Santa Ana River
National Recreational Trail
Master Plan

Prepared for the City of Corona
By The Dangermond Group

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We would like to thank all the participants who have contributed to the conceptual planning process for this important regional trail asset especially;

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Santa Ana Watershed Project Authority
Chino Hills State Park
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Glossary of Abbreviations

ACOE	United States Army Corps of Engineers
BNSF	Burlington Northern Santa Fe
CA Fish and Game	California Department of Fish and Game
Caltrans	California Department of Transportation
CHSP	Chino Hills State Park
GIS	Geographic Information Systems
GRGC	Green River Golf Course
JCSD	Jurupa Community Services District
OCWD	Orange County Water District
PFRD	Orange County Public Facilities and Resources Department
SAWPA	Santa Ana Watershed Project Authority
SR-71 (91)	State Route 71 (91)
CA State Parks	California State Parks
SART	Santa Ana River Trail - official proposed route
So. Route	Proposed alternate/interim trail route
TLMA	Riverside County Transportation and Land Management Agency
U.S. Fish and Wildlife	United State Fish and Wildlife Service

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Executive Summary

History

The Santa Ana River area was first proposed as a State Recreation Area in 1955. As the Inland Empire area continued to grow, the value of the river corridor came into focus and the first "Crest to Coast Trail event" was staged in 1969. This trail ride event traversed the entire Santa Ana water-way, 110 miles from the Orange County coastline all the way up to the San Bernardino Mountain crest at 8500 feet above sea level in the National Forest lands. When completed it will traverse parts of Orange, Riverside and San Bernardino Counties.

In 1977 portions of the Santa Ana Trails project gained "National Recreational Trail" status and the trail was conceived to connect with the previously established Pacific Crest National Scenic Trail which follows the mountains from Mexico to Canada. A new emerging recreational trail concept was coming into focus for southern California.

The 1980s brought more people and development to the once rural inland counties and inquiry and demands for a public trails system grew rapidly.

In 1990 the first master plan for the entire trail was completed outlining the goals and phases for each segment. Since that time intervening development and infrastructure projects have made much of that planning effort obselete.

From 2001-2002, under leadership from the Santa Ana Watershed Project Authority, a preliminary assessment of the remaining trail segments was completed. This led to the current planning effort led by the City of Corona and funded by a Caltrans Community Planning Grant, the County of Riverside and the City of Corona.

Completed Santa Ana River Trail Segments

Much of the trail south of Prado Dam has been completed, as have segments in Riverside County. Specifically, Orange County has completed hiking/equestrian trail segments from the ocean in Huntington Beach to 17th Street in Santa Ana and from Katella Avenue in Anaheim to Gypsum Canyon Road in Yorba Linda. Also completed is a bicycle trail from Huntington Beach to the entry to Green River Golf Course, about 2 miles upstream of Gypsum Canyon Road (See Appendix - D Santa Ana River Trails & Greenway Regional Open Space Connections).

Riverside County began construction of trail segments in 1986 having now completed nearly 16 miles each, of parallel hiking/equestrian and bicycle trails, extending from Hidden Valley Wildlife Center to the Riverside/San Bernardino County Line.

San Bernardino County anticipates completion of their first Santa Ana River Trail segment, extending from La Cadena Dr. to Waterman Avenue in March, 2005.

Future Santa Ana River Trail Segments

Orange County, with their portion of the trail nearly completed, has three remaining proposed trail segments; a segment of the hiking/equestrian trail between Westminster Blvd. and Katella Ave. (which is not a part of this study) and a segment of the hiking/equestrian trail from Gypsum Canyon to the Riverside County line, and a segment of the bicycle trail from approximately 2 miles north of Gypsum Canyon Road to the Riverside County line.

In Riverside County the remaining twenty miles of trail extend from the Orange County line to Hidden Valley Wildlife Center.

In San Bernardino County the segment extending from the Riverside County line to La Cadena Dr. is in final planning stages and the segment from Waterman Ave. to Alabama St. is awaiting environmental and cultural resources studies that are anticipated to be completed in February 2005.

Purpose of this Plan

The purpose of this study is to update prior Santa Ana River Trail plans by creating a master plan for the un-built segments of the trail from Gypsum Canyon Rd. to Hidden Valley Wildlife Center. Goals of the project are to:

- Provide for a continuous, safe trail linkage system
- Provide trail linkage to feeder trail systems
- Provide multi-use, barrier-free trail opportunities within the trail system
- Provide environmental education opportunities within the trail system
- Provide protection of the natural resources for the Santa Ana River corridor through operation and management guidelines
- Provide new park facilities and upgrade interfaces with existing parks as needed at appropriate intervals along the river corridor

In San Bernardino County the remaining trail segments are being planned by Parks and Recreation staff in partnership with The Wildlands Conservancy. A summary of this planning effort can be found in Appendix F. A preliminary study for completion of the trail from Alabama St.to Seven-Oaks Dam was recently completed by students at Cal Poly University, Pomona, and is also included in Appendix F.

Trail Funding

It is no accident that the remaining un-built trail segments are primarily between Gypsum Canyon Road and Hidden Valley Wildlife Center. Flood control projects, endangered habitat, wildlife crossings, development and private property in these reaches of the river have created a tangled web of overlapping issues, that have required patience and inter-agency cooperation.

Additionally, because of the multi-jurisdictional nature of these trail segments and the close coordination with other large projects such as flood control and transportation, funding issues are more complex, requiring larger amounts of money extended over greater periods of time.

Estimated Construction Costs

By Reach*

$4.2 M	**15.6 Miles**	**Gypsum Canyon Blvd. to Prado Dam**
$3.4 M	**10.9 Miles**	**Prado Dam to Corydon Ave.**
$6.6 M	**22.5 Miles**	**Corydon Ave. to Hidden Valley Wildlife Center**
$4.0 M	**3.4 Miles**	**SR-71 - from Proposed Santa Ana River Trail north to Euclid Ave.**
$8.5 M	**7.8 Miles**	**Riverside/San Bernardino County Line to California St.**
$23.8 M	**24.5 Miles**	**Alabama St. to 7-Oaks Dam Loop**

By Facility*

$25.5 M	**59.8 Miles**	**Santa Ana River Trail - Preferred Alignment**
$ 2.1 M	**18.0 Miles**	**Santa Ana River Trail - Secondary Alignment**
$ 8.2 M	**6.9 Miles**	**Regional Connectors**
$14.7 M	**0.0 Miles**	**Trail Amenities including visitor's center, camping and interpretive nodes (San Bernardino Loop Trail)**

By County*

$ 2.4 M	**10.3 Miles**	**Orange**
$13.2 M	**36.5 Miles**	**Riverside**
$34.9 M	**37.9**	**San Bernardino**

Total All Facilities = $50.5 Million plus <u>20% Contingency</u> = $ 60.6 Million

*Please add 20% Contingency

FUTURE OF THE PROJECT

Future of the Project

The proposed trail segments in this report break down into two basic categories; relatively straightforward, or complex.

Trail elements that fall into the straightforward category have adequate room on public land, present no threat to habitat or wildlife, have few geological/geographical constraints and are not dependant on the completion of other projects, such as flood control or transportation projects. These trail elements are easier to fund because timelines are shorter and more predictable, the projects are generally less expensive, and they can be ready for construction upon receipt of funding. Potential sources of funding for these projects can be found in the table Funding Source Matrix in Appendix H. Most of these trail segments fall within the jurisdictions of local cities who are planning to oversee their further planning and construction.

Complex projects involve interactions with one or more agency-sponsored projects (such as flood control or transportation), and are located in areas that have potential for impacts on habitat and wildlife, and where space is limited due to existing infrastructure. Complex projects are more difficult to fund because they are frequently larger, more expensive, require more agency review, involve the acquisition of land, may require mitigation, have longer project timelines and are not ready to proceed. These projects are likely to require a special dispensation from either the federal or state level as well as local match funds. Most of these trail segments fall within county, state or federal jurisdictions and will require a collaborative process.

The recent experience with Proposition 40 funds highlights the need to tailor any special dispensations specifically to the project timeline. As an example, although $10 Million of Proposition 40 funds were allocated for use on this project, they came with a short timeline that limited their use for trail segments in Prado Basin and the Orange County portions of Green River Golf Course. Communication with elected officials about the specific parameters of projects prior to allocation of funds may help tailor the terms of the funding to better support the needs of the project.

There are still Proposition 40 funds that have not been allocated and it is recommended that this source of funds be explored. It may be possible to have additional funds, with more compatible terms, allocated for use in Prado Basin and the Orange County portion of Green River Golf Course, as well as other segments of the trail.

Transportation funds are available for alternative commuter corridors, such as bikeways. To qualify for these funds, a bikeway is required to be included in an official bikeway plan approved by Caltrans and the local Metropolitan Planning Organization. While the Santa Ana River Trail is included in several plans, the SR-71 bikeway is not, and a first step would be to approach Riverside County to amend their plan to include this route. This would qualify it for federal and state transportation grants, including the state Bicycle Transportation Accounty Program (BTA) and Federal Transportation Enhancement funds. These funds might be augmented with additional Caltrans funding.

The stakeholder team has met several times with U.S. Army Corps of Engineers (ACOE) staff regarding a cooperative approach to trails in Prado Basin. Two overall funding strategies have been discussed. The

first is for the ACOE to complete its dam raising project and related levees and for the interested agencies to fund and build the trails, integrating them into the ACOE facilities post-facto. The other option discussed is a 50-50 match with the ACOE. While the extra funding is attractive, this option is likely to be much slower.

A third option is to approach federal elected officials, particulary Congressmen Lewis and Calvert and request a special allocation for the project in Prado Basin. They have been informed of the value and need for funding in this area and are open to a discussion of they might help.

No matter which option is chosen, it is a matter of urgency to develop a sponsorship agreement with the ACOE for the trails in Prado Basin. The ACOE is unable to approve plans without an agreement, because in order to approve design plans, they need to know who will be responsible for future maintenance of which segments, including their own and Orange County Public Facilities and Resources Department's (PFRD)s responsibilities.

Caltrans staff has provided input and support for this project throughout this planning effort. They have expressed an interest in continuing to work with local jurisdications to plan and build the segment along SR-71 extending from SR-91 to Euclid Avenue.

Jeff Dickman, Trails Coordinator for Orange County Harbors, Beaches and Parks will be taking the lead for the segment of the trail from Gypsum Canyon Road upstream to the Riverside County line.
In Riverside County, Paul Frandsen, General Manager of the Regional Park and Open-Space District, will be working with his staff to develop the portions of the trail from the Orange County line north through Prado Basin. In San Bernardino County, Jeff Weinstein, Trails Coordinator, has been planning and building trails to complete the project to California Street.

Cities in Riverside and San Bernardino Counties have provided strong support throughout this planning effort. Staff members are well informed about the project and plan to continue efforts to complete trail segments within their jurisdictions. Several cities have applied for grants for completion of trail segments within their jurisdictions.

REACH 1
Gypsum Canyon Road to Prado Dam

Reach 1 - Gypsum Canyon Road to Prado Dam - Map Exhibits 2, 3 and 4

Overview

The proposed reach of the Santa Ana River Trail from Gypsum Canyon Road to Prado Dam traverses primarily Orange and Riverside Counties with a small segment in San Bernardino County. Development in this area is limited to the hillside north of the river in Yorba Linda, with the remaining land located in the Santa Ana River flood plain. The flood plain serves several useful purposes, including providing fertile soil for citrus groves, a scenic home to a 36-hole golf course and grazing land for horses.

In developing a safe, scenic, environmentally-friendly and cost-effective trail route in this area, planners face several major challenges:

1. ***Geographical***
   The steep Chino Hills to the north dictate a trail that would need to be located on the flood plain between State Route 91 on the south, and Chino Hills State Park on the north. The meandering nature of the river on this flood plain further limits the possible locations for the trail within the flood plain.

2. ***Environmental***
   While the habitat in this reach is not as rich as that in Prado Basin, it provides a home for Least Bell's Vireos just downstream of Prado Dam and a north-south cougar corridor link between Coal Canyon and the Puente Hills.

3. ***Jurisdictional***
   Sharing this flood plain are the Burlington Northern Santa Fe (BNSF) railroad tracks, the 36-hole Green River Golf Course and the flood control plain of the Orange County Public Facilities and Resources Department (PFRD). In addition to these facilities, plans for enlarged or new traffic corridors to manage the traffic on State Route 91 are being discussed, and these range anywhere from widening the existing Freeway, to a double-decker freeway corridor over the BNSF railroad tracks.

Opportunities and Constraints

In evaluating potential trail routes two general possibilities were identified - routes south and routes north of the river. Ultimately it was decided that bicycle routes in both locations made good sense. Orange County PFRD's construction in the flood plain is not likely to be completed for as many as ten to twelve years, and it would not be feasible to build a trail north of the river until their work is nearly finished. Therefore, it is proposed that a bicycle alignment south of the river would provide a good short-term route which could be built cost-effectively. Because of space constraints along the southern perimeter of Green River Golf Course, there is no room for a short term equestrian route.

Routes North of the River from Gypsum Canyon Road to the San Bernardino County Line

Between Gypsum Canyon Road and Creek Drive in Yorba Linda, there is an existing asphalt maintenance road that parallels the southern edge of residential development and doubles as a bicycle, rollerblading and dog-walking trail.

A few hundred feet south of this is an unpaved maintenance road that provides access to existing citrus groves further east. Habitat along this road is degraded with substantial exotics, and of interest are the remains of an historic concrete irrigation channel (see Appendix E, Section A).

From Creek Drive east to Evening Breeze Drive is a mitigation corridor located between the BNSF railroad tracks and residential development. While it may be possible to negotiate a trail alignment on this corridor, there are several constraints. These include the limitations of the original mitigation agreement and the need to cross the railroad tracks. Also, most importantly, this would then put the trails on the north side of the railroad tracks, which is impractical because of steep unstable slopes and inadequate room, and this would require a second crossing of the tracks back to the south of the tracks.

More practically, between Creek Drive and Evening Breeze Drive, trails would remain on the south side of the railroad tracks, with the hiking/equestrian route proceeding on the existing maintenance road through the orange groves and with the bicycle trail located between the groves and the railroad tracks on a second existing maintenance road.

Existing Bicycle Trail at Gypsum Canyon Road.

Steep slopes north of the BNSF railroad tracks.

Historic orange groves east of Gypsum Canyon Road.

The major challenge for this route occurs about fifteen hundred feet west of Green River Golf Course (GRGC) where the meander of the river abuts metal pilings that reinforce the railroad tracks.

BNSF Railroad support pilings.

Two possibilities were explored for bypassing this pinch-point. Initially a route that further reinforced the north river bank with fill and riprap was studied as a potential cost-saver. TKE Engineering developed a study of the river reinforcement option and suggested that the reinforcement could be constructed to allow the trail to be below the grade of the tracks, which would increase the safety of the trail (see Sections B, C, D). The second alternative evaluated was a two-bridge alternative, with the first bridge crossing to the State Park property south of the river, and once past the pinch-point, crossing back north of the river just east of the northwestern boundary of the golf course. Input from Vandermost Consulting and BNSF railroad staff were helpful in selecting the most prudent alternative.

Vandermost Consulting was asked to evaluate the environmental permitting implications of the two choices in this location. Their recommendation was the two-bridge alternative which, because of its smaller footprint, would cause less disruption to existing habitat and the river.

BNSF railroad staff were consulted about the potential for further reinforcement adjacent to their tracks and they were concerned about the adjacency of the trail to their tracks. They were not receptive to having a trail within their right-of-way, but were willing to consider the additional reinforcement adjacent to their tracks if this would place the trail outside of their right-of-way. The two-bridge alternative avoids these problems.

From the western boundary of the golf course to the San Bernardino County line the slopes north of the railroad tracks are steep and little room is available for trails. To avoid these constraints it is suggested that both trails be placed between the tracks and the golf course.

In general this is relatively easy to accomplish by placing the trails in the location of the existing maintenance road. Most of the play on the golf

Existing golf course maintenance road and BNSF railroad tracks.

course would not direct balls towards this proposed trail. However, where necessary the trail users may need to be protected.

Routes North of the River from the San Bernardino County Line to Prado Dam

Just east of the San Bernardino County line there were two existing railroad crossings that were considered. the first was an at-grade crossing which was intended to be limited to golf course maintenance uses only. In reality it was used as access to the maintenance road north of the golf course for many purposes including an unofficial equestrian staging area just north of the tracks. In late summer of 2004Burlington Nrothern Santa Fe fenced this off. The second crossing is an official golf cart crossing beneath the tracks in Riverside County. Because this crossing would require trail users to backtrack, it is a concern that trail users are likely to cut across the tracks further west. This route would also expose bicyclists and equestrians to the golf course for an additional four thousand feet.

A preferred alternative is to take advantage of conditions just west of San Bernardino County. In this area the track-adjacent slopes curve north, safely creating room for a non-motorized bridge over the tracks. This would connect to the proposed trail alignment north of the golf course heading east along the existing maintenance road north of the golf course.

To avoid potential ownership conflicts north of the GRGC clubhouse, Ron Krueper, Superintendent of Chino Hills State Parks was contacted and he confirmed that the Santa Ana River Trail could use the existing equestrian trail along the base of the slopes between the railroad tracks

A protected bikeway at Willowick Golf Course in Santa Ana.

Equestrians parked just north of the BNSF railroad crossing at the golf course.

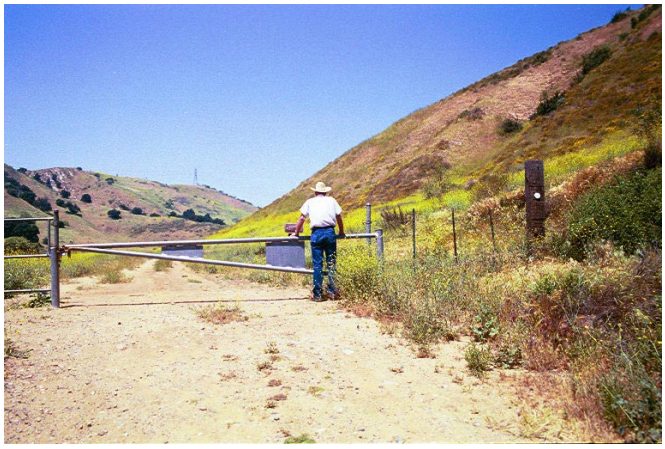
East of the golf course clubhouse the slopes recede to the north.

and the entry to Aliso Canyon. A small shaded rest area is proposed for this location.

Once the Orange County PFRD acquisition of the Golf Course is finalized, a more direct route linking the trail just north of the tracks to the existing maintenance road should be reconsidered. At this time it is labeled as an alternative.

For hikers, equestrians and off-road bicyclists that wish to head north to Chino Hills and beyond, an existing unpaved trail through Aliso Canyon links to the Chino Hills bikeway and trails system.

Trail users proceeding east through Prado Basin on the proposed official Santa Ana River Trail would make use of the existing maintenance road along the north side of the golf course. This Class I trail would link to the Prado Basin trails by way of the proposed ACOE maintenance road along the north bank of the river's main channel. This solution avoids the cost and impacts of an additional bridge. There is adequate room beneath the State Route 71 (SR-71) and State Route 91 (SR-91) connector for the trail.



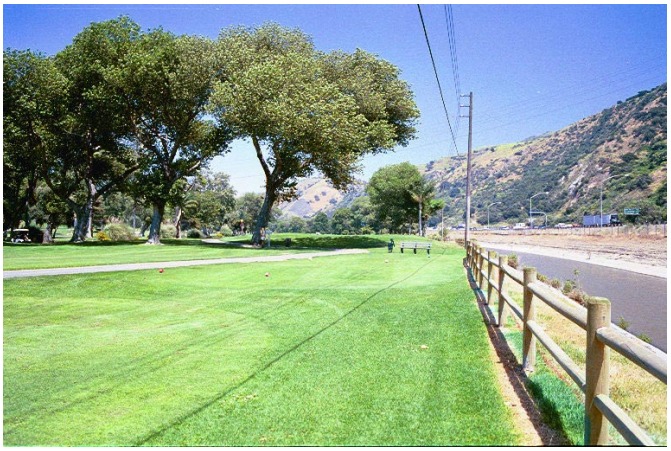
The Aliso Canyon trail entry to Chino Hills State Park.

The existing maintenance road downstream of Prado Dam.

Maintenance road beneath the SR-71/SR-91 connector.

Routes South of the River from Gypsum Canyon Road to Prado Dam

The existing bicycle route located between State Route 91 (SR-91) and Green River Golf Course may have a short lifespan. Engineering drawings in the *Supplemental EIS and Project EIR for Prado Basin and Vicinity, including Stabilization of the Bluff Toe at Norco Bluffs, prepared in July, 2000 for ACOE*, show plans for truncation of the existing Class I bike path just west of Green River Road. Additionally, there remains the potential for the widening of SR-91 which would require removal of the existing bike path.



The existing bicycle trail downstream of Green River Road is sandwiched between the Santa Ana River and SR-91.

As an alternative, this study examined the potential for placing a Class I Bicycle Path on the proposed ACOE river reinforcements (Appendix E - Sections F, G, H, H). However, there are privacy issues because of the adjacent residential development and also substantial agency coordination would be required, causing a long delay.

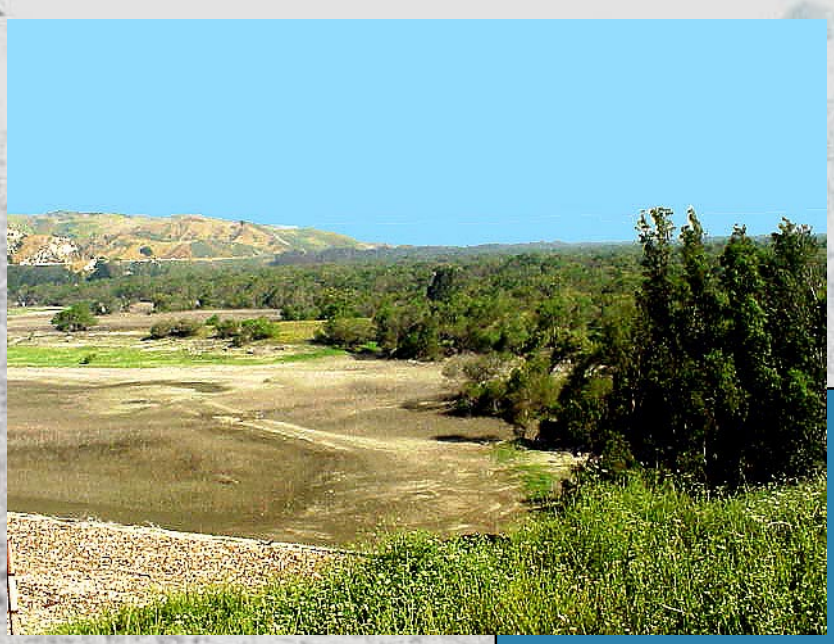
Green River Road adjacent to the mobile home park.

A more promising southern Class II bicycle route utilizing Green River Rd. and Crestridge Dr. would prove an alternative southern alignment that could be completed as soon as funding is obtained. This could be utilized short-term as an interim trail and long-term as a local use trail. This route could be extended as a Class I Bicycle Path using the State Park property along the southern perimeter of the Green River Housing tract and connected to the proposed ACOE Maintenance Road adjacent to the main Santa Ana River Channel just downstream of Prado Dam.

The remaining one mile of proposed Class I bicycle path would be relatively inexpensive to build. It would extend further east on State Park property and then parallel the westbound lanes of State Route 91 where it would intercept the proposed Army Corps of Engineers' maintenance road along the south bank of the main river channel downstream of Prado Dam.

An additional bicycle link to the Corona bicycle trail system would utilize Green River Road from Crestridge Drive to Palisades Drive.

An equestrian/hiking route adjacent to the existing bicycle trail, from Gypsum Canyon Road to the western boundary of the golf course, would provide a loop trail when combined with a route north of the tracks, utilizing one of the proposed two bridges across the river as described above.



REACH 2
Prado Dam to Corydon Avenue

Reach 2 - Prado Dam east to Corydon Avenue - Map Exhibits 5 and 8

The Army Corps of Engineer's (ACOE) Prado Dam reconstruction project provides a once in a lifetime opportunity to complete the Prado Basin portion of the Santa Ana River Trail.

ACOE staff has given insight regarding habitat and wildlife issues and assistance to determine a route that best utilizes the advantages of the channel and levee construction, while avoiding flooded and biologically sensitive areas. The following routes provide a cost-effective, environmentally sensitive trail alignment that additionally offers the potential to utilize federal funding for construction of the trail.

Routes from Prado Dam to the Corona Water Treatment Plant

Just downstream from Prado Dam the ACOE is currently constructing a new channel and spillway for the river. The new channel will be flanked by maintenance roads on both sides, with a bridge connecting them just downstream of the headwall. The ACOE has agreed in principal to the co-use of these facilities for all trail users. This segment of the trail would be a true multi-use trail, with all users utilizing the paved surface of the maintenance road. Details of the design are not yet firm, because of habitat issues in this area, and further studies are recommended to finalize this design (Appendix E - Section J).

The maintenance roads would serve as a trail hub. First and foremost they would link the proposed official Santa Ana River Trail route on the existing maintenance road west of SR-71, to the proposed trail as it progresses eastward through Prado Basin on its way to the San Bernardino Mountains. Secondly, the ACOE maintenance roads would provide connections for local and interim trails (south of the river) to the official Santa Ana River Trail. Finally, they would provide access to the proposed Class I Bicycle Path along the northbound lane of SR-71.

Center (above the shrubs) the proposed ACOE maintenance roads straddle the river channel.

At the upper left corner of the photograph is the existing bluff overlooking SR-91.

The Santa Ana River Trail would exit the ACOE maintenance road after crossing the bridge connector to the south bank of the river and proceed across the spillway basin. Responding to requests from agency biologists, the trail alignment would avoid sensitive habitat on the floor of the basin by climbing a steep incline to access the top of the bluff along the southern perimeter of Prado Basin, overlooking SR-91. Although this may require some users to walk their bicycles, it is believed the benefits outweigh the deficits, and the total inclined distance is anticipated to be less than 150 feet. The majority of the trail will be designed, to the extent possible, to a maximum 5% grade..

Proceeding upstream in Prado Basin, the Santa Ana River Trail will ride the southern perimeter of the basin, with the bicycle trail on top of the levees (avoiding the flood plain) and the hiking/equestrian trail at the base of the levees (Appendix E - Section K). A conceptual alignment has been submitted to ACOE staff for their use in designing bicycle access to and from their levees. Where inlets enter the basin, it is proposed the culvert-crossings be used to avoid impeding the flow of drainage into the basin.

Route from the Corona Water Treatment Plant to Corydon Avenue

East of the Corona Water Treatment Plant the trails would diverge, with the bicycles high and dry on the existing bluff behind Butterfield Trail Stage Park and the equestrians and hikers adjacent to the eastbound lane of Butterfield Drive . At Smith Avenue both trails would mount the ACOE levee and round the corner onto Rincon Street, avoiding conflicts with the Corona Airport. A spur trail is anticipated to cross Rincon Street and head south along Temescal Wash.

The Santa Ana River Trail would proceed north as a Class I bicycle path and equestrian/hiking trail, adjacent to the southbound lane of traffic on Rincon Street (Appendix E - Section L). It is proposed that to allow additional room for the bicycle trail, the motorized traffic lanes would be narrowed. Further design studies are recommended to determine the safest barrier between motorized traffic and the proposed bicycle trail.

Butterfield Ranch Road south of the Corona Airport.

View north on Rincon Street.

REACH 3
Corydon Avenue to Hidden Valley Wildlife Area

Reach 3 - Corydon Avenue east to Hidden Valley Wildlife Area - Map Exhibits 10 and 11

Overview

Over the past decade (since the last Master Plan was prepared in 1990) the trail reach through the Cities of Corona and Norco has, in some areas, become more difficult to plan due to development. By contract in other areas it has become easier because of proposed flood control and water projects. The following proposed trail alignments provide the best possible balance of cost-effectiveness, environmental consciousness and timeliness while reflecting the rustic character of a National Scenic Trail.

There are two possible types of trail alignments in the Cities of Corona and Norco. The first type is utilization of Class II bicycle routes and road-adjacent equestrian routes (many of which are existing). Missing segments would be low-cost to build, and could be built now. The alternative type of route would be to utilize a more scenic route along the river. Because of its complexity and the need to coordinate with other agencies' projects it would be more costly and it might take a decade or two to build.

Equestrian trails in Norco replace sidewalks.

Most trail users prefer the scenic route overlooking the river. However, because this trail route would take many years to complete, it is suggested (as was suggested south of Prado Dam) that the Class II bicycle and road-adjacent equestrian routes be utilized as an alternate and interim trail system.

Primary Route from Corydon Avenue to Wayne Makin Park

There is adequate room to build an equestrian trail on Stagecoach Road (in the City of Corona) from Corydon Avenue to the Corona/Norco city line. Continuing from the city line (in the City of Norco) there is an existing road-adjacent equestrian trail on Stagecoach Drive, which continues on Bluff Street to its intersection with River Road.

Stagecoach Road is a typical equestrian trail in Norco.

A Class II bicycle route exists on Corydon Avenue in the City of Corona, beginning at Stage Coach Drive and continues on River Road to its intersection with Bluff Street.

Alternatively, beginning at Corydon Avenue, the bluff that circles the perimeter of Prado Basin presents the opportunity for unparalleled views of the resplendent basin habitat and trails paralleling the top of the bluff would take advantage of this. However, two major challenges present themselves. At the base of the slope is sensitive habitat on property owned and managed by Orange County Water District (OCWD). Because of potential disruption to nesting birds and potential fire danger OCWD staff has expressed a strong desire to avoid a trail in or near this habitat. At the top of the bluff's slope are homes where privacy is an important factor. The slopes however, are fairly lengthy and a viable, although expensive solution, is to place the trails approximately mid-way down the slopes. A combination of cut and fill and retaining walls is proposed to create the ten and twelve foot pads necessary for the equestrian/hiking and the bicycle trails.

During rush hour traffic at the intersection of Bluff Street and River Road traffic is very heavy. Also, at other times of the day, it is fast moving, creating conditions that are not conducive to safe equestrian crossings. Nonetheless, the trails need to cross the street, and therefore it is suggested that it is worthwhile to bear the added expense of a culvert under-crossing at this location.

Bicyclists could access the proposed Orange County Water District (OCWD) maintenance road that is proposed to run along the periphery of their River Road project. There are two possible alternatives for access and these will need to be studied further: 1. Bicyclists could ride north on Bluff Street about one hundred feet and access a potential entry trail across ACOE land, or 2. Bicyclists could access the maintenance road via an extension of the proposed River Road culvert undercrossing (Appendix E, Section M).

Alternatively they could proceed northwest across the river on the new multi-use trail that is proposed to be incorporateed into the River Road Bridge upgrade currently being planned by Riverside County Transportation and Land Management Agency. Choices at the terminus of this trail include heading northeast on the proposed Jurupa Community Services District multi-use trail or circling back beneath River Road to a proposed trail linking to the City of Chino proposed trail system (Appendix I).

Equestrians and hikers would face similar choices at the intersection of Bluff Street and River Road. However, in addition to their maintenance road, OCWD is proposing a system of trails along the levees within their proposed water treatment project (Appendix F).

Primary Route from Wayne Makin Park to Hamner Avenue

Looking forward to the trail, Norco has constructed a staging area across from Wayne Makin Park at Fifth Street. In addition to parking, trail users can make use of drinking fountains and restrooms at the park. To add value to this area an interpretive center is proposed.

Returning to the riverbed, a bicycle trail is proposed for the top of the ACOE proposed bluff reinforcement

project. A study of the published ACOE sectional studies demonstrates adequate room for a trail (Appendix E, Section N. To protect the reinforcement a fence may be an option. Equestrians would continue to ride at the base of the bluffs.

The Santa Ana riverbed is adjacent to the staging area near Wayne Makin Park in Norco.

The biggest problem is a very short – approximately one hundred and fifty foot long – segment of both trails that would require removal of arrundo and reinforcement of the bluff just downstream of Hamner Avenue. At this time no agency has plans to clean this up and provide an opportunity for a trail connection. While equestrians can ride the river bottom, bicyclists would need to exit the river at the Wayne Makin staging area and connect to the Class II system on Norco Drive by way of 5th Street. However, one distant opportunity may present itself at Hamner Avenue. Because of road widenings north and south of Norco, Hamner Avenue (in the City of Norco where Hamner Avenue is narrow), will become congested. As traffic increases, Hamner Avenue and the bridge are likely to be widened. This could present an opportunity to add a multi-use trail to the bridge, and clear and reinforce the bluff, creating an opportunity to complete the preferred Santa Ana River Trail bicycle alignment through the City of Norco.

Looking north on Old Hamner Road in Norco.

Alternate Route from Corydon Avenue to Hamner Avenue

North of River Road in Norco there are many existing road-adjacent equestrian trails that take the place of sidewalks. Discussions with Norco City staff resulted in a decision to use existing routes that, to complete a route from Corydon Avenue to Old Hamner Road, would only require the construction of about one and one-half miles of equestrian trail. While there are fewer completed miles of Class II bicycle route in this segment, the cost of adding Class II bicycle lanes is minimal, requiring only striping and signing.

Detroit Street Bridge in Norco.

For a short segment on Bluff Street, between River Road and Vine Street, there is no existing eques-

trian trail. Although there is room to put one on the south side of the road, it will need to be coordinated with future development of the state-owned property on the southeast corner of the intersection. Continuing north on Vine Street and Norco Drive, equestrians can access existing equestrian trails. They can free-ride behind the Park-and-Ride at Sixth Street and Old Hamner Road and continue to the river where the trail descends to the river bed.

As an extension of the existing bicycle lanes on Corydon Avenue and River Road, there is adequate room for Class II bicycle lanes on Corydon Avenue between River Road and Vine Street, and on Norco Drive and Old Hamner Road. The Detroit Street Bridge has far less traffic at rush hour than the Sixth Street bridge and it is proposed that it is the Interstate 15 (I-15) crossing of choice. Bicyclists can then continue on Sierra Avenue and Seventh Street to access the entry to the ACOE bluff trail currently being planned by the City of Norco.

Primary Route from Hamner Avenue to La Sierra Wildlife Area

North of Hamner Avenue the existing bicycle pad created by the ACOE's bluff stabilization project is being paved and striped to Pedley Avenue. North of Pedley Avenue, for over a mile, residences line the bluff. North of Pedley Substation Road the river meanders north, away from the bluffs, which in this area are bare of houses. Much of the land is owned by Riverside City and Riverside County. However, there is a fifteen hundred foot stretch of the trail that would cross private land that currentlly blocks a river-adjacent bicycle trail. While to date the owner has not been willing to grant an easement or sell the property, it is proposed that this option continue to be pursued. Equestrians would continue to use their current trails in the riverbed. In the Hidden Valley Wildlife Area the Riverside Parks and Open Space Department is planning and constructing bicycle and equestrian/hiking trails to connect to the existing Santa Ana River Trail further east (Appendix F).

Overlooking the Hidden Valley Wildlife Area.

Alternate Route from Hamner Avenue to La Sierra Wildlife Area

To assure a viable route that can be realized within the next five years it is suggested that bicyclists exit the river bluff route at Pedley Avenue to access a Class II interim and long-term alternate. A Class II bicycle route could be developed on any of several east-west streets, however, 8th Street would provide the most direct route. Snaking the route north on California Avenue, then east on North Drive then onto Arlington Avenue would provide a timely and inexpensive connection to the existing entry to Hidden Valley Wildlife Area. To ensure a safe route for all users, a safe crossing would need to be developed at the entry to this facility.

SR-71 CONNECTOR
SR-71 to Euclid Avenue

North Prado Connector – SR-71 from SR-91 to Euclid Avenue - Map Exhibits 6, 7, and 9

Overview

Currently bicyclists riding from the cities of Chino Hills and Chino to the West Corona Metrolink station ride their bicycles on State Route 71, a heavily traveled highway. At the southern terminus they exit the highway via an old farm road, and wind their way to Green River Road as they are prohibited from accessing State Route 91. This is clearly a route for only the most intrepid riders. The existing alternative is a route around the east side of Prado Basin adding over ten miles to the trip.

Example of a separated bicycle lane adjacent to I-80 in northern California.

Caltrans staff has met several times with staff from local jurisdictions to consider a separated bicycle lane adjacent to the northbound lane of SR-71, similar to a successful bicycle lane along I-80 between Davis and Sacramento (Appendix E, Section O).

As part of the planning process Caltrans staff has prepared comments, outlining specific design guidelines (Appendix K). Prominent among the suggestions were safety measures, permitting, and wild-life issues. The lead agency to further develop this project will need to be decided. This may be either Caltrans or one of the local jurisdictional agencies.

Bicycle Route from Prado Dam to Euclid Avenue

The proposed bicycle trail on the ACOE maintenance road (north bank of the main river channel just downstream of Prado Dam) would connect to a Class I bike trail along the northbound lane of SR-71 by way of an engineered bicycle ramp. This would be located in the general vicinity of the existing maintenance road that now connects Prado Basin with SR-71.

TKE Engineering identified three existing conditions adjacent to the northbound lanes of SR-71, including down-slopes, up-slopes and level (Appendix E, Sections A-A, B-B, C-C), the most prevalent being down-slopes. All of the conditions are compatible with construction of the proposed bikeway, however, many will require cut and fill and/or retaining walls. To address concerns regarding traffic noise, the trail can be built below the grade of the highway in many areas.

A barrier to prevent trespassing into Prado Basin has been requested by Caltrans. However, to retain the quality of the spectacular views of Prado Basin, it is suggested that a transparent barrier such as chain link fencing can be combined with a viewing area approximately midway along the two and one-half mile route. Further technical studies of the junctures of the proposed bikeway and the proposed SR-71 wildlife undercrossings will be necessary to assure that the bikeway does not interfere with wildlife migrations, nor allow wildlife to access SR-71.

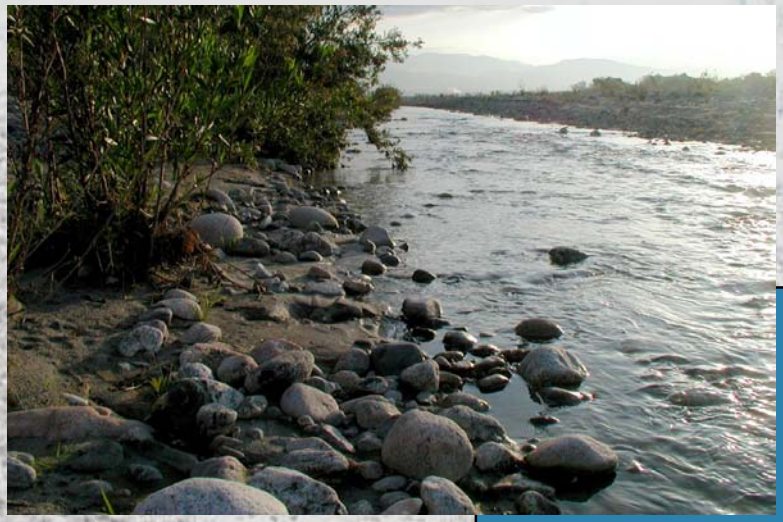
Bicyclists would exit the SR-71 bikeway at Euclid Avenue with connections to the Cities of Chino and Chino Hills' proposed bikeway and trail systems.

