route could be attractive as recreational route but would not serve as a transportation corridor.

No public roads connect across this area. Lynch Road has an interchange with I-80 at the east end of this option, connecting under the freeway to McGary Road. Lynch Road extends northwest into the hills from the interchange.

All routes considered through this area would like within one or more of three open space areas – two public preserves (Newell Ranch and Lynch Camp) and one private open space easement (Creston Station Ranch), as shown in **Table B-1**.

Table B-1: Open spaces and potential trail access south of Jameson Canyon

Parcel	Location	Notes
Newell Ranch Open Space*	Napa County, between American Canyon and the Napa/Solano county line	A narrow corridor at the western end connects to American Canyon
Lynch Canyon Open Space	Solano County, between Newell Ranch Open Space and I-80	Includes Lynch Road, which has an interchange on I-80 (1.75 miles southwest of Red Top Road). Lynch Road connects under I-80 to McGary Road.
Creston Station Ranch (private)	Mostly in Napa County, along the county line between the CNRR railroad and Newell Ranch Open Space	Several property owners have conservation easements on their property held by Napa County Land Trust that allow public trails.

* Full name: *The Jack and Bernice Newell Open Space*

Figure 5-1 shows a Ridge Trail alignment through Newell Ranch Open Space (planned) and Lynch Canyon Open Space (dedicated) to Lynch Road. At the north, a potential connection from SR12 through Creston Station Ranch is shown, with two possible alignments for linking it to the east-west trail corridor. To reach SR12, the Creston Station Ranch branch crosses the railroad at an existing private crossing associated with that property.

Alignment Option 2 (“Highway”) west of Confluence

SR29 intersection

Segment	Endpoints
Western	Devlin Road NAP 0.0 (east edge of SR29 mainline)

Existing Conditions

- Major rural signalized intersection
- No sidewalks
- Striped shoulders of various widths
- All corners except the southeast have large corner islands and free-running right turn movements.
- The southeast corner has no island. It has a right turn only lane and a right turn limit line.

Planned Changes

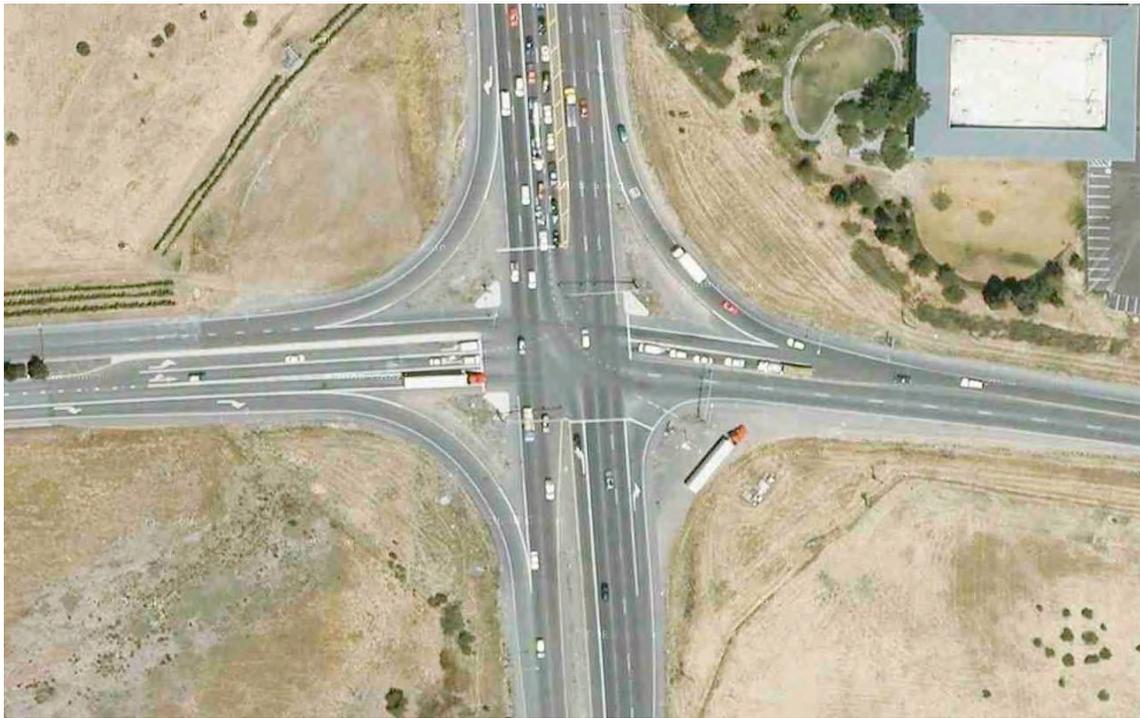
- This intersection is planned for replacement by a grade separated interchange. SR29 will cross over Aviation Way / SR12.
- As part of the interchange project, Caltrans will construct a trail along the south side of Aviation Way / SR-12 under SR29, extending east to the southwest corner of the SR12 / Kelly Road signal.

Feasibility (Opp = Opportunity, Con = Constraint)

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North	X		Ample undeveloped land away from intersection	Low
		X	SR29 has 7 total through and turn lanes to cross	
		X	Free right turns on northwest and northeast corners conflicts with pedestrian/bicycle crossings	
		X	On the north side of Aviation Way west of the intersection, existing hedges are close to the roadway	
2S – Highway South	X		Ample undeveloped land away from intersection	Low*
		X	SR29 has 7 total through and turn lanes to cross	
		X	Free right turn on southwest corner conflicts with pedestrian/bicycle crossings	

* Caltrans will construct a trail along the south side of SR12 between Devlin Road and Kelly Road as part of the SR29/SR12 interchange project.

Photo 7-1: SR29 intersection



a) Aerial view (Aviation Way at left, SR12 at right, SR29 runs vertically)



b) Aviation Way facing east toward SR29



c) SR12 (Jameson Canyon Road) facing west toward SR29

SR29 to Kelly Road

Segment	Endpoints	
Western	NAP 0.0 (east edge of SR29)	NAP 0.25 (Kelly Road)

Location

- NAP 0.0 (east edge of SR29) to NAP 0.25 (Kelly Road)

Existing conditions

- North side of SR12: landscaped embankment with warehouse parking lot behind.
- South side of SR12: Swale, open strip, ROW fence, vacant land.

Planned changes

- As part of the SR29/SR12 interchange project, Caltrans will construct a trail along the south side of SR-12 to the southwest corner of the SR12 / Kelly Road signal.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Embankment is close to roadway	Low
2S – Highway South	X		Undeveloped strip between swale and ROW fence.	Low*
	X		Wide undeveloped area behind the ROW fence	

* Caltrans will construct a trail along the south side of SR12 between Devlin Road and Kelly Road as part of the SR29/SR12 interchange project.

Photo 7-2: SR29 to Kelly Road



a) Aerial view (SR29 at left, Kelly Road at right)



b) Facing west from Kelly Road toward SR29 – swale along south side, embankment along north side



c) South side of SR12 facing west toward SR29. Drainage swale.



d) North side of SR12: Low embankment with shallow parking lot and warehouses behind

Kelly Road signal

Segment	Endpoints	
Western	NAP 0.25 (Kelly Road)	NAP 0.25 (Kelly Road)

Existing conditions

- Minor rural signalized intersection
- No sidewalks
- Striped shoulders of various widths
- Eastbound and westbound right turn only lanes
- North side of SR12 east of signal: landscaped embankment with farm field service road behind
- South side of SR12: open strip with vineyard beyond

Planned changes

- The SR12 widening project's western limit of work is Kelly Road. Widened SR12 with median barrier will be constructed east of this point.

Recommendations

- Because of the substantial length of the northbound and southbound storage areas, align the trail crossing of Kelly Road as an intersection crosswalk rather than behind the storage area
- Consider right turn arrows to prohibit right turns when trail users are crossing Kelly Road

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North	X		Possible joint use of farm field service road	
		X	Landscape is close to roadway	Low
2S – Highway South	X		Ample width for a path	Low*

* Caltrans will construct a trail along the south side of SR12 west of Kelly Road as part of the SR29/SR12 interchange project.

Photo 7-3: Kelly Road signal



a) Aerial view



b) Kelly Road facing north toward SR12

Kelly Road to western boundary of Kirkland Ranch

Segment	Endpoints	
Western	NAP 0.25 (Kelly Road)	NAP 1.11

Existing conditions

- 3-lane rural highway (2 lanes eastbound, 1 lane westbound)
- North side: Farm service road outside the ROW
- South side: Wide buffer area, then vineyard strip, then golf course service road

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North	X		Possible joint use of farm service road outside ROW (evidence of tractor turns appears to be within the field (i.e. off the service road))	Low
		X	Fence is close to roadway	
2S – Highway South	X		Ample width for a path in the buffer area north of the vineyard, assuming width remains after SR12 is widened. Consider a trail in the buffer strip as far as possible from the widened roadway (to reduce noise). Alternatively, the golf course service road south of the vineyard strip may provide a quieter and more scenic user experience.	Low

Photo 7-4: Kelly Road to western boundary of Kirkland Ranch



a) Aerial view, western end. South side: Golf courses behind vineyards. North side: Service road and farms.



b) Aerial view, eastern portion. Kirkland Ranch at upper right.



c) Landscape buffer and vineyards along south side, service road along north side. Some of the south-side buffer will be utilized for SR12 widening.

