

## **APPENDIX T7: ALTERNATIVES**

**Planning and Preliminary Engineering Study of  
Bob Jones Trail Routes  
Phase II, San Luis Obispo to Ontario Road**



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**February 8, 2002**

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## Executive Summary

### Study Purpose

This study was prepared to analyze planning and preliminary engineering design issues for the Bob Jones Trailway, Phase II, which extends from the Octagon Barn on South Higuera Street to the County's Ontario Road staging area, generally following the San Luis Obispo (SLO) Creek corridor.

Three potential routes were studied, including trail alignment, design considerations, potential costs and right of way acquisition. The routes include Option 1 (Land Conservancy Route) that is generally located on the west side of SLO Creek, crossing under Hwy 101 near the staging area; Alternative 2, which generally follows the east side of SLO Creek and would cross East Fork and Davenport Creek; and Alternative 2, a partial route that would begin south of Cloveridge Lane and use the existing Monte Road, San Luis Bay Drive, and Ontario Road right of way.

The intent of this study is to provide enough planning and design information to:

- Make an informed decision as to the best route from the options and alternatives considered.
- Identify additional engineering and environmental studies that may be needed for design and permitting.
- Prepare a project description for CEQA purposes and agency permitting, and to guide subsequent Plans and Specifications.
- Prepare grant request applications for funding (some require completion of CEQA document).
- Prepare an accurate cost estimate, schedule and annual funding required for project implementation, along with any recommended project phasing
- Identify right-of-way requirements for purposes of appraisal and acquisition.

### Biological Opportunities and Constraints

Sensitive habitat types are present within the project area, primarily associated with wetland and riparian habitat found along the creek. They include: *Central Coast Arroyo Willow Riparian Forest*, a willow-dominated community; *Central Coast Riparian Scrub*, found at East Fork and Davenport Creek; and *Coastal and Valley Freshwater Marsh*, which is dominated by perennial species and found along East Fork, and in roadside areas near the Octagon Barn, west of S. Higuera.

There are 21 sensitive species (six animals and 15 plants) that have a reasonable chance for occurrence within the project area.

In general, the Bob Jones Trail follows the San Luis Obispo Creek corridor. To avoid biological impacts associated with the creek, the trail should be located outside the riparian corridor, and should avoid placing infrastructure within the Ordinary High Water area of the creek, where feasible. Permitting and consultation may be required for jurisdictional impacts to wetlands, including Corps, CDFG, and NMFS, and consultation with USFWS may require surveys associated with sensitive species such as California Red-Legged frog (CRLF). Specific recommendations to address biological constraints include:

- CRLF protocol presence/absence surveys should be prepared for the creek corridor.
- Archaeological monitoring is recommended for any excavation/development near the Octagon Barn (affects both the SLOLC and Alternative 1 alignments).
- A jurisdictional wetland investigation should be prepared to ensure that the design avoids jurisdictional wetlands.
- A Streambed Alteration Agreement may be required from CDFG if the alignment affects existing drainage swales or creek corridor.
- Work should be scheduled to avoid conflicts with nesting birds. If work occurs during March through August, then surveys will be needed to determine the presence of yellow warbler or other sensitive species.
- Use clear span bridges across SLO Creek, East Fork and/or Davenport Creek, and avoid widening existing bridges (South Higuera, farm bridge) where possible to avoid impacts to the riparian resources.

### **Engineering Opportunities And Constraints**

The principal engineering constraints affecting design and location of the trail alignment consist of:

- Flood scour, safety and trail maintenance issues,
- Bridge crossings,
- Wet areas with soft soils requiring special construction techniques to enable all-weather, year round access,
- Bank Instability, that could threaten trail structures located near such failures,
- Steep slopes and topographic constraints,
- Pedestrian/traffic conflicts, and
- Utility conflicts

Portions of all identified trail options are located within the active floodplain of San Luis Obispo Creek and its tributaries, including substantial areas within the FEMA defined 100-year floodplain. This presents regulatory constraints and construction and safety challenges to trail design and maintenance.

To avoid problems, trail design should include crowning the trail, tapering the shoulders to prevent erosion, and using geotextiles to strengthen the design. Where the trail must be placed on fill, use of rolling dips and providing cross drains for the design flow will be needed. High maintenance costs should be anticipated for portions of the trail within an active floodplain.

New bridge structures, or reconstruction/modification of existing bridges must not place people at risk to flood injury, or exacerbate flooding. New bridge approaches will need to ramp up, with the bridge on elevated pilings located about 1.5-2 meters (4-6 feet) above the creek bank top in order to be above the FEMA 100-year flood elevation with a 1 foot of freeboard, and approaches may need to be placed on pilings to allow flow conveyance under the ramps. There may be minor local effects on floodwater surface elevations that will need to be mitigated.

The trail connection beneath Highway 101 Bridge at Ontario Road will need to be sensitively designed to avoid impacting the structures flood flow capacities. Possible solutions include use of seasonally removable sections for the trail, or designing the trail at grade to avoid flow obstruction.

Other engineering constraints that may require special design considerations include:

- Wet soil areas
- Bank instability in limited locations
- Topographic constraints
- Pedestrian crossing/Traffic conflicts
- Utility conflicts

### **Property Ownership And Right Of Way Issues**

The State of California (Caltrans) owns a significant portion of the trail route. Some areas within the SLO Creek corridor are within Caltrans' Channel Change Easement, which was secured to facilitate maintenance of the creek to protect the adjacent Highway. The terms of the easement, and whether public access would be allowed within this area needs to be clarified. If the channel change easement areas were to be avoided, then the trail route would be limited to existing street right of way, or lands east of the creek, outside the riparian corridor.

Caltrans also owns a 30 ft. right of way along the east side of Highway 101, between San Luis Bay Drive and the Highway 101 Bridge at SLO Creek, referred to as a Farm Road. The State purchased the land to provide property owners with access to public roads from their fields. To obtain access, the County can purchase the abutting property owners' interest and excess land from the State; or the County can acquire an easement from affected property owners, and obtain an agreement or encroachment permit from Caltrans to use the land.

Caltrans also owns other land within the trail route, including the lands south of the Ontario Road staging area where the trail would need to cross under the Highway 101 Bridge at SLO Creek, and in the vicinity of Cloveridge Lane.

Property transfer can occur by Legislative Act, purchase, or cooperative agreement, especially if part of a mitigation action.

## **Project Costs**

Planning level cost estimates were developed to compare alternatives, and for forward planning. The costs are not based on detailed designs, and do not include design, environmental review and permitting, or right-of-way acquisition. It is anticipated that right of way acquisition will be a minimum of \$200,000.00, and could increase if additional right of way is needed to accommodate approach ramps, slope adjustments or any associated creek restoration work. Each alignment is assumed to an 8 ft. asphalt-paved section with a 3 ft. graded shoulder on each side, and actual construction is anticipated to cost \$1.2–1.5 million. Design and permitting fees could cost up to \$200,000.00, making the total cost of the Phase II Trail in the range of \$1.6-2 million.

## **Trail Phasing And Interim Trail Opportunities**

Interim trail opportunities exist by utilizing existing rights of way (Monte Road, Cloveridge Lane, etc.) to provide interim trail connections until funding and right of way becomes available to provide a phased, permanent Class I trail. This would include loop trail opportunities, or point access trail connections until right of way or trail construction funding becomes available. Some potential interim trail opportunities are located along the old Highway 101 right of way; at the City of SLO's Filipponi Preserve; along Monte Road, and along the Caltrans farm road.

## **Next Steps**

In order to implement the project, additional research is recommended. CEQA review and permitting should be initiated, engineering and contract documents prepared, and right of way acquired. The detailed information needed to complete the project is listed below. Specific tasks include:

- Finalize project description.
- Meet with property owners.
- Hold public meeting to discuss project and solicit public support.
- Conduct environmental and engineering research needed for CEQA review and permitting, and Plans and Specifications (develop scope, schedule, cost estimates).
- Conduct research for right of way appraisal and acquisition.
- Hold interagency field tour to solicit input on permitting/mitigation issues.
- Identify funding sources and invite for tour (SLO Land Conservancy).
- Initiate CEQA review and permitting.
- Identify link to City portion of trail at Los Osos Valley Road (LOVR).

## **Research Needed For CEQA Review And Permitting**

- Perform Red-legged frog protocol surveys, focused on creek crossings, and additionally anywhere the proposed trail is within 50 feet of bank top.
- Complete fisheries and aquatic habitat surveys at all creek crossings.
- Complete jurisdictional wetlands delineation for areas potentially affected by the trail (only a reconnaissance level analysis has been completed). Recommend changes to the trail route to avoid wetlands.
- Complete a site-specific archaeological investigation at creek crossings, complete archaeological site records forms and publish a “not for public distribution” cultural report.
- Identify wetlands and habitat acreages that will be impacted by the project. Estimate mitigation requirements and locate potential mitigation sites.
- Prepare CEQA document (most likely an Expanded Initial Study/Mitigated Negative Declaration)
- Prepare permit applications, including Habitat Mitigation and Monitoring Plan, U.S. Army Corps permits, etc. if appropriate.

## **Engineering Design And Construction Document Preparation**

- Prepare detailed topographic maps/field surveys at creek crossings, at-grade road crossings, and Cloveridge intersection and embankment area
- Complete geotechnical investigation (soil borings) at bridge crossings, Cloveridge embankment and wet soil areas.
- Map location of utilities from field work and office compilation
- Identify specific bridge location and abutment footprint and design.
- Prepare detailed design drawings and contract documents for project construction, including phasing, if appropriate

## **Research Needed to Complete Right of Way Acquisition**

- Precisely locate trail route and right-of-way needed and identify acreage to be acquired from each property owner
- Prepare legal property descriptions and acquire appropriate easements or fee title to acquire necessary right of way from private landowners
- Research easement use restrictions, especially Caltrans Farm Road and Channel Change easements; secure necessary easements
- Negotiate with Caltrans regarding Cloveridge intersection and Hwy 101 bridge underpass requirements for easement; secure encroachment permit

**Planning and Preliminary Engineering Study of  
Bob Jones Bikeway Routes  
Phase II, San Luis Obispo to Ontario Road**

## **1.0 INTRODUCTION**

This study presents an analysis of planning and preliminary engineering design issues for the Bob Jones Bikeway, Phase II. This project is one component of a planned City-to-Sea route that will provide a continuous Class I recreational bikeway between the coast and the City of San Luis Obispo. Phase I of the project, completed in 1996, is a 1.2-mile trail segment between San Luis Bay Drive near Avila Beach and the Ontario Road staging area. Phase II evaluated the engineering and biological constraints of the route between the Land Conservancy of San Luis Obispo County (Land Conservancy=s) Octagon Barn on South Higuera Street and the County=s Ontario Road staging area, following San Luis Obispo (SLO) Creek along much of the way. In many places SLO Creek is very close to Highway 101, and this raises additional issues.

The principal issues to be examined in determining the optimal trail route and its construction feasibility include:

- Potential occurrence of sensitive environmental habitats, and cultural resources along the creek zone
- Flooding, bank instability and associated safety and maintenance costs
- Noise, safety, and security issues regarding public access
- Determining how much right of way is needed to safely locate a trail
- Road and creek crossings
- Property acquisition needs
- Structural design considerations

This report examines the physical and environmental constraints to establishing bicycle and pedestrian trails along three potential routes. Alternative trail alignments, design considerations, potential costs and right of way acquisition needs are also addressed, and additional study research needs to be identified.

### **1.1 Study Purpose**

This study evaluates the engineering feasibility and biological constraints associated with extending the existing trail from its terminus at the Ontario Road staging area to South Higuera Street at the Octagon Barn, within San Luis Obispo County. A separate study, conducted by the City of San Luis Obispo, was recently completed to provide a trail along San Luis Obispo Creek within the city limits, terminating at Los Osos Valley Road.

This report evaluates three alternative routes that terminate at the County's staging area on the east side of Ontario Road, near San Luis Bay Drive (**Sheets 1 and 2**).

***Option 1 (Land Conservancy Route)***

This route would start at the Octagon Barn where trailhead parking and other facilities could be available. To access the bicycle and pedestrian corridor, trail users would cross South Higuera Street at a 90-degree angle. The trail would then extend down the west side of South Higuera between San Luis Obispo Creek and South Higuera. At the point San Luis Obispo Creek travels under South Higuera, the trail would either extend under the roadway or have an at grade crossing. From this point, the trail would be located between San Luis Obispo Creek and the road (South Higuera and Cloverridge Lane) until the end of Cloverridge Lane. From the end of Cloverridge Lane, the trail would cross San Luis Obispo Creek and stay on the east side of the creek until San Luis Bay Drive is reached. The trail would then cross San Luis Bay Drive and extend south along a farm road (along a Caltrans easement) that is adjacent to the east side of Highway 101. At the Highway 101 Bridge, the trail would go under the Bridge, with this section of trail ending at the existing Ontario Road Staging Area.

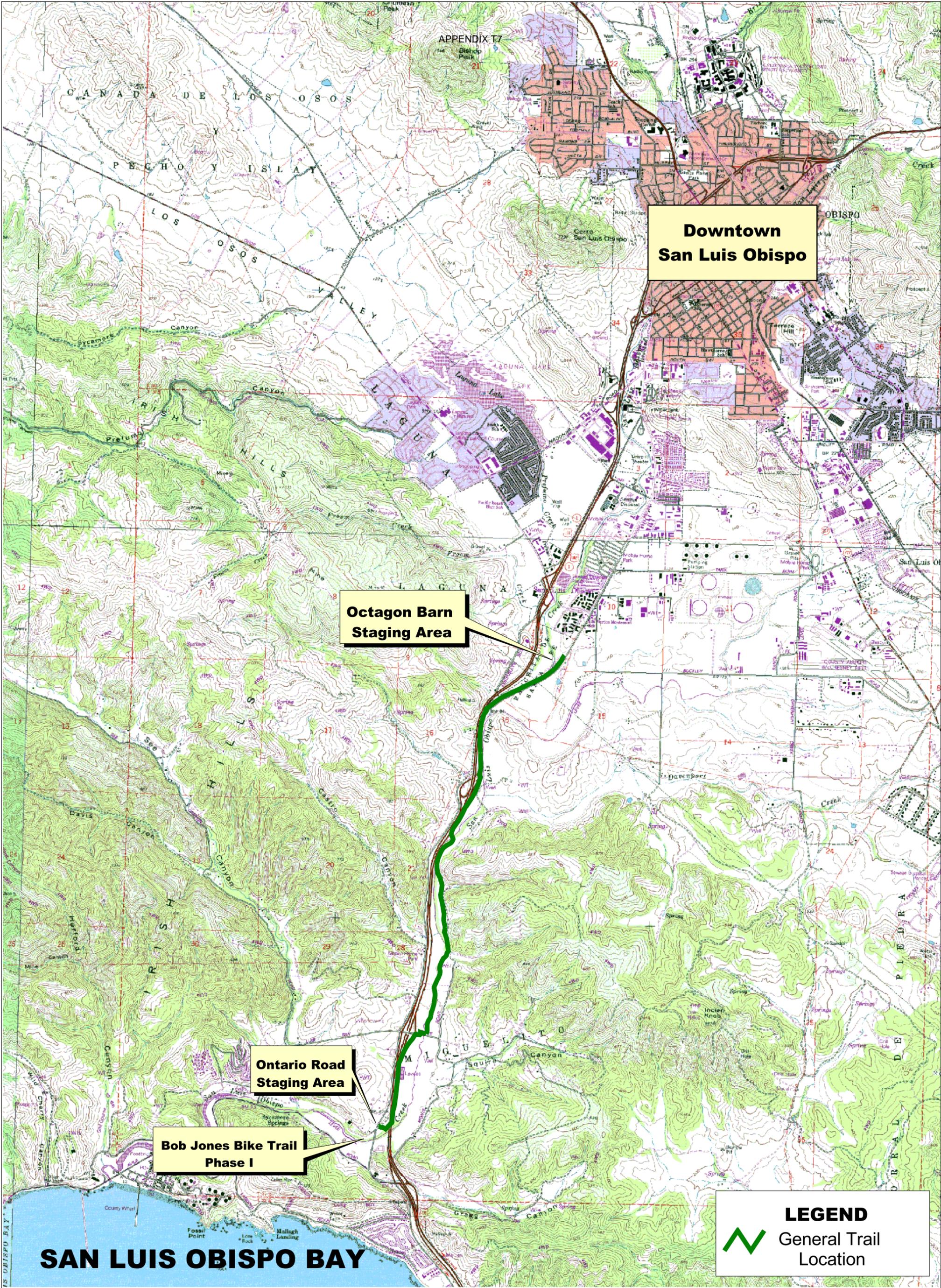
***Alternative 1***

This route would also start at the Octagon Barn where parking and other facilities could be available. Instead of crossing South Higuera, the trail would stay on the east side of South Higuera, adjacent to the road. The trail would cross East Fork and Davenport Creek along the east side of SLO Creek. At Monte Road, the trail would cross over an existing farm bridge to the western side of the creek and would be located on an existing farm road. From this point, the trail would continue on the west side of the creek until reaching San Luis Bay Drive. From San Luis Bay Drive, the trail corridor would continue along the same route as the San Luis Obispo Land Conservancy option, outlined in #1 above.

***Alternative 2***

The beginning of this route (Octagon Barn) would be the same as either the Land Conservancy Option or Alternative 1. Where Cloverridge Lane ends, the route would extend south along the western side of San Luis Obispo Creek (between the creek and Highway 101) until crossing SLO Creek at the farm bridge, east to Monte Road. The trail would be located within the road right-of-way of Monte Road and west along San Luis Bay Drive, to Ontario Road. The trail would be located along Ontario Road to the staging area.

Photographs of the project site are included on **Sheets 3** through **6**.



**Downtown  
San Luis Obispo**

**Octagon Barn  
Staging Area**

**Ontario Road  
Staging Area**

**Bob Jones Bike Trail  
Phase I**

**LEGEND**



General Trail Location

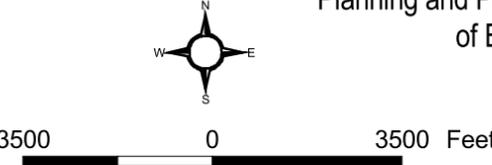
**SAN LUIS OBISPO BAY**



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MORRO  
GROUP, INC.  
Environmental Services

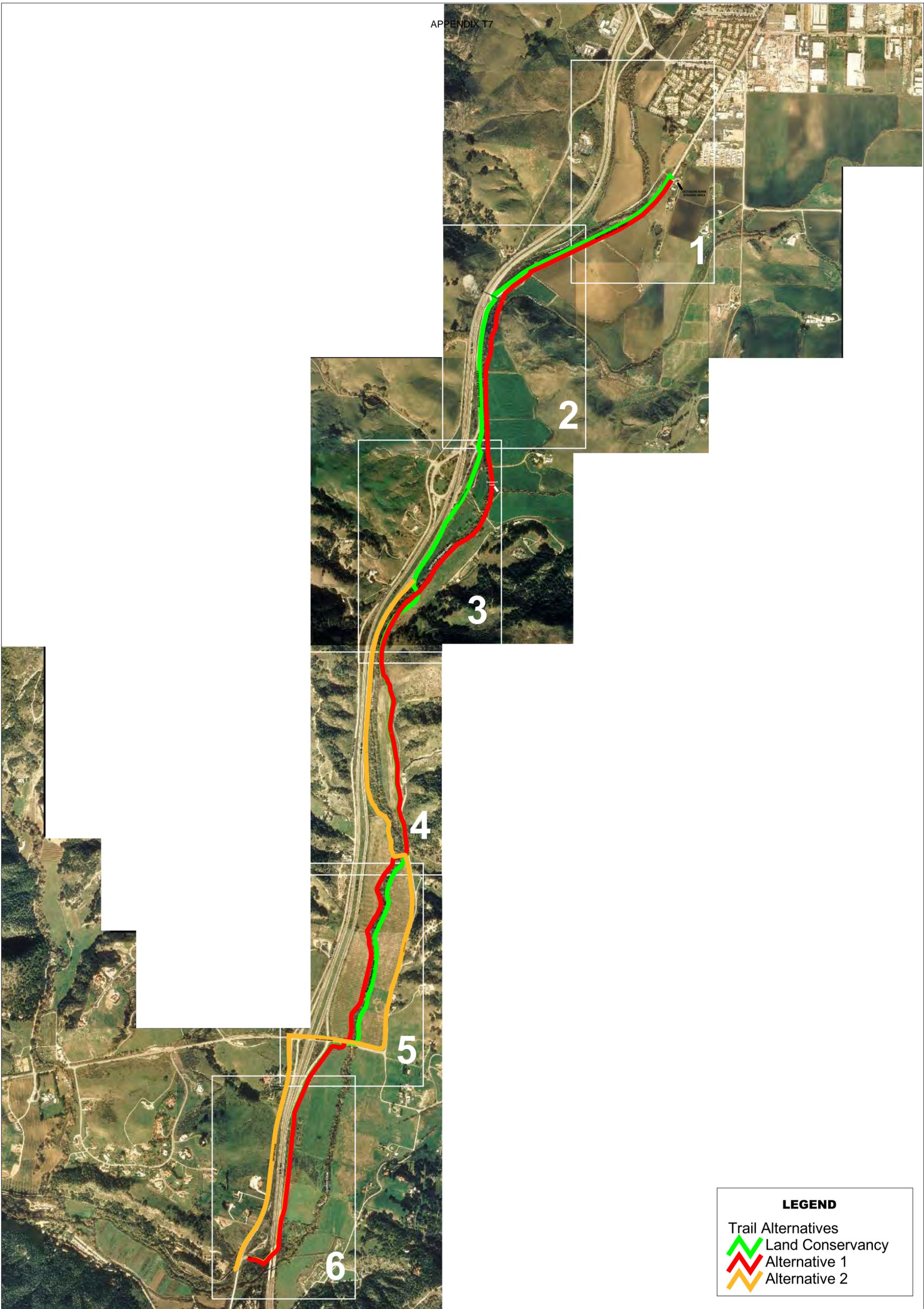


3500 0 3500 Feet

Planning and Preliminary Engineering Feasibility  
of Bob Jones Trail Routes - Phase II

LOCATION MAP

SHEET 1



**LEGEND**

Trail Alternatives

-  Land Conservancy
-  Alternative 1
-  Alternative 2

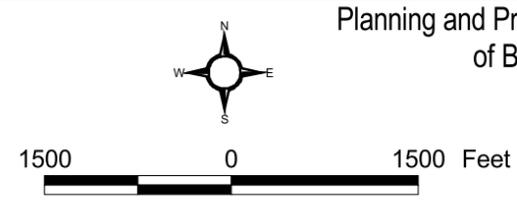
**QUESTA**  
ENGINEERING CORE

Civil  
Environmental  
& Water Resources

PO. Box 70356 1220 Brickyard Cove Road Point Richmond, CA 94807

**MORRO GROUP, INC.**  
Environmental Services

1500 0 1500 Feet



Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II



**1**  
 Octagon Barn on South Higuera, looking north. Note utilities and sight distance along road.



**2**  
 Octagon Barn looking south. Note bank on east side of South Higuera, with possible retaining wall needed and potential utility conflicts (Alternative 1).



**3**  
 South Higuera Bridge, northeast side of SLO Creek, showing area that would need to be excavated and reinforced to accommodate trail section.



**4**  
 East side of South Higuera Bridge at Filipponi Ecological Reserve (City of SLO), where bridge undercrossing would transition to grade.



**5**  
 South Higuera near intersection with Cloveridge Lane, showing steep slope and lack of shoulder to safely locate trail.



**6**  
 Cloveridge Lane looking south near end of lane. Trail could be accommodated within existing right of way in this area.



East side of San Luis Obispo Creek, looking north; section opposite Cloveridge Lane.



East side of San Luis Obispo Creek, looking south toward Baron Canyon Open Space and Monte Road.



Scour at base of Baron Canyon Open Space, area east of SLO Creek.



West side of SLO Creek, south of Cloveridge Lane (Alternate 2) between Hwy 101 and the creek. Insufficient area exists between the Creek and Highway in this area to safely locate the trail.



East side of SLO Creek looking north from Baron Canyon area toward Cloveridge Lane.



Farm Road at end of Monte Road, looking north.



Monte Road right of way, looking south. Trail could be located along the road, along a farm road paralleling Monte Road, or area adjacent to creek corridor.



Farm road on west side of SLO Creek, north of San Luis Bay Road.



Intersection of farm road on northwest side of SLO Creek, and San Luis Bay Road. Possible staging area, crossing location on San Luis Bay Road.



Caltrans farm road adjacent to Highway 101 south of San Luis Bay Road (looking north).



Caltrans farm road entrance at southwest intersection of San Luis Bay Road and SLO Creek.



San Luis Bay Road Bridge over Highway 101. Current configuration is insufficient for sidewalk or bicycle lane.



19

Looking south at Ontario Road. Bicycle trail currently exists along west side of road within shoulder area.



20

SLO Creek floodway under Highway 101 on west side of Highway near Ontario Road Staging Area.



21

SLO Creek floodway under Hwy 101 on east side of Highway, south of farm road. Trail crossing will need to maintain floodway access (no diversion of flood flows) beneath Highway structure.



22

Highway 101 undercrossing following bridge retrofit completion. This is the center barrel of the bridge, at the most active part of the floodway. (same area as Photo 21)



23

Area at northwest corner of Highway 101 Bridge. This area is the furthest from the center of the floodway.



24

Construction access road on west side of Highway 101, near Ontario Staging Area.

1000-4  
July 1, 1993

HIGHWAY DESIGN MANUAL

Figure 1003.1A  
Two-way Bike Path on Separate Right of Way

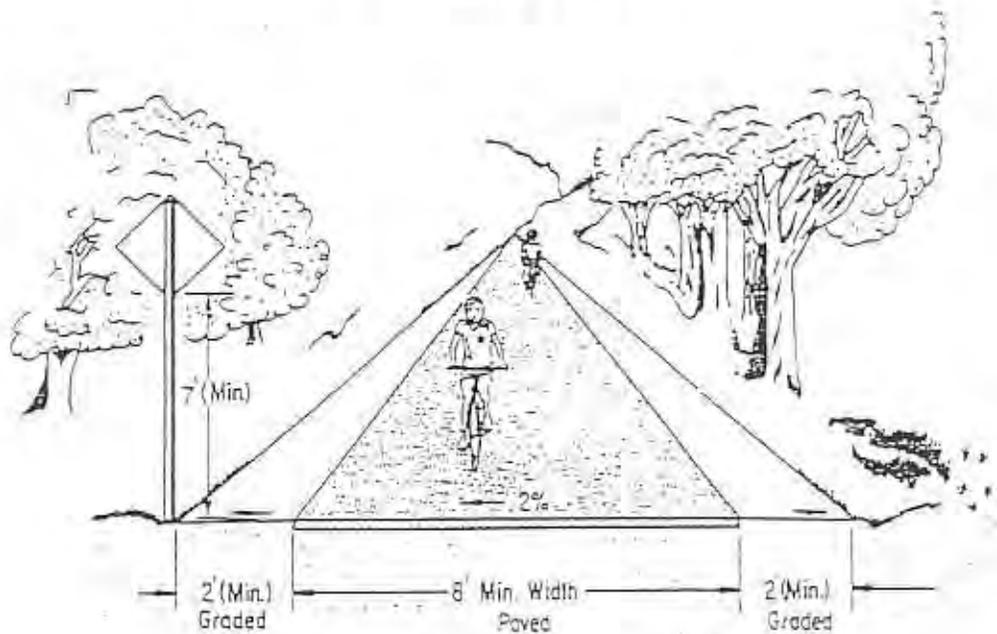
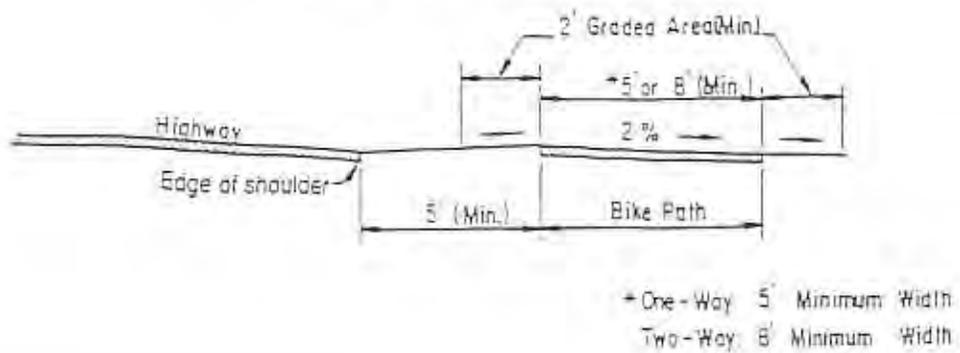


Figure 1003.1B  
Typical Cross Section of Bike Path Along Highway



## 1.2 Project Objectives

The goal of the project is to provide a Class I trail wherever feasible. The *County Bikeways Plan* for SLO County uses standards developed by the California Department of Transportation (Caltrans) for three classifications of bikeways. These include:

- A Class I Bikeway (Bike Trail) provides a separated right of way for the exclusive use of bicycles and pedestrians. This is intended to minimize traffic conflicts, and is recommended where funding is available. The existing Phase I Bob Jones Bikeway, between Avila Beach and Ontario Road is a Class I Bikeway. The County Bikeways Plan calls for selection of a Class I route following completion of this Constraints Analysis.
- A Class II Bikeway (Bike Lane) provides a striped lane for one-way bike travel on a street or highway. These lanes are for the use of bicycles or pedestrians exclusively, but vehicle parking is permitted. The County Bikeways Plan shows South Higuera Street and Ontario Road as Class II Bike lanes, and calls for continued improvements to the current route (signage and striping) until a new Class I route is completed.
- A Class III Bikeway (Bike Route) is a roadway that is designated by signs or permanent markings, and allows shared use by bicycles, pedestrians and motor vehicles.
- The County further defines a Class IV Bikeway (Bike Access) as a roadway identified as a satisfactory place to ride. The intent of this designation is to provide a network of connections between existing and proposed Bikeways, that can be conveyed on a Bike Map, to provide a continuous route. This designation does not apply to ant streets within the study area.

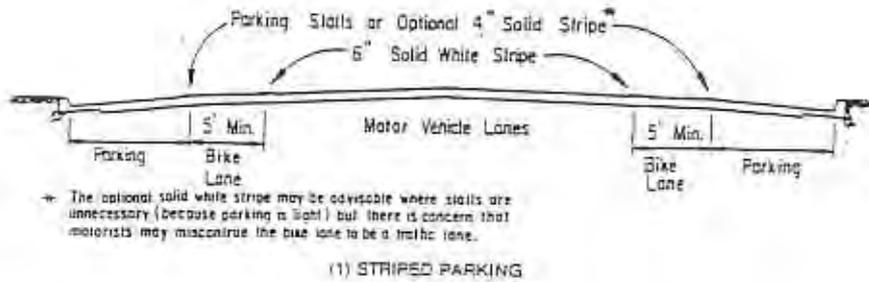
**Sheets 7 and 8** illustrate Class 1 and Class 2 Bikeways.

## 2.0 SITE OPPORTUNITIES AND CONSTRAINTS

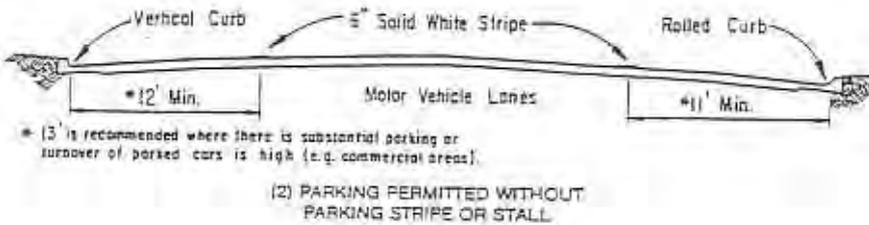
**Opportunities** are physical conditions, complimentary land uses, or other factors that enhance, simplify or reduce the costs of trail construction. Opportunities include:

- Existing trails, roads or graded areas
- Public ownership, or existing access easements
- Public ownership/easements on adjacent lands
- Willing property owners
- Public support of project
- Level to gently rolling land
- Geologically stable
- Minimal flood hazard
- Scattered vegetation and/or minimal habitat value

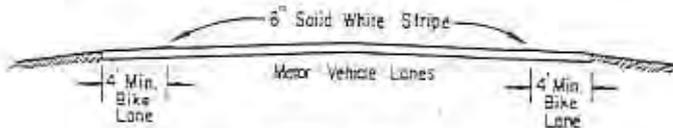
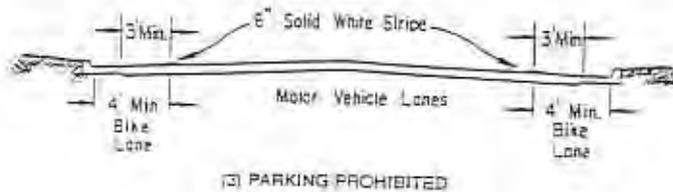
Figure 1003.2A  
Typical Bike Lane Cross Sections  
(On 2-lane or Multilane Highways)



\* The optional solid white stripe may be advisable where stalls are unnecessary (because parking is tight) but there is concern that motorists may misclassify the bike lane to be a traffic lane.



\* 13' is recommended where there is substantial parking or turnover of parked cars is high (e.g. commercial areas).



- Upland areas
- Accessible from existing roads
- Minimal utility conflicts
- Minimal traffic conflicts
- Existing creek crossings and bridges

Trail implementation costs increase, or problems occur, when there are obstacles, or **constraints**, that influence trail design and acquisition, or prevent achievement of full project goals and objectives. These can be: 1) physical constraints, such as low or wet areas, steep slopes, rock outcroppings, or creek crossings; 2) land use constraints, such as easement restrictions or unwilling landowners; or 3) safety constraints such as proximity to traffic or lack of sight distance. Constraints include:

- Class II or III bikeway corridor requirement, versus a Class I
- Potential public safety or liability issues
- Environmental concerns that would be very expensive to mitigate
- Potential geologic hazards, seismic, unstable ground, etc
- Flood hazards and bank instability
- Wetlands
- Dense vegetation and/or sensitive wildlife habitat
- Security/liability issues from adjacent landowners perspective
- Above ground and underground utilities—construction and security hazards<sup>1</sup>
- Near-by sources of noise or air pollution

This section summarizes the preliminary opportunities and constraints that were identified along the trail corridor. A detailed discussion of biological and cultural opportunities and constraints is contained in **Section 3**, and engineering opportunities and constraints are discussed in **Section 4**.

## 2.1 Opportunities and Constraints, Land Conservancy Option

### 2.1.1 Octagon Barn to Cloveridge Lane

Opportunities:

- Sufficient right of way for separated trail
- Possible transition or connection to City Trail
- Possible opportunities to use Old Highway right of way, historic bridge crossing
- Minimal existing infrastructure
- Separation from South Higuera/ improved trail experience
- Opportunities to restore riparian corridor in this area

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<sup>1</sup> Existing utilities can pose construction challenges and right of way concerns where utilities cross the proposed route. Underground utilities (such as pressurized lines) can be a safety hazard to trail users where they are exposed due to lack of maintenance. There may be liability issues associated with access over an existing easement. Overhead utilities can be a problem where there is insufficient clearance for safe passage.

## Constraints:

- Lack of signalized crossing/sight distance at busy South Higuera
- Potential flooding adjacent to creek, high scour potential
- Need for crossing under S. Higuera Bridge at Hi.101 on ramp (possible clearance issues)
- Transition and clearance a problem near Hi.101 onramp
- Steep slope adjacent to road north of Cloveridge
- Lack of r/w, steep slope, utility conflicts at South Higuera/Cloveridge Lane intersection
- Significant ADA compliance/earthwork needs at Cloveridge/Higuera transition
- Potential conflicts with underground pipelines

*2.1.2 Cloveridge Lane to San Luis Bay Drive*

## Opportunities:

- Cloveridge Lane has sufficient r/w for trail, little existing traffic
- Sufficient land between highway and creek for trail
- Existing farm road east of creek to Monte Road provides view opportunities above active creek floodplain
- Minimal traffic on Monte Road, interim trail opportunities
- Restoration opportunities along SLO Creek

## Constraints:

- R/w acquisition needs south of Cloveridge Lane<sup>2</sup>
- Need for new creek crossing where Hwy 101 flows adjacent to Highway
- Potential flooding/slope stability issues north/west of Monte Road
- Traffic conflicts with trail crossing at San Luis Bay Drive
- Potential conflicts with underground pipelines

*2.1.3 San Luis Bay Drive to Ontario Road Staging Area*

## Opportunities:

- Farm road adjacent to Highway provides unique off-street experience
- Screening from Highway
- Direct link to Ontario Road Staging area

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<sup>2</sup> There are no public lands from the south end of Cloveridge Lane to Monte Road; right of way would need to be acquired to complete the trail in this area.

## Constraints:

- Potential easement restrictions/acquisition issues related to use of farm road for trail
- Wetlands fill/permitting along road
- Crossing under Hwy 101 is active floodway
- Caltrans use issues under Highway
- Potential boardwalk/bridge section under Highway

## 2.2 Opportunities and Constraints, Alternative 1

### 2.2.1 Octagon Barn to Cloverridge Lane

## Opportunities:

- Trail stays on east side of S. Higuera, reducing traffic conflicts
- Sufficient right of way to construct Class 1 Bikeway
- Minimal existing infrastructure
- Potential opportunity to coordinate with SLO Conservancy work at Filipponi site
- Avoids conflicts at S. Higuera Bridge
- Utilize existing graded trail section south of SLO Creek/East Branch confluence to Maino property
- Creek restoration/bank stabilization opportunities could be combined with project

## Constraints:

- Hill south of Octagon Barn (earthwork/possible retaining wall)
- R/W acquisition needs between Octagon Barn and Cloverridge Lane (City of SLO, Maino and Bunnell properties)
- Possible conflicts with adjacent farm uses
- Erosion/bank slope stability issues adjacent to SLO Creek
- Existing utility line easements, exposed piping
- Exposed pipes, need for crossing at Davenport Creek

### 2.2.2 Cloverridge Lane to San Luis Bay Drive

## Opportunities:

- Eliminates need for SLO Creek crossing north of Monte Road
- View opportunities north of Monte Road
- Utilize/upgrade summer crossing of SLO Creek

## Constraints:

- Route next to creek edge has significant flood scour/erosion constraints
- Possible unwilling property owners east of SLO Creek
- Erosion/slope stability issues adjacent to SLO Creek
- Existing utility line easements, exposed piping

### 2.2.3 *San Luis Bay Drive to Ontario Road Staging Area*

#### Opportunities:

- Farm road adjacent to Highway provides unique off-street experience
- Screening from Highway
- Direct link to Ontario Road Staging area

#### Constraints:

- Potential easement restrictions/acquisition issues related to use of farm road for trail
- Wetlands fill/permitting along farm road
- Crossing under Hwy 101 is in active floodway
- Caltrans use/permit issues under Highway
- Potential boardwalk/bridge section under Highway

## 2.3 **Opportunities and Constraints, Alternative 2**

### 2.3.1 *Octagon Barn to Cloveridge Lane (note: Alt. 2 begins at end of Cloveridge Lane)*

#### Opportunities:

- Reduced r/w acquisition needs

### 2.3.2 *Cloveridge Lane to San Luis Bay Drive*

#### Opportunities:

- Reduced r/w acquisition needs
- Utilizes existing seasonal bridge crossing
- Minimal traffic on Monte Road, interim trail opportunities

#### Constraints:

- Inadequate r/w between Cloveridge Lane and Seasonal bridge crossing to safely locate trail west of SLO Creek

### 2.3.3 *San Luis Bay Drive to Ontario Road Staging Area*

#### Opportunities:

- Utilizes existing roadway for trail, minimal right of way needs
- Interim opportunities along Ontario Road, as signed trail already exists
- Avoids crossing under Hwy 101, uses existing crossing

#### Constraints:

- Conflicts with motorists on San Luis Bay and Ontario Rd (not a separated Class I Bikeway)
- Hwy 101 crossing at San Luis Bay Drive is too narrow for separate trail, or pedestrian access

### 3.0 BIOLOGICAL AND CULTURAL OPPORTUNITIES AND CONSTRAINTS

This section examines biological and cultural opportunities and constraints in the geographic areas identified below.

#### 3.1 Methods

The pertinent literature was reviewed to formulate a list of sensitive resources that are known, or may potentially occur, at or near the project alternative alignments. All three alignments are contained entirely within the USGS 7.5 minute series quadrangle for Pismo Beach, California. The California Natural Diversity Database (NDDDB) for this quadrangle (NDDDB 2001) was referenced to determine the locations of sensitive resources reported to the California Department of Fish and Game. Environmental documents prepared for projects within and near the planned bike trail alignments were also reviewed to supplement the NDDDB results. These were:

- 1) Endangered Species Biological Assessment for the Widening of the Southbound Route 101 Bridge Crossing San Luis Obispo Creek Near the Avila Road Exit in San Luis Obispo County (Caltrans 2001);
- 2) Final Expanded Initial Study for the Ontario Road bridge Replacement (Morro Group 1993);
- 3) Biological Assessment for the Filipponi Ecological Area Restoration and Enhancement Plan (Morro Group 2001a), and;
- 4) Natural Environment Study for the South Higuera Street Bridge Seismic Retrofit Project (Morro Group 2001b).