Equestrians would access the North Prado region by way of the State Park Aliso Canyon trail, west of SR-71, and make connection to the Cities of Chino Hills and Chino trails systems.

Proposed SR-71 wildlife culvert undercrossing location.

Existing maintenance road in North Prado Basin.

Equestrian and hiking trail through Chino Hills State Park.



APPENDIX A
Opportunities & Constraints

Appendix A

Opportunities and Constraints
Gypsum Canyon Road to Prado Dam

March 15, 2005

Segment	Santa Ana River Trail Status	Location	Multi-Use	Bike	Hi/Eq	Opportunities	Constraints	Description	Action Items	Jurisdiction
G3	SART	Gypsum Canyon Rd. to Creek Dr. (Yorba Linda)		X		Existing maintenance road is currently used by bicyclists and hikers Separation from SR-91	Linkage to trail further east would require bridging the river.	The existing maintenance road along the north bank of the Santa Ana River in Yorba Linda is currently used by bicyclists and hikers. It lacks the true character of a rural trail due to the housing tracts to the north, but its proximity to the river provides a pleasant walk/ride.	Check ownership status	Orange County
G7a	SART	Creek Dr. east about 800 feet		X		Existing unpaved road Separation from SR-91	Linkage to the east would require bridging the river	This Class I bicycle trail would proceed east from Creek Dr. adjacent to the southern edge of Burlington Northern Santa Fe (BNSF) railroad tracks for about 800 feet where it would join with the hiking/equestrian trail to continue together adjacent to the tracks.	Check ownership Ground truth extent of the irrigation channel	Orange County
G7	SART	800 feet east of Creek Dr. to Evening Breeze Dr. (Yorba Linda)		X	X	State Parks owns land south of river Separation from SR-91	A portion of the trail would be through habitat, Linkage to the east would require bridging the river	The bicycle and hiking/equestrian trails would proceed easterly together through the historic orange groves and degraded habitat. This would need approval from U.S. Fish and Wildlife and CA Fish and Game. It would require 2 bridges further east.	Check ownership Ground truth extent of the irrigation channel	Orange County
G9	SART	West boundary of Green River Golf Course (GRGC) to GRGC clubhouse		X	X	Separation from SR-91 Flat terrain Potential room for trails	Would require approval of golf course management Would require realignment of one golf green Would require approval from Orange County Public Facilities and Resources Dept. - which will be deferred for 5-10 years	This alignment has many good qualities. There is adequate room to squeeze both trails at the toe of slope of the BNSFtrack berms. An important constraint may be the golf course, as this route would require moving one of the greens that lies at the northwest corner of the golf course. Also, this property is going to be purchased by Orange County Public Facilities and Resource Department for flood control purposes and that purchase and subsequent planning will not be completed within the time frame of the Caltrans grant. This may cause difficulty in getting approval for this alignment.	Check with BNSF re setbacks for trails	Orange County
G9a	SART	Approximately 600 feet west of Green River Golf Course clubhouse, over BNSFtracks to approximatley 600' north of the clubhouse		X	X	Grades north of the tracks at this location would permit a trails alignment This alignment would use State Parks property	This alignment would require crossing the BNSFrailroad tracks to the north side	This alignment would provide a link to the trail alignment north of the BNSFrailroad tracks. The slopes north of the tracks are less steep here and adequate room is available for both trail alignmnets. The trail would proceed on State Parks' land. The challenge here is obtaining permission and funding for an bridge over the BNSFrailroad tracks.	Check with BNSF re setbacks for trails	San Bernardino County
G10	SART	Evening Breeze Dr. to west boundary of Green River Golf Course		X	X	Room for double bridge river crossing State Parks land would accommodate a trail	Environmental clearance needed Needs two bridges across the Santa Ana River	Route G10 is an alternative to G8 that provides a route for all users and avoids SR-91. However, it would require two bridges spanning the river. The property along the southern perimeter of this alignment has been recently purchased by State Parks as a wildlife corridor. A trail across this property might conflict with this use. Approval by State Parks, U.S. Fish and Wildlife would be needed. The two bridges would be costly as they would need to be built to withstand substantial flood waters.	Check re environmental status of Fish & Wildlife CA Fish and Game Orange County Public Facilities and Resource Department	Orange County

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Opportunities and Constraints
Gypsum Canyon Road to Prado Dam

Segment	Santa Ana River Trail Status	Location	Multi-Use	Bike	Hi/Eq	Opportunities	Constraints	Description	Action Items	Jurisdiction
G12	SART	This route, extending from north of the clubhouse to SR-71 uses a portion of the Santa Ana Watershed Project Authority's (SAWPA) maintenance road. However, this segment of the proposed trail is not on CA State Park land and appears to have ownership conflicts. The Orange County Public Facilities and Resources Deptartment EIR should provide more information about ownership when it is released in October of 2005.		X	X	Easy grade Aesthetic Linkage to Aliso Canyon trail in Chino Hills State Park Linkage to Army Corps of Engineers (ACOE) maintenance road in Prado Basin	Ownership is not known	The existing maintenance road along the north permeter of the golf course is located on an property whose ownership is being researched by Public Facilities and Resource Department. However, several easements have been granted including one to SAWPA. They are planning on using this alignment for their desalter (SARI Line) and are ammenable to having the trail alignment in this location.	Ownership/easement - SAWPA and CA State Parks Check environmental status with U.S. Fish & Wildlife, CA Fish and Game, ACOE	Riverside County
G24	SART	This route, from approximately 750 feet to 3000 feet north of clubhouse links to the SAWPA maintenance road. This segment avoids ownership conflicts by using State Parks land.		X	X	Check ownership Easy grade Aesthetic Linkage to Aliso Canyon trail in Chino HillsState Park Linkage to ACOE maintenance road in Prado Basin	Possible bridge over Santa Ana River	About 1/4 mile north of the golf course club house the ownership conflicts may create a conflict for staying on the SAWPA's maintenance road. As an alternative the existing State Parks equestrian trail.can be expanded to include a Class I bicycle trail.	Ownership/easement - SAWPA and CA State Parks Check environmental status with U.S. Fish & Wildlife, CA Fish and Game, ACOE	State Park
G20	SART	Gypsum Canyon to Creek Dr. (Yorba Linda)			X	Existing maintenance road in orange groves Historic irrigation channel	Linkage to the east would require bridging the river	This route would begin adjacent to an historic irrigation channel that could be restored, through degraded habitat and proceed east through historic orange groves that are still in production. This land is owned by the County, but potential for this use would need to be confirmed. The bicycle trail on the existing maintenance road to the north, would parallel this segment of the hiking/equestrian trail	Check ownership Ground truth extent of the irrigation channel	Orange County
G20	SART	Passes primarily through existing citrus groves from Gypsum Canyon Rd. east to 150 feet west of Evening Breeze Dr.			X	Removed from SR-91	Passes through some degraded habitat	This route would begin adjacent to an historic irrigation channel that could be restored, through degraded habitat and proceeds east through historic orange groves that are still in production. Possible limitations include ownership issues, and issues further east where the river abuts the railroad tracks. where alternatives are discussed above in G8 and G10.		Orange County
G14, 14b, & 14c	SoRoute	Class I trail from Gypsum Canyon Rd. to Green River Rd.		X		Existing bicycle trail No bridge needed to cross Santa Ana River Caltrans will need to move for SR-91 widening	None known	The existing bicycle route adjacent to SR-91 is suitable for now, despite the fact that it is noisy and unpleasant, sandwiched between the south bank of the river and the toe of SR-91 embankment. Of concern are engineering drawings that propose truncating the existing trail (EIS/EIR for the proposed Orange County Public Facilities and Resource Department) . Widening of SR-91 would likely require the existing bicycle trail to be replaced.	Existing	Orange County

Appendix A

Opportunities and Constraints
Gypsum Canyon Road to Prado Dam

Segment	Santa Ana River Trail Status	Location	Multi-Use	Bike	Hi/Eq	Opportunities	Constraints	Description	Action Items	Jurisdiction
G15	SoRoute	Class II trail from the golf course entry to Green River Rd intersection with SR-91		X		Present local use of existing roadway for Class II. Adequate room for Class II	Traffic moderate to golf course and mobile home park	Traffic on Green River Road is generally limited to residents of the mobile home park and users of the golf course. It provides adequate width for bicycle lanes and the grades, while steep are negotiable.	Verify future plans for Green River Rd.	Orange County
G15a	SoRoute	Class II connector over BNSFrailroad tracks on Crestridge Dr. (entry to Green River Housing Tract) from Green River Rd. To State Parks property and segments G15b.		X		There is adequate room for bicycles on Crestridge Dr. This is an existing route crossing the BNSFrailroad tracks	Traffic is moderate in the morning and early evening	The existing golf cart underpass in Green River Golf Course would be suitable for bicycles, however, it is less direct than a bridge over the rail road tracks and creates the potential for bicyclists to unofficially cut across the railroad tracks, creating a hazard.		San Bernardino County
G15b & G15c	SoRoute	Class I trail on the Chino Hills State Park property (southern perimeter of Green River Housing Tract) to east boundary of Chino Hills State Park.		X		Chino Hills State Park owns land Grades are easy	The Chino Hills State Park property is isolated.	Because of the isolation of this Class I bike trail through State Parks property this route may attract non-beneficial uses behind the Green River Housing. Linkage of this segment with the ACOE maintenance road would require crossing areas identified as endangered habitat and obtaining approval for this route may be difficult. However, it is a key connector to the southern bicycle routes.		State Park
G16	SoRoute	This proposed Class I local connection beneath SR-91 extends from the proposed ACOE maintenance road along the south side of the river to link to segment G15c		X		Easy grade Aesthetic Linkage to Aliso Cnyn trail in Chino Hills State Park Linkage to ACOE maintenance road in Prado Basin	Possible habitat conflict downstream of the anticipated ACOE bridge over the Santa Ana River.	This segment provides a very important link from the ACOE maintenance road along the south bank of the river by connecting to segments G15a,b&c which link to the existing bicycle routes east to Corona and west to Orange County. It may be very difficult to get approval from CA Fish and Game for this trail segment,.	Check environmental status with U.S. Fish and Wildlife, CA Fish and Game, ACOE	Riverside County
G26	SoRoute	Existing Class II on Green River Rd. from Dominguez Rd. east to City of Corona		X		Easy grade Aesthetic Linkage to Aliso Canyon trail in Chino Hills State Park Linkage to ACOE maintenance road in Prado Basin	Possible bridge over Santa Ana River	This is an existing local route. However, it has value both as a local route and also as a temporary route until a more long-term preferred route is built.	Ownership/easement - SAWPA and CA State Parks Check environmental status with U.S. Fish & Wildlife, CA Fish and Game, ACOE	Corona
G14 & 14a	SoRoute	Gypsum Canyon Rd. to Green River Rd.			X	Habitat and ownership issues are minimal	Caltrans may need to move this route for potential SR-71 widening Adjacent to SR-91 Limited room adjacent to bike trail on south bank of the river	The proposed hiking/equestrian route adjacent to SR-91 would have adequate room from the Gypsum Canyon Rd. Bridge to about 600 feet east of the bridge where it would join the existing bicycle trail south of the river. The next 500 feet would be tight, and then the river meandes north leaving more room. Potential widening of the SR-91 would likely necessitate replacing this route.	Existing	Orange County
G23	SoRoute	Proceeds north from SR-91, adjacent to the south bank of the river along the western perimeter of Green River Golf Course, to Creek Dr.			X	Aesthetic State Parks ownership	Potential habitat conflicts	This route links the proposed equestrian trail along SR-91 to segment G9 (Green River Route 2) along the south side of the railroad tracks. This route would require one bridge crossing. (This bridge would be one of the two needed to complete the route along the south side of the BNSFtracks)		Orange County

Appendix A

Opportunities and Constraints
Gypsum Canyon Road to Prado Dam

Segment	Santa Ana River Trail Status	Location	Multi-Use	Bike	Hi/Eq	Opportunities	Constraints	Description	Action Items	Jurisdiction
G27	SoRoute	Proposed hiking trail from SR-91 (south of Prado Dam) to Fresno Canyon			X	Easy grade Aesthetic Linkage to Aliso Canyon trail in Chino Hills State Park Linkage to ACOE maintenance road in Prado Basin	Possible bridge over Santa Ana River	Ths proposed route would provide local hiking access to Fresno Canyon, and could be accessed from the Santa Ana River Trail via the G15 and G25a bicycle routes.	Ownership/easement - SAWPA and CA State Parks Check environmental status with U.S. Fish & Wildlife, CA Fish and Game, ACOE	Riverside County
G21	Alternate SART	Gypsum Canyon Road bridge		X	X	Existing bridge with fenced north and southbound sidewalks	None known	This existing Gypsum Canyon Rd. bridge has existing multi-use north and southbound lanes that link trail possibilities along the north and south banks of the river.		Orange County
G12a	Alternate SART	This route, extends from approximately 750 feet north of the golf course clubhouse to 3000 feet northeast on the SAWPA maintenance road		X	X	Easy grade Aesthetic Linkage to Aliso Canyon trail in Chino Hills State Park Linkage to ACOE maintenance road in Prado Basin	Ownership may be an issue	The existing maintenance road in this location has questionable ownership and may also conflict with the Orange County Public Facilities and Resource Department proposed plans.	Ownership/easement - SAWPA and CA State Parks Check environmental status with U.S. Fish & Wildlife, CA Fish and Game, ACOE	Sate Parks
G25	Alternate SART	Proposed Class I would be a local connector adjacent to the north side of the railroad tracks bearing east from segment 15a to the culvert beneath SR-91 (south of Prado Dam)		X		Easy grade Aesthetic Linkage to Aliso Canyon trail in Chino Hills State Park Linkage to ACOE maintenance road in Prado Basin	Possible bridge over Santa Ana River	This route would provide a link to the existing Class bicycle trail adjacent to SR-91 at Green River Rd. and a link to the Corona Class II bicycle lanes heading east on Green River Rd.In addition to being a local connector, this bicycle segment would provide a link over the railroad tracks from the proposed Santa Ana River Trail to the Class II bicycle trail on Green River Rd.	Ownership/easement - SAWPA and CA State Parks Check environmental status with U.S. Fish & Wildlife, CA Fish and Game, ACOE	Riverside County
G17	Constrained	Adjacent to western perimeter of Green River Mobile Home Park and Green River Housing Tract to the northeast corner of the Green River Housing Tract		X		Staying on the south bank of the river eliminates the need for a bridge to cross the river Planting treatment to screen housing	Easements/ownership may be a problem Privacy issues with adjacent owners may be an issue May interfere with Public Facilities and Resource Department river reinforcement plans	This alignment could take advantage of the bank stablization proposed as part of the Mainstem project by the Orange County Public Facilities and Resource Department. There is room to pass beneath the railroad trestle (on the south bank of the river) as it crosses the Santa Ana River along the eastern border of the Green River Mobile Home Park. A planting treatment to screen housing might satisfy potential privacy issues.	Check ownership Ground truth	Riverside County

Appendix A

Opportunities and Constraints
Gypsum Canyon Road to Prado Dam

Segment	Santa Ana River Trail Status	Location	Multi-Use	Bike	Hi/Eq	Opportunities	Constraints	Description	Action Items	Jurisdiction
G18	Constrained	Ridge Dr. west thru Chino Hills State Park - Class I		X		Aesthetic Property owned by Chino Hills State Park	This route is isolated There are potential habitat issues further upstream	This alignment would be isolated and likely to attract non-beneficial uses behind the Green River Housing Tract. It would link with segment G16 which presents habitat issues.	Existing	Riverside County
G4	Constrained	Creek Dr. to Evening Breeze Dr. (Yorba Linda) north of railroad tracks			X	Culvert crossing of BNSFtracks at Creek Dr.	Existing City of Yorba Linda conservation easement, or Easement - proximity to BNSFtracks Possible linkage problem to east	This route would require obtaining a trails easement across an existing conservation easement that is part of the housing tract adjacent to it on the north side. Further east this segment links to segment G5 north of the BNSFtracks, which does not have space to accommodate trails	Check conservation easement Check with BNSF re setbacks for trails Check with BNSF re culvert undercrossing	Orange County
G8	Constrained	Evening Breeze Dr. to west boundary of Green River Golf Course		X	X	No bridge would be required	BNSFeasement may conflict Environmental clearance needed	Route G8 provides a route for all users that avoids SR-91 and does not require bridging the river. However, there is a 100 - 150 foot segment of this route that would require an easement from BNSFrailroad where the river abuts their tracks. Slope stablization would be required with some infill of the river to provide an adequate pad for a true multi-use trail in this area. Technical studies are necessary to determine the practicality of this solution, including the cost.	Check with BNSF re setbacks for trails	Orange County
G11	Constrained	Clubhouse through existing RR undercrossing		X	X	Existing crossing beneath BNSFtracks	Possible conflict with golf course	There is an existing undercrossing beneath the tracks in Green River Golf Course for use by golfers. A continuation of the trail alignment at the toe of the BNSFtrack berm would provide access for all users beneath the rails. This alignment would be cost effective although it would require an easement, probably from Orange County Public Facilities and Resource Department.	Will depend on golf course acquisition by Orange County Public Facilities and Resources Department	Riverside County
G5	Constrained	Evening Breeze Dr. to north of Green River Golf Course clubhouse			X	Existing BNSFmaintenance road	Subsidance on adjacent hillsides Located on BNSF easement Close proximity to BNSFtracks	This route along the north side of the BNSFrailroad tracks provides inadequate space for trail alignments, with steep unstable slopes (with visible slippage) to the north and the railroad tracks to the south. It is within the BNSFright of way, and they have a general policy of not permitting trails within their right of way.	Check with BNSF re setbacks for trails	Orange County

***Trail Status**

SART	Preferred Santa Ana Trail Route. Some segments may have time constraints which would delay their completion.
SoRoute	Preferred alternate routes. These include existing/proposed segments and can be completed at minimal cost within the next few years.
Alternate	Existing routes. These duplicate SoRoute segments are less direct, aesthetic, safe or otherwise less desirable.
Constrained	Severely constrained. These are trail segments that are constrained by cost, geology, ownership or other reasons and are no longer being considered.

***Unit Cost** The Unit costs for bicycle and equestrian trails include 10% for plan preparation

Appendix A

Opportunities and Constraints
Prado Dam to Corydon Avenue

March 15, 2005, 2005

Segment	Location	Multi-Use	Bike	Hike Eques.	Opportunities	Constraints	Description	Action Items	Jurisdiction
P1	Santa Ana River east to proposed headwall		X		ACOE has offered to allow bicycles on maintenance road on north and south sides of river channel.	None known	A bicycle trail on the proposed ACOE maintenance road on the south side of the main river channel would provide a paved base for a bicycle trail that would serve as an interim trail until the trail in Green River Golf Course area is completed. After that, it would be a local use trail that would link local residents to the trail on the north side of the channel, via a proposed ACOE bridge, providing access to SR-71	Coordinate with ACOE	ACOE
P2	Santa Ana River east to proposed headwall		X		ACOE has offered to allow bicycles on maintenance road on north and south sides of river channel	None known	A bicycle trail on the proposed ACOE maintenance road on the north side of the main river channel would provide a paved base for a bicycle trail that would link to the proposed final trail alignment downstream of Prado Dam and also provide access to northbound lanes of SR-71.	Coordinate with ACOE	ACOE
P3	Headwall to edge of spillway plain and on existing bluff along southern perimeter of Prado Basin		X		There is a need to work with ACOE regarding habitat restoration. The wide bluff would accommodate trails without disturbing valuable habitat.	There is possible mountain lion danger. Steep ascent to the top of the bluff may be difficult to accommodate. This location is noisy and may be difficult to access from the floodway plain if the ACOE removes the existing construction ramp and does not provide a substitute	The trails would proceed side-by-side across the spillway plain after descending from the ACOE maintenance roads along the river channel. It would proceed to the bluff just south of the spillway. The ACOE is still evaluating how to accommodate a ramp up to the top of the bluff for a trail and wildlife corridor. The existing construction ramp is slated to be eliminated because it is too close to the spillway. It may be possible to realign it further south. The top of the bluff along the Caltrans SR-91 R.O.W. is wide enough to accommodate side-by-side equestrian and bicycle trails. The Freeway noise can be heard, but the route is high and dry, a provides good view of Prado Basin and would not disturb valuable habitat.	Coordinate with ACOE	ACOE
P4	Descent from existing bluff to P5		X		Perimeter of Prado Basin avoids sensitive habitat and flood plain	Bridges or culverts will be needed to cross drainage inlets.	The bicycle trail would continue along the perimeter of Prado Basin. Bridges or culverts would be needed to cross drainage inlets on two occassions.	Coordinate with ACOE	ACOE
P5 & P5a	Continuation of P4 to wastewater treatment levee		X		Aesthetic trail alignment	There is a need for ramps to access levees.	The bicycle trail decends from the levee and join the equestrian trail in the basin at the toe of the existing slope.	Coordinate with ACOE	ACOE/ Corona
P6	On proposed Corona wastewater treatment levee		X		Proposed levee will be graded to width. Scenic views of Prado Basin habitat	Unaesthetic Wastewater Treatment Plan	The bicycle trail will ascend the Wastewater Treatment Plant levee.	Coordinate with ACOE	ACOE/ Corona
P6a	On proposed Corona wastewater treatment levee		X		Proposed levee will be graded to width. Scenic views of Prado Basin habitat	Unaesthetic Wastewater Treatment Plan	The bicycle trail will skirt the wastewater facility continuing on the bluff beyond the plant for about another 1400 feet.	Coordinate with ACOE	ACOE/ Corona
P7	From Corona Wastewater treatment plant levee to Smith Avenue		X		Avoids the flooding on the floor of the basin Property owned by City of Corona	None known	The bicycle trail will descend from the bluff and skirt the southern perimeter of Butterfield Stage Park. This route is preferred because of flooding further north.	City of Corona to plan	ACOE/ Corona

Appendix A

Opportunities and Constraints
Prado Dam to Corydon Avenue

Segment	Location	Multi-Use	Bike	Hike Eques.	Opportunities	Constraints	Description	Action Items	Jurisdiction
P15	On proposed Alcoa levee		X		Class I Existing graded levee	None known	The bicycle trail will continue adjacent to Smith Avenue on proposed ACOE levees to Rincon Street.	Coordinate with ACOE	ACOE/ Corona
P16	From Alcoa Dike to Auburndale St. intersection with Temescal Canyon Wash		X		Class I Existing graded levee	None known	The bicycle trail will link across Rincon Street to the proposed ACOE levees where it will proceed south to link to the proposed Temescal Canyon Wash.	City of Corona to plan	ACOE/ Corona
P17 & P17a	On Rincon Street from Smith Ave. to Corydon Ave.		X		Opportunity to move traffic over to accommodate a Class I bike path along the southbound lane of traffic	Road, as is, is too narrow to accommodate bicycle lanes on both sides of the street, especially where it curves as it approaches Corydon Ave. Creating a Class I along existing traffic lines would require 12 foot strip of mitigation in addition to 10 foot strip for equestrians.	The bicycle trail would proceed northwest on Rincon St. adjacent to the northbound lane of traffic as a Class I. The equestrian trail will run parallel to it, separated by a vegetated berm. The road would be restriped to move motorized traffic over to accommodate the width of the bicycle trail.	City of Corona to plan	Corona
P8	Santa Ana River east to proposed headwall			X	ACOE has offered to allow equetrians on maintenance road on north side of river channel.	A fence may be needed on the channel side of the maintenance road and on the bridge.	Equestrians would utilize the proposed ACOE maintenance road along the north side of the river channel which would link to the proposed equestrian trail west of SR-71. They would cross either on the head wall or over the proposed ACOE bridge to the spillway plain.	Coordinate with ACOE	ACOE
P9	Headwall to edge of spillway plain and on existing bluff along southern perimeter of Prado Basin			X	There is a need for continued coordination with ACOE regarding habitat restoration.	There is possible mountain lion danger. Steep ascent to the top of the bluff may be difficult to accommodate.	The trails would proceed side-by-side across the spillway plain after descending from the ACOE maintenance roads along the river channel. It would prceed to the bluf just south of the spillway. The ACOE is still evaluating how to accommodate a ramp up to the top of the bluff for a trail and wildlife corridor. The existing construction ramp is slated to be eliminated because it is too close to the spillway. It may be possible to realign it further south.	Coordinate with ACOE	ACOE
P10	Descent from existing bluff to P11			X	Perimeter of Prado Basin avoids sensitive habitat and flood plain	Bridges or culverts will be needed to cross drainage inlets.	The hiking/equestrian trail would continue along the perimeter of Prado Basin. No bridges or culverts would be needed to cross drainage inlets.	Coordinate with ACOE	ACOE
P11	Continuation of P10 to wastewater treatment levee			X	Rural character and separated from freeway noise	None known	The equestrian trail would continue at the base of the existing bluff for the segment west of the Wastewater Treatment Plant levee.	Coordinate with ACOE	ACOE/ Corona
P12	Along base of Corona wastewater treatment levee			X	Good rural character Habitat is mostly invasives in this area	None known	The equestrian trail would proceed along the base of the levee and then head across the floor of the basin toward the Corona Municipal Airport.	Coordinate with ACOE	ACOE/ Corona

Appendix A

Opportunities and Constraints
Prado Dam to Corydon Avenue

Segment	Location	Multi-Use	Bike	Hike Eques.	Opportunities	Constraints	Description	Action Items	Jurisdiction
P13	Adjacent to westbound lane of Butterfield Drive to base of Alcoa levee, or proceed across Prado Basin to hug the western perimeter of the Corona Airport			X	Crossing the Basin would be in keeping with the rural nature of the trail Using Butterfield Drive would avoid airport conflicts	Airplane noise Mitigation and permitting a probability Airport not in keeping with rural character of trail A trail along the western perimeter of airport would interfere with airport operations	The equestrian trail has two potential options here. The first option would be to proceed across the floor of the Basin and then skirt the airport hugging the western perimeter. It would then skirt the northern perimeter of the airport and then daylight at Rincon St. just northwest of the water ponds. Mitigation for habitat would most likely be required for the short segment around the airport and airport staff has indicated that it would interfere with airport operations. The second alternative would proceed along the westbound perimeter of Butterfield Dr. to the Alcoa levee.	City of Corona to plan	ACOE/ Corona
P14	On Rincon Street from Smith Ave. to Corydon Ave.			X	Opportunity to move traffic over to accommodate a Class I bike path along the southbound lane of traffic with an adjacent equestrian trail	Road, as is, is too narrow to accommodate bicycle lanes on both sides of the street, especially where it curves as it approaches Corydon Ave. Creating a Class I bike path along existing traffic lines would require 12 foot strip of mitigation in addition to 10 foot strip for the hiking/equestrian trail.	The equestrian trail would run parallel to a Class I bicycle trail that would be adjacent to the southbound lane of traffic on Rincon Street Mitigation would be minimized by moving motorized vehicle lanes to the north side of the road and eliminating one of the shoulders.	City of Corona to plan	ACOE/ Corona
Staging Area	In Prado Basin adjacent to southbound lane of Auto Center Dr. in current location of paintball facility				ACOE will be purchasing paint gun facility. Proximity to West Corona Metrolink station at Auto Center Dr.	Possible problems with inappropriate uses	A staging area at Auto Center Dr., where the existing paint gun facility is would accommodate facilities for bicycle commuters taking Metrolink. It could have showers and bicycle lockers, as well as more traditional facilities, such as shade and drinking water. For equestrians it would provide room for horse trailer parking, horse tie-ups and water for horses. The ACOE is proposing to purchase this property and has expressed no concerns with using it for a staging area.	State Parks to plan in conjunction with City of Corona	ACOE/ Corona
SR-1	Adjacent to northbound lane of SR-71 from SR-91 to Euclid Ave.		X		There are great views of Prado Basin from the proposed bicycle trail, The bicycle trail would link cities north of the basin to the West Corona Metrolink station, There is adequate room to accommodate a bicycle trail.	This trail segment would be quite costly, Fencing would be needed to keep people off the highway and out of habitat, Habitat crossings beneath SR-71 would need to be avoided.	The Class I separated bike path adjacent to the northbound lane of SR-71 would provide a connection from SR-91 to Euclid Ave. in Chino Hills. It would provide a bicycle commuting link from the cities north of Prado Basin to the West Corona Metrolink station in South Prado Basin at Auto Center Dr. There is adequate room along this corridor to accommodate the bicycle lane. Portions of the bicycle lane may be below the grade of SR-71 with vertical curves that help adjust the trail to the terrain. Cut, fill and retaining wall would be needed to create a stable trail. Fencing would be used, where needed, to keep users on the trail.	Caltrans to plan in conjunction with Riverside County and Cities of Corona, Chino and Chino Hills	Caltrans/ County of Riverside/ Corona

Appendix A

Opportunities and Constraints
Corydon Avenue to Hidden Valley Wildlife Center

Segment	Location	Multi-Use	Bike	Hi/Eq	Opportunities	Constraints	Description	Action Items	Jurisdiction
HE-B 10	Corydon Ave. to Bluff St. on the slope of the bluff adjacent to Prado Basin		X	X	Avoids traffic Rural quality to the trail	Potential ownership issues with Orange County Water District (OCWD) Potential permitting issues Potential high cost of retaining wall Possible residential development by OCWD	This route avoids traffic on the streets. An option that avoids the ownership and permitting issues is to locate the trails on the slope, held by a retaining wall. Orange County Water District is considering development of a residential neighborhood on the bluff.	Coordinate with Orange County Water District and U.S. Fish and Wildlife Service	Corona/Norco/ Riverside County
HE-B 10a	Short trail to Prado Basin overview location		X	X	Spectacular view of Prado Basin	Possible residential development by Orange County Water District	This short trail segment provides access to a bluff overlooking Prado Basin. Orange County Water District is considering development of a residential neighborhood on the bluff.	Verify ownership	Norco / Riverside County
HE-B 20	Bluff St. to River Rd. on the slope of the bluff adjacent to Prado Basin		X	X	Avoids traffic Rural quality to the trail	Potential ownership issues with Orange County Water District Potential permitting issues Potential high cost of retaining wall	This route avoids traffic on the streets. An option that avoids the ownership and permitting issues is to locate the trails on the slope, held by a retaining wall. It has the potential to cross beneath River Rd. and connect with the proposed River Rd. bridge multi-use trail.	Coordinate with Orange County Water District and U.S. Fish and Wildlife Service	Norco / Riverside County
HE-B 30	River Rd. from Bluff St. to Prado Basin Park Rd. Proposed to be built by Riverside County Transportation and Land Management Agency		X	X	Proposed multi-use trail by Riverside CountyTransportation Department	None known	From Bluff St. current Riverside County Transportation and Land Management Agency plans are build a multi-use trail from Bluff St. to Prado Basin Park Rd. which would upgrade the existing underpass beneath River Rd. with a cloverleaf that would provide access to both the City of Chino trails system and the Jurupa Community Services District trails system.	Coordinate with Riverside County Transportation	Riverside County Transportation
HE-B 40	From River Rd. through Prado Basin Park north on Hellman Ave. to McCarthy Rd.		X	X	Exceptional views of Prado Basin along the bluff in Prado Basin Park	Potential ownership issues along Hellman Ave.	The first of two final trail segments forming a northern loop around Prado Basin could be built along the bluff in Prado Basin Park providing excellent views. It could follow Hellman Ave which has minimal traffic to access McCarty Rd. The eastern perimeter of Hellman Ave. is within the boundary of Prado Basin Park to McCarty Rd.	Verify ownership	Chino/ San Bernardino County
HE-B 50	From Hellman Ave. west on McCarty Rd. to the proposed Chino trail system		X	X	Possible use of paint gun property along McCarty Rd.	Potential ownership issues along McCarty Rd.	The final trail segment forming a northern loop around Prado Basin McCarty Rd., potentially on an easement at the existing paint gun park.	Verify ownership	Chino/ San Bernardino County
HE-B 60	Bluff St. north from River Road crossing Army Corps of Engineers (ACOE) property to link with Orange County Water District's proposed River Road Project perimeter road.		X	X	Room for Class I bike and Hiking/equestrian trails on northbound side of the road	Need to cross Bluff St. to access perimeter road	There is adequate room for a Class I bike trail and hiking/equestrian trail on Bluff St. About 300 feet north of River Rd. there is access via ACOE property to the proposed Orange County Water District River Road Project perimeter road running adjacent to the River.	Coordinate with the City of Norco	Norco
HE-B 70	Orange County Water District's proposed maintenance road from River Rd. to 5th St. staging area.		X	X	Class I is preferable for aesthetics, safety, and continuity. Cost would be minimal due to Orange County Water District's grading of roadbed.	Access is limited.	A preferred alternative would be to utilize the proposed Orange County Water District River Road Project perimeter road for bicyclists and their equestrian trails for hikers/equestrians. Access for both could be from the River Road Bridge Project multi-use trail or from Bluff St. as described in HE-B60 above. Further north access to this trail segment would be from 5th St. adjacent to Wayne Makin Park. At its northern terminus it could connect to the proposed ACOE toe stabilization project. Sections in the EIR/EIS for this reach exhibit adquate room for a bike trail on top of the bluff and equestrian/hiking trail at the base.	Coordinate with Orange County Water District	Norco/ Orange County Water District

Appendix A

Opportunities and Constraints
Corydon Avenue to Hidden Valley Wildlife Center

Segment	Location	Multi-Use	Bike	Hi/Eq	Opportunities	Constraints	Description	Action Items	Jurisdiction
HE-B 80	Class I bike path on bluff adjacent to, and hiking/equestrian trail at base of ACOE proposed toe stabilization project (south of Hamner Ave.). Extends from the Orange County Water District's proposed River Road Project perimeter to the northern boundary of the ACOE project just south of the Hamner Ave. Bridge		X	X	Potential for a Class I bicycle trail through the City of Norco	This area of the river has steep banks and is choked with arundo. No known flood control or stabilization projects in this area	This area of the river has steep banks and is choked with arundo. No known flood control or stabilization projects are proposed for this area, allowing the trail to piggy back. A potential Hamner Ave. bridge widening project in the future might provide an opportunity to complete this segment of the trail and to link to the proposed Jurupa Community Services District multi-us trail north of the river.	None known	ACOE/ Norco
HE-B 90	Class I bike trail on Norco bluff and hiking/equestrian trail at base of bluff from Pedley Ave. to La Sierra Wildlife Center trails		X	X	The arundo in the river bed reduces the environmental impacts of a trail	This stretch of the bluff would require easements for the bicycle trail across private property	Although this alignment is easy for equestrians placing a bicycle trail on the bluff raises many ownership issues as well as issues regarding the stability of the bluff.	Ownership - easements needed	Norco
HE-B 100	Hamner Ave. bridge		X	X	Potential for a Class I bicycle trail through the City of Norco	This area of the river has steep banks and is choked with arundo. No known flood control or stabilization projects in this area	This area of the river has steep banks and is choked with arundo. No known flood control or stabilization projects are proposed for this area, allowing the trail to piggy back. A potential Hamner Ave. bridge widening project in the future might provide an opportunity to complete this segment of the trail and to link to the proposed Jurupa Community Services District multi-us trail north of the river.	None known	Norco/ Riverside Transportation Dept.
HE-B 110	Jurupa Community Services District's multi-use trail		X	X					Jurupa Community Services District
B1	Corydon Ave. from Stagecoach Dr. to River Rd.		X		Existing Class II	Automobile traffic fumes and safety issues Not scenic	The existing Class II bicycle lanes along Corydon Ave. from Rincon St. to River Rd. is an acceptable alternate route. However, the next link along River Rd. is heavily traveled resulting in more fumes and a greater safety issue.	Verify ownership Check with Riverside County staff to evaluate potential for	Corona (Existing)
B2	River Rd. from Corydon Ave. to Bluff St.		X		Room for Class II on River Rd. south of Bluff St.	Limited room for Class II on northbound side of River Rd. only, north of Bluff St.	From Corydon Ave. to Bluff St., River Rd. provides adequate room to include Class II bike lanes. This road is heavily traveled during rush hour resulting in automobile fumes and the safety issues related to automobile traffic.	Coordinate with Riverside County Transportation	Norco
B3	Corydon Ave. from River Rd. north to Vine St.		X		Room for Class II on Corydon Ave.	Aesthetics	There is adequate room on Corydon Ave. from River Rd. northeast to 5th St. for Class II bicycle lanes. The aesthetic advantages of a Class I trail are prefererable.	Verify with City of Corona	Norco
B4	Corydon Ave.and Norco Dr. from Vine St. to Old Hamner Rd.		X		Room for Class II bicycle lane Provides access to businesses	Class I is preferable for aesthetics, safety, and continuity	There is adequate room for Class II bicycle lanes on Norco Dr. from 5th St. to Old Hamner Rd. however, crossing Hamner Ave. is difficult at rush hour and might require reconsideration of the timing of lights or some other consideration. The river just south of Hamner Ave. bridge is a potential choke point for the trail with its steep side, abundant vegetation and proximity to houses. Other agencies have considered bluff stabilization in this area, however, at this time no such project is apparent.	City approvals	Norco
B5	Old Hamner Rd./Detroit St. from Norco Dr. to Sierra Ave.		X		Room for Class II bicycle lane Provides access to businesses	Class I is preferable for aesthetics	There is adequate room for Class II bicycle lanes on Old Hamner Rd. and Detroit St. to Sierra Ave. The Detroit St. bridge is a better choice than the 6th St. bridge because of lighter traffic, particularly at rush-hour.	City approvals	Norco