Western boundary of Kirkland Ranch to midway to Kirkland Ranch Road signal

Segment	Endpoints	
Western	NAP 1.1	NAP 1.2

Existing conditions

- 3-lane rural highway (2 lanes eastbound, 1 lane westbound)
- North side: Edge slopes up sharply. Vineyard beyond ROW appears to extend to top of slope
- South side: Edge slopes down. Wide undeveloped field with vegetation and vineyard beyond

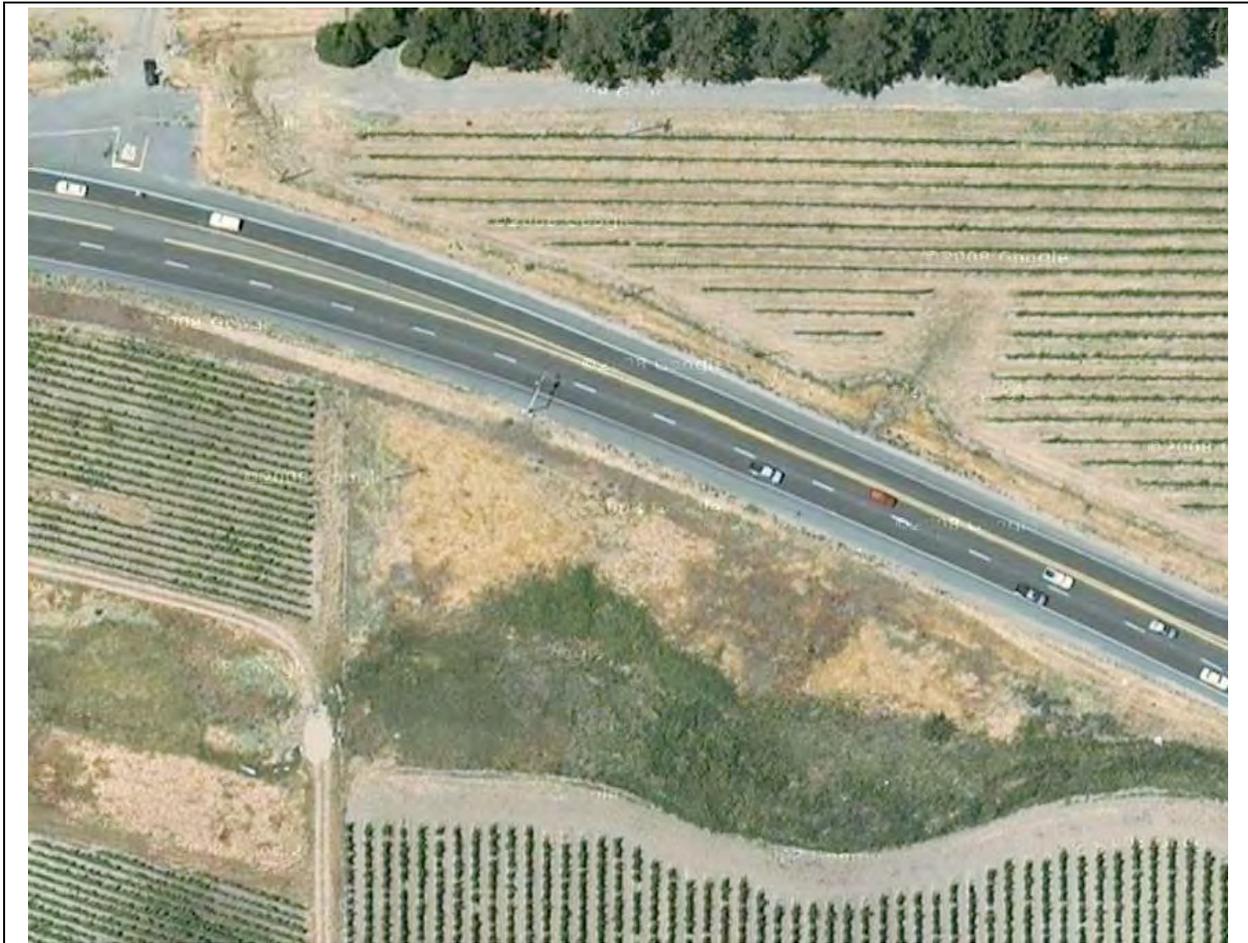
Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Width appears insufficient for path without acquiring ROW from vineyard	Moderate [Easement]
2S – Highway South	X		Sufficient width for a path within the vacant field	Low

Photo 7-5: Western boundary of Kirkland Ranch to midway to Kirkland Ranch Road



a) Aerial view



b) Deep swale along south side, embankment and vineyards along north side

Midway between the western boundary of Kirkland Ranch and Kirkland Ranch Road signal, to Kirkland Ranch Road signal

Segment	Endpoints	
Western	NAP 1.2	NAP 1.3

Existing conditions

- 3-lane rural highway (1 westbound lane, 2 eastbound lanes. Eastbound left turn lane at signal.)
- North side: Vineyard extends to ROW line with a modest grade difference relative to the roadway
- South side: Swale at ROW edge. Vegetation and vineyard immediately beyond.

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier. The widening will presumably replace or relocate the swale.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Width appears insufficient for path without acquiring ROW from vineyard	Moderate [Easement]
2S – Highway South	X		There appears to be sufficient width for a path behind the existing swale	Low

Photo 7-6: Midway between the western boundary of Kirkland Ranch and Kirkland Ranch Road, to Kirkland Ranch Road



a) Aerial view. Away from signal: Vineyards behind narrow buffer.



b) Facing west toward Kirkland Ranch Road signal. Golf course gateway begins at lower left.

Kirkland Ranch Road signal

Segment	Endpoints	
Western	NAP 1.3	NAP 1.3

Existing conditions

- Minor rural signal
- Chardonnay Golf Club entrance is south leg of intersection

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Trail may be infeasible due to adjacent cultivation	Moderate [Easement]
		X	Stone walls extend to the ROW edge	
2S – Highway South		X	Modifications to golf course gateway landscaping would be needed if the trail crossed as an intersection crosswalk	Moderate [Landscape]
	X		Golf course gateway landscaping extends beyond storage depth of northbound approach. Trail could cross golf course driveway near south edge of gateway feature (i.e. south of the “sand traps”).	

Recommendations

- Consider crossing a south-side trail away from the signal, near the back (south) side of the golf course entry feature (i.e. south of the “sand traps”).

Photo 7-7: Kirkland Ranch Road signal



Kirkland Ranch Road signal to Fagan Creek

Segment	Endpoints	
Western	NAP 1.3	NAP 1.58
Confluence	NAP 1.58	NAP 1.9

Existing conditions

- North side: Gentle embankment sloping upward to field. Farm road behind buffer strip.
- South side: Gentle embankment sloping downward to field. Fairly wide buffer within ROW. Unpaved service road just outside ROW; vineyard beyond

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North	X		Farm service road may be suitable for joint use as trail	Moderate [Depends on usability of farm service road]
		X	Farm road may be obstructed when the field is being serviced.	
2S – Highway South	X		There appears to be sufficient width for a path within the exiting ROW	Low

Photo 7-8: Kirkland Ranch Road to Fagan Creek



a) Aerial view, western portion



b) Aerial view, eastern portion



c) Vineyards both sides, below highway on south side, above highway on north side.

Fagan Creek

Segment	Endpoints	
Confluence	NAP 1.9	NAP 1.9

Existing conditions

- North side: Pump station just west of creek
- Southwest quadrant: Vineyards behind buffer strip, extending to creek
- Southeast quadrant: Ranch house
- Trees come close to SR12
- Bridge is only wide enough for existing roadway and shoulders
- Steep dropoff into creek behind guardrail on both sides

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Pump station just west of creek	Moderate [Creek bridge needed]
		X	Trees are close to SR12	
		X	Bridge is only wide enough for existing roadway and shoulders.	
		X	Steep dropoff into creek behind guardrail	
2S – Highway South		X	Ranch house in southeast quadrant	Moderate [Creek bridge needed]
		X	Trees are close to SR12	
		X	Bridge is only wide enough for existing roadway and shoulders	
		X	Steep dropoff into creek behind guardrail	

Recommendations

- If the trail is aligned on the south side, align it between the roadway and the house

Photo 7-9: Fagan Creek



a) Aerial view. Pump station on north side just west of creek. Vineyards to creek in southwest quadrant. Ranch house on southeast quadrant.



b) Steep dropoff behind guardrail, both sides

Fagan Creek to Lynch Road

Segment	Western endpoints	Eastern endpoint
Confluence	NAP 1.9	NAP 2.02

Existing conditions

- North side: Undeveloped land except for a pump station and well
- South side: Farmstead with driveway midway between creek and Lynch Road

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.
- At Lynch Road, the widening project will add a U-turn feature (deceleration/storage lanes and a median break)

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North	X		Ample width for a trail	Low
		X	Pump station with large valves and ventilation between creek and Lynch Road	
2S – Highway South		X	Barn on west side of house driveway is close to SR12.	Moderate [Existing features]
		X	Between the barn and the east edge of the property, large mature bushes and trees screen the farm, with little width behind roadway shoulder.	
		X	East of the large mature bushes and trees, vineyards come close to SR12	

Recommendations

- If trail is on south side, align it between the barn and the roadway

Photo 7-10: Fagan Creek to Lynch Road



a) Aerial view: pump station on north side, farmstead on south side



b) Pump station on north side



c) Farmstead on south side

Lynch Road intersection

Segment	Western endpoints	Eastern endpoint
Confluence	NAP 2.02	NAP 2.02

Existing conditions

- North side: T intersection of Lynch Road
- South side: Line of mature Eucalyptus trees running north-south from the ROW edge

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.
- At Lynch Road, the widening project will add a U-turn feature (deceleration/storage lanes and a median opening)

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North	X		Ample width for a trail	Low
2S – Highway South		X	Line of mature Eucalyptus trees. If these are retained by the SR12 widening project, a south-side trail would need to pass behind them (to the south).	Low

Recommendations

- If trail is on south side, align it behind the trees
- If trail is on north side, have it cross Lynch Road away from SR12 to give incoming (northbound) motorists time and distance to slow and stop for the trail crossing

Photo 7-11: Lynch Road intersection



Alignment Options 2-4 (Highway, Railroad, and South Foothills) east of Confluence
Lynch Road to creek near houses #3875 and #3890

Segment	Western endpoints	Eastern endpoint
Confluence	NAP 2.02	NAP 2.32

Existing conditions

- North side: Embankment, moderate to fairly steep (hill). Vineyards begin at ROW line
- South side: Moderate embankment. Row of vines serves as fence at ROW line. Vineyard service road immediately beyond, vineyards beyond service road. A major creek runs east-west behind property fronting SR12. Narrow vineyard south of creek, then the railroad ROW, then steep hillside (south foothills).

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Embankment, moderate to fairly steep. Gentler slope west of house #3980 (white plank fence).	Moderate
		X	Vineyards begin at ROW line	
		X	Fence at ROW line with mature trees immediately behind	
2S – Highway South	X		Possible use of vineyard service road. Ample clearance along barn.	Low
		X	Moderate embankment	
3N – Railroad North		X	Creek runs parallel to railroad. Trees along north side of railroad	Moderate
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills				Low [Landslides, Topography]

Photo 7-12: Lynch Road to creek near houses #3875 and #3890



a) Aerial view. Lynch Road at upper left. House driveways at lower right.



b) Facing east from Lynch Road. Steep embankment on north side. Gentle roll-off on south side.



c) House on north side – 3890 on fence to right of driveway gate

Houses #3875 and #3890 to Houses #685 and #686

Segment	Western endpoints	Eastern endpoint
Confluence	NAP 2.32	NAP 2.6

Existing conditions

- North side: Hillside
- South side: Gentle slope. Row of vines serve as ROW fence. Vineyard service road immediately beyond, vineyards beyond.