A Phase I archaeological survey of the three project alternatives (alignments) was conducted by Morro Group resource specialist Kate Ballantyne, Caltrans archaeologist Dr. Valerie Levulett, and Caltrans archaeological intern Allyson Ogden. Dr. Levulett has worked for over 30 years on California and Baja California archaeology, and was approved by the County of San Luis Obispo (S. McMasters, pers. comm.) to lead the necessary surveys on this project. A query of the California Archaeological Inventory, Central Coast Information Center in Santa Barbara was conducted on August 3, 2001 to determine previous cultural survey efforts and results along the entirety of each trail alternative and a 0.5-mile buffer on each side of an alignment. A search of the inventories of the National and State Historic Property Data Files, National Register of Historic Places, National Register of Determined Eligible Properties, California Historical Landmarks, California Points of Historic Interest, California Office of Historic Preservation Archaeological Determinations of Eligibility, and the Caltrans State and Local Bridge Surveys was also conducted as part of this literature review task. The project is entirely contained within the USGS 7.5-minute series quadrangle for Pismo Beach, California. Ms. Ballantyne, Ms. Ogden, and Dr. Levulett conducted surface surveys of the alignments on September 15 and October 13, 2001.

Biological resources at and near the project alignments were inventoried using several methods. Morro Group resource specialist Jeremy Wiggins and Morro Group biologist Jeff Tupen foot surveyed each of the alignments on July 19 and July 24, 2001. A follow-up verification visit was conducted on January 9, 2002 to observe several suspected wetland and stream areas during wet winter conditions. A Trimble Trailfinder Pro XR Global Positioning System (GPS) was used to map the location of the top of bank of San Luis Obispo Creek. This datum is commonly used by the U.S. Army Corps of Engineers (Corps) as a conservative, preliminary estimate of the location of the Ordinary High Water Mark (OHWM), particularly in those systems where channel incision/bed degradation have resulted in vertical creek banks. This is very much the case at many locations within the lower San Luis Obispo Creek corridor. Other suspected Corps jurisdictional areas (i.e., wetlands and waters) were also mapped. A formal wetland delineation, consistent with Army Corps of Engineers 1987 regulations, was not conducted as part of this constraints analysis.

Within riverine systems, the OHWM generally delineates the outboard extent of habitat areas subject to Corps regulation, or the extent of Waters of the U.S., as defined by the Corps. Wetland habitats, as a subcategory of Waters of the U.S., typically are located between (within) the OHWM's of a drainage, but may also be located outboard and adjacent to an OHWM. The Corps considers the OHWM as that location within a fluvial system that is "established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." (Federal Register 1986).

The collected OHWM GPS data were combined with information collected by Morro Group for Phase II of the City of San Luis Obispo Zone 9 Waterway Management Plan (Questa in prep.). Existing information included the location and characterization of riparian vegetation along the San Luis Obispo Creek corridor, and the location and characterization of instream habitat types of San Luis Obispo Creek.

The California Department of Fish and Game (CDFG) regulates development in and near stream habitat under Section 1600 of the Fish and Game Code. Defined drainages with a streambed, streambank, or streambed are subject to regulation under Section 1600. Other sections of the Fish and Game Code are also pertinent to the present project, and these will be discussed later within the Impact Assessment section of this constraints document. Commonly, the outboard edge of existing riparian vegetation is used by the CDFG as the limit of their jurisdiction under Section 1600. The National Marine Fisheries Service also commonly uses the outboard edge of riparian vegetation as the limit of their jurisdiction of habitat for the federally threatened southern steelhead trout, *Onchorhynchus mykiss*. San Luis Obispo Creek and its tributaries were designated as Critical Habitat for steelhead in February 2000 (Federal Register 2000). San Luis Obispo Creek was not included within the USFWS-designated critical habitat area for California red-legged frog or CRLF (Federal Register 2001). While CRLF have been located within at least three sub-watersheds of the San

Luis Obispo Creek watershed (NDDDB 2001a, 2000b), they have not yet been confirmed as present within the mainstem of San Luis Obispo Creek, within or below the City of San Luis Obispo. Nevertheless, habitats within the mainstem of San Luis Obispo Creek may be considered as suitable for CRLF and are therefore subject to USFWS jurisdiction.

Currently the County of San Luis Obispo does not have a formal ordinance or policy on creek setbacks. The County does recognize Sensitive Resource Areas (SRA's). A SRA is an official county designation in the Land Use Element of the General Plan for the San Luis Obispo Area, (Jan 9, 1997), designating an area as having " high environmental quality, special ecological or educational significance." The Land Use Element shows area mapped as SRA's. SLO Creek is not mapped or designated as an SRA. The County will rely on this plan and the related CEQA document, and any special agency permit conditions for appropriate stream resource protection of SLO Creek.

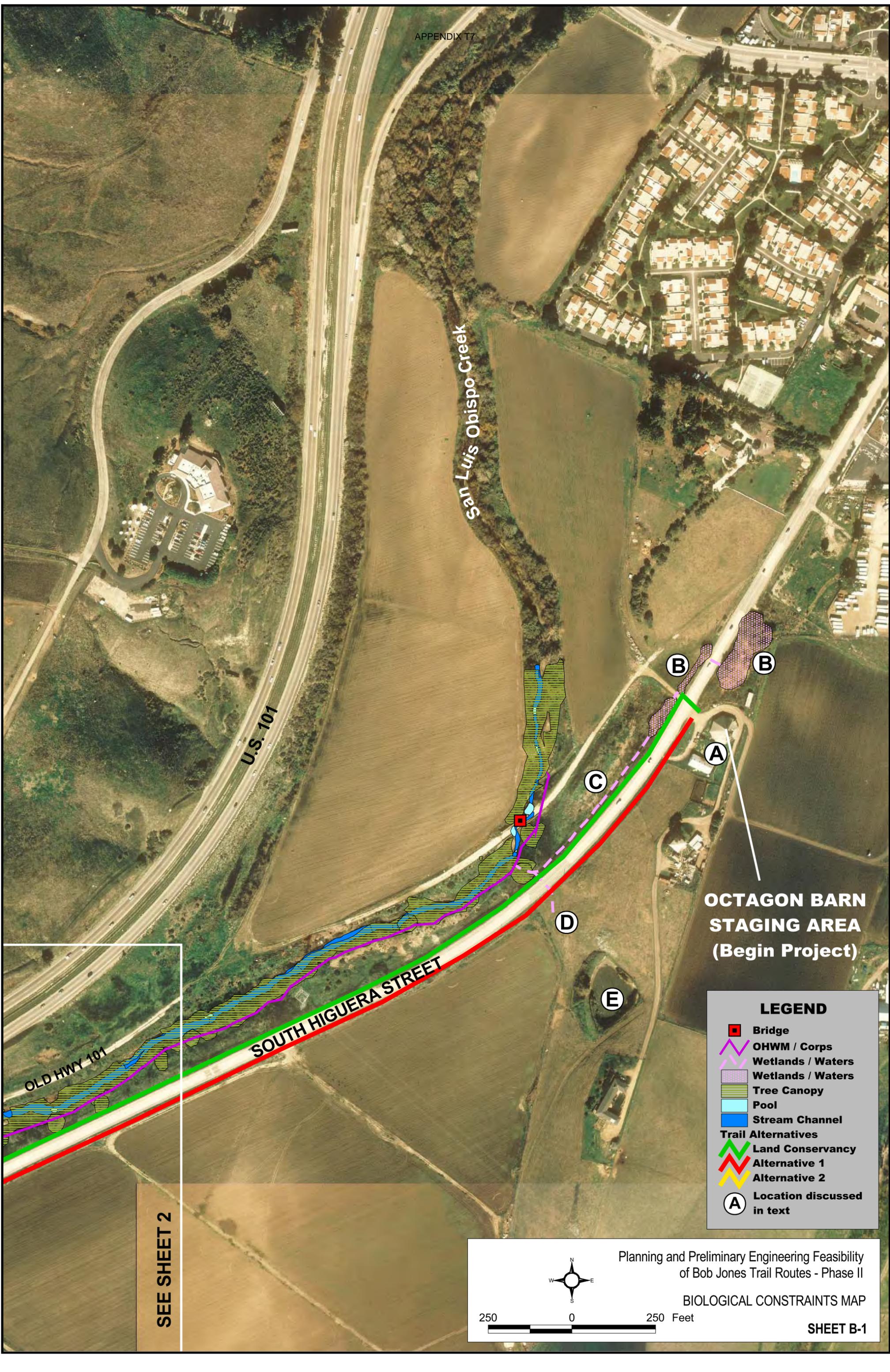
In summary, habitat data presented within this document reflect the locations of NDDDB-mapped sensitive resources and of habitats regulated by the Corps, CDFG, and NMFS, and USFWS. Project alternatives are evaluated later in this document with respect to their potential impacts to these sensitive resources and habitats. The regulatory implications of such impacts are also discussed.

### 3.2 Results

The San Luis Obispo Creek corridor was divided in to 6 segments (shown as **Sheets B1** through **B-6**) to best illustrate the various project alignments and natural/cultural resources such that each could be seen easily and clearly. Six segments was determined to be the fewest number of segments to allow such resolution. Sensitive and important natural habitats are mapped within the attached sheets and are shown on the sheets with a letter (i.e., K), which is discussed separately in the text. Important cultural resources of the project area are discussed in the text without reference to specific resource locations, assigned a letter of the map sheets. A separate, limited-review document will be produced mapping the specific locations of identified important cultural resources. Site survey records will be included within this confidential report.

#### **Cultural Resources**

Searches of the noted databases resulted in the identification of 21 previous cultural resource surveys and 11 known archaeological sites within the defined project search area. The following table summarizes these 11 known sites, with locations suppressed for confidentiality. Site locations are ordered within **Table 3-1** from northward to southward, proceeding from the origin of the Phase II trail at the Octagon Barn to the Ontario Road parking area. Brief descriptions of each of these 11 sites are presented following the tabulated summary. None of the alignment options pose direct impacts to any of the known resources summarized within **Table 3-1**.



San Luis Obispo Creek

U.S. 101

SOUTH HIGUERA STREET

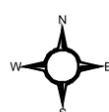
OLD HWY 101

OCTAGON BARN STAGING AREA (Begin Project)

**LEGEND**

-  Bridge
-  OHWM / Corps
-  Wetlands / Waters
-  Wetlands / Waters
-  Tree Canopy
-  Pool
-  Stream Channel
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  Location discussed in text

SEE SHEET 2



Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

BIOLOGICAL CONSTRAINTS MAP

250 0 250 Feet

OLD HWY 101

San Luis Obispo Creek

Filipponi Ecological Preserve

East Fork Creek

S. HIGUERA BRIDGE

U.S. 101

SOUTH HIGUERA STREET

SEE SHEET 1

SEE SHEET 3

**LEGEND**

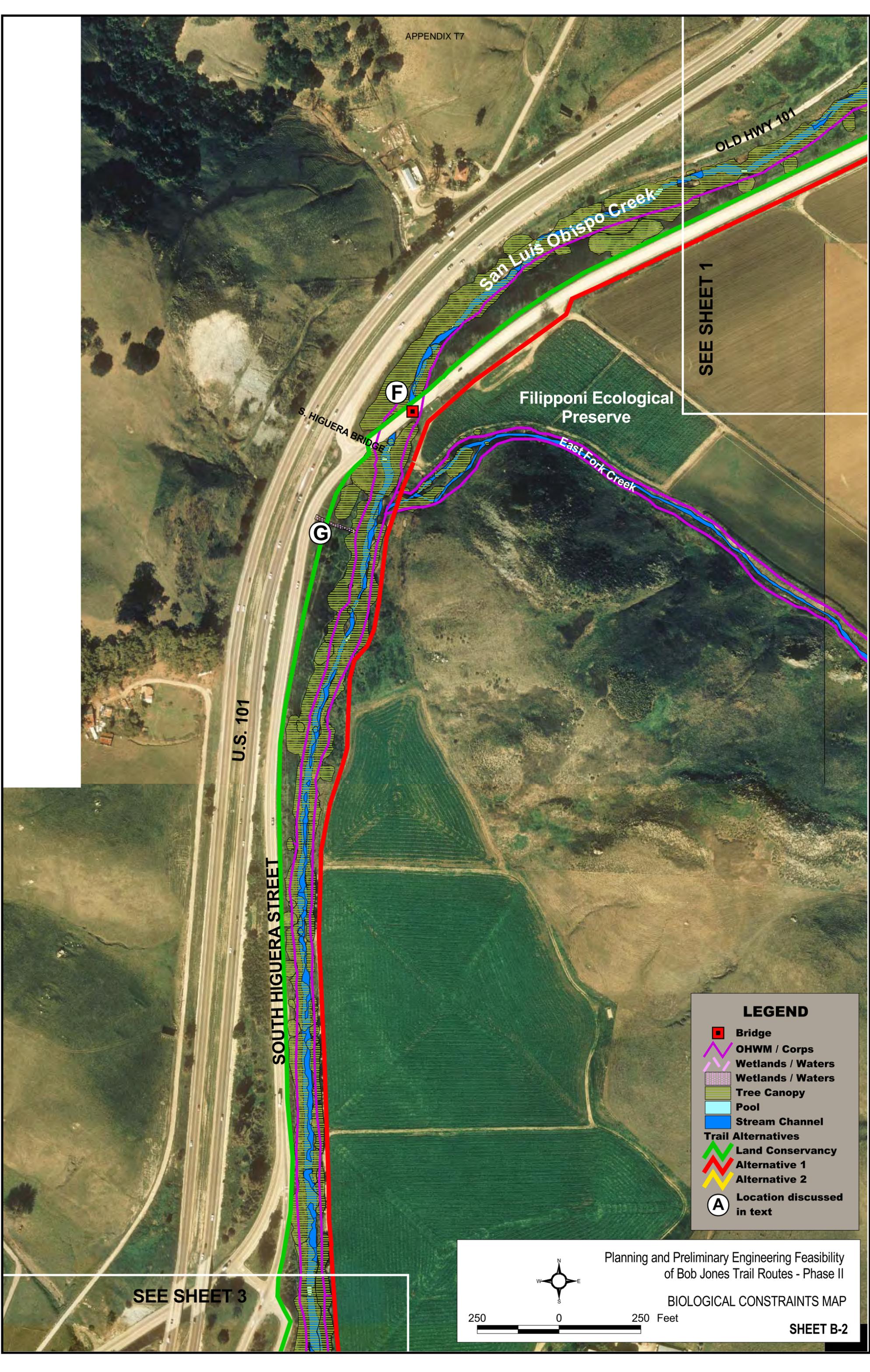
-  Bridge
-  OHWM / Corps
-  Wetlands / Waters
-  Wetlands / Waters
-  Tree Canopy
-  Pool
-  Stream Channel
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  Location discussed in text

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

BIOLOGICAL CONSTRAINTS MAP

250 0 250 Feet

**SHEET B-2**



SEE SHEET 2

Davenport Creek

NORTHBOUND OFF-RAMP

U.S. 101

CLOVERIDGE LANE

H

San Luis Obispo Creek

ONTARIO ROAD

U.S. 101

I

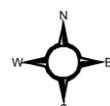
**LEGEND**

-  Bridge
-  OHWM / Corps
-  Wetlands / Waters
-  Wetlands / Waters
-  Tree Canopy
-  Pool
-  Stream Channel
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  Location discussed in text

SEE SHEET 4

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

BIOLOGICAL CONSTRAINTS MAP



250 0 250 Feet

J

APPENDIX 17

SEE SHEET 3

J

San Luis Obispo Creek

ONTARIO ROAD

U.S. 101

BARON CANYON RANCH ROAD

MONTE ROAD

U.S. 101

K

L

M

SEE SHEET 5

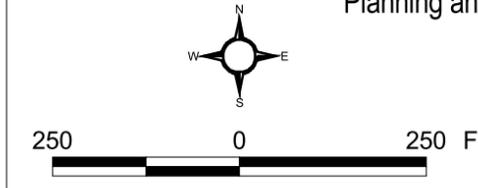
**LEGEND**

-  Bridge
-  OHWM / Corps
-  Wetlands / Waters
-  Wetlands / Waters
-  Tree Canopy
-  Pool
-  Stream Channel
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  Location discussed in text

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

BIOLOGICAL CONSTRAINTS MAP

SHEET B-4



250 0 250 Feet

SEE SHEET 4

ONTARIO ROAD

U.S. 101

San Luis Obispo Creek

MONTE ROAD

SAN LUIS BAY DRIVE

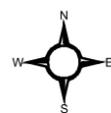
N

SEE SHEET 6

P.G. & E. COMMUNITY CENTER

**LEGEND**

-  Bridge
-  OHWM / Corps
-  Wetlands / Waters
-  Wetlands / Waters
-  Tree Canopy
-  Pool
-  Stream Channel
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  Location discussed in text



Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

BIOLOGICAL CONSTRAINTS MAP

250 0 250 Feet

APPENDIX T7

P.G. & E.  
COMMUNITY  
CENTER

SEE SHEET 5

ONTARIO ROAD

U.S. 101

San Luis Obispo Creek

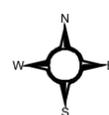
ONTARIO  
STAGING  
AREA  
(End of Project) **(P)**

HIGHWAY 101  
BRIDGE

BOB JONES BIKE TRAIL  
PHASE I

**LEGEND**

-  Bridge
-  OHWM / Corps
-  Wetlands / Waters
-  Wetlands / Waters
-  Tree Canopy
-  Pool
-  Stream Channel
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  Location discussed in text



Planning and Preliminary Engineering Feasibility  
of Bob Jones Trail Routes - Phase II

BIOLOGICAL CONSTRAINTS MAP

250 0 250 Feet



**TABLE 3-1**  
Cultural Resource Sites Known in the Vicinity of  
the Proposed Bob Jones Trail, Phase II.  
San Luis Obispo County, California.

Site ID	Category	Resource Type	Authority
SLO-1365	Prehistoric	mortars	Gibson, 1988
SLO-1002H	Historic	Octagon Barn	Dills ,1989
SLO-981	Prehistoric	chert flakes	Gibson, 1980
SLO-552	Prehistoric	mortars, midden	von Werlhof, 1980
SLO-1557H	Historic	glass, ceramics, etc.	Benson & Schulz, 1992
SLO-1609H	Historic	glass, ceramics, etc.	Benson & Schulz, 1992
SLO-1558H	Historic	railroad tracks	Benson & Schulz, 1992
SLO-1556H	Historic	glass, ceramics, etc.	Benson & Schulz, 1992
SLO-1614H	Historic	glass, ceramics, etc.	Benson & Schulz, 1992
SLO-1612H	Historic	railroad tracks	Benson & Schulz, 1992
SLO-1731	Prehistoric	chert flakes, flake tools	Gibson, 1994

SLO-1365: Two shallow bedrock mortars (10 cm diameter, 5 cm deep, 40 cm apart) in red Franciscan rock outcrop.

SLO-1002H: Octagon Barn. A circa 1900 construction barn of unusual construction.

SLO-981: One black chert “perform” fragment, chert flakes (2 primary and 10 secondary).

SLO-552: Temporary campsite; traces of midden shell, and two portable mortars. Projectile points, knives, and scrapers found nearby site. Banded chert and clamshells also found.

SLO-1557H: Site consists of diffuse historic sheet of scatter of ceramics, glass, and metal. Occupational refuse.

SLO-1609H: Site consists of diffuse historic sheet of scatter of ceramics, glass, and metal. Occupational refuse.

SLO-1558H: Site consists of three partially exposed narrow gauge rails that at one time continued east and west beyond the present roadway. This site represents the probable last rail remnants of the historic Pacific Coast Railway System and was most likely associated with Miles Station.

SLO-1556H: Site consists of diffuse historic sheet of scatter of ceramics, glass, and structural material debris. A preliminary surface survey revealed the architectural structural debris and occupational refuse. A 1940 photograph depicts a structure at this site location.

SLO-1614H: Site consists of diffuse historic sheet of scatter of ceramics, glass, and non-structural material debris. A preliminary surface survey revealed the architectural structural debris and occupational refuse. A 1940 photograph depicts a structure at this site location.

SLO-1612H: Site consists of three partially exposed narrow gauge rails that at one time continued east and west beyond the present roadway. This site represents the probable last rail remnants of the historic Pacific Coast Railway System and was most likely associated with Miles Station.

SLO-1731 Chert flakes, flake tools, possible groundstone, burnt rock.

The project-specific surface survey (Phase I investigation) conducted in September and October of 2001 yielded no firm observations of culturally significant material or structures. A substantial distance of the proposed alignments is located along or adjacent to developed roadways, and as such, is located within roadbed fill materials. However, several observations of scattered shell material (e.g., oysters, Pismo clams, unidentified fragments) were recorded east of and adjacent to San Luis Obispo Creek, near the southern portion of the area of investigation. Specific information regarding the locations of observed shell fragments, and locations of known resources identified during the database search, will be submitted under separate cover.

### ***Biological Resources – Sensitive Habitat***

The NDDB (2001a) lists three sensitive habitats within the Pismo Beach quadrangle. Of these, two were eliminated from consideration within this constraints analysis due to consideration of geographic distributions of the noted habitats. Review of pertinent environmental documents and observations during field studies resulted in the addition of two habitats occurring within the project area. In total, then, three sensitive habitat types were determined to occur within the project area.

### ***Central Coast Arroyo Willow Riparian Forest***

Central coast arroyo willow riparian forest (CCAWRF) habitat is characterized by a dense, low, closed-canopy, broadleaf, winter-deciduous forest dominated by arroyo willow (*Salix lasiolepis*). This habitat type commonly occurs on moist to saturated sandy or gravelly soils in association with low-gradient coastal streams from Monterey south to Santa Barbara (R. Holland 1986). CCAWRF habitat exists along those portions of the San Luis Obispo Creek corridor where willows are strongly developed, such as the riparian zone north of San Luis Bay Drive and west of Monte Road, adjacent to the Devincenzo agricultural operations (**Sheet B-4**). The CDFG considers CCAWRF a sensitive habitat type due to its relative rarity resulting from lowland agricultural conversions and urban development. CCAWRF habitat is commonly designated as jurisdictional wetland habitat by the U.S. Army Corps of Engineers (Corps) and the CDFG. Wetlands are recognized as sensitive habitats by most resource agencies.

### ***Central Coast Riparian Scrub***

Central Coast Riparian Scrub (CCRS) habitat typically consists of a scrubby, streamside thicket of mixed willow species, varying from open to impenetrable (R. Holland 1986). This is considered an early seral community that, in the absence of severe flooding or disturbance, may evolve to CCAWRF habitat, noted above. Characteristic soils are relatively fine-grained sand and gravel bars close to ground water. CCRS habitat is found in association with most perennial and many intermittent streams from the San Francisco Bay Area south to about Point Conception, Santa Barbara County. CCRS habitats, like CCAWRF habitats, exist along the majority of the San Luis Obispo Creek corridor. Many of the degraded areas of the mainstem riparian corridor (e.g., confluences of the East Fork and Davenport Creek with the mainstem of San Luis Obispo Creek) are typified by CCRS habitat, having been repeatedly flooded and scoured (**Sheets B-3 and B-4**). The CDFG (R. Holland 1986) considers this habitat as sensitive for the same reasons as CCAWRF habitat, discussed above. Also similar to CCAWRF, CCRS habitat often includes jurisdictional wetland habitat.

### ***Coastal and Valley Freshwater Marsh***

Coastal and Valley Freshwater Marsh (CVFWM) habitats are dominated by perennial, emergent monocots 4-5 m in height, with this vegetation often forming closed canopies. Typical species include cattail (*Typha* spp.) and bulrush (*Scirpus* sp.). CVFWM habitat often is located in those areas not subject to excessive current, and within those areas subject to permanent flooding. Within the project area, CVFWM habitat is located on several of the lower reaches of major San Luis Obispo Creek tributaries like the East Fork (see Morro Group 2001a). Other regions of this habitat type include roadside areas near the Octagon Barn, on the west side of South Higuera Street (**Sheet B-4**). The CDFG considers CVFWM habitat as sensitive due to excessive land conversion practices in the past, chiefly for agriculture and less so, for urban development. This habitat type is considered jurisdictional wetland by the CDFG and Corps.

### 3.3 Additional Wetland and Stream/Drainage Areas

For purposes of this constraints analysis, the entirety of the San Luis Obispo Creek corridor (shown as green polygons) and several suspected wetland areas (shown as pink polygons or lines on the map) may be considered as Corps jurisdictional wetland habitat.

A well-developed riparian scrub wetland (**Sheet B-1, Resource B**) is located immediately north of the Octagon Barn. Open water was present during the field surveys in July 2001 and January 9, 2002, and it is therefore likely that this wetland is inundated all year long. An approximately 14-inch reinforced concrete pipe passes surface water from this wetland westward beneath Higuera Street, where similar wetland habitat exists also. Both wetland areas are characterized by a dense arroyo willow (*Salix lasiolepis*) overstory, with cattails (*Typha latifolia*), bulrush (*Scirpus acutus*), and poison hemlock (*Conium maculatum*) present as understory species. A wetland swale (**Sheet B-1, Resource C**) drains this wetland southward along the west margin of Higuera Street, ultimately draining to San Luis Obispo Creek approximately 270 feet south of the noted culvert beneath Higuera Street. This swale may be considered a seasonally intermittent drainage, as it was dry in July 2001 and wet in January 2002. Vegetation of the drainage is variable, with monotypic stands of bulrush present nearer the Octagon Barn, and ruderal vegetation such as castor bean (*Ricinus communis*), poison hemlock, and summer mustard (*Hirschfeldia incana*) dominating the lowest portion of the drainage near the confluence point.

A smaller drainage swale (**Sheet B-1, Resource D**) is located on the east side of Higuera Street directly eastward of this noted confluence point. This swale was dry in July 2001 and January 2002. Vegetation within the poorly defined swale consisted of unidentifiable annual grasses and patchy curly dock (*Rumex crispus*). The source of hydrology appears to be an agricultural pond not evident from Higuera Street (**Sheet B-1, Resource E**), and it is likely that this swale may be an overflow channel for the noted pond. An approximately 8 foot wide by 6-foot tall box culvert conveys water through this swale westward into San Luis Obispo Creek.

An ephemeral stream (**Sheet B-2, Resource G**) is passed eastward beneath Highway 101 to San Luis Obispo Creek approximately 100 feet below the bridge. This stream lacked surface flow in July 2001 and January 2002. Streamside (riparian) vegetation near this channel was not particularly indicative of jurisdictional wetland habitat, with dominants including castor bean, cocklebur (*Xanthium strumarium*), fireweed (*Epilobium* sp.), and smilgrass (*Piptatherum miliaceum*). The watershed of this stream is evident within **Sheet B-2** to the west of Highway 101, south of a roadcut through a serpentine outcrop.

A relatively large seasonally intermittent stream (**Sheet B-3, Resource H**) parallels the driveway to the Bunnell property, apparently conveying surface flow westward from a watershed west of Highway 101 into the San Luis Obispo Creek mainstem. An approximately 10 foot wide by 5-foot high box culvert contains this flow beneath the

roadways. This swale was dry in July 2001 and flowing in January 2002. Riparian vegetation was dominated by a sparse canopy of arroyo willow. The streambed was unvegetated during both the July 2001 and January 2002 visits.

A similar, though smaller, seasonally intermittent stream exists approximately 240 feet upstream of the existing Devincenzo Bridge (**Sheet B-4, Resource M**). This drainage (**Sheet B-4, Resource K**) is passed eastward beneath Highway 101, via a 10 foot wide by 5-foot tall box culvert, from a watershed on the hills west of Highway 101. The drainage was dry during the July 2001 site survey and flowing during the January 2002 visit. Streamside vegetation was dominated by arroyo willow, with the streambed lacking vegetation during both site visits.

An extensive area of potential wetland habitat was mapped along the eastern bank of San Luis Obispo Creek, approximately 100 feet above the Devincenzo Bridge (**Sheet B-4, Resource L**). Here, the floodplain of San Luis Obispo Creek widens and flattens to form a somewhat braided channel structure. Large (to 5 ft diameter at breast height) California sycamore trees (*Platanus racemosa*) form the canopy and arroyo willow dominate the subcanopy. Herbaceous understory species such as water speedwell (*Veronica* sp.), umbrella sedge (*Cyperus eragrostis*), and fireweed (*Epilobium* sp.) suggesting the existence of jurisdictional wetland habitat.

A large, forested area located near the San Luis Bay Drive and northbound Highway 101 off ramp (**Sheet B-5, Resource N**) may be classified as jurisdictional wetland habitat. The area is slightly depressional in topography, and appears to seasonally retain surface water. No source of hydrology (i.e., storm drains, culverts) could be located, and surface water was not evident in July 2001 or January 2002. The dominant vegetation within this area included black walnut (*Juglans hindsii*), red willow (*Salix laevigata*), arroyo willow, and poison hemlock. A formal wetland delineation would be necessary to determine if the Corps would consider the area jurisdictional wetland.

Another suspected wetland area (**Sheet B-6, Resource O**) was mapped near the terminus of the Phase II project, approximately 120 feet north of the Highway 101 Bridge over San Luis Obispo Creek (**Sheet B-6, Resource P**). This area can best be described as a wet meadow. Vegetation within this area is almost completely dominated by poison hemlock and phalaris (*Phalaris californica*), both marginally indicative wetland habitat.

## Biological Resources – Sensitive Species

The NDDB (2001a) lists 22 sensitive species (16 plants and six animals) within the Pismo Beach quadrangle. Of these, 10 species were eliminated from consideration within this constraints analysis due to the lack of suitable habitat or by consideration of geographic distributions of species. Review of pertinent environmental documents and field observations resulted in the addition of nine species either occurring, or with the potential for occurrence, within the project area. In total, then, 21 sensitive species (six animals and 15 plants) were determined to occur or have a reasonable chance for occurrence within the project area. These are presented within **Table 3-2** and discussed in the text that follows.

**TABLE 3-2**  
List of Sensitive Species and Habitats Potentially Occurring along the  
Bob Jones Trail Phase II Alignment Alternatives

Scientific Name	Common Name	Legal Status <sup>a</sup> Federal/State/CNPS
<b>Plants</b>		
<i>Calochortus obispoensis</i>	San Luis mariposa lily	--/--/1B, 2-2-3
<i>Carex obispoensis</i>	San Luis Obispo carex	--/--/1B, 2-2-3
<i>Centromadia parryi</i> ssp. <i>australis</i>	Congdon's tarplant	--/--/1B, 3-3-2
<i>Chorizanthe breweri</i>	Brewer's spineflower	--/--/1B, 3-1-3
<i>Cirsium fontinale</i> var. <i>obispoense</i>	Chorro Creek bog thistle	FE/SE/1B, 3-2-3
<i>Clarkia speciosa</i> ssp. <i>immaculata</i>	Pismo clarkia	FE/SR/1B, 3-3-3
<i>Dudleya abramsii</i> ssp. <i>bettinae</i>	San Luis Obispo serpentine	--/--/1B, 3-2-3
<i>Dudleya abramsii</i> ssp. <i>murina</i>	San Luis Obispo dudleya	--/--/1B, 2-1-3
<i>Dudleya blochmaniae</i> ssp. <i>blochmaniae</i>	Blochman's dudleya	--/--/1B, 2-3-2
<i>Layia jonesii</i>	Jones's layia	--/--/1B, 3-2-3
<i>Lupinus ludovicianus</i>	San Luis Obispo County lupine	--/--/1B, 3-2-3
<i>Scrophularia atrata</i>	black-flowered figwort	--/--/1B, 2-2-3
<b>Wildlife</b>		
		Federal/State/CDFG
<i>Accipiter cooperi</i>	Cooper's hawk (nesting)	--/CSC/--
<i>Clemmys marmorata pallida</i>	southwestern pond turtle	FSC/CSC/P
<i>Dendroica petechia</i>	yellow warbler (nesting)	--/CSC/--
<i>Empidonax trailii</i>	willow flycatcher (nesting)	--/SE/--
<i>Icteria virens</i>	yellow-breasted chat (nesting)	--/CSC/--
<i>Oncorhynchus mykiss irideus</i>	steelhead trout– South/Central ESU	FT/CSC/--
<i>Rana aurora draytonii</i>	California red-legged frog	FT/CSC/P
<i>Taricha torosa torosa</i>	Coast Range newt	--/CSC/--
<i>Thamnophis hammondi</i>	two-striped garter snake	--/CSC/P
Wildlife and Plants: FE: federally endangered FT: federally threatened FSC: federal species of concern SE: California endangered SR: California rare CSC: California species of special concern P: protected by CDFG	Plants: California Native Plant Society (CNPS): List 1B = rare, threatened, or endangered in California and elsewhere.  CNPS Rare-Endangerment-Distribution: Rare: 1) rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time; 2) distributed in a limited number of occurrences, occasionally more if each occurrence is small; 3) distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported.	CNPS R-E-D (continued): Endangerment: 1) not endangered; 2) endangered in a portion of its range; 3) endangered throughout a portion of its range.  Distribution: 1) more or less widespread outside California; 2) rare outside California; 3) endemic to California.

***San Luis Mariposa Lily (Calochortus obispoensis)***

San Luis mariposa lily is a perennial, herbaceous member of the lily family that is endemic to San Luis Obispo County, ranging from Cuesta Pass, south to Arroyo Grande. The San Luis mariposa lily is known from chaparral, coastal scrub, grassland, and freshwater seep habitats of dry, serpentine soils. This species blooms from May to July. The California Native Plant Society (CNPS) considers this species very rare (Tibor 2001). The Cal Flora Occurrence Database catalogs 48 historical occurrences of this species, with the majority located on west Cuesta Ridge, Reservoir Canyon, upper Stenner Creek, and upper Chorro Creek. The NDDB (2001a) notes a 1988 occurrence of San Luis mariposa lily at the Froom Creek region, approximately 0.5-mile north-northwest of the project area, and a 1980 occurrence at the western ridge of Indian Knob, approximately 0.15 mile east of the project alignments. This species was not observed during the July 2001 site visits, though suitable habitat does exist within the project area where serpentine outcrops intersect with San Luis Obispo Creek (e.g., East Fork confluence).

***San Luis Obispo sedge (Carex obispoense)***

San Luis Obispo sedge is a perennial (rhizomatous) herb that is native and endemic to California. This species chiefly occurs on steep, serpentine-derived hillsides in association with chaparral and coastal sage scrub habitats, and flowers from April to June. The CNPS considers this species very rare (Tibor 2001). Cal Flora catalogs 34 historical occurrences of this species. The majority of these occurrences are located on the west Cuesta Ridge, San Simeon, and Cerro Alto. The NDDB (2001a) does not show this species within the Pismo Beach quadrangle, and this species was not observed within the project area during the July 2001 surveys. Suitable habitat does exist within the project area, however, where serpentine outcrops intersect with San Luis Obispo Creek (e.g., East Fork confluence).

***Congdon's tarplant (Centromadia parryi ssp. australis)***

Congdon's tarplant is an annual herb that is both native and endemic to California. It is found within valley grassland habitats on alkaline soils, and is commonly found within wetland regions or those areas retaining water. It flowers from June through November. The NDDB (2001a) notes a 1969 occurrence of this species at Laguna Lake, approximately 2 miles northwest of the Octagon Barn. The CNPS considers this species extremely rare (Tibor 2001). Congdon's tarplant was not seen during the July 2001 surveys, and it is unlikely that this species occurs along the project alignments due to the lack of suitable habitat.

***Brewer's spineflower (Chorizanthe breweri)***

Brewer's spineflower is an annual herb that is native to California and largely, if not entirely, restricted to San Luis Obispo County. Hoover (1970) notes that this species is restricted to the southern portion of the Santa Lucia range. It flowers from May to June, and is found on serpentine soils within chaparral, foothill woodland, coastal sage scrub, and closed-cone pine forest habitats. It is considered extremely rare by the CNPS. Forty-nine historic occurrences are noted by Cal flora, with the majority of these along east Cuesta Ridge and within upper Reservoir Canyon and Poly Canyon. The NDDB (2001a) maps the nearest occurrence at the Froom Ranch, recorded in 1987. This

species was not observed during July 2001 surveys. However, suitable habitat for Brewer's spineflower exists at those locations where serpentine soils are located near San Luis Obispo Creek.

***Chorro Creek Bog Thistle (Cirsium fontinale var. obispoense)***

The Chorro Creek bog thistle, a San Luis Obispo County endemic, occurs primarily in association with serpentine seeps located in chaparral and cismontane woodland communities. This fairly tall (to 6.5 feet) perennial herb flowers primarily from February to July. The CNPS considers this species as extremely rare (Tibor 2001). It is listed as both state and federally endangered. Chorro Creek bog thistle is mapped by the NDDB and Cal Flora as primarily occurring along Prefumo Creek, San Simeon Creek, upper Pennington Creek, and Chorro Creek. The NDDB (2001a) reports two 1992-1993 occurrences of this species from the Froom Creek region. This species was not observed within the project area during the July 2001 surveys. Suitable habitat does exist within the project area, however, where serpentine outcrops intersect with San Luis Obispo Creek (e.g., East Fork confluence).

***Pismo clarkia (Clarkia speciosa ssp. immaculata)***

Pismo clarkia is an annual herb that is distributed in the sandy hills between San Luis Obispo and Arroyo Grande, inland to Huasna Valley (Hoover 1970). It is both native and endemic to California, and is commonly associated with chaparral edges and valley foothill grassland habitats. It flowers from May to June, and is considered by the CNPS as extremely rare. Calflora notes 23 occurrences within San Luis Obispo County, with most of these within Arroyo Grande and Pismo Beach. The NDDB (2001a) reports a 1993 occurrence of this species within Gragg Canyon, approximately 1 mile east of the Ontario Road parking lot. This species was not seen during July 2001 surveys, but suitable habitat does exist along several areas of the proposed alignments.

***San Luis Obispo Serpentine Dudleya (Dudleya abramsii ssp. bettinae)***

San Luis Obispo serpentine dudleya is a succulent, perennial herb and a San Luis Obispo County. It is typically associated with coastal scrub and valley foothill grassland communities on serpentine soils, and blooms from May to July. The CNPS considers this species as extremely rare (Tibor 2001), and is federally listed as a Species of Concern. Cal Flora catalogs 17 historical occurrences of this species. Most of these occurrences are from Morro Bay and Cayucos. However, an occurrence was mapped in 1994 on "glider hill", a serpentine outcropping directly behind (west of) Madonna Inn. This latter occurrence is the closest mapped occurrence to the project area, as this species does not appear on the NDDB (2001a) Pismo Beach quadrangle. This species was not observed during site surveys in July 2001, though suitable habitat for this species does exist at several locations along the alignment alternatives (e.g., near the East Fork confluence).

***San Luis Obispo Dudleya (Dudleya abramsii ssp. murina)***

San Luis Obispo dudleya is a perennial, herbaceous species typically found in chaparral and foothill woodland habitats on serpentine soils. It is endemic to California, with a flowering period of May to June. The CNPS consider this species rare (Tibor 2001). Similar to *D. a. bettinae*, this dudleya is not mapped on the NDDB (2001a) Pismo Beach quadrangle. Cal Flora catalogs 10 historical occurrences of this species, with most from Cuesta Park (north San Luis Obispo City), and a single occurrence on Cerro San Luis in 1950. This species was not observed during site surveys in July 2001, though suitable habitat for this species does exist at several locations along the alignment alternatives (e.g., near the East Fork confluence). *D. abramsii* observed within the serpentine outcrops likely represent *D. a. murina* based on the range distribution statements within Hoover (1970) (Neil Havlik, pers. comm.).

***Blochman's dudleya (Dudleya blochmaniae ssp. blochmaniae)***

Blochman's dudleya is a perennial herb that is native to California, ranging southward to Baja California. It flowers from April to June, and is found primarily in clay rocky soil on serpentine substrate in valley grassland and coastal sage scrub habitats. The CNPS considers this species as very rare. Calflora reports 12 occurrences of this species within San Luis Obispo County, with all of these on the coast near Morro Bay and Cayucos. The NDDB (2001a) notes a 1987 occurrence at Laguna Lake. This species was not seen during July 2001 surveys of the project area.

***Jones's layia (Layia jonesii)***

Jones's layia is an annual herb that is found on serpentine or clay-based chaparral and valley grassland habitats. Within San Luis Obispo County, this species is known to range primarily from the Cayucos area south to San Luis Obispo. It is a California endemic, with flowering generally occurring in March to May. Jones's layia is federally listed as Species of Concern, and CNPS considers this species extremely rare (Tibor 2001). Cal Flora maps 33 occurrences throughout San Luis Obispo City and Morro Bay. The NDDB (2001a) notes two 1936 occurrences: one near Laguna Lake and one approximately 1 mile west of the confluence of the East Fork with the San Luis Obispo Creek mainstem. This species was not observed during the July 2001 site surveys. Suitable habitat may exist at those locations where serpentine soils occur near San Luis Obispo Creek or its tributaries.

***San Luis Obispo County lupine (Lupinus ludovicianus)***

San Luis Obispo County lupine is a perennial herb native and endemic to California. It flowers from April to June, and is chiefly found in chaparral and foothill woodland habitats on limestone derived soils. Most occurrences of this species are from the Arroyo Grande watershed, though Calflora also reports several San Luis Obispo and north county occurrences. The NDDDB (2001a) reports a 1980 occurrence approximately 3 miles east of the project terminus at Ontario Road, and a 1982 occurrence near Price Canyon. San Luis Obispo County lupine is considered as extremely rare by the CNPS. This species was not observed during the July 2001 site surveys, and it is unlikely to be found within the project area due to the lack of limestone-derived soils.

***Black-flowered figwort (Scrophjularia atrata)***

Black-flowered figwort is a perennial herb that is native and endemic to California, though its distribution is largely limited to San Luis Obispo and Santa Barbara counties (Hoover 1970). It flowers from April through June, and is found within coastal strand, chaparral, coastal sage scrub, closed-cone pine forest, and riparian scrub habitats. It is considered very rare by the CNPS. The NDDDB (2001a) notes occurrences of this species 1) off Cave Landing Road (Avila) in 1990, approximately 1 mile southwest of the Ontario Road staging area; 2) in Price Canyon in 1950, and; 3) on Indian Knob around 1984. This species was not seen during July 2001 site surveys, but could potentially occur within sandy floodplain areas near Monte Road or similar habitats.