Appendix A

Opportunities and Constraints
Corydon Avenue to Hidden Valley Wildlife Center

Segment	Location	Multi-Use	Bike	Hi/Eq	Opportunities	Constraints	Description	Action Items	Jurisdiction
B6	La Sierra Ave./River Dr. from Old Hamner Rd. to ACOE bluff stabilization along south bank of river		X		Room for Class II bicycle lane Provides access to businesses	Class I is preferable for aesthetics	There is adequate room for Class II bicycle lanes on La Sierra Ave. and River Dr. which connects to an existing ramp leading to the existing ACOE bluff along the south bank of the Santa Ana River.	City approvals	Norco
B7	Trail on platform created by ACOE of Engineer bluff stabilization project on south bank of the river from Hamner Ave. to Pedley Ave.		X		Existing bluff is graded for Class I bike trail with good access for bicycles Aesthetic	None known	The existing bluff created by the ACOE along the south bank of the Santa Ana River has been identified as a Class I bicycle path. It will need to be paved, striped and signed. It ends at an existing ramp which provides access to a soil cement bike path that ends at Crestview Dr. An alternate to the soil cement bike path is to exit at Pedley Ave. This route is detailed in the construction drawings prepared for the City of Norco in March 2002.	City approvals	ACOE/ Norco
B8	From existing river trail on bluffs south on Pedley Ave. to 8th St., east to California Ave. and north to North Dr.		X		Room for Class II bicycle lane on east side of California Ave. Existing plans to make a T intersection at Pedley Ave. and Arlington Ave.	Crossing at California Ave. and Arlington Ave. may be too close to Pedley Ave. for a stop sign.	Pedley Ave., 8th St. have adequate room for Class II bike lane. California Ave. has adequate room for bike lanes, but traffic speeds are high. An alternative is to cross California (which would require traffic control measures) and continue to Crestview Dr. which also has room to accommodate Class II bike lanes but has slower traffic. Another alternative is to take Pedley to 7th St. which has room for bike lanes but which may allow for a better crossing at California Ave.	Check with traffic engineers regarding crossing potential at California Ave. and Arlington Ave. City approvals	Norco
B9	North Ave. east to Arlington Ave. to Hidden Valley Wildlife Center trails via Arlington Ave.		X		Room for a Class II bicycle lane on Arlington Ave.	Traffic on Arlington Ave. is heavy Off-street route is preferable	The final bicycle link to the Hidden Valley Wildlife Area is difficult due to private property ownership on the north side of Arlington Ave. The property owners to date have not been agreeable to a trails easement on their property. Arlington Ave. provides adequate width for Class II bike lanes but traffic speeds are high and the road curves just east of the entry to Hidden Valley, resulting in a safety hazard to eastbound bicyclists needing to cross the road.	Revisit ownership to see if an off-street route can be found	Riverside County
B10	Class I bike trail linking the ACOE proposed toe stabilization project (south of Hamner Ave.) to the ACOE bluff stabilization (north of Hamner Ave.)		X		Potential for a Class I bicycle trail through the City of Norco	This area of the river has steep banks and is choked with arundo. No known flood control or stabilization projects in this area	This area of the river has steep banks and is choked with arundo. No known flood control or stabilization projects are proposed for this area, allowing the trail to piggy back. A potential Hamner Ave. bridge widening project in the future might provide an opportunity to complete this segment of the trail and to link to the proposed Jurupa Community Services District multi-use trail north of the river.	None known	ACOE/ Norco
HE1	On Stagecoach Dr. from Corydon Ave. to Corona/Norco city limit			X	Room for trail on north side of Stagecoach Dr.	Traffic noise and safety concerns Residential atmosphere Would require fill to accommodate trail width	Just east of Corydon Ave., Stagecoach Dr. slopes down to an empty parcel. There is room to put a trail in this location if fill is added to widen the trail pad. This street-adjacent trail would lack the rural character that the alternative of a a trail at the base of the bluff would have.	Check possibility of easement from developer Verify with City of Norco	Corona
HE1a	On Stagecoach Dr. from Corona/Norco city limit to end of Stagecoach Dr.			X	Existing trail	Residential atmosphere	The existing trail is functional and pleasant, however it lacks the rural charcter that a trail at the base of the bluff would have.	None known	Norco
HE3	On Bluff Rd. from Stagecoach Dr. to River Rd.			X	Existing trails	Residential atmosphere	The existing trail is functional and pleasant, however it lacks the rural charcter that the alternative of a trail at the base of the bluff would have.	City approvals	Norco
HE4a	Bluff St. from River Rd. to Vine St.			X	Proposed trail on Bluff St. adjacent to Naval Reserve site	Possible right of way issues	The Naval Reserve site on the southeast corner of River Rd. and Bluff St. does not provide access for equestrians. Consideration of an easement would be important here. To access the proposed Orange County Water District's River Road Project's perimeter road equestrians would need to cross Bluff St. mid-block.	Check possibility of easement from developer Verify with City of Norco	Norco

Appendix A

Opportunities and Constraints
Corydon Avenue to Hidden Valley Wildlife Center

Segment	Location	Multi-Use	Bike	Hi/Eq	Opportunities	Constraints	Description	Action Items	Jurisdiction
HE4b	Vine St. from Bluff St. to Corydon Ave.			X	Existing trail Vine St. north of Naval Reserve site	Trail exists on Bluff St.north of the Naval Reserve site to Corydon Ave.	North of the Naval Reserve site existing equestrian trails in residential neighborhoods continue along Vine St. north to Corydon Ave.	None known	Norco
HE5	Norco Dr. from Vine St. To Old Hamner Rd. -Existing			X	Existing trails	Difficulty crossing Hamer Ave. at rush hour	There are existing trails on Corydon Ave. and Norco Dr. from Vine St. to Old Hamner Rd., however backup of traffic at Hamner Ave. during rush would make equestrian crossing nearly impossible. Traffic regulation for motorized traffic northbound on Hamner Ave. or those turning eastbound onto 6th St. would be needed to clear the corner and provide a crossing for non-motorized traffic.	City approvals	Norco
HE6	Old Hamner Rd. from Norco Dr. to south bank of river			X	"Free ride - no official trail behind Park and Ride Existing trail on Old Hamner Rd.	None known	There is staging for equestrians at the Park and Ride on Old Hamner Ave. South of Norco Dr. After crossing Norco Dr., or when continuing east on Norco Dr., equestrians can link to Old Hamner Rd. Old Hamner Rd. has an existing equestrian trail on the east side which terminates at a ramp leading down through a fence opening to the river bed. Equestrians have been riding at this location for years on unofficial trails which have been maintained by Norco equestrians. Because this area is thick with arundo, habitat issues have not been a problem.	City approvals	Norco
HE7	Trail on south bank of river from Old Hamner Rd. to Pedley Ave. at base of ACOE toe stabilization project			X	Adequate room for equestrians to continue existing use Aesthetic route.	None known	Equestrians can use existing ramps at Corona Ave., north of California Ave. and at Crestview Dr., to access the river bed. Because the equestrians can ride in the river bed they are able to access the equestrian trails in Hidden Valley Wildlife Center.	Ground truth linkage to La Sierra or check with County Trails coordinator City approvals	ACOE/ Norco
HE8	Hiking/Equestrian trail linking the ACOE proposed toe stabilization project (south of Hamner Ave.) to the ACOE bluff stabilization (north of Hamner Ave.)			X	Potential for a river-adjacent Hiking/Equestrian trail through the City of Norco	This area of the river has steep banks and is choked with arundo. No known flood control or stabilization projects in this area	This area of the river has steep banks and is choked with arundo. No known flood control or stabilization projects are proposed for this area, allowing the trail to piggy back. A potential Hamner Ave. bridge widening project in the future might provide an opportunity to complete this segment of the trail and to link to the proposed Jurupa Community Services District multi-use trail north of the river.	None known	ACOE/ Norco
NP-1	Farm road access to SR-71 west side of SR-71		X		Use exsting road for egress from southbound SR-71	Requires easement	An existing farm road would provide an alignment for southbound bicyclists on SR-71, linking it to the ACOE proposed maintenance road along the north bank of the river channel adjacent to the dam. It would, along with segment P2, provide access for bicyclists to SR-71, which is now designated as a highway. Future plans to add additional lanes and redesignate SR-71 as a freeway would require this route to be replaced.	Check ownership	Riverside County
NP-2	ACOE maintenance access to SR-71 east side of SR-71		X		Use of existing road for acess to northbound SR-71	Requires easement	An existing maintenance road would provide an alignment for northbound bicyclists on SR-71, linking it to the ACOE proposed maintenance road along the north bank of the river channel adjacent to the dam. It would, along with segment P1, provide access for bicyclists to SR-71, which is now designated as a highway. Future plans to add additional lanes and redesignate SR-71 as a freeway would require this route to be replaced. Initial inquiry to the ACOE have met with approval of this alignment.	Ownership search, obtain permission, obtain easement from owner	Riverside County

APPENDIX B
Design Guidelines

Design Guidelines

The Design Guidelines for this project are a synthesis of Caltrans and County bicycle and trails standards. The three counties through which the Santa Ana River Trail passes, Orange, Riverside and San Bernardino, have individual standards that vary. However, their common intent is to provide safe, cost-effective bikeway and trail systems that can be realized within the context of varying degrees of urbanization. The guidelines presented in this report propose a standard for the trail that is preferable, however, in some locations may not be feasible because of narrow right-of-ways, steep slopes and existing development.

Substantial effort was taken to work with agency staff to coordinate the trail planning with transportation, flood control and bridge and roadway projects that are either already under construction or in the planning stages and anticipated to be completed within ten years. This type of coordination usually results in a better project, cost savings due to cost sharing and the ability to reduce environmental impacts by piggy-backing on newly-created infrastructure, such as levees, bank stabilization projects and bridges.

Because fire prevention is a high priority in Prado Basin Galen Young, Fire Marshall, City of Corona Fire Department reviewed the Prado Basin route exhibits. His original comments can be seen in Appendix H. Also, included in Appendix H are comments from Tim Mott, Corona Police Department, Traffic Division, regarding safety measures for the trail.

Additional comments from Caltrans regarding the proposed SR-71 separated bicycle lane can be found in Appendix H.

Further, helpful input was given to trail planning staff at a Public workshop which was held at the City of Chino Hills Council Chambers. These comments can be seen in Appendix I.

Where feasible comments were incorporated into the alignments and construction and maintenance guidelines. Some of the comments are more relevant to the next phases of planning and are being passed, as part of this document, to those who will convert the conceptual plan conceived in this document into the grant requests, National Environmental Policy Act (NEPA) and California Environmental Quality (CEQA) documents and construction drawings that will prepare it for construction.

General Guidelines

Signage

Because of the lengthy time span over which the Santa Ana River Trail is being constructed and the multi-jurisdictional nature of the Trail, complete uniformity of design is not practical. However, wherever practicable basic standards, in particular for signage, will provide a more uniform experience.

Trail Designation: Portions of the Santa Ana River Trail have been designated with National Recreational Trail status. This designation is given to exemplary trails of local and regional significance. It is intended that, upon completion, the entire trail, from the Pacific Ocean in Orange County to the Pacific Crest Trail in the San Bernardino Mountains, will be thus designated.

Recommendation: It is recommended that jurisdictions responsible for building the trail will agree on a common name for the trail, and design and post uniform signage that identifies the trail by name and identifies it as a National Recreational Trail.

Recommendation: Post uniform signage providing information about the Santa Ana River and its various habitats.

Wildlife Conflicts – Wildlife conflicts are a great concern along the river. Fast moving bicycles present a risk to many animals and horse manure is known to attract cowbirds, which endanger small birds. Additionally, some animals present a risk to trail users. While they are uncommon, cougars (which breed in nearby Fremont Canyon) have been sighted in this area.

Recommendation: Regulatory signage requiring slow speeds and informational signage about the risks to wildlife are recommended for areas where wildlife is known to cross the trail alignment.

Recommendation: Signage warning trail users about the risks of cougars and rattlesnakes and outlining appropriate behavior when encountering these animals, should be posted at regular intervals in affected areas.

Recommendation: In areas proximate to endangered birds, it is recommended that signage be posted that equestrians are to bag and carry out their horse's wastes. Waste-cans would be provided at rest areas and staging areas for disposal.

Fire Prevention: Because many Santa Ana River Trail users are from surrounding urban and suburban areas, they may be unfamiliar with indigenous habitat and wildlife, how to protect these resources and how to behave in a manner that assures their own safety. In particular, fire can be a real danger to users, habitat and wildlife alike. Cigarette smoking and building recreational fires are two risky behaviors.

Recommendations:

1. Informative signage should be used illustrating the consequences of fires and the increased fire risks in vegetated areas, asking people to smoke in designated areas only and prohibiting building fires.
2. In high risk areas the bicycle trail should be built with frequent access points for fire fighting equipment and for trail users to exit the trail.
3. In high risk areas unvegetated buffers should be built adjacent to the trail, and consideration should be given for placing fencing between the trail and sensitive habitat.
4. Safe, unvegetated zones should be placed in high risk areas for people caught on the trail during a fire.

Railroad:

The proximity of the preferred trail alignment in Green River Golf Course to the railroad tracks creates a concern for the safety of trail users, particularly children and equestrians.
Recommendation: Fencing is recommended as a barrier between the trail and the railroad tracks. Slatted eight foot high chain link fencing would provide both a physical and visual separation, as well as some protection against debris flying from the trains.

Golf Course: The layout of the golf course is mostly compatible with placing a trail along the northern perimeter of the course. The direction of play is away from the trail, with the exception of hole number four at the northwest corner of the golf course. Because of the expense of repositioning this hole, protecting the trail users may be a better alternative.
Recommendation: A short chain link cage would provide protection for all trail users in this location.

Lighting: Because of the presence of many sensitive wildlife species along the river, lighting most of the trail is not an option.
Recommendation: Limit lighting to low lumen lighting and avoid sensitive habitat areas.

Staging: Because of the proximity of equestrians to the Santa Ana River Trail in Northern Orange County and east to Hidden Valley, providing staging for horse trailers is important.
Recommendation: Provide staging accommodating equestrian trailer parking between Gypsum Canyon Road and Hidden Valley Wildlife Center. (A staging area exists across from Wayne Makin Park in Norco).
Recommendation: A staging area north of the clubhouse at Green River Golf Course, in Chino Hills State Park could be accessible if a motorized railroad crossing were built just east of the club house. This location would provide good access to trails in Chino Hills State Park.
Recommendation: A staging area accommodating equestrians is recommended in Prado Basin at Auto Center Drive in Corona. Another advantage to this location is its proximity to the Metrolink station on Auto Center Drive. Providing bicycle lockers and showers would provide facilities for commuting bicyclists.

Bikeway Design Guidelines - Metric

Introduction

The following Bikeway Design Guidelines were primarily derived from Chapter 1000, Bikeway Planning and Design, of the California Department of Transportation Highway Design Manual, July 1, 1995 and the County of Riverside General Plan. For additional information trail designers should consult the origina Design Manual, the Manual of Uniform Traffic Control Devices, 2003 (MUTCD) and the California Supplement to the MUTCD, which were adopted by the State of California in May, 2004.

Definition:

- Class I Bikeways shall provide a bikeway used to serve corridors not served by streets and highways or where wide right of way exists, permitting such facilities to be constructed away from the influence of parallel streets. They are primarily for recreational use.

Alternating segments of Class I and Class II/Class III bikeways along a route should be avoided when possible.

General Bikeway Design Guidelines

Surface Quality

- The surface to be used by bicyclists should be smooth, free of potholes, and the pavement edge uniform.
- On new construction, the finished surface of bikeways should not vary more than 6 mm from the lower edge of a 2.4 meter long straight edge when laid on the surface in any direction.

Bikeway Surface Tolerances

Direction of Travel	Grooves[(1)]	Steps[(2)]
Parallel to travel	No more than 12 mm wide	No more than 10 mm high
Perpendicular to travel	------	No more than 20 mm high

(1) Groove – a narrow slot in the surface that could catch a bicycle wheel, such as a gap between two concrete slabs.

(2) Step – A ridge in the pavement, such as that which might exist between the pavement and a concrete gutter or manhole cover; or that might exist between two pavement blankets when the top level does not extend to the edge of the roadway.

- Drainage inlet grates, manhole covers, driveways, etc., on bikeways shall be designed and installed in a manner that provides an adequate surface for bicyclists. They should be maintained flush with the surface when resurfacing.
- Drainage inlet grates on bikeways shall have openings narrow enough and short enough to assure bicycle tires will not drop into the grates (e.g., reticuline type), regardless of the direction of bicycle travel.

- Where it is not immediately feasible to replace existing grates with standard grates designed for bicycles, 25 mm x 6 mm steel cross straps shall be welded to the grates at a spacing of 150 mm to 200 mm on centers.
- Vertical lips from driveway to gutter shall be avoided when possible and limited to 15 mm when necessary.
- Vertical barriers and obstructions, such as abutments, piers, and other features causing bikeway constriction, shall be clearly marked to gain the attention of approaching bicyclists.

Class I Bikeway Design Guidelines

Class I bikeways are facilities with exclusive right of way, with cross flows by motorists minimized.

Widths and Clearances

- The minimum paved width for a two-way bike path shall be 3.1 meters
- The preferred width for a two-way bike path shall be 3.7 meters to allow bicyclists to ride side by side.
- A minimum .6 m wide graded area shall be provided adjacent to the pavement,
- A .8 m graded area is recommended where clearance from poles, trees, walls, fences, guardrails or other later obstructions are present.
- No one-way bike paths shall be allowed due to enforcement difficulties.
- A minimum .6 m clearance to obstructions shall be provided adjacent to the pavement
- The vertical clearance to obstructions across the clear width of the path shall be a minimum of 3 meters.
- A yellow centerline stripe shall be used to separate opposing directions of travel in the following circumstances:
  - Where there is heavy use.
  - On curves with restricted sight distance.
  - Where the path is unlighted and nighttime riding is expected.

Crossings

- Where motor vehicle cross traffic and bicycle traffic is heavy, grade separations are desirable to eliminate intersection conflicts.
- Where grade separations are not feasible, assignment of right of way by traffic signals timed to allow bicycle crossing should be used, if feasible.
- When crossing an arterial street, the crossing should either occur at the pedestrian crossing or completely out of the influence of any intersection to permit adequate opportunity for bicyclists to see turning vehicles.
- When crossing at mid-block locations, right of way should be assigned by devices such as yield signs, stop signs, or traffic signals which can be activated by bicyclists.
- Stop or yield signs for bicyclists should be placed at all crossings to minimize potential for conflict resulting from turning autos.
- Ramps should be installed in the curbs, to preserve the utility of the bike path. Ramps should be the same width as the bicycle paths.

Separation

- Class I Bikeways should be separated from the curb by a minimum of 1.5 meters whenever feasible.

- Class I Bikeways separated from the curb by less than 1.5 meters should include a physical barrier to prevent bicyclists from encroaching onto the highway. Suitable barriers include chain link fences or dense shrubs.
- Low barriers (e.g., dikes, raised traffic bars) are to be avoided next to a highway.
- Class I Bikeways immediately adjacent to streets and highways are to be avoided.
- Class I Bikeways in the median of highways are to be avoided.

Speeds

- Class I Bikeway Design Speeds
- The minimum design speed for Class I Bikeways shall be 25 mph except on long downgrades
- The minimum design speed for Class I Bikeways shall be 50 km/h on long downgrades (steeper than 4%, and longer than150 m)

Horizontal Alignment and Superelevation

- The superelevation rate will vary from a minimum of 2 % (the minimum necessary to encourage adequate drainage) to a maximum of approximately 5%. A straight 2% cross slope is recommended on tangent sections.

Figure 1003.1C Curve Radii & Superelevations

$$V127+ fR =e1002$$

where,

R = Minimum radius of curvature (m),

V = Design Speed (km/h),

e = Rate of bikeway superelevation, %

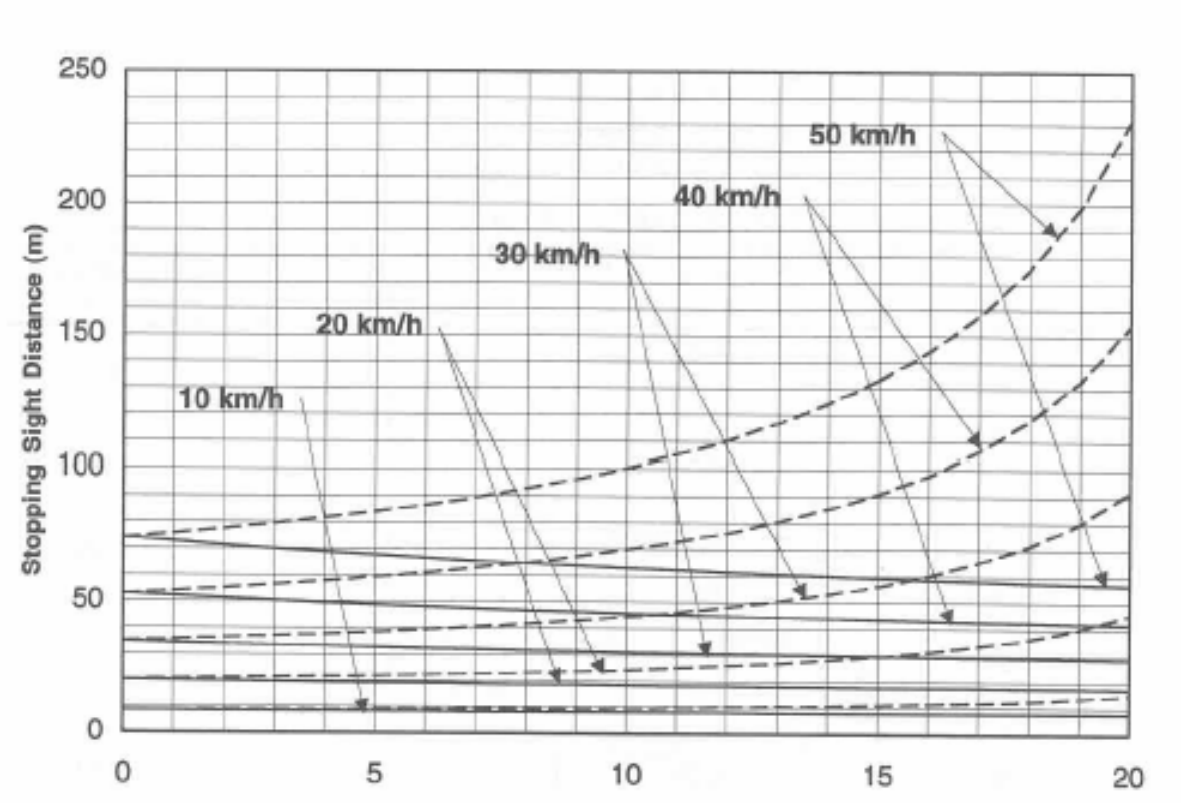
f = Coefficient of friction

Design Speed-V (km/h)	Friction Factor-f	Superelevation-e (%)	Minimum Radius-R (m)
20	0.31	2	10
30	0.28	2	24
40	0.25	2	47
50	0.21	2	86
20	0.31	3	9
30	0.28	3	23
40	0.25	3	45
50	0.21	3	82
20	0.31	4	9
30	0.28	4	22
40	0.25	4	43

50	0.21	4	79
20	0.31	5	9
30	0.28	5	21
40	0.25	5	42
50	0.21	5	76

Stopping Sight Distance

Figure 1003.1D
Stopping Sight Distance



$$S = \frac{V}{254\,(f \pm G)} + \frac{V}{1.42+}$$

Descend - - - - - -

Ascend _____

Where : S = stopping sight, m

V = velocity, km/h

f = coefficient of friction (use 0.25)

G = grade, m/m (rise/run)

Length of Crest Vertical Curves

Figure 1003.1E
Stopping Sight Distances for Crest Vertical Curves

$L = 2S - \frac{450}{A}$ when S > L

$L = \frac{AS^2}{450}$ when S < L

Double line represents S=L

L = Min. length of vertical curve - meters

A= Algebraic grade difference-%

S = Stopping sight distance - meters

Height of cyclist eye - 1400 mm

Height of object – 100 mm

V = Design speed km/h (Refer to Figure 1003.1D to determine "V", after "S" is determined.

GIVEN "A" AND "L"; FIND "S"

A (%)	**L=50m S (m)**	**L=100m S (m)**	**L=150m S (m)**	**L=200m S (m)**	**L=25 m S (m)**	**L=300m S (m)**
4.5	75					
5	70	95				
5.5	66	90				
6	63	87				
6.5	60	83				
7	57	80	98			
7.5	55	77	95			
8	53	75	92			
8.5	51	73	89	103		
9	50	71	87	100		
9.5	49	69	84	97		
10	47	67	82	95		
10.5	46	65	80	93		
11	45	64	78	90		
11.5	44	63	77	88	99	
12	43	61	75	87	97	
12.5	42	60	73	85	95	
13	42	59	72	83	93	
13.5	41	58	71	82	91	
14	40	57	69	80	90	98
14.5	39	56	68	79	88	96
15	39	55	67	77	87	95

Figure 1003.1E
Stopping Sight Distances for Crest Vertical Curves
(continued)

GIVEN "A" AND "S"; FIND "L"

A (%)	S=10 m L (m)	S=15m L (m)	S=20m L (m)	S=25m L (m)	S=30m L (m)	S=35m L (m)	S=40m L (m)	S=45m L (m)	S=50m L (m)
5									10.0
6							5.0	15.0	25.0
7						5.7	15.7	25.7	35.7
8					3.8	13.8	23.8	33.8	43.8
9					10.0	20.0	30.0	40.0	50.0
10				5.0	15.0	25.0	35.0	45.0	55.6
11				9.1	19.1	29.1	39.1	49.5	61.1
12			2.5	12.5	22.5	32.5	42.7	54.0	66.7
13			5.4	15.4	25.4	35.4	46.2	58.5	72.2
14			7.9	17.9	27.9	38.1	49.8	63.0	77.8
15			10.0	20.0	30.0	40.8	53.3	67.5	83.3
16		1.9	11.9	21.9	32.0	43.6	56.9	72.0	88.9
17		3.5	13.5	23.5	34.0	46.3	60.4	76.5	94.4
18		5.0	15.0	25.0	36.0	49.0	64.0	81.0	100.0
19		6.3	16.3	26.4	38.0	51.7	67.6	85.5	105.6
20		7.5	17.5	27.8	40.0	54.4	71.1	90.0	111.1
21		8.6	18.6	29.2	42.0	57.2	74.7	94.5	116.7
22		9.5	19.6	30.6	44.0	59.9	78.2	99.0	122.2
23		10.4	20.4	31.9	46.0	62.6	81.8	103.5	127.8
24		11.3	21.3	33.3	48.0	65.3	85.3	108.0	133.3
25		12.0	22.2	34.7	50.0	68.1	88.9	112.5	138.9
26		12.7	23.1	36.1	52.0	70.8	92.4	117.0	144.4
27		13.3	24.0	37.5	54.0	73.5	96.0	121.5	150.0
28	4	13.9	24.9	38.9	56.0	76.2	99.6	126.0	155.6
29	4	14.5	25.8	40.3	58.0	78.9	103.1	130.5	161.1
30	5	15.0	26.7	41.7	60.0	81.7	106.7	135.0	166.7

Appendix B - Bikeways

Lateral Clearance on Horizontal Curves

Figure 1003.1F
Lateral Clearances on Horizontal Curves

S = Sight distance in meters
R = radius of E of $^{c}_{L}$ of lane in meters
tn.= Distance from $^{c}_{L}$ of lane in meters
V = Design speed for S in km/h
(Refer to Figure 1003.10 to determine "V", after "S" is determined.

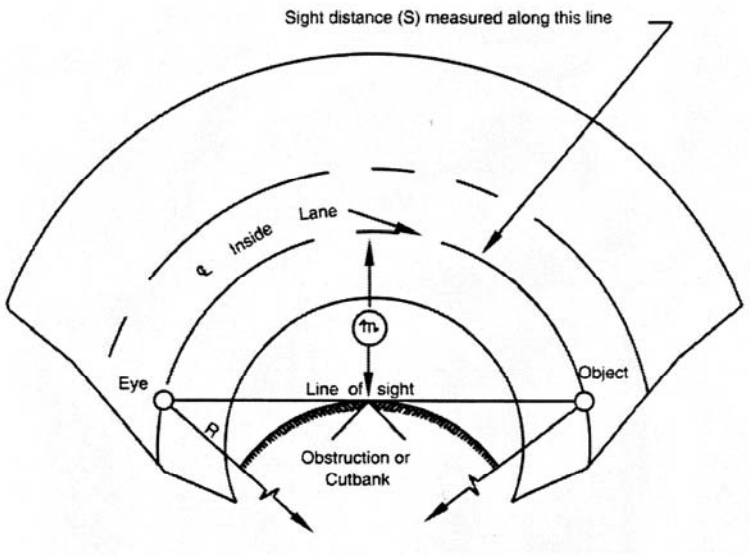
Angle is expressed in degrees

$$tn = R\left[1-\cos\left(\frac{28.65S}{R}\right)\right]$$

$$S = \frac{R}{28.65}\left[\cos^{-1}(R-tn.)\right]$$

Formula applies only when S is equal to or less than length of curve

Line of sight is 600 mm above $^{c}_{L}$ inside lane at point of obstruction.



GIVEN "R" AND "S"; FIND "m"											
	S=10 m	**S=20 m**	**S=30 m**	**S=40 m**	**S=50**	**S=60 m**	**S=70 m**	**S=80 m**	**S=90 m**	**S=10 0 m**	**S=110 m**
	m	***m***	***m***	***m***	***m***	***m***	***m***	***m***	***m***	***m***	***m***
R (m)	**meters**	**meters**	**meters**	**meters**	**meters**	**meters**	**meters**	**meters**	**meters**	**meters**	**meters**
25	0.50	1.97	4.37	7.58	11.49	15.94	20.75	25.73	30.68	35.41	39.72
50	0.25	1.00	2.23	3.95	6.12	8.73	11.76	15.17	18.92	22.99	27.32
75	0.17	0.67	1.50	2.65	4.13	5.92	8.02	10.42	13.10	16.06	19.28
100	0.12	0.50	1.12	1.99	3.11	4.47	6.06	7.90	9.96	12.24	14.75
125	0.10	0.40	0.90	1.60	2.49	3.58	4.87	6.35	8.01	9.87	11.91
150	0.08	0.33	0.75	1.33	2.08	2.99	4.07	5.30	6.70	8.26	9.97
175	0.07	0.29	0.64	1.14	1.78	2.57	3.49	4.55	5.75	7.10	8.57
200	0.06	0.25	0.56	1.00	1.56	2.25	3.06	3.99	5.04	6.22	7.52
225	0.06	0.22	0.50	0.89	1.39	2.00	2.72	3.55	4.49	5.53	6.69
250	0.05	0.20	0.45	0.80	1.25	1.80	2.45	3.19	4.04	4.98	6.03
275	0.05	0.18	0.41	0.73	1.14	1.63	2.22	2.90	3.67	4.53	5.48
300	0.04	0.17	0.37	0.67	1.04	1.50	2.04	2.66	3.37	4.16	5.03
350	0.04	0.14	0.32	0.57	0.89	1.29	1.75	2.28	2.89	3.57	4.31
400	0.03	0.13	0.28	0.50	0.78	1.12	1.53	2.00	2.53	3.12	3.78
500	0.03	0.10	0.23	0.40	0.62	0.90	1.22	1.60	2.02	2.50	3.02
600	0.02	0.08	0.19	0.33	0.52	0.75	1.02	1.33	1.69	2.08	2.52
700	0.02	0.07	0.16	0.29	0.45	0.64	0.87	1.14	1.45	1.79	2.16
800	0.02	0.06	0.14	0.25	0.39	0.56	0.77	1.00	1.27	1.56	1.89
900	0.01	0.06	0.13	0.22	0.35	0.50	0.68	0.89	1.12	1.39	1.68
1000	0.01	0.05	0.11	0.20	0.31	0.45	0.61	0.80	1.01	1.25	1.51

Figure 1003.1F
Lateral Clearances on Horizontal Curves
(continued)

GIVEN "R" AND "m"; FIND "S"

	m=1 meter	m=2 meters	m=3 meters	m=4 meters	m=5 meters	m=6 meters	m=7 meters	m=8 meters	m=9 meters	m=10 meters	m=11 meters
R (m)	**S (m)**	**S (m)**	**S (m)**	**S (m)**	**S (m)**	**S (m)**	**S (m)**	**S (m)**	**S (m)**	**S (m)**	
25	14.19	20.13	24.74	28.67	32.17	35.37	38.35	41.15	43.81	46.36	48.82
50	20.03	28.38	34.81	40.27	45.10	49.49	53.55	57.35	60.93	64.35	67.61
75	24.52	34.72	42.57	49.21	55.08	60.40	65.32	69.91	74.23	78.34	82.26
100	28.31	40.06	49.11	56.75	63.51	69.63	75.27	80.54	85.50	90.20	94.68
125	31.64	44.78	54.88	63.41	70.94	77.77	84.06	89.92	95.44	100.67	105.66
150	34.66	49.04	60.10	69.43	77.67	85.13	92.00	98.41	104.44	110.15	115.60
175	37.43	52.96	64.90	74.97	83.86	91.91	99.32	106.23	112.73	118.88	124.75
200	40.01	56.61	69.36	80.13	89.62	98.22	106.13	113.51	120.45	127.01	133.27
225	42.44	60.04	73.56	84.97	95.04	104.15	112.53	120.35	127.70	134.66	141.28
250	44.73	63.28	77.53	89.56	100.16	109.76	118.59	126.82	134.56	141.89	148.86
275	46.91	66.37	81.31	93.92	105.03	115.09	124.35	132.98	141.09	148.77	156.08
300	49.00	69.32	84.92	98.08	109.69	120.19	129.86	138.86	147.33	155.34	162.97
350	52.92	74.86	91.71	105.92	118.45	129.79	140.22	149.94	159.08	167.72	175.95
400	56.58	80.03	98.03	113.22	126.61	138.73	149.87	160.26	170.01	179.25	188.04
500	63.25	89.47	109.59	126.57	141.53	155.06	167.52	179.11	190.01	200.32	210.13
600	69.29	98.00	120.04	138.63	155.02	169.83	183.47	196.16	208.09	219.38	230.12
700	74.84	105.85	129.65	149.73	167.42	183.42	198.14	211.85	224.72	236.91	248.50
800	80.00	113.15	138.60	160.05	178.97	196.07	211.80	226.45	240.21	253.23	265.62
900	84.85	120.01	147.00	169.76	189.81	207.95	224.63	240.16	254.75	268.56	281.69
1000	89.44	126.50	154.95	178.93	200.07	219.18	236.76	253.13	268.51	283.06	296.90

Grades

- The maximum grades for Class I Bikeways shall be 10% except for occasional short segments of 24 meters.
- Where feasible grades shall be limited to 5%.
- The minimum pavement thickness shall be 50 mm with maximum 12.5 mm aggregate and medium grading.
- Basement soil shall be sterilized to preclude weed growth through the pavement.

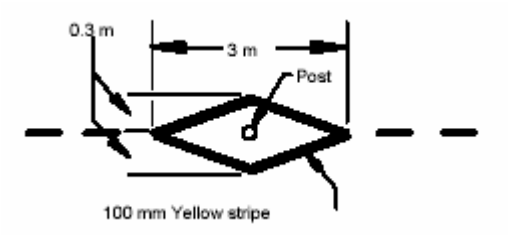
Drainage

- The surface of the Class I Bikeways shall have a one direction cross slope of 2% when feasible.
- Where necessary, catch basins with drains will be provided to carry intercepted water across the path. Such structures shall provide no undue obstacle to bicyclists.
- Culverts or bridges are necessary where a Class I Bikeway crosses a drainage channel.

Barrier Posts

- Installation of barrier posts at entrances to Class I Bikeways to prevent motor vehicles from entering, shall be well marked and visible to bicyclists, day or night (i.e., install reflectors or reflector tape).
- When more than one post is necessary, a 1.5 meter spacing shall be used.
- Barrier post installations shall be removable to allow emergency and service vehicle entry.

Figure 1003.1G
Barrier Post Striping



Lighting

If the bikeway is intended to be used after dark, lighting at intersections and along path is essential for safety and utility, and typically ranges from 6 – 10 lx (o.6 – 1.0 f.c.). If overhead lighting systems are utilized vertical clearance should be a minimum of 2.4 meters.

In sensitive habitat areas lighting should be avoided, however, if it is used lighting should use low lumen lamps, preferably with motion detector capabilities. Low lumen lighting can be incorporated into K-rail where it is planned or existing.

Multi-purpose Trail Design Guidelines:

All multi-purpose trails shall include a paved Class I Bikeway separated from an adjacent unpaved hiking/equestrian trail.

Appendix B - Bikeways

Bicycle Storage

There are three primary methods to protect bicycles from damage and theft:

- Enclosing the bicycle in a lockable space such as a locker or cabinet.
- Locking the bicycle to a post, rack or other stationary object.
- Wrapping a chain through the frame and wheels to make the bicycle inoperable.

Lockers are the most effective method of protecting bicycles but tend to be large and expensive. They should be used at major commuter transportation destinations such as schools and transportation centers. They may also be used at work destinations such as large medical, office or industrial destinations.

Racks are less effective in preventing theft, as chains can be cut and bicycle hardware such as seats and pedals can be removed. They should be located in well-lit, high visibility areas not more than 15 meters from the destination. If they are located further from the destination they encourage people to lock their bicycles to building columns, trees and parking meters, where they may serve as an impediment to pedestrian traffic. Devices that provide lateral support only at one wheel leave the bicycle vulnerable to damage.

To encourage bicycle commuters city codes should encourage the inclusion of shower facilities in large commercial and industrial complexes.

Trails Design Guidelines

Introduction

These Hiking/Equestrian Trial Design Guidelines were prepared to provide guidance in planning and implementation of the Santa Ana River Trail. Strict standardization among hiking and riding trails or even segments of the same trail is impractical because of the vast difference in topography and other physical characteristics and because of dissimilarities in kinds and extent of use. Standards are good, but flexibility is necessary. Therefore, design may vary among different trails or segments of trails according to development constraints and various special conditions. Nevertheless, certain basic standards allowing for flexibility and for the safety and maintenance of the trail and their related facilities should be followed. The specific design standards contained herewith have been prepared to achieve the following goals and policies:

Alignments: The equestrian/hiking trail system should provide for a continuous passage from the Pacific Ocean in Orange County to the Pacific Crest trail in the San Bernardino Mountains and links to local and regional trails.

Guidelines:

- Wherever possible, General Plan trail alignments should use existing paths and/or unimproved roads (i.e., maintenance roads, flood control berms, unused access roads, etc.).
- Trails should have a relationship to identifiable designation points of interest to both hiking and equestrian users.
- Trail alignments should be compatible with existing and future land uses.
- Alignments should minimize potential impacts on non-equestrian areas.
- Trail alignments should form a network that connects to and enhances adopted county and local trails plans and the State of California trail system.
- Trail alignments should be generally consistent with local standards in both intent and design.
- Equestrian/hiking trail alignments should connect state, regional and local parks and recreation facilities when feasible.

Safety: The equestrian/hiking trail system should be designed and implemented in such a manner as to enhance the public safety and welfare of the community.

Guidelines:

- Equestrian/hiking trails should not be aligned in such a manner as to make them susceptible to periodic flooding or erosion.
- Signage identifying equestrian/hiking trails and crossings should be located to meet public safety requirements.
- Where feasible trail alignments should not exceed a maximum gradient of eight percent (8%); trail width may vary in order to achieve the eight percent grade.
- The use of a switchback trail system should be discouraged except when absolutely necessary. Acute angles should be avoided.
- Where trail easements are limited, the system should be fenced to preclude use outside the trail easement.

- Where trails are located in a designated open space area accessible to the general public, an open trail system may be used. The open trail should be clearly marked, but need not be fenced.
- Priority should be given to the physical separation of vehicular and trail users where possible.

Environment: The equestrian/hiking trail system should be designed in such a manner as to respect the natural environment of the immediate area.

Guidelines:

- Trail alignments should preserve existing native and ornamental vegetation by removing only as much as necessary to accommodate the trail.
- Trail buffer widths may be limited in sensitive areas in order to preserve scenic amenities and valuable habitat.
- Where trail alignments include existing trees, particular attention to preservation should be incorporated into design plans.
- Where feasible trail alignments should respect natural landforms and not require significant grading to implement.
- Trail improvements should be minimal and respect the natural terrain and vegetation in the immediate area.
- In response to these goals and policies, the following specific standards have been developed for implementing the trail system.

Design Standards:

Equestrian/hiking trails, as designated on the Santa Ana River Conceptual Plan, are intended to be a regional trail system to serve the riding and hiking needs of residents of the three Counties and local communities. Some trail alignments utilize existing or proposed service roads which also provide service vehicle access (fire, utility or maintenance). Trails utilizing said service routes should accommodate said vehicle use, for example entrance barricades should allow for restricted vehicle passage.

Equestrian and Hiking Trails

Construction Methods: Visible evidence of trail construction should be confined to the trail width. Construction should attempt to make as little impact on the natural environment as possible.

Grades: Grades should be held to a maximum of eight percent (8%) whenever possible. Steep grades are tiring for hikers and horsemen and create erosion problems. Long stretches of a given grade should be avoided whenever possible.