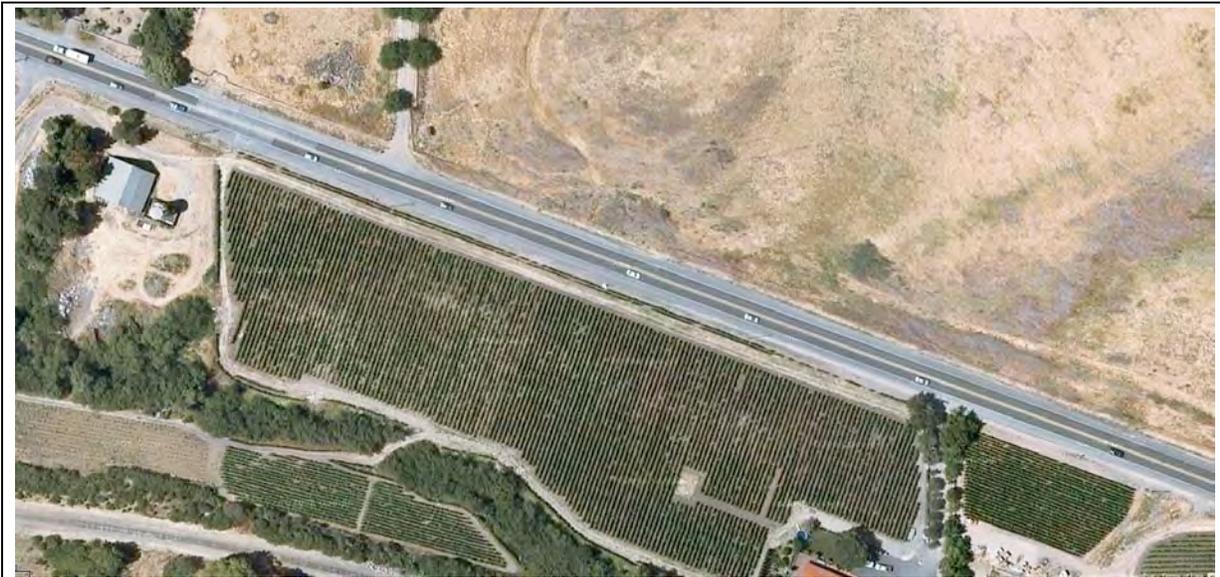
Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint level
2N – Highway North		X	Moderate hillside	Moderate [Topography]
2S – Highway South	X		Possible shared use of vineyard service road	Low
		X	Stone driveway walls, mature conifers at ROW line at #685-#686 (numbers on mailbox)	
3N – Railroad North		X	Vegetation on north side on western half	High
		X	Creek runs close to railroad on eastern half	
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills				Moderate [Landslides, Topography]

Photo 7-13: Houses #3875 and #3890 to Houses #685 and #686



a) Aerial view. Hillside along north side, vineyards along south side. Rail line visible at lower left.



b) South side: driveway of houses #685 and #686

Houses #685 and #686 to next creek to the east

Segment	Western endpoints	Eastern endpoint
Central	NAP 2.6	NAP 3.1

Existing conditions

- North side: Varies – mostly moderate hillside
- South side: Nearly level. Vineyard service road at ROW line, vineyards beyond.

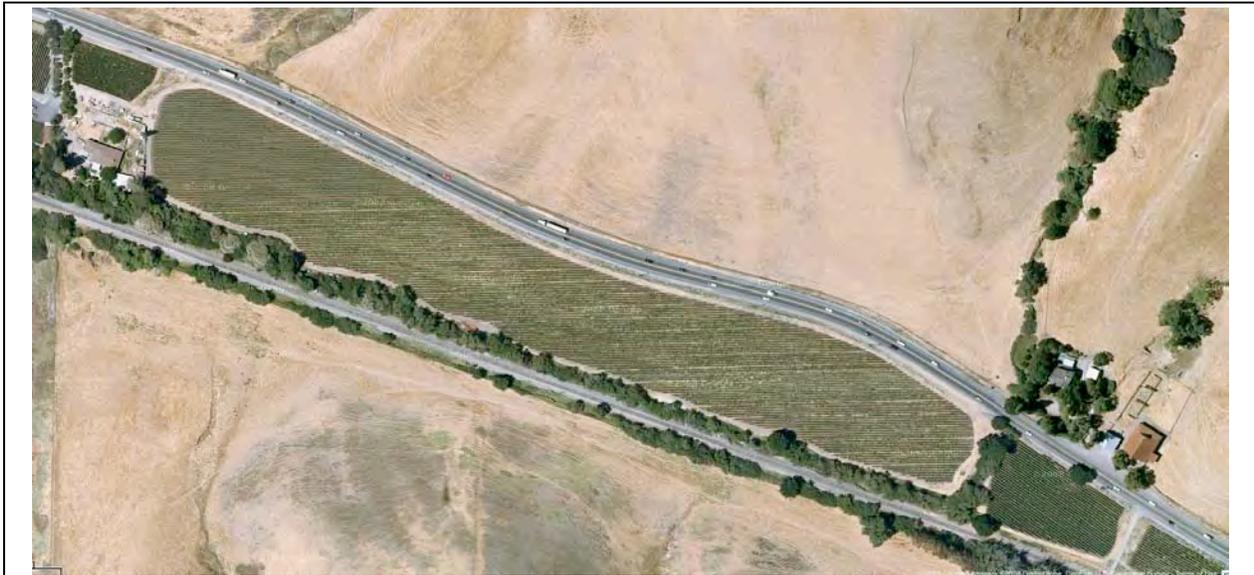
Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Hillside	Moderate [Topography]
2S – Highway South	X		Possible shared use of north-edge vineyard service road	Low
		X	Proximity of highway	
3N – Railroad North		X	Continuous mature trees	High
	X		Possible use of south-edge vineyard service road	
3S – Railroad South		X	Mostly continuous trees and brush	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad	Moderate [Landslides, Topography]

Photo 7-14: Houses #685 and #686 to next creek to the east



a) Aerial view: Hillside along north side, vineyards near highway on south side. Railroad south of vineyards.



b) Hillside along north side, vineyards near highway on south side

Creek and farmstead near railroad's approach from west

Segment	Endpoints	
Central	NAP 3.1	NAP 3.2

Existing conditions

- Guardrails at pavement edge. Steep drops into creek immediately behind.

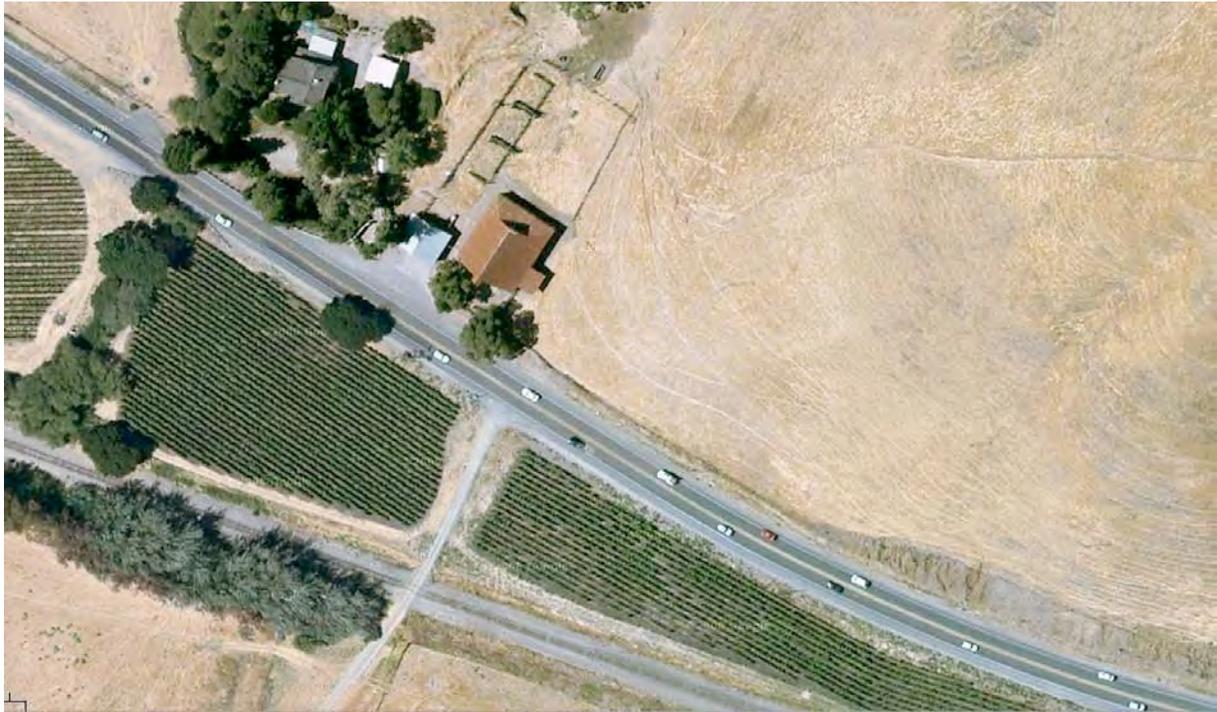
Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.
- Potential Bay Area Ridge Trail crossing in this area

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Creek comes up to guardrail on both sides – no extra structure width to carry a trail across.	Moderate [Creek bridge needed]
		X	Dense tree cover	
2S – Highway South	X		Creek comes up to guardrail on both sides – no extra structure width to carry a trail across.	Moderate [Creek bridge needed]
		X	Only one tree; it will probably be removed by the SR12 widening project	
3N – Railroad North		X	Heavy vegetation	High
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad	Moderate [Landslides, Topography]

Photo 7-15: Creek and farmstead near railroad's approach from west



a) Aerial view (segments 15 and 16): Creek, house, barns, railroad, private rail crossing



b) Facing east toward creek

East of creek and private railroad crossing

Segment	Endpoints	
Central	NAP 3.2	NAP 3.2

Existing conditions

- North side: House and two barns just east of creek
- South side: Two mature trees on ROW line opposite north-side barn and driveway