***Cooper's Hawk (Accipiter cooperi)***

Cooper's hawk is a fairly large accipiter hawk that ranges throughout the United States and is widely distributed throughout California. This species is a resident of San Luis Obispo County, nesting and foraging in and near deciduous riparian areas. Cooper's hawk is rarely found in areas without dense tree stands or patchy woodland habitat. Breeding occurs March to August, peaking May to July. Incubation lasts about 36 days, and young are independent eight weeks thereafter (Baicich and Harrison 1997). California considers Cooper's hawk a Species of Concern, based on a reduction in breeding numbers in recent years. These reductions are reportedly due to destruction of lowland riparian habitat and direct/indirect human disturbance at nest sites. This species is afforded protection under the Migratory Bird Treaty Act of 1918 and section 3503 of the California Fish and Game Code (nesting birds). This species was not seen within the riparian corridors of either San Luis Obispo Creek or its major tributaries during site visits conducted in July 2001. However, willow thickets along all these drainages may be used for seasonal nesting.

***Southwestern Pond Turtle (Clemmys marmorata pallida)***

The southwestern pond turtle (SWPT) ranges discontinuously from Monterey Bay southward through the Coast Ranges to Baja, Mexico (Hunt 1994). It prefers quiet waters of ponds, small lakes, streams, and marshes and requires basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks. The SWPT will often inhabit reaches of streams that contain deep pools, with depths greater than 3 feet (Stebbins 1972). They are typically found in the largest and deepest pools along streams containing suitable basking sites, including fallen trees and boulders. They also tend to congregate along portions of streams containing abundant underwater cover or areas containing escape routes beneath the water surface such as undercut banks, tangles of roots, and submerged logs (Hunt 1994). Overland movements up to 5 km have been recorded, and these are thought to be in response to adverse environmental circumstances (e.g., drought), or normal movements within home ranges (D. Holland 1994). Along the central coast, mating occurs during April to May, and eggs (3 to 11) are typically laid from March to August within nests constructed in sandy banks. Incubation of eggs may range to approximately 3 months, with young turtles reaching sexual maturity in about eight years. Southwestern pond turtles are considered omnivores, feeding on vegetation, insects, fishes, frogs, and carrion. The SWPT is designated as a Federal Special Concern species, and is considered Protected and a California Special Concern species by the CDFG. D. Holland (1994) estimates that 80 to 85% of the turtle populations (including both SWPT and northwestern pond turtle, *C. m. marmorata*) in California have been eliminated primarily due to land conversion, collecting, disease, introduction of non-native predators, urbanization, and flood control practices.

Southwestern pond turtles were not observed within the project area during any of the site visits. Pond turtles are, however, known from San Luis Obispo Creek and many of its tributaries (Fugro 1995). A single SWPT was observed at the confluence of the East Fork with San Luis Obispo Creek in 1999 (Clarke and Havlik, City of San Luis Obispo, in litt.). In early November 2001, a SWPT was observed on San Luis Obispo Creek approximately 0.5 mile south of the Ontario Road parking lot (Morro Group, pers. obs.). It is likely that this secretive species occurs throughout the San Luis Obispo Creek watershed at those locations where deep pools exist (e.g., near the existing Devincenzo bridge near Monte Road).

***Yellow warbler (Dendroica petechia)***

Yellow warblers are migratory and are broadly distributed throughout North America, though their California distribution is largely restricted to the northern and coastal portions of the State, and the Sierra Nevada foothills. Within San Luis Obispo County, this species is a fairly common summer transient of deciduous riparian habitats. Breeding and nesting of yellow warbler typically occurs from mid-April to early August, with peak activity occurring in June. Eggs (typically 3 to 6) are incubated for approximately 11 days, and young fledge approximately 9 to 12 days thereafter. The nesting lifestage of yellow warbler is considered sensitive (California Special Concern) by CDFG. Brood parasitism by brown-headed cowbirds has reportedly reduced numbers of this species statewide, though predation and destruction/clearing of riparian

habitat is also implicated in population declines of this species. This species is afforded protection under the Migratory Bird Treaty Act of 1918 and section 3503 of the California Fish and Game Code (nesting birds).

This species was not observed within the project area during July 2001, though focused surveys were not specifically conducted. While habitat within the project area is considered suitable, records of nesting yellow warblers are not known from the project vicinity (pers. comm. with T. Edell, Caltrans Biologist). Yellow warbler may nevertheless nest within willow thickets associated the San Luis Obispo Creek corridor and its tributaries.

***Willow Flycatcher (Empidonax traillii)***

Willow flycatcher is a small, migratory passerine that ranges across North America and is a rare spring transient and an uncommon spring/summer migrant to San Luis Obispo County. This species is commonly found as a summer resident within mountainous wet meadow and montane riparian habitats of the Sierra Nevada and Cascade ranges after migrating from winter habitat in Central and South America. Dense willow thickets are required for nesting and roosting, with peak egg laying occurring in June. Young fledge within 13 to 14 days. Willow flycatcher is listed as California Endangered, primarily due to destruction of riparian scrub habitat and to cowbird brood parasitism. This species is afforded protection under the CESA, the Migratory Bird Treaty Act of 1918, and section 3503 of the California Fish and Game Code (nesting birds).

This species was not observed within the project area during July 2001, though focused surveys were not specifically conducted. No nesting records of this species exist within San Luis Obispo County (pers. comm. with T. Edell, Caltrans Biologist), though the project area could provide migratory habitat (resting/feeding).

***Yellow-breasted Chat (Icteria virens)***

The yellow-breasted chat is a migratory species distributed throughout the United States, though it is noted as an uncommon summer resident of the coast and Sierra Nevada foothills of California. Preferred habitat for cover, foraging, and nesting consists of willow riparian thickets, with dense understory cover. In San Luis Obispo County, observations of yellow-breasted chat are limited to uncommon occurrences from May to mid-August, concurrent with their breeding period, which peaks in June. Eggs (3 to 6 typically) are incubated for 11 to 15 days, with chicks fledging 8 to 11 days thereafter. The nesting lifestage of yellow-breasted chat is considered sensitive by the CDFG, and this species is listed as a California Special Concern species. Habitat loss and cowbird brood parasitism (similar to yellow warbler, discussion above) are implicated in population declines. This species is afforded protection under the Migratory Bird Treaty Act of 1918 and section 3503 of the California Fish and Game Code (nesting birds).

Yellow-breasted chat were not observed within the project area in July 2001, though focused surveys for this species were not conducted. No nesting records for this species exist in the vicinity of the project site (pers. comm. with T. Edell, Caltrans Biologist), but the project area willow thickets could provide migratory habitat (resting/feeding).

***Southern Steelhead Trout (Oncorhynchus mykiss irideus)***

Steelhead are known as the anadromous form of rainbow trout (McEwan and Jackson 1996). Steelhead historically ranged from Alaska southward to the California-Mexico border, though current data suggest that the Ventura River is presently the southernmost drainage supporting substantial steelhead runs. Periodically, steelhead are reported within the Santa Clara River and Malibu Creek. Southern steelhead are important in that they represent the southernmost portion of the native steelhead range in North America, having ecologically and physiologically adapted to seasonally intermittent coastal California streams.

Optimal habitat for steelhead throughout its entire range on the Pacific Coast can generally be characterized by clear, cool water with abundant instream cover (i.e., submerged branches, rocks, logs), well-vegetated stream margins, relatively stable water flow, and a 1:1 pool-to-riffle ratio (Raleigh et al. 1984). However, steelhead are occasionally found in reaches of streams containing habitat that would be considered less than optimal. Steelhead within the central coast region begin moving up coastal drainages (including San Luis Obispo Creek) following the first substantial rainfall of the fall season. Spawning typically occurs in the spring in riffle areas that consist of clean, coarse gravels (Moore 1980). Deposited eggs incubate for approximately 3 to 4 weeks, with hatched fry rearing within the gravel interstices for an additional 2 to 3 weeks. Emergent fry rear at the stream margins near overhanging vegetation. Juveniles (smolts), after rearing for 1 to 3 years within freshwater, and post-spawning adults outmigrate to the ocean from March to July, depending on streamflows. Therefore, juvenile steelhead can be found within San Luis Obispo Creek at all times of the year, while adults are more likely to be found from approximately February to July.

All populations of steelhead occurring within the South-Central California Coast Evolutionary Significant Unit (ESU) Region—which is defined as that geographic region north of the Santa Maria River, northward to (and including) the Pajaro River (and its tributaries), Santa Cruz County—were listed as Federally Threatened by the National Marine Fisheries Service (NMFS) in August 1997. Southern steelhead trout are also considered a California Special Concern species. The NMFS lists habitat deterioration due to sedimentation and flooding related to land management practices, and potential genetic interaction with hatchery rainbow trout, as risk factors to steelhead within this ESU. This species is afforded protection under the Federal Endangered Species Act. Southern steelhead trout are distributed throughout the San Luis Obispo Creek watershed (Cleveland 1996) and are abundant within and near the project area (Morro Group 2001a, 2001b).

***California Red-legged Frog (Rana aurora draytonii)***

The California red-legged frog (CRLF) historically ranged from Marin County southward to northern Baja California. Presently, Monterey, San Luis Obispo, and Santa Barbara counties support the largest remaining CRLF populations within the State. CRLF prefers aquatic habitats with little or no flow, the presence of surface water to at least early June, surface water depths to at least 0.7 m (2.3 ft), and the presence of fairly sturdy underwater supports such as cattails. The largest densities of this subspecies

are typically associated with dense stands of overhanging willows and an intermixed fringe of sturdy emergent vegetation.

CRLF typically breed from January to July, with peak breeding occurring in February. Eggs are attached to subsurface vegetation, and hatched tadpoles require 11 to 20 weeks to metamorphose. It is estimated that only 1% of eggs actually reach adulthood. This species was formally listed by the United States Fish and Wildlife Service (USFWS) as Federally threatened in 1996, and is considered a California Special Concern species, and protected species, by the CDFG. Riparian habitat degradation, urbanization, predation by bullfrogs, and historic market harvesting have all reportedly contributed to population declines in this species.

This species was not observed within the project area during any of the site visits. While not ideal, suitable habitat as described above does exist within the San Luis Obispo Creek corridor and some of its major tributaries. Within lower San Luis Obispo Creek, the nearest reported occurrences of CRLF are from Gragg Canyon (approximately 0.5-mile east of Avila Hot Springs) and Harford Canyon (near the mouth of San Luis Obispo Creek).

### ***Coast Range Newt (Taricha torosa torosa)***

Two subspecies of California newt (*T. torosa*) are recognized: Coast Range newt (*T. t. torosa*) and Sierra newt (*T. t. sierrae*). The former ranges discontinuously along the coast of California from Mendocino County to San Diego County. Optimum habitats reportedly consist of valley-foothill hardwood forest in association with rivers, creeks, ponds, and lakes. This species is seasonally abundant within the upper watersheds of several San Luis Obispo County creeks, including San Luis Obispo Creek near Cuesta Grade, Morro Creek near Cerro Alto campground, and the uppermost reaches of Toro Creek (J. Tupen, Morro Group Biologist, pers. obs.). Coast Range newts have both terrestrial and aquatic phases to their life cycle. Adults are largely inactive, aestivating within subterranean refuges during most of the year. Following the first rains of fall, adults migrate to water, with mating occurring from September to May. Adhesive egg masses are deposited on submergent vegetation and rocks from May to June, with larvae hatching 5 to 7 weeks thereafter. Larvae transform to adults during the summer or fall of their first year. Sexual maturity is reached at approximately the end of the first year.

Postmetamorphic juveniles and adults eat earthworms, snails, slugs, sowbugs, and insects. Adults within breeding ponds eat insects, crustaceans, snails, and the eggs of other amphibians and trout, as well as eggs of their own species. The CDFG considers Coast Range newt distributed from San Luis Obispo County southward as a Species of Concern. Riparian degradation related to urban development has likely contributed to population declines.

This species was not observed within the project area during any of the site visits. While the project area may occasionally harbor Coast Range newt, preferred habitat does not exist within the San Luis Obispo Creek corridor or its major tributaries near the project alignments. The project area lacks the rocky streambed composition and mature, hardwood riparian canopy that Coast Range newt typically is found in association with.

***Two-striped Garter Snake (Thamnophis hammondi)***

The two-striped garter snake is a highly aquatic species, and is associated with semi-permanent to permanent freshwater habitats containing substantial emergent vegetation. It is also typically found in perennial pools containing frogs and fish, which are their primary prey (Zeiner et al. 1990). This species is considered a Species of Concern, and is protected by the CDFG. While the habitat of lower San Luis Obispo Creek is appropriate and suitable for this species, no confirmed observations have been recorded in this area (Fugro West 1995). This species was not observed within the project area during any of the site visits.

### **3.4 Preliminary Impact Assessment and Recommendations**

The following impact assessment is based on the project description that was available to Morro Group at the time of preparation of this biological constraints analysis. The project alignments are shown in approximate locations on **Sheets B-1** through **B-6**. Where alignments are shown to overlap, for example, on the fringe of riparian canopies, we assumed alignments could be moved to avoid resource conflicts. As such, identified resource constraints are real and potentially significant, unless mitigated appropriately.

**Table 3-3** summarizes the potential resource constraints associated with each of the three alignment alternatives, including the Land Conservancy Option, Alternative 1, and Alternative 2. The potential for significant resource conflicts is identified within **Table 3-3** as “high”, “moderate”, or “low”, based on the present definition of the project and the resources in question, and applicable agency regulations. Relative to CEQA, impacts within Table 3-3 noted as “high” may be considered equivalent to potential “Class I” impacts, or those with a very strong potential to result in significant, unmitigable adverse impacts to a resource unless carefully considered. Impacts shown as “moderate” within **Table 3-3** may be compared to “Class II” CEQA impacts, where potentially significant impacts can be adequately mitigated to levels below significance. Impacts noted as “low” may be compared to Class III impacts, or those that are likely insignificant. Following the “General” comments below, the impact assessment is organized by stream segment as shown on **Sheets B-1** through **B-6**.

General Considerations. The Bob Jones Trail is essentially planned to follow the San Luis Obispo Creek corridor. Any trail development that impacts riparian vegetation of the creek corridor, or the corridor of its tributaries, will require coordination and potentially, permitting action, with the CDFG and NMFS. Similarly, any development within the mapped Ordinary High Water Mark of SLO Creek will require permitting action by the Corps.

While CRLF have not yet been identified within the mainstem of San Luis Obispo Creek, the USFWS may require presence/absence surveys along the preferred alternative to determine if CRLF are using the project site. CRLF are known to migrate between proximal drainages and habitats.

**Table 3-3**

Potential for Natural and Cultural Resource Conflicts by Alignment and Stream Segment  
Phase II of the Bob Jones Trail, San Luis Obispo to Ontario Road

Alignment Option	Sheet	Sensitive Species	Sensitive Habitats	Corps Jurisdiction	CDFG Jurisdiction	NMFS Jurisdiction	USFWS Jurisdiction	Cultural Concerns
Land Conservancy	Sheet B1	moderate	high	high	high	low	moderate	moderate
	Sheet B2	high	high	high	high	high	moderate	low
	Sheet B3	high	high	high	high	high	moderate	low
	Sheet B4	moderate	low	low	low	low	moderate	low
	Sheet B5	moderate	low	low	low	low	moderate	low
	Sheet B6	moderate	high	moderate	low	low	moderate	low
Alternative 1	Sheet B1	low	moderate	moderate	moderate	low	moderate	moderate
	Sheet B2	high	high	high	high	high	moderate	low
	Sheet B3	high	high	high	high	high	moderate	moderate
	Sheet B4	moderate	low	low	low	low	low	low
	Sheet B5	low	low	low	low	moderate	low	low
	Sheet B6	moderate	high	moderate	low	low	moderate	low
Alternative 2	Sheet B1	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Sheet B2	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Sheet B3	moderate	high	moderate	high	high	moderate	low
	Sheet B4	high	high	high	high	high	moderate	low
	Sheet B5	low	low	low	low	low	low	low
	Sheet B6	low	low	low	low	low	low	moderate

Recommendations:

- Where possible, align the trail outboard of (away from) the edge of riparian corridor to avoid CDFG and NMFS jurisdiction.
- Where possible, align the trail outboard of (away from) the mapped OHWM to avoid Corps jurisdiction.
- Conduct protocol presence/absence surveys for CRLF along the entirety of the Phase II preferred alternative alignment. This requirement is independent of which alignment is selected, and therefore, CRLF surveys are not discussed again in this constraints document. Protocol surveys for CRLF should be conducted prior to consultations with the USFWS. Typically, this consultation is facilitated during the Corps permitting process, or by another lead federal action agency (e.g., FHWA). The lead federal action agency (most likely the Corps, in this case), will make a determination (based on survey results and project description) regarding the potential for adverse project-related effects to CRLF. Protocol surveys for CRLF are typically completed before the federal action agency will make a finding.

**Sheet B-1:** **Sheet B-1** characterizes that portion of the proposed Phase II project beginning at the Octagon Barn, proceeding southwesterly for a distance of approximately 600 feet. Within this sheet, the Land Conservancy and Alternative 1 alignments largely parallel South Higuera Street, and therefore pose relatively few environmental concerns. Alternative 2 does not exist within **Sheet B-1**.

The Octagon Barn was identified as historic site SLO-1002H during the database review (refer to Cultural Resources section of this document). It is possible that historically significant artifacts may be found in the vicinity of the barn structure. Fill impacts to wetland area "B" will likely be regulated by the Corps under Section 404 of the Clean Water Act. Fill impacts would require permitting action by the Corps. The noted wetland habitat (B), swale features (C and D), and agricultural pond (E) may provide habitat for the federally threatened California red-legged frog (CRLF). CRLF may migrate between the noted agricultural pond and defined drainages shown in **Sheet B-1**. As such, habitats B, C, and D may be regulated by the USFWS under the Endangered Species Act.

While small, the noted scrub wetland habitat (B) may support sensitive nesting birds such as yellow warbler.

Recommendations:

- Archaeological monitoring is recommended for any excavation/development near the Octagon Barn (affects both the SLOLC and Alternative 1 alignments).
- A jurisdictional wetland investigation will be necessary prior to development of the Land Conservancy alignment (and perhaps, the

Alternative 1 alignment) to comply with Section 404 of the Clean Water Act.

- Development of the Land Conservancy alignment will require coordination with the CDFG to verify if the drainage swales are regulated under Section 1600 of the Fish and Game Code (Streambed Alteration Agreement).
- If development of the Land Conservancy alignment occurs during the period March through August, nesting bird surveys will be required to determine the presence of yellow warbler, and potentially other, sensitive nesting birds. Coordination with the CDFG may be required.

**Sheet B-2:** Sheet B-2 includes approximately 1400 feet of the proposed project, terminating near Cloveridge Lane on south Higuera Street. The riparian corridor of San Luis Obispo Creek is moderately well-developed throughout this segment, and includes dense stands of arroyo willow interspersed with large individuals of black cottonwood (*Populus trichocarpa*) and black walnut. The East Fork of San Luis Obispo Creek joins the mainstem immediately below the South Higuera Street Bridge (F). The Land Conservancy alternative would cross San Luis Obispo Creek on South Higuera Street Bridge. Trail crossing using the existing bridge would pose no adverse resource conflicts. Construction of a trail lane on the existing bridge would likely require coordination with the CDFG and NMFS. The Land Conservancy option would also crossing the ephemeral stream noted as Resource “G”. Dependent upon the type of crossing used, multi-agency coordination may be required.

Alternative 1 would cross the East Fork of San Luis Obispo Creek near its confluence with the mainstem. Construction of a bridge crossing would require coordination with most resource agencies, including the NMFS, Corps, USFWS, RWQCB, and CDFG.

#### Recommendations:

- If possible, avoid widening the South Higuera Street Bridge to accommodate trail construction (SLO-LC option). Bridge projects, in general, typically involve fairly lengthy and complex permitting and resource agency review phases.
- Use a free span bridge design to cross ephemeral stream “G” or the East Fork of San Luis Obispo Creek.
- A jurisdictional wetland delineation will likely be necessary prior to bridge crossing of ephemeral stream “G” or the East Fork. Coordination with the CDFG will likely be required even for span bridge crossings.

**Sheet B-3:** Sheet B-3 includes that approximately 1400-foot portion of the project near the Maino and Bunnell properties south of Cloveridge Lane. Within this sheet, the riparian corridor of San Luis Obispo Creek dense, but somewhat monotypic relative to the upstream areas already described. Arroyo willow is the dominant overstory species. Davenport Creek enters San Luis Obispo Creek near the Maino property. The Land

Conservancy option would involve crossing a potentially jurisdictional drainage swale (“H”), and construction of a bridge crossing over San Luis Obispo Creek at Resource “I”. Alternative 1 would require construction of a bridge crossing over Davenport Creek near its confluence with San Luis Obispo Creek. Similar to the previous discussion, such bridge crossings would likely require multi-agency coordination and permitting.

Recommendations:

- Where practical, use a free span bridge design to cross Resource “H”, Davenport Creek, and the mainstem of San Luis Obispo Creek.
- A jurisdictional wetland delineation will likely be necessary prior to construction of the noted bridge crossings. Coordination with the CDFG will likely be required even for span bridge crossings.

**Sheet B-4:** Sheet B-4 includes that approximately 1200 foot portion of the project located upstream (north of) the existing Devincenzo agricultural bridge crossing over San Luis Obispo Creek (Resource “M”). Within this sheet, the riparian corridor of San Luis Obispo Creek is denser and wider than most other surveyed regions, and composed dominantly of arroyo willow, black walnut, and the ornamental weeping willow (*Salix babilonica*). Resource “J” identifies a broad section of the riparian corridor of San Luis Obispo Creek. As noted in the “General” discussion of this section, trail construction within riparian habitat would require multi-agency action. Construction of a bridge crossing over drainage “K” would be required for Alternative 2. Trail crossing using the existing Devincenzo Bridge (“M”) would not require agency action, while widening or otherwise altering the bridge to facilitate the trail would likely require multi-agency coordination.

Recommendations:

- Use a free span bridge design to cross Resource “K”. CDFG and Corps coordination may still be required.
- If possible, avoid widening the Devincenzo Farm bridge to accommodate trail construction.

**Sheet B-5:** Sheet B-5 includes an approximately 1000 foot portion of the project located north of, and an approximately 200 foot portion of the project located south of, San Luis Obispo Bay Drive. The riparian corridor of San Luis Obispo Creek is substantially narrower here than within **Sheet B-4**, presumably due to intensive agricultural development encroaching upon both the east and west banks. No adverse resource impacts are anticipated if the preferred alignment avoids potential wetland resource “N”.

Recommendations:

- Where practicable, avoid potential jurisdictional wetland area “N”.

**Sheet B-6.** Sheet B-6 includes that approximately 1100-foot portion of the project located south of San Luis Bay Drive to its terminus at the Ontario Road parking lot. For the majority of all three alternative alignments, and with the exception of the region near the parking lot, the San Luis Obispo Creek corridor is completely avoided. It is likely that trail construction would occur largely within roadbed (i.e., fill) material, and therefore, few resource impacts are anticipated. Construction of the Land Conservancy and Alternative 1 options would likely require crossing of potential wetland area "O", and would require crossing below Highway 101 at stream grade. Construction of the final 200 feet of Alternative 2 may potentially disturb historic train station artifacts such as portions of abandoned railway.

Recommendations:

- Archaeological monitoring is recommended for excavation/development near the final 400 feet of Alternative 2.
- Ensure that the last 400 feet (approx.) of the Land Conservancy and Alternative 1 alignments are located near Highway 101 to avoid potential wetland resource "O". If avoidance is not practical, a jurisdictional wetland delineation will be required for this resource to determine whether or not it qualifies as jurisdictional wetland habitat.

#### 4.0 ENGINEERING OPPORTUNITIES AND CONSTRAINTS

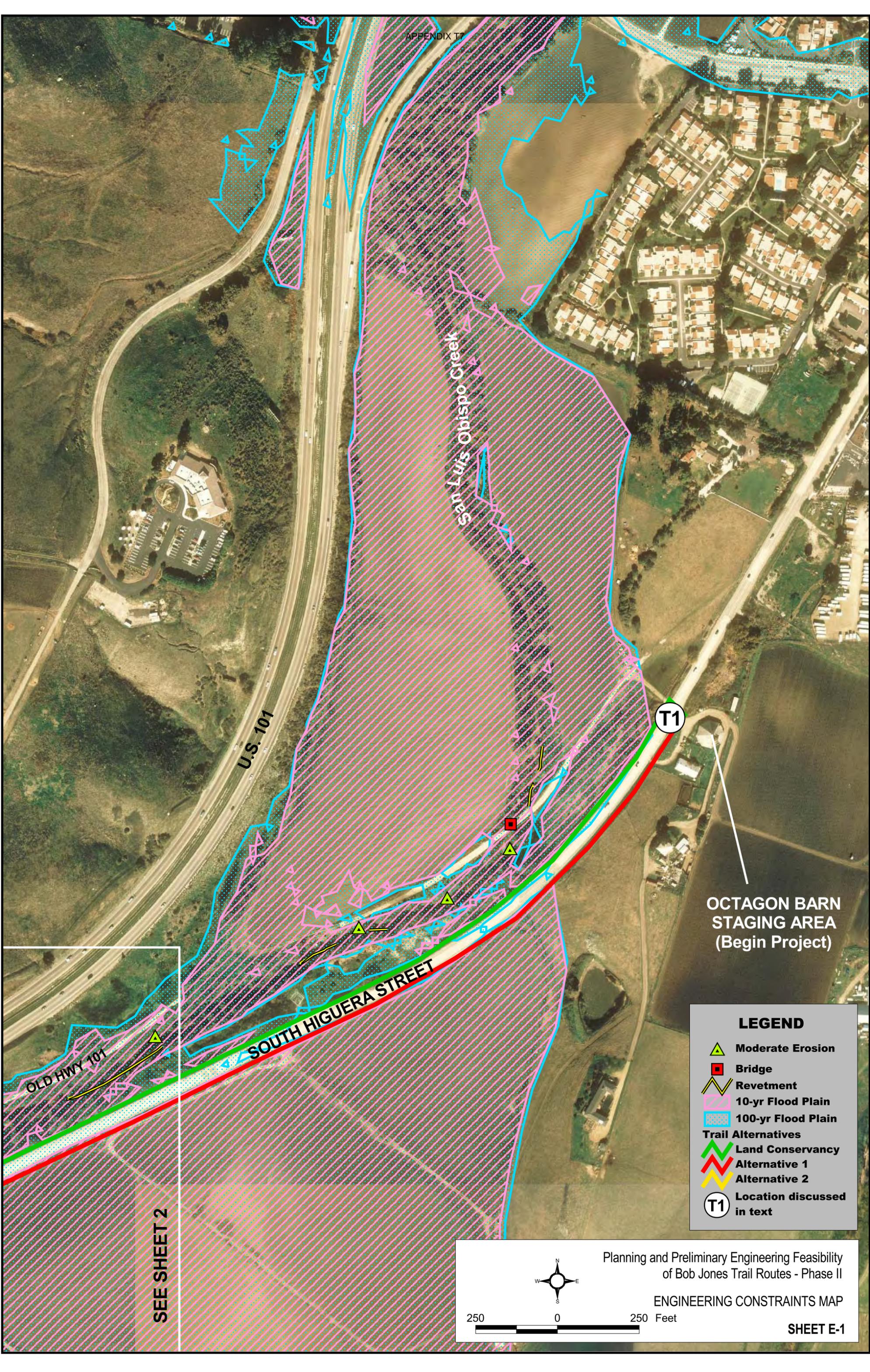
The principal engineering constraints affecting design and location of the path alignment consist of:

- Flood scour, safety and path maintenance issues,
- Bridge crossings,
- Wet areas with soft soils requiring special construction techniques to enable all-weather, year round access,
- Bank Instability, that could threaten path structures located near such failures,
- Steep slopes and topographic constraints,
- Pedestrian/traffic conflicts, and
- Utility conflicts

Engineering opportunities and constraints are summarized on **Sheets E-1 through E-6, and Table 4-1**. Conflicts are characterized low, medium or high, referring to the relative severity of the potential conflict. Letters shown at specific locations on the sheets are discussed in the text by type of opportunity or constraint (**B**=bridge crossing, **T**=traffic issue, **S**= scour, **W** = wet soil area).

#### 4.1 Flood Scour, Safety, And Path Maintenance Issues

Large portions of all identified path options are located within the active floodplain of San Luis Obispo Creek and its tributaries, including areas within the FEMA defined 100-year floodplain. This presents both regulatory constraints and real construction and safety challenges to certain aspects of path design and maintenance.



San Luis Obispo Creek

U.S. 101

SOUTH HIGUERA STREET

OLD HWY 101

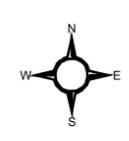
T1

OCTAGON BARN STAGING AREA (Begin Project)

**LEGEND**

-  Moderate Erosion
-  Bridge
-  Revetment
-  10-yr Flood Plain
-  100-yr Flood Plain
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  Location discussed in text

SEE SHEET 2



250 0 250 Feet

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

ENGINEERING CONSTRAINTS MAP

SHEET E-1

OLD HWY 101

San Luis Obispo Creek

FILIPPONI ECOLOGICAL PRESERVE

East Fork Creek

S. HIGUERA BRIDGE

U.S. 101

SOUTH HIGUERA STREET

SEE SHEET 1

T2

B1

B2

**LEGEND**

- Moderate Erosion
- Bridge
- 10-yr Flood Plain
- 100-yr Flood Plain
- Revetment
- Trail Alternatives**
- Land Conservancy
- Alternative 1
- Alternative 2
- T1 Location discussed in text

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

ENGINEERING CONSTRAINTS MAP

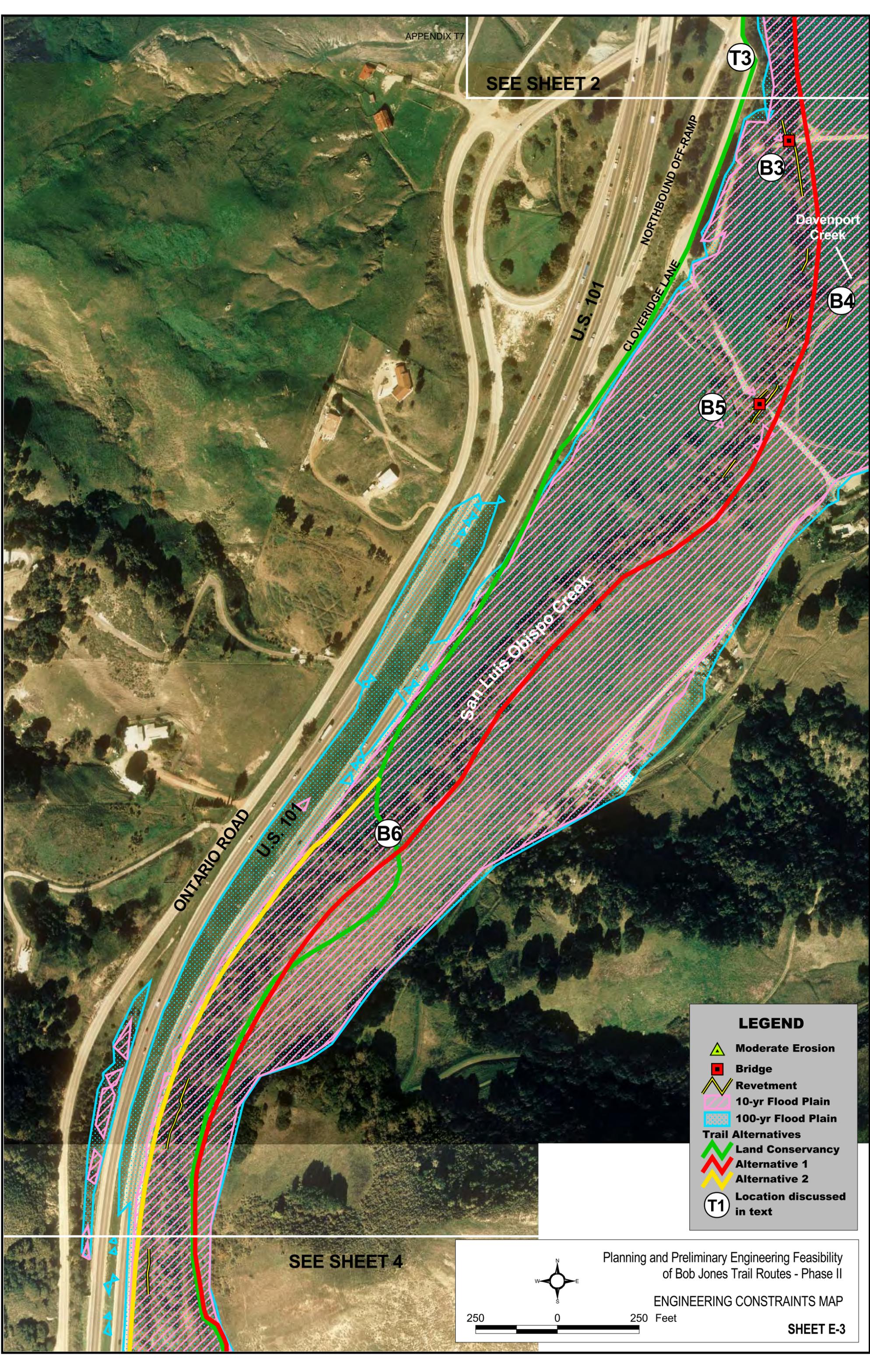
250 0 250 Feet

**SHEET E-2**

SEE SHEET 3

T3

SEE SHEET 2



**LEGEND**

- Moderate Erosion
- Bridge
- Revetment
- 10-yr Flood Plain
- 100-yr Flood Plain
- Trail Alternatives**
- Land Conservancy
- Alternative 1
- Alternative 2
- Location discussed in text

SEE SHEET 4



Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

ENGINEERING CONSTRAINTS MAP

250 0 250 Feet

SEE SHEET 3

APPENDIX 77

FLOOD SCOUR AREA

ONTARIO ROAD

U.S. 101

BAR ON CANYON RANCH ROAD

San Luis Obispo Creek

MONTE ROAD

T4

B7

SEE SHEET 5

**LEGEND**

-  Moderate Erosion
-  Bridge
-  Revetment
-  10-yr Flood Plain
-  100-yr Flood Plain
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  Location discussed in text



Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

ENGINEERING CONSTRAINTS MAP

250 0 250 Feet

SHEET E-4

SEE SHEET 4

ONTARIO ROAD

U.S. 101

San Luis Obispo Creek

MONTE ROAD

T4

SAN LUIS BAY DRIVE

T5

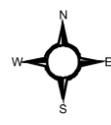
T6

SEE SHEET 6

P.G. & E. COMMUNITY CENTER

**LEGEND**

-  Moderate Erosion
-  Bridge
-  Revetment
-  10-yr Flood Plain
-  100-yr Flood Plain
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  T1 Location discussed in text



Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

ENGINEERING CONSTRAINTS MAP

250 0 250 Feet

P.G. & E. COMMUNITY CENTER

SEE SHEET 5

ONTARIO ROAD

U.S. 101

San Luis Obispo Creek

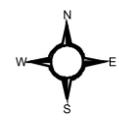
ONTARIO STAGING AREA (End of Project)

BOB JONES BIKE TRAIL PHASE II

HIGHWAY 101 BRIDGE

**LEGEND**

-  Moderate Erosion
-  Bridge
-  Retevment
-  10-yr Flood Plain
-  100-yr Flood Plain
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2
-  Location discussed in text



250 0 250 Feet

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

ENGINEERING CONSTRAINTS MAP

The hydraulic modeling that was completed as part of the Phase II SLO Creek Waterway Management Plan investigations confirms field observations that nearly all of the proposed path alignments would be located on a very active and frequently flooded, riverine floodplain. The modeling indicates that much of the creek floods on a 7 to 10-year recurrence interval. Flooding should certainly be expected to occur within the design life of any paths along the creek. Most reaches of SLO creek flooded in 1995 (a 50-year event in this area), and again in the winters of 1998, and 2000. Flood debris has been deposited along field fencing near proposed path alignments and in the branches of streamside trees at elevations at least 1 meter (3 feet) above the elevation of the floodplain. The hydraulic modeling also indicates flood depths in excess of 3-4 feet can be expected along most of the creekside paths.

Flood frequency has two issues that need to be considered in the paths plan; endangerment of path users, especially at creek crossings and bridge under-crossings, and path stability and maintenance from scour of high velocity flows.

SLO Creek is very flashy, meaning the creek can rise rapidly in response to heavy rains in the upper watershed, and then fall back below flood stage equally rapidly. The time from heavy rains to flood peaks reaching the SLO downtown area has been reported to be on the order of two hours, and the flood peak could move downstream through the study area in an additional hour's time (City of SLO staff). This does not provide sufficient time to issue a flood warning and patrol the path to make sure any path users are off path and the path is closed. An alternative that should be considered is to seasonally close sections of the path near roads, such as bridge crossings and under-crossings. Closure could be seasonal (Nov.- March) or event-driven (when heavy rains are forecast). Posting "*Use at Your Own Risk*" signs during the winter months is

**Table 4-1**  
**Potential for Engineering Conflicts by Alignment and Stream Segment**  
**Phase II of the Bob Jones Pathway, San Luis Obispo to Ontario Road**

Alignment Option	Sheet	Flood Scour, Safety and Path Maintenance	Bridge Crossings	Wet Areas with Soft Soils	Bank Instability	Steep Slopes and Topography	Pedestrian and Traffic conflicts	Utility Conflicts
Land Conservancy	Sheet E1	moderate	low	low	low	low	high	moderate
	Sheet E2	moderate	high	moderate	high	moderate	moderate	moderate
	Sheet E3	moderate	high	low	moderate	moderate	moderate	high
	Sheet E4	moderate	low	low	moderate	moderate	low	low
	Sheet E5	moderate	low	low	low	low	moderate	low
	Sheet E6	high	low	high	low	low	low	low
Alternative 1	Sheet E1	low	low	low	moderate	moderate	low	moderate
	Sheet E2	moderate	moderate	moderate	high	low	low	moderate
	Sheet E3	moderate	moderate	moderate	high	low	low	moderate
	Sheet E4	moderate	high	low	moderate	moderate	low	low
	Sheet E5	moderate	low	low	low	low	moderate	low
	Sheet E6	high	low	high	low	low	low	low
Alternative 2	Sheet E1	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Sheet E2	n/a	n/a	n/a	n/a	n/a	n/a	n/a
	Sheet E3	high	low	moderate	high	high	moderate	low
	Sheet E4	high	high	moderate	high	high	moderate	low
	Sheet E5	low	low	low	low	low	high	low
	Sheet E6	low	low	low	low	moderate	high	moderate

also a consideration. Primary areas of concern are where the path alignment passes under a reconfigured S. Higuera bridge abutment, and under the bridge at Highway 101.

Overbank flows along portions of SLO creek appear to have high velocities, especially when flood flows are returning to the creek channel as water elevations in the channel drop. There are several areas of scour on the floodplain, or zones where the creek had scoured depressions or rivulets 4-6 inches deep and 3-4 inches wide, somewhat parallel to the creek flow direction. Many of the bottoms of these depressions are lined with pebbles and small cobbles, indicating their origin as scour features. The most serious areas of floodplain scour are shown on **Sheet E-2, Site L**. Many of the scour holes may also be associated with local eddying around flood debris such as driftwood deposited on the floodplain.

These scour marks indicate that the path system must be designed so that it does not require frequent and costly maintenance or replacement of path sections due to wash outs.

Generally, the most common path washouts occur at tributary or creek crossings where the path section is filled and culverted, and the culvert is undersized with respect to flood flows. Path washouts can also occur where path sections are elevated on fill (not at grade) on the floodplain, and the ascending or receding overbank flows spills across the elevated path shoulders and undercut the path fill.

These problems can be minimized with a good path design. A good path design might include crowning the center section of the path, gradually tapering the shoulders to adjacent grade to prevent erosive weir flow, and protecting the road shoulders with a geotextile fabric under compacted soil and crushed rock or well vegetated edges. Because of the uneven terrain and ponding areas within the floodplain, it will be necessary to construct at least portions of the path on elevated fill for good drainage. Selective use of rolling dips or ford style crossings of seasonal drainage paths or swales, or adequately sizing cross drains for the design flow will also be essential to good path design. Even so, high maintenance costs should be anticipated for the Bob Jones path, given its location within an active floodplain.

#### *4.1.1 FEMA 100-year Floodplain and County Floodplain Management Policies*

The Engineering Constraints maps also show the FEMA designated 100-year floodplain, including the FEMA and Zone 9 *Waterway Management Plan*-determined 100- year floodplain., as well as the Zone 9 *Waterway Management Plan* 10-year floodplain. The FEMA floodplain limits are based on what FEMA terms an “approximate” study, meaning the floodplain delineation was not based on a detailed hydraulic model, and the topographic mapping and cross-sections used in the floodplain study are from small scale maps. The exact outer edge of the FEMA 100-year floodplain and areas of higher ground within or immediately adjacent to the 100-year floodplain may not be shown accurately. However, more detailed floodplain mapping work completed by Questa as part of the Phase II SLO Creek Waterway Management Plan shows that the FEMA map is reasonable in this area, and that it is not worthwhile

to file a formal request for a Letter of Map Revision (LOMAR) with FEMA to modify the mapping for purposes of path or improvement construction.

The FEMA map does however represent an official determination of flooding and flood hazards, and since San Luis Obispo County has adopted it as part of their floodplain management ordinance, it presents some potential restrictions on the Bob Jones Bikeway project. The primary requirement imposed by current County regulations, consistent with FEMA policies and standards, is that any construction project not block or divert the flow of flood waters, and/or increase local or downstream flooding or bank instability problems. These restrictions are included in even more strongly worded requirements in the proposed SLO Creek Watershed Drainage Design Manual. This Manual outlines design requirements for projects located along creeks and within the floodplains of San Luis Obispo Creek and its tributaries. The Design Manual as proposed would cover both City and County projects in this watershed. Although not yet adopted by either the city or County, it may be in effect when the Bob Jones Bikeway project moves through subsequent environmental review and design and construction phases.