- The grade should undulate gently to provide natural drainage and to eliminate monotonous level stretches.
- Where feasible, no grade should be so steep that erosion is a problem.
- Grades should be lessened at approaches to switchbacks and the turns should be as nearly level as practical. Long, gradual switchbacks should be used rather than short, steep switchbacks. Acute angles should be avoided when possible.

- Approaches to road crossings should be nearly level.

Maximum grades should be as follows:

Less than 250’	20%
Less than 500’	15%
Greater than 500’	10%

Construction Guidelines: Generally, trail width should be 10 feet wide. The trail may be narrower if approved by local jurisdictions, but under no circumstances less than 4 feet and only when surrounded by open space. The trail width should be determined by amount and intensity of use, as well as topography and vegetation.

In order to reduce erosion and, therefore, maintenance problems, disturbance of the soil surface should be kept to a minimum. Only those rocks, stumps, and roots which interfere with passage should be removed.

The degree of cut allowed on a slope depends on the soil type, hardness, etc.; make slope cuts at a maximum of two to one (2:1), but not so steep that erosion or loss of stability will result. Make transitions on all cuts so that the trail will be molded into the terrain. Construct the trail with provision for settling and sloughing. On side slopes, loose material which may slide onto the trail should be removed. A berm of earth or rock, on the outside edge of the trail may be necessary.

Steep areas may be handled by terracing and building steps. These must be reinforced with stone or wood. Steps simply cut into the slope should not be used, as these become slippery when wet, and eventually erode. Steps should be negotiable by horses and they must be broad, flat terraces, at least 8 feet between steps.

Vegetation: Vegetation should be preserved as much as possible to protect the aesthetic quality of the trail. Vegetation should be cleared to a height of 12 feet within the boundaries of the trail tread (See Exhibit B). Pruning along trails should be selective. Good pruning practices should be followed, including cutting branches off flush with the limb, and stems flush with the ground (See Exhibit C). Stumps may be treated to prevent sprouting. Large limbs should be pruned flush with the trunk and wounds sealed to prevent decay. Dead and dying limbs and snags, which may fall on the trail, should be removed. Ground cover plants and low shrubs should be removed only from the actual trail. Hand pruning or spot spraying with herbicides is permissible when poison oak predominates.

Where a trail is on a side slope, the vegetation on the uphill side will be more invasive and should be cut back more severely than vegetation on the downhill side (See Exhibit A).

Vegetation should be allowed to return to cut slopes to increase stability. Where feasible, any replanting should be in conformance with habitat or land use plans. Replant areas with vegetation indigenous to those areas or compatible with plantings already in place.

Drainage: Drainage is the most important item in trail construction; it requires a special study of the precipitation, runoff, springs, and streams in the area. Surface water must be diverted from the trail's surface before it builds up to an erosive force. The method used to drain the trail will depend on the quantity and speed of water and the type of soils in the area. The best and simplest drainage is to slope the trail surface, 1 - 3 percent, to allow the water to sheet off, rather than run in a stream. Low grades help prevent drainage problems; steep grades allow the water to run faster building up erosive force.

For steeper conditions water bars divert water off a trail at controlled points along the trail. They can be incorporated in the original construction of a trail, or they can be installed later as a maintenance measure. Water bars can effectively eliminate erosion and stabilize a trail. They can be made from 4 x 6 redwood timber, native logs or plastic. The elements of a properly installed water bar are:

- Set the water bar at a 60 degree angle across the trail. A water bar set perpendicular (90 degrees) across the trail will not divert the water off. A water bar set 30 degrees across the trail can be awkward to hike or ride over.
- Extend the water bar such that water is carried completely off the trail to a steep side slope. Otherwise, the water flow will bypass the water bar and erosion will occur
- Provide rock at the down slope end of the water bar to dissipate the energy of the flowing water, thereby minimizing erosion.
- The top of the water bar should be nearly flush with the trail tread to minimize tripping hazards. Regular maintenance will be necessary to put the silt that will flow over the water bar and deposit on the downhill side back on the uphill side of the water bar (See Exhibits G and H).

Minor rivulets crossing larger streams, whether permanent or intermittent, may require a bridge or an "Arizona" crossing (drainage pipe system). If a drain pipe system is used, it is very important to prevent erosion at the outfall end by providing rip-rap or other hard surface for the water to hit first. If this is not provided, the water leaving the pipe will erode the surface below it, and eventually the fill around the down slope end of the pipe. The installation of rip-rap is to be placed, such that it does not conflict with the trail area. Avoid causing off-trail drainage problems, such as erosion or siltation, by careful culvert placement.

Surfacing: The trail will be surfaced with decomposed granite. The color of the material shall be compatible with the environment through which the trail passes. When trails cross driveways, a non-slip surface shall be applied (broom/rake finish).

Structures: Structures may include water bars, drain pipes, retaining walls, bridges, etc. If possible, structures should be avoided because of their installation and maintenance costs. Ideally, trail structures should be built using on-site materials or improved materials which blend into the environment. They should be designed so that they are

harmonious with the surroundings. Structures should be as vandal-proof as possible. Use recessed bolt heads wherever possible. Bridges shall be a minimum of ten feet wide.

Fences: Trail fencing should be provided where horses need to be firmly confined within the trail width or for safety such as in specific areas of sensitive habitat, community and regional parks, as separation from bikeways, fire hazard and steep slope areas, bridges, and other potential hazard or high-traffic and general public use areas.

Fencing should be constructed of materials that blend with the surrounding community, are in character with the recreational nature of the trails, and that weather well. Suggested materials include wood such as cedar or redwood. The following are suggested dimensions for materials:

Fencing Component	Split-Rail Fencing	Pole Fencing
Rail (size)	2 in. x 3 in. min.	2 ½ in. min.
Post (size)	4 in. x 5 in. min.	4 ½ in. min.
Post (spacing)	6 ½ in. max.	7 – 8 ft.

Other dimensions include:

- Fence height is not to exceed four feet at the maximum. A 3 foot fence height may be appropriate for trails bordering on sensitive areas (bridge fencing excepted).
- The top of the post shall not exceed 6 feet above the top rail.
- The height above ground of the top rail shall be 48 $\pm$ 2 inches maximum.
- All posts shall be treated for rot-resistance. The center to center distance between the top and bottom rails shall be 21 $\pm$ 3 inches,

Hitching posts shall be constructed of 6 in. square posts, set on foot into the ground, reaching a 4 foot height. Rings for tethering horses shall be attached to the top of the post.

Plantings such as trees, hedges, or large rocks can also serve as trail fencing or barriers.

Barbed wire is prohibited as a trail fencing material.

Barriers: A trail can be made difficult to motorcyclists by creating a log barrier at the entrance or by leaving fallen logs on the trails. These are difficult to cross with a motorcycle, but may be stepped over by hikers and riders. Wherever barriers are used to prevent vehicle access, appropriate signage shall be installed.

Bollards should be installed at the entry to service road trails to allow bicycle access but exclude larger vehicles. They should be of the folding type to allow easy access for utility vehicles.

Utilities: Utility boxes and vaults, manholes, pole lines or other above grade utilities shall be located outside the trail easement.

Staging Areas: Staging areas should be large enough to accommodate the amount and type of traffic the trail demands. If a trail is used only by small groups, a staging area to hold a half-dozen cars may be adequate. Staging areas should not duplicate existing facilities; where there is an existing parking area, it should be used. Facilities which should be provided at staging areas include shade, trail signs, water and trash cans. The staging area may include many other types of facilities, if appropriate for the area and use, and the staging area may be simply part of an existing park. Establishment of isolated staging areas should be avoided, as they generally are more difficult to maintain. Staging areas should be located at the beginning and ending of trails and may be provided along the trail route.

Rest Areas: Rest areas are smaller facilities that accommodate fewer people than staging areas, and they may or may not accommodate parking spaces. Rest areas for trail users should be located within regional or local parks, state parks, and staging areas as first priority and at other feasible locations to seek a desirable minimum spacing of 3 – 5 miles. Rest areas should also be near neighborhoods and other areas to reduce the need for large staging facilities. Rest areas may provide the following:

Benches
Hitching posts
Water for horses
Water for hikers and riders
Identification signs
Picnic tables
Rest rooms, where feasible
Shade
Trash receptacles
Bicycles racks

Signage Guidelines for Trails

Visitor-friendly uniform signage would add to the Santa Ana River Trail experience by providing safety, way finding and educational information. These guidelines have been prepared to respond and assist in the planning and implementation of trail signage. Several types of signs are desirable and will add to the enjoyment and safety of the user. These include:

- Warning signs
- Regulatory signs

Warning signs: Warning signs call the user's attention to potentially hazardous conditions and should be placed sufficiently in advance of the hazard to allow for responsive action. Examples include:

- Bump
- Pavement ends
- Dip
- Road Narrows
- Bike Xing
- Narrow Bridge

Regulatory signs: Regulatory signs inform users of traffic laws and regulations governing movements, parking, speeds, etc. and indicate rules that would otherwise not be apparent. Examples include:

- Motor vehicles prohibited
- No Parking
- Bicycles only

Guide signs: Guide signs should be placed where a route begins, ends, changes direction or intersects with other bikeways. Intermediate guide signs should be provided to reassure bicyclists of their position if distances are great between major decision points.

- Directional Signs
- Information node panels
- Interpretive panels

Trail and bike route identification signs should be positioned at one-quarter mile intervals.

Signs for bicyclists and along Class I Bikeways should be placed at 4-5 feet above the pavement. Bicycle-oriented warning signs should be positioned far enough in advance of the condition to allow time for perception and response, based upon design speeds and sight/stopping distances (See Exhibit X). The nearest projection of a sign should be a minimum of 3 feet from the edge of the bikeway surface. Care should be taken to place signs where they will not be obscured by other elements such as parked cars or vegetation.

Appendix B - Signage

Pavement Markings: Pavement markings are particularly valuable to bicyclists since they are in the line of vision.

Stenciled message markings are normally white, with a minimum letter and arrow height of 4 feet and include such messages as

- Stop
- Yield
- Slow
- Ped Xing
- RR Xing
- Bike Lane

Because pavement markings can reduce friction, making stopping more difficult and increasing the dangers of sideslip, their occurrence should be limited and avoided at critical stopping points when possible.

Durability: Provide a durable sign that will withstand the outdoor environment.
Guidelines:

- Durable woods such as redwood or cedar
- Aluminum
- Plastic
- Ceramic
- Fade resistant paint and ink should withstand weathering and UV light

Readability: Provide a sign that will be easily readable.
Guidelines:

- Clean lines
- Color coded
- A simple shape that can be well-executed.
- Sign size should be the minimum required to convey the message to the viewer. The size of lettering should be determined by considering legibility factors such as distance, mode of transportation, and speed at which the intended audience is traveling.
- One-inch letters are adequate for most non-motorized trail situations.
- Letter size is dependent upon the distance from which the message is to be viewed:

Interpretive-Informational signs:

Viewed from 4 feet or less	5/8 inch letters
Viewed from 5 to 7 feet	¾ inch letters
Viewed from 8 to 12 feet	1 inch letters
Viewed from 13 to 20 feet	2 inch letters
Viewed from over 20 feet	3 inch letters

Appendix B - Signage

Non-motorized Trails Route signs:

Viewed from 0-20 feet	3-4 inches
Viewed from 21-75 feet	6 inches
Viewed from over 75 feet	8 inches

- The appropriate letter height for signage is typically 2-3 times the minimum legibility letter height for a given distance.
- Gothic, Helvetica and similar fonts have been selected for signing by many public agencies because of their easy readability. These and similar typefaces should be the first considered.
- Comparison of lower case and capital letters shows that lower case letters have a slightly greater legibility distance. Capitals are seen more quickly, but lower case letters can be read more rapidly.
- Symbol size is also a function of the viewing distance and the amount of time available for viewing.

Signs should be located to be easily read from the trail. Height of signs should be determined by vegetation and other surroundings, but normally, 40 inches from ground to bottom of a single sign, and 36 inches from ground to bottom of a double sign is a good rule. Signs may be incorporated as part of the fencing.

- Lettering and symbols should be white or light colored against a dark background.
- Illuminated signs should be carefully lit from remote mounted fixtures not visible by sign viewers.

Uniformity: Provide uniformity and trail and bikeway recognition.

Guidelines:

- Sign frame and supports such as blue, green and brown complement natural settings and do not provide overt contrast.
- All signs used should be a consistent size, shape color, layout and symbology.
- Utilize “universal” traffic and facilities symbols.
- The sign concepts described are intended for use as recreational identifiers only and should not be used for other purposes.

Trail Recognition: Promote recognition of the Santa Ana River Trail.

Guidelines:

- All signage should clearly identify facilities as the Santa Ana River Trail.
- A damaged sign should be replaced or repaired such that the repair is not noticeable.

Appendix B - Signage

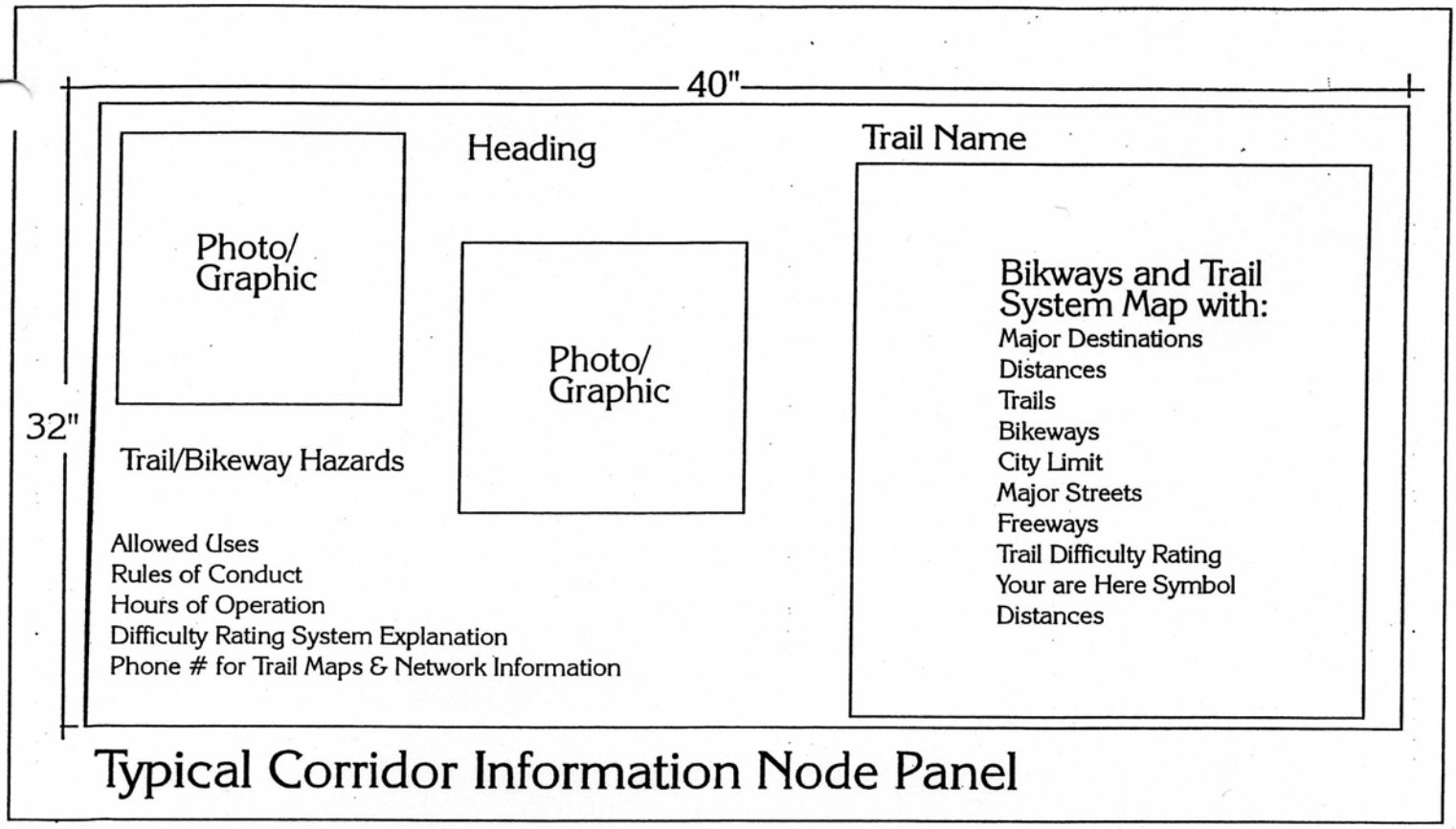
Safety: Contribute to the safety of the user.

Guidelines:

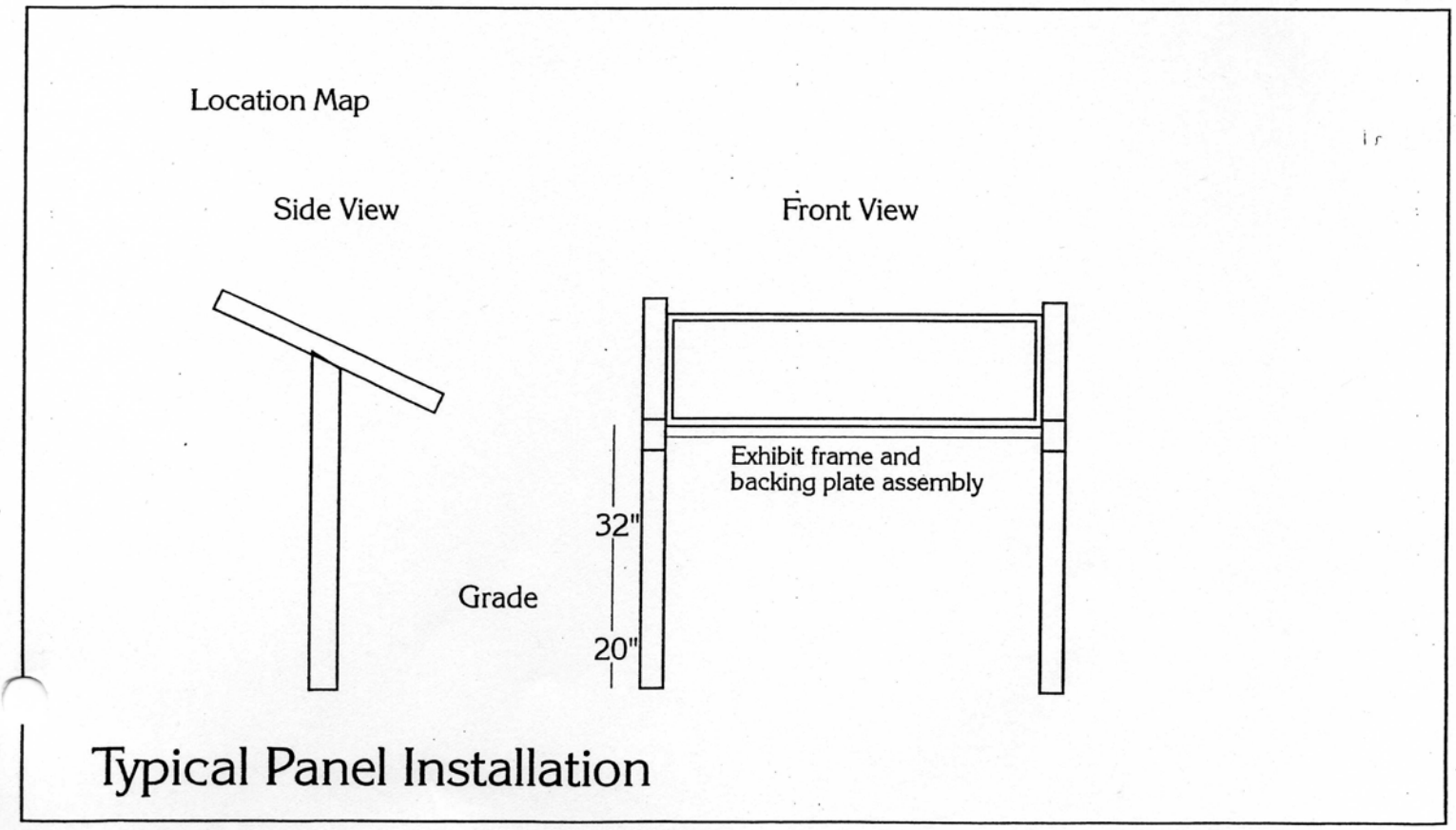
- A recreational sign should not mimic a regulatory sign in shape or color, potentially creating confusion as to the purpose or message of the sign.
- Regulatory signs should be in conformity with Caltrans standards.
- Signs should be offset from the trail edge a minimum of 2 feet. However, exact location for the best visibility can only be done in the field.
- Signs should identify hazard points, clearance requirements or safety precautions, as warranted.
- Trail user yielding signs should be placed at all trailheads and posted periodically, especially at trail crossings and along trails that accommodate a variety of users.
- Trail name signs should be placed at entry points, halfway points and other points where trail identification is needed.
- Street signage to warn motorists of impending trail/bikeway crossings should be located in advance of trail crossings. Signs should meet City, County and State standards. Marking for trail/bikeway crossings should consist of striping on the roadway surface and, where feasible, texturing (sandblasting) of the roadway surface.

Enjoyment: Inform and add to the enjoyment of the user.

- Provide Interpretive Panels that use graphics and text to provide interpretive and educational messages, enhancing the user's appreciation of environmental, archeological and historical elements.
- Corridor Information Panels should be installed at major decision making points where trails, bikeways and roads meet and provide;
    - a map showing an overview of the system's important destinations
    - trail difficulty
    - travel distances
    - allowed uses,
    - hours of operation
    - hazards
    - adjacent facilities locations such as telephones and first aid
    - Phone number where to obtain trail maps and other trail information (Refer to "Typical Corridor Information Node Panel" illustration on following page)
- The use of the guideline elements should not take precedence over the interpretive message; instead they should blend with and enhance the graphics communicating the interpretive message.
- Trail and bike route markers should be installed at access points for trails and bikeways.
- Provide an educational handout that provides information and serves as a guide to the entire trail system.
- Directional signs should be placed, as appropriate, to clarify trail destination and direction to trail users.

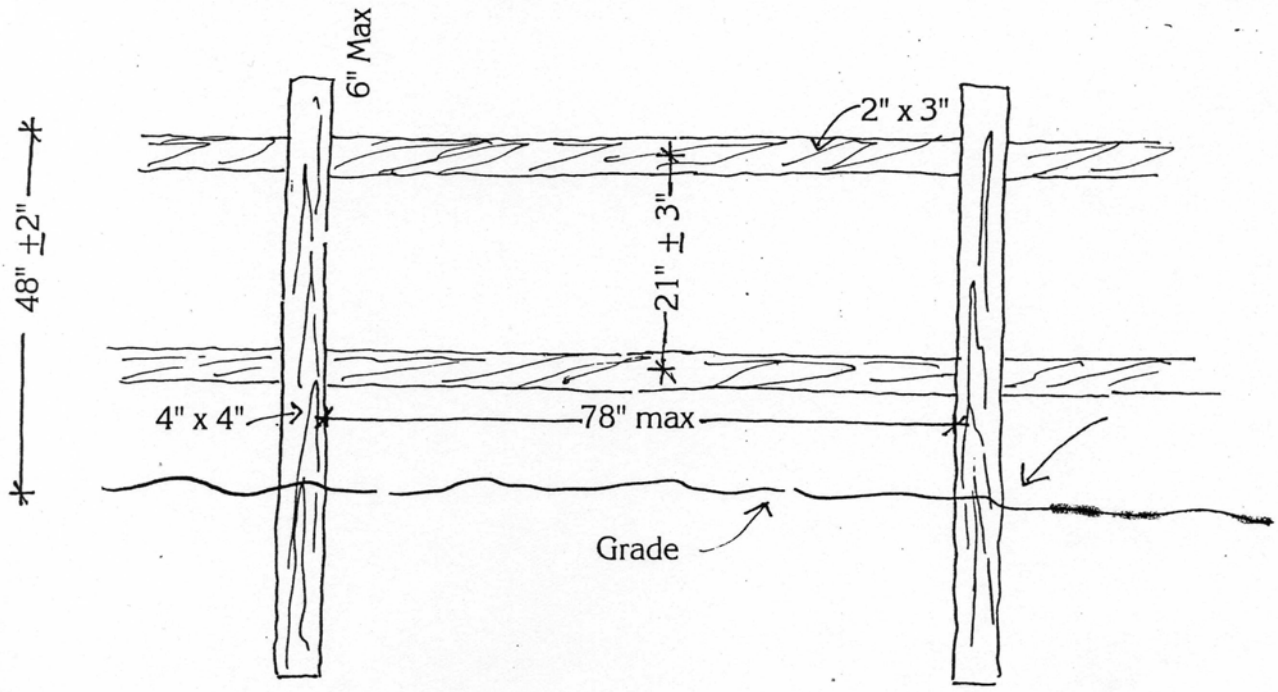


Typical Corridor Information Node Panel

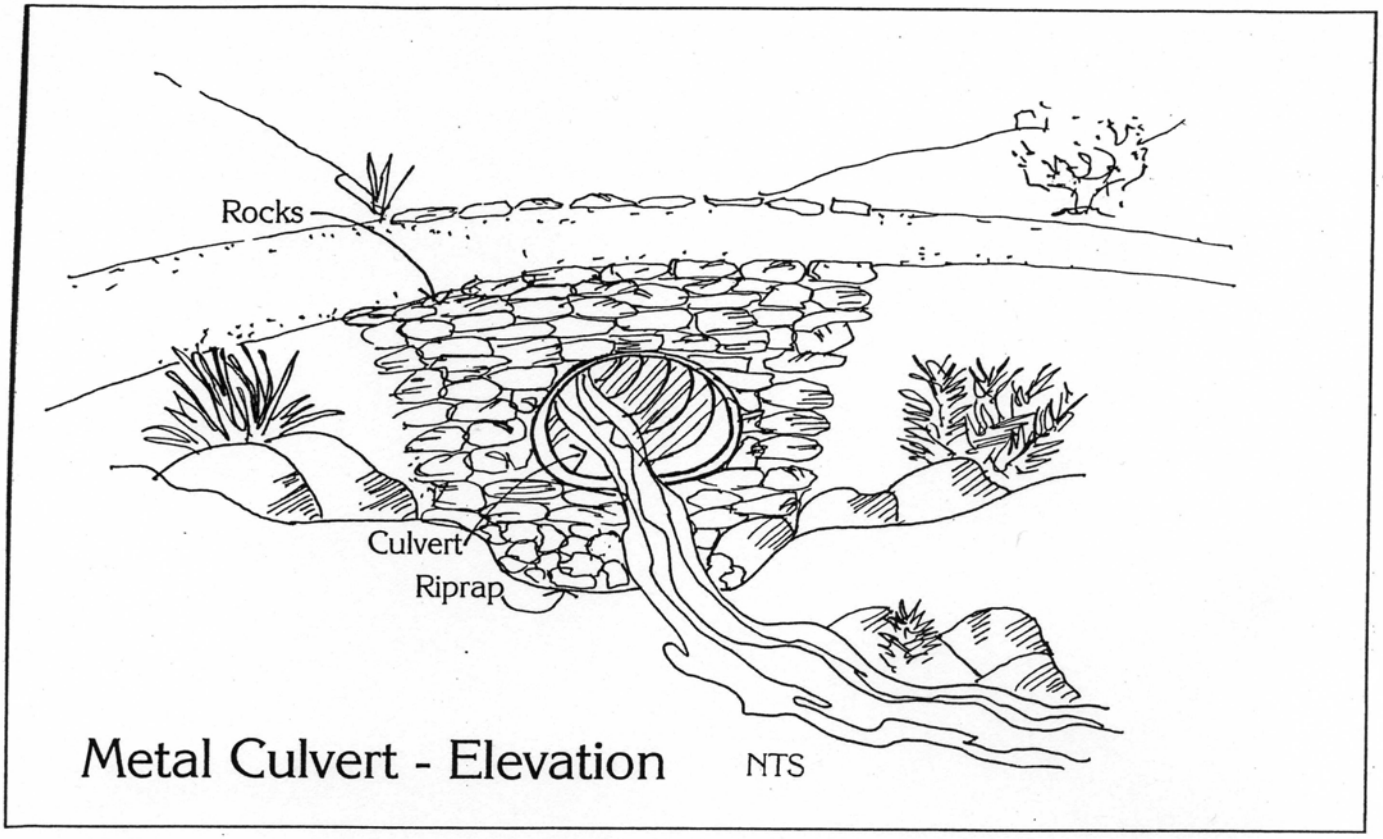


Typical Panel Installation

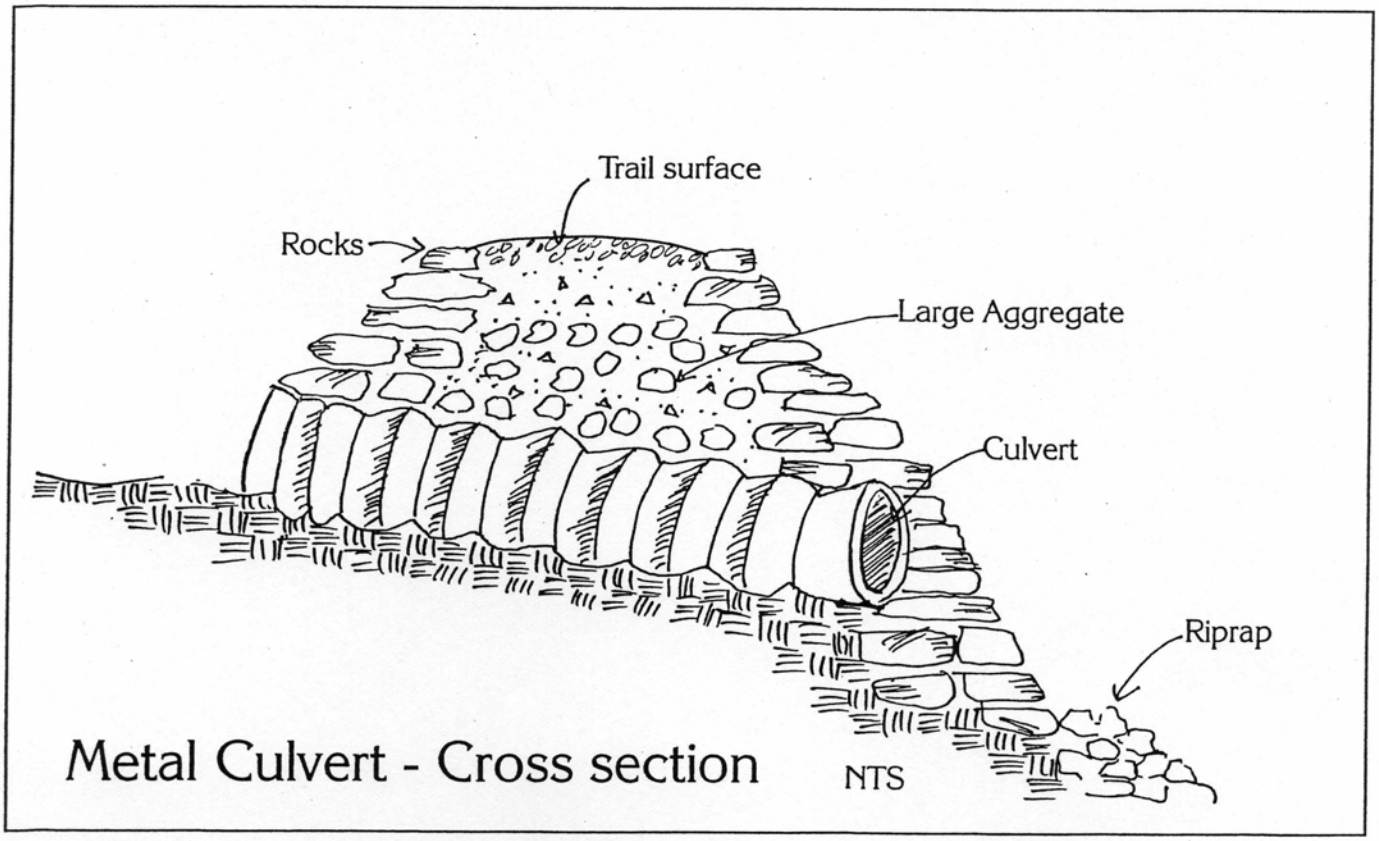
Typical Trail and Class I Bikeway Signs



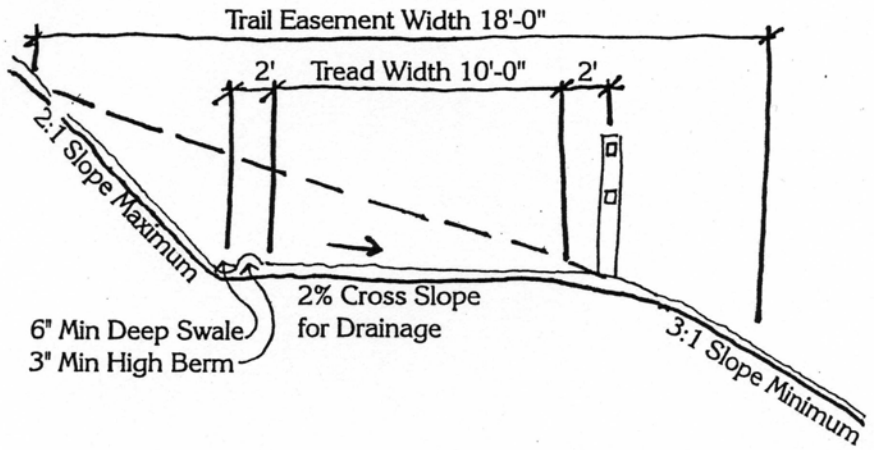
Typical Trail Fencing



Metal Culvert - Elevation NTS

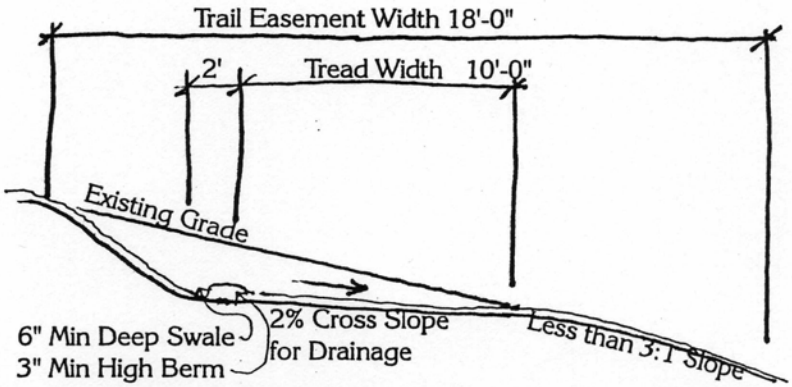


Metal Culvert - Cross section NTS



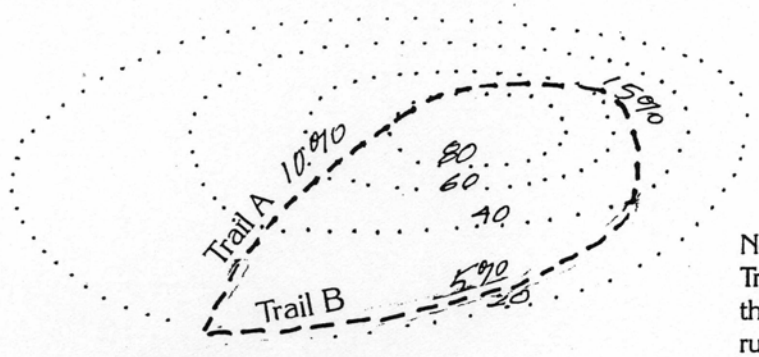
Swale & Berm Typical Size, Actual Dimensions will be Determined by Field ConditionsDrainage and Irrigation Systems for all Up-Slopes shall be Designed to Prevent Run-off onto Trail

Trail Standards
Side Slopes More Than 2:1



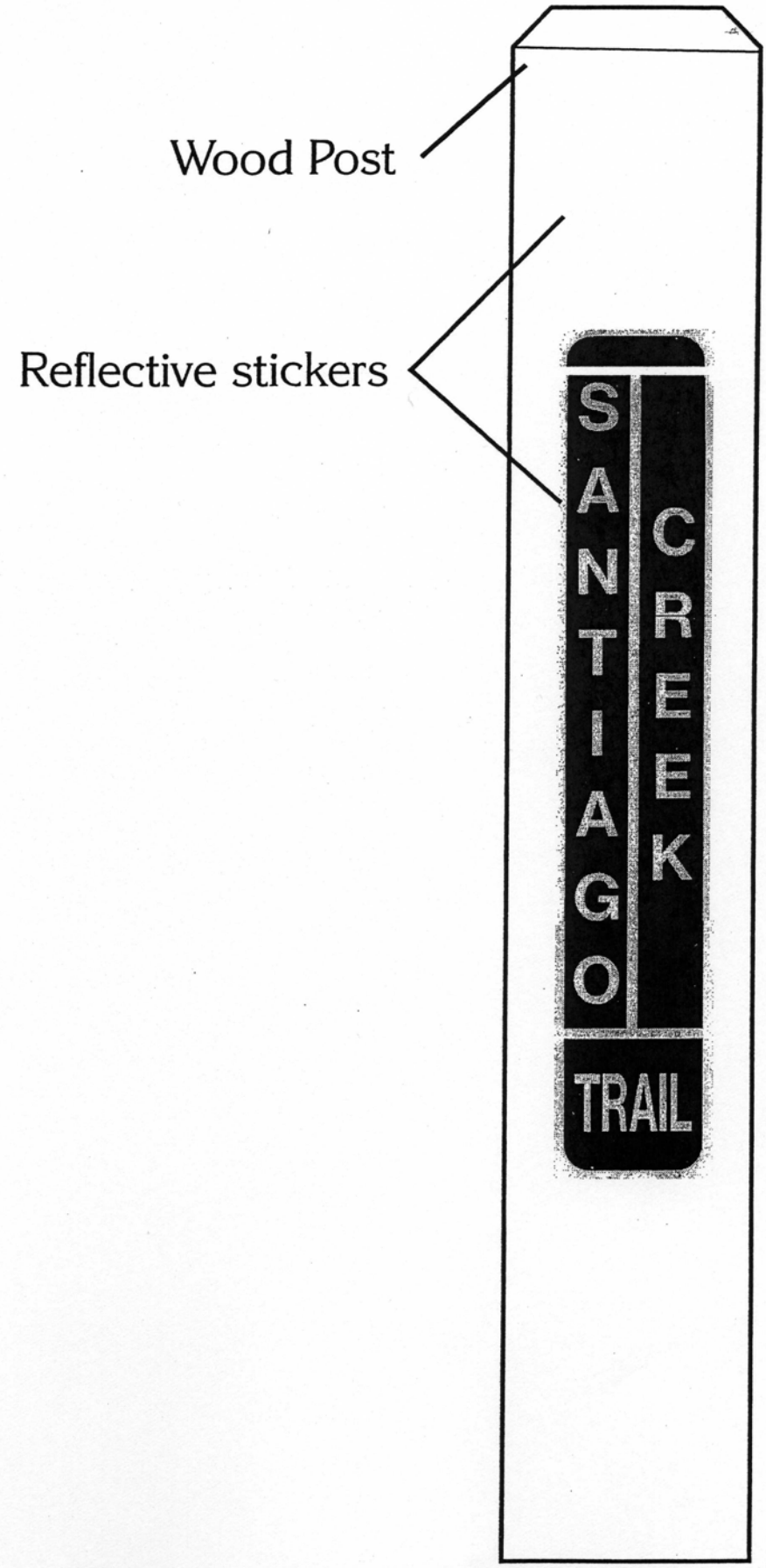
Swale & Berm Typical Size, Actual Dimensions will be Determined by Field ConditionsDrainage and Irrigation Systems for all Up-Slopes shall be Designed to Prevent Run-off onto Trail

