Highway 17
Regional Trail Connections Study
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Prepared by:
Midpeninsula Regional Open Space District
Aaron Peth, Planner II
Meredith Manning, Senior Planner

with
TrailPeople Landscape Architects and Planners
Jana Sokale Environmental Planning

Preparers and Contributors

Midpeninsula Regional Open Space District Staff

Aaron Peth	Planner II
Allen Ishibashi	Senior Real Property Agent
Brad Pennington	Foothills Area Superintendent
Brian Malone	Visitor & Field Services Assistant General Manager
Bryan Apple	Capital Projects Field Manager
Coty Sifuentes-Winter	Senior Resource Management Specialist
Cydney Bieber	Public Affairs Specialist III
Dan Chamberlin	Acting Special Projects Maintenance Supervisor
Don Mackessy	Maintenance Supervisor
Holden Neal	Equipment Mechanic Operator
Jamie Hawk	Acting GIS Program Administrator
Jane Mark, AICP	Planning Manager
Jason Lin	Engineering and Construction Manager
Joshua Hugg	Governmental Affairs Specialist
Julie Andersen	Senior Resource Management Specialist
Kirk Lenington	Natural Resources Manager
Melanie Askay	Grants Specialist
Meredith Manning	Senior Planner
Michael Gorman	Foothills Area Manager
Michael Jurich	Land and Facilities Services Manager
Nathan Greig	Data Analyst I
Susanna Chan	Project Planning & Delivery Assistant General Manager

Consultants

<u>Jana Sokale Environmental Planning</u>

Jana Sokale	Principal Planner

<u>TrailPeople, Landscape Architects and Planners</u>

Randy Anderson	Principal Landscape Architect
Quan Sun	GIS mapping and illustration
Kristiana Cuevas	Editing and Comment Review

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Executive Summary

Midpeninsula Regional Open Space District (Midpen) is an independent special district in the San Francisco Bay Area that has preserved a regional greenbelt system of over 63,000 acres of public land and manages 26 open space preserves. This Highway 17 Regional Trail Connections Study supports Midpen's goal of providing regional trail access across Highway 17 to complete the Bay Area Ridge Trail (Ridge Trail) and Juan Bautista de Anza National Historic Trail (Anza Trail) through this region. This report complements the *Highway 17 Wildlife Passage and Regional Trail Crossings Revised Alternatives Report (2019)* which has identified potential crossing locations and structures to provide access across the four-lane highway (See Figure 1 – Location Map), and was the number one project identified by Midpen constituency for the 2014 Measure AA bond initiative. Measure AA is a $300 million general obligation bond approved in June 2014 by over two-thirds of District voters. These two projects, the *Highway 17 Wildlife Passage and Regional Trails Crossings Revised Alternatives Report* (Highway 17 Crossings Report) and the *Highway 17 Regional Trail Connections Study* (Trail Connections Study) are identified as high priority projects in Midpen's *2014 Vision* Plan.

The trail connections described in this report cross multiple jurisdictions. Trails are proposed on public lands and some private lands, which would require securing public access rights with a trail easement, acquisition or other negotiation. The majority of public lands are owned by Midpeninsula Regional Open Space District (Midpen), County of Santa Clara Parks and Recreation Department (County Parks), County of Santa Clara Roads and Airports Department (County Roads), Valley Water (formerly Santa Clara Valley Water District) and State of California Department of Transportation (Caltrans). The trail connections consider the operating and security policies of the various water and power delivery utilities in the region. Implementation of any project described in this study will require significant collaboration among the jurisdictions and stakeholders with regards to design, construction, funding, trail use policies and operation and long-term maintenance of the facilities. A portion of the required funding for the Highway 17 crossings has been allocated through Midpen's voter approved Measure AA. Additional funding from grants and other sources will be required to fully implement the trail connections. Collaboration will be essential for successful development and operations of the trails.

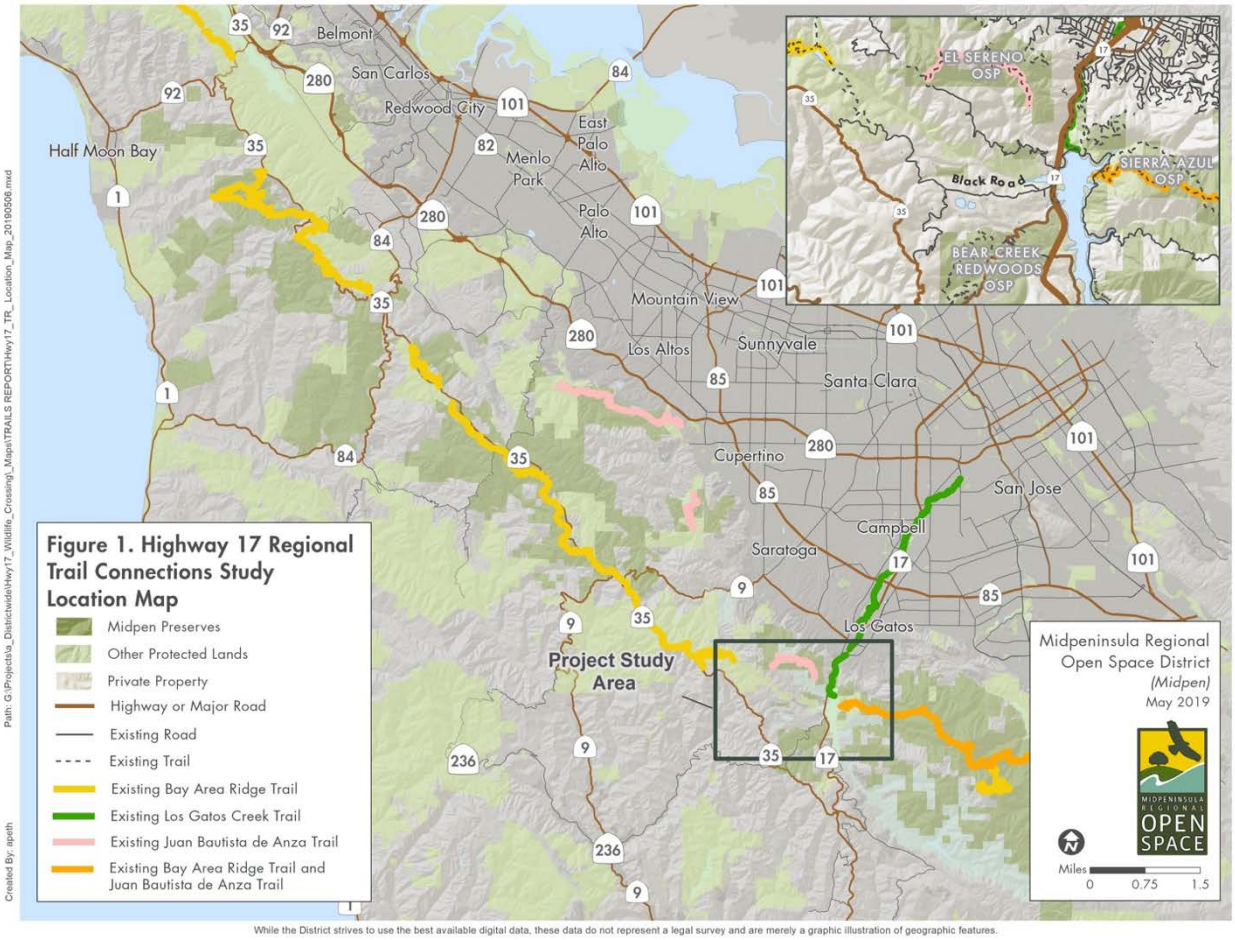

Figure 1. Location Map

This study describes the purpose and objectives of the trail connections study, provides an overview of the potential highway trail crossing locations, outlines the methodology and analysis for identifying and assessing the regional trail connections and describes the findings that determined feasibility and infeasibility of the trail connections and the relationships of the trails to the potential highway crossings. These new connections will connect roughly 50 miles of the existing Bay Area Ridge Trail (Ridge Trail) and roughly 22 miles of the Juan Bautista de Anza Trail (Anza Trail) in this region. Building a new highway crossing and connecting regional trails will close a trails gap from Russian Ridge Open Space Preserve (OSP) to the west to Almaden Quicksilver County Park to the east.

A new trail crossing of Highway 17 also has the potential to improve approximately 14 miles of existing north-south trails that parallel the highway and would connect to other regional trail systems, including the Los Gatos Creek Trail, the trail system planned for Bear Creek Redwoods OSP, and the Guadalupe River Trail in San Jose. The north-south trails will facilitate bicycling commuting from the Lexington Basin to Santa Clara Valley. The trail systems proposed to link to the highway crossing will provide access to 19 miles of multi-use trail, 24 miles of bicycling and hiking trail, 15 miles of hiking and equestrian trail and three miles of hiking-only trail.

Collaboration among agencies will be required to set uniform trail use policies, especially on longer routes crossing multiple jurisdictions such as the Ridge Trail and Anza Trail. The trail setting and intended use will dictate trail width and tread. Trail uses may include hiking, bicycling, horseback riding

and walking dogs on leash. Midpen (1995) has established dog access site evaluation criteria to determine the suitability of allowing dogs on leash within the open space preserves. Consideration will be given to established uses where trails connect to other existing trails, to avoid termination of a specific use at the junction where feasible.

Providing a recreational and commuter trail crossing of Highway 17 poses a complex challenge due to the significant constraints presented in the Lexington Basin. The area is difficult to navigate due to presence of the highway, which acts as a barrier to the movement of wildlife, pedestrians, bicyclists and equestrians. In addition, the area is also challenging due to the surrounding steep terrain, underlying geology, existing water and power delivery facilities and diversity of ownership and jurisdictions in the study area. This is why there has been a pause in regional pedestrian, bicycle and equestrian improvements undertaken in this area for several decades; the easier routes have already been established, leaving this very difficult gap to complete. In addition to creating feasible highway crossings for trails and for wildlife, identifying feasible connecting trails to the potential highway crossings is a high priority for Midpen and regional partners. The proposed highway crossing alternatives are only feasible if the locations can be accessed by existing and proposed regional trails.

This report evaluates a wide range of potential trail connections by assessing site conditions, including trail length, steepness and cross-slopes, stream and drainages crossings, and geological conditions. These assessments were conducted on conceptual trail alignments that were developed using geographic information system (GIS) tools and site visits. The delineation of potential trail alignments included use of existing and former roads, road cuts, and easements, and responded to topographic and drainage constraints. The potential alignments minimize interference with potential wildlife movement corridors, natural resources, and existing residential or public service facilities that were identified through the *Highway 17 Crossings Report (2019).* A total of thirteen (13) trail connections to the east and west of Highway 17 were evaluated as a part of this study. These trail connections link to one or more of three highway trail crossing locations under consideration and/or the existing Bear Creek Road Overpass.

Determining feasible trail routes to the potential crossings of Highway 17 is critical in the selection of the preferred highway crossing location. Conversely, it is important to have a range of trail route options should any of the highway crossings be deemed infeasible at a later date when more detailed investigations are undertaken for environmental review and design. It is also important to have a variety of routing options should public access rights through private property be difficult to secure. This study identifies a range of potentially feasible trail connections and highlights the complexities and interconnectedness of the routes with the highway crossing locations.

A number of the alternative trail connections are too speculative to confirm, requiring access through private lands and/or public non-park lands where access permission must first be secured; therefore, the maps included in this report are limited to general trail routes sufficient for the purpose of a feasibility analysis. These trail connections are subject to further planning, public and agency input, environmental analysis access negotiations, and design review and permitting before they could be implemented.

Summary of the Potential Full Build Out Trail Routes

The Highway 17 Crossings Report (2019) identified five potential locations that may support a trail or wildlife crossing structure. Of these five locations, two support wildlife-only passage, while the remaining three could support a combined trail and wildlife crossing spanning Highway 17. In addition,

the existing Bear Creek Road Overpass potentially could be modified to support some forms of trail use. The potential trail crossings include (See Figure 2 – Study Area Map):

- Ravine Creek Undercrossing (Alternative 1 – Wildlife Passage Only)
- Trout Creek Undercrossing (Alternative 2 – Wildlife Passage Only)
- Southern Overcrossing (Alternative 3 – Combined Trail and Wildlife Crossing or Trail Only)
- Montevina Undercrossing (Alternative 4 – Combined Trail and Wildlife Crossing or Trail Only)
- Northern Overcrossing (Alternative 5 – Combined Trail and Wildlife Crossing or Trail Only)
- Bear Creek Road Overpass (Existing Highway Overpass – Would Require Modifications)

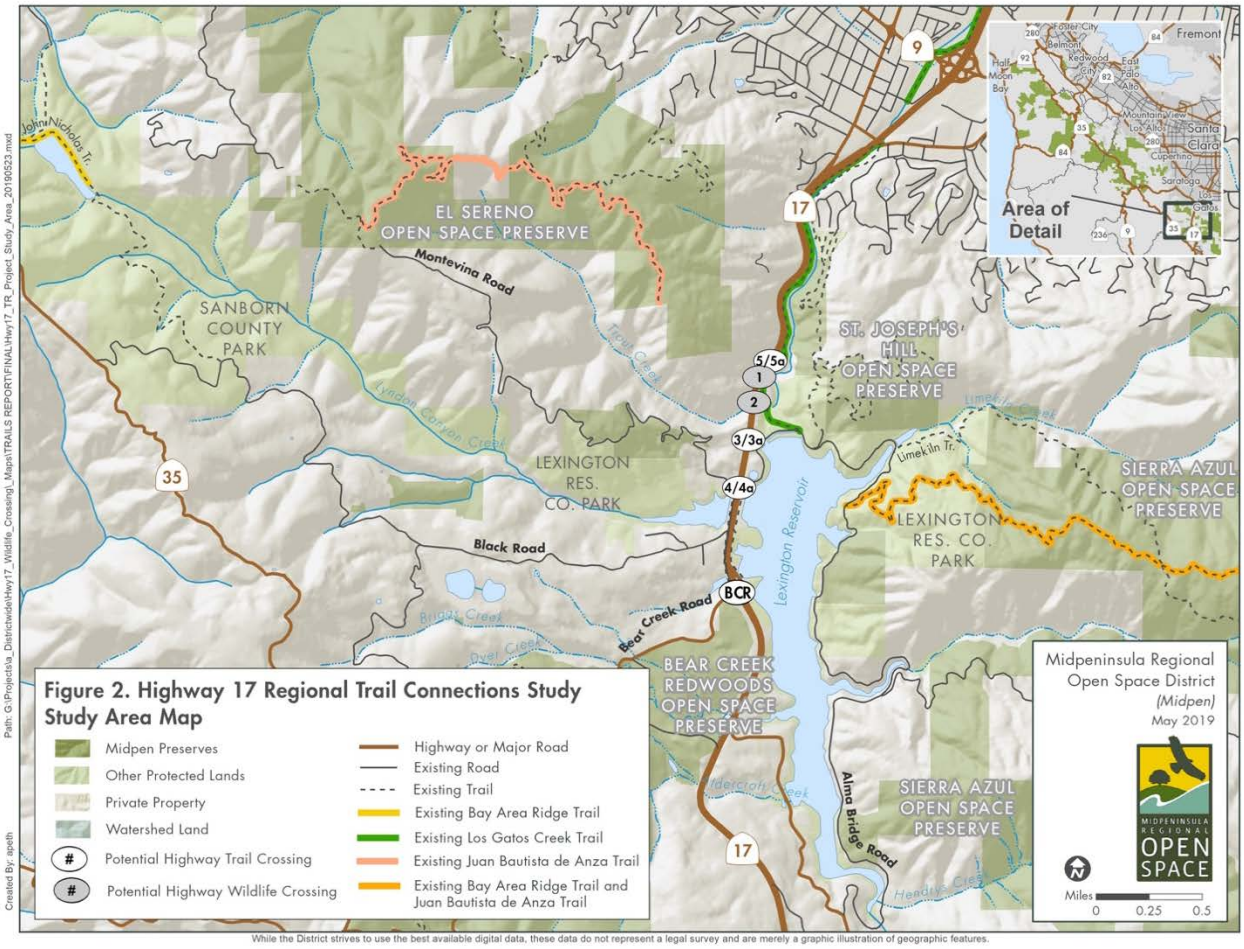

Figure 2. Study Area Map

Each potentially feasible trail connection links to one or two of the three potential Highway 17 trail crossing locations. The two potentially feasible west side routes extend through the open space lands in and adjacent to El Sereno OSP connecting to the proposed highway crossings. These routes span Highway 17 and connect to two eastern routes that link to the existing Priest Rock Trail in Sierra Azul OSP. The eastern routes each vary depending upon the location of the highway crossing and the trail segments selected to extend the east-west route to the Priest Rock Trail. Two north-south routes provide access paralleling Highway 17 from the Los Gatos Creek Trail to the Bear Creek Road Overpass (See Figure 11 – Potential Full Build Out Trail Routes Map).