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Just east of creek there is a stone column at the house driveway, two barns (one near the ROW line), and two significant trees just east of the barn driveway	Moderate [Landscaping]
2S – Highway South	X		Private driveway on south side of SR12 just east of the last house crosses the railroad ROW at a private grade crossing could be used for trails to cross the railroad	Low
		X	Two mature trees on ROW line opposite north-side barn and driveway	
3N – Railroad North	X		Private railroad crossing could be used for trails to cross the railroad	Low
		X	Open field in narrow strip between highway and rails.	
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad	Moderate [Landslides, Topography]

Photo 7-16 – East of creek and private railroad crossing



a) Facing west toward private railroad crossing and barn



b) Driveway to private railroad crossing

Private railroad crossing to east end of vineyards

Segment	Endpoints	
Central	NAP 3.2	SOL 0.1

Existing conditions

- North side: Steep embankment with a cut; hill above embankment
- South side: Buffer strip along highway, with vineyard (approximately 10 rows) behind, then a vineyard service road along the north side of the railroad ROW
- Napa / Solano county line crosses in this area

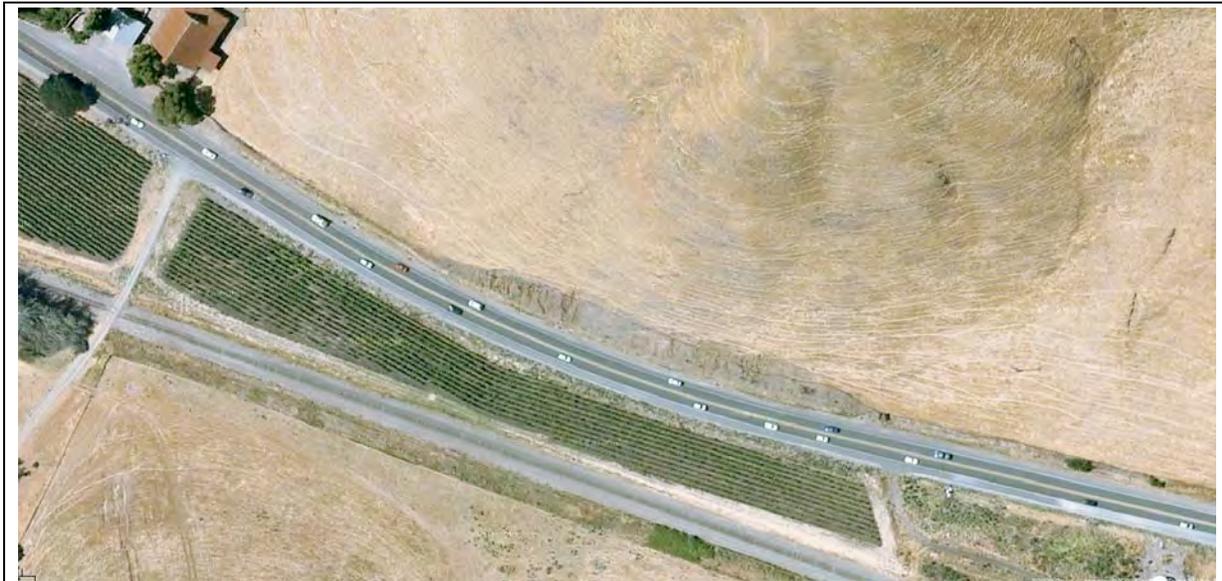
Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint level
2N – Highway North		X	Steep embankment with a cut; hill above	High
2S – Highway South	X		Width available along north edge of vineyard	Low
		X	North edge of vineyard is close to traffic	
3N – Railroad North	X		Possible shared use of vineyard service road that runs between vineyard and railroad	Low
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad	Moderate [Geology, Topography]
	X		A paved ranch road runs roughly NNW-SSE straight up the hill about 3/5 mile. It could potentially be part of a link to the I-80 corridor.	

Photo 7-17: From private railroad crossing to east end of vineyards



a) Aerial view. Aqueduct pump station visible at lower right beyond vineyards.



b) Vineyards on south side. Hillside on north side.

East end of vineyards to Spurs Trail

Segment	Endpoints	
Central	SOL 0.1	SOL 0.88

Existing conditions

- North side: Steep embankment (cut); hill above. One private road at midpoint. Mature vegetation for approximately 400' E of private road
- South side: Vacant land. Aqueduct utility station just E of end of vineyards. Land slopes to the south, toward RR ROW which is within 600' on this entire segment

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Steep embankment; hill above.	High
		X	Private road; mature vegetation for approximately 400' east	
2S – Highway South	X		Vacant field. Railroad is within 600'. Aqueduct utility station just east of vineyards.	Low
3N – Railroad North	X		Vacant field. Highway is within 600'. Aqueduct utility station just east of vineyards.	Low
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad	Moderate [Landslides, Topography]

Photo 7-18: East end of vineyards to Spurs Trail



a) Aerial view



b) East end of vineyards



c) Between vineyards and Spurs Trail – steep hill on north side, vacant land on south side



d) Private road west of Spurs Trail. Wooded hill on north side, vacant land on south side.



e) Just west of Spurs Trail. Ranch on north side, vacant land on south side.

Spurs Trail to Cattle Creek

Segment	Endpoints	
Central	SOL 0.88	SOL 0.98

Existing conditions

- North side of SR12: Open ranch land except for Spurs Trail private road and vegetation along creek.
- South side of SR12: Intermittent bushes, cultivated land beyond
- North side of railroad: Heavy vegetation
- South side of railroad: Steep hillside

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North	X		Open ranch land except for Spurs Trail private road and vegetation along creek	Low
		X	Spurs Trail (private road).	
		X	Wood fence along property line	
		X	Cattle Creek comes to paved edge of shoulder	
2S – Highway South	X		Intermittent vegetation, cultivated land beyond	Low
		X	Cattle Creek comes to paved edge of shoulder	
3N – Railroad North	X			Low
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad	Moderate [Landslides, Topography]

Photo 7-19: – Spurs Trail to proposed wildlife undercrossing



a) Aerial view



b) Spurs Trail



c) South side opposite Spurs Trail



d) House driveway on south side east of Spurs Trail, near proposed wildlife undercrossing

Cattle Creek (Proposed Large Mammal Crossing)

Segment	Endpoints	
Central	SOL 0.98	SOL 0.98

Existing conditions

- Both sides of SR12: Guardrails at pavement edge. Drop-off into creek immediately behind.
- North side of railroad: Heavy vegetation
- South side of railroad: Steep hillside

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2S – Highway South		X	Guardrails at pavement edge. Cattle Creek immediately beyond.	Moderate [Creek bridge needed]
2S – Highway South	X		Width may be available on both sides of creek along cultivated field after SR12 widening	Moderate [Creek bridge needed]
		X	Guardrails at pavement edge. Cattle Creek immediately beyond	
3N – Railroad North	X		Heavy vegetation	High
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad	Moderate [Landslides, Topography]

Photo 7-20: Cattle Creek (Proposed Large Mammal Crossing)



a) Aerial view



b) Cattle Creek, north side



c) Cattle Creek, south side

Cattle Creek to Miner's Trail

Segment	Endpoints	
Central	SOL 0.98	SOL 1.0

Existing conditions

- North side of SR12: Two private driveways. Large mature trees on both sides of driveways.
- South side of SR12: Level field.
- North side of railroad: Heavy vegetation
- South side of railroad: Steep hillside

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Two private driveways.	Moderate [Landscaping]
		X	Large mature trees on both sides of driveways	
2S – Highway South	X		Level field. Trail could run along it if width is available after SR12 widening.	Low
		X	Need to bridge the creek	
3N – Railroad North		X	Heavy vegetation	High
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad for part of segment	Moderate [Geology, Topography]

Photo 7-21 – Miner’s Trail



a) Miner's Trail (north side of SR12)



b) Aerial view. SR12 at middle, railroad at bottom, ranch road on south foothills below.

Photo 7-21 – Miner’s Trail (continued)



Miner’s Trail to narrow part of Jameson Canyon

Segment	Endpoints	
Central	SOL 1.0	SOL 1.2

Existing conditions

- North side of SR12: Moderate hillside, ranch land.
- South side of SR12: Level open field.
- North side of railroad: Jameson Canyon Creek runs close to railway
- South side of railroad: Steep hillside close to tracks

Planned changes

- The SR12 widening project will widen SR12 to the south and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Moderate hillside	Moderate [Geology, Topography]
2S – Highway South	X		Level field. Trail could run along it if width is available after SR12 widening.	Low
3N – Railroad North		X	Heavy vegetation along creek	High
3S – Railroad South		X	Insufficient width between tracks and toe of hill	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad for part of segment, then curves through dense trees to follow terrain	Moderate [Geology, Topography]

Photo 7-22: Miner's Trail to narrow part of canyon



a) Aerial view. Railroad at center.



b) East of Miner's Trail, heading toward canyon

Narrow part of Jameson Canyon

Segment	Endpoints	
Canyon	SOL 1.2	SOL 1.7

Existing conditions

- North side of SR12: Very steep hillside.
- South side of SR12: Very steep hillside covered with trees, extending down to railroad
- North side of railroad: Steep hillside extending up to highway
- South side of railroad: Jameson Canyon Creek runs close to tracks, passing to the south and then back to the north through the Canyon segment.

Planned changes

- The SR12 widening project will widen SR12 and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North	X		Dirt road atop hill north of highway	High
		X	Very steep hillside along highway	
2S – Highway South		X	Very steep hillside between highway and railroad	High
3N – Railroad North		X	Very steep hillside between highway and railroad	High
3S – Railroad South		X	Creek is close to railway and passes under it twice	High
4 – South Foothills	X		Dirt road runs east-west on hillside above railroad, through a significant valley	Moderate [Geology, Topography]
		X	Significant north-south valley through Canyon segment	

Photo 7-23: Narrow part of Jameson Canyon



a) Aerial view. Railroad at center.



b) Narrow part of canyon, facing east

East of narrow part of Jameson Canyon

Segment	Endpoints	
Eastern	SOL 1.7	SOL 2.5

Existing conditions

- North side of SR12: Relatively steep hillside, leveling out closer to Red Top Road
- South side of SR12: Fairly level field away from highway, but ranch house in middle of property, roughly halfway between highway and RR
- North side of railroad: Dense tree cover
- South side of railroad: Dense tree cover

Planned changes

- The SR12 widening project will widen SR12 and add a median barrier.