Portions of all the path options are located within the 100-year floodplain. However, this is not a major regulatory constraint for at-grade paths, because flow diversion and blockage are not issues. The primary concern is potential bridge crossings of the creeks.

## **4.2 Bridge Crossings**

Creek crossings are necessary at East Fork and Davenport Creeks for Alternative 1 (east side of creek), and there is at least one crossing that may be required on the main stem of SLO Creek in the Land Conservancy Option. Alternatives 1 and 2 use the existing private farm bridge crossing of the creek, although some modifications of this bridge for safety issues (better approaches and handrails) would be necessary. In addition, two of the options would cross under the Highway 101 Bridge near the Ontario Road Staging Area, and the Land Conservancy option would cross under the existing south Higuera Street Bridge, with a possible new, parallel bridge in this area.

Any new bridge structure, or reconstruction and modification of existing bridge abutments to allow pedestrian and bicycle undercrossing, must be made in a way that does not place people at risk to flood injury, or exacerbate flooding. In the case of new bridges, this will likely mean that the bridge approaches will need to ramp up, with the bridge on elevated pilings located about 1.5-2 meters (4-6 feet) above the creek bank top in order to be above the FEMA 100-year flood elevation with a 1 foot of freeboard. This creates an additional cost and an aesthetic design issue as the bridge would appear very elevated above the creek banks, somewhat resembling a CalTrans pedestrian over-crossing of a highway with a circular ramp structure. To further minimize flow blockage, the approach ramps should also be on pilings (boardwalk fashion) to allow some flow conveyance under the ramps. Even so, there will likely be some minor local effects on floodwater surface elevations that will need to be mitigated.

One could argue that at most of the proposed bridge locations the effect on flooding is immaterial- there are no structures or residences that would be damaged by slight increases in floodwater elevations from the bridges. This is contrary to current County floodplain management policy and would be even more at odds with the proposed floodplain management policies proposed in the SLO Watershed Drainage design manual that is currently being evaluated for possible adoption by the City and County for this watershed. In addition, since the path options are located near Highway 101 (and some creek sections are within Caltrans easements), the project would need to demonstrate that construction would not affect the depth or frequency of flooding of Highway 101 or impact bank or roadway stability. If this can be demonstrated, then a variance from the County's floodplain regulations can be requested.

#### *4.2.1 Seasonal Bridges*

Another option for a new bridge crossing would be a bridge with seasonally removable bridge decking. This would avoid the problem of having to ramp the bridge up above the 10-year flood elevation (or higher if a variance from 100-year flood design requirement is not received). In this approach, the abutments would be constructed as permanent structures, but the bridge decking and railing would be constructed of light-weight, high strength composite materials that would need to be erected or craned in-place at the end of each flood season (April 15) and removed prior to the beginning of the next flood hazard period (November 1). Removable bridges are not uncommon in California parks. Examples of these include Laguna Park in Sebastopol and at the Carmel River Park in Monterey County. Obviously, this approach imposes a twice-annual maintenance requirement, and limits path use to the April 15-November 1 time frame.

#### *4.2.2 New Pedestrian Undercrossing at the Existing South Higuera Bridge (B1 and B2A)*

The Land Conservancy option crosses SLO Creek from the west side to the east side south of the Octagon Barn, in the vicinity of the South Higuera Street Bridge. This crossing would utilize the shelf of land under the bridge. Although the area is overgrown with weeds and debris and has accumulated some sediment, it appears feasible to excavate out enough headroom (7 feet minimum requirement) along the north abutment to enable construction of a path under the bridge. This would not provide sufficient clearance for horses or cyclists, and appropriate signage would be needed. The under-bridge path would connect the path on the west side of South Higuera Street with a path on the east side, through the edge of the Filipponi Ecological Preserve.

The path would likely require excavation of the north slope and construction of a concrete retaining wall along the north abutment, and lowering the existing embankment soil shelving by 3 or 4 feet. Although construction would not be easy, we have determined that it is feasible to construct a path under the bridge in order to avoid an at-grade crossing of South Higuera Avenue. As with all bridge crossings, accumulation of debris and sediment along the path, and exposure of path users to flood hazards is a concern.

#### *4.2.3 New Bridge Crossing at East Fork (B2)*

The Alternative 1 path (east side of SLO Creek) would require a bridge crossing of East Fork Creek, just above its confluence with SLO Creek. This location is within the Filippini Ecological Preserve and would be located at or near a natural gas pipeline crossing of the creek. The creek banks in this area are somewhat unstable, as the creek bed has headcut in response to the historic lowering of SLO Creek in this area. The general crossing area also has a dense cover of willows and other native and introduced trees and shrubs, and is flood prone. The required bridge crossing is estimated to be about 40 feet in length.

#### *4.2.4 Existing Bridge at Maino Property Entrance (B3)*

There is an existing private bridge serving the Maino property, east of Cloveridge Lane. The bridge has been reinforced and armoring has been placed on the banks adjacent to the structure to minimize the effects of bank erosion in this area. However, continued downcutting and erosion in this reach remains a problem. The County would need to obtain an easement to use the bridge for public access. Obtaining such an easement could potentially be problematic, due to property owner concerns regarding traffic, security, safety and liability issues.

#### *4.2.5 New Bridge Crossing at Davenport Creek (B4)*

Unlike East Fork, lower Davenport creek has little riparian vegetation, but is incised, and is actively head-cutting with eroded banks. This creek is also flood-prone. The natural gas pipeline also crosses lower Davenport creek. The required bridge crossing is estimated to be about 30 feet in length. Most of Davenport Creek is privately owned, however, there are areas of erosion and channel downcutting that may represent creek restoration and mitigation opportunity sites if the property owner is willing.

#### *4.2.6 Existing Bridge at Bunnell Property Entrance (B5)*

There is a private bridge at this location serving the four parcels east of SLO Creek. This structure is south of the Maino Bridge and subject to the same erosion and downcutting, although the riparian canopy is wider in this area and there is a revetment on both banks. The County would need to obtain an easement to use the bridge for public access. Obtaining such an easement could potentially be problematic, due to property owner concerns regarding traffic, security, safety and liability issues.

#### *4.2.7 New SLO Creek Bridge at end of Cloveridge Lane (B6)*

A new bridge crossing of SLO Creek south of Cloveridge Lane would be subject to a number constraints, including flood hazards and the need to avoid increasing flood frequency and flooding depths due to blockages to Highway 101, which is located approximately 100 feet west of the creek at this location. The bridge would therefore likely need to ramp up 4 to 6 feet, creating a design challenge, but not an impossible one. A 80 to 90 foot span would be needed. The creek is well vegetated in this area,

and an Individual Permit process should be anticipated for this structure, requiring at least a year to obtain. This site should be considered for a seasonally removable bridge, if this path option is selected.

#### *4.2.6 Retrofit Existing Summer Farm Bridge (B7)*

Alternatives 1 and 2 utilize the existing farm bridge that crosses SLO Creek west of north Monte Road. The existing private bridge consists of a steel girder crossing founded on telephone pole-style piers driven into the creek bed and cabled together. The decking is composed of 3"x12" redwood planks. The bridge is approximately 10 feet wide and 80 feet long. It has a 2"x4" bumper rail along the outer edge, but does not have safety hand rails. Although likely not designed by a professional engineer, the bridge appears to be sturdy and capable of supporting a light pickup truck or farm implements.

The farm bridge partially spans the creek at bank top elevation (the pier abutments are in the water at bank edge) and currently does block flood flow passage. The creek banks in the vicinity of the bridge are well vegetated and there is a deep pool located under and downstream of the bridge that provides excellent fish habitat. Because of the excellent riparian and aquatic habitat conditions at this location, if the County did acquire the bridge and surrounding land, it would be unlikely that major improvements to the bridge foundation could be made. Although the bridge has not been inspected by a structural engineer, it does not appear that there are any serious structural problems that would prevent its use as a pedestrian and bicycle bridge. Some minor improvements to the decking would be needed and the County could consider installation of seasonally removable safety handrails (removed in December and re-installed in April) for safety and ADA purposes.

The approaches to the bridge are eroded and have been scoured by high creek flow and some improvements to the grade and stability of the path approaches are also needed, including grading and paving.

This creek crossing alone is not sufficient to provide a continuous path, since there is insufficient width along Alternative 2 (west of SLO Creek) to connect the path upstream. Therefore, this bridge crossing is not necessary if a route is established along the east side of the creek from Monte Road to San Luis Bay Drive. This bridge could be utilized if a loop path is established. The County would need to obtain an easement to use the bridge for public access. Obtaining such an easement could potentially be problematic, due to property owner concerns regarding traffic, security, safety and liability issues.

#### *4.2.7 Path Connection Beneath Highway 101 Bridge at Ontario Road (B8)*

The Land Conservancy Option and Option 1 pass under the pier-supported Highway 101 Bridge crossing of SLO Creek at Ontario Road. It appears that the outer or northern (upstream) opening is the most advantageous for location of a path, as the path would connect to the construction access road developed when seismic retrofit work was completed on the bridge during 2000. Access is provided to the existing

Ontario Road staging area, where the existing finished section of the Bob Jones Bikeway begins, heading west towards Avila Beach.

The path location here (under the bridge) is immediately adjacent to a very active creek and is most likely within the 2-year flow of the creek (it may be within OHW). This area is likely subject to Corps wetlands jurisdiction, and would also require consultation with state and federal agencies regarding Endangered Species, as discussed in **Section 2**.

Following completion of the seismic retrofit work, the outer bridge opening area and the construction access road to the site from the Ontario Road Park and Ride facility (a future trailhead staging area) were planted with willow cuttings, apparently as biological mitigation for the construction work. This planting may affect the flood impacts in the area (see Section 3.1) and may complicate permitting and mitigation requirements for the Bob Jones Bikeway.

Locating the path in this area will require an easement from Caltrans. Caltrans will likely insist on a path design that does not impede flood flows or result in scour around the pier abutments. This might mean construction of a paved concrete path section, with some portions possibly founded on shallow concrete piers that can resist the shearing power of floodwaters in this area. The path will also need to be at creek grade so as not to trap debris or obstruct flow and cause scour. Even so, the County should expect continuous maintenance problems here associated with deposition of gravels, cobbles, and other debris on the path section (see Sheet 10 of the report).

This is another area of significant path user safety concern during periods of flooding. Seasonal or forecast heavy rain event closure may be appropriate here.

#### **4.3 Wet Soil Areas (W1)**

**Sheet E-6** shows an area of very wet soils along the Farm Road easement with Caltrans, immediately above the Highway 101 crossing of SLO Creek. This area likely is under water for large portions of the year, has saturated, low strength soils, and is probably a Corps jurisdictional wetland.

Apart from the permitting issues, this 160-meter (525 foot) section will require special construction techniques. The path in this area could be constructed as a boardwalk, or use of a special honeycomb-like geosynthetic blanket, where the cells of the blanket are filled with free-draining sands and gravels. The geosynthetic blanket is designed to spread the weight of the path material over a larger soil area and provide the necessary bearing strength, while keeping the area dry. There may be other wet soil areas that were not identified during the Phase I studies that could require a boardwalk or use of special construction materials.

#### 4.4 Bank Instability

The banks of lower SLO creek are unstable and failing locally along portions of their length as shown on **Sheets E-1** through **E-6**. This information was developed for SLO County Flood Control District Zone 9 as part of the creek inventory work completed by Questa for the SLO Creek Phase II Waterway Management Plan. The most unstable portions occur: 1) below Ontario Road and the Highway 101 bridge, (in a segment where the path alternatives do not closely follow the creek) and 2) and in the reach beginning just above the East Fork confluence with SLO Creek to just below its confluence with Davenport Creek. The main areas of creek instability are associated with prior creek realignment and straightening activities. In the first area below Ontario road, the straightening apparently occurred in the 1930's associated with agricultural land usage. In the second area, near East Fork and Davenport Creeks, the straightening occurred in the 1950's and was associated with construction of Highway 101. Portions of the west bank (Highway 101 side) through this area were lined with rock riprap and broken concrete as shown on **Sheets E-2** and **E-3**.

Although the lower creek (Ontario Road) area is well vegetated with willows, the creek is actively cutting behind the willows, attempting to re-establish the natural meander pattern that occurred in this area historically. This poses little threat to the path alternatives, which follow the Caltrans farm road easement here, and are well away from the creek. Flooding is still an issue in this area.

Bank instability problems are of greater concern along the reach of SLO Creek between East Fork and Davenport Creeks. The creek apparently has incised some 1.5 to 2 meters (5 to 7 feet) in this reach, creating steep, near vertical banks that are unstable. Lateral bank erosion on the order of 2 to 4.5 meters (5 to 15 feet) has occurred along the east bank, and the creek banks are 4 to 4.5 meters high (13-15 feet). Although the west bank is partially protected by rock and willows, the east bank is more barren and is lined with mature Monterey Pine trees along its bank top at the edge of the bank. Several of these have toppled into the creek, and a number of them are undercut and are in danger of falling into the creek. When this occurs, additional local bank erosion will occur due to the deflection of flow and entrapment of debris by the fallen tree.

Creek instability has implications for long term path design and maintenance, especially where a proposed path link is located close to one of the existing or potential failure zones. There are three ways to deal with unstable zones; 1) repair the instabilities that may threaten the project as part of project design and construction, 2) wait for bank failure to occur and address the failure at that time, as part of maintenance, and 3) plan on failures occurring as part of long term natural creek geomorphic processes, and provide a large enough setback zone from the creek in unstable areas to allow for failures to occur and naturally stabilize themselves.

The latter will require more land and higher acquisition costs, but may in the long term prove less costly than making bank repairs that might otherwise be unnecessary if a wide enough creek setback zone is utilized. Based on our knowledge of creek conditions, it is likely that a combination of the three approaches will be needed as in some areas there is just not enough allowable room between the highway and the creek banks to allow an adequate setback, or avoid potentially unstable areas.

The bank stability management issue is complicated on the east bank of SLO Creek between East Fork and Davenport creeks by the occurrence of an inactive gas pipeline along the creek bank top. (A gas pipeline is also located along the west bank, which is more stable). The pipeline is located on average about 10 to 15 feet from top of bank and is within as close as 5 feet. It daylights where it crosses lower East Fork and lower Davenport Creeks. Although the gas line is not currently used, it is kept pressurized and could be reactivated in the future.

Stabilization of the near vertical banks along this creek section would best be accomplished by laying the bank slopes back to a stable 2.5:1 angle, possibly with an in-channel bench or vegetated terrace, and then planting the reworked bank to native shrubs and trees. This possible design is complicated by the location of the gas line near top of bank. If a path link is considered on the east side of SLO creek, the acquired right-of-way would likely need to extend further east beyond the pipeline alignment, encompassing a band 60-70 feet wide from top of bank.

If Alternative 1 is selected and if property acquisition includes the creek bank zone, then bank management of this area might include removal of the pines at ground level, and stabilization of the bank slopes using willow wattling and live willow staking techniques, possibly also utilizing fiber rolls in key areas. It is unlikely that willow wattling or staking would be very successful without removing the existing pines, as they block the sunlight that is required for successful establishment.

#### **4.5 Steep Slopes and Topographic Constraints**

There are few topographic constraints to path design and construction within the study area, because most of the area is relatively flat. One area with topographic constraints is the Land Conservancy option where the path is located on the steep (2.5H:1V) roadway embankment east of the Cloveridge Road-South Higuera intersection. This would be necessary to avoid conflicts with roadway traffic and provide a separated alignment. The path would need to cross the steep slopes of the embankment and would require a mid-slope retaining wall structure above and below the path in order to provide a minimal 8 foot wide path on this slope.

Other sloping segments include the short slope length required to transition from the shared alignment option along Monte Road, which is constructed on the footslopes above valley, down to the floodplain near the existing private farm bridge, and the short length of modest slopes from the Ontario Road staging area to the Highway 101 bridge

under-crossing. Both segments will be less than 100 feet long and can easily be designed to meet ADA grade requirements of less than an 8% slope.

Another area where a retaining wall might be needed is on the Alternative 1 alignment immediately south of the Octagon Barn, where an existing hill may need to be sloped back, or a retaining wall constructed to accommodate the path section along the east road shoulder.

#### **4.6 Pedestrian Path/Traffic Conflicts**

By definition a Class I Bikeway is separated from existing roadways so that pedestrian and bicycle conflicts with automobile traffic are minimized. However, due to various constraints, including cost considerations, the reality is that along many Class I routes some shared alignments, or crossings of roadways by the paths are unavoidable.

Depending on the selected alignment, several road crossings and shared alignments are possible. This section discusses potential conflicts and traffic hazards<sup>3</sup>.

##### *4.6.1 Crossing South Higuera at Octagon Barn (T1)*

All of the Bob Jones Phase II route options begin at the Land Conservancy's Octagon Barn on South Higuera Street. The Land Conservancy option crosses S. Higuera at grade in the vicinity of the Barn and heads southward along a new alignment located between SLO Creek and S. Higuera. South Higuera Street is a County roadway with a posted speed limit of 55 MPH. The roadway in the vicinity of the Octagon Barn is nearly straight and gradually sloped with a viewing distance of at least 100 feet. An at-grade crossing appears initially to be feasible here, but signage and striping would be needed. Speed reduction should also be considered.

##### *4.6.2 Crossing near South Higuera Bridge (T2)*

The Land Conservancy option would require either a crossing of South Higuera under the bridge (see Section 4.2 above) or an at-grade crossing of the roadway. The South Higuera on-ramp to Highway 101 is located about 80 meters (265 feet) south of the bridge (and crossing location), and the roadway is curved in this section, limiting line of sight distance to about 200 feet. A safer at-grade crossing with a longer sight of vision could be constructed about 160 meters (525 feet) to the north, near the entrance to the Filipponi Ecological Preserve. This crossing appears to be more feasible.

This would put the path onto the western edge of the Preserve, and would require separate SLO Creek crossing near the confluence with East Fork. The possible location of the Bob Jones Bikeway on the edge of the Preserve has been considered by the Land Conservancy and the City of SLO, who owns the Preserve, and further discussion would be needed.

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<sup>3</sup> The analysis was not completed by a traffic engineer, and should therefore be considered preliminary.

#### 4.6.3 Cloveridge Lane (T3)

The Cloveridge Lane-South Higuera intersection and Highway 101 ramp is a key constraint that will need to be overcome to successfully locate and design a safe route for the Land Conservancy option. The majority of the Cloveridge Lane onramp is under the ownership and control of Caltrans, and Caltrans engineers indicated they are researching whether to take back portions of South Higuera and Cloveridge Lane in this area, currently relinquished to SLO County. The roadway is relatively narrow in this area, and has limited area to accommodate a bicycle lane, without costly structural improvements. The options of constructing a path segment on the embankment below the road was discussed in section 3.5.

#### 4.6.4 Monte Road (T4)

A potential path alignment would utilize Monte Road for a portion of the route. Monte Road is a county road with a 50 ft. right of way that serves a rural residential population, including the Baron Canyon subdivision. Monte Road is relatively straight and level in this area, and is not heavily traveled, with a paved section of approximately 20-24 feet. A bicycle lane could be constructed within the existing right of way. Traffic conflicts would likely be minor, but signage and striping would be critical. One of the advantages of using Monte Road (besides cost savings) is that it provides a different perspective view of the lower SLO valley, the apple orchard along the creek, and the riparian corridor.

#### 4.6.5 San Luis Bay Drive (T5)

Potential conflicts along San Luis Bay Drive would occur where the path crosses near SLO Creek (Land Conservancy and Alternative 1), or at the San Luis Bay Bridge over Hwy. 101 (Alternative 2).

At the path crossing to the farm road south of SL Bay Road, it is possible that a small parking area or turnout could be built to provide access for path users. This is a logical site for path access and off-street parking, as unauthorized parking along the road might occur otherwise. This would necessitate signage, striping and possible speed reduction to accommodate the crossing/pullout area. This section of SL Bay Road is not heavily traveled, as it provides mostly local access to Monte Road residents, but it is not wide enough to accommodate on-street parking.

For Alternative 2, the path would be located on San Luis Bay Drive west to the intersection of Ontario Road. In this area, there is not sufficient width to safely locate a bicycle lane and/or pedestrian area within the Hwy. 101 overpass. The bridge structure is not wide enough to safely accommodate pedestrians or bicycles. According to County staff, there are no current plans to upgrade this structure, although the possibility of attaching a lightweight aluminum bicycle lane to the structure could be explored if this option is selected. This approach has been used in other areas for

providing pedestrian and bicycle access along Caltrans bridge and over-crossing structures that are otherwise unsafe or have only limited space.

#### 4.6.6 Ontario Road (T6)

Alternative 2 would be located along the edge of Ontario Road from San Luis Bay Drive south to the staging area. This bicycle lane currently exists along the road, and would need minor improvements to remove obstacles. Potential traffic conflicts would occur at the intersection of SL Bay Road and Ontario Road, near the PG&E Diablo Canyon public use facility, and at the entrance to the staging area. Shoulder widening, signage and striping would be needed to identify and improve these areas.

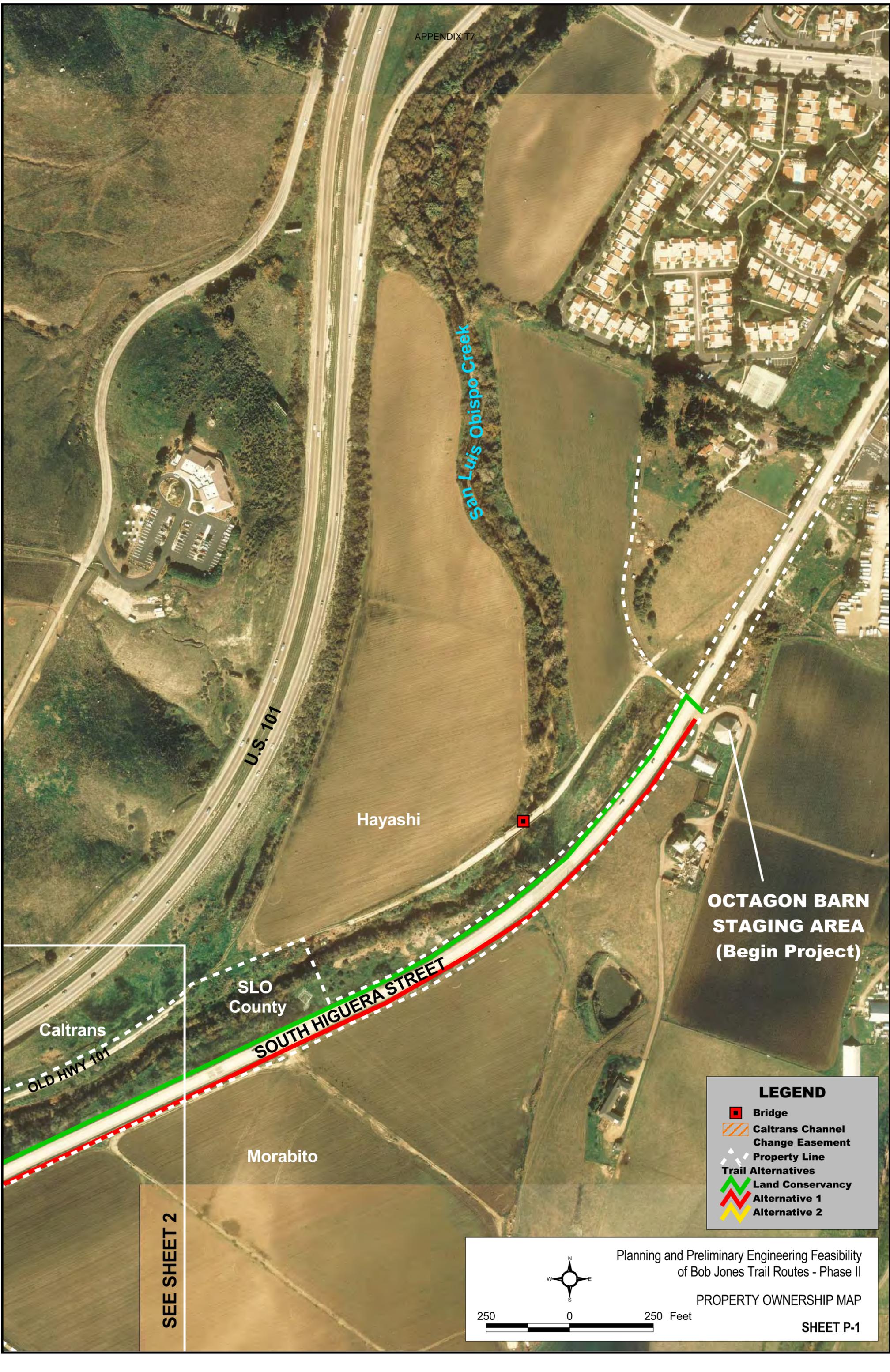
### 4.7 Utility Conflicts

Utility conflicts along the path corridor include overhead utilities with insufficient clearance, overhead utility crossings, and underground utilities. Some of the utility information is incomplete, however, most utilities are marked in the field and potential minor conflicts are apparent in several areas. One area where overhead utility lines could conflict with the path route is on the Land Conservancy option near the intersection of S. Higuera and Cloverridge Lane. At this location, the utilities cross the slope where the path would be located and there is a potential clearance conflict. The lines would likely need to be raised in this area. Although there are overhead utility lines (electrical and telephone) along most of South Higuera Street, they do not appear to present a conflict with path use elsewhere.

As discussed previously, natural gas pipelines are located along the top of bank (mainly within the Caltrans channel change easement) on both the east and west banks of SLO Creek between the Octagon barn and the end of Cloverridge Lane. In addition to the bank stability issue discussed in that section, the pipelines do raise an issue of maintenance access that will need to be reviewed with the easement owners. Paved path construction over the buried pipelines will make exposure and repair of broken pipeline segments more difficult, due to the additional costs of the paving. The location of the pipelines along the creek bank tops also makes revegetation and riparian enhancement more difficult in this bank top area, as the utilities may want to maintain a clearing for inspection, and unimpeded access for repair. The alternative would be to acquire additional right of way for the path outside of the gas line, and consider the gas line width as a vegetated creek buffer.

## 5.0 PROPERTY OWNERSHIP AND RIGHT OF WAY ISSUES

**Sheets P1-P6** show property ownership in the vicinity of the project. Each of the potential alignments traverses both public and private lands. The minimum right of way needed for completion of a trail segment is 20 feet, based on a paved trail section similar to the existing trail between the west end of San Luis Bay Drive and Ontario Road. The trail section here consists of an 8 ft. paved section with a three foot shoulder on each side. Where possible, right of way width should be 30-50 feet, to allow for variations in the trail alignment, to avoid obstacles, and for placement of site furnishings



San Luis Obispo Creek

U.S. 101

Hayashi

SLO County

Caltrans

OLD HWY 101

SOUTH HIGUERA STREET

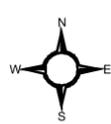
Morabito

OCTAGON BARN STAGING AREA (Begin Project)

**LEGEND**

-  Bridge
-  Caltrans Channel Change Easement
-  Property Line
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2

SEE SHEET 2



250 0 250 Feet

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

PROPERTY OWNERSHIP MAP

SHEET P-1

Caltrans

OLD HWY 101

San Luis Obispo Creek

SLO County

Caltrans

SEE SHEET 1

Filipponi Ecological Preserve

S. HIGUERA BRIDGE

East Fork Creek

City of San Luis Obispo

U.S. 101

Caltrans

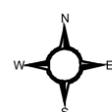
SOUTH HIGUERA STREET

Caltrans Channel Change Easement

Maino

**LEGEND**

-  Bridge
-  Caltrans Channel Change Easement
-  Property Line
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2



Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

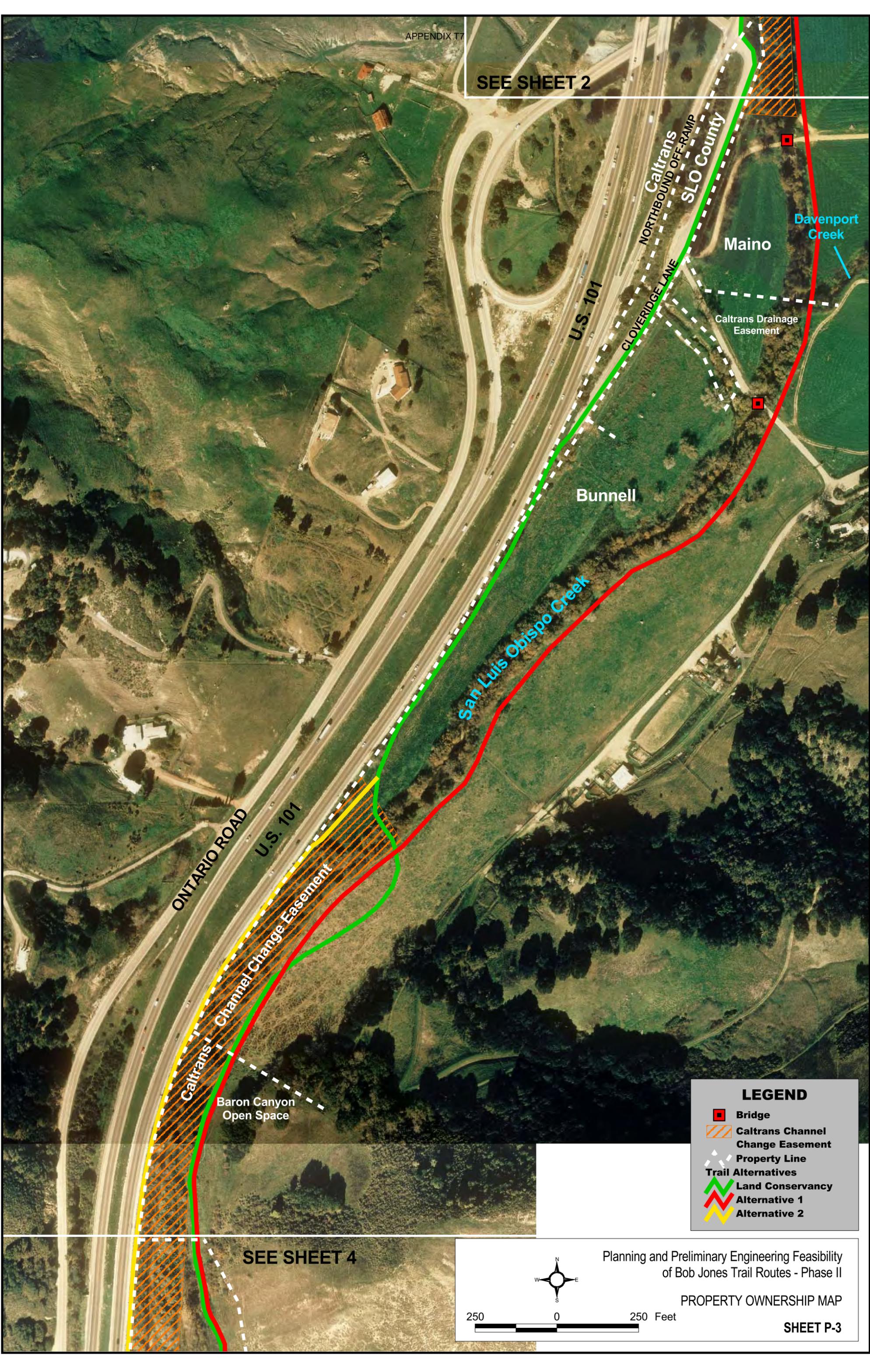
PROPERTY OWNERSHIP MAP

250 0 250 Feet



SEE SHEET 3

SEE SHEET 2



ONTARIO ROAD

U.S. 101

Caltrans Channel Change Easement

Baron Canyon Open Space

U.S. 101

CLOVERIDGE LANE

Caltrans NORTHBOUND OFF-RAMP

SLO County

Bunnell

Maino

Davenport Creek

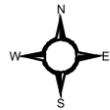
San Luis Obispo Creek

Caltrans Drainage Easement

**LEGEND**

-  Bridge
-  Caltrans Channel Change Easement
-  Property Line
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2

SEE SHEET 4



250 0 250 Feet

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

PROPERTY OWNERSHIP MAP

SHEET P-3

APPENDIX T7

SEE SHEET 3

Barron Canyon

Devincenzo

ONTARIO ROAD

U.S. 101

Caltrans

Caltrans Channel Change Easement

BARON CANYON RANCH ROAD

MONTE ROAD

Caltrans

U.S. 101

Devincenzo

SEE SHEET 5

**LEGEND**

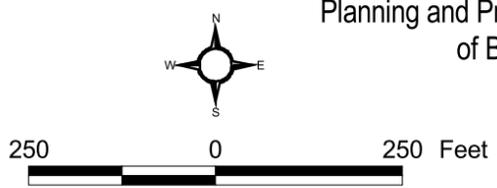
-  Bridge
-  Caltrans Channel Change Easement
-  Property Line
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

PROPERTY OWNERSHIP MAP

250 0 250 Feet

**SHEET P-4**



SEE SHEET 4

Devincenzo

Creekside Farm

ONTARIO ROAD

U.S. 101

MONTE ROAD

San Luis Obispo Creek

Creekside Farm

SAN LUIS BAY DRIVE

Caltrans

Argano

SEE SHEET 6

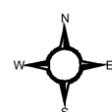
P.G. & E. COMMUNITY CENTER

SLO County

Whitaker

**LEGEND**

-  Bridge
-  Caltrans Channel Change Easement
-  Property Line
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2



Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

PROPERTY OWNERSHIP MAP

250 0 250 Feet

P.G. & E. COMMUNITY CENTER

SEE SHEET 5

Whitaker

Pollard

Land Conservancy

Villa

San Luis Obispo Creek

Kruse

Morrison

SLO Buddhist Church

Dunn

SLO County

Mid State

ONTARIO STAGING AREA (End of Project)

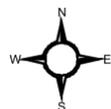
Reynolds

HIGHWAY 101 BRIDGE

BOB JONES BIKE TRAIL PHASE 1

**LEGEND**

-  Bridge
-  Caltrans Channel Change Easement
-  Property Line
- Trail Alternatives**
-  Land Conservancy
-  Alternative 1
-  Alternative 2



250 0 250 Feet

Planning and Preliminary Engineering Feasibility of Bob Jones Trail Routes - Phase II

PROPERTY OWNERSHIP MAP

SHEET P-6

such as benches or interpretive exhibits. In some areas, additional right of way would need to be obtained to locate the trail outside the riparian zone, avoid bank stability problems, or to accommodate ramps for bridge access.

### **5.1 Caltrans Channel Change Easement**

Caltrans has a creek maintenance easement along SLO Creek throughout much of the study area, associated with the realignment and highway construction work completed by them in the 1950's. In these areas, a portion of the creek channel is encumbered by a Channel Change Easement, granted to Caltrans from the individual property owner. Portions of each trail route are within the easement area. The easement is defined on Parcel Map Coal-89-210 as "Easement for channel change, maintenance, public utilities, and incidental purposes". Whether this definition includes public access (if combined with the provision of roads or trails within the area for maintenance access purposes) should be clarified.

According to Caltrans Engineers, the maintenance easement "allows them, but does not obligate them" to enter the creek to maintain the creek, such as completing bank repair and channel clearing work, where in their opinion, such work is necessary to keep Highway 101 open and in a safe condition. The easement allows them to work along existing roads and trails (Including a new trail), potentially damaging the trail, road or other improvements. Discussions with Caltrans regarding the easement, and acquisition of right of way in these areas will be necessary.

Issues regarding whether the County could or should acquire the easement along with a possible maintenance responsibility and creek enhancement opportunity should be carefully researched and discussed with County Counsel. If the channel change easement areas are to be avoided, then the trail route would be limited to existing street right of way, or lands east of the creek, outside the riparian corridor.

### **5.2 Caltrans Farm Road Easement**

Caltrans owns a 30 ft. right of way along the east side of Highway 101, between the San Luis Bay Drive and the Highway 101 Bridge at SLO Creek. This right of way is separated from the Highway 101 corridor and adjacent farm fields by fencing along both sides. The State purchased the strip of land for the purposes of satisfying the grantor's needs, to provide the owners with access to public roads from their fields. This dates back to the time when Caltrans put a high level of importance on maintaining agricultural land use access along their highways, while controlling unsafe access points. The State owns the land, and provides for the right of use and passage to its grantors "...for the purpose of a cattle trail..." According to the District Engineer, although the State owns the land, it does not hold it as a right of way for the public at large. "*The County would need to acquire the abutting owners' permission to allow the County's use of the strip for a bike trail.*" (Senet, 1999) Currently the adjacent fields are not used intensively for farming and grazing, and one of the fields is slowly reverting back to a more wild condition with brush.

According to Caltrans, there are two possible approaches to obtaining access in this area:

- The County can purchase the abutting property owners' interest and then purchase the excess land from the State, giving the County control and ownership of the land; or
- The County can acquire the rights from affected property owners to use the land, and enter into an agreement with Caltrans by lease agreement or encroachment permit, to use the land. This would include an indemnification and hold harmless agreement and assurances that the County would maintain the trail.

This issue is complicated by the fact that one of the property ownerships is held in trust and the sale or exchange of the trust assets may be difficult to obtain in the near future. If this is the case, then an interim project may need to direct trail users to Ontario Road via San Luis Bay Drive.

### 5.3 Other Caltrans-Owned Property

Caltrans also owns other land within the trail route, including the lands south of the Ontario Road staging area where the trail would need to cross under the Highway 101 Bridge at SLO Creek. Caltrans engineers also indicated that they are in the process of re-acquiring right of way in the vicinity of Cloveridge Lane from SLO County (that had previously been relinquished to the County) for their future right of way needs. The provision of trail right of way at that location should be explored if and when this transfer occurs.

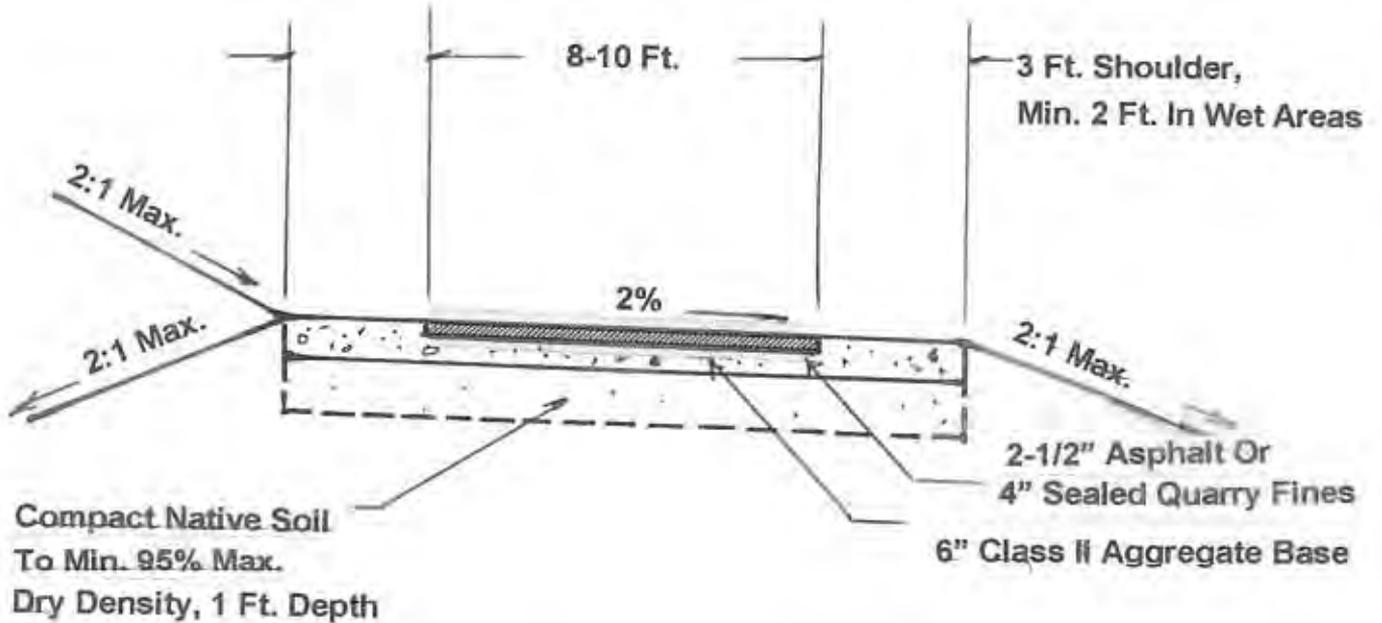
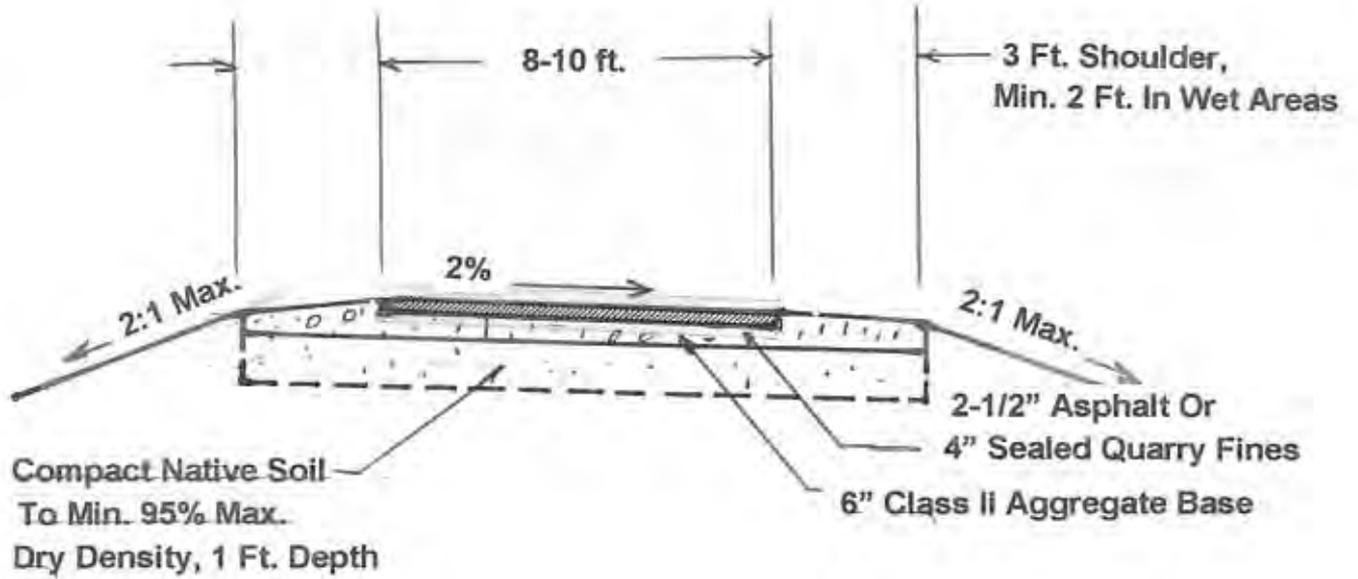
The process for the transfer of right-of-way from the Department to another public entity can be through one of the following three methods:

- Legislation through State Legislature instructing Caltrans to transfer deed to another public entity.
- Excess Lands Agreement, in which Caltrans would sell the property to the other public entity at fair market value.
- Cooperative Agreement, in which Caltrans would agree to transfer the deed to the second public entity at a nominal fee as Caltrans' contribution to a public transportation project for the public good, or as a mitigation measure for the permitting process on another Caltrans project (Melkonians, pers. comm.)