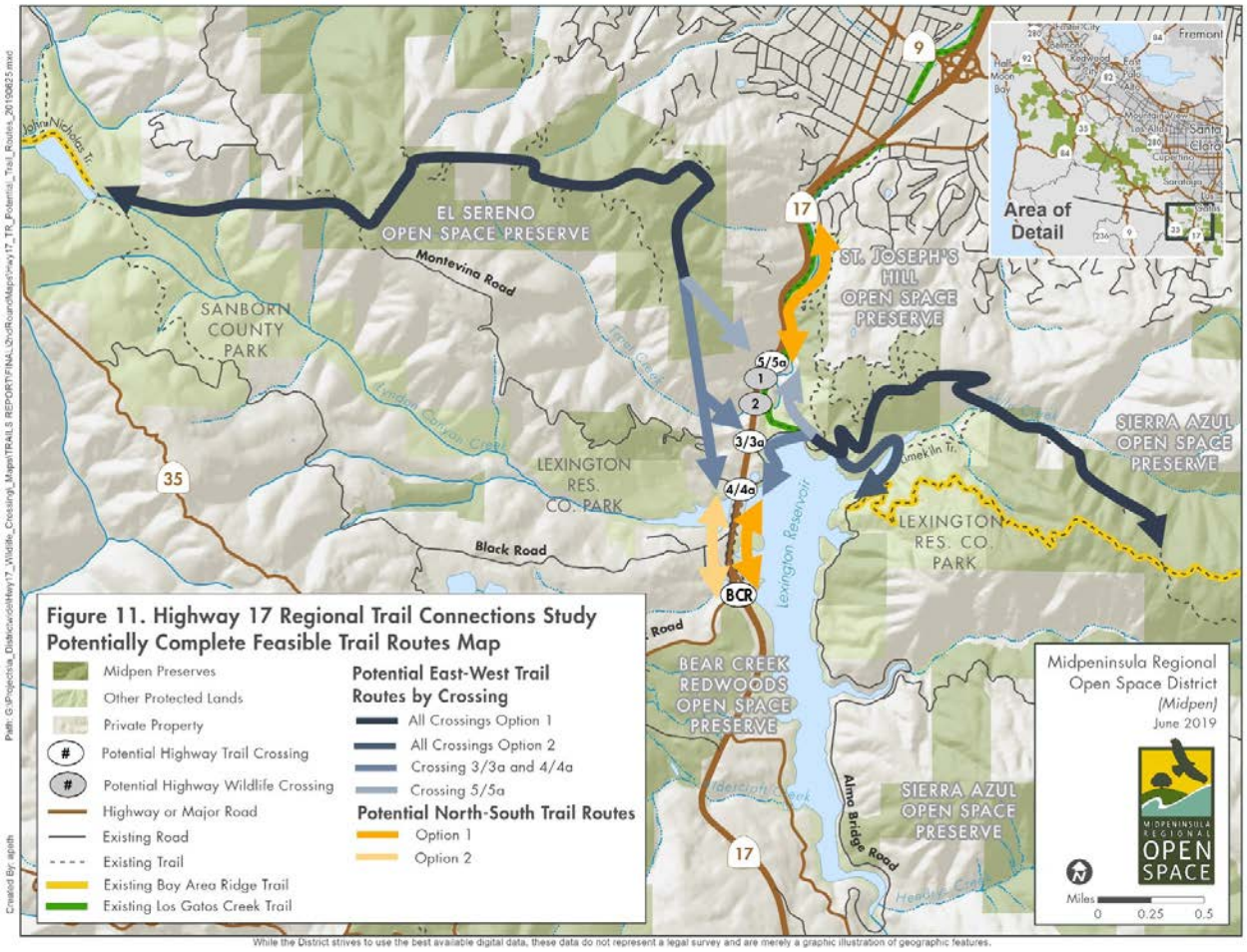

Figure 11. Potential Full Build Out Trail Routes Map

The two potentially feasible west side routes extend from El Sereno OSP to the proposed highway crossings. These routes would extend through both public and private ownership in existing private minimally developed or public open space land. Connection A is located north of Ravine Creek and connects only with the proposed Northern Overcrossing (Alternative 5). Connection B crosses Trout Creek and connects to either the Southern Overcrossing (Alternative 3) or Montevina Undercrossing (Alternative 4). Individual maps of each of the potential full build out trail routes are provided at the end of the study as Figures 12, 13 and 14.

Similar to the western trail connections, all of the eastern trail options provide flexibility for selecting a preferred east-west connection, depending on the highway crossing selected. The Northern Overcrossing (Alternative 5) links directly to the Los Gatos Creek Trail, which extends across the face of Lexington Reservoir's Lenihan Dam to access to Alma Bridge Road. The Southern Overcrossing (Alternative 3) links with the Lenihan Dam spillway service road, which extends to the Los Gatos Creek Trail. The Montevina Undercrossing (Alternative 4) emerges near the intersection of Highway 17 and Alma Bridge Road at an existing trail paralleling the highway. All of these east side routes require improvements to some portion of Alma Bridge Road to reach the informal trail parking area at the Jones Trail on Alma Bridge Road (Jones Trail Parking Area) and the County Parks parking lot at the Lexington Reservoir boat launch ramp. The Montevina Undercrossing (Alternative 4) would require improvements from the Highway 17/Alma Bridge Road intersection to the Jones Trail Parking Area. The Northern

(Alternative 5) and Southern (Alternative 3) Overcrossings would require improvements over a short stretch of road from the Los Gatos Creek Trail/Alma Bridge Road intersection, located on the eastern edge of Lenihan Dam, to the Jones Trail Parking Area. These eastern regional trail connections preserve some level of flexibility for the selection of the highway crossing locations.

The regional trail connections could extend east from the informal Jones Trail Parking Area either through existing public lands and easements or along Alma Bridge Road. The regional trail could connect along an old unimproved dirt road above Alma Bridge Road through Valley Water and Midpen lands to link with the Manzanita Trail in St. Joseph's Hill OSP. A trail easement held by Midpen crosses private property connecting the trail system in St. Joseph's Hill OSP to the Limekiln Trail in Lexington Reservoir County Park and Sierra Azul OSP. This connection would need to cross both Limekiln Canyon Road and Limekiln Creek. This routing would require that the Ridge Trail Council give consideration to changing the Ridge Trail designation in Sierra Azul OSP to use the Limekiln Trail west of the junction with the Priest Rock Trail. The County of Santa Clara Board of Supervisors would also need to accept the Trail Connections Study and subsequent changes to other County trail or park master plans would be necessary to reflect the revised alignment designations.

Significant improvements would be required on portions of Alma Bridge Road in order to provide trail access to either or both the Limekiln Trailhead and/or Priest Rock Trailhead, both of which currently terminate directly on Alma Bridge Road.

The existing trails within Lexington Reservoir County Park that parallel Alma Bridge Road and the right-of-way along Montevina Road from the Bear Creek Road Overpass to the intersection of Alma Bridge Road with Highway 17 could be improved to provide north-south trail access to the regional trails, parks and open space preserves in the area. These improvements would have stand-alone benefits for trail users wishing to access the county parklands and open space preserves located along Highway 17, as well as bicycle commuter benefits to provide year-round physical separation of this use from the highway.

These potential full build out trail routes and all other routes evaluated through this study are described in detail throughout this report.

Photo 1. Taken from Route A (west side of Highway 17) looking north-northeast at view of Santa Clara Valley.

Purpose

This regional trail connections study is a companion report to the *Highway 17 Crossings Report (2019)*, which seeks to identify and assess trail and wildlife crossings that span Highway 17 in the vicinity of the Town of Los Gatos, CA (See Figure 1 – Location Map). This study identifies feasible regional trail connections to the proposed highway crossing structures. The goal is to close the gap in the Bay Area Ridge Trail (Ridge Trail) and Juan Bautista de Anza National Historic Trail (Anza Trail) that exists due to the presence of Highway 17 and the challenging topography and mosaic of ownership and jurisdiction in this area. The County of Santa Clara Department of Parks and Recreation (Santa Clara County Parks) also identified this priority Ridge Trail and Anza Trail gap in their Countywide Trails Prioritization and Gaps Analysis Report (2015). The Ridge Trail currently ends within Sanborn County Park to the west and within Lexington Reservoir County Park to the east. The Anza Trail currently ends within El Sereno OSP to the west and within Sierra Azul OSP to the east (See Figure 2 – Study Area Map). It has long been a high priority for Midpen, Santa Clara County Parks and other partners to close the gap in these two trail systems. Identifying trail connections is important to understand the functionality of the various Highway 17 crossing locations and to ensure informed decision-making and connection success in the final selection of a preferred trail crossing location and design.

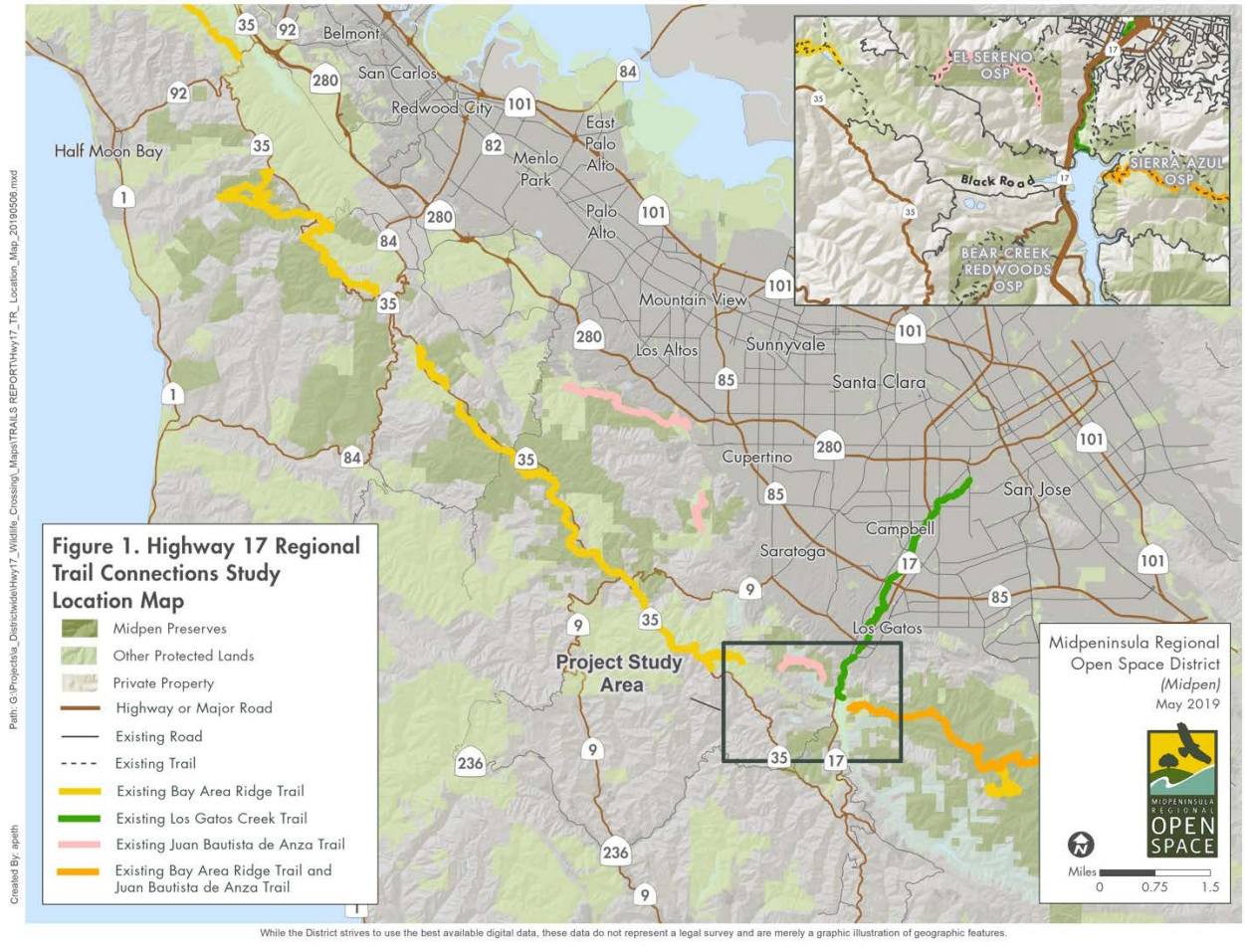

Figure 1. Location Map

Implementation of the highway crossing and regional trails will complete approximately 50 miles of Ridge Trail and 22 miles of Anza Trail, where gaps now exist (See Appendix C. Maps of El Sereno OSP, Sierra Azul OSP, St. Joseph's Hill OSP, Lexington Reservoir County Park and Sanborn County Park Indicating Existing Public Trails). As mentioned, this gap is challenging partially due to the presence of the highway, which acts as a barrier to the movement of wildlife, pedestrians, bicyclists and equestrians, and partially due to the surrounding terrain, existing facilities and diversity of ownership and jurisdictions in the study area. Identification of *feasible* recreational trail routes is an important factor to consider for overall comparison of highway crossing alternatives and selection of a preferred alternative.

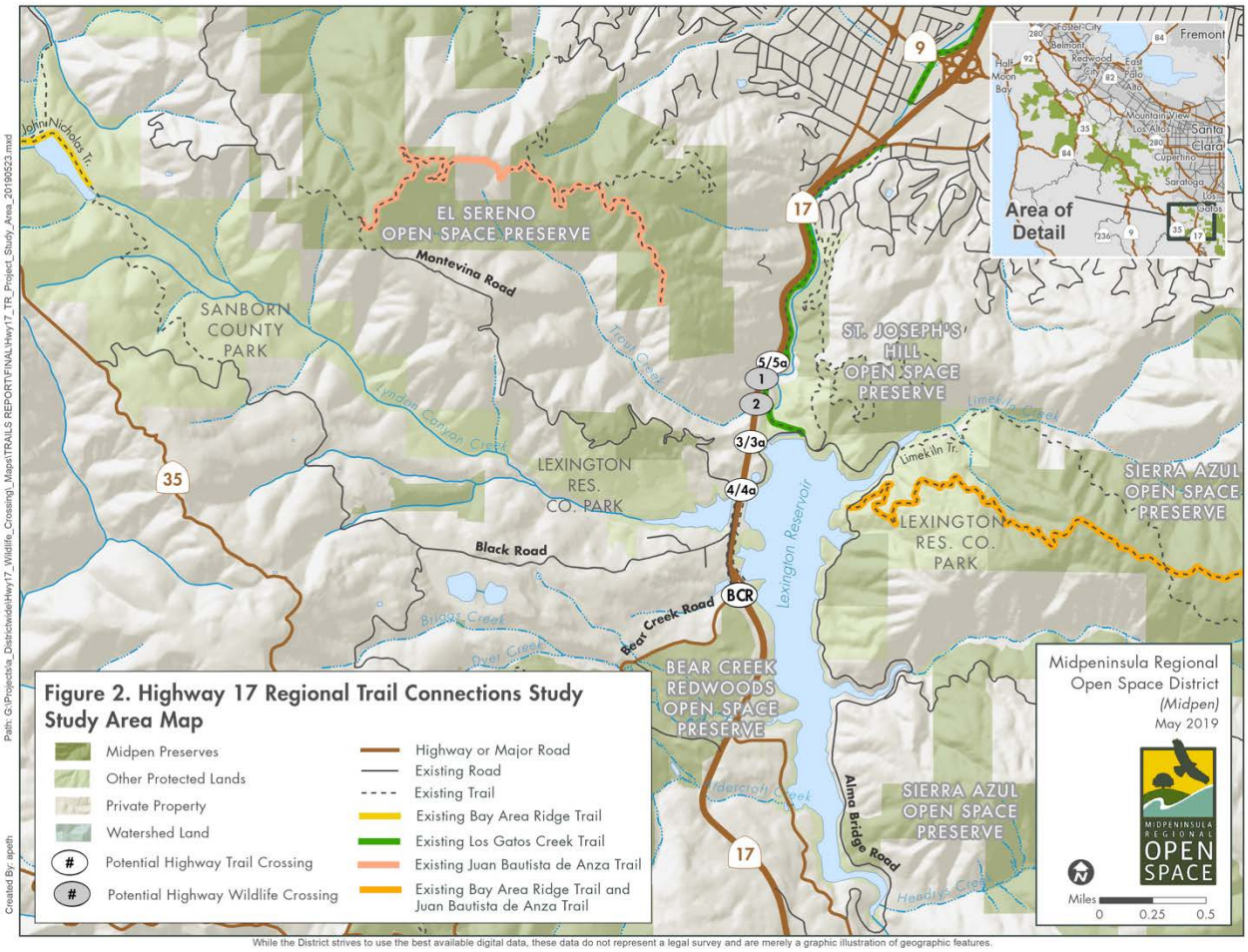

Figure 2. Study Area Map

Objectives

Assessment of respective advantages and disadvantages of the regional trail connections helped Midpen gain a deeper understanding of the potential routing options related to the future Highway 17 recreational trail crossing options. Specific study objectives include:

- Identify and assess a wide range of potential trail routes connecting to the highway trail crossing locations under consideration in the *Highway 17 Wildlife Passage and Regional Trail Crossings Revised Alternatives Report*.

- Link the Ridge Trail and Anza Trail from the John Nicholas Trail in Sanborn County Park to the west to the Priest Rock Trail in Lexington Reservoir County Park and Sierra Azul OSP to the east.
- Improve, extend and/or connect the trails that parallel Highway 17 to link parks, open space preserves and trails in the north (El Sereno OSP, Lexington Reservoir County Park, St. Joseph's Hill OSP, Los Gatos Creek Trail) to those to the south (Bear Creek Redwoods OSP and Sanborn County Park).
- Establish assessment criteria to compare the trail alignment options.
- Highlight potentially feasible complete routes for closing the regional trail gap.
- Generate data to highlight the pros and cons of trail connection alternatives for decision-makers to consider during the selection of a preferred highway trail crossing location.
- Coordinate public access policies in this important multi-jurisdictional area.

Highway 17 Trail Crossing Alternatives

The Highway 17 Crossings Report (2019) identified five potential locations that may support a trail or wildlife crossing structure. Of the five locations, two support wildlife-only passage while the remaining three could support a combined trail and wildlife crossing spanning Highway 17. A combined facility would be wider (approximately 30 feet for an overcrossing and approximately 40 feet for an undercrossing) and, in the case of an overcrossing, vegetated to provide cover for wildlife. Any of the locations that could support a combined facility would also work as stand-alone trail crossing. A stand-alone trail crossing would be approximately 14 feet for an overcrossing and 18 feet for an undercrossing. In addition, the existing Bear Creek Road Overpass could potentially be modified to serve trail users wanting to parallel the highway to reach other destinations. Only the three potential trail crossing locations and the existing Bear Creek Road Overpass are discussed in detail in this report. Refer to the *Highway 17 Crossings Report (2019) for a detailed discussion of the wildlife crossings.* Potential trail crossings include:

- Ravine Creek Undercrossing (Alternative 1 – Wildlife Passage Only)
- Trout Creek Undercrossing (Alternative 2 – Wildlife Passage Only)
- Southern Overcrossing (Alternative 3 – Combined Trail and Wildlife Crossing or Trail Only)
- Montevina Undercrossing (Alternative 4 – Combined Trail and Wildlife Crossing or Trail Only)
- Northern Overcrossing (Alternative 5 – Combined Trail and Wildlife Crossing or Trail Only)
- Bear Creek Road Overpass (Existing Highway Overpass – Would Require Modifications)

Alternatives 1 and 2 have greater potential to serve as wildlife passage across Highway 17, and were not considered as potential trail-only crossings or combined trail/wildlife crossings. The three potential trail crossings and the Bear Creek Road Overpass are briefly described below to provide context for the regional trail connections. More information about all of these crossings is available in the *Highway 17 Crossings Report (2019)*.