Feasibility

Alignment Option	Opp	Con	Details	Constraint Level
2N – Highway North		X	Steep grade for part of segment. High hills to north with deep valleys between	Moderate [Geology, Topography]
2S – Highway South	X		Fairly level field away from highway	Low near highway
		X	Ranch house in middle of property, roughly halfway between highway and railroad	
3N – Railroad North		X	Dense tree cover	High
3S – Railroad South		X	Dense tree cover	High
4 – South Foothills		X	Tree cover near north face for part of segment	Moderate [Geology, Topography]
		X	Rolling hills with several small north-south valleys	
	X		Opportunity to connect directly to Red Top Road at I-80	

Photo 7-24: East of narrow part of Jameson Canyon



a) Aerial view. Red Top Road at right, I-80 at lower right



b) East of canyon, facing east

Alignment Option 3 (“Railroad”) west of Confluence

West of the Confluence segment, the 100’ wide Union Pacific Railroad (UPRR) right of way diverges south of SR12 and runs toward American Canyon to the south. South of Chardonnay Golf Club near the Confluence, the land on both sides of the railroad is fairly level and entirely used for agriculture. A private road runs due east from Kelly Road just north of SR29 to a farm east of the railroad, with a private crossing at UPRR milepost 60.3. There is a public grade crossing at Watson Lane, which we define as the southern/western limit of Option 3.

Segment	Western endpoint	Eastern endpoint
Western	Watson Lane	Eastern boundary of Chardonnay Golf Club (approximate UPRR milepost 59.6)

Existing conditions

- Agricultural land uses on both sides through Western segment
- Farm service roads (some paved, mostly unpaved) along one or both sides of right of way
- Four small streams or swales intersect the right of way

UPRR has stated that wishes to preserve its entire right of way width within the study area for possible future expansion such as double-tracking, and will not allow a trail alignment within its right of way. Any proposed trail would have to run outside the right of way.

The right of way is bordered entirely by agricultural land uses through the Western segment except for one practice green at the southeast corner of Chardonnay Golf Club. Some of these fields have unpaved or paved service roads along the right of way. Trail alignments along the railroad right of way would require property acquisition where these service roads exist or are unsuitable for joint use, and joint use easements where they do exist and are suitable.

Alignment Option	Opp	Con	Details	Constraint level
3N – Railroad North		X	Most adjacent parcels have no service road along the ROW.	Moderate [Easements and/or acquisitions]
		X	At Chardonnay Golf Course, one practice green is adjacent to the ROW fence.	
		X	Several small streams or swales intersect ROW	
	X		Public grade crossing at Watson Lane	
	X		Private grade crossing at UPRR milepost 60.3	
3S – Railroad South		X	Most adjacent parcels have no service road along the ROW.	Moderate [Easements and/or acquisitions]
		X	At Watson Lane a house and its yard adjoin the east side of the ROW.	
		X	Several small streams or swales intersect ROW	
	X		Public grade crossing at Watson Lane	
	X		Private grade crossing at UPRR milepost 60.3	

Photo 7-25: Railroad within Western segment



a) Aerial view (golf courses at top, private grade crossing at middle center)



b) Private grade crossing of farm access road that intersects Kelly Road (UPRR milepost 60.3)



c) Public grade crossing at Watson Lane

Alignment Option 5 (“Golf Courses”) west of Confluence

Eagle Vines Golf Course and Chardonnay Golf Club are located within the Western segment south of SR12, east of Kelly Road, and west of the railroad.

Segment	Western endpoint	Eastern endpoint
Western	Kelly Road	Eastern boundary of Chardonnay Golf Club; where railroad approaches from the south and west

Existing conditions

- Golf courses with conventional layout including golf cart paths.
- Fagan Creek bisects both courses in the east-west direction.
- California Red Legged Frog habitat in and near Fagan Creek.

Alignment Option	Opp	Con	Details	Constraint level
5N – Golf Courses - Creek	X		Golf cart paths	High
		X	Need to connect golf cart paths into a contiguous east-west route	
		X	Potential to be struck by golf balls	
		X	Potential user conflicts between trail users and cart path users	
		X	Issue of public non-golf use of a golf course (public or private)	
		X	California Red-Legged Frog habitat along Fagan Creek	
		X	Connecting to SR29 would require a facility along Kelly Road	
5S – Golf Courses – South edge	X		Mostly straight alignment from Kelly Road to near the railroad; property lines could be avoided in this area	Moderate [Easements or acquisitions]
		X	Some vineyards indent into south boundary line of Chardonnay Golf Club	
		X	Connecting to SR29 would require a facility along Kelly Road	

Recommendation

Because of the potential safety hazards to trail users from errant golf balls, and because aligning a trail close to Fagan Creek to minimize this hazard would impact California Red Legged Frog habitat, Alignment Option 5N (“Golf Courses – Creek”) is considered infeasible.

Photo 7-26: Golf courses



a) Aerial view, Eagle Vines Golf Course (Kelly Road at left edge, Fagan Creek across center)



b) Aerial view, Chardonny Golf Club (Railroad at lower right corner, Fagan Creek across center)

Appendix D: Cost Methodology

APPENDIX D: COST ESTIMATE

Cost Methodology

Based on typical volumes of soil and earthwork, and considering typical paving and drainage costs, an average cost was developed for each of the four construction difficulty groups. For instance, the cost per lineal foot for **Group A** was estimated to be fifty dollars a lineal foot (**\$85.00/LF**), similar to what was used in the 2005 ABAG Gap Analysis, after adjusting to reflect the rural nature of the trail where no landscaping, lighting, etc. would be required. Construction costs in **Group B** areas were estimated to average **\$140.00/LF**, while **Group C** costs were estimated to average **\$225.00/LF**. **Group D**, which anticipates the construction of retaining walls or slope stabilization treatment with soil nailing, welded wire walls and shot Crete, etc, is the highest, averaging **\$400.00/LF**.

The total lineal footage of each segment was then measured on the GIS-based trail corridor planning maps and a determination made of the lineal footage of each segment that was in Group A, B, C, or D, based on the project slope maps, landslide maps, and other map resources, and on the field reconnaissance. The cost per lineal foot for each of the groups was then applied to arrive at the estimate for the major part of the trail construction cost, the components involved in earthwork, grading, drainage, and paving.

Depending on the final route, construction of a trail through the Jameson Canyon corridor would also involve the crossing of four to six or more creeks and seasonal drainage ways. Each of these would need culverts or pre-engineered bicycle/pedestrian bridges. Smaller drainage culverts are included in the earthwork, drainage, and paving cost assumptions.

Bridges

Bridge crossing cost information was developed by also dividing the creek and drainage way crossings into four groups:

1. **Crossing Type A**, requiring a small culvert with fill and a headworks structure, or a bottomless arch culvert from 10 to 20 feet across. Costs for furnishing and installing a 10-20 foot crossing were estimated to average **\$15,000.00** each.
2. **Crossing Type B**, requiring a bridge crossing between 20 and 50 feet long. The installed cost of a pre-engineered steel bridge, including abutments in this size range was estimated to average **\$60,000.00**.
3. **Crossing Type C**, requiring a bridge crossing between 50 and 70 feet long. The installed cost of a pre-engineered steel bridge, including abutments in this size range was estimated to average **\$80,000.00**.
4. **Crossing Type D**, requiring a bridge crossing from 70 feet and up to 100 feet long. The installed cost of a pre-engineered steel bike/pedestrian bridge, including abutments in this size range was estimated to average **\$120,000.00**.

Based on the field reconnaissance and an analysis of aerial photographs and a detailed LiDAR topographic base map of the Jameson Canyon corridor, each creek/drainage crossing for all of the feasible alternative trail segments was evaluated and the size class of bridge and corresponding cost determined. All of the bridge costs were then added together for each segment to obtain a total cost per segment for bridge crossings.

Fencing

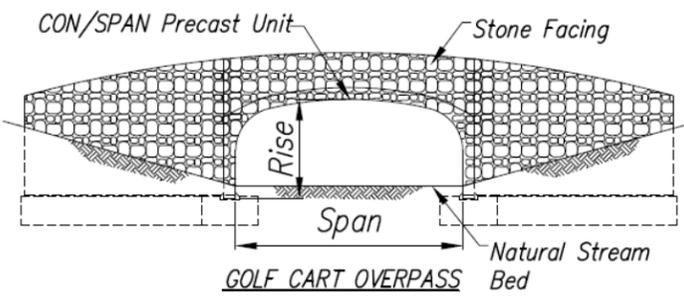
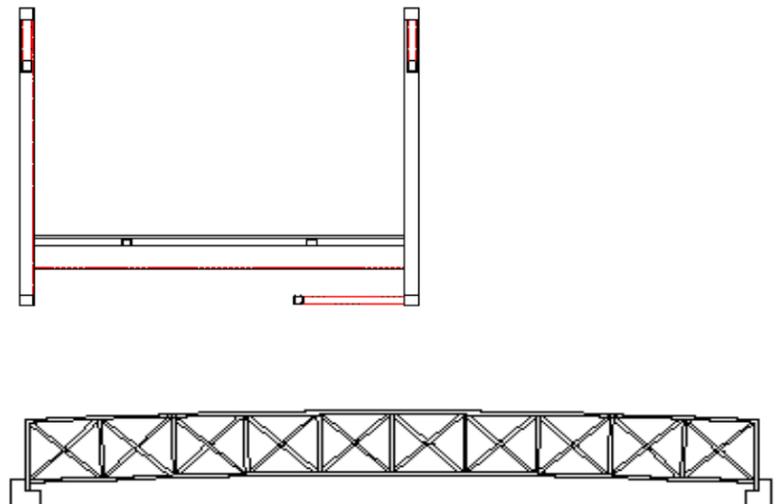
Most of the proposed trail route will require 3 or 4 strand T-post field fencing, on both sides of the 25 to 30 foot wide anticipated trail ROW. Farm gates to allow the adjacent rancher to cross the trail on ranch roads and to access agricultural lands or ranch buildings may be required. In some areas, chain link fencing may be required along the trail route to provide a higher level of protection and security between the trail and adjacent uses, such as the highway or potential unsafe rail crossings. Costs for field fence, including a provision for periodic gates are listed in the table at **\$10.00/LF**.