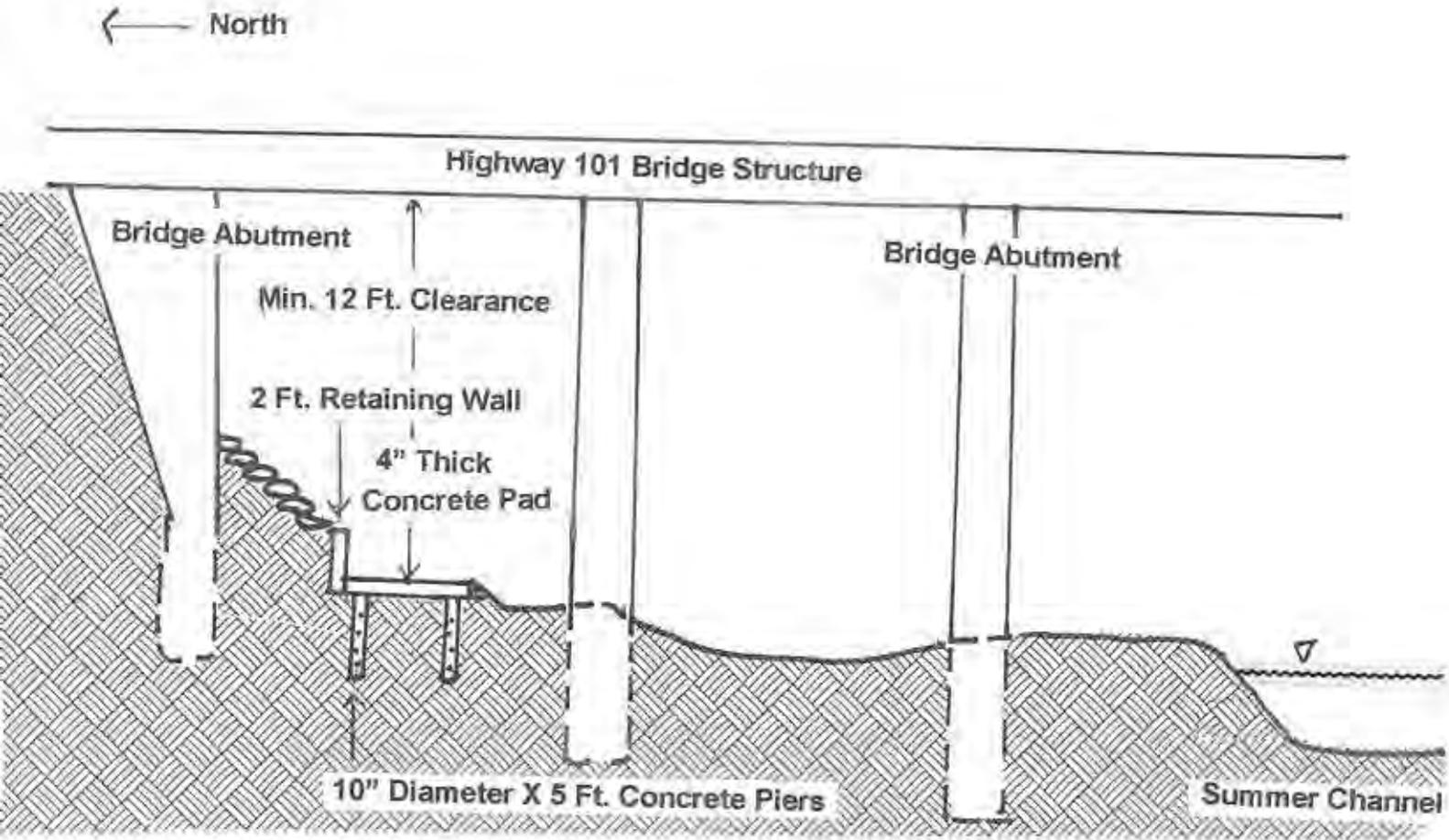
## 6.0 TRAIL DESIGN ELEMENTS

When considering a bikeway route, the following design elements should be evaluated to ensure compatibility with neighboring land uses. Typical trail sections for the project are shown on **Sheets 9 and 10**.

**Lighting.** Lighting is generally utilized in urban areas and not generally applicable for this route. However, lighting might be considered at trailhead locations or where adjacent to heavily traveled roads to increase visibility for trail users, such as Octagon Barn or South Higuera Bridge, if an at-grade crossing is chosen.



### Typical Cross Sections



**Typical Cross Section Under Highway 101  
In Scour Zone Area**

**Fencing.** Fencing is generally not needed unless the trail is located adjacent to existing uses that might be incompatible with trail use, such as a pasture or highway where access needs to be controlled. The existing fence separating the Caltrans farm road from adjacent property owners may need to be repaired. In addition, if a trail route is selected on the east side of SLO Creek, it is anticipated that property owners would want fencing to preclude access to their lands. The location, height and type of fencing needs to be considered to function appropriately without restricting wildlife access or increasing flood resistance.

**Trail surface.** The main trail route would be expected to include a paved asphalt trail section with a graded shoulder, with pre-built pedestrian bridges, possibly rated for vehicular use at the creek crossings. However, in other areas, a surfaced trail such as earth with soil cement, compacted quarry fines, boardwalks, or other material could be considered for compatibility with the surrounding area, management needs, or as a cost saving measure.

**Trail width.** The existing trail between San Luis Bay Drive and Ontario Road consists of an eight-foot wide paved trail section with three foot graded shoulders on each side, narrowing to two-foot shoulders in wet areas. Reducing the trail width in some areas could be considered such as areas adjacent to sensitive resources. For maintenance purposes, a wider (10-12 ft. surfaced width) should be considered in some areas. Proposed national regulations for accessible trails call for clear trail width of 36" minimum, with passing space at minimum 1000 ft. intervals if the trail is less than 60" wide. A full section is recommended where vehicular access is required, or where shared use of trails is expected.

**Fire and fuel management buffers.** Providing a fire break/managed area adjacent to the trail to reduce fire potential and improve visual access to the trail is desirable, especially along Monte Road. Agreement for management and maintenance of a well-managed area outside the trail right of way may need to be negotiated with adjacent property owners, although the County has a relatively wide right-of-way along Monte.

**Trailheads.** This trail route would complete an important link to the Avila Beach area. Bicyclists currently utilize South Higuera and Ontario Road, connecting to the Phase I Bob Jones bike trail as a recreation route. As the trail is completed, it is expected that demand for recreational access will increase. Provision of adequate parking and interpretive facilities at each end of the trail route will be an important component of the trail. Parking and other facilities (restroom facilities) are needed and would be provided at the Octagon Barn and Ontario Road staging areas. Interpretive displays and signage would be needed at these locations as well. A possible pull-out or small parking area could also be provided on San Luis Road, as there is no on-street parking available. This should be considered if an interim loop trail is built utilizing the farm bridge.

**Educational and informational opportunities.** In addition to providing information about this area's history, natural habitats, trail distances and user

information, there is an opportunity to include interpretive displays to inform trail users about agriculture, flooding, fisheries habitat, and water quality to increase awareness about these issues as well as about trail safety.

***Volunteer citizen groups.*** Local residents should be encouraged to monitor the trail route to reduce potential user conflicts.

***Trail management and maintenance.*** Ongoing management and maintenance costs, including provision of fire fuels management, and periodic bank stability and flood debris cleanup will add to overall project maintenance costs. Determination of the most appropriate management entity (County or possibly a non-profit association formed to patrol and maintain facilities) may affect trail design and location.

***Use restrictions.*** Periodic and seasonal trail closure or dusk-until dawn closure may be considered to reduce potential use conflicts, however this may increase management and maintenance needs.

***Trail implementation phased over time.*** Construction of the trail route in segments over time could provide interim or point access as well as an opportunity to monitor trail use and security needs. Securing funding to acquire right of way and implement portions of the trail is typical in such projects, and may provide impetus for private contributions for trail implementation.

## **7.0 PROJECT COSTS**

Planning level cost estimates were developed to facilitate comparison of alternatives, and for forward planning. The costs are not based on detailed designs, and therefore are accurate only for planning cost comparisons. A 20% contingency for unknowns is utilized. Design, environmental review and permitting, and right-of-way acquisition are also not presently included in the costs. These costs (less right of way) are typically in the range of 25 to 30% of construction, or about \$200,000.00. The estimates are best used to facilitate a comparison among the alternatives, and as a measure of feasibility. Trail construction costs are based on an 8 ft. asphalt-paved section with a 3 ft. graded shoulder on each side.

**Table 7-1: Land Conservancy Route  
Octagon Barn to Ontario Staging Area, Generally West of SLO Creek**

	<b>Item</b>	<b>Quantity</b>	<b>Unit Cost</b>	<b>Subtotal</b>
	Octagon Barn to Cloveridge Ln.			
1	Pedestrian Crosswalk, Octagon Barn, signage and striping	lump sum	\$10,000.00	\$15,000.00
2	Asphalt Trail	6,400 l.f.	22.00	140,800.00
3	Bridge Undercrossing At S. Higuera	lump sum	25,000.00	25,000.00
	Cloveridge Ln. to San Luis Bay Dr.			
4	Asphalt Trail (1,300 lf. along Cloveridge Lane could be eliminated if trail incorporated into existing paved area)	11,100 l.f.	22.00	244,200.00
5	Pedestrian Bridge, end of Cloveridge (includes approach)	150 l.f.	1500.00	225,000.00
	San Luis Bay Drive to Ontario Staging Area			
6	Pedestrian Crosswalk, SL Bay Drive at SLO Creek	lump sum	20,000.00	20,000.00
7	Asphalt Trail	4,800 l.f.	22.00	105,600.00
8	Caltrans Undercrossing @ Highway 101	200 l.f.	100.00	20,000.00
	General Items			
9	Mobilization	lump sum	10,000.00	10,000.00
10	Traffic Control	lump sum	15,000.00	15,000.00
11	Demolition and Site Protection	lump sum	15,000.00	15,000.00
12	Parking and Staging area, Octagon Barn (20 stalls)	lump sum	50,000.00	50,000.00
13	Signage and Site Furnishings (restroom)	lump sum	\$75,000.00	\$75,000.00
14	Mitigation Planting, Monitoring and Maintenance	lump sum	50,000.00	50,000.00
	20% Contingency			201,000.00
	Subtotal (does not include design , permitting, r/w, etc)			\$1,211,600.00

**Table 7-2: Alternative 1  
Octagon Barn to Ontario Staging Area, Generally East of SLO Creek**

	Item	Quantity	Unit Cost	Subtotal
	Octagon Barn to Cloverridge Ln.			
1	Earthwork/Retaining Wall s/o Octagon Barn	500 l.f	\$50.00	\$25,000.00
2	Asphalt Trail	6,900 l.f.	22.00	151,800.00
3	Pedestrian Bridge, East Fork including approach	100 l.f.	1500.00	150,000.00
4	Pedestrian Bridge, Davenport Creek, inc. approach	100 l.f.	1500.00	150,000.00
	Cloverridge Ln. to San Luis Bay Dr.			
5	Asphalt Trail	10,500 lf	22.00	231,000.00
6	Pedestrian Bridge/ Farm Bridge Improvements	Lump sum	50,000.00	50,000.00
	San Luis Bay Drive to Ontario Staging Area			
7	Pedestrian Crosswalk, SL Bay Drive at SLO Creek	Lump Sum	20,000.00	20,000.00
8	Asphalt Trail	4,800 l.f.	22.00	105,600.00
9	Caltrans Undercrossing @ Highway 101	200 l.f.	100.00	20,000.00
	General Items			
10	Mobilization	lump sum	lump sum	10,000.00
11	Traffic Control	lump sum	lump sum	15,000.00
12	Demolition and Site Protection	lump sum	lump sum	15,000.00
13	Parking and Staging area, Octagon Barn (20 stalls)	lump sum	lump sum	50,000.00
14	Signage and Site Furnishings (restroom)	lump sum	lump sum	75,000.00
15	Mitigation Planting, Monitoring and Maintenance	Lump sum	Lump sum	50,000.00
	20% Contingency			225,000.00
	Subtotal (does not include design fees, permitting, right of way, etc)			\$1,343,400.00

**Table 7-3: Alternative 2  
Partial Alignment from Cloveridge Drive to Ontario Staging Area**

	<b>Item</b>	<b>Quantity</b>	<b>Unit Cost</b>	<b>Subtotal</b>
	Cloveridge Ln. to San Luis Bay Dr.			--
1	Asphalt Path	9,300 l.f.	\$22.00	204,600.00
2	Farm bridge Improvements	Lump sum	Lump sum	50,000.00
3	Path Route along Monte Road to SLBay Dr.	5,100 l.f.	10.00	51,000.00
	San Luis Bay Drive to Ontario Staging Area			
4	Path Route on SL Bay Rd and Ontario Rd	5,100 l.f.	10.00	51,000.00
5	Improvements to SL Bay Hwy 101 Overcrossing	lump sum	300,000.00	300,000.00
6	Pedestrian Crosswalks at Ontario Road	Lump sum	50,000.00	50,000.00
	General Items			
10	Mobilization	lump sum	lump sum	10,000.00
11	Traffic Control	lump sum	lump sum	15,000.00
12	Demolition and Site Protection	lump sum	lump sum	15,000.00
13	Parking/Staging area, Octagon Barn (20 stalls)	lump sum	lump sum	50,000.00
14	Signage and Site Furnishings (restroom)	lump sum	lump sum	75,000.00
15	Planting, Monitoring and Maintenance	Lump sum	Lump sum	50,000.00
	20% Contingency			175,000.00
	Subtotal (does not include design fees, permitting, right of way, etc)			\$1,0966,600.00

## 8.0 RESEARCH NEEDS AND RECOMMENDATIONS

The intent of this Feasibility Study is to provide enough planning and design information to:

- Make an informed decision as to the best route from the options and alternatives considered.
- Identify additional engineering and environmental studies that may be needed for design and permitting.
- Prepare a project description for CEQA purposes and agency permitting, and to guide subsequent Plans and Specifications.
- Prepare grant request applications for funding (some require completion of CEQA document).
- Prepare an accurate cost estimate, schedule and annual funding required for project implementation, along with any recommended project phasing.
- Identify right-of-way requirements for purposes of appraisal and acquisition.

This section of the report discusses trail phasing and interim trail opportunities, as well as additional work to be done in order to complete the trail link.

### 8.1 Trail Phasing And Interim Trail Opportunities

Interim trail opportunities exist by utilizing existing rights of way (Monte Road, Cloveridge Lane, etc.) to provide interim trail connections until funding and right of way becomes available to provide a phased, permanent Class I trail. This would include loop trail opportunities, or point access trail connections until right of way or trail construction funding becomes available. Some potential interim trail opportunities include:

- Old Highway 101/Octagon Barn Point Access. This route could utilize the Old Highway 1 right of way to provide a loop trail and crossing of SLO Creek, with possible connection to the City's trail.
- Filipponi Loop Trail: In conjunction with ongoing restoration of this site, construction access and bank stabilization project components could be designed with seasonal crossings, or improvements to the existing road south of the East Branch confluence for point access to the east side of the creek. The trail design would need to comply with the restoration goals of the site, and avoid sensitive areas of the site.
- Monte Road Loop Trail: Using the seasonal farm bridge crossing, an interim loop trail could be provided, using Monte Road Right of way, north to seasonal crossing, and south to San Luis Bay Drive, with improvements to the existing farm road on the west side of SLO Creek.

- Trail Extension, Ontario Road Staging Area to San Luis Bay Drive: This loop would consist of trail construction under Highway 101 to provide a seasonal crossing, and improvements to the farm road to provide access to San Luis Bay Drive. Combined with signage and striping, this trail could form a loop back to the staging area via the existing Ontario Road route, or continue to the Monte Road loop described above.

## 8.2 Next Steps

The purpose of this section of the report is to identify and prioritize the next steps in project implementation. One of the first steps will be to select a Preferred Trail Alignment. This will help refine the study area for permitting and design. **Sections 8.3, 8.4 and 8.5** outline specific design and research needed to complete the project.

- Finalize project description.
- Meet with property owners.
- Hold public meeting to discuss project and solicit public support.
- Conduct environmental and engineering research needed for CEQA review and permitting, and Plans and Specifications (develop scope, schedule, cost estimates).
- Conduct research for right of way appraisal and acquisition.
- Hold interagency field tour to solicit input on permitting/mitigation issues.
- Identify grant funding sources and invite for tour (SLO Land Conservancy).
- Initiate CEQA review and permitting.

## 8.3 Research Needed For CEQA Review And Permitting

- Perform Red-legged frog protocol surveys, focused on creek crossings, and additionally anywhere the proposed trail is within 50 feet of bank top.
- Complete fisheries and aquatic habitat surveys at all creek crossings.
- Complete jurisdictional wetlands delineation for areas potentially affected by the trail (only a reconnaissance level analysis has been completed). Recommend changes to the trail route to avoid wetlands.
- Complete a site-specific archaeological investigation at creek crossings, complete archaeological site records forms and publish a “not for public distribution” cultural report.
- Identify wetlands and habitat acreages that will be impacted by the project. Estimate mitigation requirements and locate potential mitigation sites.
- Prepare CEQA document (most likely an Expanded Initial Study/Mitigated Negative Declaration)
- Prepare permit applications, including Habitat Mitigation and Monitoring Plan, U.S. Army Corps permits, etc. if appropriate.

## 8.4 Engineering Design And Construction Document Preparation

- Prepare detailed topographic maps/filed surveys at creek crossings, at-grade road crossings, and Cloveridge intersection and embankment area
- Complete geotechnical investigation (soil borings) at bridge crossings, Cloveridge embankment and wet soil areas.
- Map location of utilities from field work and office compilation
- Identify specific bridge location and abutment footprint and design
- Prepare detailed design drawings and contract documents for project construction, including phasing, if appropriate

## 8.5 Research Needed to Complete Right of Way Acquisition

- Precisely locate trail route and right-of-way needed and identify acreage to be acquired from each property owner
- Prepare legal property descriptions and acquire appropriate easements or fee title to acquire necessary right of way from private landowners
- Research easement use restrictions, especially Caltrans Farm Road and Channel Change easements; secure necessary easements
- Negotiate with Caltrans regarding Cloveridge intersection and Hwy 101 bridge underpass requirements for easement; secure encroachment permit

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# Bob Jones Pathway Phase II Feasibility Study

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San Luis Obispo, California



**Final - December 2003**

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Prepared for San Luis Obispo County Parks & Recreation Department  
Prepared by Alta Planning + Design and Questa Engineering Corporation



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# 1. INTRODUCTION

This study examines the options for developing Phase II, or the extension, of the Bob Jones Pathway. The Bob Jones Pathway is located in San Luis Obispo County, along the San Luis Obispo Creek corridor. The Bob Jones Pathway is a popular multi-purpose trail used for recreational users throughout the region. Phase II of the Bob Jones Pathway provides a critical link between the completed portions of the trail between Avila Beach and Ontario Road, and the portions being planned and designed within the City of San Luis Obispo.

## GOALS AND OBJECTIVES

The overall goal of the Bob Jones Pathway is to provide an enhanced connection for bicyclists and pedestrians between the City of San Luis Obispo and Avila Beach along the San Luis Obispo Creek corridor. The following goals and objectives have been developed to help guide the evaluation process in this feasibility study.

**Goal 1: The project should improve bicycle and pedestrian recreation, education, and connectivity in San Luis Obispo County and complete a major gap in the Bob Jones Pathway.**



**Objective A:** Recreation Amenity. Provide an enjoyable and educational recreational experience along the route, including improved access to recreational amenities, especially the stream corridor and public open spaces.

**Objective B:** Transportation. Ensure that the facility serves a viable transportation function in its alignment and design.

**Objective C:** Connectivity. Provide links and improve access to connector trails and important destinations along the corridor including future connections into the City of San Luis Obispo.

**Goal 2: The project should provide maximum benefits to the public.**

**Objective A:** Safety. Improve safety conditions for bicyclists and pedestrians in the corridor by minimizing potential conflicts with motor vehicles, and minimizing potential safety problems related to flash floods.

**Objective B:** Range of User Groups. Maximize the range of potential users of any new facility or service, including users of all ages and abilities. Understand the needs, capabilities, and interests of each user group, and consider this in the design of any solution(s).

**Objective C: Function.** Maximize the functional aspects of any recommendation in terms of convenience, gradients, availability, directness, access, cost, and connectivity to major destinations.

**Objective D: Cost Effectiveness.** The project should represent the best combination of quality with initial and long term maintenance cost effectiveness for the County.

**Objective E: Aesthetics.** The project should offer users the best possible environment in which to ride or walk, away from the noise and fumes from local roads and highways.

**Objective F: Education.** The project should provide educational opportunities to pathway users such as affording views of the riparian corridor, providing background on agriculture's role in San Luis Obispo County, and educational displays which discuss cultural resources found along San Luis Obispo Creek.

**Goal 3: The project should minimize negative impacts to the environment and local property owners.**

**Objective A: Environment.** Design the project so it does not result in significant negative environmental impacts in terms of direct construction impacts (water quality, cultural resources, etc.) and indirect impacts (increased demand on local resources that are already over capacity, public financial resources, etc.).

**Objective B: Property Impacts.** Avoid or minimize impacts to private property.

**Objective C: Visual Impacts.** Design the project so it does not result in significant impacts to the visual resources of the corridor.

**Goal 4: The project should be consistent with adopted policies, standards, and goals.**

**Objective A: Consistency:** Design the project to be consistent with the local, County, and State adopted standards, policies, and goals, such as Caltrans and ADA.

## SUMMARY OF RELEVANT PLANS & POLICIES

This section discusses the key public agencies involved in the Bob Jones Pathway, and relevant planning and policy documents prepared by each. This section, while useful in understanding the context of a project, may not be required for this analysis.

### County of San Luis Obispo

The County of San Luis Obispo Parks Department produced a *County Trails Plan* that was adopted in 1991. This Plan is currently being updated, however many of the projects listed in that plan remain the same. The Plan used a ranking process for potential trail projects that has been utilized in this report as well. The top ranked project in that plan is the “San Luis Obispo to Avila Beach” Trail, which is essentially the same corridor as the Bob Jones Phase II project. The most significant difference is that the 1991 County Plan identified this trail as being on Ontario Road rather than along San Luis Obispo Creek for most of the corridor.

### San Luis Obispo Land Conservancy

The Land Conservancy of San Luis Obispo County is a local land trust whose stated mission is to protect land having scenic, agricultural, habitat and cultural values. The Land Conservancy was created in 1984. Since its formation, the Conservancy has permanently protected over 4,000 acres of land in San Luis Obispo County. Land trusts are local grassroots conservation groups that help preserve the character of their communities by working to protect open space, as well as agricultural, historical and cultural resources. Generally speaking, land trusts are private 501(c)(3) non-profit organizations that protect land through acquisition of fee title to land and through conservation easements. Most often these lands and easements are donated to land trusts by individuals that have a strong attachment to the land and the values it represents. In some cases lands are purchased for conservation purposes. The donation of land may also afford the donating party some form of tax relief.

The Land Conservancy's Watershed Enhancement Program for San Luis Obispo Creek has several key components, including identification and prioritization of problem areas, landowner and community outreach, physical restoration design and installation, fundraising, and partnership development. The Conservancy has authored several technical studies related to fish habitats and hydrology, identified, prioritized, and built over 20 physical restoration projects, produced educational Public Service Announcements, stenciled storm drains, and acquired streamside lands and Conservation Easements.

The Bob Jones City to the Sea Trail was named after Bob Jones, a long-time board member at the Land Conservancy, who worked hard to protect and preserve San Luis Obispo Creek. The City to the Sea Trail is a visionary concept to join the communities of San Luis Obispo and Avila Beach via a trail along San Luis Obispo Creek. The Land Conservancy's role is to restore and enhance the stream corridor and work with interested landowners in securing trail access. This is a long-term process, but many of the landowners along the route are supportive of the concept.<sup>1</sup>

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<sup>1</sup>[http://www.kcbx.net/vv/land\\_con/about.htm](http://www.kcbx.net/vv/land_con/about.htm)

## Bob Jones Pathway

The *Planning and Preliminary Engineering Study of Bob Jones Pathway Routes Phase II, San Luis Obispo to Ontario Road* (February 8, 2002), was prepared by the Questa Engineering Corporation and The Morro Group. This report covers many aspects of a typical trail feasibility study, with some aspects (such as biological opportunities and constraints, engineering opportunities and constraints, and property ownership) covered in depth. The study presents an excellent summary of factors that are likely to be important in the evaluation and selection of a preferred option. The study also provides a wealth of background information that can be used to evaluate various options.

Three basic alternatives are presented in the study. Option 1: (Land Conservancy Route), Alternative 1: (generally located on the south bank of the valley), and Alternative 2: (generally located closer to U.S. 101 or next to Monte Road). There is considerable overlap between the options and it may be easier to refer to sub-sections of the project having a variety of options.

The design objectives of the project are stated to be a Class I paved bike path wherever feasible, and where not, a Class II (bike lanes), Class III (bike route), or a locally designated Class IV (bike access route).

Much of the study presents details on opportunities and constraints in list form or map form, providing important information to the facility planners and designers. This information includes wetlands, stream channel, tree canopy, 10- and 100-year floodplain limits, areas of erosion, cultural resources, biological resources, potential engineering conflicts, crossings and roadway conflicts, utility conflicts, property ownership and easement issues, and potential natural and cultural resource conflicts.

## California Department of Transportation

The State of California, Department of Transportation (Caltrans) is responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries. Caltrans has jurisdiction over the Highway 101 right-of-way and various ramps and interchanges to be reviewed as part of this feasibility study. Currently, Caltrans has plans to modify the South Higuera/U.S. 101 Interchange that may have some impact on the selected alignment. The status of these plans along with potential impacts to the trail alignments is being researched.

Caltrans is involved in five other aspects of this project:

1. Lateral Easements: some of the trail alignments are proposed to be the Caltrans right of way. This would require Caltrans approval and permits.
2. Crossing Easements: some of the options require an under crossing of U.S. 101 where the highway crosses over San Luis Obispo Creek. This would require Caltrans approval and permits.
3. Farm Road Easement: Several of the trail alignments would utilize an existing Caltrans farm road easement that has specific limitations on its use. This may require a change or transfer of this easement along with property owner approvals.
4. Channel Change Easement: Caltrans has a creek maintenance easement on San Luis Obispo Creek for much of this corridor. The purpose of the easement is to allow Caltrans the ability to take remedial action to protect the highway from flood and

- erosion conditions in the Creek and its tributaries. Any plans that propose changes to the creek, its flood capacity, or its banks would require Caltrans approval and permits.
5. Design Standards: All bicycle facilities funded through transportation grants must conform to Caltrans design standards as identified in Chapter 1000 of the Highway Design Manual.

In conversations with Caltrans ROW agent Ken Hill, most recently on July 14, 2003, it seems likely that Caltrans may grant use of the Farm Road Easement in question, if the use of the easement was to be allowed by the abutting property owners. Use of the Channel Change easement would depend on the appropriate preliminary environmental review.

### **Pacific Coast Railway**

The Pacific Coast Railway (PCR) was located in the same corridor as the proposed Bob Jones Pathway, providing an opportunity to reflect the unique history of the area in this project. The PCR started its humble origins as a 1½-mile long 30-inch gauge horse and gravity powered tram, and came to its demise in the early 1940's as a 3' gauge line. At its zenith, it had stretched over 76 miles from what was once called Harford's wharf on San Luis Obispo Bay, to the town of Los Olivos. The PCR was instrumental in the development of the area, including the building of a wharf for use by the Union Oil Company to fill its oil tankers, and the hauling of materials from a quarry for use in road building. In the Bob Jones Pathway – Phase II corridor, the abandoned rail right of way is mostly located on the north/west side of U.S. 101 generally where Ontario Road is currently.

### **Conoco-Phillips Oil Company**

The Union Oil Company pipeline traverses the corridor and may impact the location, right-of-way, and design of the trail, as the pipeline, running in a general north-south direction parallel to Highway 101, is located on or near the trail alignment at several points. In conversations with Conoco – Phillips property representative Randy Booth before and on July 14th, use of the easement over the pipeline remains a possibility. In addition, he stated that Conoco – Phillips had concerns, primarily about safety issues and maintaining access to the pipeline for scheduled or future maintenance needs. However, multi-use trails have been constructed on top of oil pipelines in California in the past, such as the Battles Road Bikeway in Santa Maria. The primary remaining issue is to determine whether the pipeline is on an easement that allows the underlying owner to restrict non-pipeline use. Maps and plans have been requested on numerous occasions to address these concerns, but representatives have not been cooperative.

## 2. NEEDS ANALYSIS

This chapter provides an overview of the user needs for the Bob Jones Pathway – Phase II project. Currently, the project corridor is regularly used by bicyclists using Ontario Road and South Higuera either as part of longer distance rides, local circuits, or to reach recreational areas including Avila Beach. Given the conditions of these roads, which include high traffic speeds, limited shoulders, and a heavy mix of trucks, most users are experienced bicyclists who feel comfortable riding on busy roadways.

When completed, the Bob Jones Pathway will attract a much broader spectrum of users to this corridor. This includes walkers, runners, rollerbladers, and recreational and casual bicyclists. Each of these potential user groups has specific needs that will directly affect the planning and design of the project. For example, many less experienced bicycle riders prefer to use multi-use trails (also known as Class I bike paths) or lower-traffic side streets rather than busy roadways with or without shoulders. Experienced bicyclists are often willing to trade more traffic and higher traffic speeds for a more direct route to their destination. This project should be designed for the greatest variety of user groups that will potentially use this corridor including students going to school, recreational and commuting bicyclists, pedestrians, hikers, dog walkers, in-line skaters, parents pushing strollers, seniors, children, and the disabled community.

### Transportation Needs

Transportation trips are any trips where the trip is primarily utilitarian in nature, including school and work commute trips, trips to the store, trips to visit friends, and even trips to a recreational destination. People making transportation trips, whether in a car, on foot, or on a bicycle, share common attributes in the facilities they seek to use. For potential pathway users, these attributes include:



- a. Trip lengths that range from a few blocks to ten or more miles.
- b. Routes that are direct.
- c. Travel periods often coincide with peak traffic volumes and congestion, increasing the exposure to potential conflicts with vehicles.
- d. Places to rest, drink, and store their bicycle.
- e. Major concerns include changes in weather (rain and heavy fog), riding in darkness, personal safety and security.
- f. Intersections with no stop signs or signal controls.
- g. Routes where they are required to stop as few times as possible, thereby minimizing delay.

Pathway users who are using the pathway primarily as a means of transportation are likely to be small, although it is likely there will be some commuters between Avila Beach/Pismo Beach and San Luis Obispo. It is also possible that some people who would have driven to Avila Beach would instead ride their bicycles, thereby reducing local vehicle trips.

## Recreational Needs and Economic Benefits

Recreational use generally falls into one of three categories: exercise, non-work destinations (such as shopping or libraries), and sightseeing. Recreational users can be a varied user group in and of themselves, since the term encompasses a broad range of skill and fitness levels, from a bicycle racer who does 100-mile rides each weekend, to a family with young children who occasionally want to ride a couple miles down a quiet trail. Regardless of the skill level of the recreational user, directness of route is typically less important than being in scenic surroundings, having amenities like restrooms and water fountains, and being on routes with few traffic conflicts. Visual interest, shade, protection from wind, moderate gradients, and artistic or informational features also has a much higher value.

All recreational corridor users require some basic amenities to have a comfortable experience and to want to return. They include consistency of environment in terms of exposure to motor vehicle traffic, a consistent facility design, clear destination and intersection signage, and even surfaces. The aesthetic component of a facility is very important to most recreational users. In other words, most people prefer to walk or bicycle in pleasing surroundings. Some of the Bob Jones Pathway options will offer users more pleasing surroundings (such as along the stream corridor) than others (such as directly along U.S. 101).

It is likely that, once completed, the Bob Jones Pathway will become a major regional attraction. At over 10 miles in length and connecting two beautiful destinations, people from around the region and possibly around the State may come to use the facility. As such, the Pathway will become a major recreational destination itself—with resultant implications in terms of trailhead parking, economic benefits, among other items. For example, the pathways in Lake Tahoe attract over 1 million people per year and are one of the primary reasons the summer season now attracts more visitors than the winter season. Pathways give visitors another important activity to pursue, resulting in longer stays and higher local expenditures. Research has shown that trails users attracted from outside the immediate area spend on average \$15 per visit per day. Even a modest number of outside users will generate significant economic benefits for the area.

## Connecting Facilities

In order to maximize the number of users who will walk and bicycle to the pathway rather than drive, and to link to surrounding communities, connections to the Pathway must be integrated into the planning and design process.

On the east end, the pathway will eventually connect to the Bob Jones Pathway currently being planned and designed by the City of San Luis Obispo. Currently, this project terminates at Los Osos Valley Road. The short-term connection between this point and the proposed starting point of the Phase II project are bike lanes along Los Osos Valley Road and South Higuera. The longer-term connection is along the San Luis Obispo Creek through what is now private property. An easement will be needed to make this eventual off-road connection. Bicyclists will be attempting to reach the Phase II trail from a variety of directions, some of which may need improvements in the future. Major access routes from the east include Los Osos Valley Road, South Higuera (which has bike lanes), Tank Farm Road, and Buckley Road (which is planned to be extended to South Higuera in the future).

On the west end, the Phase II project will link to the existing pathway that connects to Avila Beach. For people arriving from or destined to the Pismo Beach area, the access route to the trail

will be via Ontario Road and Shell Beach Road. Some improvements may be needed to these routes to accommodate the expected increases in bicyclists in the future.

### **Traffic Volumes**

If the recommended alignment included any crossings of major roadways such as South Higuera, a traffic analysis based on existing and projected traffic volumes would be required.

### **Projected Usage**

One of the goals of the Bob Jones Pathway is to maximize the variety of user groups who will benefit from it, including recreational and commuting user groups. The selection of the preferred alternative will impact the number and diversity of users who will be attracted to the corridor. According to Alta's Trail Demand Model, the Bob Jones Pathway will attract approximately 236,000 annual users.

### 3. PROJECT ALTERNATIVES

This chapter identifies the criteria used to evaluate the options, describes the individual alignment components, evaluates the alignments in detail, and outlines the three top ranked alignments and the final recommendation.

#### Description of Alternatives

The Bob Jones Pathway Phase II was identified as consisting of three alternatives in the Planning and Preliminary Engineering Study. Upon closer inspection of these alternatives, there is considerable overlap between some of the options and the pathway really appears to consist of five (5) sub-sections, with each sub-section having two or more alternative alignments. The preferred alignment is likely to consist of components of the three original alternatives. In some cases, loop routes may be created out of two or more sub-sections.

Sub-Section 1:	Octagon Barn to South Higuera Street Creek Crossing
Alternative 1A:	North side of South Higuera Street (Land Conservancy option)
Alternative 1B:	South side of South Higuera Street (Alternative 1)
Sub-section 2:	South Higuera Street Crossing to San Luis Obispo Creek Crossing (South of Cloveridge Lane)
Alternative 2A:	West side of San Luis Obispo Creek (Land Conservancy option)
Alternative 2B:	East side of San Luis Obispo Creek (Alternative 1)
Sub-section 3:	San Luis Obispo Creek Crossing (South of Cloveridge Lane) to Old Farm Bridge Crossing
Alternative 3A:	West side of San Luis Obispo Creek (Alternative 2)
Alternative 3B:	East side of San Luis Obispo Creek (Land Conservancy option and Alternative 1)
Sub-section 4:	Old Farm Bridge Crossing to San Luis Bay Drive
Alternative 4A:	West side of San Luis Obispo Creek (Alternative 1)
Alternative 4B:	East side of San Luis Obispo Creek next to creek (Land Conservancy option)
Alternative 4C:	East side of San Luis Obispo Creek next to Monte Road (Alternative 2)
Sub-section 5:	San Luis Bay Drive to Ontario Road Trailhead
Alternative 5A:	On-road option using Ontario Road (Alternative 2)
Alternative 5B:	Caltrans easement to U.S. 101 Under-Crossing (Land Conservancy option and Alternative 1)

#### Evaluation Criteria

A decision matrix with clearly described criteria and scoring was used to evaluate each project alternative. The evaluation criteria were based on the overall project goals and were weighted to reflect the relative importance of each category. Each criterion had a weighting factor reflecting its relative importance from 0 (low benefit or negative impact) to 10 (high benefit or low negative impact) depending on the relative



importance. This criterion was then used to evaluate each of the alternative alignments.

The criteria proposed to be used for the Bob Jones Pathway – Phase II alternatives were based on the criteria used in the *1991 County Trails Plan* but adjusted for the trail alignment evaluation purposes:

– *Vehicle Conflicts and User Safety*

Conflicts with motor vehicles can be a major impediment to use by less experienced and capable users, especially recreational users, children, and the elderly. Several of the alternatives involve either the use of Ontario Road and/or crossings of roadways. Alternatives that avoid or minimize these conflicts would rate higher than those that don't.

– *Flood Impacts*

Alternatives that could potentially increase flooding impacts, be impacted by floods, or do not adequately address potential safety impacts from flash floods would rate lower than projects that either were outside the flood plain or had adequate addressed potential problems.

– *Functionality / Access*

People using the project for transportation purposes will resist using a facility that is not easily accessible, is too circuitous, or requires changes from a multi-use path to riding on busy roadways.

– *Usage*

The project should appeal to the widest variety of users possible. Multiple users include bicyclists, walkers, joggers, dog walkers, in-line skaters, and others. It is expected that all options will conform to the Americans with Disabilities Act (ADA). Some of the alternatives are expected to attract a broader cross section of users, and more users overall, than others

– *Cost*

Cost of the alternative is always a critical component, especially where crossing improvements, fencing, bridges, under crossings, or other expensive infrastructure improvements are being considered. What are the estimated capital and operating costs for developing this alignment? Alternatives that had lower initial and long-term maintenance costs, whose costs were more certain, and who would qualify more easily for available funding would score higher than those that do not.

– *Environmental Impacts*

As the Bob Jones Path – Phase II project will traverse the San Luis Obispo Creek for much of its length and possibly cross it several times, and given the environmentally rich nature of this corridor, potential environmental impacts must be assessed for the preferred route and alternatives considered to mitigate potential significant impacts, including wetland impacts, visual impacts, cultural resources impacts, and noise and health impacts. Environmental benefits such as preservation, rehabilitation, stabilization, and

interpretive opportunities should also be considered. Alternatives that include new construction in wetland areas or new coverage of wetlands will score lower than alternatives that have no or fewer impacts.

– *Adjacent Land Use Impacts*

This is a key component for any new pathway located adjacent to private properties that may involve concerns about privacy, security, and impacts to farming operations. While research has shown that shared use paths do not have higher crime rates than surrounding areas, and privacy issues can usually be resolved through design, this is still a relatively important criteria. Alternatives that have potential impacts on security and privacy of adjacent land uses would score lower than other projects.

– *Right-of-Way*

The availability of public right-of-way is an important criterion. Alternatives that require the purchase of easements or property may involve timely and complex negotiations, plus additional costs. These projects would score lower than projects where right-of-way ownership is already by a public agency.

– *Aesthetics*

Does the alignment contain negative aesthetic (such as noise due to proximity to a freeway) or positive aesthetic (such as access and/or views to the creek) elements that may be an important user amenity?