Southern Overcrossing (Alternative 3)

A trail overcrossing would provide recreational trail users with a dedicated crossing of Highway 17. The proximity of the Southern Overcrossing to the Lenihan Dam spillway would allow a trail connection that bypasses the narrow and winding portion of Alma Bridge Road to the south, reducing potential traffic conflicts on this portion of the roadway. Trail improvements along Alma Bridge Road to the east of the dam would be needed to provide a safe trail connection to the Priest Rock Trail. The extent of improvements depend on which alternative eastern trail segments are selected. Construction and permanent trail access to the crossing location would occupy or be adjacent to part of the existing construction staging area that is used by Valley Water.

A significant grade differential of 10% from west (higher) to east (lower) exists between the highway crossing elevation and Alma Bridge Road elevation. his could be addressed by a series of stacked trail switchbacks climbing up the adjacent hill (See Figure 3. Southern Overcrossing Site Plan) or by a longer curved or angled ramp built on fill or columns extending into the area adjacent to Highway 17 that is used intermittently as a construction staging area. This alternative would require construction in close proximity to existing overhead utility lines and communication facilities, and would potentially require new security fencing. On the western side, the overcrossing would land on a wide bench above the highway in Caltrans right-of-way created for the construction of Highway 17.

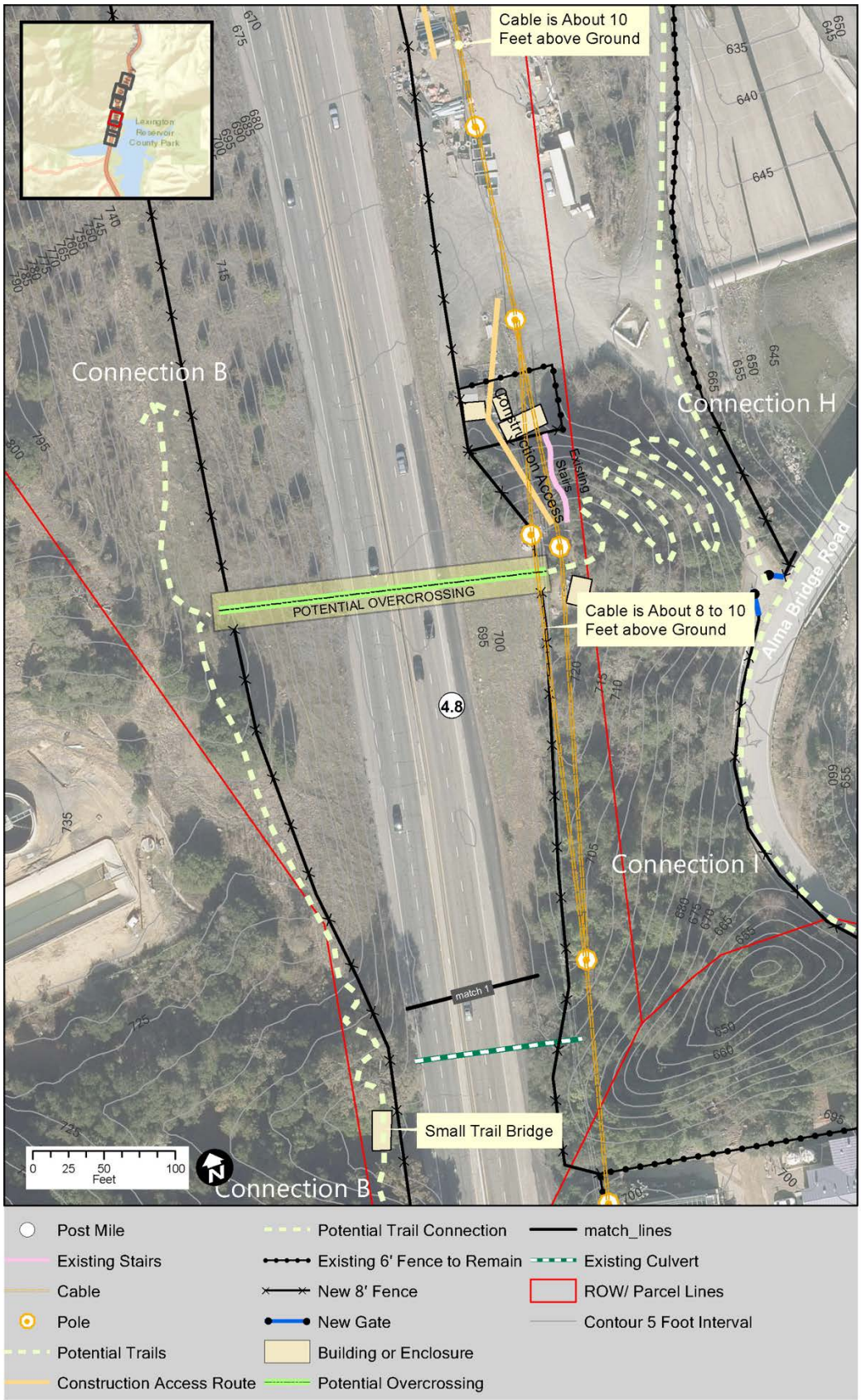

Figure 3: Southern Overcrossing Site Plan

Montevina Undercrossing (Alternative 4)

This undercrossing could provide recreational trail users with a passageway beneath Highway 17 that takes advantage of a change in geology. Approximately 500 feet to the south of where Montevina Road and Alma Bridge Road respectively turn west and east away from the highway, the highway transitions southward from being located in a bedrock cut to being constructed atop a fill embankment. The proposed undercrossing would provide an additional penetration beneath Highway 17 which may also support wildlife passage. This undercrossing links directly from Montevina Road on the west to an existing trail on the east, which then turns north to Alma Bridge Road (See Figure 4. Montevina Undercrossing Site Plan). Although it connects to an existing roadway to the west, the undercrossing would not be constructed to accommodate vehicles. There is approximately 12 to 15 feet of elevation difference between the surface of the highway and the adjacent road or trail beyond the embankments. Of note: when the Bear Creek Road overpass was designed and permitted in the 1990s, the connecting trails were included on the frontage road to link to a future trail crossing at or near to Montevina/Alma Bridge Roads.

In Figure 4, symbology marked EM represents electromats designed to deter wildlife from entering the highway at connecting roadways. These electrically-charged mats are imbedded into the pavement and deliver a mild, buzz-like shock to wildlife that attempt to cross. Pedestrians wearing shoes and cyclists won't be shocked when they cross the mat. However, dogs, horses and people without shoes will be exposed to an electric shock, but this could be avoided by a separate gate or if an “off” button on a timer are installed at the site. Signage warning people of the presence of the mats will be important so they know not to walk on them or let their pets stray onto them (keeping stray domesticated animals off the highway would be a side benefit of the fencing and mats). Electro mat technology is continuously evolving and as this project develops, newer designs that meet the needs of the project should be considered for implementation. For example in some areas, electro mats will need to be designed to prevent reptiles and amphibians from getting onto the mats. Design manufacturers are aware that there is a need for this product, but there is no design yet.

This alternative would have minimal, if any, direct ongoing impact on dam, water system or highway facilities, except that it would increase the amount of trail traffic crossing Montevina Road and Alma Bridge Road. There is adequate shoulder space along the portions of Montevina Road that parallel Highway 17 to accommodate trail access, although a new road/trail crossing and traffic slowing measures would be needed (limited sight distance due to the curve in the road may not allow for this, without reconfiguration). The access along Alma Bridge Road is of equal concern because there are minimal to no shoulders, a sharp curve with limited sight visibility, and heavy quarry truck traffic, as well as general vehicular use at times when trail use is also likely to be high. County Roads staff expressed concern about this issue, and preferred other crossing options that did not add trail traffic to Alma Bridge Road in this segment.

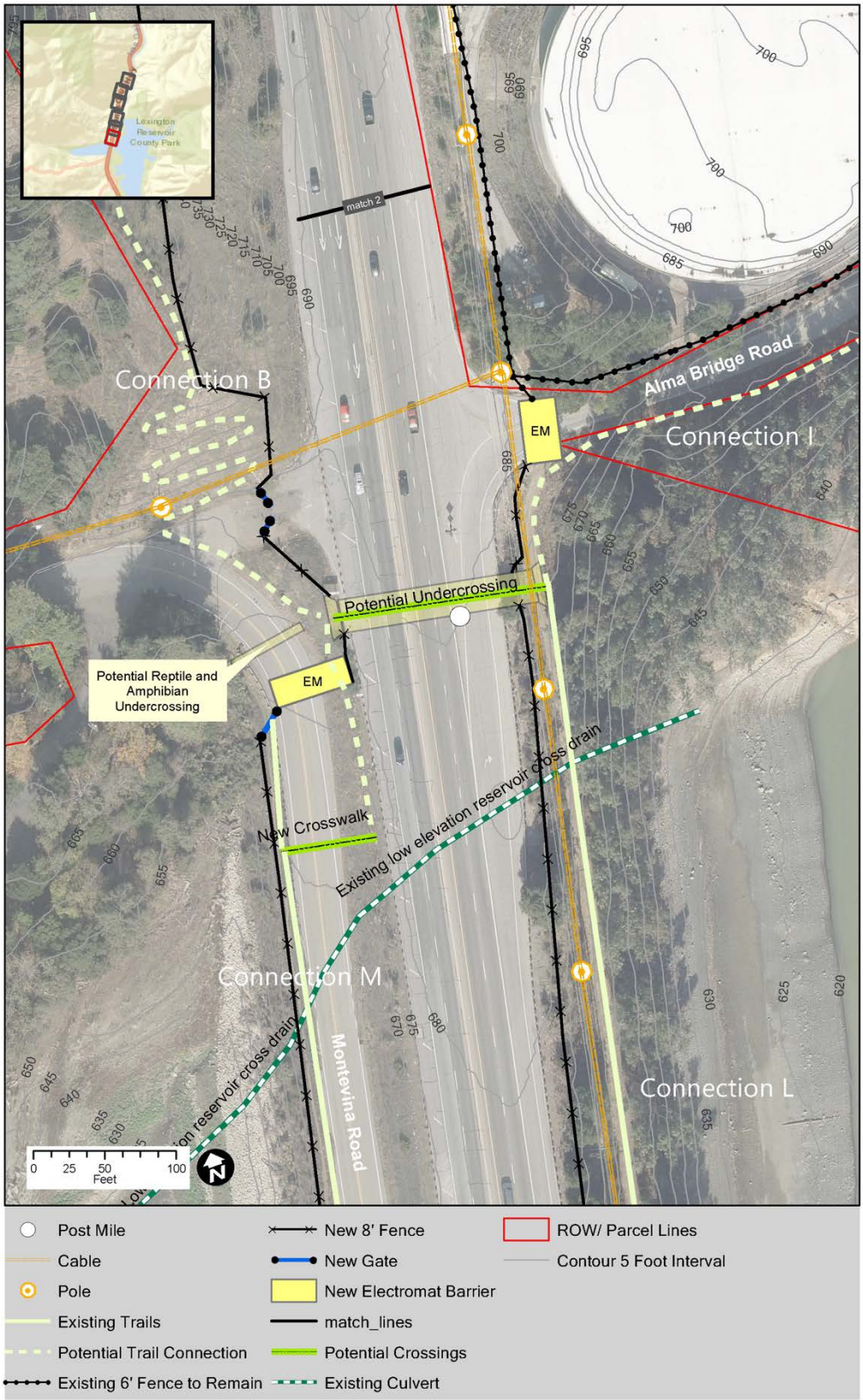

Figure 4: Montevina Undercrossing Site Plan

Northern Overcrossing (Alternative 5)

The Northern Overcrossing is located approximately at the merge of an existing service road that provides access onto northbound Highway 17 from the Los Gatos Creek Trail at approximately post mile 5.25. It is currently gated and fenced and primarily used as a turnout by California Highway Patrol (CHP). The crossing would include an elevated ramp structure located along the existing service access road that would turn perpendicular to the highway to form the crossing from east to west. A design objective is to maintain sufficient space so that the access road onto the highway would be preserved for future use (See Figure 5. Northern Overcrossing Site Plan).

This site features an elongated north-south bench in the overall eastward-descending slopes that drop to Los Gatos Creek below. The western end of the overcrossing would meet steep southern-facing slopes that descend to the shoulder of Highway 17. These steep slopes have been heavily modified by cuts made for the highway and the associated access driveway for a former residence.

This location is appealing because it would provide a shorter distance to make a new west side trail connection to existing trails in El Sereno Open Space Preserve and because it affords a direct connection to the Los Gatos Creek Trail on the east side. This highway crossing has less need for improvements on Alma Bridge Road to complete the connection east than either the Southern Overcrossing (3) or the Montevina Undercrossing (4). Substantial improvements would be needed on a portion of Alma Bridge Road to implement a north-south regional trail connection from the Northern Overcrossing (5).

This site is advantageous for avoiding impact or conflict with existing water, utility or dam facilities. The large diameter water line that follows the Los Gatos Creek Trail is below the surface where the highway access road connects to the Los Gatos Creek Trail, and it is located well to the east and below the proposed structure. There is a constraint from an adjacent series of power poles and overhead lines to the east of the access road. The Northern Overcrossing (5) would also have the least impact to riparian habitat and the two potentially feasible wildlife undercrossings at Trout Creek and Ravine Creek.

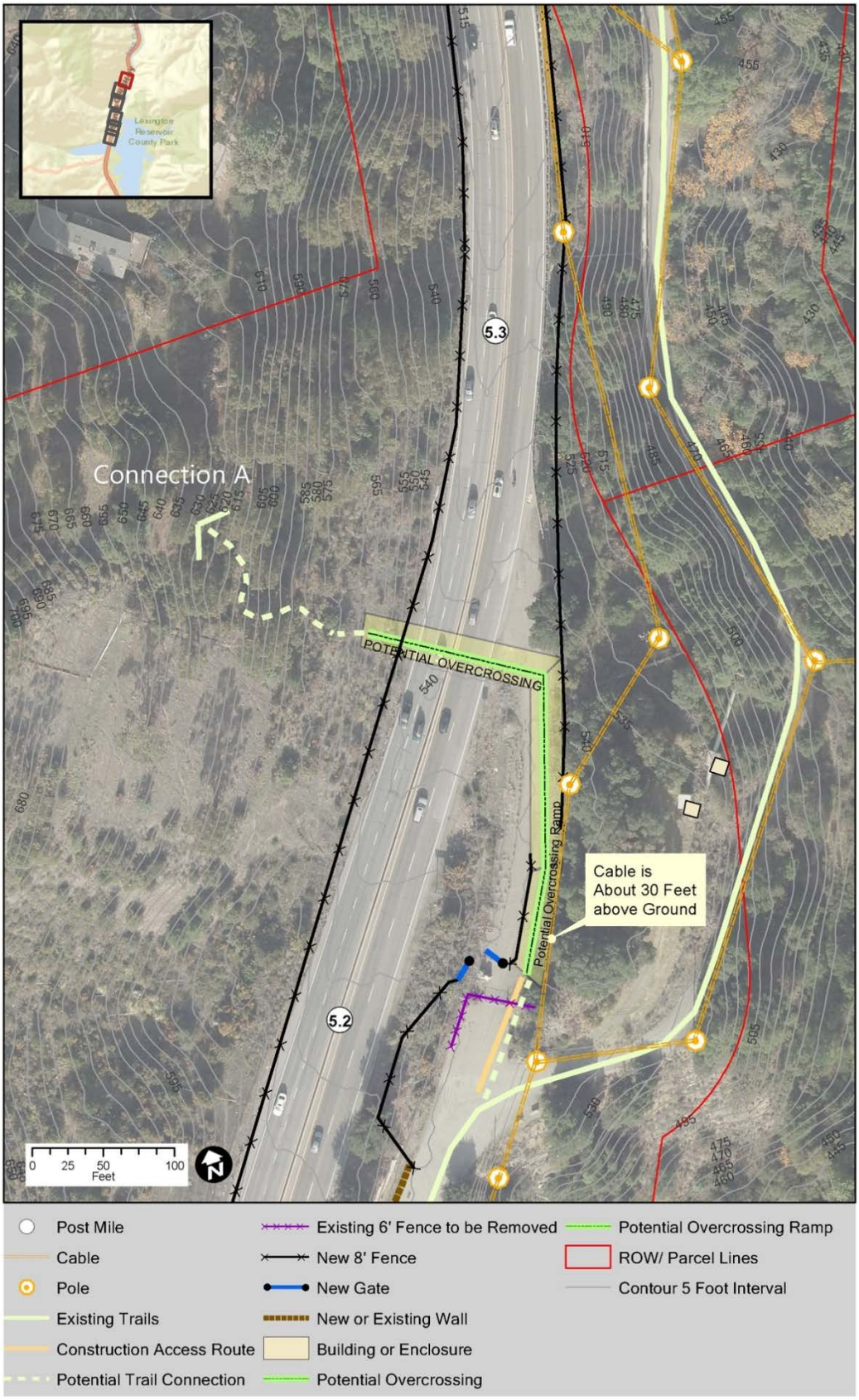

Figure 5: Northern Overcrossing Site Plan

Approaches to the Crossing Structures

All highway crossing structures begin and end within the Caltrans right of way. Immediate trail approaches to these structures are also within Caltrans right of way; in addition, all have unique access complexities immediately beyond the right of way (see Table 1). The complexities listed below refer to connecting trail segments that have been assigned letter designations in the analysis.