Trail Standards
Side Slopes Less Than 2:1

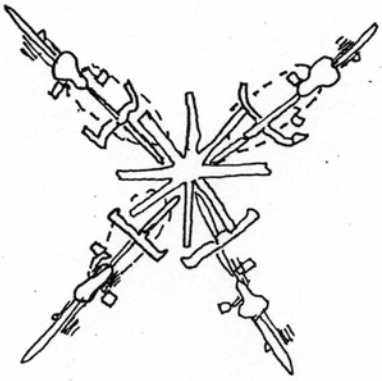


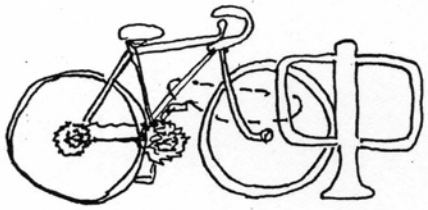
Note:
Trail A travels perpendicular to the contours, causing water to run down the middle of the trail
Trail B traverses the natural slope allowing water to run off the side of the trail

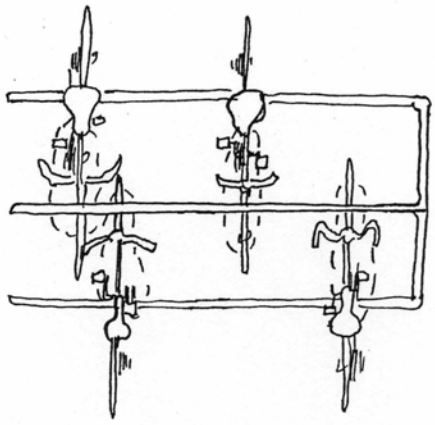
Traversing the Slope

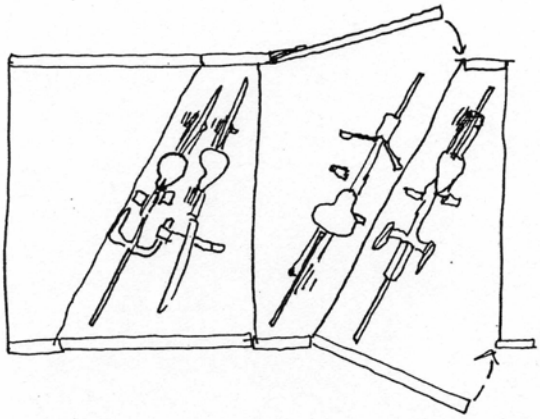


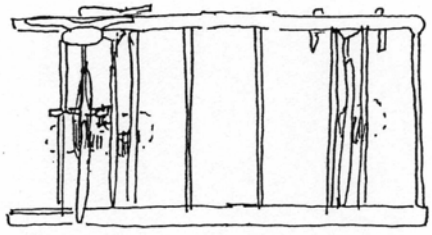
Trail Signage

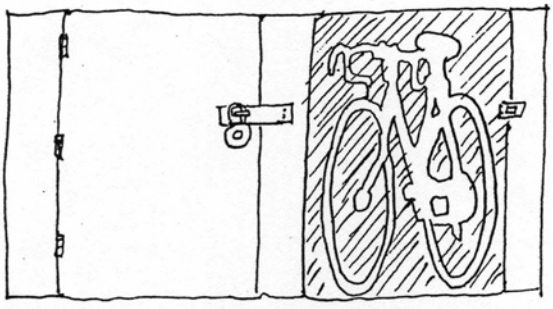




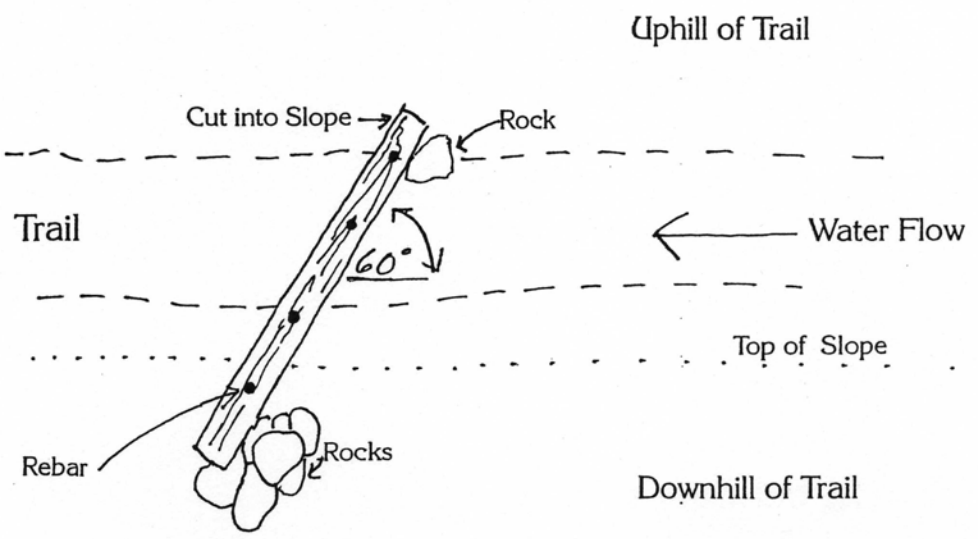




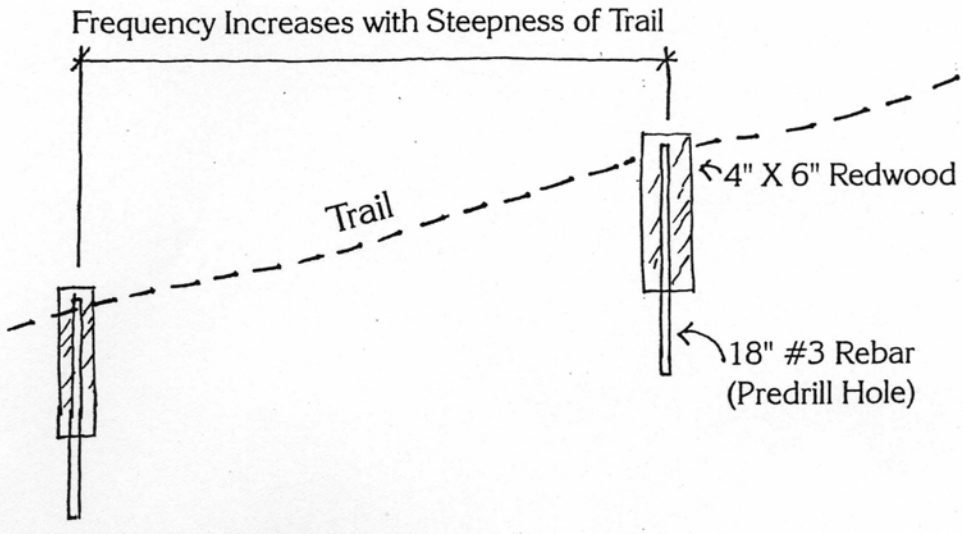




Bicycle racks and Storage Lockers



Wooden Water Bar Installation - Plan



Wooden Water Bar Installation - Section

APPENDIX C
Maintenance Guidelines

Appendix C

Maintenance Guidelines

Introduction

To create the most usable and enjoyable trails system, stretching from the San Bernardino Mountains to the Orange County coast, it is desirable for the Santa Ana River Trails to be as seamless in character and consistent in materials and maintenance as possible. The River and Trails pass through many County, Agency, and Local jurisdictions, so consistent maintenance standards along the entire facility would go a long way to ensuring the quality of the trail experience. These suggested guidelines utilize recognized maintenance standards and established practices in suggestions for all the various agencies involved. The responsible agencies might also maintain an addendum or internal written procedure to follow for portions of the SART facilities under their care.

The maintenance guidelines were derived by reviewing trail design standards and looking at similar facilities around southern California. Guidelines were drawn up to include weekly, monthly, bi-annual and as-needed maintenance for local public works departments. Some issues addressed include repaving and grading of surfaces, trimming and minimum heights for vegetation, and frequency of clean up for horse droppings on equestrian trails.

Suggestions for the Maintenance Guidelines were incorporated from cycling, hiking, and equestrian groups; through papers, websites, and newsletters. The general public was also included through public comments gathered at the SART public meeting held in December of 2004. Additionally, all facilities and maintenance procedures should follow the American with Disabilities Act (ADA) standards for maintaining disabled access.

Recent highlights for making California's streets safer for cyclists:

1) Improve street sweeping schedules.
2) Improve policies on patching utility trenches in bike lanes.
3) Increasing signal times to allow cyclist time to safely pass intersections.
4) Making bike lane striping more consistent.
5) Limiting construction closures of bike lanes.
6) Designing better bike trail crossings on major streets.
7) Provide alternative bike routes to one-way streets.
8) Restrict cell phone users to hands free operation.

Monitoring and Maintenance

The responsible agencies could have a mechanism to monitor and respond to actual surface conditions on the trails and bikeways. The agencies might also maintain an internal mechanism for annual review of all accidents occurring on trail facilities. Accidents in particular should be reviewed to determine if physical conditions on the trail or bikeway contributed to any accidents.

Draft Maintenance Requirements

ADMINISTRATIVE SPECIFICATIONS

A. General Requirements

1. **Professional workmanship, quality equipment, and materials services to include:**

a) Bikeway

1. Sweep
2. Cut vegetation along the edges
3. Cut overhead vegetation/debris removal
4. Tree root pruning
5. Weed, disease and pest control
6. Shrub bed cultivation and weeding
7. Maintain signage/map boards
8. Striping
9. Repair potholes
10. Maintain unpaved shoulders
11. Resurface
12. Erosion control
13. Clean drainage culverts
14. Litter pickup
15. Drinking fountain maintenance
16. Outdoor furnishings maintenance
17. Gates/Bollards maintenance
18. Patrols

b) Trails

1. Rake surface
2. Control vegetation (grass/weeds) on surface
3. Cut vegetation along the edges
4. Cut overhead vegetation/debris removal
5. Tree root pruning
6. Weed, disease and pest control
7. Shrub bed cultivation and weeding
8. Maintain fences
9. Erosion control
10. Clean drainage culverts
11. Maintain signage/map boards
12. Resurface
13. Litter pickup
14. Drinking fountain maintenance

15. Outdoor furnishings maintenance
16. Gates/Bollards maintenance
17. Patrols
18. Horse trough/tie-up maintenance

c) Tunnels
   1. Clean floor of tunnel after flooding, sweep
   2. Remove graffiti
   3. Maintain light bulbs

d) Open space
   1. Mow slopes
   2. Dead/diseased tree removal/replacement
   3. Irrigation for fire control

e) Stream crossing maintenance
   1. Debris removal after flooding
   2. Check footings
   3. Repair/replace/resurface bridge elements
   4. Repair wash-outs
   5. Erosion control

B. Facilities to be Maintained

1. City owned trails
2. Class I Bikeways
3. Trail and Class I Bikeway way related open space
4. Private trails included in City system
5. County trails/bikeways included in City system

C. Maintenance Schedules

1. Daily recurring maintenance
2. Weekly recurring maintenance
3. Biweekly recurring maintenance
4. Monthly recurring maintenance
5. Quarterly recurring maintenance
6. Semi-annually recurring maintenance
7. Annual recurring maintenance
8. Extraordinary maintenance – as required

D. Use of Chemicals

1. Federal, State and local laws for chemical use will be complied with.
2. Licensed Pest Control Operator will direct use of chemicals.
3. All regulations and safety precautions listed in the "Pesticide Information and Safety Manual" published by the University of California shall be adhered to.

ON-GOING MAINTENANCE TASKS

A. Weeds and Grass

1. All weeds and grass shall be removed from trails and adjacent shrub beds.
2. Dead weeds to be removed from the areas treated.
3. Chemical and herbicides shall be applied in accordance with product labeling and applicable law.

B. Pruning and tree trimming

1. Trimming, pruning of and removal of debris from trees and shrubs for vehicular and pedestrian and equestrian clearance, visibility, plant health, appearance, access and safety shall be done as needed, at least monthly.
2. All pruning shall conform to National Arborists Association Standards.
3. Maintain trees to achieve a 12 foot minimum clearance for branches overhanging beyond curb lines on Class II and Class III Bikeway designated roadways.
4. Maintain trees to achieve a 10 foot minimum clearance for branches overhanging class I bikeways and trails.
5. Tree pruning shall be performed with the intent of developing healthy, structurally sound trees with natural form and proportion, symmetrical appearance and proper vertical and horizontal clearance.
6. Prune shrubs to encourage healthy growth, natural form and proportion. Restrict growth beyond edges of bikeways and trails.
7. No more than thirty percent (30%) of a plant's foliage shall be removed during pruning operations.
8. All trimmings and debris shall be removed and disposed of offsite or at approved composting area(s).

C. Litter, Leaf, and Debris Control

1. Removal of all litter, paper, glass, trash, undesirable materials, siltation and other accumulated debris from bikeways and trails
2. Supplemental hand sweeping of edges, corners and all areas inaccessible to or surfaces inappropriate for power equipment of bikeways.
3. Removal of litter from bikeways weekly

4. Removal of litter from trails monthly
5. Accumulation of leaves and debris shall be removed from all landscaped areas including beds, planters, turf areas under trees and placed in appropriate containers.
6. Raking should only be used in ground cover or mulched areas to remove heavy accumulation of leaves and debris. When raking is necessary, it should be done lightly, taking care not to damage plants or displace mulch.

D. Trash Containers

1. Exterior trash containers shall be emptied daily or when half full prior to assigned times and all material shall be placed in appropriate trash bin(s).
2. Trash bins shall be conveniently located for public use as approved by the Supervisor.
3. Containers and appurtenances shall be washed a minimum of once per month or more frequently if required to prevent the concentration of insects, odors, etc.
4. Containers and container appurtenances shall be maintained free of rust and kept painted at all times. The paint pallet shall be approved by the supervisor.
5. Each container shall have a plastic liner at all times to contain trash.

E. Sweeping//Washing

1. Sweeping will be accomplished by the use of blowers, or other approved methods monthly or after heavy winds or rain. Power equipment shall be limited to hours of the day when the public will be least impacted by noise. The supervisor will approve hours for equipment utilization.
2. Check paved areas for cracks, crevices and deterioration and notify supervisor in writing within 24 hours. Frequency – when sweeping.
3. Benches will be washed monthly. Check for carvings, graffiti and needs of repair and notify supervisor in writing within 24 hours of discovery.
4. Check tunnels for accumulation of debris after rainfall.
5. Check tunnels for graffiti and notify supervisor in writing within 24 hours of discovery.

F. Drinking fountain maintenance

1. Maintain all drinking fountains by performing the following:
    a) Drinking fountains shall be cleaned and disinfected weekly using appropriate products according to manufacturer's recommendations.
    b) Leaking fixtures, clogged or stopped up drains and damaged fountains that cannot be repaired by tightening the fixture to stop the leak, or unclogged by using a plunger or a snake shall immediately be reported to the supervisor.

G. Light standards

1. Inspect light fixtures in tunnels and replace bulbs as required.
2. If repairs are required to light standards, immediately notify supervisor in writing.

H. Trail Closures

Temporary Trails Closures

1. There are four times to temporarily close a trail or section of a trail; during construction of a trail, when a high fire hazard exists in the area, when a hazardous condition exists on the trail, and during periods of very wet weather.
2. In the case of high fire hazard, the County Fire Department shall monitor weather conditions and provide input to the County or City when park and trail closures are necessary.
3. If a trail is determined to have a hazardous condition, such as a landslide or washout, it may be closed until the hazard is repaired. Any staff person may make a request to have have a trail closed for this reason.
4. A trail may also be closed during periods of heavy rains if the trail becomes dangerously slippery, or if use of the trail while the surface is wet would result in serious damage to the trail. It is especially important to keep vehicles off service trails during the rainy season except in emergencies.
5. If a trail is closed for any reason, the trail shall be posted as closed at main entry points, and blocked to use where possible.
6. Trail closures shall be as short as possible; repair shall be done promptly. The safety of the trail users and the long-term adverse effects to the trail shall be considered before reopening the trail.

Permanent Trail Closures:

1. Short sections of trails may require rerouting, due to landslides or other problems. The original route shall be closed to use when a reroute is provided.

Appendix C - Sample

Sample Maintenance Requirements

	Frequency April-September	Frequency October-March	Avg Production
			Method
Bikeway			
Sweep	Monthly or as required	Monthly or as required	Hand sweep Power vacuum Blower
Edges - Shrub & groundcover pruning	Monthly	Monthly	By hand Electric
Edging	Monthly	Monthly	Power edger String trimmer
Shrub bed cultivation and weeding	Monthly	Bi-Monthly	Weed,till Rake Spray Mulch
Weed, disease and pest control	As required	As required	Truck sprayer Manual sprayer Tractor with boom Sprayer
Tree trimming/debris removal	Monthly	Bi-Monthly	By hand lift By aerial lift
Tree root pruning	As required	As required	N/A
Maintain signage/map boards	As required	Annually	Check Repair Install
Striping	Annually	As required	N/A
Repair potholes	As required	As required	N/A
Repair bituminous road surfaces (3 laborers, 2 equip. oper.)	As required	As required	N/A

Appendix C - Sample

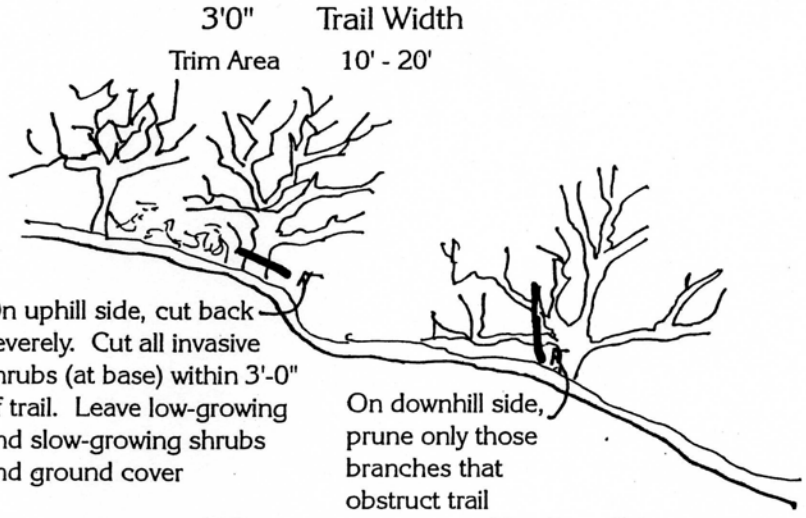
Sample Maintenance Requirements

	Frequency April-September	Frequency October-March	Avg Production
Erosion control/drainage maintenance	As required	After Rain	
Drinking fountain maintenance	As required	As required	Check Repair Install
Litter pickup	Bi-weekly	Bi-weekly	Empty/cleaning Distribute/retrieve Painting
Outdoor furnishings maintenance	Monthly	Monthly	Check, repair, wash; paint
Gates/Bollards maintenance	Monthly	Monthly	
Patrols	As required	As required	
Trails			
Edges - Shrub & groundcover pruning	Monthly	Monthly	By hand Electric
Edging	Monthly	Monthly	Power edger String trimmer
Shrub bed cultivation and weeding	Monthly	Bi-Monthly	Weed,till Rake Spray Mulch
Weed, disease and pest control	As required	As required	Truck sprayer Manual sprayer Tractor with boom Sprayer
Tree trimming/debris removal	Monthly	Bi-Monthly	By hand lift By aerial lift
Tree root pruning	As required	As required	N/A
Maintain fences	Monthly	Monthly	

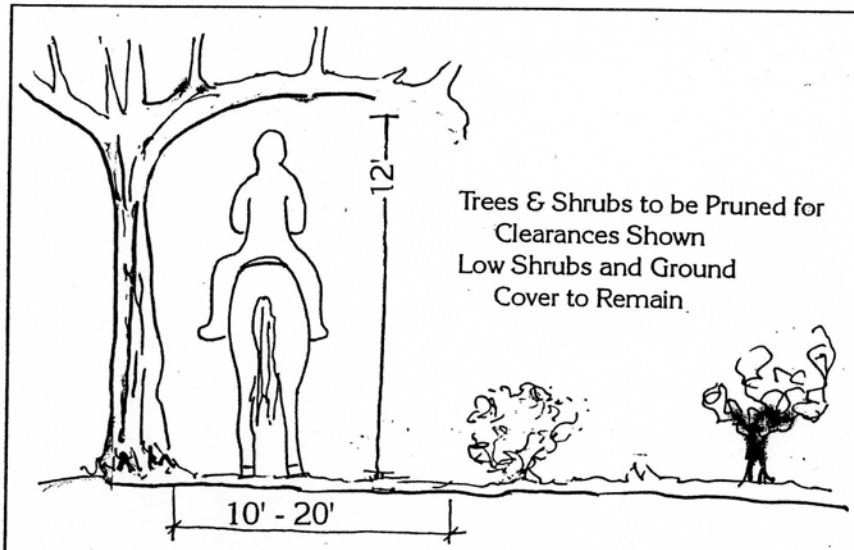
Appendix C - Sample

Sample Maintenance Requirements

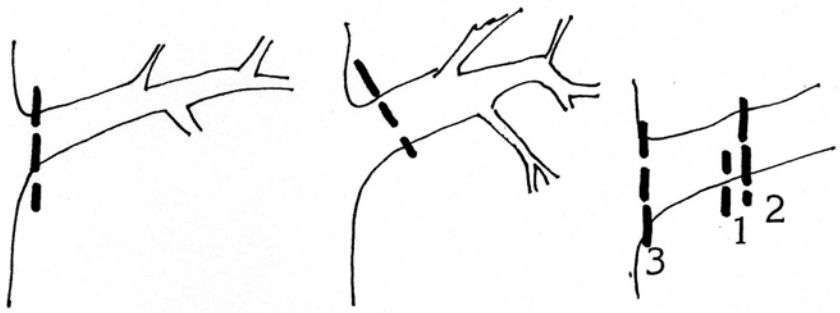
	Frequency April-September	Frequency October-March	Avg Production
Clean drain pipes and culverts	After rains	After rains & bi-weekly	N/A
Repair cut and fill slopes	As required	As required	N/A
Maintain signage/map boards	As required	As required	Check Repair Install
Maintain surface (stone chips, asphalt, concrete)	As required	As required	N/A
Drinking fountain maintenance	As required	As required	Check, repair Install
Litter pickup	Monthly	Bi-weekly	Empty/cleaning Distribute/retrieve Painting
Outdoor furnishings maintenance	Monthly	Monthly	Check, repair, wash; paint
Gates/Bollards maintenance	Monthly	Monthly	
Patrols	As required	As required	
Tunnels			
Clean floor of tunnel	Monthly	Bi-weekly	
Remove graffiti	As required	As required	
Maintain light fixtures	Monthly	Monthly	
Stream crossing maintenance			
Debris removal after flooding	As required	After rains	
Check footings	As required	After rains	
Repair/replace/resurface bridge elements	Yearly	Yearly	
Repair wash-outs	As required	As required	
Erosion control	As required	After rains	
Open space			
Mow slopes	Monthly	Monthly	
Repair cut and fill slopes	As required	As required	N/A



Vegetation Clearing on Side Slopes



Vegetation Clearing on Flat Terrain



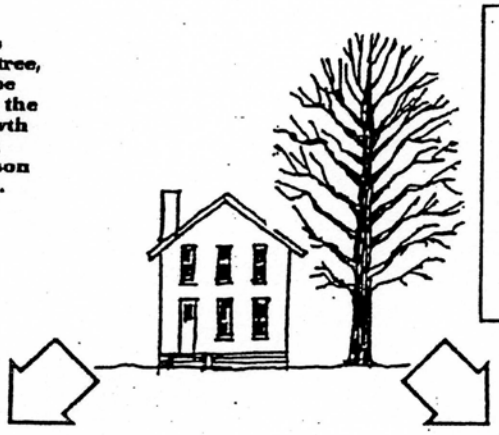
RIGHT:
Branches cut flush with limb or trunk

WRONG:
Stubs are unsightly & Hazardous

LARGE LIMBS:
Make Cuts in Order Shown

Proper Pruning Practices

When a decision is made to reduce the size of an older tree, it can be topped, or it can be pruned properly. Although the speed and nature of regrowth will depend on species and local factors, any comparison of irresponsible topping vs. competent pruning will be dramatic.



Topping by Any Other Name is Just as Ugly

Sometimes pseudo tree experts use different terms for the malpractice of topping. Here is a rogues' gallery of synonyms:

- Stubbing
- Heading
- Heading-back
- Stubbing-off
- Hatracking
- Topping-off
- Dehorning
- Lopping

Topping

Pruning

Year 1

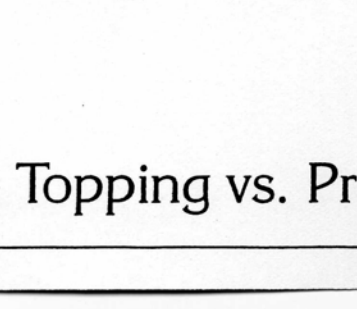
The topped tree is an ugly stub and a remnant of a once lovely tree. If pruned properly, size is reduced but form and beauty are retained.

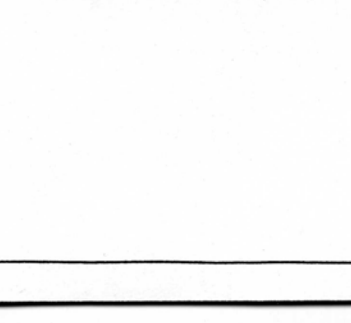
Year 3

Vigorous sprouts have sprung out of the topped tree in large numbers and are growing with abnormal rapidity. The pruned tree adds growth more slowly and more normally distributed.

Year 6

In a relatively short time, the topped tree is as tall – and far bushier and more dangerous – than it was to begin with. The properly pruned tree is safer, more beautiful, and its size better controlled.





Tree Topping vs. Pruning

APPENDIX D
Master Plan Map Exhibits

Appendix D

Map Exhibit Summary

Overview

The Master Plan Map Exhibits were compiled and created in a Geographic Information Systems (G.I.S.) format with information supplied by the Counties of Orange, Riverside and San Bernardino, the Cities of Corona, Norco, Yorba Linda, Chino and Chino Hills, California State Parks, U.S. Army Corps of Engineers, Caltrans, Santa Ana Watershed Authority, Orange County Water District, Inland Empire Utilities Agency and Jurupa Community Services District.

While many of the regional trails are still conceptual, and therefore are not included on the Master Plan Map Exhibits, the Santa Ana River Trail proposed alignments were planned to link to these regional trails wherever possible.

Exhibits

Map Exhibit 1

Santa Ana River Trail & Greenway Regional Open Space Connections Exhibit

This map exhibit overviews the progress of Santa Ana River Trail construction in the context of recreationally-oriented open space. Because the Santa Ana River Trail crosses many jurisdictional lines, the trail alignment is numbered from 1- 11 (and indexed at the bottom of the exhibit) to indicate the managing agency. More detailed contact information can be found in Appendix I, (information is current at the completion of this study).

Map Exhibit 2

Opportunities and Constraints – Gypsum Canyon Road to Prado Dam

The Opportunities and Constraints map exhibit is keyed, by segment numbers, to the Opportunities and Constraints Matrices (Appendix A) and the Construction Cost Estimates (Appendix G). The potential trail alignments identified on these exhibits were catalogued and evaluated giving consideration to costs, geographic viability, trail character, ownership, potential for timely completion and habitat and wildlife compatibility. Reviewing these parameters was vital to identifying the preferred trail alignment.

Map Exhibit 3

Engineering Drawings – River Center Line Station 1405 + 00 to 1585 +00

This exhibit is a study of a potential trail alignment which would utilize the bank stabilization proposed in the *Supplemental EIS and Project EIR for Prado Basin and Vicinity, including Stabilization of the Bluff Toe at Norco Bluffs*, prepared for the U.S. Army Corps of Engineers in July, 2000.

Appendix D

Map Exhibit 4

Preferred Trail Alignments – Gypsum Canyon Road to Prado Dam

This exhibit outlines the preferred alignment. Selection criteria that favored this trail included adequate right of way for the trail, historic, educational and scenic opportunities, and long-term viability. Because the preferred alignment for the Santa Ana River Trail cannot be built until flood control improvements in this reach are completed (possibly a decade away), an additional cost effective secondary alignment was identified to allow completion of the trail alignment from Gypsum Canyon Road to Prado Dam in the near future. Both the preferred and the secondary alignments are identified on this map exhibit.

Map Exhibits 5, 8 and 9

Preferred Trail Alignments – Prado Dam to Corydon Avenue and
State Route 71 Class I Bicycle Path Southern Segment
Preferred Trail Alignments – State Route 71 Class I Bicycle Path Northern Segment
Prado Basin Engineering
Santa Ana River Trail - Draft Alignment Study

The alignment proposed through Prado Dam (map exhibit 5) is designed to avoid habitat and wildlife issues as much as possible, and to cost-effectively utilize the proposed Army Corps of Engineers' dam structures and levees. A more detailed engineering study of this reach can be seen in map exhibit 8.

The SR-71 alignment proposes to utilize Caltrans' right of way along the northbound lane of the highway to accommodate a separated bicycle lane. A more detailed engineering study of this reach can be seen in Map Exhibit 9. Sections of the existing three primary conditions adjacent to the existing highway can be seen in Appendix E.

Map Exhibit 6

Prado Area – Vegetation and Habitat Map

The proposed Prado Basin and SR-71 alignments were superimposed over Exhibit 3-5 *Least Bell's Vireo Territories, Prado Basin*, which was prepared for the Supplemental EIS and Project EIR for Prado Basin including Stabilization of the Bluff Toe at Norco Bluffs, July 2000. This map exhibit was utilized to identify the proximity of Least Bell's Vireo nesting sites to proposed trail alignments.

Map Exhibits 7 and 8

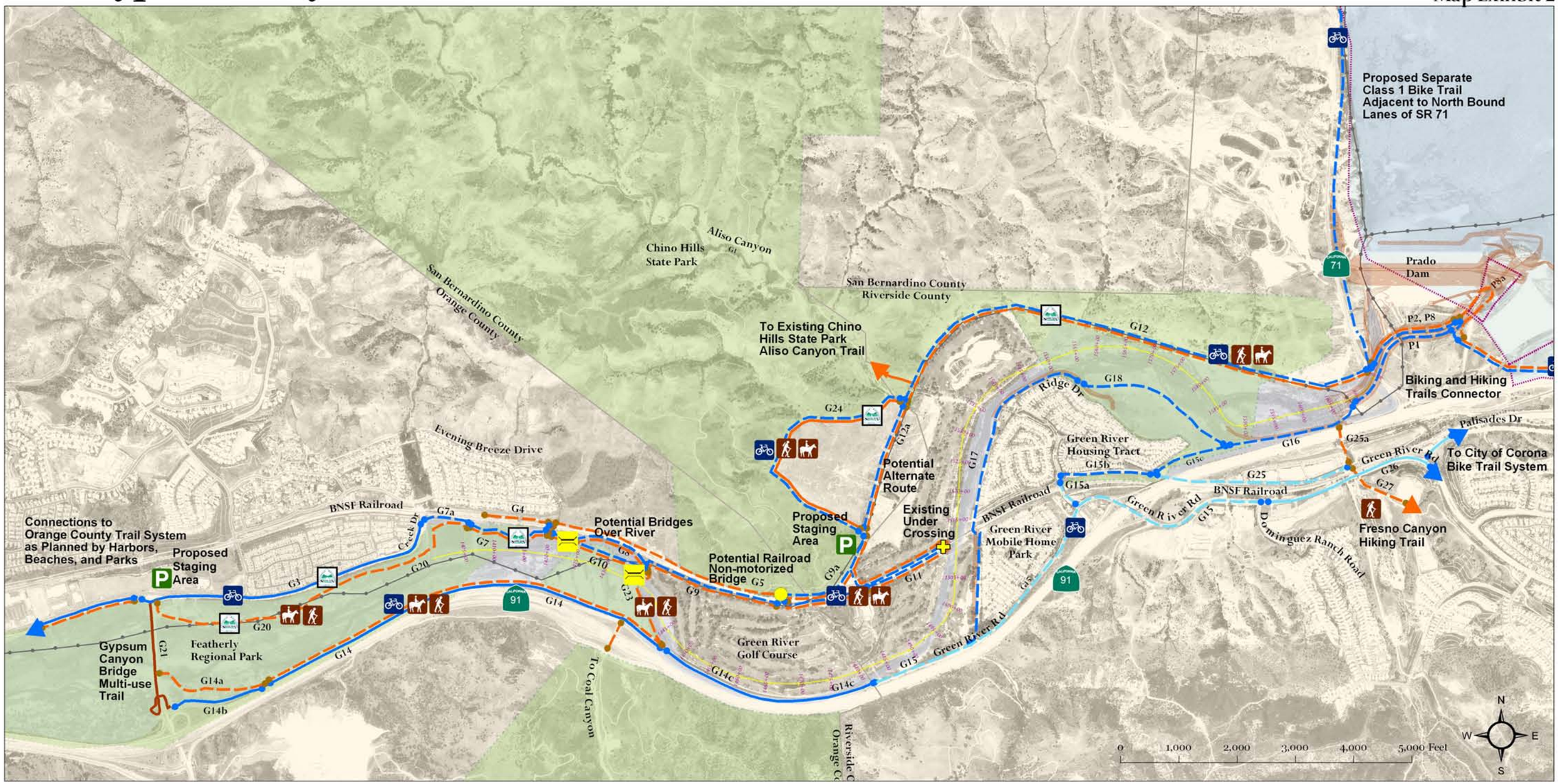
Preferred Trail Alignments Corydon Avenue to Hamner Avenue
Preferred Trail Alignments Hamner Avenue to Hidden Valley Wildlife Refuge

The preferred trail alignment from Corydon Avenue to Hidden Valley Wildlife Refuge will require coordination with flood control projects proposed by Orange County Water District and the Army Corps of Engineers which may take a decade or more for completion. A cost effective secondary alignment has therefore been proposed to provide a contiguous trail alignment prior to the completion of the preferred alignment.