Table 1. Review of Alternatives – Sub-Section 1

<b>Sub-Section 1: Octagon Barn to South Higuera Street Creek Crossing</b>
<b>Alternative 1A: North side of South Higuera Street (Land Conservancy option)</b>
<p><b>Major Advantages:</b> This option provides good functionality and access, avoids major flood impacts, has a reasonable cost, avoids major private property impacts.</p>
<p><b>Major Disadvantages:</b> Requiring all trail users to cross South Higuera after leaving the trailhead parking at the Octagon Barn is problematic given the anticipated mix of users and speeds on this road. This will impact usage of the overall facility if safety is a perceived problem. The location of the path along the road does not provide great aesthetics, and the path will need to cross under South Higuera at the creek leading to potential flooding and environmental impacts.</p>
<p><b>Conclusion:</b> While offering slightly better aesthetics than Alternative 1B, the problems caused by the road crossing and the need to cross back under South Higuera result in a lower score than that option. This option may be developed in the future when the Bob Jones Pathway is extended southward from Los Osos Valley Road along the creek.</p>
<b>Alternative 1B: South side of South Higuera Street (Alternative 1)</b>
<p><b>Major Advantages:</b> While not the most scenic stretch of the trail, this option avoids any road crossings, provides good function and access, and has acceptable cost and environmental scores.</p>
<p><b>Major Disadvantages:</b> Being located along the road will make this route less-than-scenic. There may be a need to purchase a small strip (up to 20 feet) of farmland, and the path may impact adjacent agricultural operations especially if aerial spraying operations are under way.</p>
<p><b>Conclusion:</b> Alternative 1B is the recommended alignment for this section because it eliminates trail users having to cross South Higuera, and has the lowest environmental impacts. If the pathway connection to the City of San Luis Obispo is expected to occur in the short term, than Alternative 1A is the preferred option. If it is expected to happen in the mid or long term, than Alternative 1B is the preferred option.</p>

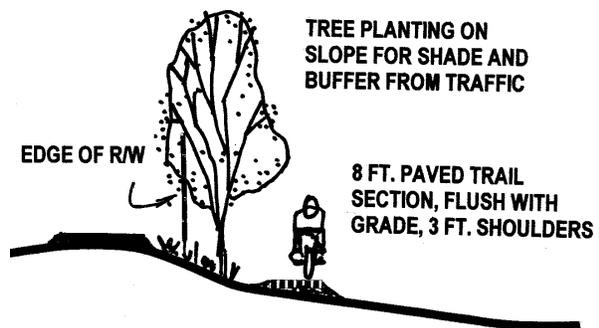


Table 2. Review of Alternatives – Sub-Section 2

<b>Sub-section 2: South Higuera Street Crossing to San Luis Obispo Creek Crossing (South of Cloverridge Lane)</b>
<b>Alternative 2A: West side of San Luis Obispo Creek (Land Conservancy option)</b>
<p><b>Major Advantages:</b> Linking to Alternative 1B, this option would bridge San Luis Obispo Creek directly adjacent to the South Higuera Bridge and therefore have the lowest environmental and flood impacts of any crossing option. The route is functional and has relatively low environmental impacts.</p>
<p><b>Major Disadvantages:</b> This option will parallel South Higuera for most of its length, until it ties into Cloverridge Lane, making it less than perfect from an aesthetic stand point. There are potential safety concerns where the two-way trail is located next to the S. Higuera ROW. Construction costs may be high given the steep terrain in this corridor. Right of way and private property impacts will be an issue at the southern end of Cloverridge where the trail starts again and must traverse the Bunnell property, but it appears the owner is willing to consider a trail easement through his property.</p>
<p><b>Conclusion:</b> This option scores the highest with the given criteria, unless it is determined that easements may be possible to acquire through private property on the East side of the creek.</p>
<b>Alternative 2B: East side of San Luis Obispo Creek (Alternative 1)</b>
<p><b>Major Advantages:</b> This route offers the best creek side environment and aesthetics, given that it is removed from U.S. 101 and South Higuera. This would be a very enjoyable walking or riding experience for all users. Trail implementation in conjunction with creek enhancement and restoration activities in this area would provide environmental benefits.</p>
<p><b>Major Disadvantages:</b> This option would require the acquisition of an easement through private property from an unwilling property owner. The trail would be adjacent to existing farm operations and would need to be buffered from agricultural uses. Two bridges would be needed to cross SLO Creek at East Branch and at Davenport Creek, with potential environmental impacts. The trail would be as close as 250 feet from the Bunnell property residence at its closest point, and would be at the very edge of the creek riparian canopy here to provide for maximum separation from the residence. The Bunnell property owner may also be unwilling to consider this trail option because of its proximity to the existing residence.</p> <p>The floodplain adjacent to the creek is also very active in this area, and is frequently flooded, with scour holes and areas of sediment deposition evident on the farm field. This issue must be dealt with in trail design and maintenance budget planning.</p>
<p><b>Conclusion:</b> This option is the preferred long-term option assuming access to the property can be secured. Since easement acquisition may take some time, this segment may be implemented later than other segments in hopes that an easement can be secured.</p>

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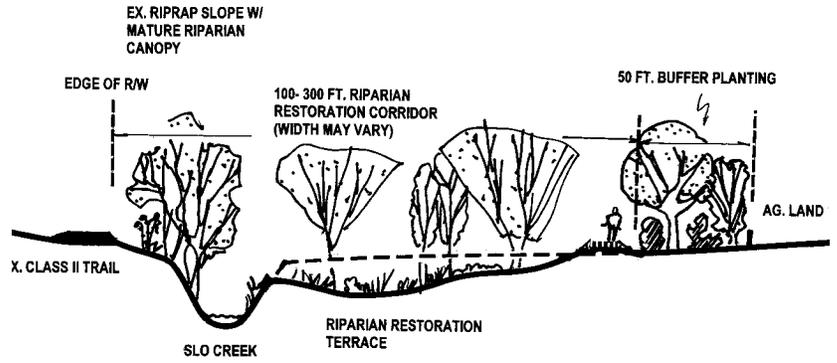


Table 3. Review of Alternatives – Sub-Section 3

<b>Sub-section 3: San Luis Obispo Creek Crossing (South of Cloverridge Lane) to Old Farm Bridge Crossing</b>	
<b>Alternative 3A: West side of San Luis Obispo Creek (Alternative 2)</b>	
<b>Major Advantages:</b> This is a functional option that minimizes major flood impacts, vehicle conflicts, environmental impacts, and private property impacts.	
<b>Major Disadvantages:</b> Being located next to U.S. 101 this route would offer poor aesthetics to users especially compared to the alternative, and would have potentially very high construction costs given the terrain. In some areas, there is sufficient ROW between the top of bank and Highway 101 traveled lanes, so a continuous west side route is problematic.	
<b>Conclusion:</b> Lack of sufficient ROW is a key flaw of this route. In addition, while no worse than Alternative 2A, the fact that there is a better alternative makes this option less than ideal.	
<b>Alternative 3B: East side of San Luis Obispo Creek (Land Conservancy option and Alternative 1)</b>	
<b>Major Advantages:</b> This option would cross the creek at the Bunnell property (unless Alternative 2B is implemented, in which case the path would continue on the west side of the creek) and provide users with an excellent riding and walking experience next to a riparian corridor. The alignment links into Baron Canyon trailhead area that would serve as a good staging and rest area for the trail. This option offers the best experience away from the noise and pollution of local roadways.	
<b>Major Disadvantages:</b> The creek crossing on the Bunnell property will need to be designed to minimize or avoid flood impacts (see design guidelines), and as a result of the bridge and design elements at the northern end the cost may be high. The route may have some environmental impacts at the crossing, but otherwise would be located out of the riparian corridor.  As with the area immediately upstream and downstream, the floodplain is very active here. One sub-alternative would be to move the trail further to the east, near the toe of slope of the adjacent hill, to minimize floodplain and trail maintenance issues.	
<b>Conclusion:</b> This is the logical alignment for this segment.	

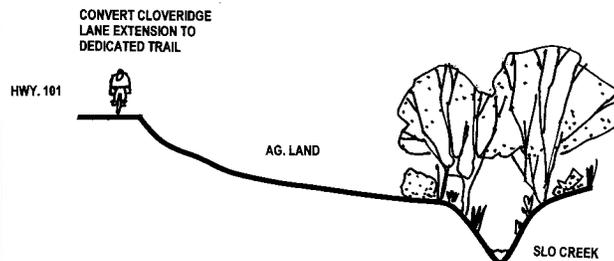


Table 4. Review of Alternatives – Sub-Section 4

<b>Sub-section 4: Old Farm Bridge Crossing to San Luis Bay Drive</b>
<b>Alternative 4A: West side of San Luis Obispo Creek (Alternative 1)</b>
<b>Major Advantages:</b> This alignment offers an excellent environment for pathway users, who will be enjoying a riparian corridor and surrounding farmlands.
<b>Major Disadvantages:</b> The greatest disadvantage of this option is that an easement would need to be acquired from the property owner, and if there is active farming there might be conflicts with this operation. In addition, there would likely be some flood impacts due to the need to use the old farm bridge, plus general proximity to the creek. However, replacement of the existing farm bridge with a new clear span bridge would have significant environmental benefits (it has creosote coated support piles directly on the creek bottom and blocks even modest flood flows). A replacement structure should be constructed at the same location as the existing bridge to minimize environmental impacts.
<b>Conclusion:</b> This option scores the same as the other options, and all should be kept to allow flexibility when negotiating with the property owner(s).
<b>Alternative 4B: East side of San Luis Obispo Creek next to creek (Land Conservancy option)</b>
<b>Major Advantages:</b> Similar to Alternative 4A, this alignment offers an excellent environment for pathway users, who will be enjoying a riparian corridor and surrounding farmlands.
<b>Major Disadvantages:</b> This alignment has the same disadvantages of Alternative 4A, except that a new bridge would need to be constructed to cross the creek at San Luis Bay Drive. Given that this entire area is in a flood zone, this new bridge is likely to be impacted by major floods. Otherwise, this option is the same.
<b>Conclusion:</b> This option scores the same as the other options, and all should be kept to allow flexibility when negotiating with the property owner(s).
<b>Alternative 4C: East side of San Luis Obispo Creek next to Monte Road (Alternative 2)</b>
<b>Major Advantages:</b> This option would have the lowest private property impacts since it is located on the perimeter of the farmland.
<b>Major Disadvantages:</b> Similar to the previous options, but this alignment's location next to Monte Road make it a slightly less enjoyable alternative for users. A new bridge would need to be constructed across the creek at San Luis Bay Drive. Note that it might be possible to funnel users onto Monte Road itself, however the road would need to be widened to allow for shoulders, measures would need to be taken to slow traffic, local residents may object, and the users themselves may be hard to manage on a road after using a separated pathway. Given these factors, a separate pathway is probably the best solution for this segment.
<b>Conclusion:</b> This option scores the same as the other options, and all should be kept to allow flexibility when negotiating with the property owner(s).

APPENDIX T7

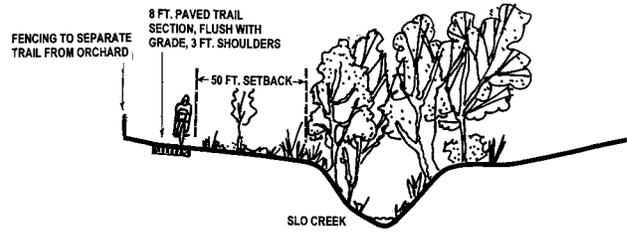
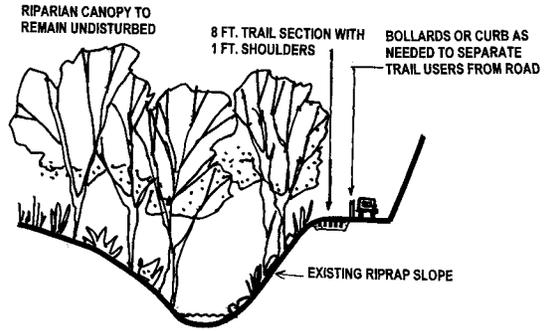
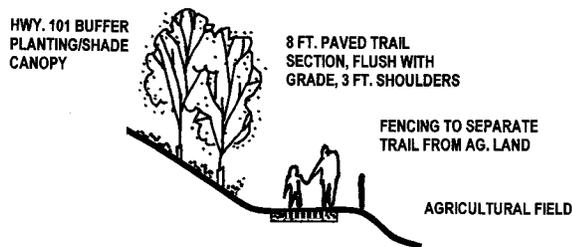


Table 5. Review of Alternatives – Sub-Section 5

<b>Sub-section 5: San Luis Bay Drive to Ontario Road Trailhead</b>
<b>Alternative 5A: On-road option using Ontario Road (Alternative 2)</b>
<p><b>Major Advantages:</b>                  This option is the easiest to implement given lower cost, environmental impacts, flood impacts, right-of-way and private property impacts. It is important to note that costs could increase for this option if it was determined that wider shoulders were needed.</p>
<p><b>Major Disadvantages:</b>                  This route does not provide a separated trail. Forcing users who have been on a separated pathway to use a busy, high speed road for the last connection to the Ontario Staging Area and existing pathway to Avila Beach could be seen as a fatal flaw—since it will have major impacts on real and perceived safety, usage, and user enjoyment. Users are also required to cross San Luis Bay Drive and Ontario Road.</p>
<p><b>Conclusion:</b>                  The implementation ease of this option compared to the complexities of the alternative alignment (5B) result in a tied score. It is our recommendation that Alternative 5B be considered the preferred alternative unless it proves to have fatal flaws of its own. If Ontario Road is selected, we would recommend measures to maximize the width of shoulders, slow traffic speeds, and warn motorists that pedestrians and bicyclists will be present.</p>
<b>Alternative 5B: Caltrans easement to U.S. 101 Under-Crossing (Land Conservancy Option and Alternative 1)</b>
<p><b>Major Advantages:</b>                  The scenic attributes of this alignment are its best assets, and it would expose users to excellent farmland and riparian vistas. Vehicle conflicts would be avoided except for having to cross San Luis Bay Drive.</p>
<p><b>Major Disadvantages:</b>                  This alignment has several property, design and maintenance challenges. The Caltrans farm access easement needs to be resolved, which may entail actually purchasing the easement or at the least re-writing the easement to change allowable uses. The under crossing of U.S. 101 would place the trail within the annual flood zone, requiring special safety precautions and designs to retain flood capacity through this crossing and minimize impacts to the trail itself. Environmental impacts would need to be assessed and mitigated as well.</p>
<p><b>Conclusion:</b>                  If the challenges listed above can be overcome, this would be the preferred option for this segment.</p>



## **Ranking Matrix**

The following table shows each of the alternatives scored according the criteria discussed previously.

Table 6. Bob Jones Pathway – Phase II, Ranking Matrix

Segments	Vehicle Conflicts / Safety	Flood Impacts	Function / Access	Usage	Cost	Environ. Impacts	Private Property Impacts	ROW	Aesthetics	Total
<b>Sub-section 1: Octagon Barn to South Higuera Street Creek Crossing</b>										
Alternative 1A: North side of South Higuera Street (Land Conservancy option)	1	8	10	6	8	6	8	10	4	61
Alternative 1B: South side of South Higuera Street (Alternative 1)	10	8	10	8	8	8	4	6	2	64
<b>Sub-section 2: South Higuera Street Crossing to San Luis Obispo Creek Crossing (South of Cloveridge Lane)</b>										
Alternative 2A: West side of San Luis Obispo Creek (Land Conservancy option)	1	10	8	6	5	5	10	10	2	57
Alternative 2B: East side of San Luis Obispo Creek (Alternative 1)	10	2	7	10	5	5	2	2	10	53
<b>Sub-section 3: San Luis Obispo Creek Crossing (South of Cloveridge Lane) to Old Farm Bridge Crossing</b>										
Alternative 3A: West side of San Luis Obispo Creek (Alternative 2)	10	7	8	5	4	5	10	10	2	61
Alternative 3B: East side of San Luis Obispo Creek (Land Conservancy option and Alternative 1)	10	4	10	10	6	5	6	6	10	67
<b>Sub-section 4: Old Farm Bridge Crossing to San Luis Bay Drive</b>										
Alternative 4A: West side of San Luis Obispo Creek (Alternative 1)	8	5	10	10	7	6	4	4	10	64
Alternative 4B: East side of San Luis Obispo Creek next to creek (Land Conservancy option)	8	7	10	10	5	6	4	4	10	64
Alternative 4C: East side of San Luis Obispo Creek next to Monte Road (Alternative 2)	8	8	10	8	5	8	8	4	4	63
<b>Sub-section 5: San Luis Bay Drive to Ontario Road Trailhead</b>										
Alternative 5A: On-road option using Ontario Road (Alternative 2)	1	10	5	1	10	10	10	10	2	59
Alternative 5B: Caltrans easement to U.S. 101 Under-Crossing (Land Conservancy option and Alternative 1)	10	2	10	10	3	4	8	2	10	59

## 4. IMPLEMENTATION

This chapter addresses the implementation of the Bob Jones Pathway – Phase II. Once the preferred alternative identified in this report is officially accepted by the implementing agencies, actual implementation of the project can begin. This chapter reviews those steps along with details on costs, design standards, maintenance, and other items.

### NEXT STEPS

Selection of the preferred alternative is the first implementation step. This report identifies the study team's preferred alternative consisting of five distinct sub-sections. The list below summarizes the next steps for this project.

#### Property Negotiations, Easements, and Approvals

Individual meetings with appropriate agencies and individuals who own property where the preferred alignment will require an easement and/or permits should be held. Prior to these meetings, the County will need to identify a model easement agreement they want to use that addresses items such as maintenance and liability. In some cases, legal input may be required to advise on the best strategy for acquisition. Specific negotiations need to be held with the following groups:

- a. Caltrans: Farm road easement, U.S. 101 under crossing, encroachment permits (as needed), channel change easements (as needed), design exceptions (as needed), and integration of pathway design into South Higuera interchange design.
- b. Hayashi/SLO Land Conservancy Octagon Barn area.
- c. Morabito Property: Possible new easement on edge of property.
- d. City of San Luis Obispo, Filliponi Preserve.
- e. Maino Property: New easement across property.
- f. Bunnell Property: New easement across property.
- g. Baron Canyon Open Space: New easement across property.
- h. Devincenzo property: New easement across property.
- i. Creekside Farm: New easement across property.
- j. Farm Road Easement: The existing Caltrans easement may involve negotiations with the seven property owners in this area.

#### Conceptual Bridge Design and Analysis

The preferred alignment shows the general alignment and crossing points of proposed new pedestrian and vehicular bridges. Several new bridges are proposed: crossing the east Branch of SLO Creek at the Filliponi Ecological Preserve, Davenport Creek, south of Cloveridge Lane, and replacement of the existing farm bridge crossing in the apple orchard near San Luis Bay Drive, and crossing alternatives at San Luis Bay Drive. In addition, a crossing under Highway 101 at the Ontario Road staging area is proposed that will require that structural modifications be made under and near the existing bridge abutments.

Although not a bridge, a substantial length of seasonal wetlands located just upstream of the Highway 101 bridge near the Ontario Road staging area will also have to be crossed using either an elevated boardwalk, articulated concrete block, or a fill section founded on geocell or similar structure.

The creek and wetland crossings represent the most sensitive areas of the trail plan, and present the greatest potential for creating adverse biological and hydrologic impacts. In addition, these elements need to be carefully designed to insure that they are durable enough to withstand the frequent flood and scour events that occur in these areas, and that high maintenance costs are recognized, and minimized through creative design engineering.

The bridge and wetlands crossings will likely require permits from the California Department of Fish and Game and the U.S. Army Corps of Engineers, and consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service on endangered species issues. Specific issues related to bridge and wet area trail design, potential impacts, and design elements to mitigate potential impacts may not currently be sufficiently identified or described for CEQA review purposes or project permitting.

More detailed preliminary engineering designs for the bridges, bridge undercrossings, and wet area trail segments should be completed prior to CEQA review and the preparation of project permit applications. The proposed crossings should be surveyed in the field (a less accurate LiDAR survey was used) and a more accurate determination made of the span required, the location and design of abutments and footings, and the design of the deck and support members. The trail section in wet areas should also be designed. Preliminary cost estimates should be updated.

Since the trail is located on an active floodplain, additional consideration will need to be given as to how the bridge and trail connection should be constructed in a way that maximizes all weather access, yet meets County and FEMA standards regarding flood flow blockage and prevention of increased flood risk. A hydraulic analysis of the structures should be completed that will identify potential problems and design solutions. This analysis should also quantify anticipated wetlands and waters impacts, with designation of project mitigations that will streamline project approval.

### **Project Approval**

The implementing agency needs to formally accept the project design and the preferred alternative, in a hearing open to the public. Aside from accepting this report's recommendations, the County will need to decide if they will complete the project in phases or all at once.

### **Project Sponsor**

The implementing agency, if different than the County Parks Department, needs to take responsibility for the next steps.

### **Environmental Review**

An environmental analysis needs to be conducted per CEQA requirements. A CEQA Initial Study Checklist will be prepared to determine if there are potential significant environmental impacts. If there are potential impacts, then an EIR may be required, most likely focusing on the specific project issues, such as biological and hydrologic impacts. Mitigation measures may be

incorporated into the project design (such as a 50-foot buffer from the edge of riparian canopy), to reduce the potential environmental impacts. The public will have several opportunities to review and comment on the project and potential impacts in this process.

## **Funding**

The County can pursue full implementation funding for the project, starting immediately.

## **Easement Acquisition**

The easement acquisition process can be completed by the County in negotiations with Caltrans and private property owners.

## **Design**

The design process, currently at about 20% completion, can proceed at the same time the environmental work is being completed. Next steps include title searches, surveying, review of “as-built” drawings, soil borings, and preliminary bridge design and hydraulic analysis (discussed above). A contract for full design and engineering services could be let out once the environmental process indicates there are no fatal environmental flaws.

## **Permitting**

Preparation of permit applications and requests for permit approvals from the U.S. Army Corps of Engineers, California Department of Fish & Game, Regional Water Quality Control Board, Caltrans, and other entities can be initiated.

## **PHASING**

The ability to construct a project in phases can be an important element because it may allow for agency location of funds over time, rather than all at once. Grant allocations are dispensed annually, but without guarantee of repeat receipt by any one applicant; each year an agency may have to apply for a mixture of different grants. Having the flexibility to hold off construction of less critical project elements until funding is secured is a significant advantage for the sponsoring agency.

Depending on how the environmental review, permitting, and easement acquisition process proceeds, the project could be constructed in two phases. Phase I (Cloveridge to Ontario Staging Area) has fewer implementation issues than the northern segment and would be a functional standalone project. Phase II (Octagon Barn to Cloveridge) could be constructed after the easement and environmental issues are resolved. Potential phasing increments of the Bob Jones Pathway – Phase II, assuming a two-phase process, are shown below.

Completion of Feasibility Study	[completed]
Environmental Review/Permitting/Preliminary Design	
Final PS&E	
Easement Acquisition	
Construction of Phase I	
Planning/Design/Permitting for Phase II	
Construction of Phase II	

The components for each proposed phase of project implementation are described in Table 7.

Table 7. Bob Jones Pathway Preferred Alternative – Project Components

<b><i>Phase I Components:</i></b>
Complete trail improvements from Monte Road to Ontario Road Staging Area
<ul style="list-style-type: none"> <li>▪ Trail improvements along east side SLO Creek from Monte Road terminus to farm road crossing.</li> <li>▪ Replacement of farm bridge with clear-span prefabricated bridge and access ramp.</li> <li>▪ Trail improvements, west side SLO Creek to San Luis Bay Drive.</li> <li>▪ Crosswalk with flashing signals, San Luis Bay Drive.</li> <li>▪ Trail construction San Luis Bay Drive to Hwy. 101 undercrossing.</li> <li>▪ Highway 101 Undercrossing trail segment, designed for seasonal flooding.</li> <li>▪ Undercrossing improvements to withstand seasonal inundation.</li> <li>▪ Access ramp from Highway 101 undercrossing to Ontario Road staging area.</li> <li>▪ Improvements to staging area, Ontario Road, including parking, interpretive display, site furnishings.</li> <li>▪ Minor improvements to Monte Road to increase pedestrian safety for use when trail is seasonally unavailable</li> <li>▪ Mitigation and monitoring associated with Phase I project impacts.</li> </ul>
<b><i>Phase I Easements/encroachment permits needed:</i></b>
<ul style="list-style-type: none"> <li>▪ Caltrans Highway 101 undercrossing</li> <li>▪ Caltrans/property owner “Farm Road Easement” clarification: <ul style="list-style-type: none"> <li>SLO Buddhist Church/Midstate Construction</li> <li>Kruse</li> <li>Villa</li> <li>Rossi</li> <li>SLO Land Conservancy</li> <li>Whitaker</li> <li>Argano</li> </ul> </li> <li>▪ Creekside Farm/Blythe Gable</li> <li>▪ Land Conservancy of SLO County/Devincenzo Property</li> </ul>
<b><i>Phase II Components:</i></b>
<ul style="list-style-type: none"> <li>▪ Cloverridge Drive trail improvements (striping, interpretive sign), connect to existing Class II trail on South Higuera Drive.</li> <li>▪ Vehicle-rated clear span bridge and access ramp across SLO Creek to east side.</li> <li>▪ Trail improvements along east side SLO Creek from Bunnell property to Monte Road</li> <li>▪ Mitigation and monitoring associated with Phase II project impacts.</li> </ul>
<b><i>Phase II Easements/encroachment permits needed:</i></b>
<ul style="list-style-type: none"> <li>▪ Land Conservancy of SLO County/Devincenzo Property</li> <li>▪ Baron Canyon Homeowners Association</li> <li>▪ Bunnell</li> </ul>

<b><i>Phase III Components:</i></b>
▪ Staging area/trailhead improvements in the vicinity of Octagon Barn/Buckley Road extension, including 20 space parking area, benches, signage and restroom.
▪ Crosswalk improvements across South Higuera to future trail segments within SLO City lands.
▪ Class I trail improvements along South Higuera Drive, separated from traveled lanes, preferably at base of existing grade.
▪ Access ramp and clearspan prefabricated bridge over SLO Creek near East Branch, as part of comprehensive creek restoration of this reach.
▪ Class I trail improvements along east side of SLO Creek, in conjunction with comprehensive habitat restoration and bank stabilization program along disturbed reaches.
▪ Clearspan prefabricated bridge and biotechnical bank stabilization, Davenport Creek.
▪ Mitigation and monitoring associated with Phase III project impacts.
<b><i>Phase III Easements/encroachment permits needed:</i></b>
▪ Maino, and/or Caltrans “Channel Change”
▪ Bunnell
▪ City of SLO/Filliponi Ecological Reserve
▪ Morabito
▪ Hayashi
▪ Land Conservancy of SLO County
<b><i>Future Phases:</i></b>
▪ One or two additional staging areas may be added along the trail route, depending upon user demand and trail amenities. If needed, an additional restroom facility would be located at the staging area.
▪ Passive park site furnishings as part of County park development at selected locations
▪ Creek restoration/enhancement program along selected reaches of SLO Creek, with education/interpretive opportunities coordinated with trail development
▪ Completion of segment connecting County portion of trail with City section.

## **COST ESTIMATE**

Cost estimates have been developed to reflect the proposed alignment and alternatives envisioned in this report. Because the estimates have been developed without the benefit of specific design drawings, they are to be considered preliminary and subject to change. Tables 8 and 9 provide a detailed breakdown of the costs consistent for the preferred alignment.

Operating and maintenance costs are shown for a 20-year period. Maintenance costs for the pathway sections are estimated at \$10,000/mile (except for flood-prone areas, which are \$15,000/mile), while the bridge maintenance is about 10% higher. Annual maintenance costs for the project are estimated to run between \$40,000 and \$50,000.

The total estimated capital costs for Phase I: Monte Road to Ontario Staging Area is \$1.1 million. Phase II (Cloveridge to Monte Road) is estimated to be \$900,000. Phase III (Octagon Barn to Cloveridge) costs are estimated at \$2.2 million. The combined cost for the entire project is estimated at \$4.1 million.

Table 8. Phase I Cost Estimate – Monte Road to Ontario Staging Area

ITEM #	DESCRIPTION	QTY	UNIT	PRICE	AMOUNT
<b>General Project Components</b>					
1	MOBILIZATION	LS	LS	\$ 15,000.00	\$ 15,000.00
2	TRAFFIC CONTROL- SL Bay Dr, Monte Rd	LS	LS	4,000.00	4,000.00
3	DEMOLITION	LS	LS	4,000.00	4,000.00
4	UTILITY PROTECTION AND RELOCATION	LS	LS	5,000.00	5,000.00
5	WAYFINDING SIGNS	5	EA	300.00	1,500.00
6	PAVEMENT STRIPING	LS	LS	5,000.00	5,000.00
7	NATIVE PLANT RESTORATION/MITIGATION	20,000	SF	1.00	20,000.00
8	REPLACE FARM BRIDGE SLO CREEK (150FT)	1	EA	175,000.00	175,000.00
9	BOARDWALK/BRIDGE APPROACH	60	LF	200.00	12,000.00
10	CROSSWALK/FLASHERS SL BAY DRIVE	LS	LS	10,000.00	12,000.00
11	ARTICULATED CONCRETE TRAIL/WET AREAS	200	SY	90.00	18,000.00
12	4 FT. FARM FENCE	250	LF	10.00	2,500.00
<b>SUBTOTAL GENERAL ITEMS</b>					<b>\$ 274,000.00</b>
<b>Trail Improvements</b>					
13	EXCAVATION AND GRADING	4500	CY	12.00	54,000.00
14	AGGREGATE BASE (14 FT. WIDE)	126,000	SF	1.00	126,000.00
15	AC PAVING (10 FT. WIDE)	90,000	SF	2.00	180,000.00
<b>SUBTOTAL Trail Improvements</b>					<b>\$ 360,000.00</b>
<b>Highway 101 Undercrossing Trail Structure</b>					
16	EXCAVATION AND GRADING	500	CY	20.00	10,000.00
17	CONCRETE UNDERLAYMENT	250	SY	10.00	2,500.00
18	ARTICULATED CONCRETE TRAIL SURFACE	250	SY	90.00	22,500.00
19	4 FT. FARM FENCE	250	LF	10.00	2,500.00
<b>SUBTOTAL HIGHWAY 101</b>					<b>\$ 37,500.00</b>
<b>Ontario Road Staging Area Upgrade</b>					
20	EXCAVATION AND GRADING	500	CY	12.00	6,000.00
21	ACCESS RAMP TO TRAIL UNDERCROSSING	2,000	SF	5.00	10,000.00
22	AC PAVING – PARKING/TRAILHEAD	6,000	SF	2.00	12,000.00
23	INTERPRETIVE SIGN	2	EA	1,000.00	2,000.00
24	4 FT. FARM FENCE	250	LF	8.00	2,000.00
25	SITE FURNISHINGS-BENCH, TABLE, WASTE RECEPT.	6	EA	1000.00	6,000.00
<b>SUBTOTAL Ontario Road Staging Area Upgrade</b>					<b>\$ 38,000.00</b>
<b>SUBTOTAL CONSTRUCTION COSTS PHASE I</b>					<b>709,500.00</b>
<b>20% CONTINGENCY</b>					<b>141,900.00</b>
<b>LAND/EASEMENT ACQUISITION-assume 5 ac@15,000/ac</b>					<b>75,000.00</b>
<b>PERMITTING</b>					<b>15,000.00</b>
<b>CEQA</b>					<b>25,000.00</b>
<b>FINAL DESIGN AND SPECIFICATIONS , INCL. SURVEYING</b>					<b>70,000.00</b>
<b>KEY POINT CONSTRUCTION OBSERVATION</b>					<b>10,000.00</b>
<b>MITIGATION MONITORING</b>					<b>6,000.00</b>
<b>APPRAISALS/RIGHT OF WAY/LEGAL</b>					<b>35,000.00</b>
<b>TOTAL PHASE I PROJECT ESTIMATE</b>					<b>\$ 1,087,400.00</b>

Table 9. Phase II Cost Estimate – Cloveridge Drive to Monte Road

ITEM #	DESCRIPTION	QTY	UNIT	PRICE	AMOUNT
<b>General Project Components</b>					
1	MOBILIZATION	LS	LS	\$ 15,000.00	\$ 15,000.00
2	TRAFFIC CONTROL-Cloveridge	LS	LS	3,000.00	3,000.00
3	DEMOLITION	LS	LS	2,000.00	2,000.00
4	UTILITY PROTECTION AND RELOCATION	LS	LS	10,000.00	10,000.00
5	WAYFINDING SIGNS	5	EA	200.00	1,000.00
6	PAVEMENT STRIPING	LS	LS	5,000.00	5,000.00
7	NATIVE PLANT RESTORATION/MITIGATION	30,000	SF	1.00	30,000.00
8	150 FT. PREFAB PEDESTRIAN BRIDGE-CLOVERIDGE	1	EA	175,000.00	175,000.00
9	BOARDWALK/BRIDGE APPROACH	60	LF	150.00	9,000.00
10	ARTICULATED CONCRETE TRAIL/WET AREAS	200	SY	90.00	18,000.00
11	4 FT. FARM FENCE	250	LF	10.00	2,500.00
<b>SUBTOTAL GENERAL ITEMS</b>					<b>\$ 270,500.00</b>
<b>Trail Improvements</b>					
12	EXCAVATION AND GRADING	3,000	CY	12.00	36,000.00
13	AGGREGATE BASE (14 FT. WIDE)	77,000	SF	1.00	77,000.00
14	AC PAVING (10 FT. WIDE)	55,000	SF	2.00	110,000.00
<b>SUBTOTAL Trail Improvements</b>					<b>\$ 223,000.00</b>
<b>SUBTOTAL CONSTRUCTION COSTS PHASE II</b>					<b>493,500.00</b>
20% CONTINGENCY					90,000.00
LAND/EASEMENT ACQUISITION-assume 5 ac@15,000/ac					75,000.00
PERMITTING					10,000.00
CEQA					25,000.00
FINAL DESIGN AND SPECIFICATIONS					60,000.00
KEY POINT CONSTRUCTION OBSERVATION					10,000.00
MITIGATION MONITORING					5,000.00
APPRAISALS/RIGHT OF WAY/LEGAL					45,000.00
<b>TOTAL PHASE II PROJECT ESTIMATE</b>					<b>\$ 867,200.00</b>

Table 10. Phase III Cost Estimate – Octagon Barn to Cloverridge Drive and Staging Areas

ITEM #	DESCRIPTION	QTY	UNIT	PRICE	AMOUNT
<b>General Project Components</b>					
1	MOBILIZATION	LS	LS	\$ 15,000.00	\$ 15,000.00
2	TRAFFIC CONTROL-S HIGUERA	LS	LS	3,000.00	3,000.00
3	DEMOLITION	LS	LS	5,000.00	5,000.00
4	UTILITY PROTECTION AND RELOCATION	LS	LS	15,000.00	15,000.00
5	WAYFINDING SIGNS	10	EA	200.00	2,000.00
6	PAVEMENT STRIPING	LS	LS	10,000.00	10,000.00
7	NATIVE PLANT RESTORATION/MITIGATION	50,000	SF	1.00	50,000.00
8	200 FT. PEDESTRIAN BRIDGE-EAST BRANCH	1	EA	200,000.00	200,000.00
9	60 FT PEDESTRIAN BRIDGE-DAVENPORT CREEK	1	EA	60,000.00	60,000.00
10	BOARDWALK/BRIDGE APPROACH	100	LF	150.00	15,000.00
11	CROSSWALK/FLASHERS S HIGUERA	LS	LS	12,000.00	12,000.00
12	ARTICULATED CONCRETE TRAIL/WET AREAS	300	SY	90.00	27,000.00
13	4 FT. FARM FENCE	500	LF	10.00	5,000.00
<b>SUBTOTAL GENERAL ITEMS</b>					<b>\$ 419,000.00</b>
<b>Trail Improvements</b>					
14	EXCAVATION AND GRADING	5000	CY	12.00	60,000.00
15	AGGREGATE BASE (14 FT. WIDE)	130000	SF	1.00	130,000.00
16	AC PAVING (10 FT. WIDE)	95000	SF	2.00	190,000.00
<b>SUBTOTAL Trail Improvements</b>					<b>\$ 380,000.00</b>
<b>Octagon Barn Staging Area</b>					
17	EXCAVATION AND GRADING	400	CY	12.00	4,800.00
18	AC PAVING – PARKING/TRAILHEAD 20 CARS	6,000	SF	2.00	12,000.00
19	PEDESTRIAN CROSSING SYSTEM- S. HIGUERA	1	EA	10,000.00	10,000.00
20	INTERPRETIVE SIGN	2	EA	1,000.00	2,000.00
21	4 FT. FARM FENCE	500	LF	10.00	5,000.00
22	SITE FURNISHINGS-BENCH, TABLE, WASTE RECEPT.	6	EA	1,000.00	6,000.00
23	SELF CONTAINED RESTROOM	1	EA	40,000.00	40,000.00
<b>SUBTOTAL OCTAGON BARN STAGING AREA</b>					<b>\$ 79,800.00</b>
<b>Cloverridge Area Trailhead</b>					
24	EXCAVATION AND GRADING	150	CY	12.00	1,800.00
25	AC PAVING – PARKING/TRAILHEAD 10 CARS	4000	SF	2.00	8,000.00
26	INTERPRETIVE SIGN	1	EA	1,000.00	1,000.00
27	4 FT. FARM FENCE	600	LF	10.00	6,800.00
28	SITE FURNISHINGS-BENCH, TABLE, WASTE RECEPT.	3	EA	1,000.00	3,000.00
<b>SUBTOTAL Cloverridge Area Trailhead</b>					<b>\$ 21,800.00</b>
<b>Monte Road Trailhead/Passive Park Area Improvements</b>					
Item #	DESCRIPTION	QTY	UNIT	PRICE	AMOUNT
29	EXCAVATION AND GRADING	500	CY	12.00	6,000.00
30	20 FT. ACCESS ROAD	5,000	SF	2.00	10,000.00
31	AC PAVING – PARKING/TRAILHEAD 20 CARS	6,000	SF	2.00	12,000.00
32	INTERPRETIVE SIGN	2	EA	1,000.00	2,000.00
33	4 FT. FARM FENCE	500	LF	10.00	5,000.00
34	SITE FURNISHINGS-BENCH, TABLE, WASTE RECEPT.	6	EA	1,000.00	6,000.00
<b>SUBTOTAL Monte Road Passive Park</b>					<b>\$ 41,000.00</b>
<b>SLO Creek Restoration</b>					
35	EXCAVATION AND GRADING	15,000	CY	12.00	180,000.00
36	BIOTECHNICAL SLOPE STABILIZATION	500	LF	100.00	5,000.00
37	CREEK FISH ENHANCEMENT IMPROVEMENTS	LS	LS	50,000.00	50,000.00
38	NATIVE PLANT RESTORATION/BUFFER PLANTING	95,000	SF	1.00	95,000.00
39	4 FT FARM FENCE	2500	LF	10.00	25,000.00
<b>SUBTOTAL SLO Creek Restoration</b>					<b>355,000.00</b>
<b>SUBTOTAL CONSTRUCTION COSTS, PHASE II</b>					<b>1,296,660.00</b>
<b>20% CONTINGENCY</b>					<b>259,332.00</b>
<b>LAND/EASEMENT ACQUISITION—assume 25 acres @15,000</b>					<b>375,000.00</b>
<b>PERMITTING</b>					<b>20,000.00</b>
<b>CEQA</b>					<b>30,000.00</b>
<b>FINAL DESIGN AND SPECIFICATIONS</b>					<b>100,000.00</b>
<b>KEY POINT CONSTRUCTION OBSERVATION</b>					<b>15,000.00</b>
<b>MITIGATION MONITORING</b>					<b>15,000.00</b>
<b>APPRAISAL/RIGHT OF WAY/LEGAL</b>					<b>55,000.00</b>
<b>TOTAL PHASE III PROJECT ESTIMATE</b>					<b>\$ 2,165,992.00</b>

## RECOMMENDED PLANNING AND DESIGN STANDARDS

This section provides specific design and implementation guidelines and standards to ensure that the preferred project is constructed to a consistent set of the highest and best standards currently available in the United States. Planning, design, and implementation standards are derived from the following sources:

- Caltrans: Highway Design Manual (Chapter 1000: Bikeway Planning and Design)
- Americans with Disabilities Act (ADA)
- AASHTO: A Policy on Geometric Design of Highways and Streets
- Manual of Uniform Traffic Control Devices
- USDOT/FHWA: Conflicts on Multiple-Use Paths
- ITE: Design and Safety of Pedestrian Facilities

If the Bob Jones Pathway will be funded from transportation sources, it will need to conform to Caltrans standards for a Class I bike path. Caltrans has developed specific design guidelines in the Highway Design Manual for Class I multi-use paths. Off-road portions of the Bob Jones path will be designed to Class I standards wherever possible. These standards are intended to be a guide to engineers in their exercise of sound judgment in the design of projects. Design standards should meet or exceed the Caltrans standards to the maximum extent feasible. Lower standards may be used “when such use best satisfies the concerns of a given situation.” Mandatory design standards “are those considered most essential to achievement of overall design objectives. Many pertain to requirements of law or regulations such as those embodied in the FHWA’s controlling criteria.” Mandatory standards are identified in Chapter 1000 of the Highway Design Manual with the use of bold text and the word “shall.”

Advisory standards are important but allow for greater flexibility and are both underlined and identified by the word “should.” Permissive standards are identified by the words “should” or “may” and can be applied at the discretion of the project engineer. Controlling Criteria, as defined by the FHWA, consists of 13 specific criteria to be used in the selection of design standards. They are: (1) design speed, (2) lane width, (3) shoulder width, (4) bridge width, (5) horizontal alignment, (6) vertical alignment, (7) grade, (8) stopping sight distance, (9) cross slope, (10) super elevation, (11) horizontal clearance, (12) vertical clearance, and (13) bridge structural capacity.

Except for mandatory Caltrans and ADA standards, all design guidelines must be considered as simply design resources for the project, to be supplemented by the reasonable judgment of professionals. The following sections establish the basic design parameters as developed by Caltrans. Mandatory standards are shown in bold face.