Table 1. Trail Connection Complexities Associated with Each Highway 17 Trail Crossing Location

Recreational Trail Crossing Location	Anticipated connecting trail complexities and requirements:
Southern Overcrossing (Alternative 3)	• Access permission from Caltrans, Valley Water, and management agreement with County Parks • Use of existing high cut benches on the west side of the highway and a new small trail bridge to connect the two benches at a drainage, and a series of ramps down a steep cut bank to connect to Montevina Road (at least part of Trail Connection B) • A ramp connecting to the overcrossing landing on the hill on the east side of Highway 17 – either on an oak-studded hillside or in a frequently-used construction staging area for dam or water system projects • Trail improvements at or near the existing Lenihan Dam spillway (Connections H and I) • Trail improvements along or parallel to Alma Bridge Road east of the existing Los Gatos Creek Trail to connect to Sierra Azul OSP (Connections I, J, or K)
Montevina Undercrossing (Alternative 4)	• Access permission from Caltrans and Valley Water, and management agreement with County Parks • Improving the existing trail (Connection L) east of Highway 17 between Alma Bridge Road and the undercrossing • Trail improvements along Alma Bridge Road past the existing Lenihan Dam spillway at least to the Santa Clara County Parks parking area (Connection I) • Trail improvements along or parallel to Alma Bridge Road east of the existing Los Gatos Creek Trail to connect to Sierra Azul OSP (Connections I, J, or K) • A crossing of Montevina Road in a location with potential limited sight distance
Northern Overcrossing (Alternative 5)	• Access permission from Caltrans and two private property owners • A new steep west side trail connection to El Sereno OSP requiring access across intervening private property • Trail improvements along or parallel to Alma Bridge Road east of the existing Los Gatos Creek Trail to connect to Sierra Azul OSP (Connections I, J, or K) • Trail improvements along Alma Bridge Road from the Los Gatos Creek Trail to Connection L near Highway 17 to provide north-south connectivity (Connections H, I)

Bear Creek Road Overpass

The Bear Creek Road Overpass is a critical link for north-south pedestrian, cyclist and equestrian movement. Although not a direct link in the connections being studied for the proposed new Highway 17 trail crossing, the overpass would allow a direct connection between the main body of Lexington Reservoir County Park east of Highway 17, the arm of Lexington Reservoir and the County parklands west of Highway 17, Bear Creek Redwoods OSP, and ultimately to Sanborn County Park, Castle Rock State Park and other destinations along Skyline Boulevard/Highway 35. The existing Bear Creek Road Overpass is currently minimally functional as a crossing for hikers and mountain bicyclists and is technically designed to accommodate horses with the requirement that they be led across the structure. Equestrians have indicated a general reluctance to dismount, citing that doing so decreases control of the animal, and therefore puts the horse (and others around them) at risk. The overpass is in a comfortable route for any of these trail users due to the need to cross the on/off ramps at each end of the overpass and negotiate the bridge with only an 8-foot sidewalk. For these and other safety reasons, more physical separation from high speed traffic is desirable for all users. Specific recommendations for improvements for recreational use are found in the 2019 Highway 17 Crossings Report.

Figure 6: Bear Creek Road Overcrossing Existing Conditions

Trail Assessment Methodology

This section describes the methodology used to identify the preliminary trail routes and the criteria used to assess the feasibility of these routes through park and open space lands, public utility lands, private property and along the adjacent roadways. Preliminary routes were identified through a review of previous trail studies, coordination with partner agencies and an assessment of property ownership. The trail feasibility was then assessed by applying adopted design guidelines and standards that required further analysis of the site conditions. Ownership, existing infrastructure and land suitability as defined by topography, underlying geology and stream crossings served as criteria for assessing trail feasibility.

Partner Coordination

From October 2016 to February 2018, Midpen and partners including Santa Clara County Parks conducted map assessments and field reconnaissance of the trail route options for the potentially

feasible crossing locations identified in the *Highway 17 Crossings Report (2017).* Coordination also occurred with agency partners and the underlying and adjacent landowners to gain a preliminary understanding of their willingness to: a) support the potential trail alignments, b) construct and/or manage the potential trail alignments on their property, and c) engage in negotiations for the acquisition of any required rights, licenses or permits needed for construction and maintenance and patrol of the related trails. This coordination is, and will continue to be, ongoing.

Identification of Preliminary Routes

In October 2016, representatives from Santa Clara County Parks, Santa Clara County Roads and Airports, Midpen and the regional partner entities implementing the Ridge Trail in this region met to discuss the potential Ridge Trail route connections related to the highway crossing. Complete minutes from this meeting are provided in *Appendix A of the Highway 17 Crossings Report (2019)*. This discussion provided additional insight into the feasibility of potential Ridge Trail routes and identified western Ridge Trail connection routes. The qualities of the routes previously contemplated in conceptual trail plans were discussed and additional routes identified for assessment.

Photo 2. Scouting trail connections at El Sereno OSP.

Site Visits

Midpen, partner agency and consultant staff conducted on-location field reconnaissance of proposed routes in critical areas. These field visits were undertaken to further assess the trail routes and confirm on-the-ground conditions.

Design Guidelines

Design guidelines were used to determine feasibility of the preliminary trail routes and roadway connections. The trails were reviewed relative to the *1995 Santa Clara County Trails Master Plan Update – Design Guidelines.* These guidelines recognize three types of natural tread trails that vary by width depending upon the planned use (shared use, single use and limited use) and the terrain (valley floor, foothill and mountain areas) in which the route is proposed. The roadway segments were assessed for

the potential to meet the California Department of Transportation Highway Design Manual: Chapter 1000 Bicycle Transportation Design (California Department of Transportation, 2015), Santa Clara Valley Transportation Authority Bicycle Technical Guidelines (VTA, 2012), American Association of State Highway and Transportation Officials Guide for the Development of Bicycle Facilities (AASHTO, 2012) and American Association of State Highway and Transportation Officials Guide for the Planning, Design, and Operation of Pedestrian Facilities (AASHTO, 2004).

Trail Standards

Trail Design Guidelines are included in the *1995 Santa Clara Countywide Trails Master Plan and the 1999 Uniform Interjurisdictional Trail Design, Use and Management Guidelines*. These guidelines suggest "trail tread widths should be determined by the amount and intensity of trail use and field conditions such as topography, vegetation and sensitivity of environmental resources" (County of Santa Clara, 1995, Chapter 5, p. 70). Countywide Trails Master Plan Guideline G-3 – Shared-use Trail – Natural Tread and G-4 – Limited Use Trail – Natural Tread have application for evaluating the feasibility of developing the trails intended to close the gap in the Ridge Trail and Anza Trail. These guidelines recommend that mountainous trails be constructed of a natural surface, be four to six feet wide and have a typical maximum grade of 12.5%. Although these guidelines establish very specific tread width, grade and surfacing types, they do not set a standard. They represent one perspective for evaluating the feasibility of trail development. Ultimately, any trail would be designed to accommodate the proposed trail uses and anticipated intensity of use. The Countywide Trail Design Guidelines also offer many recommendations for addressing steep topography that may challenge the ability of a proposed route to meet all of the design criteria.

The Architectural Barriers Act Accessibility Guidelines; Outdoor Developed Areas (AGODA), are a set of standards adopted by the Architectural and Transportation Barriers Compliance Board and are included in the 2015 ABA Standards. These standards apply to trails built by federal agencies or on federal lands. While nonfederal agencies may choose to adopt these guidelines, they remain example guidelines for trail construction. Under AGODA, recreational trails have an established set of criteria that allows for deviance from the ABA trail standards to respond to natural conditions and constraints. Similarly, access routes between developed facilities, such as picnic areas and overlooks, permit higher slopes in a prescribed manner at specific situations; however, the intent would be to align these features as much as feasible with the ABA standards. Midpen recently approved the ADA Self-Evaluation and Transition Plan Update (2019).

On-street Bicycle and Pedestrian Standards

Trail segments located on or adjacent to roadways will strive to meet the Caltrans Bicycle Transportation design guidelines, Caltrans Highway Design Manual (HDM), Chapter 1000 and Santa Clara Valley Transportation Authority (VTA) Bicycle Technical Guidelines. These guidelines apply to paved bicycle and pedestrian facilities located within the Caltrans right-of-way and pathways in other jurisdictions that receive state and federal funding.

Geographic Information Systems (GIS) Analysis

Trail alignments were developed in geographic information system (GIS) maps for the purpose of the trail feasibility analysis. The delineation of alignments included: 1) adjustments to utilize existing and former roads, 2) easements, 3) consideration of topographic and drainage constraints, and 4) minimal interference with potential wildlife movement corridors, natural resources, and existing residential or public service/utility delivery facilities.

The mapping included in this report shows only general, conceptual trail routes, and does not show precise trail alignments. Most of the trail connections would cross some private lands and/or public non-park lands where access permission must first be secured for trail development. These trail connections are subject to further planning, environmental analysis, and access negotiations.

Midpen and Santa Clara County Parks staff initially used GIS analysis to review potential routes noted in trail reports and to identify other potential areas for locating the Ridge Trail and Anza Trail on the same alignment. All of the potential trail connections were preliminarily evaluated for ownership, terrain, and general ability to obtain permits and construct. This first level of analysis and discussions with partner agencies resulted in the elimination of about half a dozen routes. No further GIS analysis was conducted on these routes eliminated during the preliminary assessment.

The conceptual trail corridors determined to have potential feasibility were further analyzed in GIS by TrailPeople for ownership, length, steepness, cross-slope, stream crossings, drainage crossings and geological conditions including landslides, fault rupture zones and liquefaction zones.

Assessment Criteria

The various routes were assessed in a side-by-side comparison. The criteria cover eleven characteristics that affect trail feasibility as follows:

1. Segment Length
2. Steepness (climbing grade)
3. Cross-Slope (natural topography)
4. Stream Crossings
5. Drainage Crossings
6. Geologic Conditions
7. Ownership Patterns
8. Proximity to Facilities
9. New Trail Construction vs. Use of Old Roads
10. Roadway Crossings
11. Construction, Operation and Maintenance Costs

1. Segment Length

Overall length of the individual trail connection segments is one factor for how expensive they are, and how efficiently they close the gap. To construct a trail that is enjoyable to hike, a balance of steepness and length must be found: in general, the steeper the terrain, the less direct the route will be, as the trail must be increased in length in order to reduce the trail steepness (climbing grade). In areas constrained by land ownership boundaries, providing a reasonably comfortable trail often requires multiple switchbacks, which can be more expensive to construct and maintain. Rainfall runoff can be difficult to drain without erosion, be appealing to users shortcut by taking a straight line approach (which can accelerate erosion), and other factors contributing to the need for increased long-term maintenance relative to a trail without switchbacks (See Table 2).

2. Steepness

Overall trail steepness was calculated for the routes defined as total elevation gain over the total route length. Ascending, descending and average trail slopes were calculated based upon conceptual trail corridors. The *1995 Countywide Trails Master Plan Guidelines* recommend that mountainous trails have

a typical maximum grade of 12.5%. In general, most of the mountainous routes for this study were preliminarily designed to have between 8% to 12% grades, resulting in a more pleasurable route for hiking or equestrian travel, especially for longer distances and/or in the company of dogs on leash. There were steeper sections on some of these conceptual routes, most of which were brief, but this GIS analysis was able to help determine if the routes were worthy of continuing forward with review. Midpen strives to avoid long segments of steep trail whenever possible, but it is sometimes unavoidable given the multitude of constraints due to ownership, topography, or any of the other items in the list above. Any selected routes would require refinement based upon land negotiations and site conditions (See Appendix B – Table A).

3. Cross-Slope

The steepness of slopes crossed by the trail alternatives is a major factor for the cost and feasibility of trail construction. Cross-slopes frequently very high given the mountainous terrain of the study area. Cross-slope data is directly correlated to construction costs and maintenance costs (See Appendix B – Table B).

4. Stream Crossings

Several perennial streams flow through the study area. Lyndon Canyon Creek flows from Sanborn County Park into the western arm of Lexington Reservoir. Trout Creek drains from El Sereno OSP and flows beneath Highway 17 to join Los Gatos Creek on its way to San Francisco Bay. Limekiln Creek flows from Sierra Azul OSP into the eastern arm of Lexington Reservoir. Ravine Creek, an intermittent stream, flows seasonally from El Sereno OSP to Los Gatos Creek. Creek corridors host sensitive riparian and wetland habitats and are widely used by wildlife for nesting, foraging and access to drinking water. Although riparian habitat is pleasurable to hike through, there is growing concern for these ever-decreasing fragile environments. Midpen's mission statement includes protection and restoration of the natural environment and providing opportunities for ecologically sensitive public enjoyment; therefore, minimizing human disturbance, however unintended or passive, fits within that mission. Midpen strives to design trails that minimize access through these habitats and traverse quickly through and out when no other options are available, allowing wildlife behavior to continue in the absence of human interference (See Appendix B – Table C).

5. Drainage Crossings Many small drainages within steep mountainous terrain of the study area contribute winter storms flows to perennial and intermittent streams. Most of these small drainages are dry the remainder of the year, and are considered intermittent. Generally, the higher up in the watershed, the narrower the intermittent stream; and the shorter the bridge required to cross , the less expensive the construction and long term maintenance is required. Similarly, the fewer crossings the greater the ease of construction and long-term maintenance of the trail (See Appendix B – Table C).

Photo 3. A drainage crossing located to the west of Highway 17 in El Sereno OSP.

6. Geological Conditions

As with many areas in the geologically active Santa Cruz Mountain Region, much of the terrain surrounding Highway 17 is unstable and prone to landslides. This is particularly the case to the west of Highway 17. Drivers traveling Highway 17 between Los Gatos and Santa Cruz experience lane and road closures resulting from the landslide debris from the surrounding hillsides disrupting traffic. Lyndon Canyon Creek, which drains into the western arm of Lexington Reservoir, is also a fault rupture zone. Sanborn County Park and Lexington Reservoir straddle the San Andreas Fault. Any of the routes paralleling Lyndon Canyon Creek could be disproportionally impacted by seismic activity. Only a very small area along Lyndon Canyon Creek is subject to liquefaction. No other locations in the study area are prone to liquefaction, which is typically associated with edge of the bay and large stream courses where loosely arranged mud, silt and cobble loose strength during earthquakes (See Appendix B – Table D).

7. Ownership Patterns

The extent to which a route passes through private land or public land that has transportation or public services functions is a key factor for trail feasibility (See Appendix B – Table E).

8. Proximity to Facilities

The proximity of the trail to private or public facilities and potential impact on them is an important factor to be considered during project development. Discussions with these private and agency partners is and will continue to be ongoing.

9. New Trail Construction vs. Use of Existing Roads

Some of the alternative trail connections partly utilize old roads; while this would likely reduce the overall amount of soil moved, the roadbed would still require improvements such as installing proper drainage. In some cases, all or part of existing roads may be narrowed from road to trail width. Trail connection I, along Alma Bridge Road is unique because it involves using shoulders where they are wide enough to accommodate a trail, and creating space for a trail where there is little to no shoulder by constructing down-slope retaining walls, or a bridge to cross over the dam spillway, among other options(See Appendix B – Table F).

10. Public Road Crossings

The need for the trail to cross a public road, especially where there is no intersection, can be a significant constraint in terms of finding a suitable line of sight, or cost constraint, especially given the different needs of different trail users (cyclists, equestrians, hikers and others) and the existing pattern of public and private business use of the road (for example by truck traffic).

11. Preliminary Construction, Operation and Maintenance Costs

Planning-level, or preliminary estimates were prepared for the trail connection segments that were found to be potentially feasible. These reflect the length of the trail, the steepness of slopes crossed, and particularly the cost of crossing streams or drainages. While by no means final costs, they provide a context and range of potential costs. Midpen is engaged with partners to develop more accurate cost estimates for these trail connection segments for consideration by Midpen's Planning and Natural Resources Committee, planned for September of this year.

Analysis

This section provides a general discussion of the GIS analysis conducted on the trail alignments deemed potentially feasible. Table 2 provides a summary of all the identified trail connections noting location, length, access to the Highway 17 crossing locations and preliminary feasibility assessment. Trail length indicates total length and may include some areas of constructed trail where the proposed routes traverse existing parks and open space preserves. The trail connections noted as infeasible in this chart did not receive further analysis.

The results of the detailed GIS analysis are presented in a series of tables in Appendix B. The tables differentiate the features and constraints of the alternative trail connection segments across the set of criteria described above. This analysis is useful to inform decisions about trail connections, but the results do not directly indicate the best alternatives because the segments need to be considered in aggregate to comprise a complete east-west route, and also considering the commuter and greenbelt connection benefits provided by a complete north-south route. The following study sections describe the overall connection options and their most significant pros and cons.

Table 2. Summary of All Identified Trail Connections

Trail Connection ID Letter	Location	Potentially Feasible/Infeasible	Hwy 17 Crossing Location(s)	Length (feet)
Connection A Western Route	North of Ravine Creek connecting to El Sereno OSP	Technically **feasible** but would require easement through private lands	Northern (5)	5,700
Connection B Western Route	Lower Trout Creek connecting to El Sereno OSP	Technically **feasible** but would require easement through private lands	Southern (3) or Montevina (4)	8,850
Connection C Western Route	Upper Trout Creek to El Sereno OSP	**Infeasible** due to topography and creek habitat	Southern (3)	7,800
Connection D Western Route	Upper Trout Creek to Lyndon Canyon to El Sereno OSP	**Infeasible** due to topography and creek habitat	Northern (5)	14,800
Connection E Western Route	Lyndon Canyon to Sanborn County Park	**Infeasible** due to geology, topography, creek habitat and multiple ownership	Southern (3) or Montevina (4)	19,550
Connection F Western Route	Black Road to Sanborn County Park	**Infeasible** due to lack of roadway width and steep topography	Southern (3)	26,900
Connection G Western Route	El Sereno OSP to Sanborn County Park	Technically **feasible** but would require easement through private lands.	Northern (5)	18,300
Connection M Western Route	Montevina Road western road shoulder	Technically **feasible**.	Montevina (4) or Bear Creek Road Overpass	2,800
Connection H Eastern Route	Lenihan Dam service road	Technically **feasible**, but steep. Would require	Southern (3)	1,350

		coordination with Valley Water.		
Connection I Eastern Route	Alma Bridge Road Various segments I(1) – I(5)	Potentially **feasible**, but requires significant investment to improve right-of-way and coordination with Valley Water.	Montevina (4)	8,200
Connection J Eastern Route	Former road cut above Alma Bridge Road	Technically **feasible** may require crossings of Alma Bridge Road	Southern (3), Montevina (4), Northern (5)	5,625
Connection K Eastern Route	Existing trail easement between St. Joseph's Hill OSP and Sierra Azul OSP	Technically **feasible** but would require crossing private road.	Southern (3), Montevina (4), Northern (5)	4,025
Connection L Eastern Route	Trail along shoreline of Lexington Reservoir	Potentially **feasible**, but would require significant investment to improve shoreline trail, which does not have a lead agency identified at this time, plus coordination with Caltrans, Valley Water (landowners) and Santa Clara County Parks, who currently maintain the trail.	Montevina (4) or Bear Creek Road Overpass	2,770

Potential Western Trail Connections

The western study area between Highway 17 and the current terminus of the Ridge Trail (John Nicholas Trail) within Sanborn County Park is dominated by steep slopes and three major drainages: 1) Lyndon Canyon Creek, whose flow is controlled by an upstream dam at Lake Ranch Reservoir in Sanborn County Park, 2) Trout Creek, and 3) Ravine Creek. Flow in Trout and Ravine creeks can remain at the surface or go subsurface depending on the water year. Ownership in this area is a mosaic of private and public lands including property owned by: 1) Midpen (El Sereno OSP), 2) Santa Clara County Parks (Sanborn County Park, a portion of Lexington Reservoir County Park and additional parcels in Lyndon Canyon Creek), 3) Valley Water, a portion of which is leased and operated by Santa Clara County Parks (portion of Lexington Reservoir County Park), 4) right-of-way for Santa Clara County Roads and Airports, and 5) Caltrans right-of-way (See Figure 8. Western Trail Connections Map).