SAN BERNARDINO COUNTY
LOS ANGELES COUNTY
ORANGE COUNTY
RIVERSIDE COUNTY
San Bernardino National Forest
CSU San Bernardino
San Bernardino Station
San Bernardino International Airport
Proposed Sports Complex
Fontana Station
The California Speedway
Rialto Station
Lytle Creek
Lytle Creek Trail
Twin Creek Trail
Santa Ana River
Santa Ana River Trail
COLTON
REDLANDS
University of Redlands
Loma Linda Medical Center/ University
Reche Canyon Trail
San Timoteo Canyon Creek Trail
CRAFTON HILLS
California Polytechnic University Pomona
Ontario International Airport
ONTARIO
JURUPA HILLS
CHINO
Jensen-Alvarado Historic Ranch
Santa Ana River Wildlife Area
Pedley Station
Riverside Downtown Station
The Mission Inn
UC Riverside
Box Springs Mountain Reserve
Norton Younglove Reserve
WHITTIER HILLS
CHINO HILLS
San Antonio Channel Trail
Cucamonga Creek Trail
Mill Creek Trail
Telegraph Canyon Trail
Chino Hills State Park
Slaughter Canyon Trail
Soquel Canyon Trail
Prado Basin
NORCO
NORCO HILLS
RIVERSIDE
Riverside La Sierra Station
MORENO VALLEY
California Citrus State Historic Park
March Air Base
Lake Perris State Recreation Area
Lake Perris
San Jacinto Wildlife Area
THE BADLANDS
YORBA LINDA
Yorba Regional Park
Featherly Regional Park
North Main Corona Station
West Corona Station
CSU Fullerton
Anaheim Canyon Station
Santa Ana River
Gypsum Canyon Trail
CORONA
ARLINGTON MOUNTAIN
Lake Matthews
ANAHEIM HILLS
West Canyon Trail
Proposed Wier Canyon Wilderness Park
Coal Canyon Ecological Reserve
Villa Park Dam
Irvine Ranch
Irvine Lake
Anaheim Station
Disneyland
Edison Field
ANAHEIM
ORANGE
SANTA ANA
Centennial Regional Park
John Wayne International Airport
Limestone Wilderness Park
Cleveland National Forest
Whiting Wilderness Park
Bolsa Chica Ecological Reserve
HUNTINGTON BEACH
Orange Coast College
Talbert Nature Preserve
San Joaquin Freshwater Marsh
UC Irvine
Huntington State Beach Park
Pacific Coast Highway
NEWPORT BEACH
Laguna Coast Wilderness Park
Aliso Creek Greenbelt
O'Neill Regional Park
Caspars Wilderness Park
Crystal Cove State Park
PACIFIC OCEAN
Lake Elsinore
Skinner Reservoir
Santa Ana River Trail & Greenway
Regional Open Space Connections
Legend
Trails Within Project Area
Bikeway - Existing - SART*
Bikeway - Proposed - SART*
Trail - Proposed - SART*
Bikeway - Proposed - Alternate Route
Trail - Proposed - Alternate Route
Other Trails
Bikeway - Proposed - SART*
Bikeway - Existing - SART*
Trail - Proposed - SART*
Trail - Existing - SART*
Multiuse - Proposed - SART*
Trail/Bikeway - Existing & Proposed - Re
County Line
*SART = Santa Ana River Trail
0 0.5 1 2 3 4
Miles

Santa Ana River Trail Opportunities & Constraints
Gypsum Canyon Road to Prado Dam

Map Exhibit 2



Legend

Existing and Proposed Trails

Trail Types

- Class I or Class II Bikeway
- Existing Class I Bike Path
- Potential Class I Bike Path
- Existing Class II Bike Route
- Potential Class II Bike Route
- Hiking Trail
- Equestrian Trail
- Existing Hiking and Equestrian Trail
- Potential Hiking and Equestrian Trail
- Potential State/County/City Multi Use Trail

Other Features

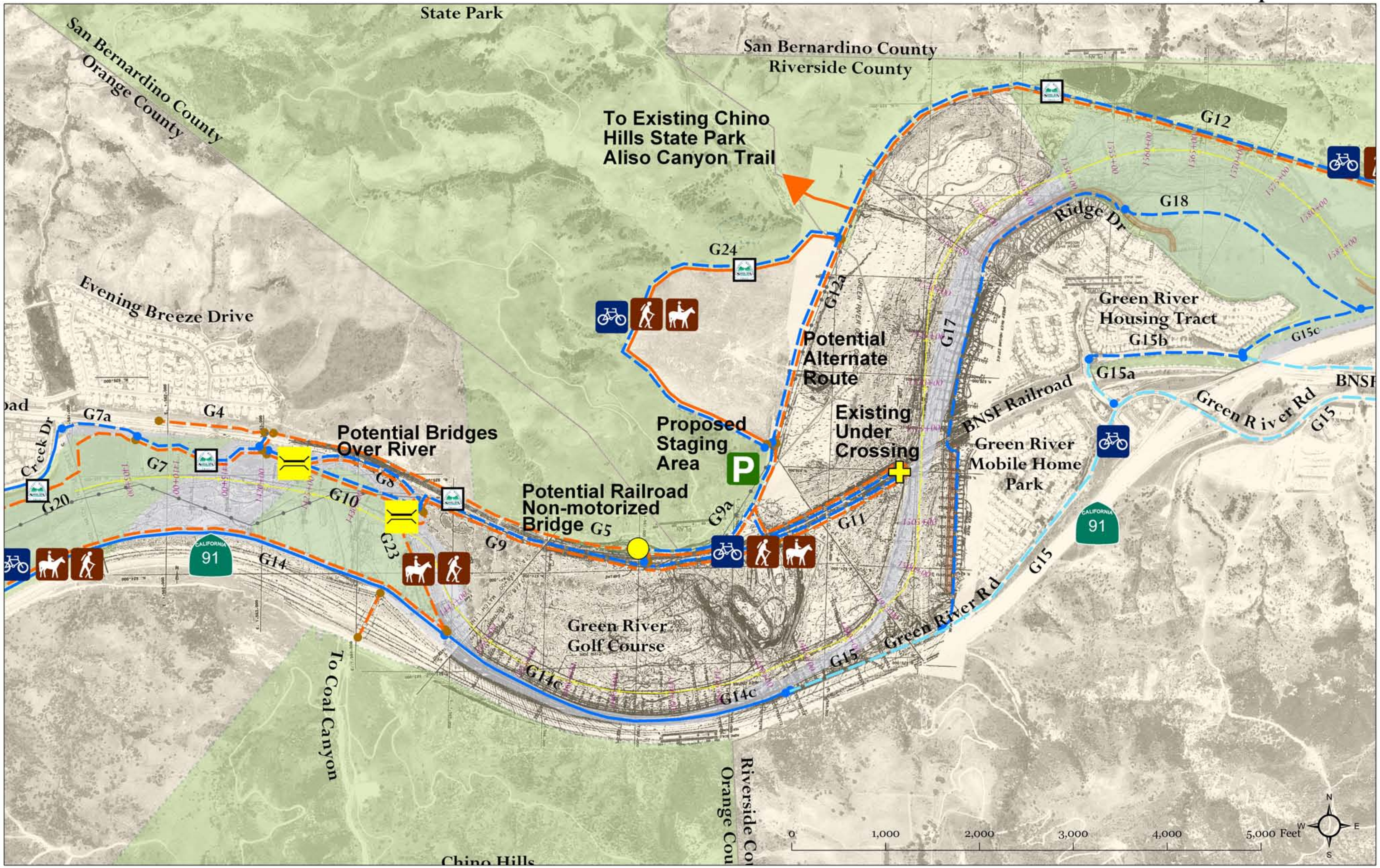
- CountyLines
- 566' Contour
- Bank Stabilizers
- River Centerline
- SARI Line
- Potential Bridge Over River
- Potential Railroad Non-motorized Bridge
- Existing Railroad Undercrossing
- Proposed Staging Area
- Parks
- Santa Ana River Trail Prefered Alignment
- California State Higway

The Dangermond Group
Creative Project Planning & Design

Prepared for the City of Corona

Santa Ana River Trail Engineering Drawings
River Center Line Station 1405 + 00 to 1585 + 00

Map Exhibit 3



Legend

Existing and Proposed Trails

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- Existing Class I Bike Path
- Potential Class I Bike Path
- Existing Class II Bike Route
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- Hiking Trail
- Equestrian Trail
- Existing Hiking and Equestrian Trail
- Potential Hiking and Equestrian Trail
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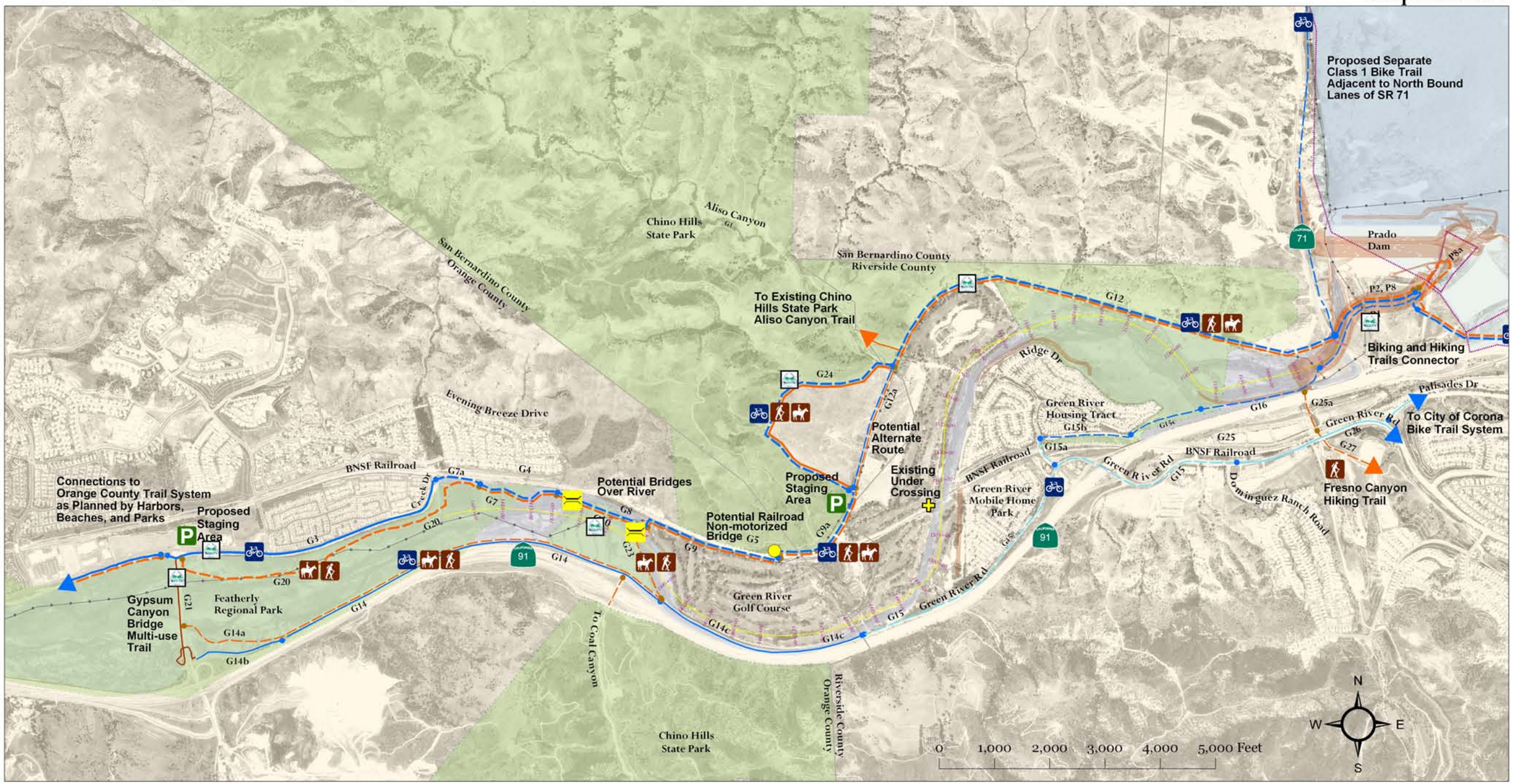
- SARI Line
- Potential Bridge Over River
- Potential Railroad Non-motorized Bridge
- Existing Railroad Undercrossing
- Proposed Staging Area
- Parks
- Santa Ana River Trail Prefered Alignment
- California State Higway

Derived from Engineering Drawings in the Supplemental EIS and Project EIR for Prado Basin and Vicinity, Including Stabilization of the Bluff Toe at Norco Bluffs
July, 2000

The Dangermond Group
Creative Project Planning & Design
Prepared for the City of Corona

Santa Ana River Trail Preferred Trail Alignments
Gypsum Canyon Road to Prado Dam

Map Exhibit 4



Legend

Existing and Proposed Trails

Trail Types

- Class I or Class II Bikeway
- Existing Class I Bike Path
- Proposed Class I Bike Path
- Proposed Class I Bike Path - Local
- Existing Class I Bike Path - Local
- Existing Class II Bike Route
- Proposed Class II Bike Route
- Proposed Class II Bike Route - Local
- Existing Class II Bike Route - Local

- Hiking Trail
- Equestrian Trail
- Existing Hiking and Equestrian Trail
- Proposed Hiking and Equestrian Trail
- Existing Hiking and Equestrian Trail - Local
- Proposed Hiking and Equestrian Trail - Local
- Proposed State/County/ City Multi Use Trail

Other Features

- CountyLines
- Bank Stabilizers
- 566' Contour
- River Centerline
- SARI Line
- Potential Bridge Over River
- Potential Railroad Non-motorized Bridge
- Existing Railroad Undercrossing
- Proposed Staging Area
- Parks
- Santa Ana River Trail Prefered Alignment
- California State Higway

The Dangermond Group
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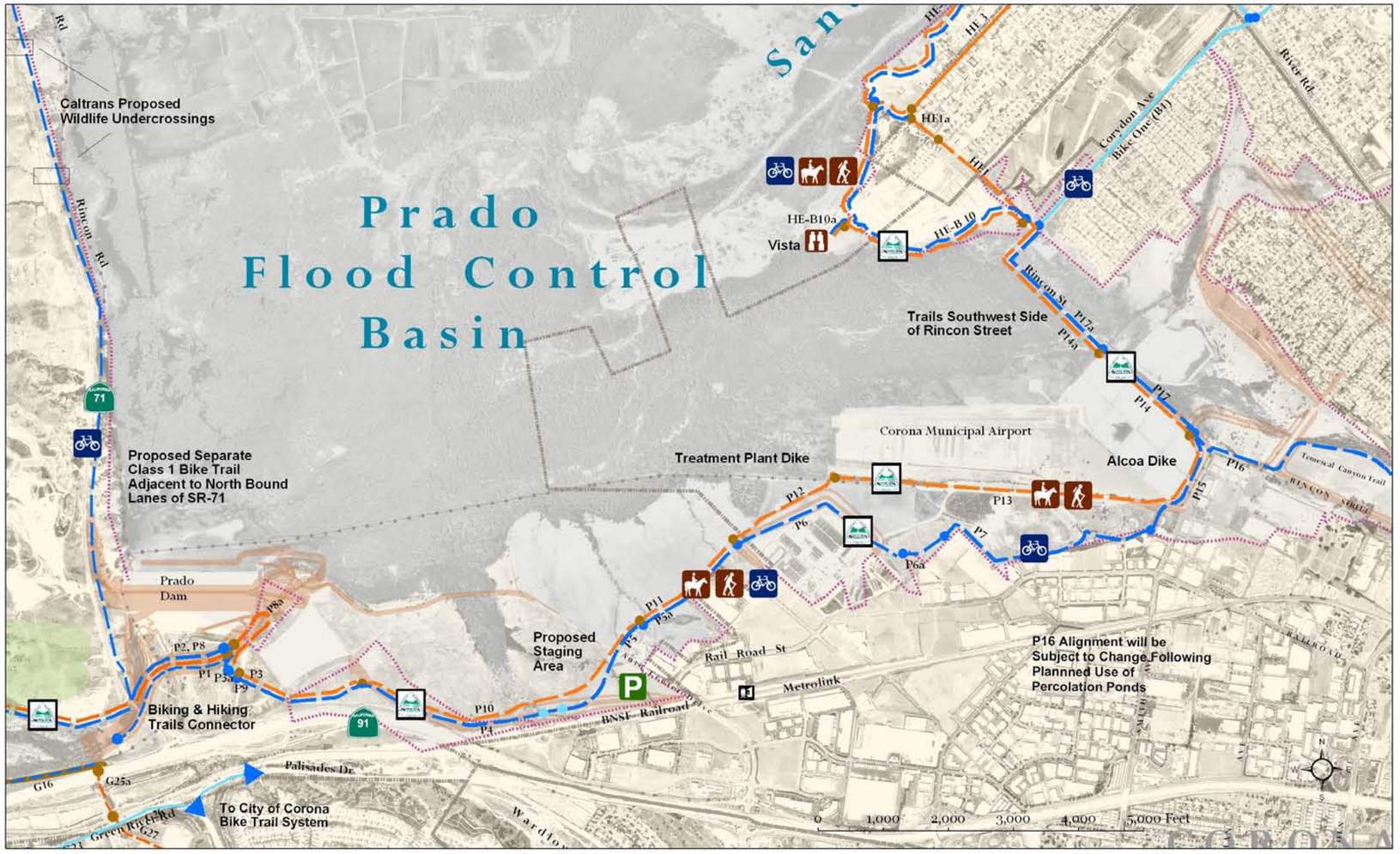
Santa Ana River Trail Preferred Trail Alignments
Prado Dam to Corydon Avenue and
State Route 71 Class I Bicycle Path Southern Segment

Map Exhibit 5



Legend

Existing and Proposed Trails

Trail Types

- Class I or Class II Bikeway
- Existing Class I Bike Path
- Proposed Class I Bike Path
- Existing Class I Bike Path - Local
- Proposed Class I Bike Path - Local
- Existing Class II Bike Route
- Proposed Class II Bike Route
- Existing Class II Bike Route - Local
- Proposed Class II Bike Route - Local
- Hiking Trail
- Equestrian Trail
- Existing Hiking and Equestrian Trail
- Proposed Hiking and Equestrian Trail
- Existing Hiking and Equestrian Trail - Local
- Proposed Hiking and Equestrian Trail - Local

Other Features

- Bank Stabilizers
- SARI Line
- CountyLines
- 566' Contour
- Metro-Link Station
- Parks
- Metro-Link Station
- Vista Point
- Santa Ana River Trail Prefered Alignment
- California State Higway

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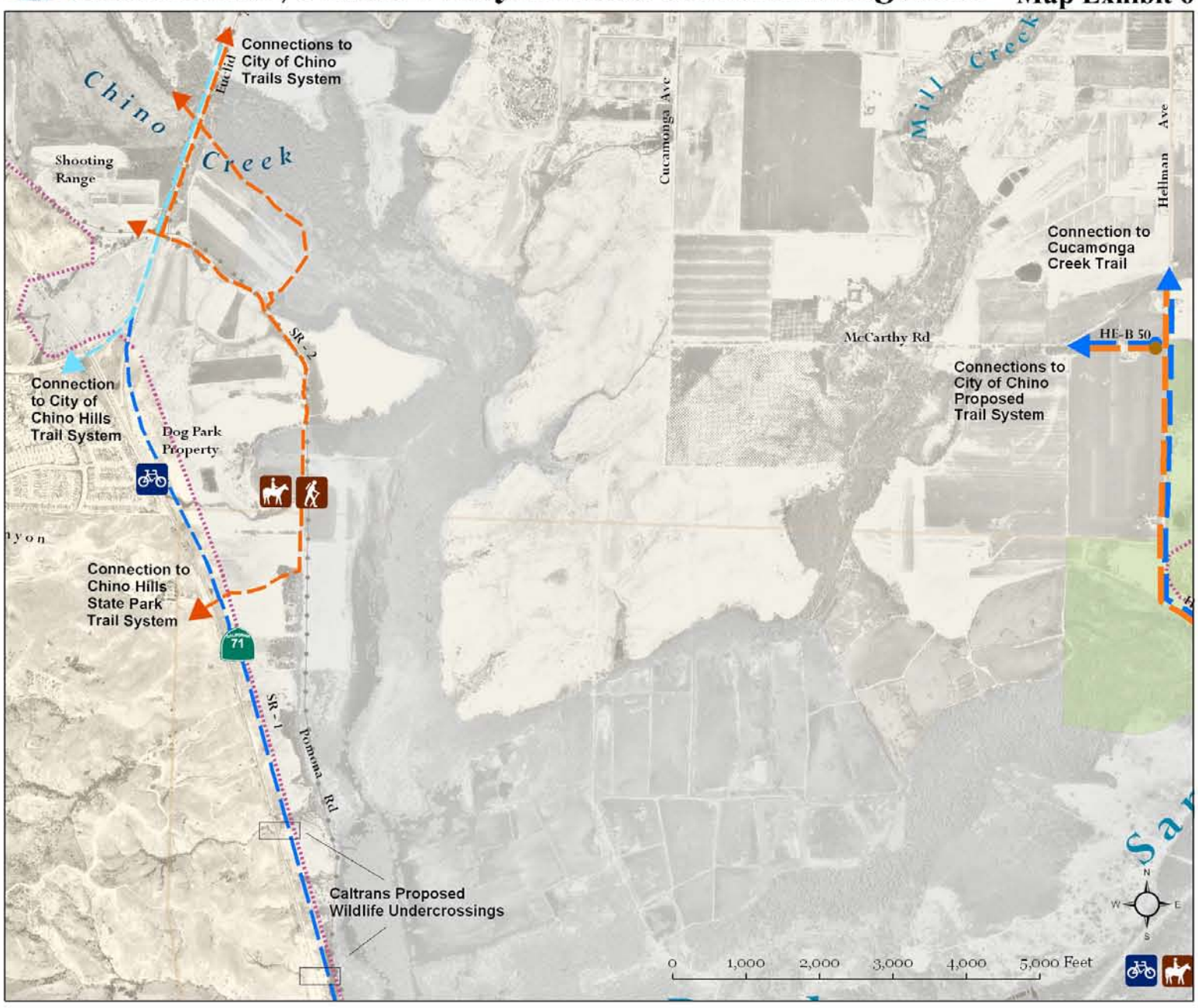
Prepared for the
City of Corona

Santa Ana River Trail Preferred Trail Alignments
State Route 71 Class I Bicycle Path Northern Segment

Map Exhibit 6



Legend

Existing and Proposed Trails

Trail Types

- Class I or Class II Bikeway
- Existing Class I Bike Path
- Proposed Class I Bike Path
- Existing Class I Bike Path - Local
- Proposed Class I Bike Path - Local
- Existing Class II Bike Route
- Proposed Class II Bike Route
- Existing Class II Bike Route - Local
- Proposed Class II Bike Route - Local
- Hiking Trail
- Equestrian Trail
- Existing Hiking and Equestrian Trail
- Proposed Hiking and Equestrian Trail
- Existing Hiking and Equestrian Trail - Local
- Proposed Hiking and Equestrian Trail - Local
- Proposed State/County/ City Multi Use Trail

Other Features

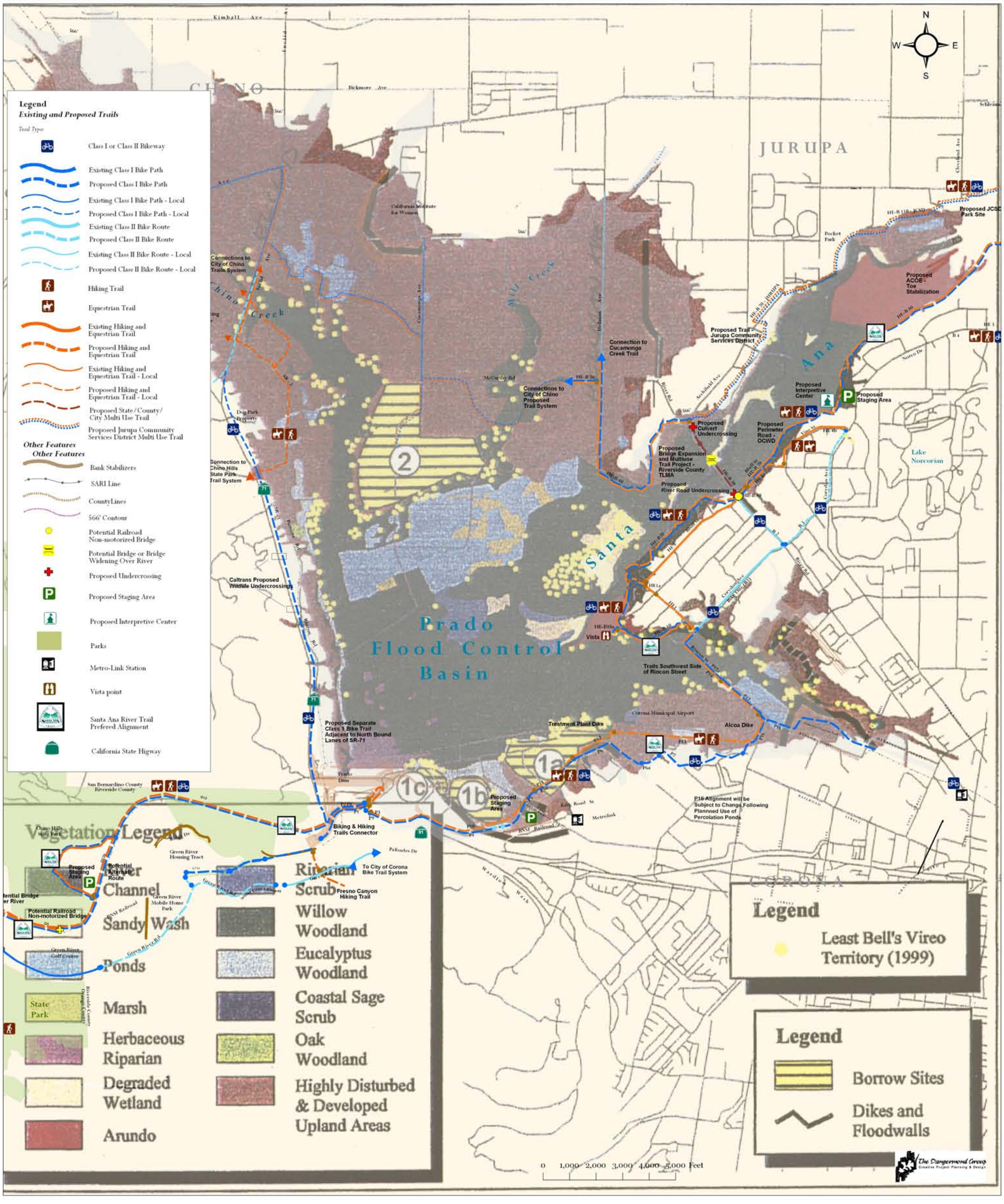
- SARI Line
- CountyLines
- 566' Contour
- Parks
- Santa Ana River Trail Prefered Alignment
- California State Higway

The Dangermond Group
Creative Project Planning & Design

Prepared for the City of Corona

Santa Ana River Trail
Prado Area - Vegetation and Habitat Map

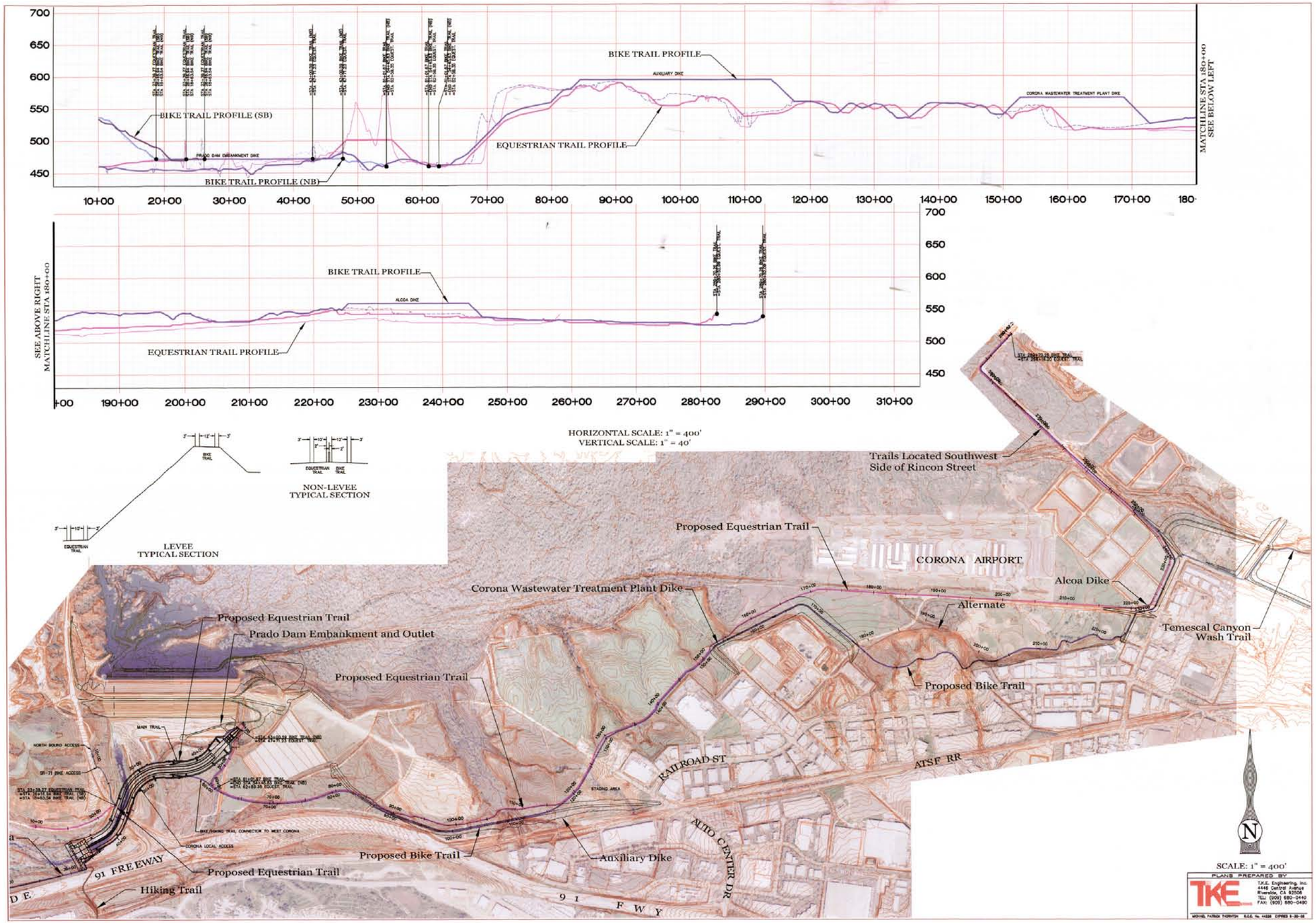
Map Exhibit 7



Prepared for the City of Corona

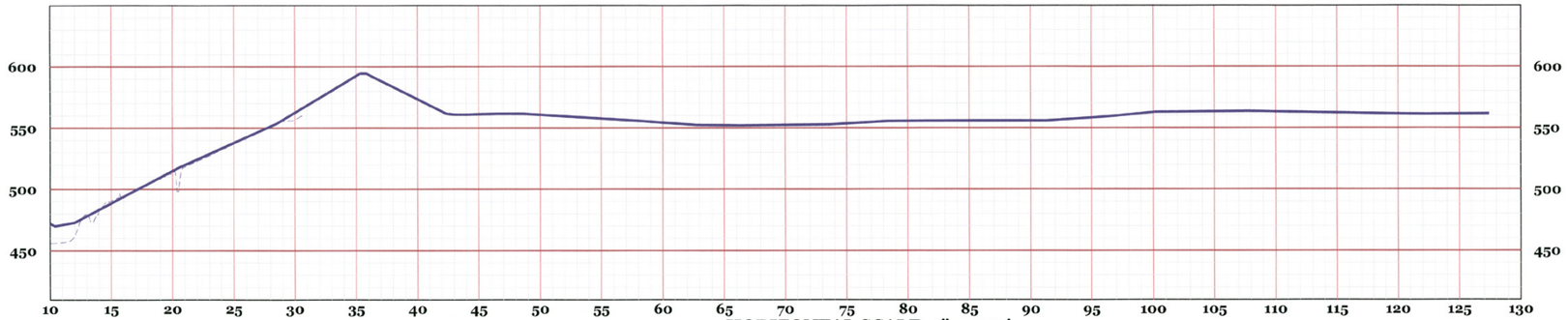
Santa Ana River Trail - Draft Alignment
Prado Dam to Corydon Avenue

Map Exhibit8

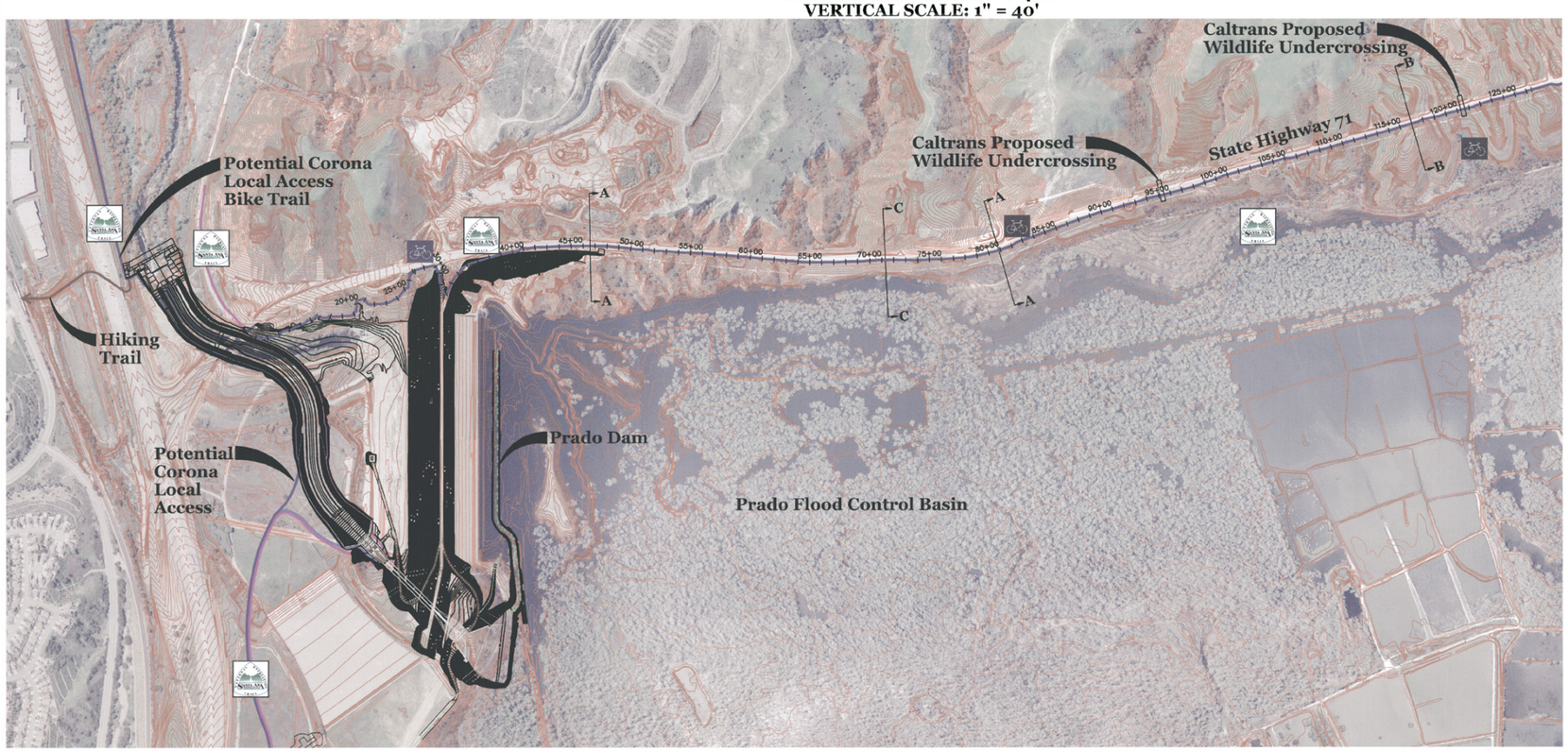


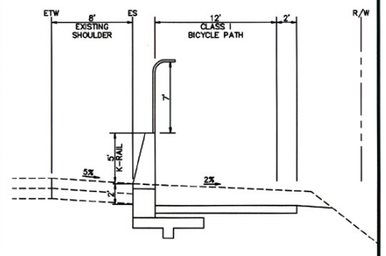
Santa Ana River Trail - Draft Alignment Study
Prado Area

Map Exhibit 9

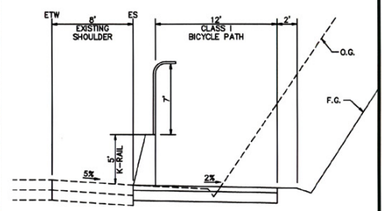


HORIZONTAL SCALE: 1" = 400'
VERTICAL SCALE: 1" = 40'

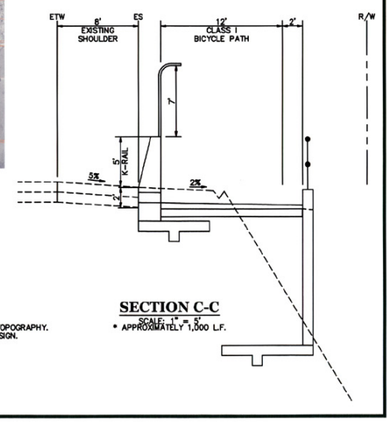




SECTION A-A
SCALE: 1" = 5'
* APPROXIMATELY 10,500 L.F.
PREDOMINANT CONDITION



SECTION B-B
SCALE: 1" = 5'
* APPROXIMATELY 1,500 L.F.



SECTION C-C
SCALE: 1" = 5'
* APPROXIMATELY 1,000 L.F.

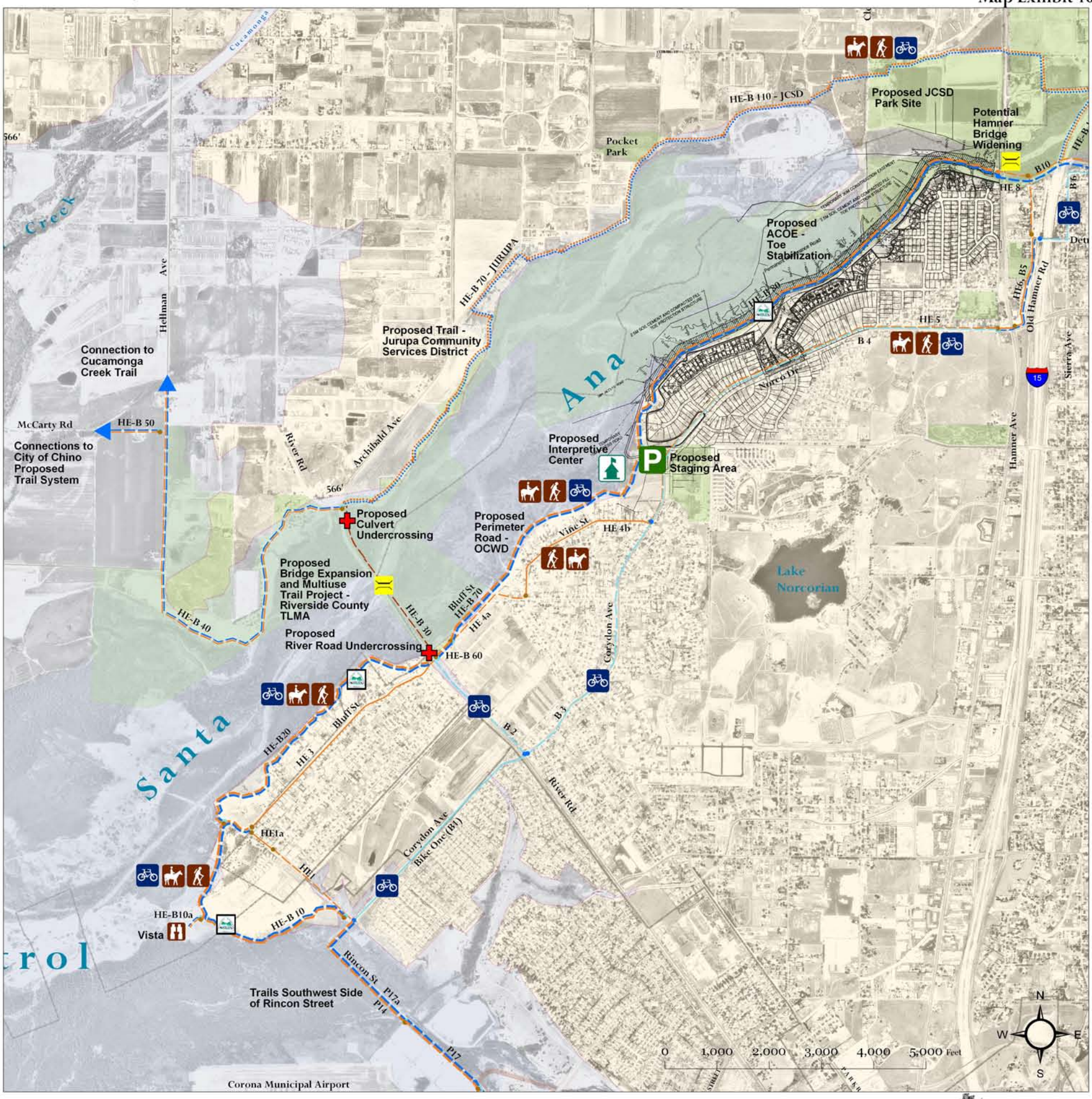
Scale: 1" = 400'

PLANS PREPARED BY
T.K.E. Engineering, Inc.
4446 Central Avenue
Riverside, CA 92506
TEL: (951) 680-0440
FAX: (951) 680-0490

* SECTION LENGTHS ARE APPROXIMATED FROM EXISTING TOPOGRAPHY. SECTION LENGTHS MAY VARY CONSIDERABLY DURING DESIGN.