Other Special Features

In addition to the costs for grading and paving, bridge crossings, fencing, signage and trail furnishings, costs were also included for trailhead parking and staging areas. These would be located at a site near the east and west ends of the corridor. The costs of providing trailhead parking (12-to 20 cars) as well as interpretive signage were estimated to be **\$75,000.00** for each of the two trailhead staging areas. Restrooms (vault toilets) would add another **\$25,000.00**

Another significant project cost that has been included in the "Special Features" category is the under-crossing of the Union Pacific Railroad tracks in the center of the corridor, near the Napa-Solano County boundary, at Creston Station. Since no feasible trail route was identified on the north side of SR12, (and for that matter, on the north side of the railroad tracks) east of Creston Station, a crossing of the railroad will be required. Since the existing crossing is a "private crossing" (see page--- for discussion), a new grade separated crossing will be required. Given that the Jameson Canyon corridor is "unofficially" a visually attractive rural scenic route, it is unlikely a pedestrian over crossing would be approved. Costs of an underground tunnel running beneath the railroad grade, an underpass, is estimated to be on the order of **\$500,000.00**.

Facility Type	Construction Type	Construction Type General Requirements	Construction Components	Cost	Typical Section
Class I Multi-Use Trail Type A	Trail – Level Paved Surface	<ol style="list-style-type: none"> Existing path, roadway or levee location requiring minor leveling/grading Aggregate Base and Paving for 10'-12' trail width 	<ol style="list-style-type: none"> Mobilization/Demolition/Traffic Control/Utility Relocation/Clearing and Grubbing Earthwork Asphalt pavement with Aggregate Base 12 ft. wide Pavement striping 	\$85/LF	
Class I Multi-Use Trail Type B	Trail – Moderate Hillside Location or Other Moderate Engineering Challenge for Implementation	<ol style="list-style-type: none"> Grading to create trail bench w/ minor cut/fill Aggregate Base and Paving for 10'-12' trail width Drainage as required. 	<ol style="list-style-type: none"> Mobilization/Demolition/Traffic Control/Utility Relocation/Clearing and Grubbing Earthwork Engineered Fill Asphalt pavement with Aggregate Base 12 ft. wide pavement striping 36" or less retaining wall 	\$140/LF	
Class I Multi-Use Trail Type C	Trail – Difficult; Hillside Location or Other Complex Engineering Challenge for Implementation	<ol style="list-style-type: none"> Grading to create trail bench w/ substantial cut and/or cut/fill Retaining walls, structure, or piles required Aggregate Base and Paving for 10'-12' trail width Drainage as required. 	<ol style="list-style-type: none"> Mobilization/Demolition/Traffic Control/Utility Relocation/Clearing and Grubbing Earthwork Engineered Fill Geocell placement Asphalt pavement with Aggregate Base 12 ft. wide Pavement striping Engineered retaining wall 	\$225/LF	
Class I Multi-Use Trail Type D	Trail – Very Difficult; Extremely Steep and Unstable Slopes	<ol style="list-style-type: none"> Grading to create trail bench w/ substantial cut and/or cut/fill Slope reconstruction, retaining walls, structure, or other slope stabilization approaches required Aggregate Base and Paving for 10'-12' trail width Drainage as required. Slope Stabilization & Erosion Control Required 	<ol style="list-style-type: none"> Mobilization/Demolition/Traffic Control/Utility Relocation/Clearing and Grubbing Earthwork Engineered Fill Geocell placement Asphalt pavement with Aggregate Base 12 ft. wide Pavement striping Engineered retaining wall Reconstructed slope with geosynthetic, soil nails, slope drainage, etc. 	\$400/LF	

Facility Type	Construction Type	Construction Type General Requirements	Construction Components	Cost	Typical Section
Trail Bridge (Arch Culvert) Type A Up to 20 feet	Bridge- Modular precast natural- bottom culvert Pedestrian/ Bicycle Load Only	<ol style="list-style-type: none"> 1. Abutment engineering/ construction 2. Transport of structure to site 3. Structure securing and surfacing 	<ol style="list-style-type: none"> a. Mobilization/Demolition/Traffic Control/Utility Relocation/Clearing and Grubbing b. Earthwork c. Bridge abutments d. Preconstructed arch system e. Engineering design 	\$15,000/EA	
Trail Bridge Type B 20-50 ft. Type C 50-70 ft. Type D 70-100 ft.	Bridge – Prefabricated Structure Light Vehicle/ Maintenance Load	<ol style="list-style-type: none"> 1. Abutment engineering/ construction 2. Transport of structure to site 3. Bridge structure securing and surfacing 	<ol style="list-style-type: none"> a. Mobilization/Demolition/Traffic Control/Utility Relocation/Clearing and Grubbing b. Earthwork c. Drilled piles or piers d. Concrete bridge abutments e. Preconstructed clearspan bridge, vehicle load rating f. Engineering design 	\$60,000/EA \$80,000/EA \$120,000/EA	

JAMESON CANYON TRAIL COST ESTIMATE

ALIGNMENT OPTION	Grading and Paving					Bridges					Fencing (\$12/LF) Cost	Special Features Lump Sum	Trailhead Parking & Staging Lump Sum	OPTION TOTALS
	A (\$85/LF) Cost	B (\$140/LF) Cost	C (\$225/LF) Cost	D (\$400/LF) Cost	G&P Subtotals	A (\$15,000/EA) Cost	B (\$60,000/EA) Cost	C (\$80,000/EA) Cost	D (\$120,000/EA) Cost	Bridge Subtotals				
	2N - Hwy North: Western	\$243,100	\$501,200	\$162,000	\$0	\$906,300	\$15,000	\$0	\$80,000	\$0	\$95,000	\$154,440	\$0	
2N - Hwy North: Confluence	\$124,100	\$305,200	\$272,250	\$0	\$701,550	\$0	\$0	\$160,000	\$120,000	\$280,000	\$104,760	\$0	\$0	\$1,086,310
2N - Hwy North: Central	\$0	\$212,800	\$1,818,000	\$204,000	\$2,234,800	\$15,000	\$120,000	\$160,000	\$120,000	\$415,000	\$218,160	\$500,000	\$0	\$3,367,960
2N - Hwy North: Canyon	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2N - Hwy North: Eastern	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
OPTION TOTALS	\$367,200	\$1,019,200	\$2,252,250	\$204,000	\$3,842,650	\$30,000	\$120,000	\$400,000	\$240,000	\$790,000	\$477,360	\$500,000	\$75,000	\$5,685,010
2S - Hwy South: Western	\$212,500	\$600,600	\$240,750	\$0	\$1,053,850	\$15,000	\$60,000	\$80,000	\$120,000	\$275,000	\$149,040	\$0	\$75,000	\$1,552,890
2S - Hwy South: Confluence	\$289,000	\$204,400	\$54,000	\$0	\$547,400	\$0	\$0	\$0	\$240,000	\$240,000	\$104,760	\$0	\$0	\$892,160
2S - Hwy South: Central	\$644,300	\$354,200	\$0	\$0	\$998,500	\$45,000	\$120,000	\$80,000	\$120,000	\$365,000	\$218,160	\$500,000	\$0	\$2,081,660
2S - Hwy South: Canyon	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2S - Hwy South: Eastern	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
OPTION TOTALS	\$1,145,800	\$1,159,200	\$294,750	\$0	\$2,599,750	\$60,000	\$180,000	\$160,000	\$480,000	\$880,000	\$471,960	\$500,000	\$75,000	\$4,526,710
3N - RR North: Western	\$61,200	\$600,600	\$483,750	\$0	\$1,145,550	\$0	\$60,000	\$80,000	\$0	\$140,000	\$276,480	\$0	\$75,000	\$1,637,030
3N - RR North: Confluence	\$0	\$340,200	\$436,500	\$196,000	\$972,700	\$0	\$0	\$80,000	\$120,000	\$200,000	\$99,360	\$0	\$0	\$1,272,060
3N - RR North: Central	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3N - RR North: Canyon	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3N - RR North: Eastern	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
OPTION TOTALS	\$61,200	\$940,800	\$920,250	\$196,000	\$2,118,250	\$0	\$60,000	\$160,000	\$120,000	\$340,000	\$375,840	\$0	\$75,000	\$2,909,090
3S - RR South: Western	\$61,200	\$701,400	\$321,750	\$0	\$1,084,350	\$0	\$60,000	\$0	\$0	\$60,000	\$276,480	\$0	\$75,000	\$1,495,830
3S - RR South: Confluence	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3S - RR South: Central	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3S - RR South: Canyon	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
3S - RR South: Eastern	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
OPTION TOTALS	\$61,200	\$701,400	\$321,750	\$0	\$1,084,350	\$0	\$60,000	\$0	\$0	\$60,000	\$276,480	\$0	\$75,000	\$1,495,830
4 - S. Foothills: Western	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4 - S. Foothills: Confluence	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4 - S. Foothills: Central	\$0	\$989,800	\$569,250	\$204,000	\$1,763,050	\$45,000	\$180,000	\$0	\$0	\$225,000	\$217,080	\$0	\$0	\$2,205,130
4 - S. Foothills: Canyon	\$11,900	\$78,400	\$315,000	\$280,000	\$685,300	\$15,000	\$60,000	\$0	\$0	\$75,000	\$58,320	\$0	\$0	\$818,620
4 - S. Foothills: Eastern	\$16,150	\$103,600	\$375,750	\$444,000	\$939,500	\$15,000	\$60,000	\$0	\$0	\$75,000	\$68,040	\$0	\$75,000	\$1,157,540
OPTION TOTALS	\$28,050	\$1,171,800	\$1,260,000	\$928,000	\$3,387,850	\$75,000	\$300,000	\$0	\$0	\$375,000	\$343,440	\$0	\$75,000	\$4,181,290
5N - Golf Course/Creek: Western	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5N - Golf Course/Creek:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5N - Golf Course/Creek: Central	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5N - Golf Course/Creek: Canyon	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5N - Golf Course/Creek: Eastern	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
OPTION TOTALS	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5S - Golf Course/South: Western	\$61,200	\$701,400	\$321,750	\$0	\$1,084,350	\$15,000	\$60,000	\$80,000	\$0	\$155,000	\$120,960	\$500,000	\$75,000	\$1,935,310
5S - Golf Course/South:	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5S - Golf Course/South: Central	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5S - Golf Course/South: Canyon	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5S - Golf Course/South: Eastern	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
OPTION TOTALS	\$61,200	\$701,400	\$321,750	\$0	\$1,084,350	\$15,000	\$60,000	\$80,000	\$0	\$155,000	\$120,960	\$500,000	\$75,000	\$1,935,310

0 = Unfeasible segment for grading & paving

TOTAL CONSTRUCTION - PREFERRED ROUTE (2S West-Confluence-Central; 4 Canyon-Eastern): \$6,502,870