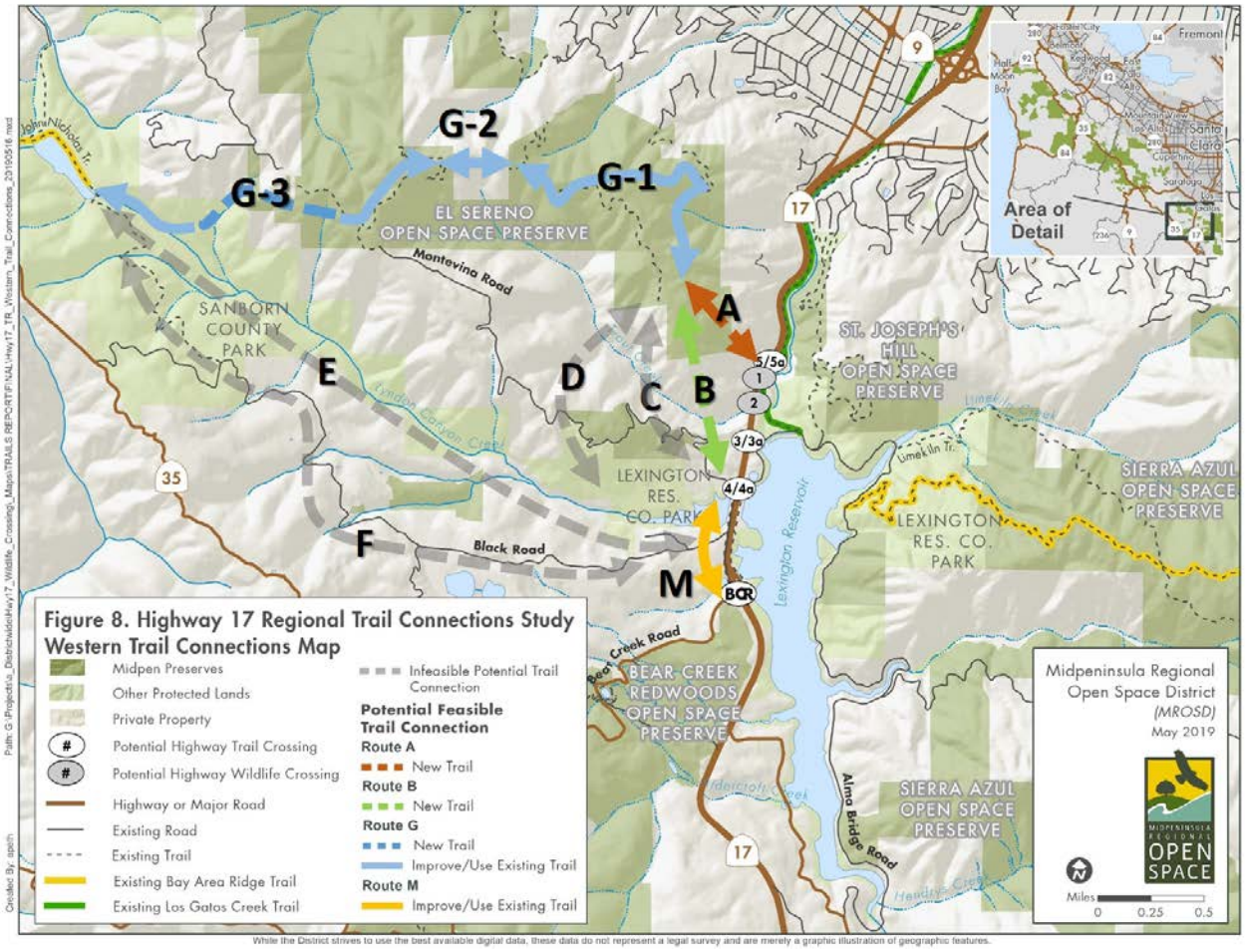

Figure 8. Western Trail Connections Map

Regional trails planned in previous studies (i.e. *Santa Clara County Countywide Trails Master Plan* (1995), *Sanborn County Park Trails Master Plan* (2008) and *Midpen Open Space Vision Plan* (2014)) identified the need for a recreational trail crossing of Highway 17. Regional trails routes in these previous plans were conceptual for lack of an identified Highway 17 trail crossing location. The Midpen 2016 *Preliminary Alternatives Report* identified potentially feasible trail crossing locations as starting points from which to begin field reconnaissance of suitable connecting trail alignments.

A total of eight trail connections on the west side of Highway 17 were examined as potential alignments to the Highway 17 trail crossing locations (See Figure 8. Western Trail Connections Map). The objective was to connect from the existing Ridge Trail alignment (John Nicholas Trail) in Sanborn County Park to one or more of the three potential Highway 17 trail crossing structures evaluated in the *Highway 17 Crossings Report.* The eight potential western trail segments are described in Table 3. Of these connections, four (C, D, E and F) were deemed infeasible and four (A, B, G and M) were found to be potentially feasible.

Table 3. Summary of Potentially Feasible Western Trail Connections

Trail Connection ID Letter	**Potential Highway Crossing(s) Serving this Trail Connection**	**Route Description**
A – North of Ravine Creek Canyon	Northern Over (5)	This route uses private property to climb the slope north of Ravine Creek to connect to the trails in the eastern portion of Midpen's El Sereno Open Space Preserve (OSP). It is the only option to connect to crossing structure #5 – the Northern Overcrossing.
B – Lower Trout Creek Canyon	Southern Over (3), Montevina Under (4)	This route heads north from Montevina Road primarily along the high benches parallel to Highway 17 and within the Caltrans ROW, crossing private property before continuing west to a connection with a PG&E service road that connects to trails near the southern boundary of Midpen's El Sereno OSP. If crossing #3 is used, the trail to Montevina Road would be needed to establish a north/south regional trail connection and commuter transportation opportunity separated from Highway 17.
C – Upper Trout Creek Canyon	Southern Over (3), Montevina Under (4)	This route crosses private property in the Trout Creek Canyon vicinity to connect with trails near the southeastern boundary of the El Sereno OSP.
D – El Sereno to Lyndon Canyon	Southern Over (3), Montevina Under (4)	This route utilizes a trail parallel to Highway 17 to head south to the existing parking area at Black Road. The route then heads west along the south slope of Lyndon Canyon Creek in Lexington County Park to a bridged creek crossing. The route then climbs up the opposite slope of canyon to follow the ridgeline above. The trail then crosses private property in Trout Creek before heading east to connect to a trail near the southeastern boundary of El Sereno OSP.
E – Lyndon Canyon	Southern Over (3), Montevina Under (4)	This route heads northwest along Lyndon Canyon Creek, utilizing property owned by Santa Clara County Parks and private parties to connect to Sanborn County Park.
F – Black Road	Southern Over (3), Montevina Under (4)	This route involves significant improvements to Black Road for use as a recreational trail from Highway 17 to the Black Road entrance of Sanborn County Park.
G – El Sereno Open	No direct access to Hwy 17 - Routes A, B, C and D connect to this route	This route is through El Sereno OSP and would be used in combination with a trail segment connecting to the Highway 17 crossing to the boundary of El Sereno OSP (A, B, C, or D).

Space Preserve		
M – Montevina Road	Existing Bear Creek Road Overpass, Montevina Under (4)	There is either an informal trail or space for a trail to serve as a multi-use trail along the western shoulder of Montevina Road on the west side from Bear Creek Road to the point where the Montevina Undercrossing is located

Infeasible Western Routes

Early GIS analysis and discussions among stakeholders determined that some of the alternative connections are infeasible. The infeasible trail connections are described below. :

Connection C – Upper Trout Creek Canyon

This route extends east from Connection G in El Sereno Open Space, winding south down the ridge to Trout Creek, crossing the creek and extending east along the south side to connect to the Southern Overcrossing (3). Trout Creek Canyon is also constrained by steep topography and numerous creek crossings on private property. Field studies determined that the canyon in the vicinity of this creek crossing is prohibitively steep, and would require multiple bridges along the northern creek bank, which is nearly vertical. A bridge installation and connecting trail was found to be infeasible in this location, and further analysis was not pursued.

Connection D – El Sereno to Lyndon Canyon

This route would extend south from the end of Connection G in El Sereno Open Space Preserve, across private property in Trout Creek Canyon, ascend to the ridge and cross Montevina Road on property owned by Midpen and Santa Clara County Parks, and descend to Lyndon Canyon, where it would extend east along the arm of Lexington Reservoir, then north to the Montevina Undercrossing. This route has the same Trout Creek crossing constraints as Connection C, and also would require many vertically stacked switchbacks to descend and ascend the two intervening canyons. It would not be a desirable route from a trail user standpoint or from a maintenance standpoint and further analysis was not pursued.

Connection E – Lyndon Canyon

This route follows a deep winding canyon that would require approximately 37 drainage crossings, including several major crossings of Lyndon Canyon Creek. In addition, it would traverse dozens of small undeveloped private parcels, and passes through or near about a dozen developed residential parcels. These issues made this route impractical and further analysis was not pursued.

Connection F – Black Road

The theory of creating a trail within the right-of-way of this county-maintained road was examined, but this narrow, winding road passes through very mountainous terrain and has no existing space for a trail. Creating space for a trail would require construction of miles of retaining walls at a high cost for initial construction and ongoing maintenance and would result in a trail that would not meet trail user experience objectives. These factors were considered impractical, and further analysis was not pursued.

Feasible Western Routes

Connections A and B from El Sereno OSP to a potential highway crossing were found to be worth pursuing in early studies and were analyzed in greater detail. Connection A or B would require Connection G to reach Sanborn County Park. Connection G uses existing trails within El Sereno OSP plus three new segments to complete the route. Connection M along Montevina Road provides opportunities for north-south travel between various regional parks and open space preserves.

Connections A and B extend through El Sereno OSP on the main ridge above Los Gatos and drop down the ridge to Highway 17. These two routes are steep and property ownership challenges may be a factor, but the alignments are more consistent with the goal for the Bay Area Ridge Trail to be located on or near the most prominent ridges overlooking the San Francisco Bay. These two western trail approaches to the highway crossings would be challenging to construct, but would be comparable to other Regional Trail segments around the Bay Area that are built on steep terrain.

Connection A – North of Ravine Creek Canyon

Connection A would extend through private lands located along Highway 17 into El Sereno OSP. The property along Highway 17 was a former residence. The site has a steep unimproved dirt road that leads uphill from the former house site to numerous other eroding unimproved dirt roads that crisscross the property and would require significant upgrades. Staff conducting field visits determined that a trail connection is feasible from the property to a currently closed unmaintained and unnamed trail in El Sereno OSP. A route in this location would require securing public access rights through private property with a trail easement, acquisition or other negotiation.

Connection A would use the North Overcrossing (5) to span Highway 17. This location is appealing because it would be a shorter distance to the existing trails in El Sereno OSP and because it affords a direct connection to the Los Gatos Creek Trail on the east side. Connection A would switchback along the slope above Ravine Creek, which may have an impact on the riparian habitat in a portion of the watershed. Phenomenal panoramic views of Santa Clara Valley, St. Joseph's Hill and the Lexington Basin are observed from this route and would provide a quintessential Ridge Trail experience.

Photo 4. View from the vicinity of Connection A looking northeast toward Santa Clara Valley.

Connection B – Lower Trout Creek Canyon

A route south of Ravine Creek Canyon would provide an enjoyable visitor experience and is feasible. Access to this area would require a crossing in Trout Creek Canyon as the steep, eroding slopes to the north provide no opportunity for approach. This route would begin at either the Southern Overcrossing (3) or Montevina Undercrossing (4) and then extend up Trout Creek canyon for a short distance before angling down to the creek to a bridge crossing. A general location for a trail bridge was identified low in the watershed before the canyon becomes so steep it is inaccessible. Connection B would extend north from the potential bridge location curving around the nose of the northern ridge to connect to either the Serenity Trail or Connection G in El Sereno OSP. This route is feasible but steep. It would require crossing intermittent streams and a bridge spanning Trout Creek before climbing a gentle ridge to connect to trails in the El Sereno OSP. Connection B would also require coordination between Midpen and private property owners to secure public access rights through private property. St. Joseph's Hill and Lexington Reservoir are visible from this route.

Photo 5. View from the vicinity of Connection B in El Sereno OSP looking east-southeast toward St. Joseph's Hill OSP and Lexington Basin.

Connection G – El Sereno Open Space Preserve

All of the potentially feasible western trails connect to El Sereno OSP. Connection G extends the Ridge Trail and Anza Trail west toward Sanborn County Park. Connection G is broken down into three discontinuous sub-segments:

- **Connection G(1)** extends from eastern most extension of the Aquinas Trail in El Sereno OSP south along the ridgeline through the preserve to potentially link with Connection A or Connection B.
- **Connection G(2)** extends along service roads and would close an existing gap in the Aquinas Trail in El Sereno OSP.
- **Connection G(3)** extends from the Montevina Ridge Trail in El Sereno OSP into the upper watershed of Lyndon Canyon to the Ridge Trail (John Nicholas Trail) at Lake Ranch Reservoir in Sanborn County Park.

Connection G(1) winds along the ridge high above Highway 17 from the eastern most extension of the Aquinas Trail to a knoll in El Sereno OSP overlooking Trout Creek canyon. Much of this route is on existing old unimproved dirt roads. The route could link with either Connection A or Connection B to provide access into the open space preserve from two of the potential highway crossings. Recreational trail users could utilize the existing trail system in El Sereno OSP to head west toward Sanborn County Park. Private property creates a gap in the Aquinas Trail. Connection G(2) is intended to close this gap

and would require coordination between Midpen and private property owners. The Aquinas Trail links to the Montevina Ridge Trail. Connection G(3) proposes an extension of the Montevina Ridge Trail to link with an existing service road that extends all the way to Lake Ranch Reservoir and the connection with the Ridge Trail (John Nicholas Trail). This planned connection is identified as the Faultline Trail extending from Lake Ranch to El Sereno OSP in the Sanborn County Park Trails Master Plan (2008). G(3) is located in the upper watershed of Lyndon Canyon Creek. This route requires crossing intermittent streams and steep topography and securing public access rights through private property with a trail easement, acquisition or other negotiation. It is likely the only potentially feasible route to reach Sanborn County Park. Each of the Connection G sub-segments also has independent utility for completing individual trails within El Sereno OSP.

Connection M – Montevina Road

Connection M extends for approximately one-half mile along the west side of Highway 17 from Bear Creek Road, north past Black Road, to the location where Montevina Road turns west up the ridge to a series of residential properties. The road right-of-way includes sufficient space on the western edge of the paved road this entire distance to create either an unpaved trail or potentially a paved pathway that could also serve road cyclists. It offers efficient connections from the existing and planned trails in Bear Creek Redwoods OSP to the parks and open space preserves to the north. Connection M would also provide a north-south connection from Bear Creek Road to El Sereno OSP and the Los Gatos Creek Trail if the Southern Overcrossing (3) or Montevina Undercrossing (4) were selected to cross Highway 17. This north-south connection could also provide bicycle commuting opportunities between the Lexington Basin and Santa Clara Valley via the Los Gatos Creek Trail.

Potential Eastern Trail Connections

A total of five trail connections and the existing Los Gatos Creek Trail on the east side of Highway 17 were examined as potential alignments to the Highway 17 trail crossing locations (See Figure 9. Eastern Trail Connections Map). The objective was to connect from the existing Ridge Trail alignment (Priest Rock Trail) in Sierra Azul OSP and Lexington Reservoir County Park located to the east of Lexington Reservoir to one or more of the three potential Highway 17 trail crossing structures evaluated in the Highway 17 Crossings Report. The five eastern trail connections and the Los Gatos Creek Trail are described in Table 4. Of these segments, all (H, I, J, K and L) were found to be potentially feasible.