Santa Ana River Trail Preferred Trail Alignments
Corydon Avenue to Hamner Avenue

Map Exhibit 10



Legend

Existing and Proposed Trails

Trail Types

- Class I or Class II Bikeway
- Existing Class I Bike Path
- Proposed Class I Bike Path
- Proposed Class I Bike Path - Local
- Proposed Class I Bike Path - Local
- Existing Class II Bike Route
- Proposed Class II Bike Route
- Proposed Class II Bike Route - Local
- Existing Class II Bike Route - Local
- Hiking Trail
- Equestrian Trail
- Existing Hiking and Equestrian Trail
- Proposed Hiking and Equestrian Trail
- Existing Hiking and Equestrian Trail - Local
- Proposed Hiking and Equestrian Trail - Local
- Proposed State/County/ City Multi Use Trail
- Proposed Jurupa Community Services District Multi-use Trail

Other Features

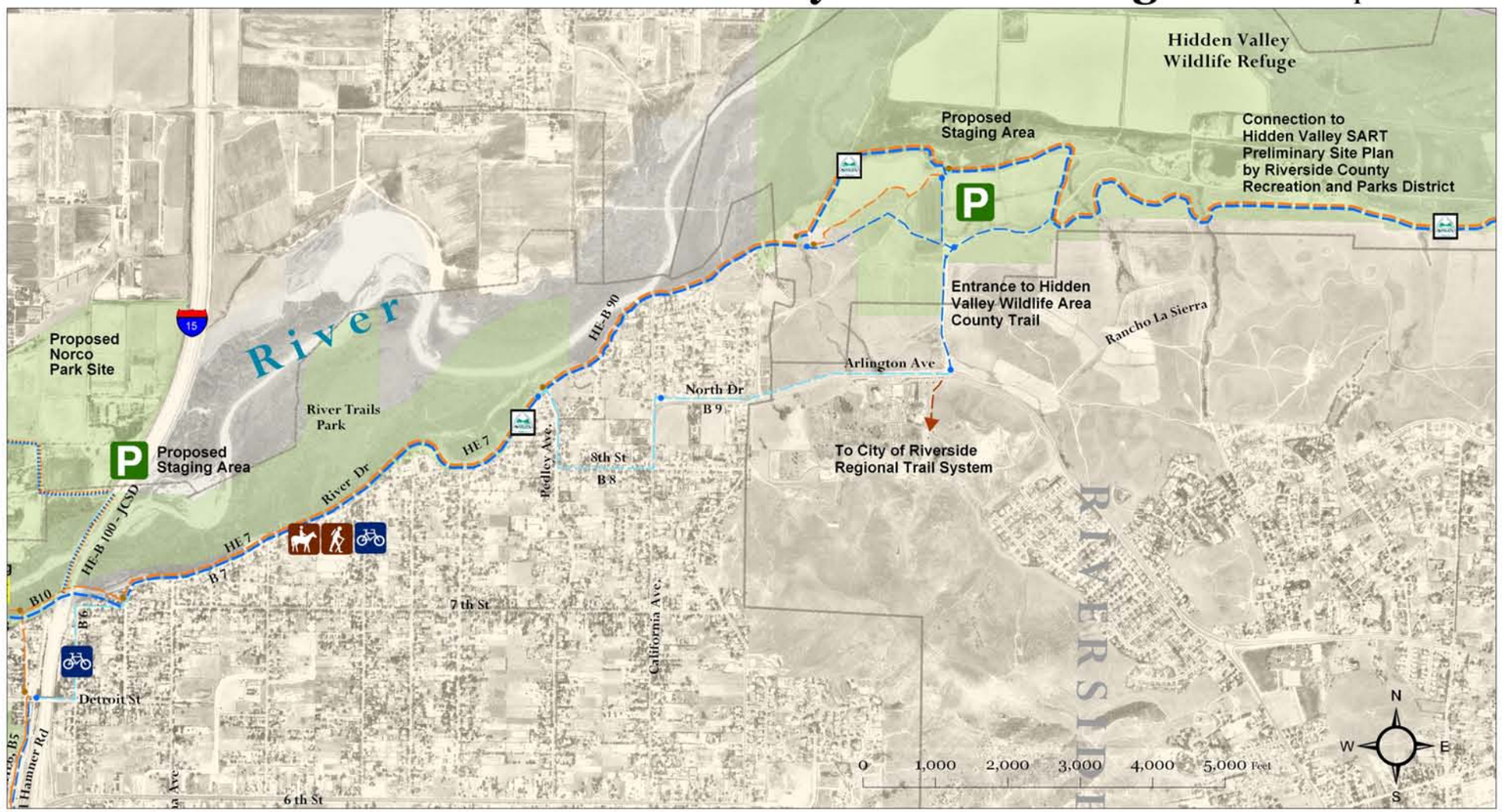
- CountyLines
- 566' Contour
- Potential Bridge or Bridge Widening Over River
- Proposed Undercrossing
- Proposed Staging Area
- Proposed Interpretive Center
- Parks
- Vista point
- Santa Ana River Trail Prefered Alignment
- Interstate Highway

The Dangerwond Group
Creative Project Planning & Design

Prepared for the City of Corona

Santa Ana River Trail Preferred Trail Alignments
Hamner Avenue to Hidden Valley Wildlife Refuge

Map Exhibit 11



Legend

Existing and Proposed Trails

Trail Types

- Class I or Class II Bikeway
- Existing Class I Bike Path
- Proposed Class I Bike Path
- Proposed Class I Bike Path - Local
- Proposed Class I Bike Path - Local
- Existing Class II Bike Route
- Proposed Class II Bike Route
- Proposed Class II Bike Route - Local
- Existing Class II Bike Route - Local
- Hiking Trail
- Equestrian Trail
- Existing Hiking and Equestrian Trail
- Proposed Hiking and Equestrian Trail
- Existing Hiking and Equestrian Trail - Local
- Proposed Hiking and Equestrian Trail - Local
- Proposed State/County/ City Multi Use Trail
- Proposed Jurupa Community Services District Multi-use Trail

Other Features

- CountyLines
- 566' Contour
- Proposed Staging Area
- Parks
- Santa Ana River Trail Prefered Alignment
- Interstate Highway

The Dangermond Group
Creative Project Planning & Design

Prepared for the
City of Corona

APPENDIX E
Project Sections

Project Sections Summary

Overview

Sectional studies were utilized to explore the relationships between the proposed trail alignments and either existing terrain, infrastructure and historical artifacts, or infrastructure proposed by the U.S. Army Corps of Engineers (ACOE) and Caltrans.

Sections 1- 4 explore the potential for interfacing with the ACOE proposed river reinforcements south of Prado Dam in the Green River Golf Course area. Although the proposed engineering plans appear to demonstrate adequate room to accommodate a trail, the proximity to residential areas is a large constraint.

Section 5 is a typical section demonstrating the relationships between the existing bicycle trail location, the historic irrigation channel and a potential hiking/equestrian trail north of the river.

Section 6 explores the potential to reinforce the existing rail road metal retaining wall with adequate fill and cobble to create a trail pad. When approached the Burlington Northern Santa Fe (BNSF) railroad staff did not approve of this alignment. After a review of possible habitat conflicts in this area, Vandermost Consulting concurred that it is not a desirable alignment.

Section 7 demonstrates a typical relationship among BNSF tracks, the golf course and a potential trail located between the tracks and the golf course. There is adequate room to safely place a trail along the tracks outside of BNSF right-of-way, with the exception of about one hundred feet at the northwestern perimeter of the golf course, where a chain link cage or other protective device is advised.

Section 8 explores the potential to utilize the ACOE proposed maintenance road adjacent to the Santa Ana River channel on both the north and south sides of the river. ACOE staff has given preliminary approval of this alignment.

Section 9 is a typical section of the relationship of bicycle and hiking/equestrian trails along the southern perimeter of Prado Basin. There is adequate room to separate the two trails, with the bicycle trail above the hiking/equestrian trail which would be located at the base of the bluff.

Section 10 demonstrates a potential culvert crossing beneath the road at River Road and Bluff Street. This is a busy intersection in an equestrian community. Providing an alternative to an at-grade equestrian crossing would increase trail safety in this area.

Section 11 explores the potential to place a bicycle trail on the top of the proposed ACOE toe stabilization along the Norco Bluffs. There would be adequate room for a bicycle trail on both Alternative A2 (Appendix E) and A3 (not shown). This should be pursued further with ACOE staff.

Appendix E - Sections

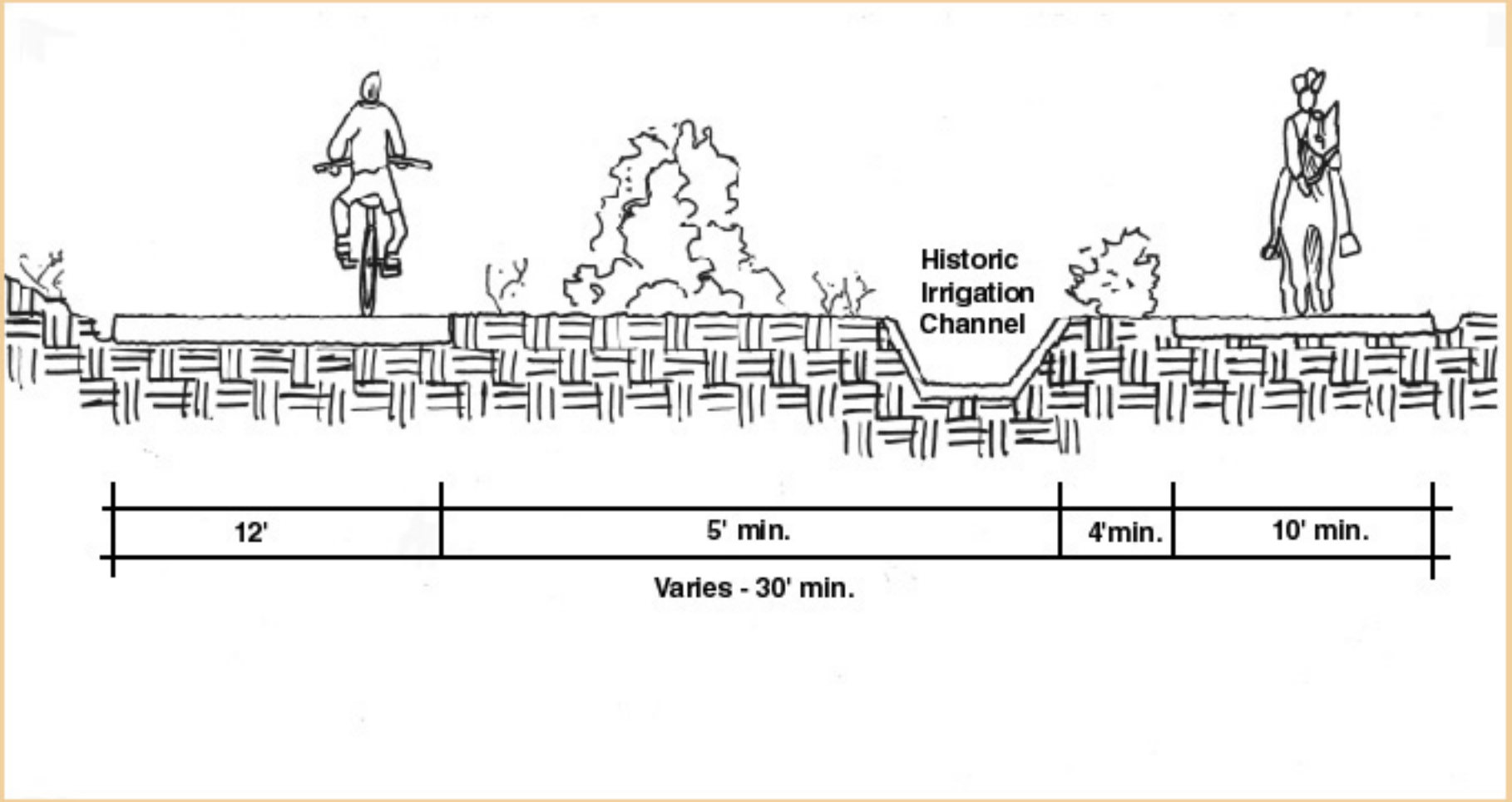
Section 12 – These sections demonstrate the three typical conditions adjacent to the northbound lane of SR-71. In further discussions with Caltrans staff the potential to place the trail below highway grade was considered as an alternative that would reduce noise and be more pleasant for riders. They expressed concerns regarding the impacts this might have on wildlife and agreed that this should be explored further.

Exhibit 13 shows an example of an existing separated bicycle trail along the southbound lane of Interstate 80 in Northern California. Caltrans has suggested and important addition is viewpoint midway between SR-91 and Euclid Avenue. Their comments are available in Appendix J.

Santa Ana River Trail - Section A

Green River Golf Course - Trail Segments # G3, G20

Historic Irrigation Channel East of Gypsum Canyon Road



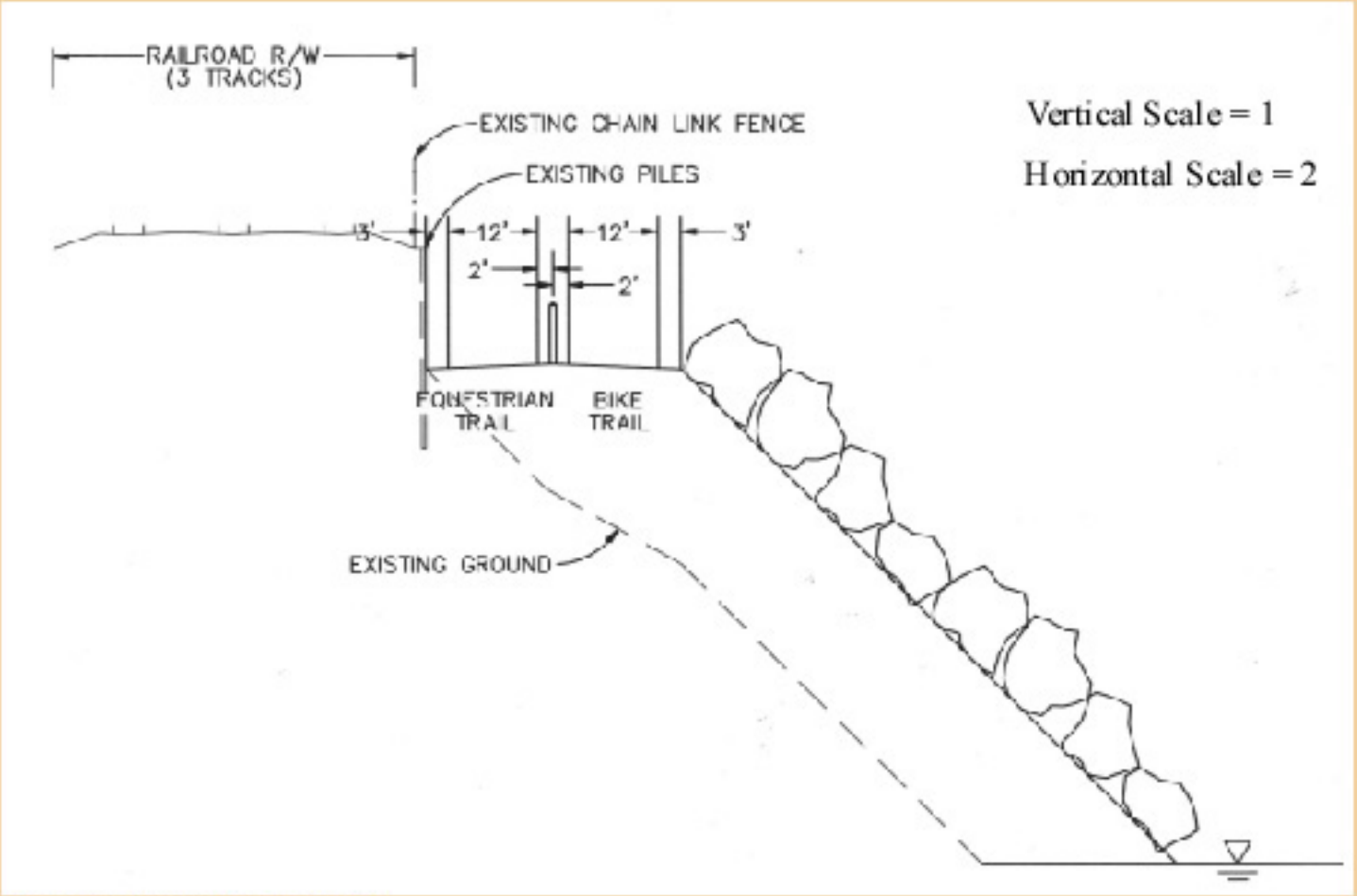
Please refer to Appendix D
Preferred Trail Alignments - Gypsum Canyon Road to Prado Dam

February 11, 2005

Santa Ana River Trail - Section B

Green River Golf Course - Trail Segments # G 8

Potential Class I Bicycle Path with River Reinforcement - River Center Line #1425 + 00



Please refer to Appendix D

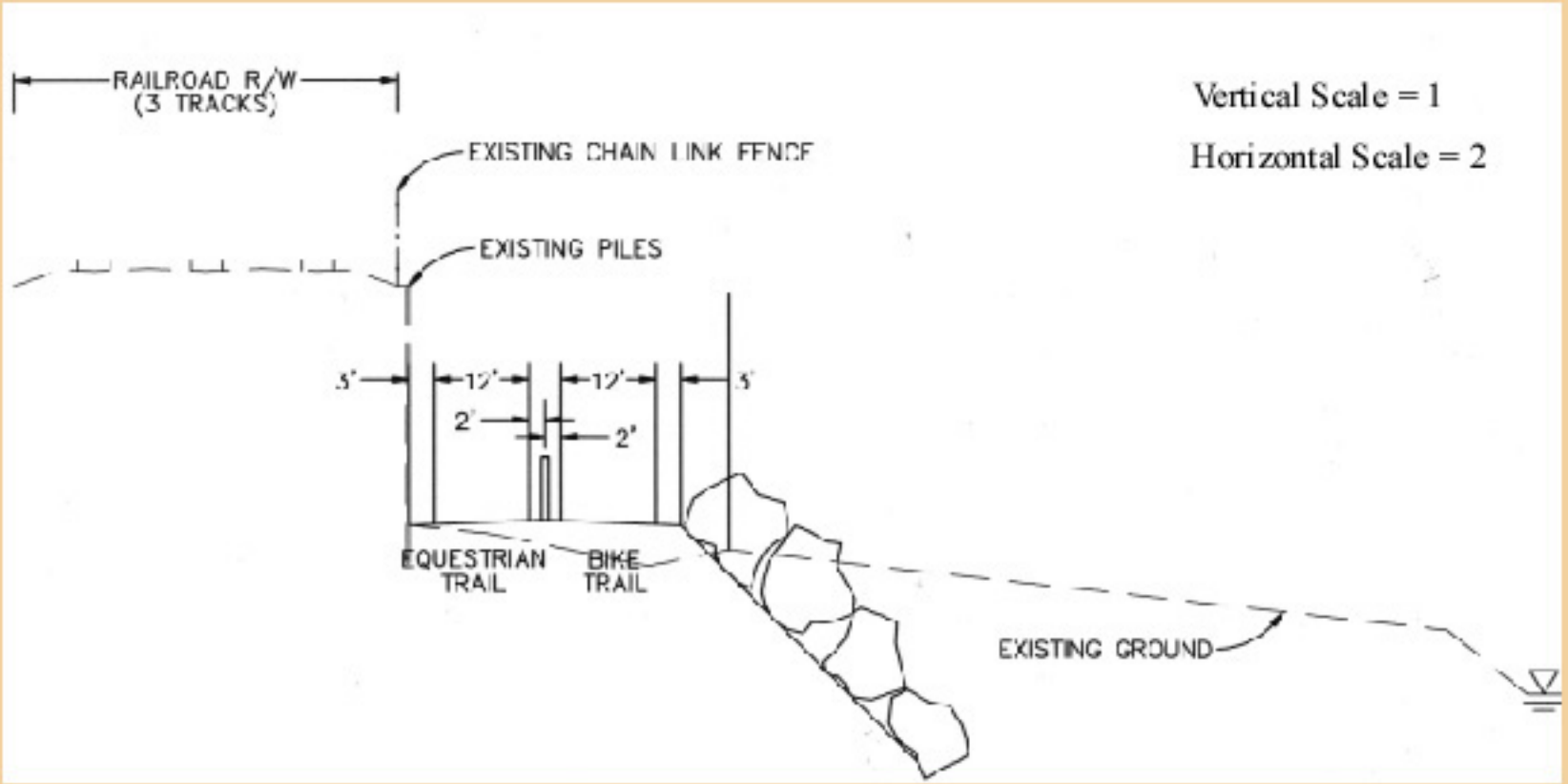
Engineering Drawings River Center Line Station 1405 +00 to 1585 +00

February 11, 2005

Santa Ana River Trail - Section C

Green River Golf Course - Trail Segments # G 8

Potential Class I Bicycle Path with River Reinforcement - River Center Line #1432 + 00

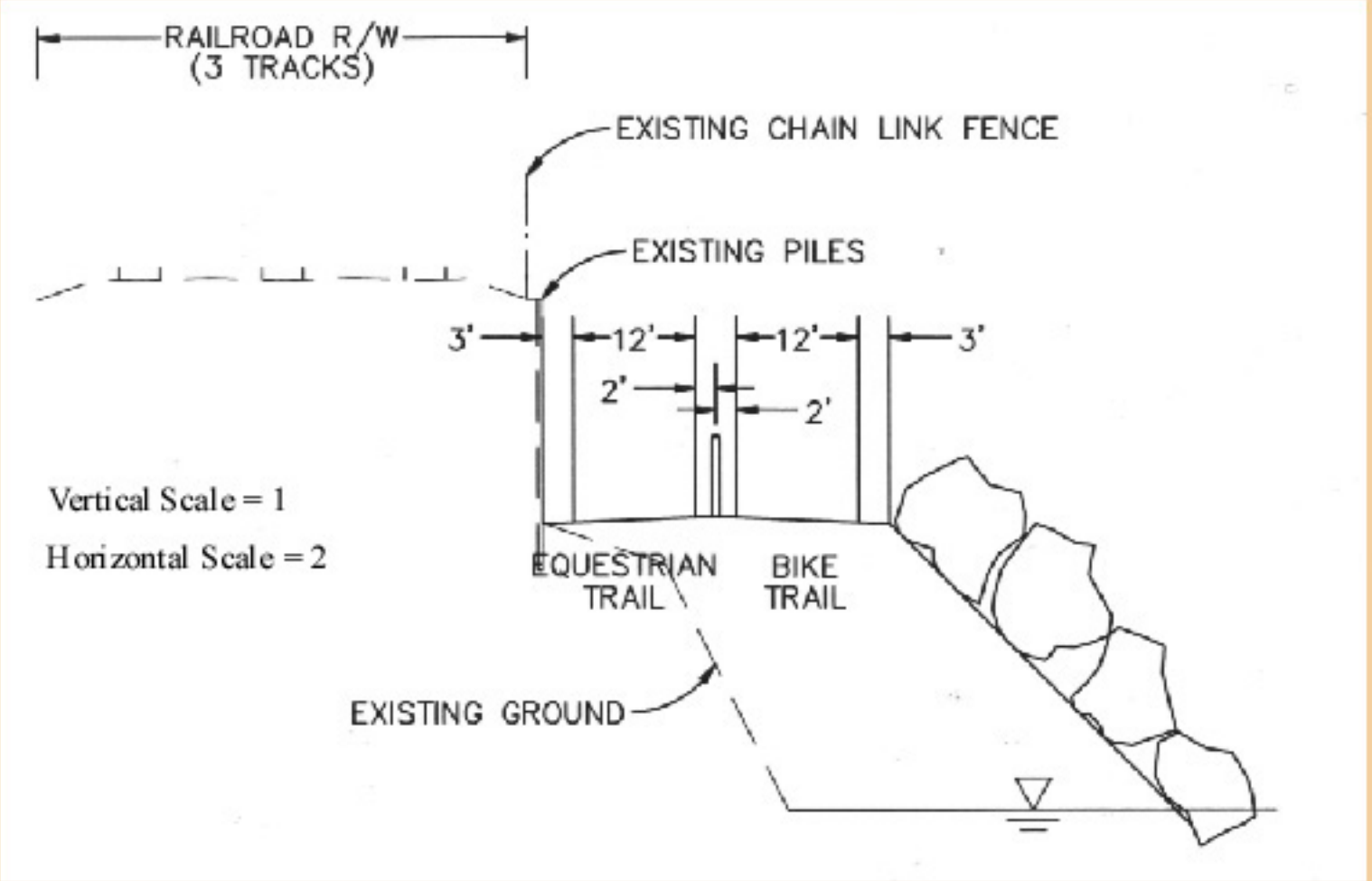


Please refer to Appendix D
Engineering Drawings River Center Line Station 1405 +00 to 1585 +00

Santa Ana River Trail - Section D

Green River Golf Course - Trail Segments # G 8

Potential Class I Bicycle Path with River Reinforcement - River Center Line #1435 + 00



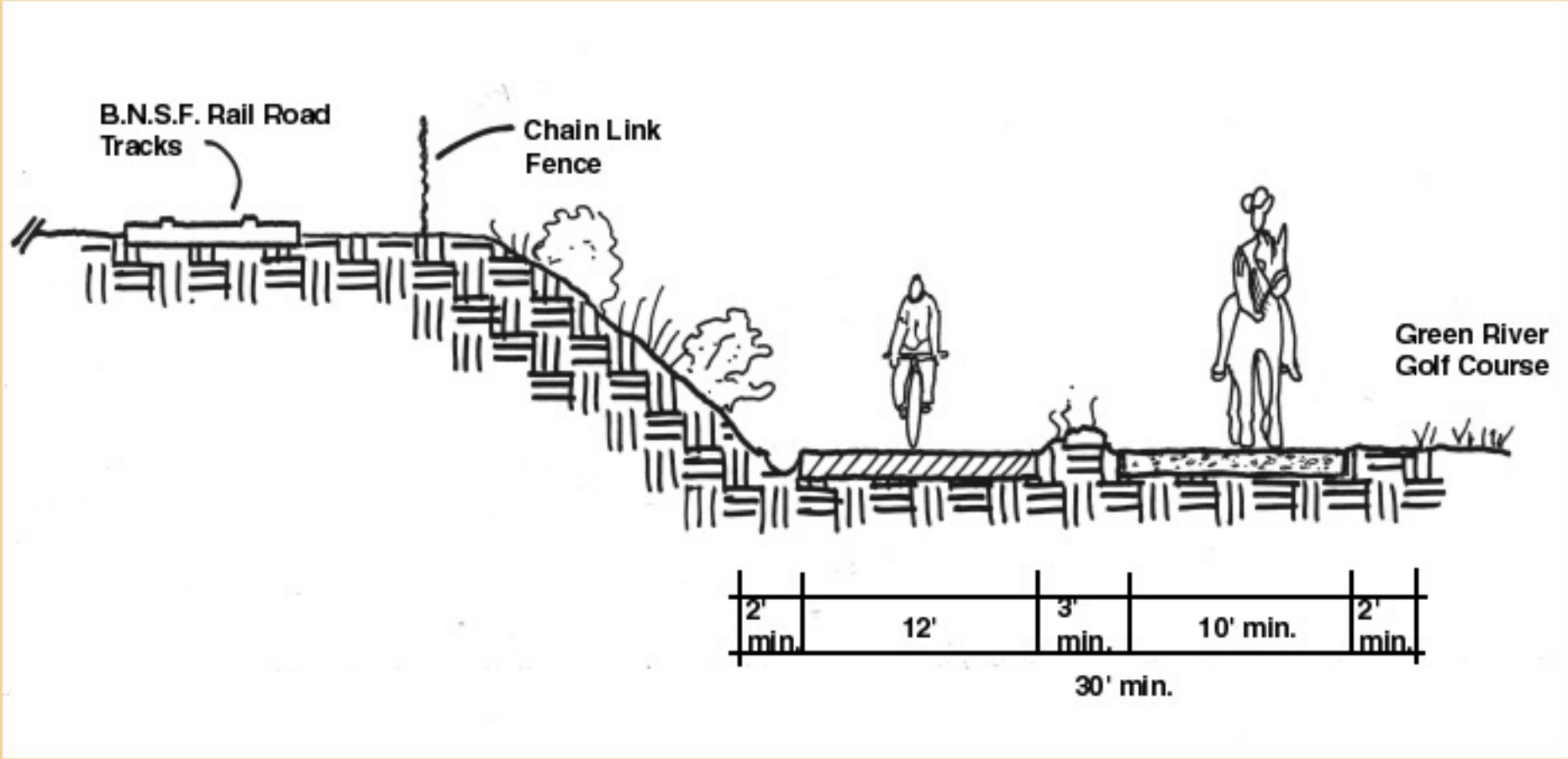
Please refer to Appendix D
Engineering Drawings River Center Line Station 1405 +00 to 1585 +00

February 11, 2005

Santa Ana River Trail - Section E

Green River Golf Course - Trail Segments # G5, G9

Typical Bicycle and Equestrian Trails adjacent to BNSF Rail Road Tracks



Please refer to Appendix D
Preferred Trail Alignments - Gypsum Canyon Road to Prado Dam

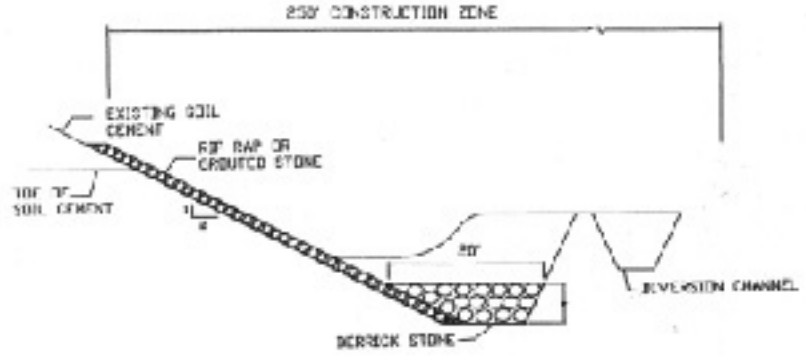
February 11, 2005

Santa Ana River Trail - Section F

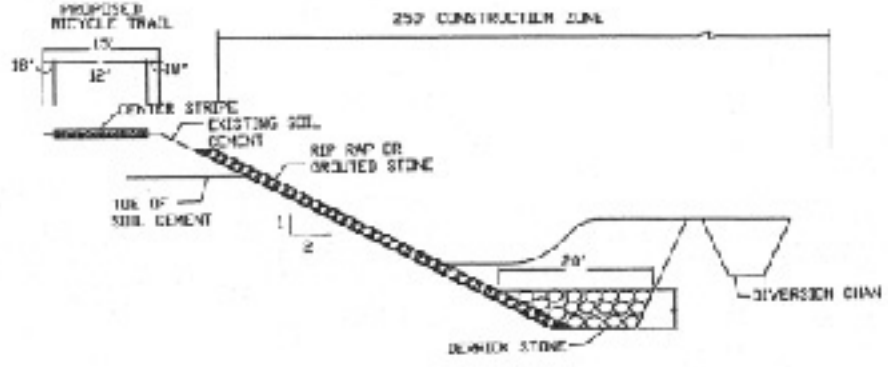
Green River Golf Course - Trail Segments # G14c

Potential Bicycle Trail on Proposed River Reinforcement

Station 1448+00 to 1495+00
Reach 9



N.T.S.
TYPICAL CROSS SECTION



TYPICAL LEVEE CROSS SECTION
WITH PROPOSED BICYCLE TRAIL
N.T.S.

Typical Cross Section - Santa Ana Mainstem including Santiago Creek, California,
Lower Santa Ana River Channel (Weir Canyon Road to Prado Dam) -
Amended to include Proposed Bicycle Trail - July 10, 2004

For original document please reference: Supplemental EIS and Project EIR for
Prado Basin and Vicinity, including Stabilization of the Bluff Toe at Norco Bluffs,
Prepared for U. S. Army Corps of Engineers, July 2000

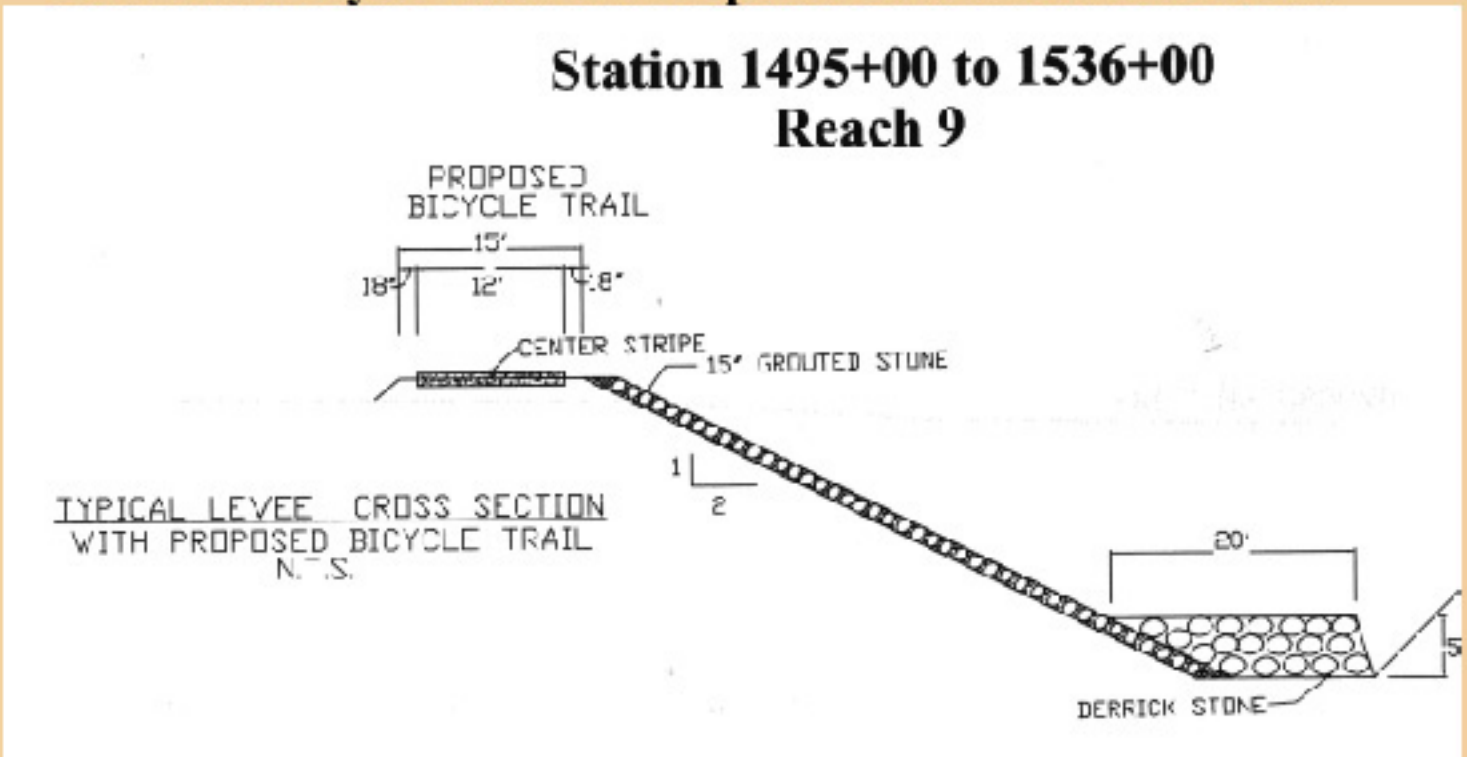
Please refer to Appendix D
Engineering Drawings River Center Line Station 1405 +00 to 1585 +00

February 11, 2005

Santa Ana River Trail - Section G

Green River Golf Course - Trail Segments # G15

Potential Bicycle Trail on Proposed River Reinforcement



Typical Cross Section - Santa Ana Mainstem including Santiago Creek, California, Lower Santa Ana River Channel (Weir Canyon Road to Prado Dam) - Amended to include Proposed Bicycle Trail - July 10, 2004

For original document please reference: Supplemental EIS and Project EIR for Prado Basin and Vicinity, including Stabilization of the Bluff Toe at Norco Bluffs, Prepared for U. S. Army Corps of Engineers, July 2000

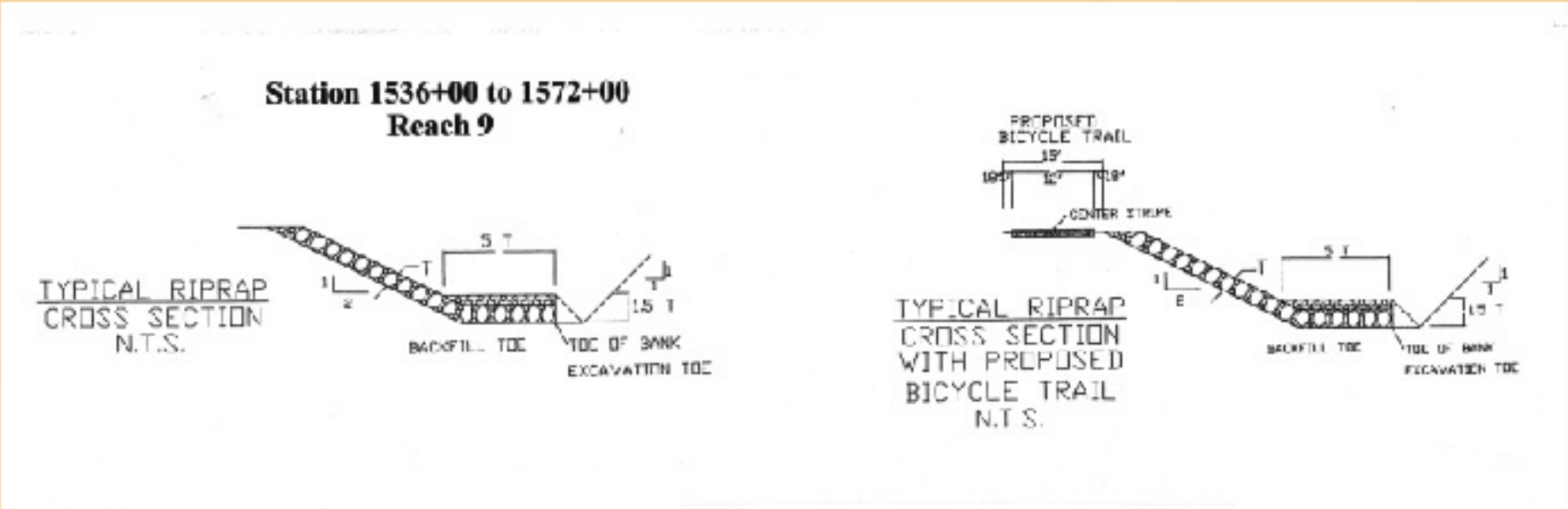
Please refer to Appendix D
Engineering Drawings River Center Line Station 1405 +00 to 1585 +00

February 11, 2005

Santa Ana River Trail - Section H

Green River Golf Course - Trail Segments # G17

Potential Bicycle Trail on Proposed River Reinforcement



Typical Cross Section - Santa Ana Mainstem including Santiago Creek, California, Lower Santa Ana River Channel (Weir Canyon Road to Prado Dam) - Amended to include Proposed Bicycle Trail - July 10, 2004

For original document please reference: Supplemental EIS and Project EIR for Prado Basin and Vicinity, including Stabilization of the Bluff Toe at Norco Bluffs, Prepared for U. S. Army Corps of Engineers, July 2000

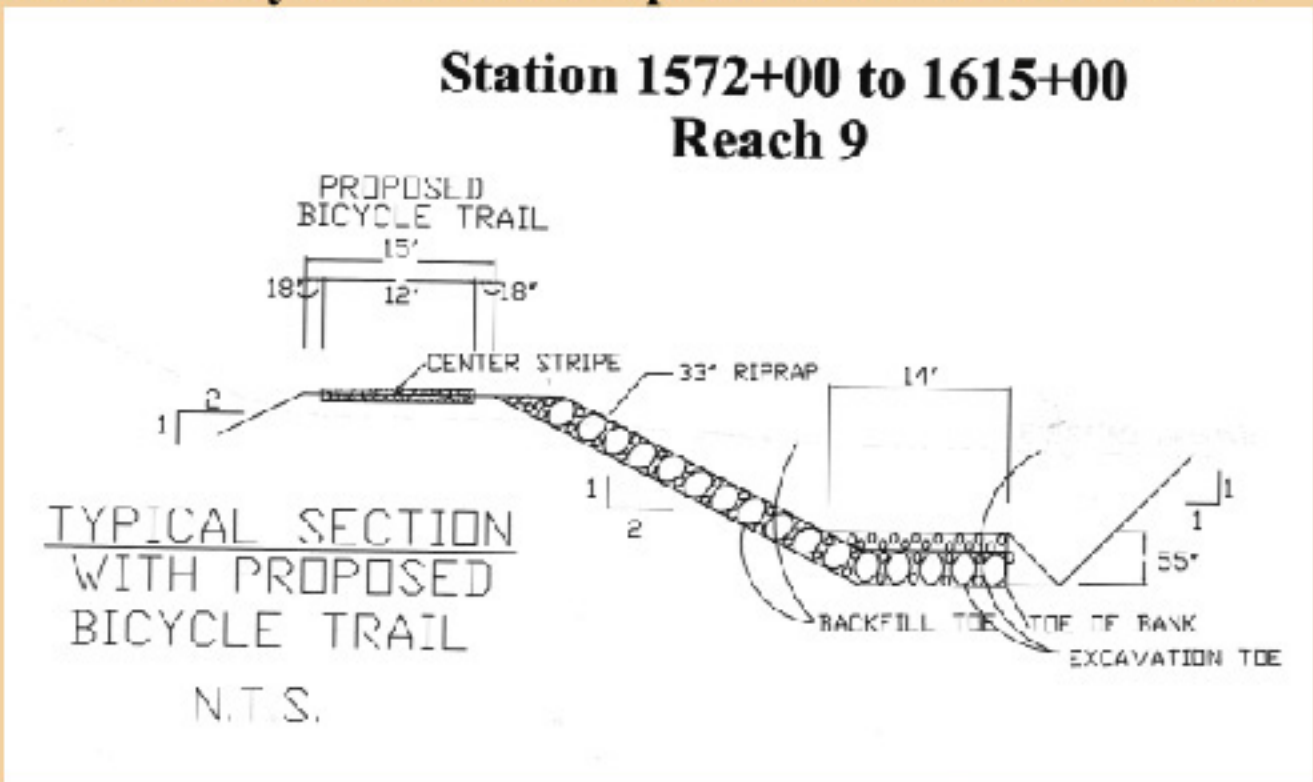
Please refer to Appendix D
Engineering Drawings River Center Line Station 1405 +00 to 1585 +00