Appendix E: Benefit Cost Analysis Methodology and Background Information

Benefit Cost Analysis of Bicycle Facilities

<http://www.bicyclinginfo.org/bikecost/>

Using this Tool

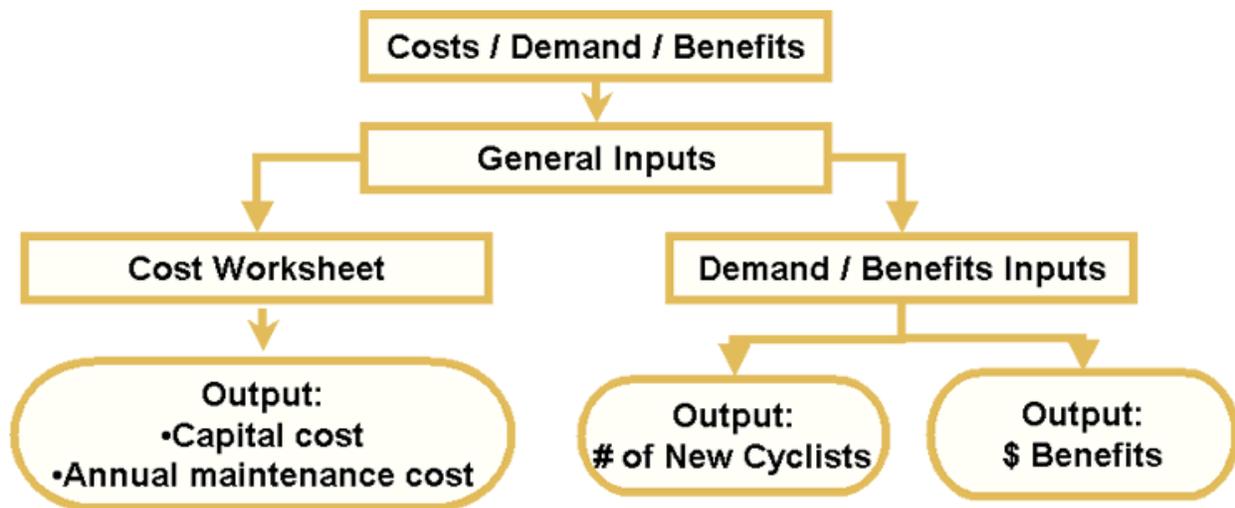
Purpose

If your community is considering building a new bicycle facility you can use this tool to estimate costs, the demand in terms of new cyclists, and measured economic benefits (e.g., time savings, decreased health costs, a more enjoyable ride, decreased pollution).

The estimates provided are the result of an 18-month study of the benefits and costs of bicycle facilities, funded by the National Cooperative Highway Research Program and the Minnesota Department of Transportation. Click "Methodology" above for more information.

Overview

This tool provides guidelines for making bicycle facility investment decisions. The first step of the application tool asks if you want to calculate costs, demands, or benefits. You can choose all three if you wish. You will then be presented with a "tree" of questions regarding the type of facility you are considering as well as information about your geographic area. The guidelines follow this general outline:



Icons

Throughout the analysis tool, you will see these icons:  You can click on the icons for more information about the given term. The Facility Costs table also contains links to more information denoted by clicking on a cost item. Clicking on any of these elements will open a popup window, so you will not lose any of your work by doing so.

Translating Demand and Benefits Research into Guidelines

Demand

Our approach to estimating the use of a new facility rests on two main assumptions. First, all existing bicyclists near a new facility will shift from some other facility to the new one. Second, the new facility will induce new bicyclists as a function of the number of existing bicyclists. Research for this project uncovered that people are more likely to ride a bicycle if they live within 2,400 meters (1.5 mile) of a facility than if they live outside that distance (Midwest Regional University Transportation Center Report). The likelihood of bicycling increases even more at 1,600 and 800 meters. We therefore estimate existing and induced demand using 800, 1,600, and 2,400 meter buffers around a facility.

We base our estimates of existing bicycling demand on U.S. Census journey to work mode shares. We establish the number of residents within 800, 1,600, and 2,400 meter buffers of the facility by multiplying the area of each buffer by a user-supplied population density. To identify the number of existing daily bicycle commuters who will shift to the new facility, we multiply the number of residents in each buffer (R) by 0.4, assuming that 80 percent of residents are adults and 50 percent of adults are commuters. We then multiply this number of commuters in each buffer by the region's bicycle commute share (C).

$$\text{Daily existing bicycle commuters} = R \cdot C \cdot 0.4$$

Adult commuters represent only a portion of adult bicyclists. We compared U.S. Census commute shares to National Household Transportation Survey (NHTS) data and found that the total adult bicycling rate ranges from the Census commute rate at the low end to 0.6 percent plus three times the commute rate at the high end (Appendix A of the NCHRP Report 552). This allows us to use readily-available Census commute shares to extrapolate total adult bicycling rates (T).

$$T_{\text{high}} = 0.6 + 3C$$

$$T_{\text{moderate}} = 0.4 + 1.2C$$

$$T_{\text{low}} = C$$

We multiply a low, moderate, and high estimate of this rate by the number of adults in each buffer to arrive at the total number of daily adult cyclists.

$$\text{Total daily existing adult cyclists} = R \cdot T_i \cdot 0.8$$

To obtain the number of existing daily child cyclists, we multiply the number of residents in each buffer by 0.2 to approximate the number of children, then by 0.05 to estimate the number of children who ride a bicycle on a given day (2001 NHTS shows that approximately 5% of children ride a bicycle on a given day).

$$\text{Daily child cyclists} = R \cdot 0.2 \cdot 0.05$$

Multiplying each of the existing cycling groups (commuters, total adults, and children) by the likelihood multipliers found in our research (L) for each buffer provides an estimated number of induced cyclists in each group.

$$\text{New commuters} = \text{existing commuters} \cdot L$$

$$\text{New adult cyclists} = \text{existing adult cyclists} \cdot L$$

$$\text{New child cyclists} = \text{existing child cyclists} \cdot L$$

Where:

$$L_{800m} = 0.51$$

$$L_{1600m} = 0.44$$

$$L_{2400m} = 0.15$$

Mobility Benefit

Our research found that bicycle commuters are willing to spend 20.38 extra minutes per trip to travel on an off-street bicycle trail when the alternative is riding on a street with parked cars (Appendix D of the NCHRP Report 552). Commuters are willing to spend 18.02 minutes (M) for an on-street bicycle lane without parking and 15.83 minutes for a lane with parking. Assuming an hourly value of time (V) of \$12, the per-trip benefit is \$4.08, \$3.60, and \$3.17,

respectively. We multiply the per-trip benefit for the appropriate facility by the number of daily existing and induced commuters, then double it to include trips both to and from work. This results in a daily mobility benefit. Multiplying the daily benefit by 47 weeks per year and 5 days per week results in an annual benefit. Annual mobility benefit = $M \cdot V/60 \cdot (\text{existing commuters} + \text{new commuters}) \cdot 47 \cdot 5 \cdot 2$ It should be noted that this methodology assumes that no bicycle facility previously existed nearby, aside from streets with parking.

Health Benefit

An annual per-capita cost savings from physical activity of \$128 is determined by taking the median value of ten studies (Appendix E of the NCHRP Report 552). We multiply \$128 by the total number of new bicyclists to arrive at an annual health benefit. Annual health benefit = total new cyclists \cdot \$128

Recreation Benefit

A wide variety of studies of outdoor recreational activities (non-bicycling) generated typical values of about \$40 per day in 2004 dollars. If a typical day of recreation is about 4 hours, this would be about \$10/hour. Note that this is an estimate of the net benefits, above and beyond the value of the time taken by the activity itself. This estimate is also in line with a recent study of urban trails in Indianapolis, which used the travel cost method to find typical implied values per trip of about \$7 – \$20.

The “typical” day involves about an hour of total bicycling activity, so we value a day at \$10 (D). From both NHTS and Twin Cities TBI, the average adult cycling day includes about 40 minutes of cycling. We use this, plus some preparation and cleanup time. We multiply this by the number of new cyclists minus the number of new commuters. Annual recreation benefit = (New bicyclists – New commuters) \cdot D \cdot 365

Decreased Auto Use Benefit

The decreased auto use benefits apply only to commuter and other utilitarian travel, as we assume that recreational riding does not replace auto travel. These include reduced congestion, reduced air pollution, and user cost savings. (The latter is not an externality, but is grouped here because it is also calculated as a function of reduced auto travel.) We multiply the total benefit per mile by the number of new commuters, multiplied by the average round trip length from NHTS (L).

We then consider two offsetting adjustments that ultimately leave the total number unchanged. First, there are utilitarian riders in addition to commuters and some of these trips will replace auto trips. Second, not all new bike commuters and utilitarian riders would have made the trip by car; evidence from NHTS suggests that something less than half of bike commuters use driving as their secondary commuting mode. For simplicity, we assume that the total amount of new bike commuter mileage is a reasonable number to use to represent the total amount of new bike riding substituting for driving.

The benefit per mile of replacing auto travel with bicycle travel is a function of location and the time of day. There will be no congestion-reduction benefits in places or at times when there is no congestion. Pollution-reduction benefits will be higher in more densely populated areas and lower elsewhere. User cost savings will be higher during peak periods when stop-and-go traffic increases the cost of driving.

Based on reasoning documented in Barnes’ Mn/DOT Report 2004-50, congestion savings will be 0-5 cents per mile, and pollution savings from 1-5 cents per mile, depending on conditions. We assume the high end of this range in central city areas, the middle range in suburban areas, and the low end in small town and rural areas. For simplicity, we assume that all commuting and utilitarian trips are during congested periods. User cost savings were determined to be 3 cents per mile during congested peak periods and 0 otherwise, thus these are scaled by location in the same way as congestion savings. We assume that bicycle commuters work 5 days a week 47 weeks a year.

Overall, the savings per mile (S) are 13 cents in urban areas, 8 cents in suburban areas, and 1 cent in small towns and rural areas. Annual decreased auto use benefit = new commuters \cdot L \cdot S \cdot 47 \cdot 5

Model Input

1. Type of Analysis

Are you interested in: Costs Demand Benefits

Note: Benefits depend on an estimate of demand. Therefore, checking Benefits also results in Demand being checked 2. Select your Metro Area from the list below:

2. Metro Area

(If your metro area is not listed or your community is outside a metro area, choose "Other/Non-metro")

Inside Oakland - East Bay or Suburban Oakland - East Bay ?