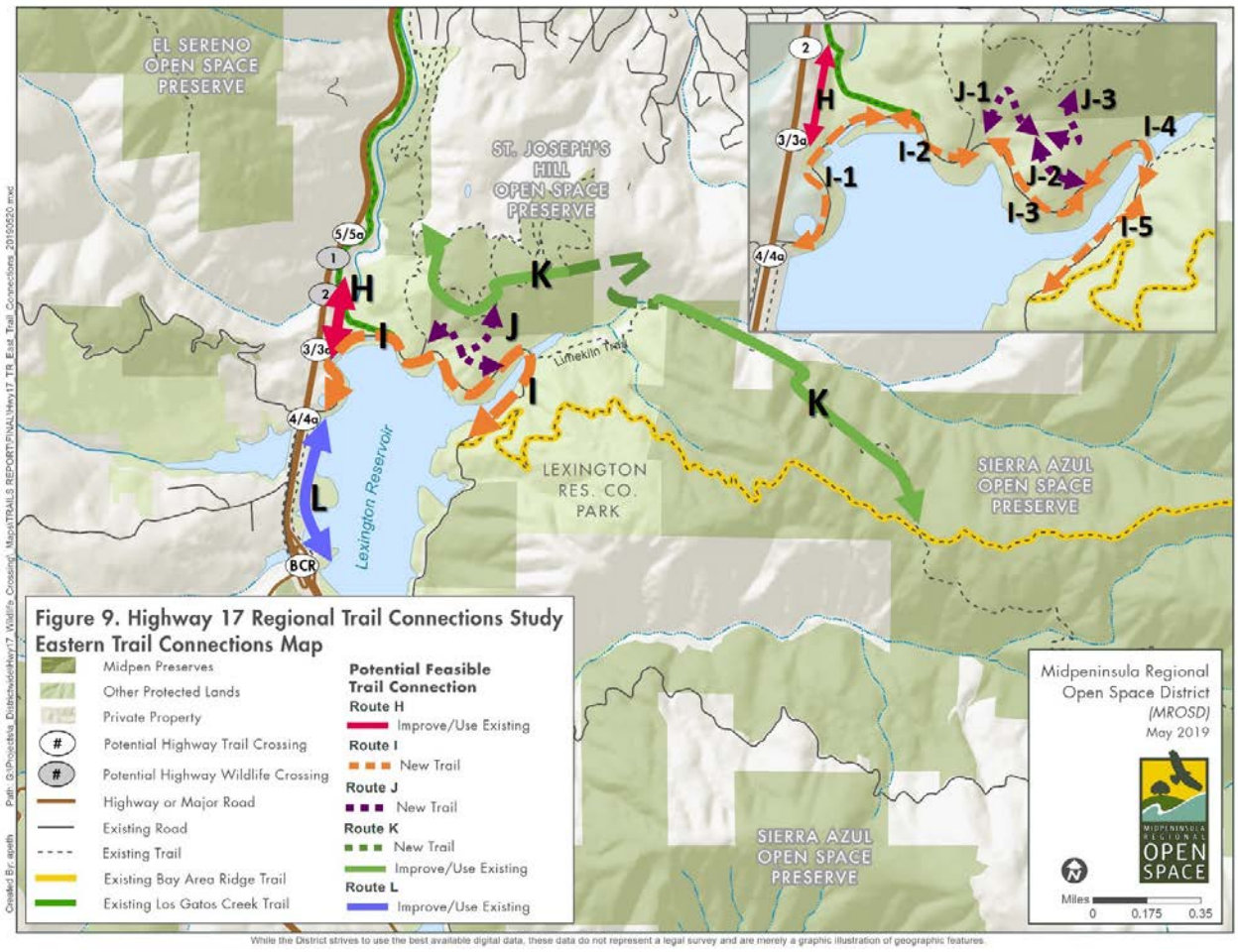

Figure 9. Eastern Trail Connections Map

Table 4. Summary of Potentially Feasible Eastern Trail Connections

Trail Connection ID Letter	Potential Highway Crossing(s) Serving this Trail Connection	Route Description
H – Spillway Service Road	Southern Over (3)	An existing service road, currently used to access nearby water facilities (Lenihan Dam, above ground water lines, etc.). The route would connect from Alma Bridge Road west of the spillway, requiring improvement of at a minimum the western parts of Connection I

I – Alma Bridge Road	Southern Over (3), Montevina Under(4), Northern Over (5)	A two-lane Santa Clara County Road and Airports-maintained road that winds along the north and east sides of the reservoir, including on a bridge across the spillway. The concept is that room for a trail would be created along the road where currently there is no space with the existing alignment. Depending on which crossing structure is connected, and which other alternative trail connections are utilized, different parts for Alma Bridge Road would need to be improved with a trail, so the route has been divided into sub-segments. See Appendix A for more details on potential Alma Bridge Road improvements.
J – Partial Alma Bridge Road Bypass	Southern Over (3), Montevina Under(4), Northern Over (5)	This is an old overgrown unimproved dirt road within Lexington Reservoir County Park and St. Joseph's Hill OSP. It parallels Alma Bridge Road, extending east from the Jones Trail near the trailhead parking areas, allowing a bypass of part of Alma Bridge Road, but requiring a new road crossing. Connection J(3) includes a new route sub-option to connect up the hill to the Manzanita Trail in St. Joseph's Hill OSP.
K – Connection to Limekiln Trail	Southern Over (3), Montevina Under(4), Northern Over (5)	This route would use part of water system service roads on private residential parcels on which Midpen owns a public trail easement. It would require that the upper part of the existing Limekiln Trail be designated as the Ridge Trail/Anza Trail route, rather than the Priest Rock Trail. It could either connect via new segment J3 and J1, or via the existing Jones Trail
L – Trail along Lexington Reservoir	Montevina Under(4), Existing Bear Creek Road Overpass	There is an existing service road/trail extending south from Alma Bridge Road along the east side of Highway 17 to Bear Creek Road Overcrossing and beyond
Los Gatos Creek Trail	Northern Over (5)	This is the only connecting route that completes the connection to the Northern Overcrossing. It would require improvements to an already dedicated public trail.

Feasible Eastern Routes

None of the eastern trail connection alternatives were found to be infeasible in early analysis, so all are analyzed in detail below.

Connection H – Spillway Service Road

This is an existing service road, currently utilized by Valley Water to access nearby water facilities (Lenihan Dam above ground water lines, etc.). It also provides access to an area between the service road and Highway 17 that has been frequently used as a construction staging area for dam and water system projects. The route needs an additional design between Connection I(1) and Connection H to create a direct route to the Southern Overcrossing. Otherwise trail users would have to use the Los Gatos Creek Trail along the face of the dam to access Connection H at the base of the dam and then climb the steep service road up the Southern Overcrossing (3) entrance. Although this is a feasible trail alignment, it would require losing elevation only to immediately need to gain it again.

Opening the Connection H service road from Alma Bridge Road north to the Los Gatos Creek Trail would facilitate north-south connections, connecting Los Gatos Creek Trail users to the Southern Overcrossing,

or to the Montevina Undercrossing (requiring additional improvements along Alma Bridge Road), and to Connection L – an existing trail in Lexington Reservoir County Park extending south to Bear Creek Road. Permission to utilize this service road for recreational trail purposes would need to be coordinated with the underlying landowner (Valley Water) and any easement holders.

Photo 6. Taken from Jones Trail in St. Joseph's Hill OSP, looking west. View of the Lenihan Dam spillway and service road at Lexington Reservoir and Highway 17 in the vicinity of Southern Overcrossing (3).

Connection I – Alma Bridge Road

Alma Bridge Road is a two-lane county-maintained paved road that winds along the north and east sides of the Lexington Reservoir, including on a bridge across the spillway. On the east side of Highway 17 there is a separate lane from the Bear Creek Road Overcrossing north to Alma Bridge Road that acts as an on-ramp for the overcrossing onto Highway 17 south and an off-ramp from Highway 17 south onto Alma Bridge Road.

This road is a challenging route for trail users or bicyclists because it is narrow and winding, often with little or no shoulder, and with slopes dropping off steeply from the hills above and to the reservoir below. The challenge is compounded by heavy truck traffic generated by the Lexington Quarry to the northeast of the reservoir, local residential and recreational traffic, and periodically construction traffic for work related to the dam and water facilities. The road is a popular route to access parking areas for Lexington Reservoir County Park east of the dam, which also provides staging for access to the Los Gatos Creek Trail to the west, and Midpen's St. Joseph's Hill OSP to the north and Sierra Azul OSP via Limekiln Trail to the east, and the continuation of the Ridge Trail to the east on the Priest Rock Trail. Alma Bridge Road will also serve as the access route to a new Midpen parking area under development east of the reservoir.

A detailed assessment of potential Alma Bridge Road trail improvements is included as Appendix A. Depending on which trail connection alternative may be feasible, and which highway trail crossing is used, different portions of Alma Bridge Road might need to be improved to serve as a trail connection. The overall route of Connection I is broken down into five sub-segments (See Figure 10. Alma Bridge Road Trail Improvements).

- **Connection I(1)** extends from Highway 17 east to the potential connection to the Southern Overcrossing to the construction yard entrance west of the dam and across the spillway and dam to the intersection of the Los Gatos Creek Trail and Alma Bridge Road.
- **Connection I(2)** extends from the construction yard entrance west of the dam to the Santa Clara County Parks parking area and the start of the Jones Trail. This segment also connects to the Los Gatos Creek Trail.
- **Connection I(3)** extends from the Santa Clara County Parks parking area and the start of the Jones Trail to the point where eastern end of trail Connection J would intersect Alma Bridge Road.
- **Connection I(4)** extends from the point where eastern end of trail Connection J would intersect with the existing Limekiln Trail.
- **Connection I(5)** extends from the Limekiln Trail to the Priest Rock Trail.

Depending on the selection of the highway crossing location, the eastern trail connections implemented and the north-south trail connections formalized, all or portions of Connection I could be implemented. Subsection I(1) is particularly complicated because it includes a cantilevered trail section and/or a new trail bridge over the dam spillway. Construction of I(1) would need to be closely coordinated with Valley Water and any future changes to the dam would impact the recreational trail improvements at this location . If either the Montevina Undercrossing or Northern Overcrossing are implemented as the recreational trail crossing, I(1) would be required to achieve a north/south regional trail connection. However, I(1) could be avoided if Southern Overcrossing is implemented. Subsection I(4) begins west of the Limekiln Canyon Road and ends at the Limekiln Trailhead. Subsection I(4) includes a large drainage crossing over Limekiln Creek. If the trail is implemented on the northeast/east side of the road in subsection I(4), a longer drainage crossing would be required but this alignment would eliminate the need for two road crossings across Alma Bridge Road. Additional details about Connection I are available in Appendix A – Trail Connection I Assessment.

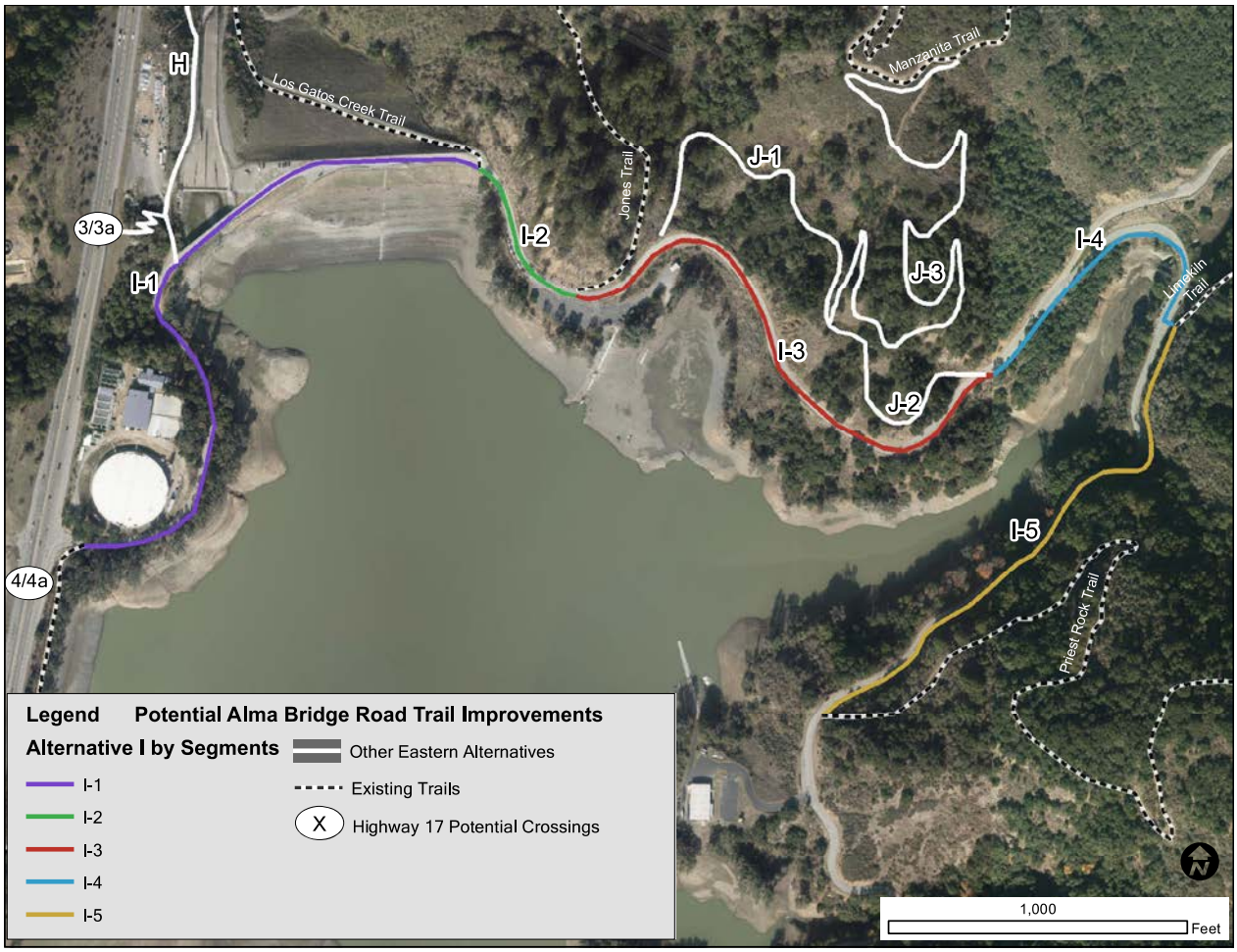

Figure 10. Alma Bridge Road Trail Improvements

Connection J – Partial Alma Bridge Road Bypass

Connection J provides an opportunity to bypass a portion of Alma Bridge Road and create a potential trail linkage to St. Joseph's Hill OSP. Connection J is broken down into three sub-segments (See Figure 10. Alma Bridge Road Trail Improvements):

- **Connection J(1)** extends from Jones Trail parking area east along a remnant unimproved dirt road to a knoll.
- **Connection J(2)** begins at the knoll, the terminus of J(1), and meanders downslope to return to Alma Bridge Road.
- **Connection J(3)** extends from the intersection of J(1) and J(2) and climbs to the Manzanita Trail in St. Joseph's Hill OSP.

This remnant unimproved dirt road located between the Jones Trail Parking Area and Alma Bridge Road is about 2/3 of the distance to the Limekiln Canyon Road. It is very overgrown but is visible in the terrain GIS data. The old road is identified as Connection J(1) and J(2), combined total length is approximately 0.4 miles long, and has an average gradient of approximately 10%. It has a steep drop off at the eastern end, where Alma Bridge Road was apparently constructed or widened, severing the old road connection. It might be feasible to improve as a trail for hikers, horses and mountain bikes. This alternative has a

significant constraint, as it would require two road crossings to connect to the other segments of Connection I on Alma Bridge Road; regardless, at least one of the crossings would be desirable to connect to the Jones Trail. If this old road were to be established as a trail, it would eliminate the need for subsection I(3), an approximately 1,500-foot section of on-road improvements. Connection J(1) could be used in conjunction with the Connection J(3) to access the existing Manzanita Trail within St. Joseph's Hill OSP. This new alignment would potentially create a recreational trail experience that is less steep and difficult to maintain than the current Jones Trail alignment.

Connections J(1) and J(2) would be considered in the event that no feasible alignment for Connection K is found or if a recreational route closer to Alma Bridge Road is desired. Implementation of this connection would require permission from the landowner, Valley Water, and the lessee managing the recreational uses at Lexington Reservoir County Park, which is Santa Clara County Parks. Staff representatives from these entities provided preliminary feedback indicating that they would support implementation of this connection.

Implementation of Connection J(1) and J(2) would reduce the length of Alma Bridge Road improvements needed to establish a Ridge Trail connection to the east. Reduction of trail improvements along Alma Bridge Road may reduce overall trail connection cost and increase separation of recreational uses from vehicular traffic.

Connection K – Connection to Limekiln Trail

Connection K is a trail easement held by Midpen across private property that connects the trail system in St. Joseph's Hill OSP to the Limekiln Trail in Sierra Azul OSP. If a trail is constructed utilizing this easement, it would eliminate the need for approximately 2,700 feet of trail improvements on Alma Bridge Road (I(3), I(4), I(5)). Connection K requires crossing Limekiln Canyon Road and Limekiln Creek. If Connection K is implemented the Ridge Trail would need to give consideration to changing the Ridge Trail route designation in Sierra Azul OSP to use the Limekiln Trail west of the junction with the Priest Rock Trail. This realignment of the Ridge Trail would require approval from the Bay Area Ridge Trail Council and the County of Santa Clara Board of Supervisors.

Connection L – Trail along Lexington Reservoir

There is an existing trail on the east side of Highway 17 beginning where Alma Bridge Road intersects Highway 17 and extending through Lexington Reservoir County Park. This existing trail along the reservoir extends south to the Bear Creek Road overcrossing, which will connect to Bear Creek Redwoods OSP upon completion of future independent projects. This important trail connection, along the shore of the reservoir, would provide a complete north-south route if Connection I(1) trail improvements were made along Alma Bridge Road. It would also serve bicycle commuters to use the improvements as an alternative north-south transportation route between communities in the western hills and the Town of Los Gatos.

Existing Los Gatos Creek Trail

The Los Gatos Creek Trail extends south along Los Gatos Creek from downtown San Jose to Los Gatos, where many users take it to reach Lexington Reservoir. The Los Gatos Creek Trail connects to the east side of the dam after a steep climb across the dam face. The trail is generally at least eight feet wide and is paved to where it crosses over Highway 17 near the center of the Town of Los Gatos, but is gravel surfaced from there to Alma Bridge Road, including the climb up the dam face.

Potential Full Build Out Trail Routes

East-West Connections Extending the Bay Area Ridge Trail and Juan Bautista de Anza National Historic Trail Across Highway 17

Understanding the feasible trail routes to the potential crossings of Highway 17 is critical in the selection of the preferred crossing location. Conversely, it is important to have a range of trail routing options should any of the highway crossings be deemed infeasible at a later date when more detailed investigations are undertaken for environmental review or conceptual design. It is also important to have a variety of routing options should public access through private property be difficult to secure. This study provides a range of potentially feasible options, but also highlights the interconnectedness of the trail routes with the highway crossing locations. The potentially feasible full build out trail routes for east-west and north-south travel are described in this section (See Figure 11. Potential Full Build Out Trail Routes).