## Path Width

**The recommended minimum width for paved multi-use paths in California is eight feet, with two feet of lateral clearance and ten feet of vertical clearance** (see Figure 1). If the path is projected to have higher volumes of bicyclists and others, or if maintenance vehicles will be using the path on a regular basis, a minimum width of 10 feet is recommended with the same lateral and vertical clearances. The Bob Jones Pathway project is recommended to be an eight- to 10-foot wide asphalt concrete (AC) paved section with three-foot wide unpaved shoulders made of a compacted surface (native material or decomposed granite) wherever possible. The shoulders are located on each side of the paved surface to accommodate joggers and others who prefer a softer surface. A two percent cross slope for drainage should be provided on all path segments. The existing Bob Jones Pathway between Avila Beach and Ontario Road staging area is eight feet wide with three-foot shoulders.



## Intersections and Crossings

The preferred alignment has several roadway or driveway crossings that will require special design treatment. This includes:

- A. Access into Octagon Barn Trail Head: bicyclists arriving at the trail head at the Octagon Barn Trail Head southbound from San Luis Obispo on South Higuera will need to merge across the road. Advance warning signs and lower posted speed limits should be provided, but no crosswalk is required.
- B. Cloveridge Road: the trail uses a short portion of Cloveridge Road as part of its alignment. At this point, users will be transitioning from a Class I bike path to a Class III bike route and then back to a bike path. Adequate warning, guidance, and directional signs need to be provided.
- C. San Luis Bay Drive: the trail crosses this low-density roadway. Appropriate treatments for a mid-block uncontrolled intersection need to be used here.

In general, crossings should occur at established pedestrian crossings wherever possible, or at locations completely out of the influence of intersections. Path approaches at intersections should always have Stop or Yield signs to minimize conflicts with autos. Crossing signs may be placed in advance of path crossings to alert motorists. Ramps should be placed on sidewalk curbs for bicyclists and to meet ADA requirements.

Road crossings from separated paths require two critical considerations: (1) path users will be enjoying an auto-free experience and may enter into an intersection unexpectedly, and (2) motorists will not expect to see bicycles or pedestrians shooting out from an unmarked location into the roadway. In most cases, path crossings at-grade can be properly designed to a reasonable degree of safety and to meet existing traffic and safety standards.

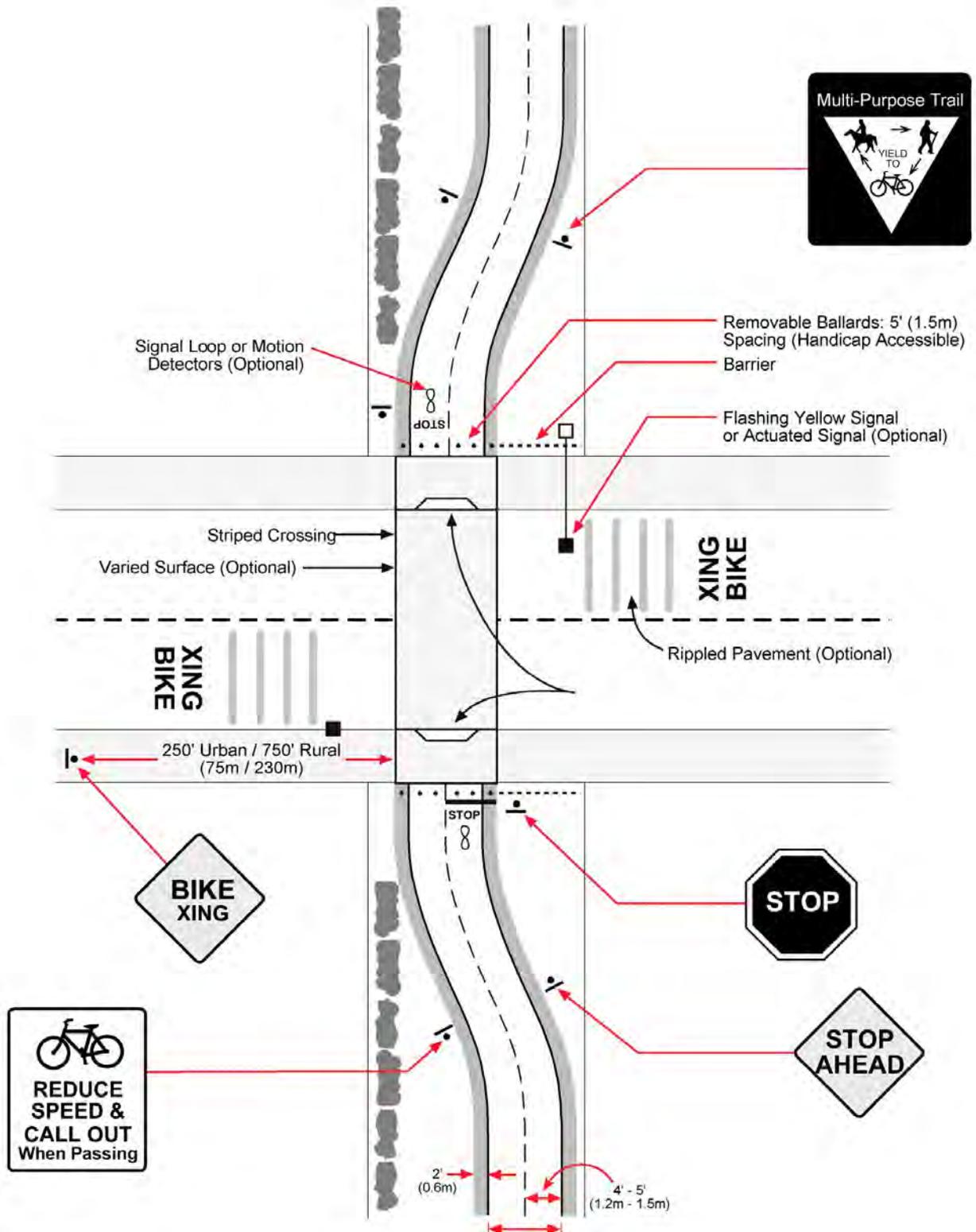


Figure 1. Unprotected Road Crossing

## *Standard Crossing Features*

This section summarizes some of the key attributes of all path crossings.

### **Signing**

Crossing features for all roadways include warning signs both for vehicles and path users. The type, location, and other criteria are identified in the *Manual for Uniform Traffic Control Devices* (MUTCD) and the Caltrans *Highway Design Manual*. Consideration must be given for adequate warning distance based on vehicle speeds and line of sight, with visibility of any signing absolutely critical. Catching the attention of motorists jaded to roadway signs may require additional alerting devices such as a flashing light, roadway striping, or changes in pavement texture. Signing for path users must include a standard “STOP” sign and pavement marking, sometimes combined with other features such as bollards to slow bicyclists. Care must be taken not to place too many signs at crossings lest they begin to lose their impact.

Directional signing may be useful for path users and motorists alike. For motorists, a sign reading “Path Xing” along with a path emblem or logo helps both warn and promote use of the path itself. For path users, directional signs and street names at crossings help direct people to their destinations. Care should be taken to keep vegetation and other obstacles out of the view line for motorists and path users.

### **Striping**

A number of striping patterns have emerged over the years to delineate path crossings. A median stripe on the path approach will help to organize and warn path users. The actual crosswalk striping is a matter of local and state preference, and may be accompanied by pavement treatments to help warn and slow motorists. The effectiveness of crosswalk striping is highly related to local customs and regulations. In communities where motorists do not typically defer to pedestrians in crosswalks, additional measures may be required.

### **Design Speed**

**The minimum design speed for multi-use paths is 20 miles per hour**, except on sections where there are long downgrades (steeper than four percent, and longer than 500-feet). Actual posted speed limits may be lower as appropriate. **Speed bumps or other surface irregularities should never be used to slow bicycles.**

### **Horizontal Alignment**

Recommended curve radii and super elevations should conform to Caltrans HDM chapter 1000 specifications, along with recommended stopping distances.

### **Path Construction**

Multi-use path construction (as shown in Figure 2) should be conducted in a similar manner as roadway construction, with sub-base thickness to be determined by soils condition and soft, wet, or expansive soil types requiring special structural sections. Minimum asphalt thickness should be two inches of Type A or Type B as described by Caltrans Standard Specifications, with a six-inch thick Class 2 aggregate base. In areas on the path where there is expected to have regular use by patrol or maintenance vehicles, three-inch thick asphalt concrete may be suitable.

## **Path Construction – Floodplains**

Where the pathway is proposed to be constructed on a floodplain and be exposed to flooding on an annual or five-year basis, it should be constructed of concrete with sufficient thickness and an to withstand the weight of grading machinery needed to scrape debris and sediment off the surface. Articulated concrete pavement is a system that consists of concrete block connected with steel cable for strength and resistance to flood flows. This is commonly used for boat ramps, shoreline protection, and other wet conditions. This material is proposed for use at the Highway 101 undercrossing as well as at the project bridge approaches and other seasonally wet areas, if appropriate. Pathways that are exposed to scouring action should be constructed with sufficient edge walls or subsurface keyways to protect against scouring action and undermining. Barriers to minimize root intrusion into the trail section will be needed where the trails are close to the riparian corridor. Any railings or other obstructions should be avoided, and when necessary, designed to seasonally removable or to breakaway or fold so as to minimize impact to flood capacity.

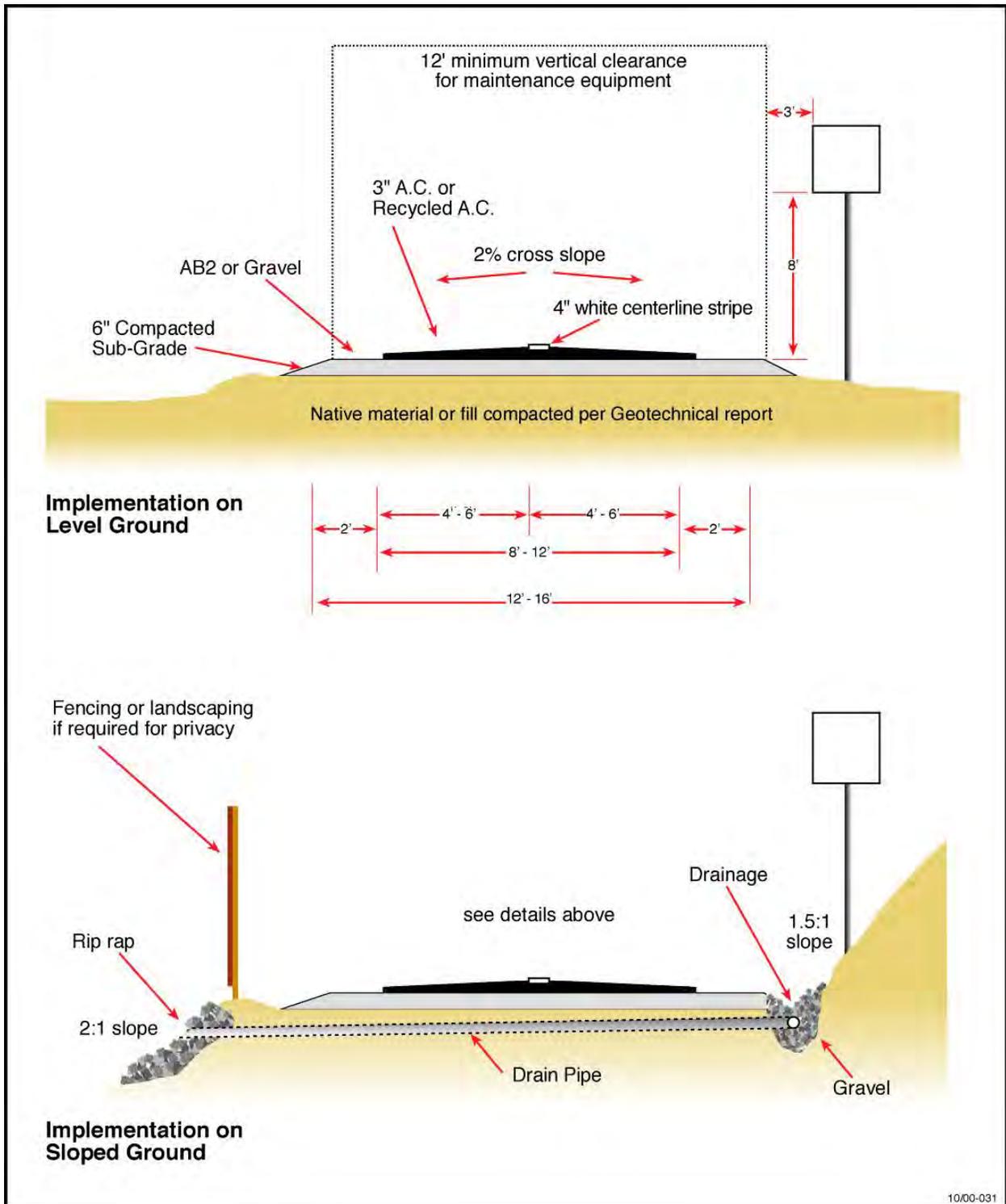


Figure 2. Multi-Use Path Cross Section

## Bridges

The preferred alignment will require four bridges, two during Phase I and two in Phase II, as described below.

### 1. San Luis Obispo Creek Crossing South of Cloverridge at the Bunnell Property (Phase I):

A pre-fabricated steel bridge with an approximately 125-foot long span, 12-feet wide, vehicular rated would be the preliminary recommendation. The bridge low cord or bottom member would need to be at least three feet above the 100-year flood elevation to provide clearance for debris passage. If the 100-year flood elevation is five to seven feet above the floodplain elevation, which is common along this reach of creek, then the bridge deck would be elevated about 10 to 12 feet. This would then require a long access ramp to transition from the trail to the elevated bridge. The access ramp itself would need to be carefully oriented and designed so that it also does not block creek flow.

One potential bridge design to meet the structural requirements of this relatively long span would be a “through-box system”, which utilizes overhead framing to provide structural support and wind resistance. This bridge style minimizes below-deck structures, and provides maximum creek clearance for flood flows. This design is effective for clear spans up to 250 feet long. Abutments would be placed out of the riparian corridor, with pier supported boardwalk landings and/or culverted approach ramps to minimize floodplain impacts. The approaches to the bridge could be on a low fill with sufficient height to withstand up to a 10-year flood event and numerous large pipes to allow sufficient cross flow. The approach to the bridge could also be on a boardwalk. Either of these two options may not be acceptable from a flood hazards perspective, and requires a more detailed hydraulic analysis associated with preparing a preliminary bridge design. Finally, the approach could be at grade and designed to withstand major flood events. This last approach would result in closures of the trail when the valley floor flooded, which may be acceptable. Any railings within the floodway would need to be designed to either be removed seasonally or to fold in flood conditions.

### 2. San Luis Obispo Creek Crossing at the Old Farm Bridge (Phase I):

This existing redwood plank farm bridge (approximately 50 feet long) appears to be re-usable as a pathway bridge, although it needs to be inspected by a structural engineer. The existing structure does not meet current floodplain management requirements, utilizes creosote-coated wood piling abutments within the creek channel, and is flooded annually. While this structure could be retrofitted with breakaway or seasonally removable railings to provide access along the preferred alignment, it is recommended that this structure be replaced with a clearspan prefabricated structure. This would provide environmental benefits, since the existing structure utilizes timbers within the creek channel, and the new structure would span the creek at a higher elevation. A ramp/landing would be designed to allow the passage of flood flows.

The farm bridge could be moved up or downstream slightly, but the current location and alignment appears to have been well selected historically in a narrow, more stable section of the creek, and replacement here with a clear span structure would be in an already disturbed location

near Monte Road, and would be beneficial in removing the treated wood from the stream water column.

### **3. East Branch Creek Crossing at Filliponi Ecological Preserve (Phase II):**

The preferred alignment crosses the lower reach of the East Branch of SLO Creek at the Filliponi Ecological Preserve, just downstream of its confluence with SLO Creek. This area contains exposed pipelines and an altered alignment. This low area is also within an active floodplain and water ponds here during the winter, creating persistent wet conditions. The south side of East Branch is already elevated along an old oil pipeline route that was cut into a bedrock shelf here, so the bridge would need to be elevated both to be above flood waters and to meet grade on the south side. An elevated ramp or boardwalk would also be needed to connect to the bridge structure on the north side, with the structure up to 200 feet long. This raised boardwalk/elevated bridge structure would need to be carefully designed and sited to avoid creating upstream/downstream hydraulic impacts, and withstand the stresses imposed on it by frequent high creek flood flows.

Some creek and channel restoration work could be completed in conjunction with bridge installation to mitigate for potential impacts associated with abutment construction and stabilize this head cutting area.

The alternative trail alignment on the north of South Higuera Street would have the trail pass under the South Higuera Street Bridge on its northeast side and then connect into the proposed East Branch bridge crossing as described above. The ramping in this design would be even more challenging, as the trail would need to be lowered to pass under the existing bridge, and then quickly ramp up to connect to the elevated East Branch bridge structure. Some clearing work has been completed in this area recently associated with the seismic retrofit to the South Higuera bridge crossing of SLO Creek.

### **4. Davenport Creek (Phase II):**

This bridge would cross a highly eroded stream channel (Davenport Creek) near the confluence with SLO Creek. Davenport Creek is actively eroding and head cutting in this area. Some creek restoration and channel stabilization work would need to be completed to reestablish the channel and correct the head cutting and exposed oil pipelines in the area. The prefabricated bridge would need to span 40-60 feet depending on the restoration design.

Two additional bridge locations were considered when evaluating alternative alignments:

#### **San Luis Obispo Creek Crossing at South Higuera Street:**

If a trail route were selected on the west side of SLO Creek along South Higuera, (trail located between S. Higuera St. and SLO Creek) then a new bridge next to the South Higuera bridge would be needed. A pre-fabricated steel or concrete bridge or concrete cast-in-place bridge with approximately a 250-foot long span would be located directly adjacent to the South Higuera Street Bridge. No new support columns would be provided within the flood zone or riparian corridor. It may be possible to select a lightweight steel structure that is partially supported by the existing structure, although this requires further review.

This alternative was not considered further as use of this possible crossing would put trail users on the “wrong side” of SLO Creek, forcing an additional creek crossing further downstream. The ROW along S. Higuera Street and SLO Creek is severely constrained in this area, especially about 1,000 feet downstream of the South Higuera Bridge, and in the Cloverridge on-ramp and off-ramp areas.

### **San Luis Obispo Creek Crossing at San Luis Bay Drive**

Under Alternatives 4B and 4C, a new bridge across the creek adjacent to San Luis Bay Drive will be needed. A prefabricated bridge approximately 80 feet in length would span the channel without intruding into the channel. Since it would be located adjacent to an existing bridge, it is unlikely to cause any additional flooding, however, it would need to be designed to withstand flooding without breaking away due to the proximity of the existing bridge. The existing vehicular bridge on San Luis Bay Drive has insufficient width to provide bike lanes, however, it might be possible to retrofit the existing structure to provide a sidewalk on one side.

### **Drainage**

A minimum two percent cross slope is recommended for adequate drainage of the path on all sections. The pathway may cross drainage swales over its length, which would require use of culverts, boardwalks, or articulated concrete pavement through seasonally wet areas. Where possible, wet areas should be avoided and the trail routed around such areas. Lateral drainage ditches and drainage pipes leading to the creek will need to be designed and sized appropriately to avoid normal events from causing water flow over the surface of the trail. Since flood events will overwhelm these facilities, all ditches and pipes should be over-sized and designed to be easily cleaned after major floods.

### **Barrier Posts**

Posts at path intersections and entrances may be necessary to keep vehicles from entering. Posts should be designed to be visible to bicyclists and others, especially at night, with reflective materials and appropriate striping. Posts should be designed to be easily moveable by emergency vehicles, such as bollards or a half gate and bollard. See Figures 3 and 4.

### **Signing, Markings, and Traffic Control Devices**

**Uniform signs, markings, and traffic control devices shall be used per section 2376 of the Streets and Highways Code.** Multi-use path signing and markings should follow the guidelines as developed by Caltrans and the Manual on Uniform Traffic Control Devices. This includes advisory, warning, directional, and informational signs for bicyclists, pedestrians, and motorists. The final striping, marking, and signing plan for the path should be reviewed and approved by a licensed traffic engineer or civil engineer. Designs which deviate from the mandatory Caltrans design standards **shall** be approved by the Chief, Office of Project Planning and Design, or to delegated Project Development Coordinators. These standards represent the basic guidelines set forth by Caltrans. There are many conditions that are not explicitly covered in the Caltrans or AASHTO guidelines.

Collapsible bollards are appropriate at trail locations where access control is important but regular entry is anticipated by maintenance, law enforcement, or emergency services vehicles. The bollards can be quickly folded to ground level, providing sufficient clearance for even low vehicles. Current models are operable with a simple wrench/key device. Collapsible bollards can be substituted for fixed bollards at any trail location.

Photo Image

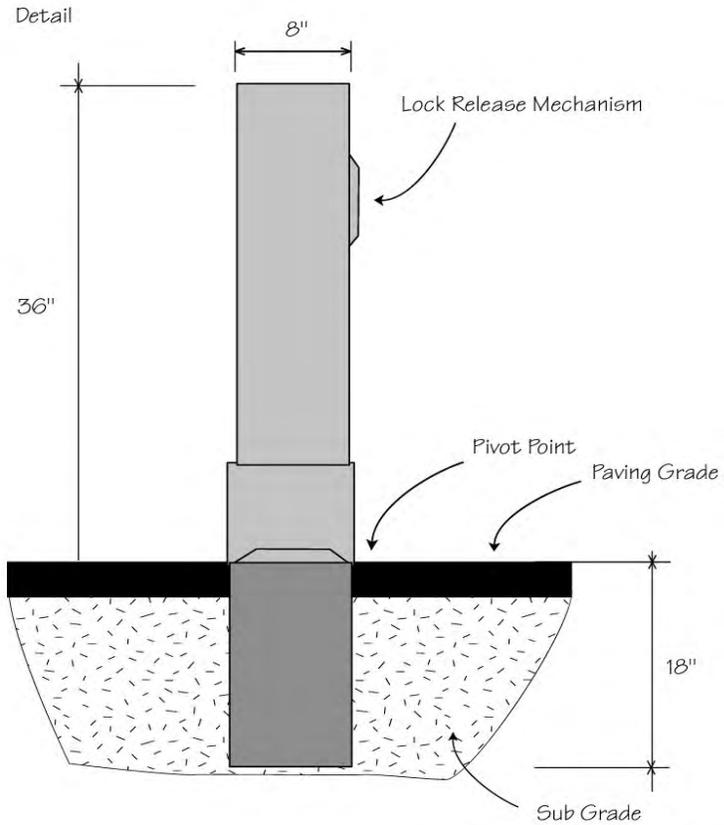


Figure 3. Collapsible Bollard

Fixed bollards are utilized at trailheads, neighborhood access points and trail intersections where vehicular access to the trail is prohibited. Bollards can be very helpful in urban and suburban areas for keeping unwanted vehicles off of highly used trails, thereby preserving the safety of its users. In rural locations where there is easy access to trails from adjacent lands, bollards may not serve a meaningful purpose.

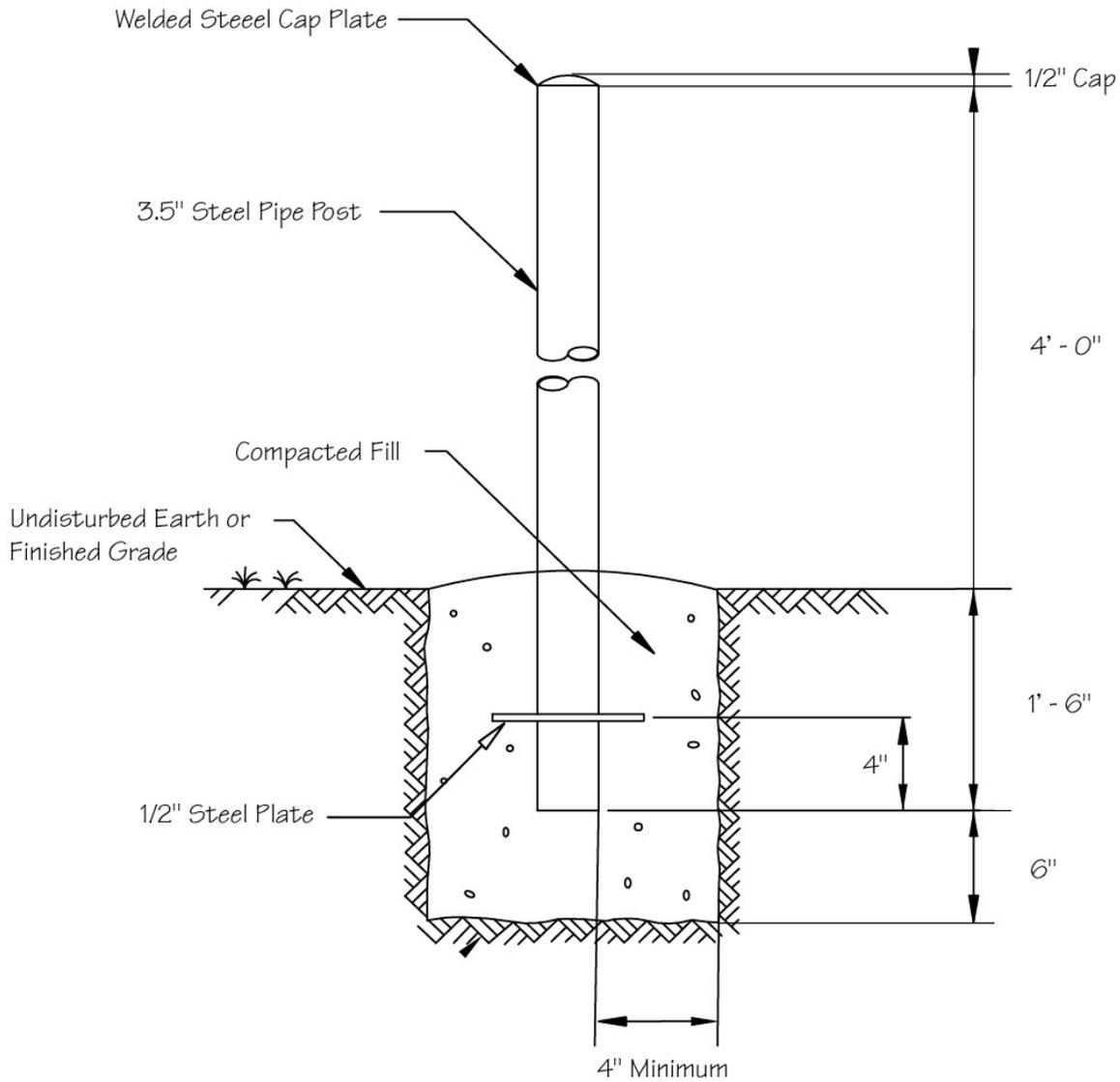


Figure 4. Fixed Bollard

In general, all signs should be located two to four feet from the edge of the paved surface, have a minimum vertical clearance of 8.5 feet when located above the path surface and be a minimum of four feet above the path surface when located on the side of the path. All signs should be oriented so as not to confuse motorists. The designs (though not the size) of signs and markings should be the same as used for motor vehicles.

## **Fencing and Barriers**

Fencing and other barriers are typically used to separate a path from adjacent private property and land uses. Much of the Bob Jones Pathway will be located adjacent to privately owned farmland, and may need to be fenced to keep trail users from wandering onto this property. A variety of fencing materials are available, as shown in Figure 5. The following are important considerations when selecting fencing or barriers:

### *Aesthetic*

Depending on the type and height of the barrier, the aesthetics of a path could be impacted by eliminating or reducing views and visibility, and otherwise creating a “bowling alley” effect for users. Fencing materials should also contribute - rather than detract - to the overall community aesthetics. Selection of fencing type and height could impact the overall attractiveness of the facility. For example, lower wooden fencing may be provided on the creek side of the pathway near sensitive areas to help prevent dogs from entering, but preserving views.

Fencing between the path and adjacent land uses can protect the privacy and security of the property owners. While crime or vandalism have not proven to be a common problem along most multi-use paths, fencing is still considered a prudent feature especially in some residential areas. The type, height, and maintenance responsibility of the fencing is dependent on local policies. Where adjacent to active farm lands, it is recommended that standard barbed wire fencing be provided along with appropriate “No Trespassing” signing.

An allowance for fencing is included in the cost estimates for this project, based on the use of four-foot high farm style 4 or 5 strand wire fencing. Use of wood or other decorative fencing is two to three times more expensive than simple wire fencing and should be reserved for staging areas or other locations that are visually significant. Potential types of fencing are shown on the following page.

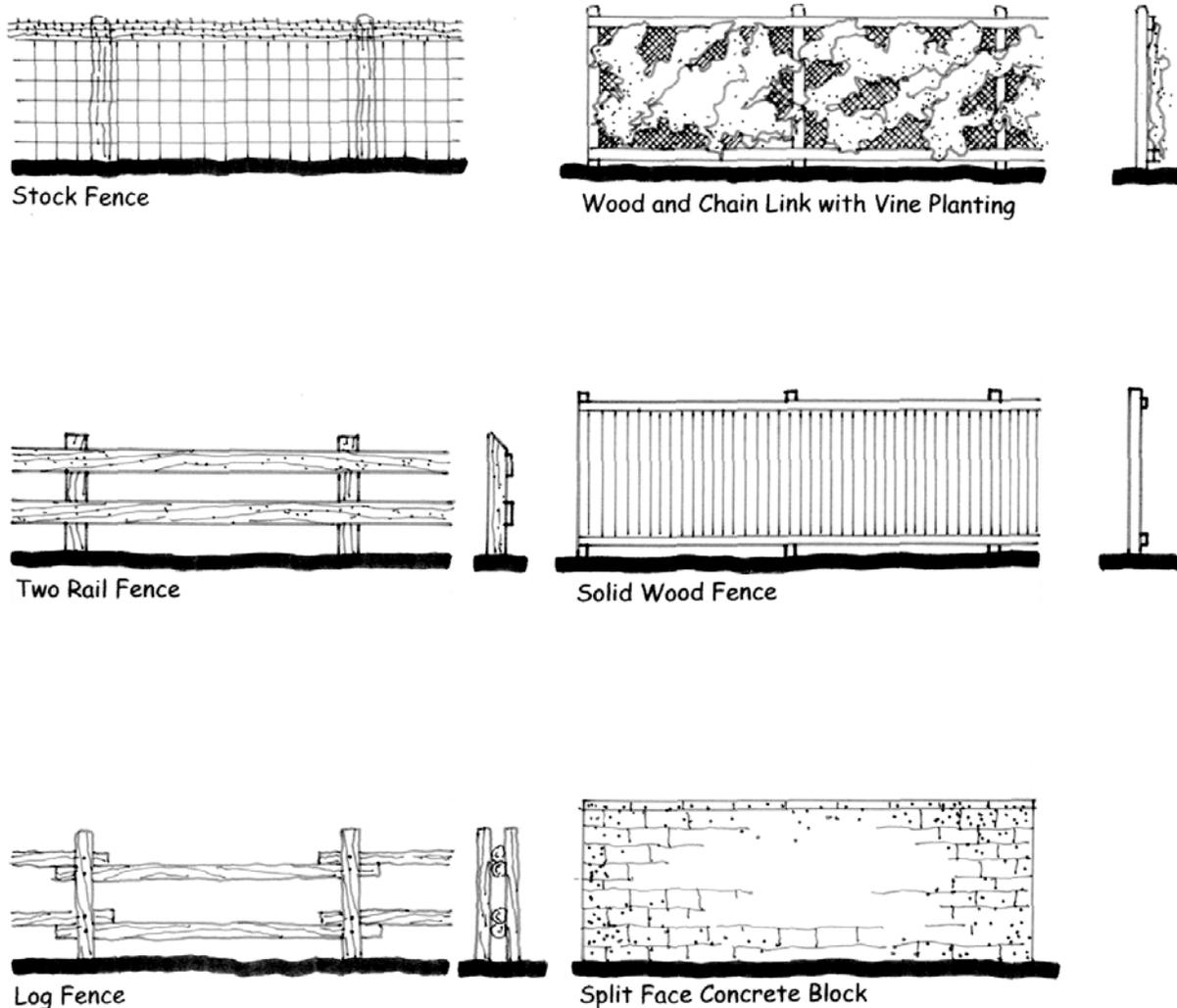


Figure 5. Fence Types

### Grades

The preferred Bob Jones Pathway alignment will be designed to a maximum gradient of 8.3% with appropriate landings to reflect Americans with Disabilities Act (ADA) recommendations. While both Caltrans “Chapter 1000 (Planning and Design of Bikeways)” and AASHTO’s *Guide for the Development of Bicycle Facilities* states that grades up to 10% are allowable for shorter distances on bike paths, the application of ADA standards on multi-use paths is less clear. The State has started requiring that all multi-use paths meet ADA standards under the expectation that they will be used by both bicycles and pedestrians. Steeper grades, up to 8.3%, can be used with intermittent landings, although these are generally inappropriate for pathways with bicycle use because they can cause a bicyclist to lose control. The 8.3% grade has been recommended as a maximum for use only on individual ramps between path segments.

## Utilities and Lighting

Surface and sub-surface utilities may be located within the right of way (including the Unocal Oil pipeline), impacting the location and construction of the path. Utilities can include active and abandoned communication cables, signal and communication boxes, fiber optic cables, water and sewer lines, gas and petroleum lines, and telephone lines. The right-of-way path section will be designed to avoid having to move most active surface utilities. The path may be located directly over existing sub-surface utilities assuming (a) adequate depth exists between the path surface and utility to prevent damage, and (b) agreements can be reached with the utility owner regarding access for repairs and impact to the path.

For environmental purposes, the Bob Jones Pathway – Phase II is not proposed to have new lighting.

## Entrance Features

The Octagon Barn Trailhead is proposed to include a parking lot with sufficient capacity for the proposed pathway. Based on our demand projections, there will be a demand for approximately 50 parking spaces at this location. Signs for overflow parking at the Ontario Trailhead should be provided. The existing trailhead or parking area at the Ontario Road Trailhead will also serve as a trailhead for the project. However, no specific improvements are included in the plans or cost estimates for this area. Depending on available resources and local support, the Bob Jones Pathway may contain a variety of support facilities such as:

### *Path Entries*

The path will draw substantial numbers of users during peak times. Path users could be directed to specific path entries where parking and other amenities are provided, helping to relieve some of the pressure on residential and commercial areas. Path entries may also contain drinking fountains, telephones, restrooms, bike lockers, and other features. They should be accessible by transit service.

### *Bollards*

A single 48-inch wood or metal bollard (post) should be placed on the centerline of the path at all entrances to prevent motor vehicles from entering the path. The bollard should be designed with high reflective surfaces and be brightly painted. The bollard should be locked to a ground plate and be easily removed by emergency vehicles. Collapsible bollards are another option.

### *Entrance Characteristics*

The path alignment should have a sharp (20' or less radius) curve at all roadway intersections to help slow bicycles. Entrance signs should include regulations, hours of operation (if any), and path speed limit. Entrance signs may also include sponsorships by local agencies, organizations, and/or corporations. Signs may be placed at the entrances or at appropriate locations along the path that provide brief descriptions of historic events or natural features (see Figure 6).

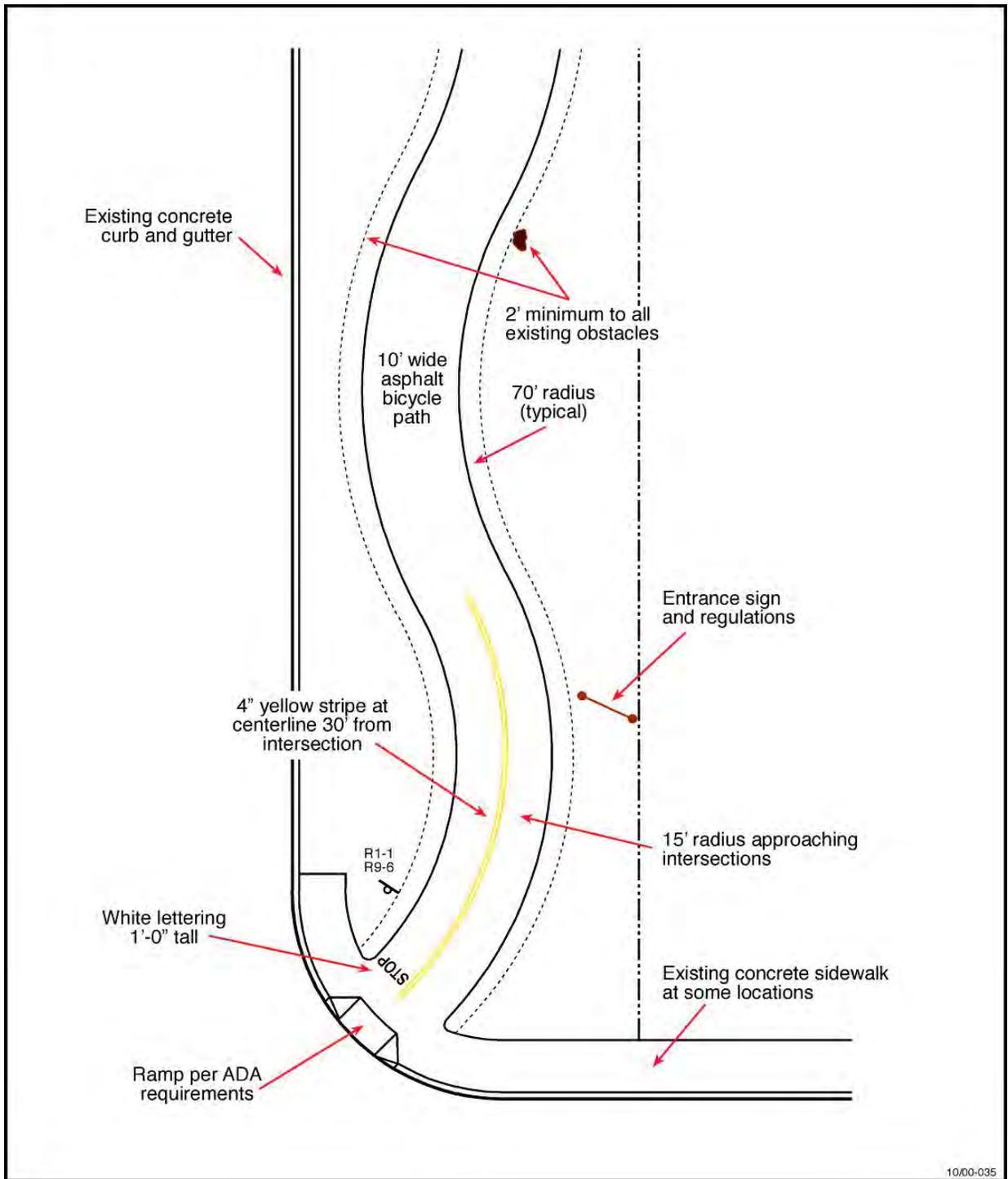


Figure 6. Path Entry Characteristics

## Landscaping and Environmental Restoration

Landscaping is not specifically planned along the path, although a widened and landscaped right of way could be considered for the preferred trail section along the existing farm field between the Octagon Barn and the Filipponi Ecological Preserve in Phase II. The right-of way segments are intended to benefit from the existing natural vegetation, and native plants may be planted to replace items lost during construction, to help stabilize slopes, or to help protect the privacy of adjacent parcels. Plantings such as vines on fencing may be employed to provide privacy for adjacent property owners.

Restoration planting with native riparian species will be incorporated into the project to mitigate for potential construction impacts, and to provide shading, buffering or separation from adjacent uses as needed. Some bank repair and creek restoration may be needed in conjunction with bridge installation and trail crossings of identified wetland areas. The cost estimate includes a line item for anticipated creek restoration, wetland mitigation and other environmental restoration features. This estimate is preliminary and will need to be updated following completion of CEQA review and project permit negotiations with regulatory agencies.

## Operations and Maintenance

Operations and maintenance of the Bob Jones Pathway is of utmost importance for the productive use of the facility, and the financial and liability resources of the County. Some portions of the path may represent new or unusual operations and maintenance costs or practices for the County, especially trails located within the annual flood plain. Some of these areas are identified below.

### *Operations*

Operation activities on the path will consist primarily of monitoring and security. Monitoring accidents including identifying the primary cause and rectifying any physical deficiencies must be accomplished by the County. The local police department typically has the responsibility for collecting accident information identifying fault, while the County has the responsibility for identifying and improving physical or operational conditions that may have contributed to the accident. The County typically also has the responsibility for making the determination to warn path users of problems, and to close the path when conditions warrant.

### *Flood Conditions*

Pathways, just like roadways, are commonly constructed in flood zones. Just like a road, all pathway entry points should include the sign “Subject to Flooding: Use at Your Own Risk.” A “Do Not Enter if Flooded” sign should be placed wherever the trail is subject to annual or 10-year or less events. Flash flood conditions are not considered severe or fast enough to be a safety consideration on the proposed alignments, since users will be warned not to enter any trail that is currently flooded, and it is extremely unlikely that waters would rise fast enough not to allow someone on the trail to easily walk to higher ground if water did come onto the trail. In the event of a major flood, the County should place wooden barriers at the entry points to the flooded sections with a sign reading “Trail Closed.” The area of highest concern is the trail undercrossing at the Highway 101 bridge. Additional consideration is warranted regarding how to appropriately sign, warn, and close this crossing point.

## Security

Most multi-use paths in the United States do not have a dedicated police patrol of the facility. The County should provide routine police or ranger patrols on all of its multi-use paths, including the Bob Jones Pathway. As a rule of thumb, a multi-use path such as the Bob Jones Pathway with average usage or greater will require one man-hour per day for every five miles of path. This translates into less than about one man-hour/day for the Bob Jones Pathway Phase II segment. This figure would also vary by time of week and year. Off-peak weekdays may require only 0.2 man-hours/day, while peak weekends may require a full 1 man-hour/day.

A summary of key security recommendations is presented below.