3. Mid-Year of construction?

4. Select a Facility Type:

- On-Street Bicycle Lane with Parking
- On-Street Bicycle Lane without Parking
- Off-Street Bicycle Trail

5. Commute Share:

Given the information you provided, the 2000 Census indicates a bicycle commute share of 1.12% for San Francisco--Oakland--San Jose, CA C .

Mode shares vary within states and metropolitan areas. If you have a better estimate of bicycle commute share in the area around the proposed facility, enter it here.

Commute share: %

6. Residential Density:

The population density of Oakland - East Bay is 7004 per square mile.

Population densities vary within metropolitan areas. If possible, please enter more specific densities in the blanks below.

Please enter the residential density of the area within 800 meters of the facility. enter in persons per square mile

Please enter the residential density of the area between 801 and 1600 meters of the facility. enter in persons per square mile

Please enter the residential density of the area between 1601 and 2400 meters of the facility. enter in persons per square mile

7. Facility Length:

Please enter the facility length. enter in meters

Annual Demand and Benefits Results

Demand:	Low Estimate	Mid Estimate	High Estimate
Residents	8,663	8,663	8,663
Existing Commuters	39	39	39
New Commuters	7	7	7
Total Existing Cyclists	125	1,519	2,282
Total New Cyclists	28	261	390
Annual Benefits	Low Estimate	Mid Estimate	High Estimate
Recreation	\$76,837	\$930,616	\$1,397,919

Mobility - Proposed Facility Type	Per Trip	Daily	Annually
Off Street bicycle trail	\$4.08	\$185	\$43,458

	Low Estimate	Mid Estimate	High Estimate
Health	\$3,528	\$33,469	\$49,857
	Urban	Suburban	Rural
Decreased Auto Use	\$2,127	\$1,309	\$164

This information reflects the variation in calculated benefits for a project provided by the on-line model, depending on the assumption of which range of facility use will be achieved, and if ROW costs are factored in, the Benefit Cost Analysis was completed for five different scenarios:

1. Low Facility Recreation Use (28 daily, 10,220 annually) and Right of Way Costs Not Considered
2. High Facility Recreation Use (261 daily, 95,265 annually) and Right of Way Costs Not Considered
3. Low Facility Recreation Use (28 daily, 10,220 annually) and Right of Way Costs Considered
4. High Facility Recreation Use (261 daily, 95,265 annually) and Right of Way Costs Considered
5. Intermediate Facility Recreation Use (90 daily, 32,850 annually) and Right of Way Costs Not Considered

**Preferred Project; Low Use - ROW Costs Not Included
28 daily users (10,220 annually)**

<u>Assumptions</u>	<u>Inputs</u>
Annual Benefit (starting year after construction)	\$125,132
Construction Year	2013
Construction Cost (ROW not included)	\$8,778,875
Annual Operating and Maintenance Cost	\$45,000
Interest Rate Assumption	2%
Inflation Assumption	1%
Project life cycle	30 years
Present Value (Benefits)	\$2,809,767.53
Present Value (Costs)	\$9,120,772.79
Benefit/Cost Ratio	0.31

Preferred Project; High Use - ROW Costs Not Included

<i>261 daily users (92,265 annually)</i> <u>Assumptions</u>	<u>Inputs</u>
Annual Benefit (starting year after construction)	\$978,911
Construction Year	2013
Construction Cost (ROW not included)	\$8,778,875
Annual Operating and Maintenance Cost	\$45,000
Interest Rate Assumption	2%
Inflation Assumption	1%
Project life cycle	30 years
Present Value (Benefits)	\$21,980,886.96
Present Value (Costs)	\$9,120,772.79
Benefit/Cost Ratio	2.41

Preferred Project; Low Use - ROW Costs Included

<u>Assumptions</u>	<u>Inputs</u>
Annual Benefit (starting year after construction)	\$125,132
Construction Year	2013
Construction Cost (ROW included)	\$8,888,875
Annual Operating and Maintenance Cost	\$45,000
Interest Rate Assumption	2%
Inflation Assumption	1%
Project life cycle	30 years
Present Value (Benefits)	\$2,809,767.53
Present Value (Costs)	\$9,222,395.79
Benefit/Cost Ratio	0.30

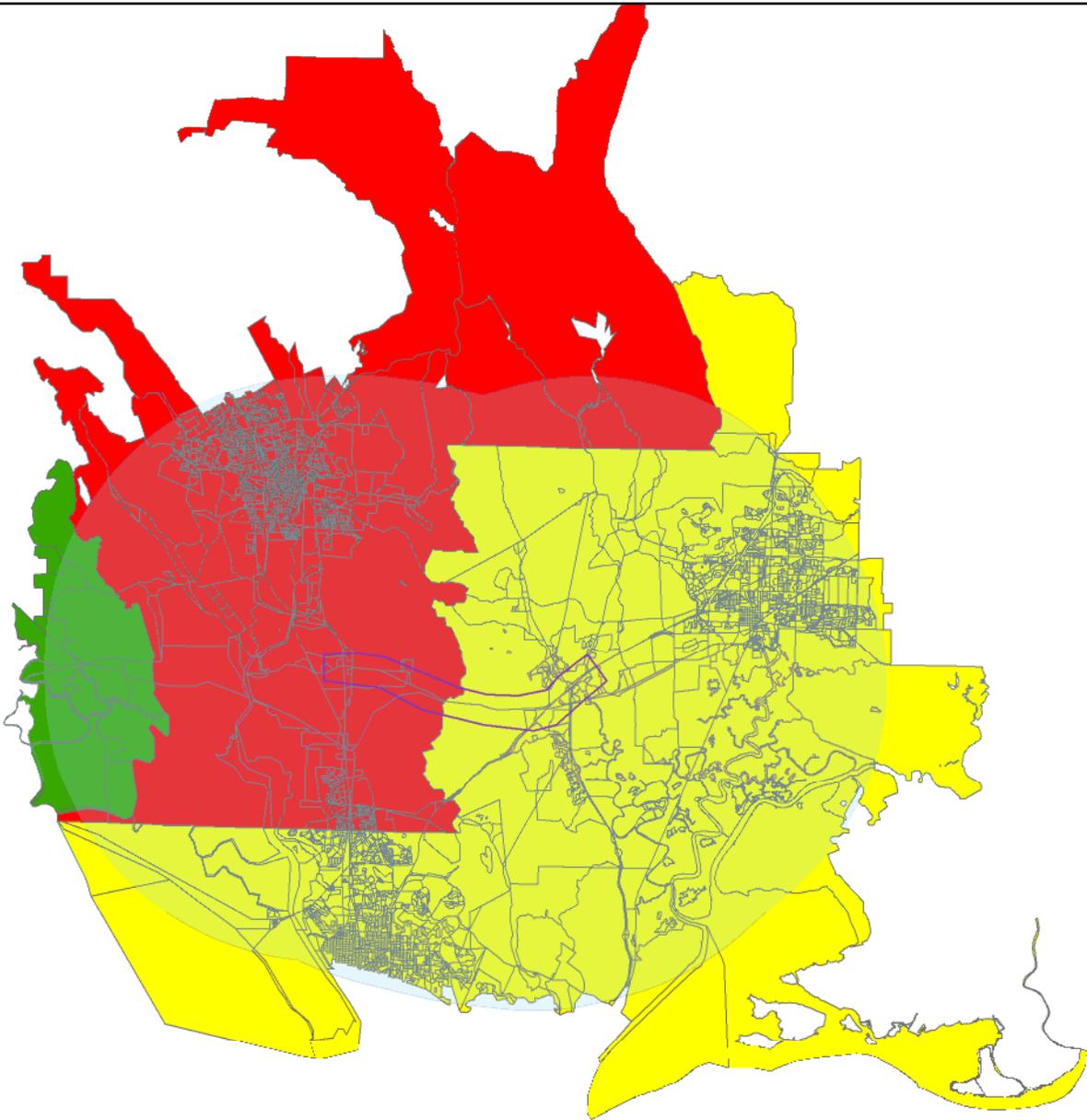
Preferred Project; High Use - ROW Costs Included

<u>Assumptions</u>	<u>Inputs</u>
Annual Benefit (starting year after construction)	\$978,911
Construction Year	2013
Construction Cost (ROW included)	\$8,888,875
Annual Operating and Maintenance Cost	\$45,000
Interest Rate Assumption	2%
Inflation Assumption	1%
Project life cycle	30 years
Present Value (Benefits)	\$21,980,886.96
Present Value (Costs)	\$9,222,395.79
Benefit/Cost Ratio	2.38

Preferred Project; Intermediate Use - ROW Costs Included

<u>Assumptions</u>	<u>Inputs</u>
Annual Benefit (starting year after construction, based on 90 users per day)	\$418,531
Construction Year	2013
Construction Cost (ROW included)	\$8,888,875
Annual Operating and Maintenance Cost	\$45,000
Interest Rate Assumption	2%
Inflation Assumption	1%
Project life cycle	30 years
Present Value (Benefits)	\$9,397,874.37
Present Value (Costs)	\$9,222,395.79
Benefit/Cost Ratio	1.02

* (90 users per day at \$10.00 recreation use value)



County	Pop. Vic.	Pop. Enc.	00-09 Census Adj Factor	Adj. Pop. Vic.	Adj. Pop. Enc.	Area (sq mi) Vic.	Area (sq mi) Enc.	Pop Den Vic.	Pop Den Enc.	Pop Den. Av.
Napa	90900	87096	8.30%	98445	94325	213.01	98.43	462.16	958.30	710.23
Solano	213686	210320	3.20%	220524	217050	282.02	161.55	781.94	1343.55	1062.75
Sonoma	495	8	2.90%	509	8	25.6	6.99	19.88	1.14	10.51
Prj. Site				319478	311383	520.63	266.97	613.64	1166.36	890.00

Jameson Canyon Trail Counties

- Napa County
- Solano County
- Sonoma County
- Jameson Trail 8 mile Buffer
- Jameson Trail Proposed Project Site

Summary

Vicinity: Pop density data including all census track blocks within an 8 mi radius of the project site: **613.64 pers/sq. mile**

Encircled: Pop density data including only census tracks that are completely within the 8 mile radius of the site: **1166.38pers/sq. mile**

Average: Average of vicinity and encircled pop density figures: **890pers/sq. mile**

Jameson Canyon Trail Population Density Figures