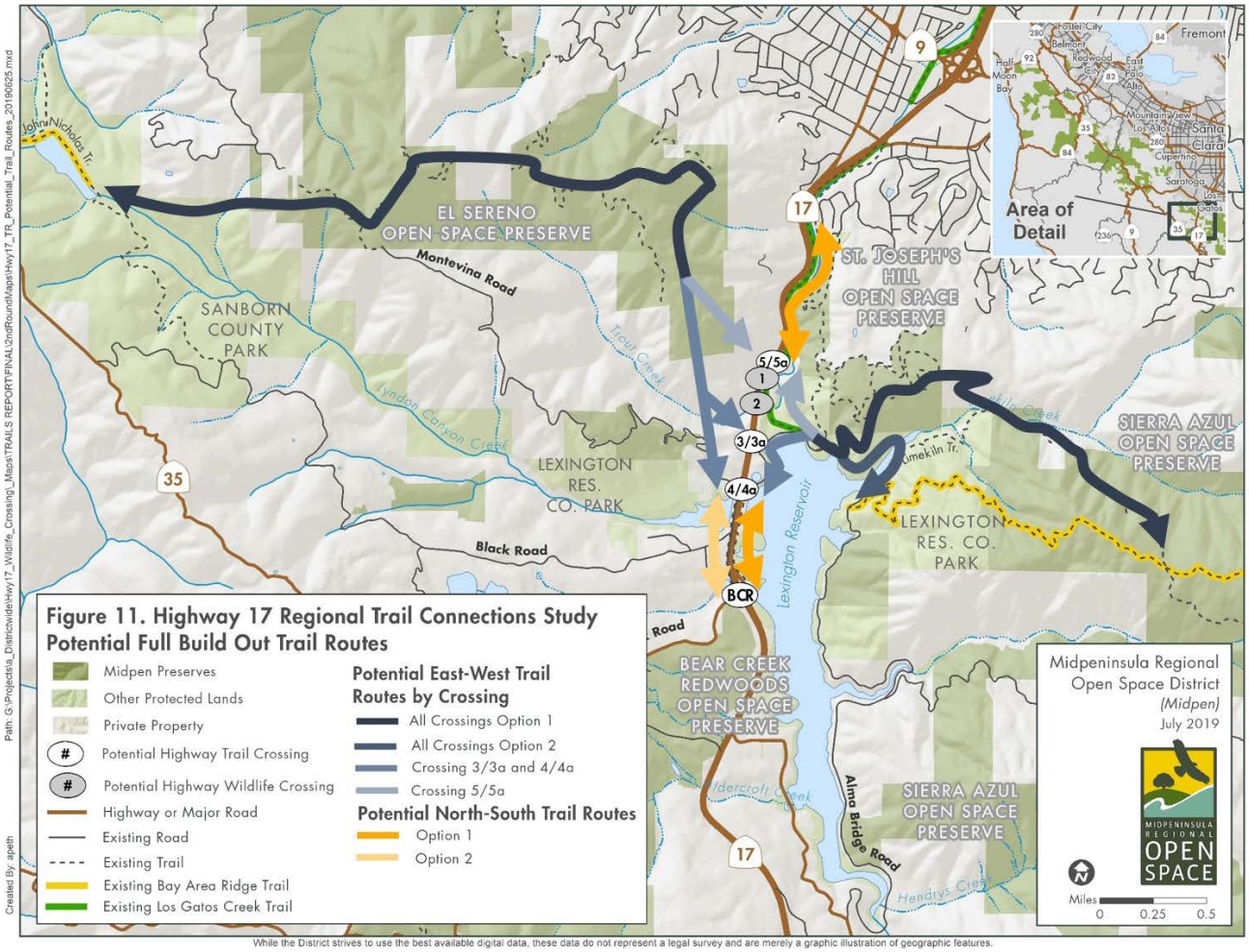

Figure 11. Potential Full Build Out Trail Routes Map

Northern Overcrossing (5) Trail Connection

The only trail linking to the Northern Overcrossing (5) from the west is Connection A. This regional trail route would extend along the planned Faultline Trail proposed between Lake Ranch in Sanborn County Park to El Sereno OSP (2008). The planned Faultline Trail would link to Connection G, which extends to Connection A in El Sereno OSP (See Figure 12. Crossing 5: Potential Full Build Out Trail Route). This route would span Highway 17 via a trail overcrossing. The overcrossing directly connects to the Los Gatos Creek Trail providing a route to the east that has the least involvement with roadway traffic on Alma Bridge Road (See Figure 5. Northern Overcrossing Site Plan). The trail would climb the face of Lenihan Dam to Alma Bridge Road. At this point, improvements would be needed to Alma Bridge Road between the Los Gatos Creek Trail and the informal trail parking area at St. Joseph's Hill OSP and the County Parks parking lot at the Lexington Reservoir boat launch ramp. Ideally, these improvements would provide, if possible, an 8-foot wide path along the hillslope to avoid the need to cross Alma Bridge Road to access St. Joseph's Hill OSP. A short trail along the hillside would avoid the need to provide a trail crossing across Alma Bridge Road.

The route could continue east either through St. Joseph's Hill OSP or along Alma Bridge Road. Connections J(1) and J(3), which extend through Valley Water and Midpen lands, would connect the route to the existing trail system in St. Joseph's Hill OSP. Connection J(3) would link with the existing Manzanita Trail that would be used to access Connection K, a trail easement held by Midpen across private property that connects the trail system in St. Joseph's Hill OSP to the Limekiln Trail in Lexington Reservoir County Park and Sierra Azul OSP. Connection K would need to cross both Limekiln Canyon Road and Limekiln Creek, requiring a significant albeit apparently straightforward bridge crossing, potentially entirely on Midpen land. Limekiln Canyon Road is a private road operated and maintained by Lexington Quarry, which generates heavy truck traffic traveling to Alma Bridge Road and Highway 17. If Connection K is implemented the Bay Area Ridge Trail Council would need to give consideration to changing the Ridge Trail designation in Sierra Azul OSP to use the Limekiln Trail west of the junction with the Priest Rock Trail. The County of Santa Clara Board of Supervisors would also need to accept the Trail Connections Study and then changes to other County trail or park master plans would be made to reflect the revised alignment designations.

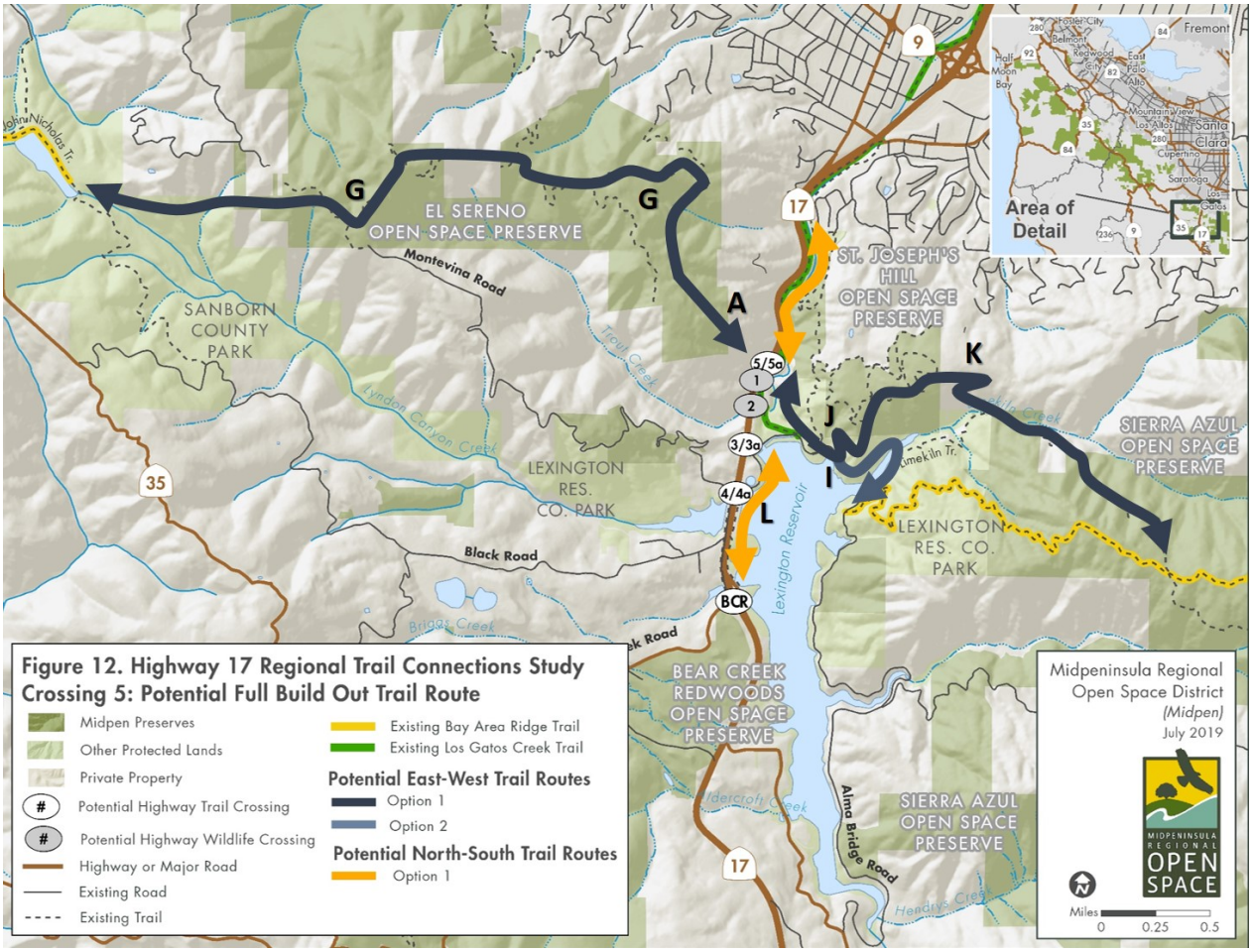

Figure 12. Crossing 5: Potential Full Build Out Trail Route Map

The Northern Overcrossing (5) could also extend east along Alma Bridge Road utilizing Connections I(2), I(3) and I(4) to access the Limekiln Trailhead or extend farther east along the road via Connection I(5) to access the Priest Rock Trailhead. Improvements to Alma Bridge Road would also serve recreational bicyclists accessing the mountains from the Los Gatos Creek Trail. Significant improvements would be needed to Alma Bridge Road to accommodate trail use. These improvements are described in more detail in Appendix A - Trail Connection I Assessment.

Photo 7. View of Limekiln Creek and Limekiln Canyon Road looking northeast from Alma Bridge Road.

The Northern Overcrossing (5) trail connections extending through St. Joseph's Hill OSP offer the most direct east-west route and the fewest conflicts with vehicles. It has the least impact on the various water utilities in and around Lexington Reservoir. The Northern Overcrossing (5) would have less impact on the two potentially feasible wildlife undercrossings proposed at Trout Creek and Ravine Creek. The route requires securing public access through private property, crossing a perennial stream (Limekiln Creek) and coordination with a multiple partner agencies. The Northern Overcrossing (5) route offers phenomenal, panoramic views of Santa Clara Valley, St. Joseph's Hill and the Lexington Basin providing a quintessential Ridge Trail experience.

Summary of the Northern Overcrossing (5) Connections:

G ⟶ A ⟶ Northern Overcrossing (5) ⟶ Los Gatos Creek Trail ⟶ I(2) ⟶ J(1) ⟶ J(3) ⟶ Manzanita Trail ⟶ K ⟶ Limekiln Trail ⟶ Priest Rock Trail

OR:

G ⟶ A ⟶ Northern Overcrossing (5) ⟶ Los Gatos Creek Trail ⟶ I(2) ⟶ I(3) ⟶ I(4) ⟶ Limekiln Trail ⟶ I(5) ⟶ Priest Rock Trail

Southern Overcrossing (3) Trail Connection

Connection B links to the Southern Overcrossing (3). This route would extend from Connection G(1) in El Sereno OSP to Connection B. The route would span Highway 17 via a trail overcrossing. Connection G(1) winds along the ridge high above Highway 17 from the eastern most extension of the Aquinas Trail to a knoll in El Sereno OSP overlooking Trout Creek canyon. Connection G(1) is primarily located on an old unimproved dirt road. Connection B would switchback down the slope in Trout Creek canyon to a bridge crossing of the stream. The trail bridge would need to be located in the lower part of the watershed because the canyon upstream becomes prohibitively inaccessible (See Figure 13. Crossing 3: Potential Full Build Out Trail Route).

As currently planned, the Southern Overcrossing (3) would link to Connection H, the spillway service road at Lenihan Dam, which connects to the Los Gatos Creek Trail at the base of the dam. This route is circuitous and adds a steep descent before requiring a climb of the dam face; however, it avoids the need for major trail improvements on Alma Bridge Road at the dam (See Figure 3. Southern Overcrossing Site Plan). If the Southern Overcrossing (3) were directly linked to Alma Bridge Road, a new and substantial trail bridge would be needed across the spillway of the dam. From the intersection of the Los Gatos Creek Trail with Alma Bridge Road this route would be completed by using the same trail connection options indicated above for the Northern Overcrossing (5).

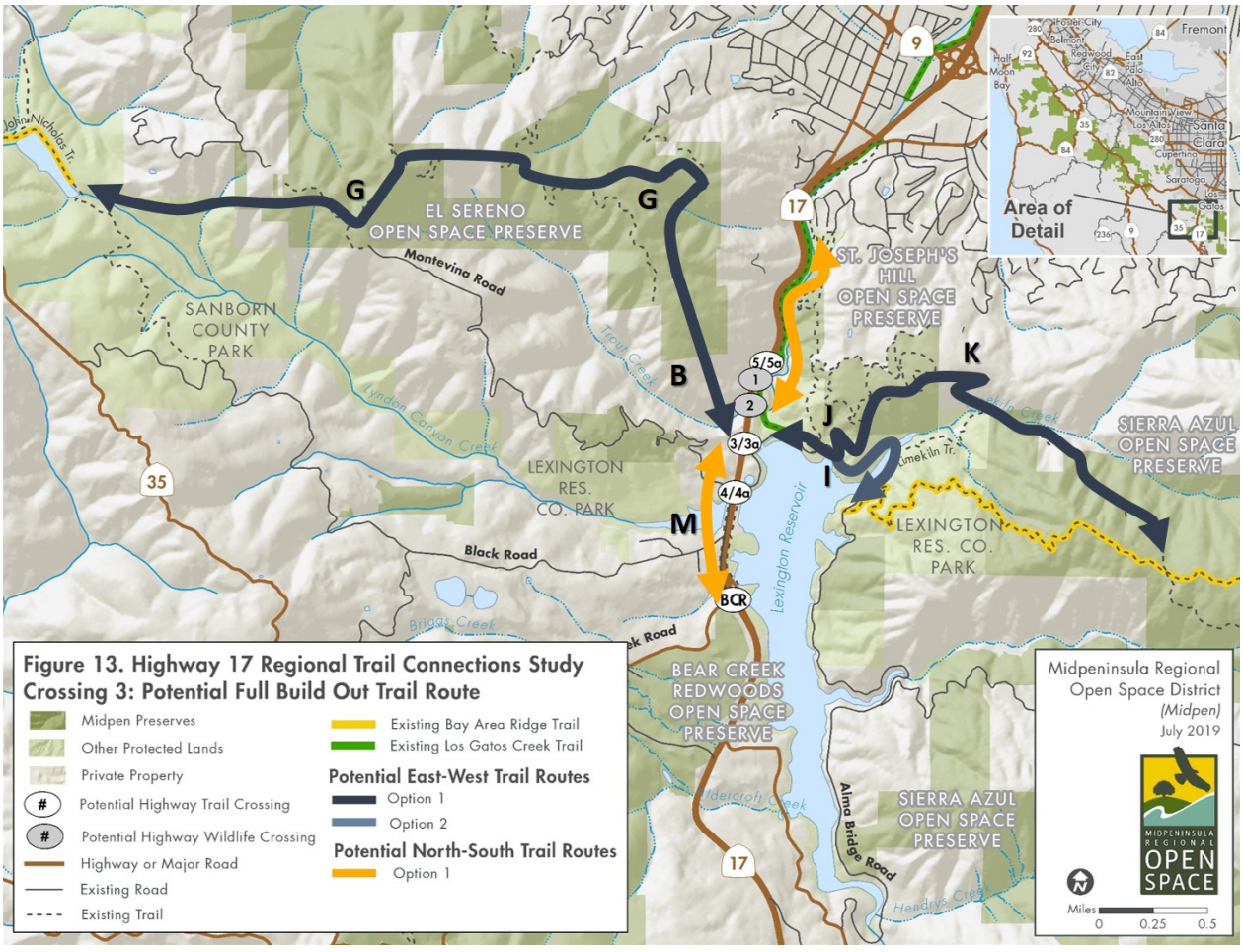

Figure 13. Crossing 3: Potential Full Build Out Trail Route Map

The Southern Overcrossing (3) trail connections offer the dramatic views across Highway 17 of Lexington Basin and the surrounding mountain range. The route is more circuitous than that of the Northern Overcrossing (5) route, but also offers limited conflicts with vehicles. The route requires crossing two streams (Trout Creek, intermittent, and Limekiln Creek, perennial), securing public access rights through private property with a trail easement, acquisition or other negotiation and coordination with a range of partner agencies.

Summary of the Southern Overcrossing (3) Connections:

G ⟶ B ⟶ Southern Overcrossing (3) ⟶ Connection H and/or Connection I(1) and I(2), then same eastward options as above.