- a. Make all path segments located more than 100' from public roads accessible to emergency vehicles.
- b. Illuminate all grade crossings.
- c. Trim all woody vegetation at least 10 feet from the path where possible to maximize visibility and reduce fire hazard.
- d. Provide bicycle racks and lockers at key destinations that allow for both frame and wheels to be locked.
- e. Provide fire and police departments with map of system, along with access points and keys/combinations to gates/bollards.
- f. Enforce speed limits and other rules of the road.
- g. Design the U.S. 101 under crossing so as to discourage loitering, such as cementing rocks to places people might want to rest.

## Maintenance

Maintenance of the Bob Jones Pathway will include the following regular activities:

<b><u>Item</u></b>	<b><u>Frequency</u></b>
Sign replacement/repair.....	1-3 years
Pavement marking replacement .....	1-3 years
Tree, Shrub, & grass trimming/fertilization .....	5 months- 1 year
Pavement sealing/potholes.....	5-15 years/30-40 years for concrete
Clean drainage system .....	1 year
Pavement sweeping.....	Monthly - annually as needed
Shoulder and grass mowing .....	as needed
Trash disposal .....	as needed
Lighting replacement/repair .....	1 year
Graffiti removal .....	Weekly - monthly as needed
Maintain furniture .....	1 year
Fountain/restroom cleaning/repair .....	Weekly - monthly as needed
Pruning .....	1-4 years
Remove fallen trees .....	As needed
Weed control.....	Monthly - as needed
Maintain emergency telephones .....	1 year
Clean Debris/Sediment from Trail Check weekly in winter	

Many of these maintenance items are dependent on the type and amount of supporting infrastructure that is developed along the path.

### *Pesticide/Herbicide/Fungicide Use*

The Environmental Protection division of the San Luis Obispo County Department of Agriculture/Weights and Measures conducts a comprehensive program in pesticide use enforcement to help protect the public's health and the environment. Information obtained from the Department of Agriculture shows that ground-applied pesticide, herbicide, and fungicide use is common near the Bob Jones Pathway. Because there are potential health risks associated with pesticide, herbicide, and fungicide exposure, landowners adjacent to the Pathway should be encouraged to use alternative methods of pest control. If pesticides, herbicides, and fungicides are applied in the vicinity of the Bob Jones Pathway, signs should be posted along the Pathway to warn users that chemicals have been applied.

### **Safety**

Safety is not considered a significant potential problem on the preferred alignments, due to users' separation from traffic. Safety will be addressed on the path in the following manner:

1. Adhere to the established design, operation, and maintenance standards presented in this document.
2. Supplement these standards with the sound judgment of professional engineers.
3. Maintain adequate recording and response mechanisms for reported safety and maintenance problems.
4. Thoroughly research the causes of each reported accident on the path. Respond to accident investigations by appropriate design or operation improvements.
5. Design the path, its structures, and access points to be accessible by emergency vehicles. Bollards at the path entries should be removable by the appropriate fire, ambulance, and police agencies. Constrained segments of the path that cannot accommodate emergency vehicles should not be longer than 500 feet, and identified in advance by the appropriate police, fire, and ambulance services.
6. Provide regular police patrols to the extent needed.

### **Private Property Protection**

The Bob Jones Pathway will be located directly adjacent to private properties along some of its proposed route. Neighbor concerns regarding path location near their properties typically include a loss of visual privacy, and concerns about increased crime, vandalism, noise, and fire. Where there are active agricultural uses, concerns include vandalism of farm equipment and impacts of aerial spraying. Wherever possible, the path should be located as far away as possible to protect the privacy of adjacent property owners, and screening or buffering vegetation may be provided at key locations. Criminal activity is not likely to occur along a path that is well planned, designed, operated, maintained, and used. Fire concerns should be addressed in part by adequate weed abatement.



New privacy fencing is not required as part of the path project as most landowners' residences are located considerable distances from the trail. However, fencing types, designs, and landscaping suggestions may be provided to property owners so that they can select the most appropriate barrier for their property. Property owners should be permitted to install gates leading directly onto the path, if desired.

### **Path Repairs & Closure**

Path users will need to be managed during construction and periodic maintenance of the path, when sections of the path will be closed or unavailable to users. Path users must be warned of impending regularly scheduled path closures, and given adequate detour information to bypass the closed or unfinished section of path. Path users must be warned through the use of standard signing at the entrance to each affected section of path ("Path Closed"), including (but not limited to) information on alternate routes and dates of closure. Sections of the path that are closed must be gated or otherwise blockaded and clearly signed as closed to public use. Alternate routes should provide a reasonable level of directness and lower traffic volumes, and signed consistently. If no reasonable alternate routes are available, the path should have an "End Path" sign and provide access to the roadway system.

### **Funding**

Funding for planning, design, and construction of the path will come from a variety of local, state, and federal funding. Most of these programs are competitive and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. Local funding for trail projects typically comes from local capital improvement programs (CIPs), which are typically used to leverage larger competitive grants.

The Federal SAFETEA program is a probable major source of funding for the Bob Jones Pathway project. SAFETEA – Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2003 - will be the third iteration of federal transportation legislation for pedestrian and bicycle project funding. This funding was established by Congress in 1991 with the Intermodal Surface Transportation Efficiency Act (ISTEA) and renewed in 1998 through the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21). SAFETEA funds are expected to be available after February 2004.

Two major programs contained in TEA-21 and assumed to continue in SAFETEA are STP (Surface Transportation Program) and CMAQ (Congestion Management and Air Quality Improvements), along with other programs such as the National Recreational Paths Fund, Section 402 (Safety) funds, Scenic Byways funds, and Federal Lands Highway funds.

SAFETEA funding will be administered through the state (California Transportation Commission) and regional governments. In the past, most, but not all, of the funding programs have been transportation oriented, not recreation oriented, with an emphasis on (a) reducing auto trips and (b) providing an inter-modal connection. Funding criteria typically includes completion and adoption of a bicycle master plan, quantification of the costs and benefits of the system (including saved vehicle trips, reduced air pollution), proof of public involvement and support, CEQA compliance, access to right of way, and commitment of local resources.

The following state sources provide funding applicable to bicycle or pedestrian facilities:

### *TDA Article III (SB 821)*

Transportation Development Act (TDA) Article III funds are state block grants awarded annually to local jurisdictions for bicycle and pedestrian projects in California. These funds originate from the state sales tax and are distributed through the Congestion Management Agency to local jurisdictions based on population.

### *Bicycle Transportation Account*

The State Bicycle Transportation Account (BTA) is an annual statewide discretionary program that is available through the Caltrans Bicycle Facilities Unit for funding bicycle projects. Available as grants to local jurisdictions, the emphasis is on projects that benefit bicycling for commuting purposes. The program is currently funded at \$7.2 million dollars annually through fiscal year 2005/06. In 2006/07, it is anticipated to decline to \$5 million dollars, where it will remain unless a law is passed to change the amount. Agencies may apply for these funds through the Caltrans Office of Bicycle Facilities.

Funding is also available for public access in conjunction with riparian restoration projects, in projects with extended educational and interpretive programs, and other parks and recreation purposes as part of California voter-approved bond acts.

A variety of local sources are available for funding bikeway and pedestrian improvements, however, their use is often dependent on local political support and budgetary conditions.

### **Liability**

In general, liability risks for neighbors of multi-use paths is well protected and probably reduced from current levels by the recreational use statute and other statutes. Assuming the path is designed, built, and operated to established standards, there is no additional liability for the County.

## 5. MAPS, PROFILES AND SECTIONS

The following pages include these maps, profiles and sections:

Preferred Alignment Location Map – Sheet 1

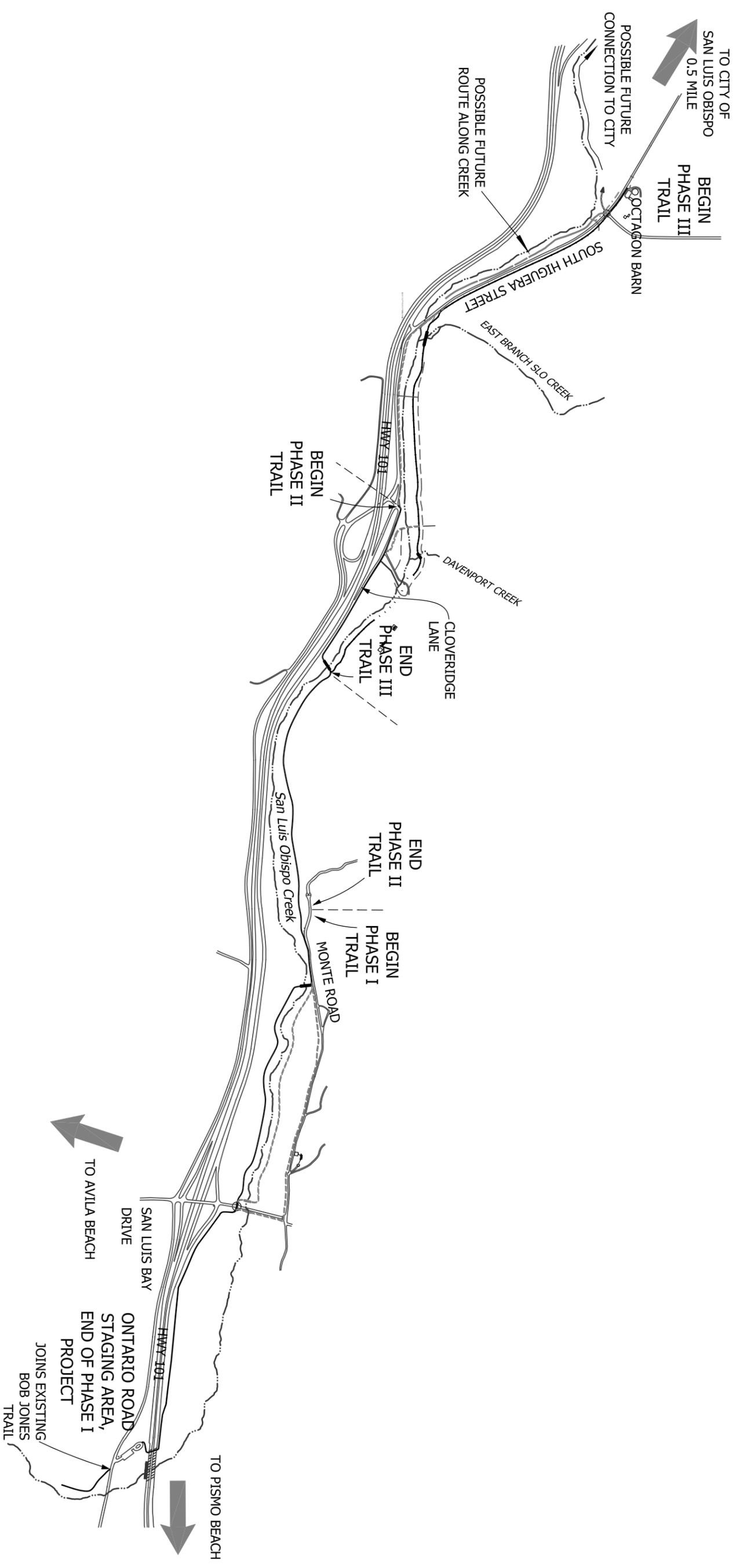
Preferred Alignment Section – Sheet 2

Preferred Alignment Section – Sheet 3

Preferred Alignment Section – Sheet 4

Preferred Alignment Section – Sheet 5

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SCALE IN FEET

**BOB JONES PATHWAY  
TRAIL ALIGNMENT - PHASE II**  
COUNTY OF SAN LUIS OBISPO



**QUESTA** Environmental & Water Resources  
ENGINEERING  
P.O. Box 70356 1220 Beldyerd Cove Road Point Richmond, CA 94807  
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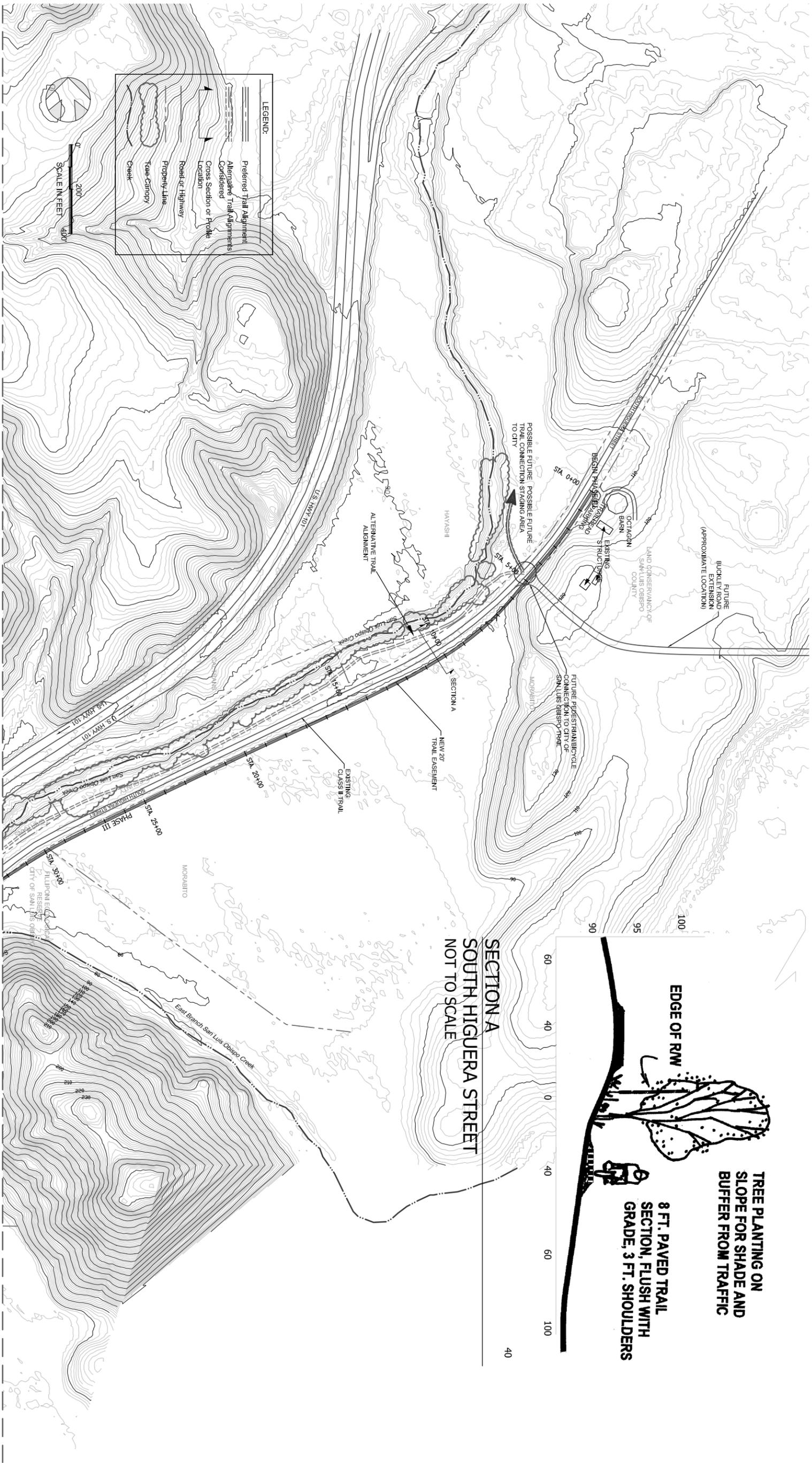
Sheet	Rev:	Date:	By:	Description:	Appr'd:

Design:	M.H.
Drawn: T.H.	
Checked: J.P.	
Appr'd: J.P.	

**PREFERRED TRAIL ALIGNMENT**  
**BOB JONES PATHWAY**  
SAN LUIS OBISPO, CALIFORNIA

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AS SHOWN		
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MATCHLINE - SEE SHEET 3

BOB JONES PATHWAY  
TRAIL ALIGNMENT - PHASE II  
COUNTY OF SAN LUIS OBISPO



Questa Environmental & Water Resources  
ENGINEERING  
P.O. Box 70356 1220 Eldorado Cove Road Point Richmond, CA 94807



Sheet No.	Date	By	Description	Appr'd

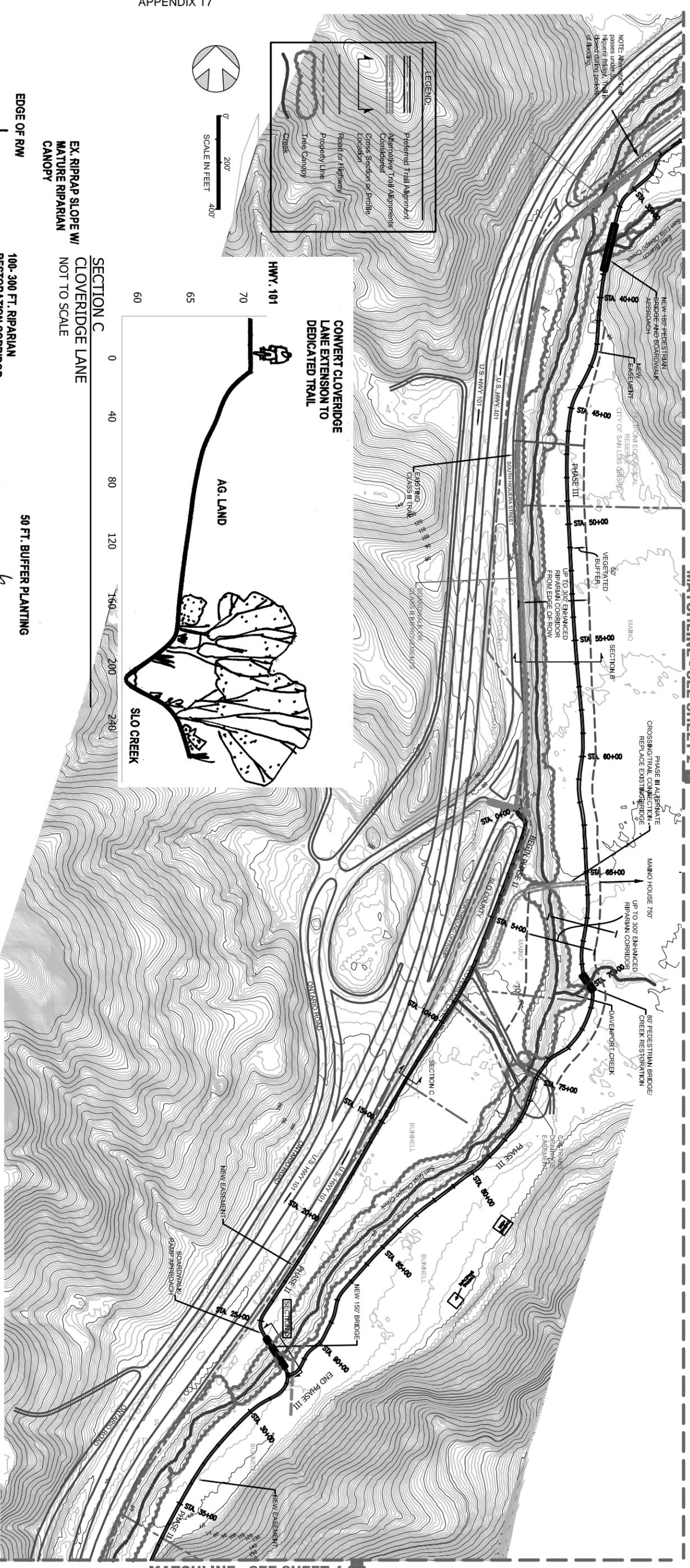
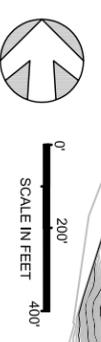
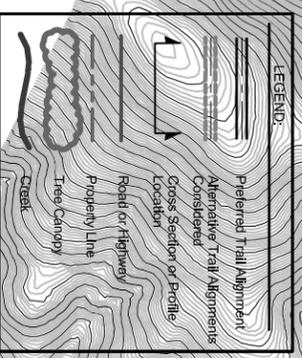
Designer	M.H.
Drawn	T.H.
Checked	J.P.
Appr'd	J.P.

PREFERRED TRAIL ALIGNMENT  
BOB JONES PATHWAY  
SAN LUIS OBISPO, CALIFORNIA

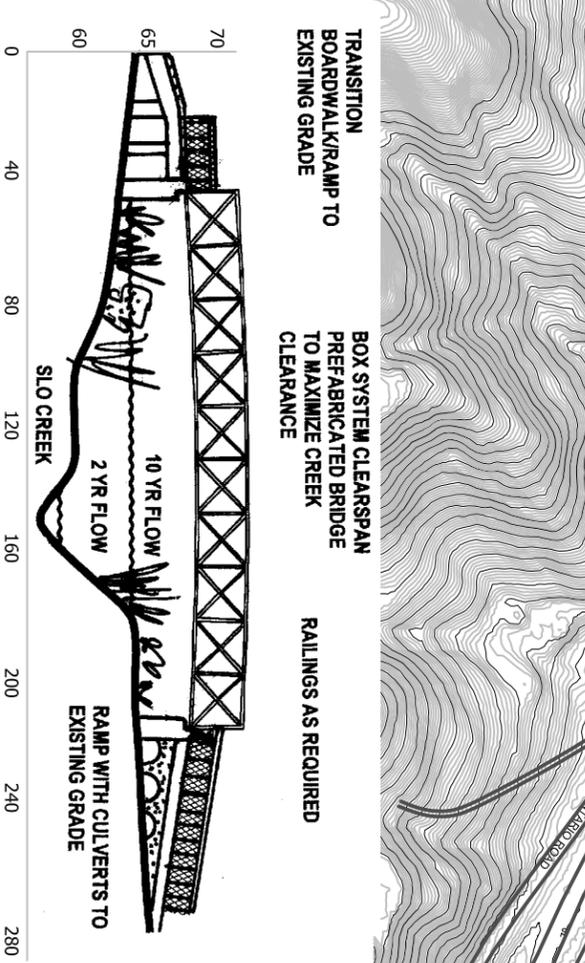
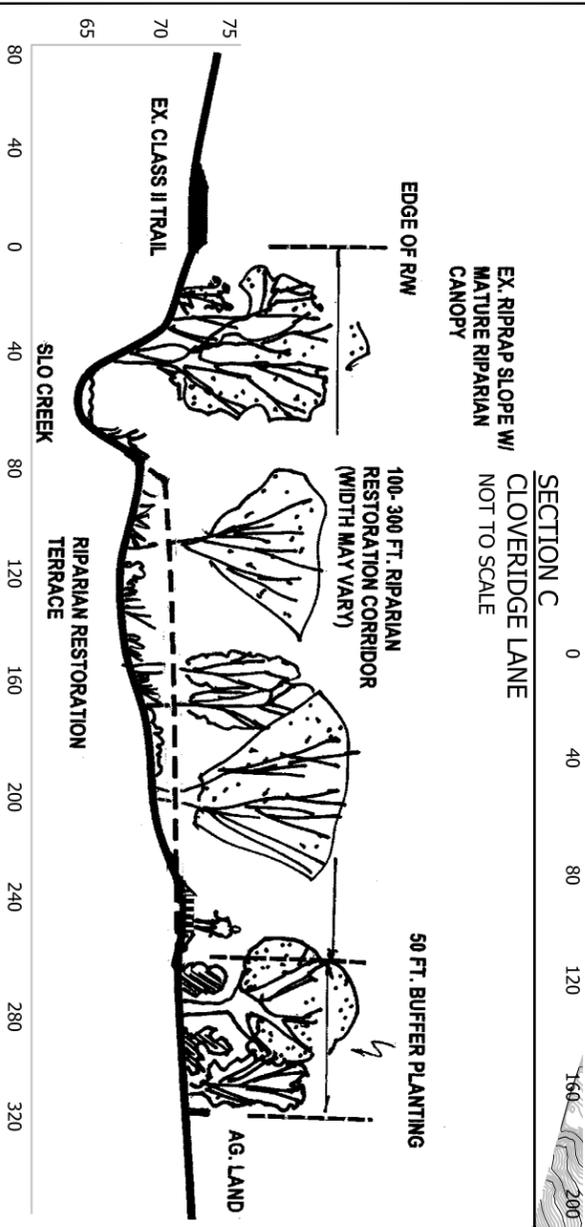
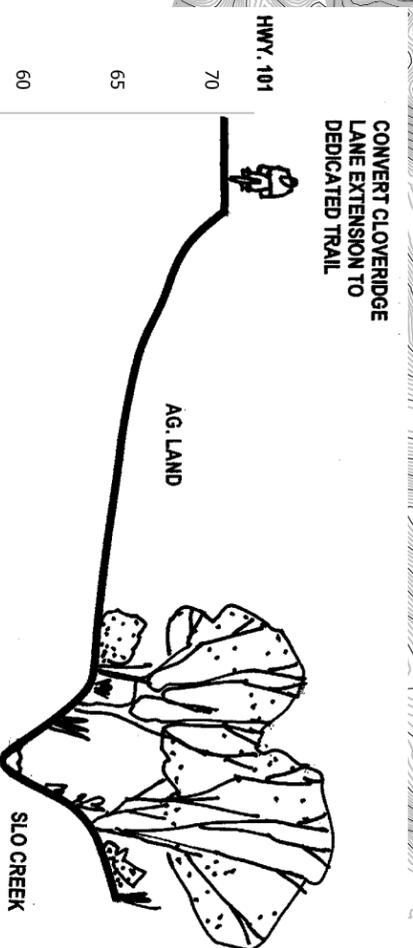
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MATCHLINE - SEE SHEET 2



MATCHLINE - SEE SHEET 4



SECTION B  
RIPARIAN RESTORATION AREA  
NOT TO SCALE

SECTION D  
BRIDGE AT SLO CREEK  
NOT TO SCALE

BOB JONES PATHWAY  
TRAIL ALIGNMENT - PHASE II  
COUNTY OF SAN LUIS OBISPO



QUESTA  
Environmental & Water Resources  
ENGINEERING

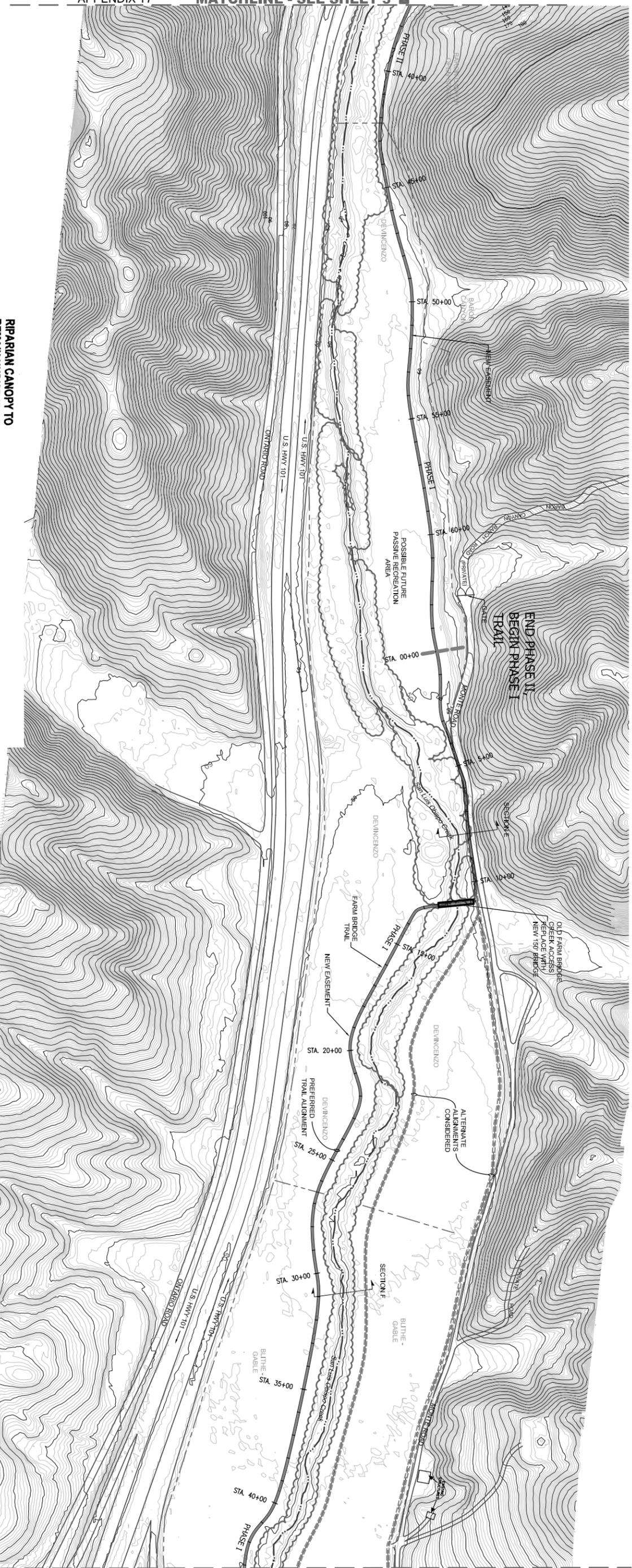


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PREFERRED TRAIL ALIGNMENT  
BOB JONES PATHWAY  
SAN LUIS OBISPO, CALIFORNIA

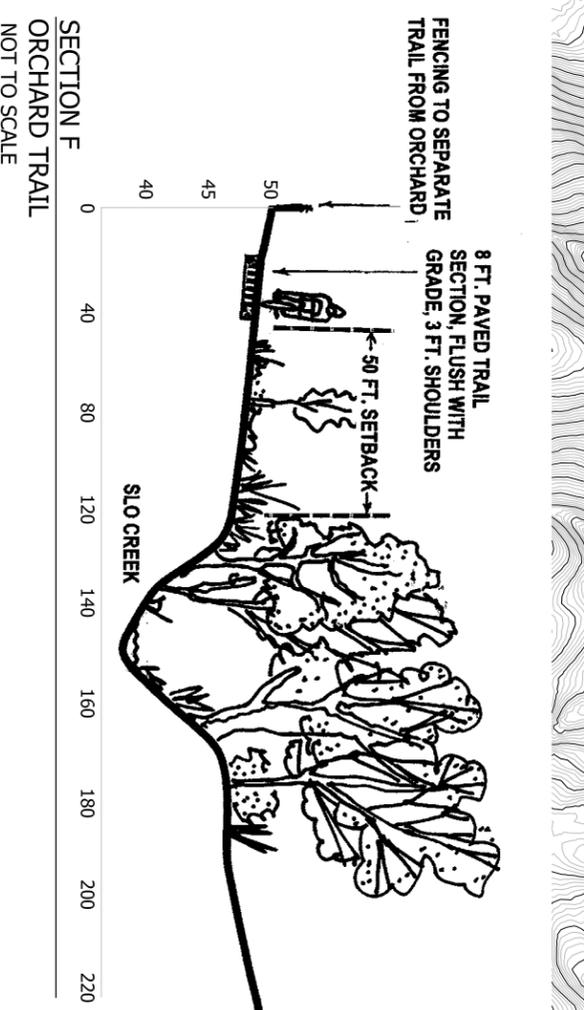
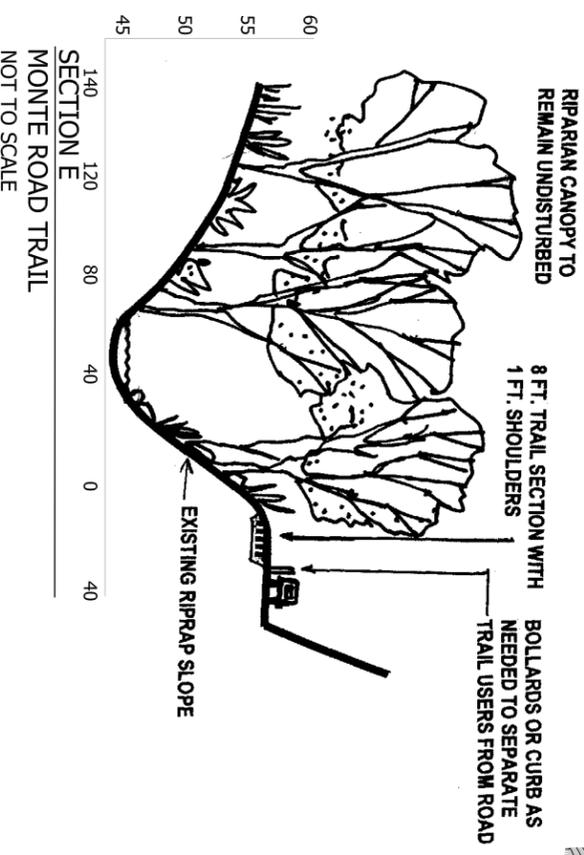
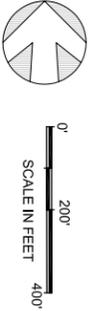
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Date:	10/02/03
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**LEGEND:**

- Preferred Trail Alignment
- Alternative Trail Alignments Considered
- Cross Section or Profile Location
- Road or Highway
- Property Line
- Tree Canopy
- Creek



**BOB JONES PATHWAY  
TRAIL ALIGNMENT - PHASE II**  
COUNTY OF SAN LUIS OBISPO



**Questa** Environmental & Water Resources  
ENGINEERING



Sheet	Rev.	Date	By	Description	Appr.

Design: M.H.  
Drawn: T.H.  
Checked: J.P.  
Appr.: J.P.

**PREFERRED TRAIL ALIGNMENT  
BOB JONES PATHWAY**  
SAN LUIS OBISPO, CALIFORNIA

Scale: D 220248  
Date: 10/02/03  
Sheet: 4 OF 5

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## 6. APPENDIX A – PHILLIPS-CONOCO CORRESPONDENCE

This Appendix contains the record of correspondence between Alta Planning + Design staff and Randy Booth, the local property manager contact in San Luis Obispo County for Phillips – Conoco. Phillips – Conoco owns the pipeline under or adjacent to segments of the proposed Bob Jones Trail alignments. As of the publication of this Feasibility Study, Phillip – Conoco has yet to provide a map or other relevant pipeline location information despite several requests by Alta staff.

The correspondence provided includes notes from phone conversations, copies of emails and a copy of a faxed memorandum, as requested by Mr. Booth, that formally requested a map showing the location of the pipeline in relation to the proposed trail alignment dated June 5, 2003. In addition, included is a request made by email to Mr. Booth, dated October 9, 2003, for Mr. Booth to highlight location or potential conflicts of the pipeline in relation to the proposed trail alignments. Mr. Booth responses, in phone conversations, alternated between expressing willingness to provide the information and stating that post-September 11 security concerns prevented him from providing the relevant maps.



806 Hearst Avenue  
Berkeley, CA 94710  
(510) 540.5008 Phone  
(510) 540.5039 Fax  
www.altaplanning.com

**TO:** Mr. Randy Booth  
**FROM:** Lev Anderson  
**DATE:** June 5, 2003  
**RE:** Phillips-Conoco Pipeline Property Information

Mr. Booth,

I am writing this letter to request property information for a Phillips-Conoco pipeline in San Luis Obispo, California. The need for this information arises from a project that we, Alta Planning + Design have been contracted to implement by the County of San Luis Obispo to complete Phase II of the Bob Jones Trail. Included in this request is a map showing the approximate alignment of the proposed project. The information we need regarding the pipeline is as follows:

- 1) Maps or plans showing the location of the pipeline(s) in the vicinity of the proposed trail (see map).
- 2) All information regarding easement restrictions, if any, that would impact a trail crossing over the pipeline or running parallel to the pipeline.
- 3) Any information you may have on planned or expected repairs to the pipeline due to regular maintenance needs such as erosion.

Your cooperation is greatly appreciated. Please do not hesitate to contact me if you have any questions or would like more information.

Sincerely,  
Lev Anderson  
Alta Planning + Design

## Notes from Telephone Correspondence

October 2, 2003:

Left message for Randy with Conoco regarding pipeline map info.

September 17, 2003:

Spoke to Randy Booth with Conoco-Phillips. He is now saying that they do not want anything on top of the pipeline, and still will not provide any maps. He says the county has maps and that we should get maps from them. I will check with Di Leo at county about getting maps.

July 10, 2003:

Called Randy Booth with Conoco about getting pipeline map. Mr. Booth said Conoco – Phillips is likely okay with a trail on their easement as long as there is not any scheduled maintenance to occur on the pipeline in the near future. He also noted that if there were maintenance tasks required for the pipeline in the future, the trail would have to be closed until they did their job.

June 5, 2003:

The pipeline was sold by Unocal to Phillips/Conoco. I talked to their real estate manager Randy Booth and requested that he send maps and information on easement restrictions. He said that requests for info need to be in writing. I sent a faxed memo to him as requested. In addition, there doesn't seem to be any planned maintenance or repairs on the pipeline. I'd check again before finalizing plans with the pipeline foreman Mark Mitchell, (805) 438-6201.

## Copy of email correspondence

-----Original Message-----

**From:** Lev Anderson [mailto:[landerson@altaplanning.com](mailto:landerson@altaplanning.com)]

**Sent:** Tuesday, September 23, 2003 2:36 PM

**To:** Randy Booth

**Subject:** Bob Jones Trail Feasibility Study

Mr. Booth,

I am emailing you to request that you review the attached map of the proposed project trail alignment. I have more detailed maps I could send if you want. Please respond with information regarding where the pipeline is immediately adjacent to the trail or crosses under the trail and what the issues are from the Conoco-Phillips perspective.

During our last conversation, you said that your company is opposed to ANY pedestrian or bicycle activity on top of the pipeline for safety reasons, even after you initially suggested that it would be possible and that your only concerns were that of needing to close the trail to perform maintenance tasks on the pipeline. I'd like to take this opportunity to point out that there are many public facilities such as paths and roadways go over pipelines throughout the country and in the State of California. In fact, I am sure that there are pedestrians and bicyclists that currently cross over the pipeline that we are discussing.

You also told me that the County has maps showing the location of the pipeline easements. I have yet to locate those maps so if you know of an appropriate County staff member for me to

contact to get copies of the map(s) that would be greatly appreciated, and would also save you the effort.

Finally, I would like to remind you that this is just a feasibility study and your company is not required to make any commitments at this time. Further, should the plan be approved, your company will have to respond sooner or later and we think it is best if all information available is shared and concerns are discussed openly. Thank you.

Sincerely,

Lev Anderson  
Alta Planning + Design  
806 Hearst Avenue  
Berkeley, CA 94710  
Ph. 510.540.5008  
Fax 510.540.5039  
landerson@altaplanning.com

-----Original Message-----

**From:** Lev Anderson [mailto:landerson@altaplanning.com]  
**Sent:** Thursday, October 09, 2003 2:52 PM  
**To:** Randy Booth  
**Subject:** Bob Jones Trail

Mr. Booth,

After talking with Jan Di Leo with the County, it seems that the best way to proceed is for me to fax you the proposed trail alignment again and have you identify where the pipeline crosses underneath so that we have an idea of where potential concerns of Conoco – Phillips may be. I had asked you to do this before but never heard back from you so I am sending it down again and ask that you respond by Wednesday morning next week, October 15<sup>th</sup>, 2003. If we do not hear back from you, we will complete the feasibility study without your input and wait to consult with you during the eventual DEIR process. However, that would be an unfortunate time, for both parties, to wait to address the issue.

Thanks you for your cooperation and I look forward to hearing back from you early next week.

Sincerely,

Lev Anderson  
Alta Planning + Design  
806 Hearst Avenue  
Berkeley, CA 94710  
Ph. 510.540.5008  
Fax 510.540.5039  
landerson@altaplanning.com

-----Original Message-----

**From:** Lev Anderson [mailto:landerson@altaplanning.com]

**Sent:** Thursday, October 09, 2003 3:41 PM

**To:** Randy Booth

**Subject:** Bob Jones map3

Mr. Booth,

As per my earlier email, I am faxing down the maps of the proposed alignment for the Bob Jones Trail. I am also emailing them as well if the quality of faxes is unsatisfactory.

Thanks again,

Lev Anderson  
Alta Planning + Design  
806 Hearst Avenue  
Berkeley, CA 94710  
Ph. 510.540.5008  
Fax 510.540.5039  
landerson@altaplanning.com

-----Original Message-----

**From:** Lev Anderson [mailto:landerson@altaplanning.com]

**Sent:** Tuesday, October 14, 2003 4:56 PM

**To:** Randy Booth

**Subject:** Bob Jones Trail

Randy,

I hope you were able to open the maps I emailed okay. We really need to hear back from you tomorrow or by Thursday at the latest. Please let me know if you have any questions or would like more information.

Thank you,

Lev Anderson  
Alta Planning + Design  
806 Hearst Avenue  
Berkeley, CA 94710  
Ph. 510.540.5008  
Fax 510.540.5039  
landerson@altaplanning.com

-----Original Message-----

**From:** Lev Anderson [mailto:[landerson@altaplanning.com](mailto:landerson@altaplanning.com)]

**Sent:** Monday, October 20, 2003 11:09 AM

**To:** Randy Booth

**Cc:** [jdileo@co.slo.ca.us](mailto:jdileo@co.slo.ca.us)

**Subject:** Bob Jones Trail

Mr. Booth,

I am writing to inform you that we are finalizing the County of San Luis Obispo's Bob Jones Trail Phase II Feasibility Study. Unfortunately, since you I haven't heard back from you, we have yet to receive appropriate input from Conoco-Phillips regarding the adjacent pipeline and any specific concerns on the part Conoco-Phillips regarding the proposed trail alignments.

The planning for the trail will proceed and Conoco-Phillips may provide input during the upcoming development process. If you have any questions or information you want included in the final Feasibility Study, please contact me directly as soon as possible. Thank you.

Sincerely,

Lev Anderson  
Alta Planning + Design  
806 Hearst Avenue  
Berkeley, CA 94710  
Ph. 510.540.5008  
Fax 510.540.5039  
[landerson@altaplanning.com](mailto:landerson@altaplanning.com)