Montevina Undercrossing (4) Trail Connection

Connection B also links to the Montevina Undercrossing (4). This route would extend from El Sereno OSP to Connection G(1) to Connection B which would pass beneath Highway 17 via a trail tunnel. This highway crossing location would require full implementation of the improvements to Alma Bridge Road identified as Connections I(1) and I(2). These include a new separated path paralleling Alma Bridge Road from the intersection with Highway 17 to the informal parking area at St. Joseph's Hill OSP and the County Parks parking lot at the Lexington Reservoir boat launch ramp. These improvements would include a new bridge to span Lenihan Dam and spillway at Lexington Reservoir (See Appendix A for more details on potential Alma Bridge Road improvements.). These roadway improvements may be beneficial to road cyclists in the area, but would add considerable expense, coordination, and long-term maintenance considerations for any structure proposed within the footprint of the dam and spillway (See Figure 14. Crossing 4: Potential Full Build Out Trail Route).

On the western side of Highway 17 Connection B would be extended south along the highway right-of-way on an elevated bench to reach the trail tunnel. The tunnel entrance is located between Montevina Road and Highway 17. Improvements would be needed along Montevina Road if trail access from the south to the tunnel is desired.

This tunnel as proposed for trail users potentially provides one additional passageway below Highway 17 for wildlife beyond the dedicated wildlife undercrossings considered at Ravine Creek and Trout Creek. As currently planned, wildlife could enter the tunnel by either coming down the hill to the north or crossing Montevina Road to the south. A small animal tunnel is also proposed beneath Montevina Road if this tunnel location is selected as the preferred trail crossing (See Figure 4. Montevina Undercrossing Site Plan).

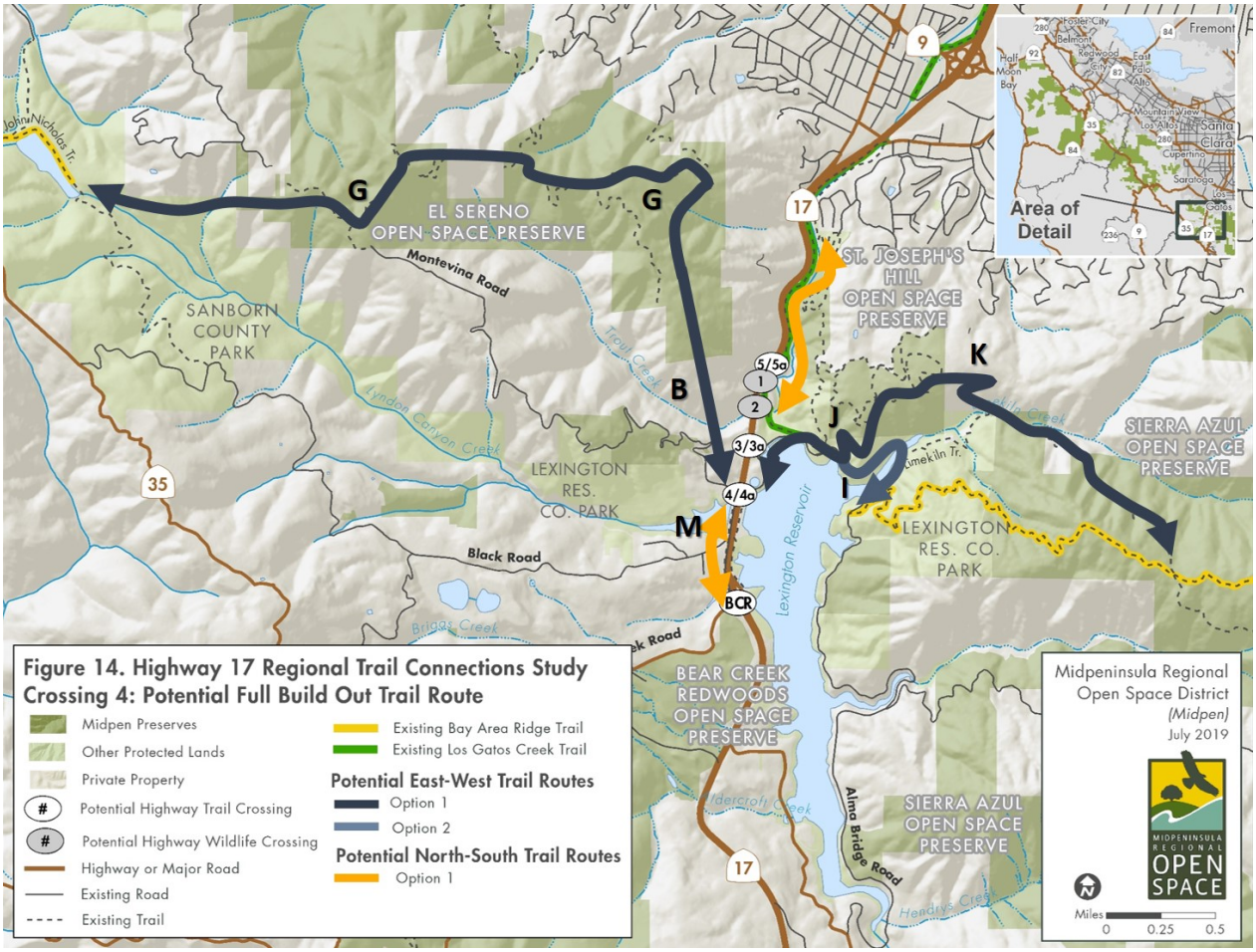

Figure 14. Crossing 4: Potential Full Build Out Trail Route Map

The Montevina Undercrossing (4) trail connections offer the same dramatic views across Highway 17 of Lexington Basin and the surrounding mountain range. The route may have more conflicts with vehicles depending upon the design of the improvements along both Montevina Road and Alma Bridge Road. The route requires crossing two streams (Trout Creek, intermittent, and Limekiln Creek, perennial), securing public access rights through private property with a trail easement, acquisition or other negotiation and coordination with a range of stakeholder and partner agencies. It may offer added benefits for wildlife movement beyond those conveyed by the dedicated wildlife undercrossing.

<u>Summary of the Montevina Undercrossing (4) Connections:</u>

G ⟶ B ⟶ Montevina Undercrossing (4) ⟶ Connection I(1) and I(2) ⟶ then same eastward options as above.

North-South Regional Trail Connections Linking Parks and Open Space Preserves

In addition to connecting the Ridge Trail and Anza Trail east-west across Highway 17, there are benefits for trail users from the connecting roadway segments that extend north to south. The Los Gatos Creek Trail extends south along Los Gatos Creek from downtown San Jose and passes through the center of downtown Los Gatos, where many users take it to reach Lexington Reservoir. The trail is generally at least eight feet wide and is paved to where it crosses over Highway 17 in central Los Gatos, but is gravel surfaced from there to the climb up the dam face. Popular parallel unpaved trails exist from Los Gatos to Lexington Reservoir in St. Joseph's Hill OSP. They include the Flume Trail along the hillside east of Los Gatos Creek, and the Jones Trail, which climbs higher over the ridge. About half way from Los Gatos to the reservoir, the Flume Trail climbs up the hill to merge with the Jones Trail. The latter connects to Alma Bridge Road near the Santa Clara County Parks parking lot, via a very steep descent.

There is an existing connecting trail on the east side of Highway 17 (Connection L) through Lexington Reservoir County Park starting where Alma Bridge Road intersects Highway 17, but the segment of Alma Bridge Road between this point and the Los Gatos Creek Trail, Jones Trail, and the Santa Clara County Parks parking area near the dam (Connection I) is a significant barrier to trail connectivity requiring extensive construction for a safe connection. The existing trail along the reservoir extends south to the Bear Creek Road overcrossing, which in turn, after completion of future independent projects, will connect to Bear Creek Redwoods OSP– an important trail connection, along with the southern shores of the reservoir and the neighborhoods to the south and to the west across Highway 17.

Another option for providing a north-south regional trail connection is possible along Montevina Road. Connection M extends for approximately one-half mile along the west side of Highway 17 from Bear Creek Road, north past Black Road, to the location where Montevina Road turns west up the ridge to a series of residential properties. The road right-of-way includes sufficient space on the western edge of the paved road this entire distance to create either an unpaved trail or potentially a paved pathway that could also serve road cyclists. Connection M would offer an efficient connection from the existing and planned trails in Bear Creek Redwoods OSP to the parks and open space preserves to the north if the Southern Overcrossing (3) or Montevina Undercrossing (4) were selected to cross Highway 17. This north-south connection could also provide bicycle commuting opportunities between the Lexington Basin and Santa Clara Valley via the Los Gatos Creek Trail.

In summary, improvements to Alma Bridge Road and Connection L would offer a north-south regional trail connection from the Northern Overcrossing (5). Development of a trail parallel to Montevina Road would also offer a north-south train connection in conjunction with either the Southern Overcrossing (3) or Montevina Undercrossing (4).

Photo 8. View near intersection of Black Road and Montevina Road looking north along Montevina Road, which parallels southbound Highway 17. The vehicle on Montevina Road is passing over the arm of Lexington Reservoir fed by Lyndon Canyon Creek.

Potential Trail Parking Locations

Parking in the Lexington Basin is currently offered by Santa Clara County Parks at several developed locations around the reservoir, all of which require a fee for parking. These sites serve the needs for boating, rowing, fishing and hiking. Alma Bridge Road has numerous pullouts that also offer informal parking which provide access to the open space preserve trailheads. Midpen is currently planning a new parking area in Sierra Azul OSP, on the east side of Lexington Reservoir on Alma Bridge Road between the Priest Rock Trail and Soda Springs Road that would significantly expand proposed vehicle and equestrian parking in the area. This parking area would also provide connecting trails to reach the Priest Rock Trail which offers access to Sierra Azul OSP trail system and the Ridge Trail. Informal parking also exists off Old Santa Cruz Highway on the west side of the reservoir south of the Bear Creek Road overpass. There is a wide pullout along the roadway which serves visitors. This site could be explored for the potential to formalize and expand parking in this area.

Parking to the west of Highway 17 is limited. El Sereno OSP has minimal parking, some of which requires securing a permit in advance of a visit. A minimal amount of parking is available along the shoulder of Black Road near the trailhead to the John Nicholas Trail in Sanborn County Park. There is a small, informal parking area at the intersection of Montevina Road and Black Road.

Parking facilities and parking demand for the trail connections will be further analyzed during the environmental review.

Budget Estimates

Construction Budget Estimates

Consultants prepared cost estimates for the trail connections. The cost estimates were based upon conceptual trail alignments developed during preliminary field reconnaissance followed by geographic information system (GIS) mapping. The delineation of alignments included adjustments to utilize existing and former roads as well as road cuts and easements; responded to topographic and drainage constraints; and minimized interference with potential wildlife movement corridors, natural resources and existing residential or public service facilities. Implementation of the trail connections may be undertaken by one or more of the agencies with ownership and/or jurisdiction.

Table 5 provides a brief overview of the preliminary construction budget estimates. These very preliminary costs will be further reviewed and refined. This table indicates the potential cost for developing a stand-alone trail crossing or a combined wildlife and trail crossing of Highway 17 in the first column. The second column provides cost estimates for the trails necessary to link the crossing structure to the nearest existing trail or road. Each crossing structure connects to different trails or roads, including the Los Gatos Creek Trail, Lenihan Dam spillway service road, Alma Bridge Road and the trail extending along the west shore of Lexington Reservoir.

The third column in Table 5 indicates cost estimates for the trail connections from a crossing structure to the existing Ridge Trail both east and west of Highway 17. The range of costs captures the various routing options under consideration. The upper range of the cost estimates is driven by the highly engineered solutions required to modify Alma Bridge Road to separate recreational users from vehicular traffic. The third column includes the cost of the nearest trail connections indicated in the second column. These two columns are useful for considering phased development options. These costs do not

include an estimated $2M in directional fencing to guide wildlife to the new highway crossings if a combined wildlife and trail crossing is chosen.

These costs assume all work is completed by outside contractors. Use of Midpen's trail building crews could provide cost savings. These cost estimates indicate that a single combined wildlife and trail crossing structure is approximately the same cost as two separate crossing structures dedicated for single purposes – one crossing for safe wildlife passage across Highway 17 and a recreational trail crossing to the close the gap in the Ridge Trail and Anza Trail.

The trail crossing project was included in Midpen's Measure AA and funded at $14M. The trail crossing and connection options identified in this study are located within various jurisdictions and may be implemented by different agencies. Full implementation would require additional funding from partner agencies and outside grant funding sources.

Table 5. Preliminary Construction Budget Estimates

Highway Crossing Location	Trail or Combined Wildlife/Trail Highway Crossing	Connection to Nearest Existing Trail	Connection to Close the Ridge Trail Gap
Southern Overcrossing (3/3a)	$9.0 or $20.5	$4.0 - $5.0	$16.5 - $22.0
Montevina Undercrossing (4/4a)	$7.0 or $13.0	$4.0 - $4.5	$19.5 - $22.5
Northern Overcrossing (5/5a)	$10.0 or $15.0	$1.0 - $2.0	$9.0 - $12.0

Operations and Maintenance Cost Implications

In addition to construction cost, the cost of ongoing operations and maintenance is an important consideration for evaluating trail connection alternatives. In evaluating the conceptual alignments, a number of factors that affect maintenance costs were roughly quantified for the potentially new portions of trail. These include: overall trail length, the steepness of the cross-slopes through which the trail passes, the number and type of drainage crossings, the number of switchbacks, and the extent of the trail that passes through wooded areas (the trees and roots generally hold the soil and reduce storm impacts). Table 6 quantifies these maintenance features and summarizes the relative implications for maintenance of the alternative connections.

Table 6. Trail Connections Maintenance Implications

	New Trail Length (Ft)	Percentage of Trails in Moderate Steep (35% to 50%) Cross Slopes (%)	Percentage of Trails in Highly Steep (over 50%) Cross Slopes (%)	Number of Major Drainage Crossings	Number of Moderate Drainage Crossings	Number of Switchbacks	Tree Cover (%)	Relative Maintenance Implications	Summary of Key Factors
Western Connections									
Alignment A	5710	27%	34%	-	3	5	70%	Moderate	Moderate % in steep slopes, low # drainage crossings; moderate # switchbacks, high tree cover
Alignment B	8851	17%	42%	3	10	6	33%	Mod - High	Moderate % in steep slopes, high # drainage crossings, moderate # switchbacks, low tree cover
Alignment C	7595	9%	65%	2	6	1	47%	High	High % in steep slopes, moderate # drainage crossings, low # switchbacks, moderate tree cover
Alignment G	13322	10%	48%	3	7	9	35%	Mod - High	Moderate % in steep slopes, high # drainage crossings, high # switchbacks, low tree cover
Alignment M	2788	7%	0%	-	-	-	9%	Low	Low % in steep slopes, no drainage crossings; no switchbacks, low tree cover
Eastern Connections									
Alignment H	1339	31%	50%	-	-	4	25%	Moderate	Moderate % in steep slopes, no drainage crossings, moderate # switchbacks, low tree cover
Alignment I (see separate table)									
Alignment J	5617	27%	28%	-	6	5	67%	Moderate	Moderate % in steep slopes, moderate # drainage crossings, moderate # switchbacks, high tree cover
Alignment K	4012	38%	29%	1	3	6	76%	Moderate	Moderate % in steep slopes, moderate # drainage crossings, high # switchbacks, high tree cover

Legend	Trail Maintenance Difficulty Levels
	Low
	Moderate
	Moderate - High (Mod-High)
	High

Trail Connection I, along Alma Bridge Road is assessed with a different methodology than the other segments because it entails constructing a trail along the road at a relatively level grade, but with different trail types (Class I paved multi-use west of the County parking area and a narrower unpaved trail east) and different levels of construction challenge/requirements. Table 7 shows the relative maintenance implications for three alternative portions of Connection I, two of which depend on use of other connections as noted.

Table 7. Trail Connections Maintenance Implications for Connection I

Alignment I	Total Length (Ft)	Exists Trail Length (Ft)	Light Construction Unpaved Length (Ft)	Light Construction Paved Length (Ft)	Heavy Construction Unpaved Length (Ft)	Heavy Construction Paved Length (Ft)	Bridge Required (Ft)	Relative Maintenance Implications	Summary
Alma Bridge Road Trail Improvements - Highway 17 to Priest Rock Trail with 5' Unpaved Trail beyond Parking Area (all segments of Connection I)	7602	527	1114	685	3356	1644	276	High	Significant bridge to maintain, plus portions with substantial retaining walls to create paved and unpaved trail
Alternative with Connection J Bypass with 5' Unpaved Trail beyond Parking Area (eliminates segment I(3))	5254	527	555	117	2135	1644	276	Mod-High	As above, but less trail construction; need to consider added Connection J maintenance (separate table)
Alternative with Connection J and K Bypass (eliminates segments I(3), I(4), and I(5))	2564	527	0	117	0	1644	276	Moderate	As above, but far less trail construction; need to consider added Connection J and K maintenance (separate table)

Legend	Trail Maintenance Difficulty Levels
	Low
	Moderate
	Moderate - High (Mod-High)
	High

Preliminary Environmental Issues

It is anticipated that the connecting trails will be reviewed under the California Environmental Quality Act (CEQA) and that regulatory permits will be required for construction. The conceptual trail alignments are intended to minimize impact on the proposed wildlife crossings of Highway 17 and on the natural resources within the study area. The conceptual trail alignments were located to avoid or minimize impacts to sensitive natural resources. However, the connecting trails must traverse steep terrain and cross streams and drainages. Much effort has been made to limit these impacts. Through the CEQA process, the trail connections environmental impacts will be reviewed, including those to hydrology, geology, and biological and cultural resources.

Next Steps

Midpen will assimilate comments from the public at several public meetings, online, and via email to help form the basis for selecting one or more trail connections to recommend for moving through the environmental analysis process. It is anticipated that a committee meeting of Midpen's Board of Directors will be held in September for this purpose. This meeting would be followed by a full Board of Directors meeting in November to make a final selection on which connections and highway crossing will move forward for environmental review. Both of these meetings are open to the public to attend. Meeting reports will be available online on Midpen's website 72 hours prior to the meeting at https://www.openspace.org/about-us/board-meetings.

Environmental review is anticipated to occur in 2020-2022. Simultaneously, Midpen will continue to work with private and public partners to develop agreements and public access easements for the connections, as well as developing grant applications. Permit acquisition (and continued grant application efforts) will be ongoing until construction begins, which could occur as early as 2023. Depending on the connections selected, construction could be ongoing for the next several decades.

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