February 11, 2005

Santa Ana River Trail - Section I

Green River Golf Course - Trail Segments # G18

Potential Bicycle Trail on Proposed River Reinforcement



Typical Cross Section - Santa Ana Mainstem including Santiago Creek, California, Lower Santa Ana River Channel (Weir Canyon Road to Prado Dam) - Amended to include Proposed Bicycle Trail - July 10, 2004

For original document please reference: Supplemental EIS and Project EIR for Prado Basin and Vicinity, including Stabilization of the Bluff Toe at Norco Bluffs, Prepared for U. S. Army Corps of Engineers, July 2000

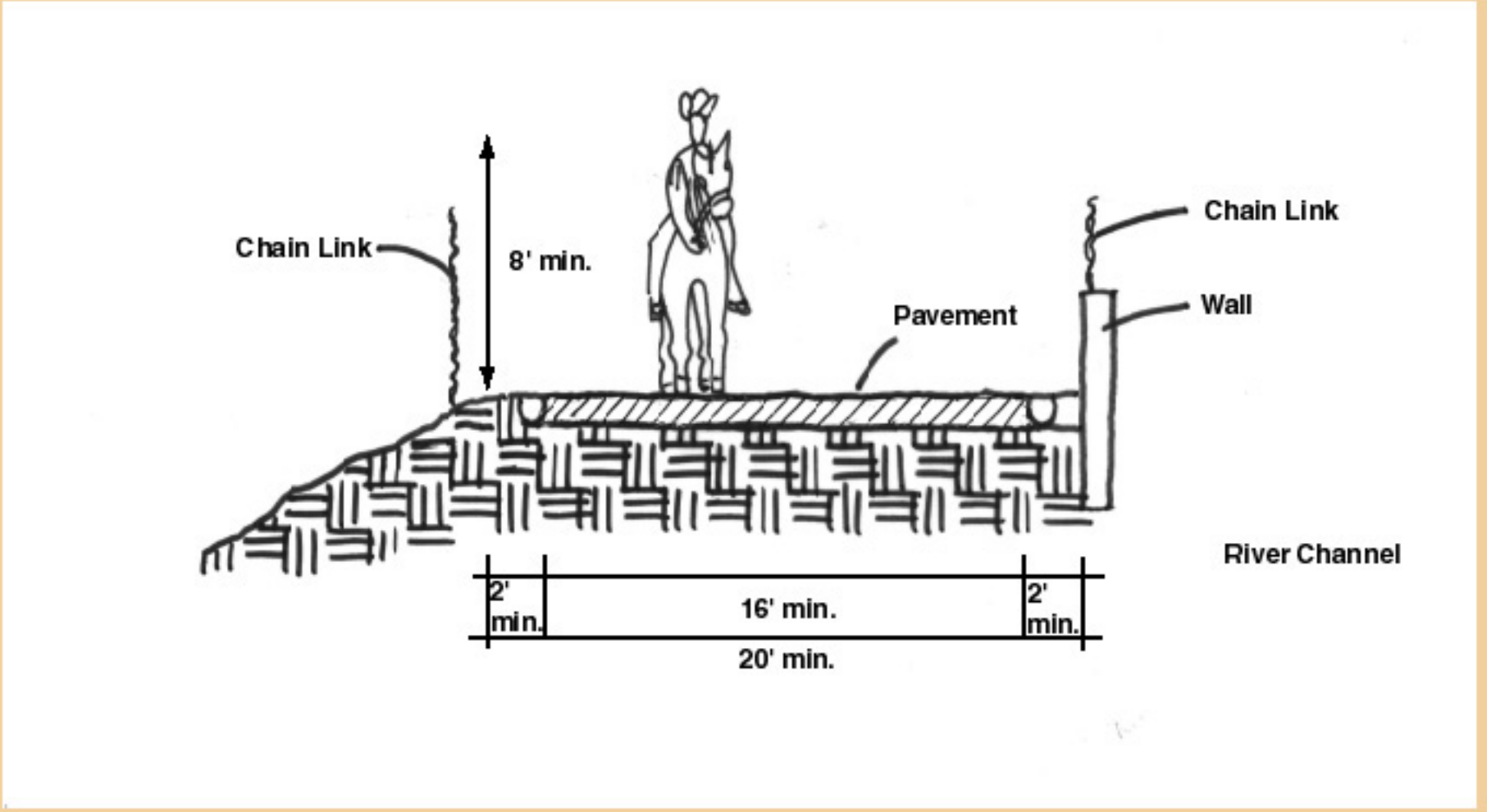
Please refer to Appendix D
Engineering Drawings River Center Line Station 1405 +00 to 1585 +00

February 11, 2005

Santa Ana River Trail - Section J

Prado Basin - Trail Segments # P1, P2, P8

Multi-Purpose Trail on Prado Dam Maintenance Road



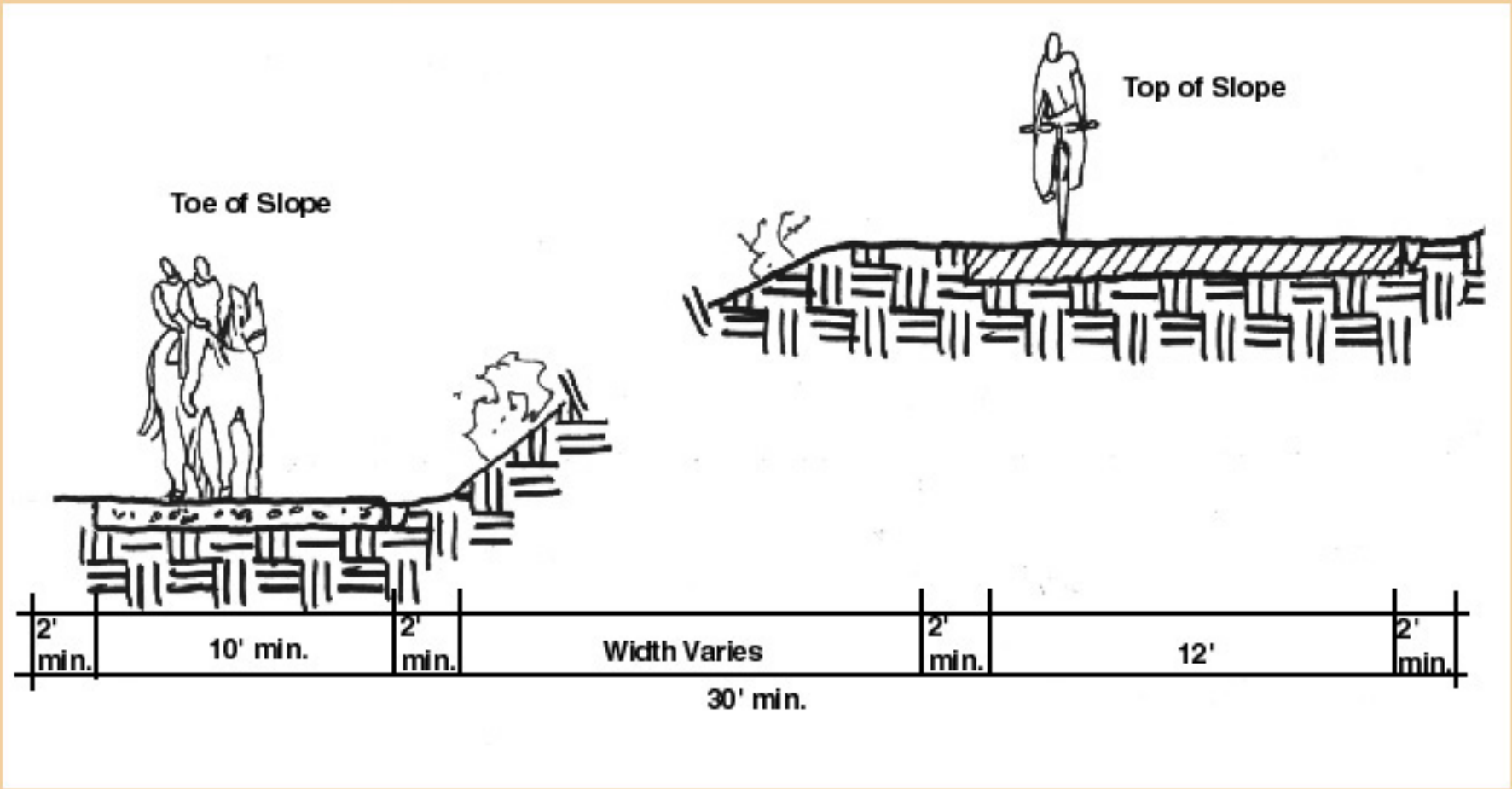
Please refer to Appendix D
Preferred Trail Alignments - Prado Dam to Corydon Avenue and
State Route 71 Class I Bicycle Path Southern Segment

February 11, 2005

Santa Ana River Trail - Section K

Prado Basin - Trail Segments # P3, P9

Typical Bicycle and Equestrian Trails along Southern Perimeter of Prado Basin



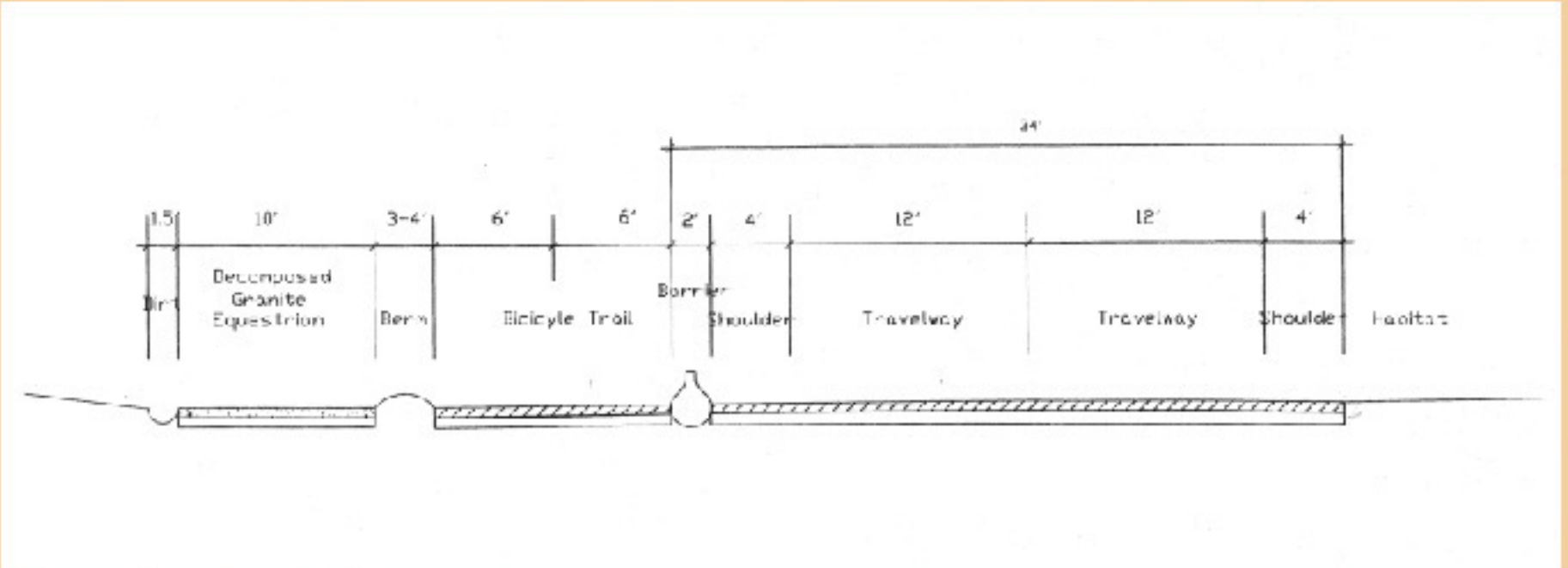
Please refer to Appendix D
Preferred Trail Alignments - Prado Dam to Corydon Avenue and
State Route 71 Class I Bicycle Path Southern Segment

February 11, 2005

Santa Ana River Trail - Section L

Corona Norco - Trail Segments # P14, P17a

Proposed Realignment of Rincon Street to Accommodate Bicycle Lane and Trail



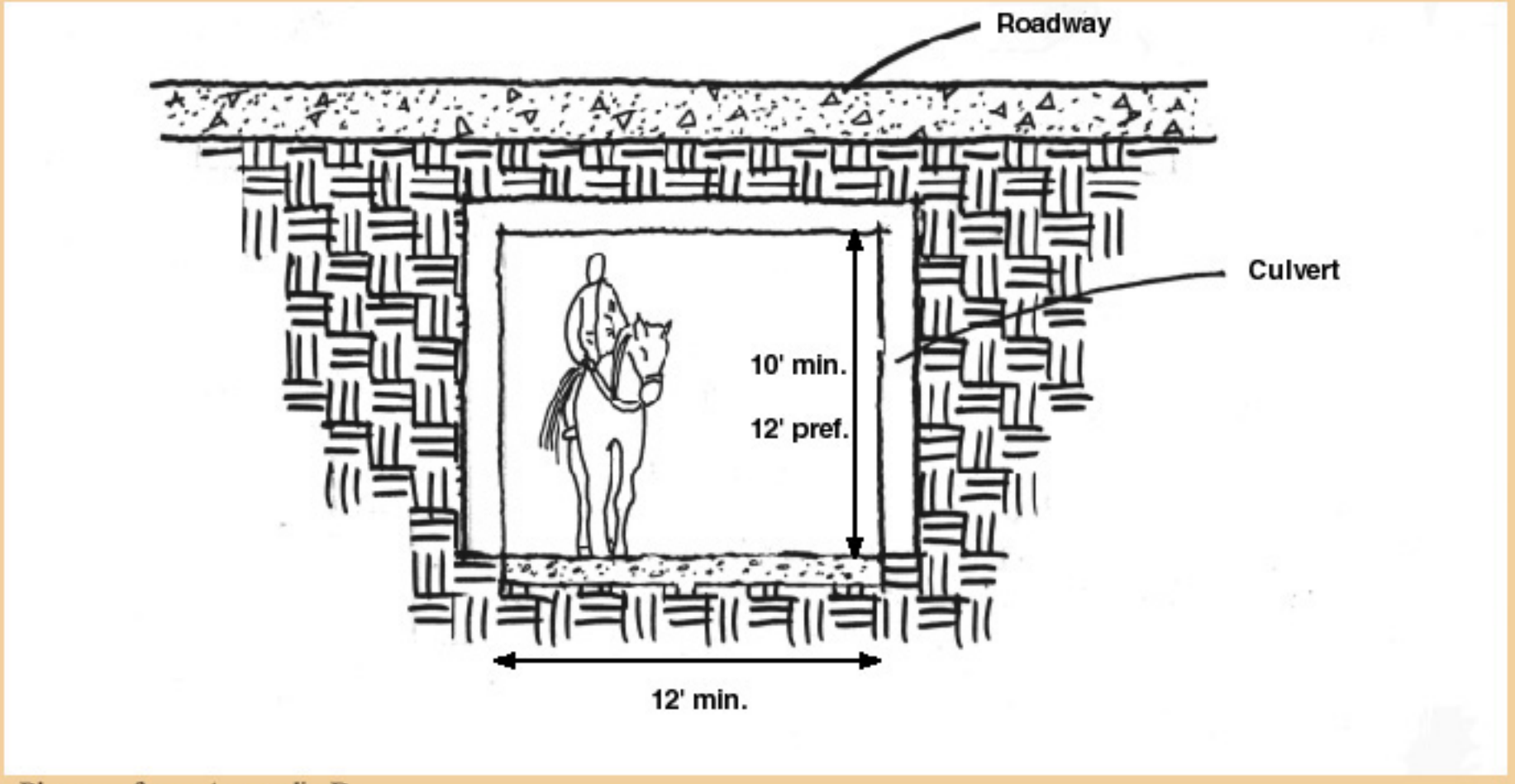
Please refer to Appendix D
Preferred Trail Alignments - Prado Dam to Corydon Avenue and
State Route 71 Class I Bicycle Path Southern Segment

February 11, 2005

Santa Ana River Trail - Section M

Corona/Norco - Trail Segments # HE3, HE4, B2, H-B30

Culvert Under-crossing at River Road and Bluff Street



Please refer to Appendix D

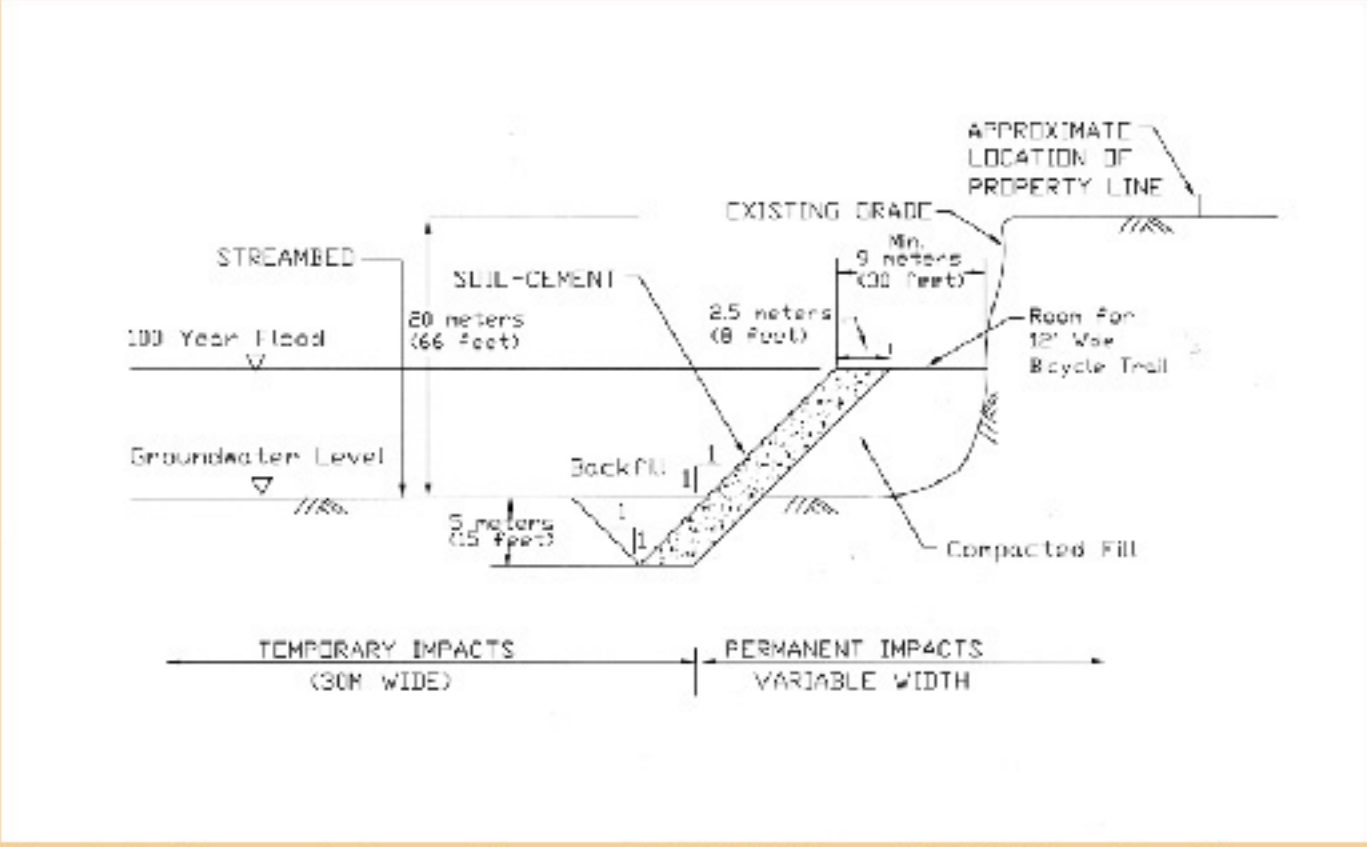
Preferred Trail Alignments - Corydon Avenue to Hamner Avenue

February 11, 2005

Santa Ana River Trail - Section N

Corona Norco - Trail Segments # HE-B-80

Potential Bicycle Trail on Bluff Reinforcement



For original document please reference: Exhibit 10 - Norco Bluffs Alternative A2:
Toe Stabilization Cross Section
Supplemental EIS and Project EIR for
Prado Basin and Vicinity, including Stabilization of the Bluff Toe at Norco Bluffs,
Prepared for U. S. Army Corps of Engineers, July 2000

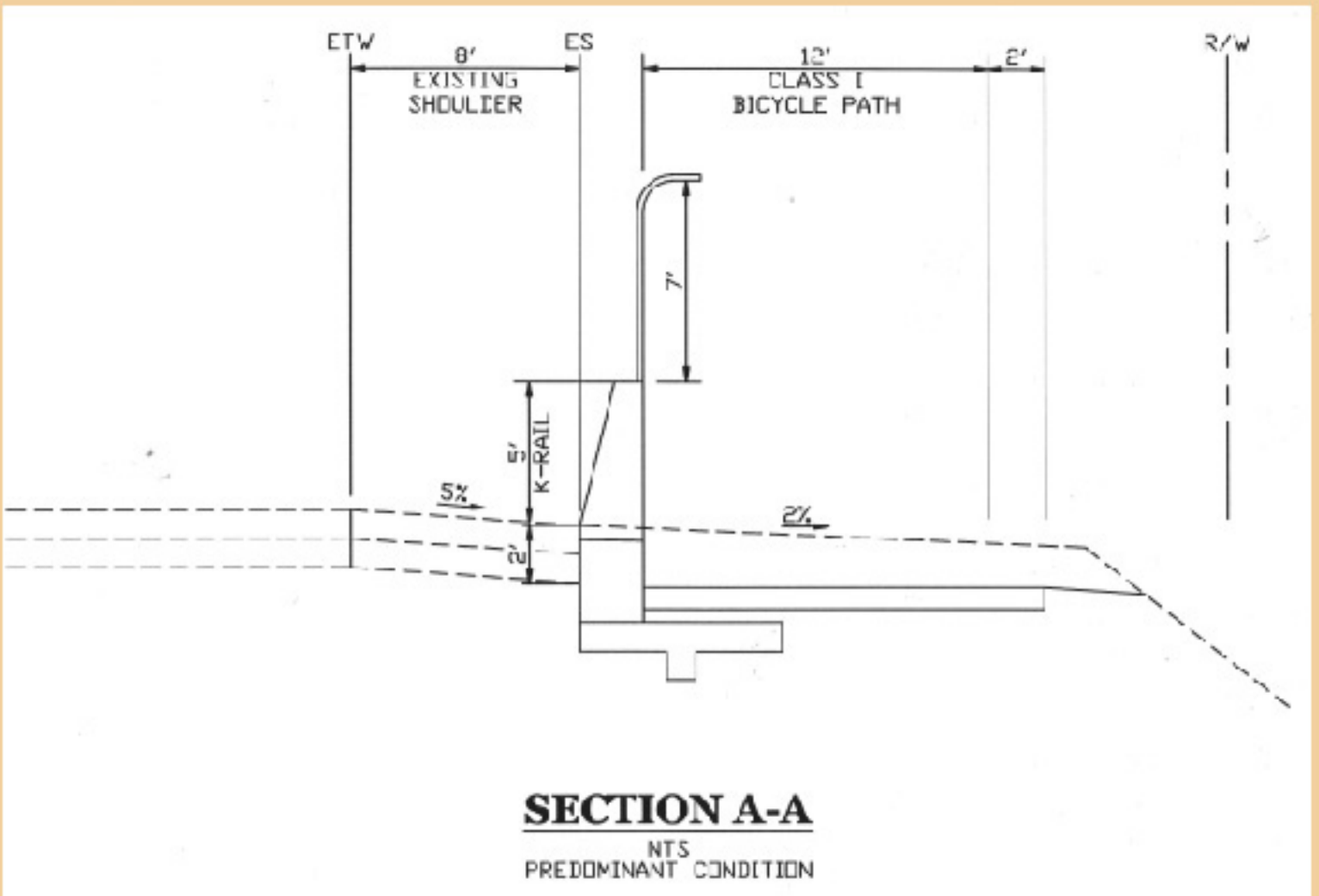
Please refer to Appendix D
Preferred Trail Alignments - Corydon Avenue to Hamner Avenue

February 11, 2005

Santa Ana River Trail - Section A-A

State Route 71 - Trail Segments # SR 1

Proposed Class I Bicycle Path - Level Slope Condition



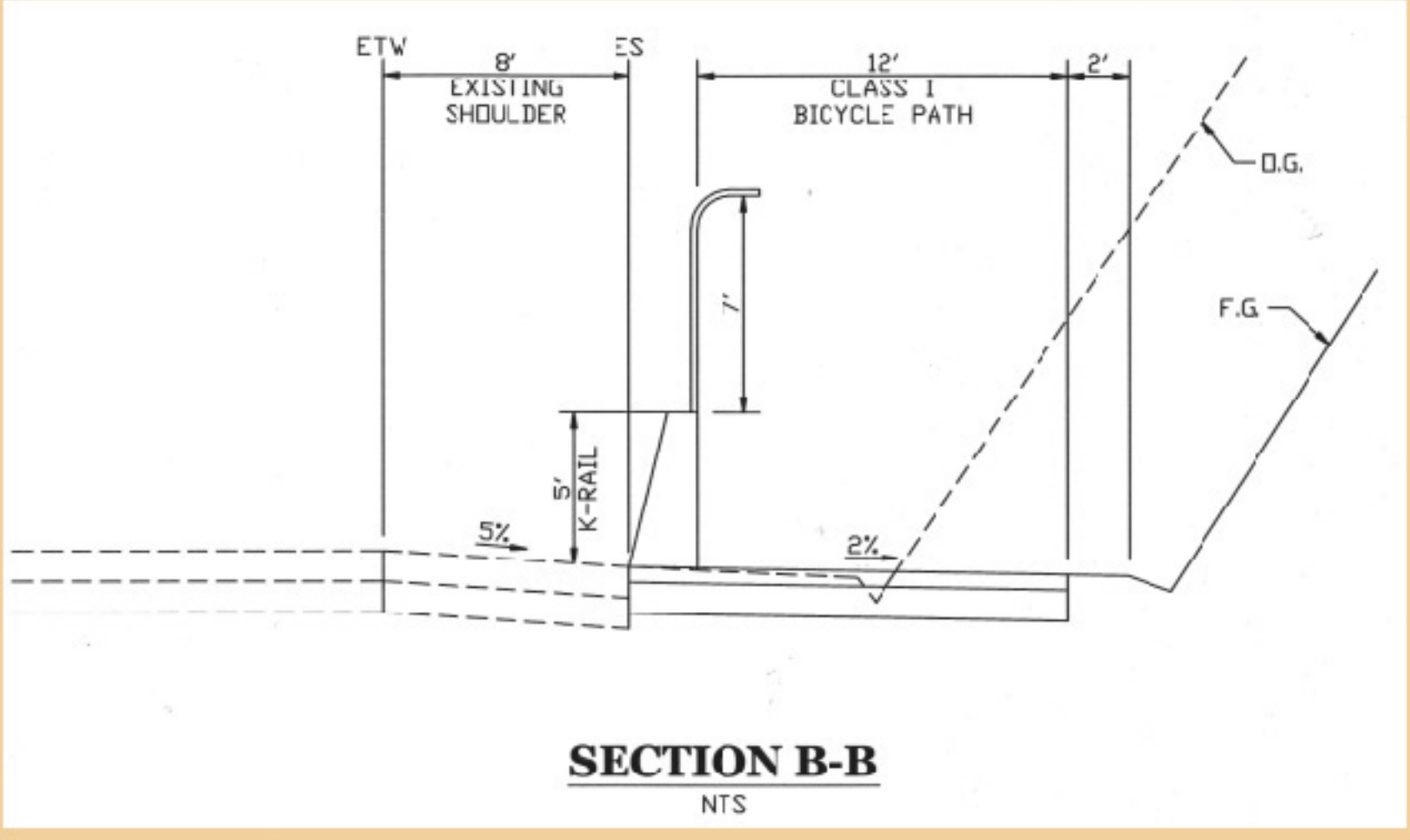
Please refer to Appendix D
Santa Ana River Trail - Draft Alignment Study Prado Basin

February 11, 2005

Santa Ana River Trail - Section B-B

State Route 71 - Trail Segments # SR 1

Proposed Class I Bicycle Path - Up Slope Condition



SECTION B-B

NTS

Please refer to Appendix D

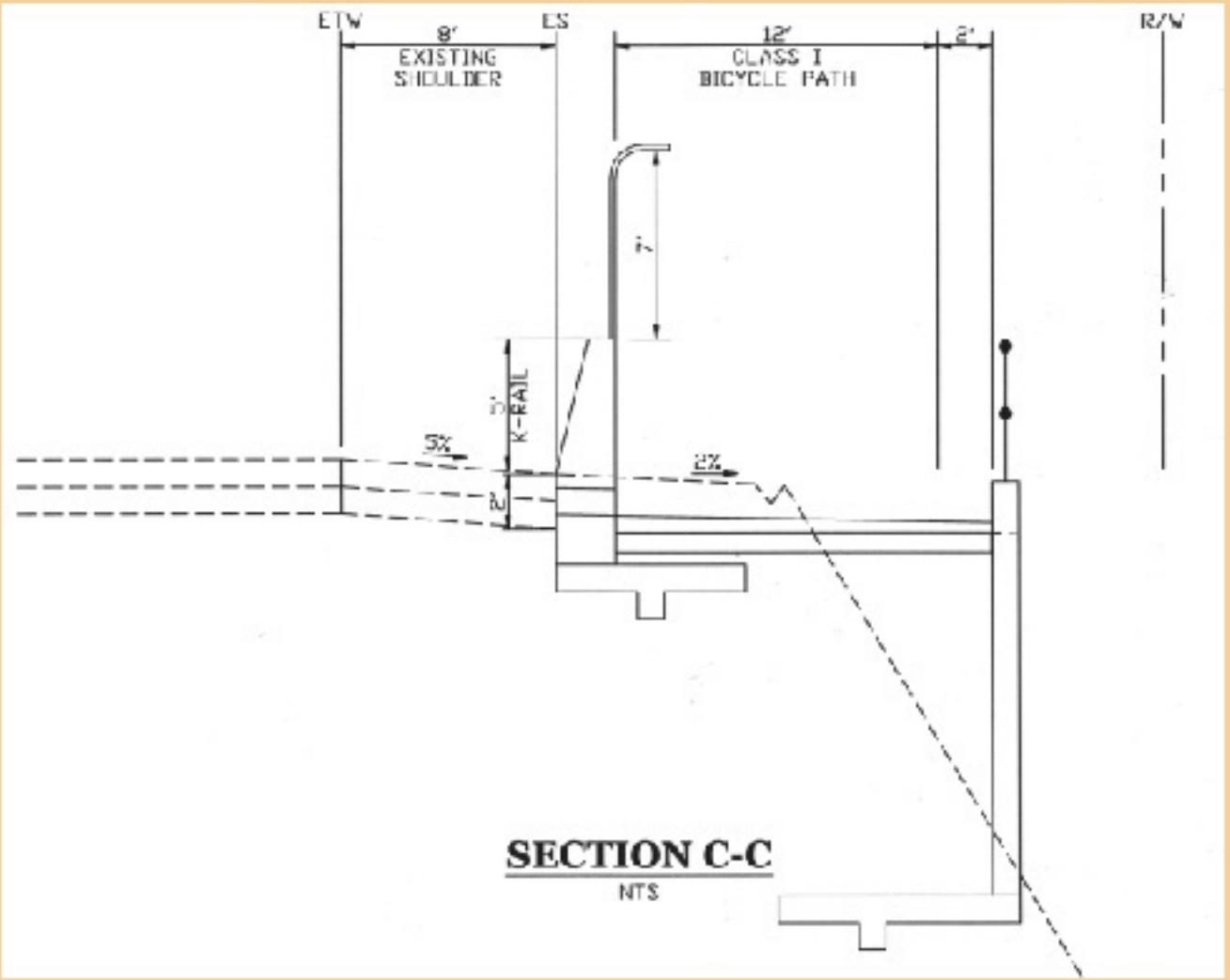
Santa Ana River Trail - Draft Alignment Study Prado Basin

February 11, 2005

Santa Ana River Trail - Section C-C

State Route 71 - Trail Segments # SR 1

Proposed Class I Bicycle Path - Down Slope Condition



Please refer to Appendix D

Santa Ana River Trail - Draft Alignment Study Prado Basin

Santa Ana River Trail - Section O

California Interstate 80

Yolo Bypass - Davis to Sacramento

Yolo County, California

Separated Bicycle Lane Example

APPENDIX F
Regional Connections

Agency Contact Information

Orange County Harbors, Beaches and Parks
Jeff Dickman
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Trail Planning and Implementation
300 N. Flower Street, 4th Floor
Santa Ana, CA 92703
(714) 834-5372
dickmanj@pfrd.co.orange.ca.us

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Mark Brewer
Park Planner
4600 Crestmore Road
Riverside, CA 92508-6858
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San Bernardino County Department of Public Works - Regional Parks Division
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Trails Coordinator
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jweinstein@parks.co.san-bernardino.ca.us

City of Corona Public Works Department
Viren Shah
Transportation Engineer
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Corona, CA 92880
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City of Norco Department of Parks, Recreation and Community Services
Brian Petree
Director
2870 Clark Avenue
Norco, CA 92860
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bpetree@ci.norco.ca.us

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rsanders@chinohills.org

City of Chino Community Development Department, Planning Division
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Associate Planner
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Chino, CA 91708-0667
mkellison@cityofchino.org

County of Riverside Transportation Department
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Environmental Planner
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Riverside, CA 92501
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Riverside Ca 92502-1090
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Jurupa Community Services District
Cheryl Russell
Administrative Manager
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Mira Loma, CA 91752
909-685-7434
crussell@jcsd.us

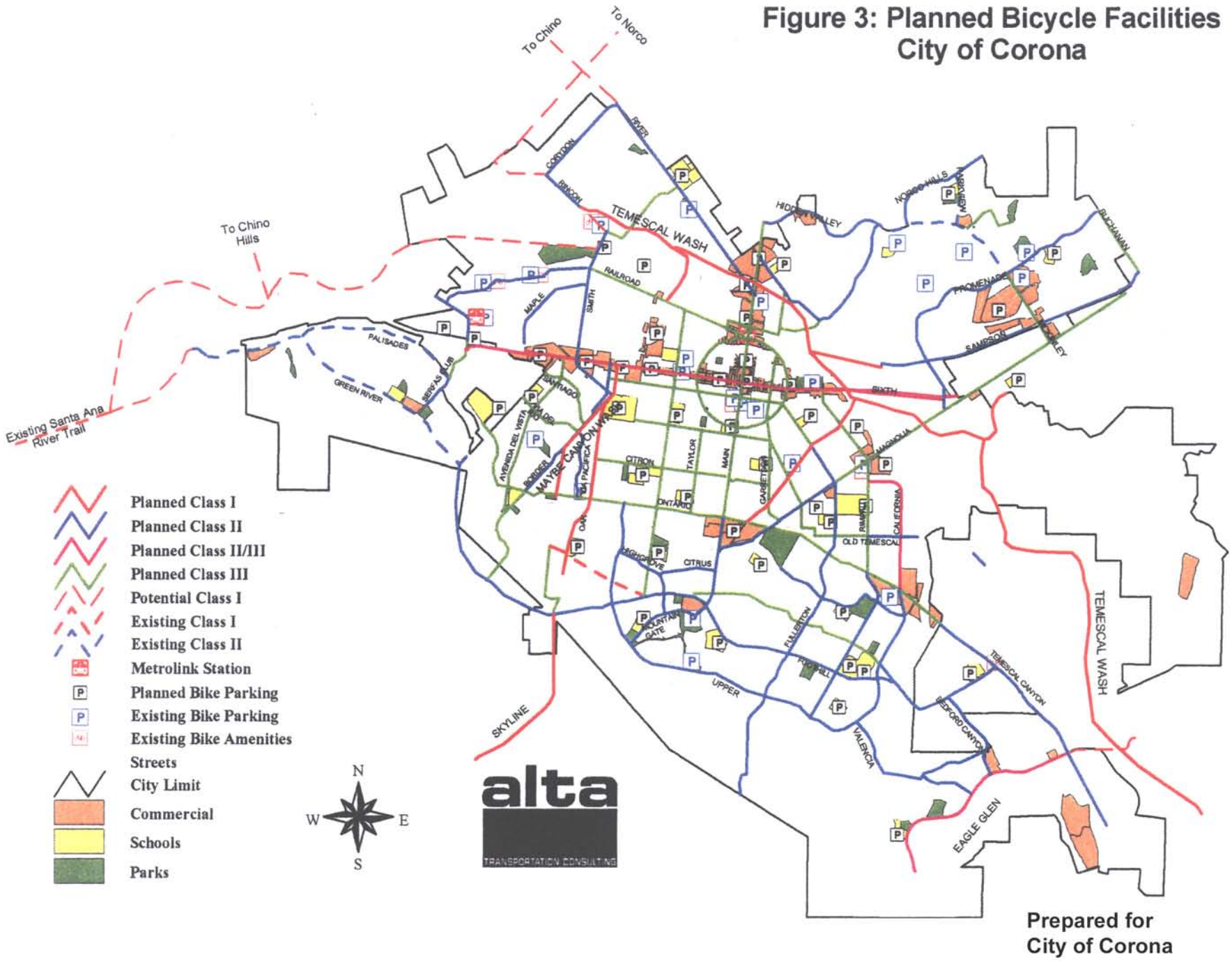
Army Corps of Engineers
Katie Parks
Recreation Planner
Los Angeles District
911 Wilshire Blvd. 90053-2325
P.O. Box 532711
(213) 452-3399
kparks@spl.usace.army.mil

State of California Department of Transportation (Caltrans)
John Chiu
Transportation Planner
District 8
464 W. Fourth St., 6th Floor
San Bernardino, CA 92401-1400
John_Chiu@dot.ca.gov

Inland Empire Utilities Agency
Gary E. Hackney
Manager of Planning
I.E.U.A.
P.O. Box 9020
Chino Hills, CA 91709
909-993-1720

Orange County Water District
Greg Woodside
Planning and Watershed Director
P.O. box 8300
Fountain Valley, CA 92728-8300
714-378-3200
gwoodside@ocwd.com

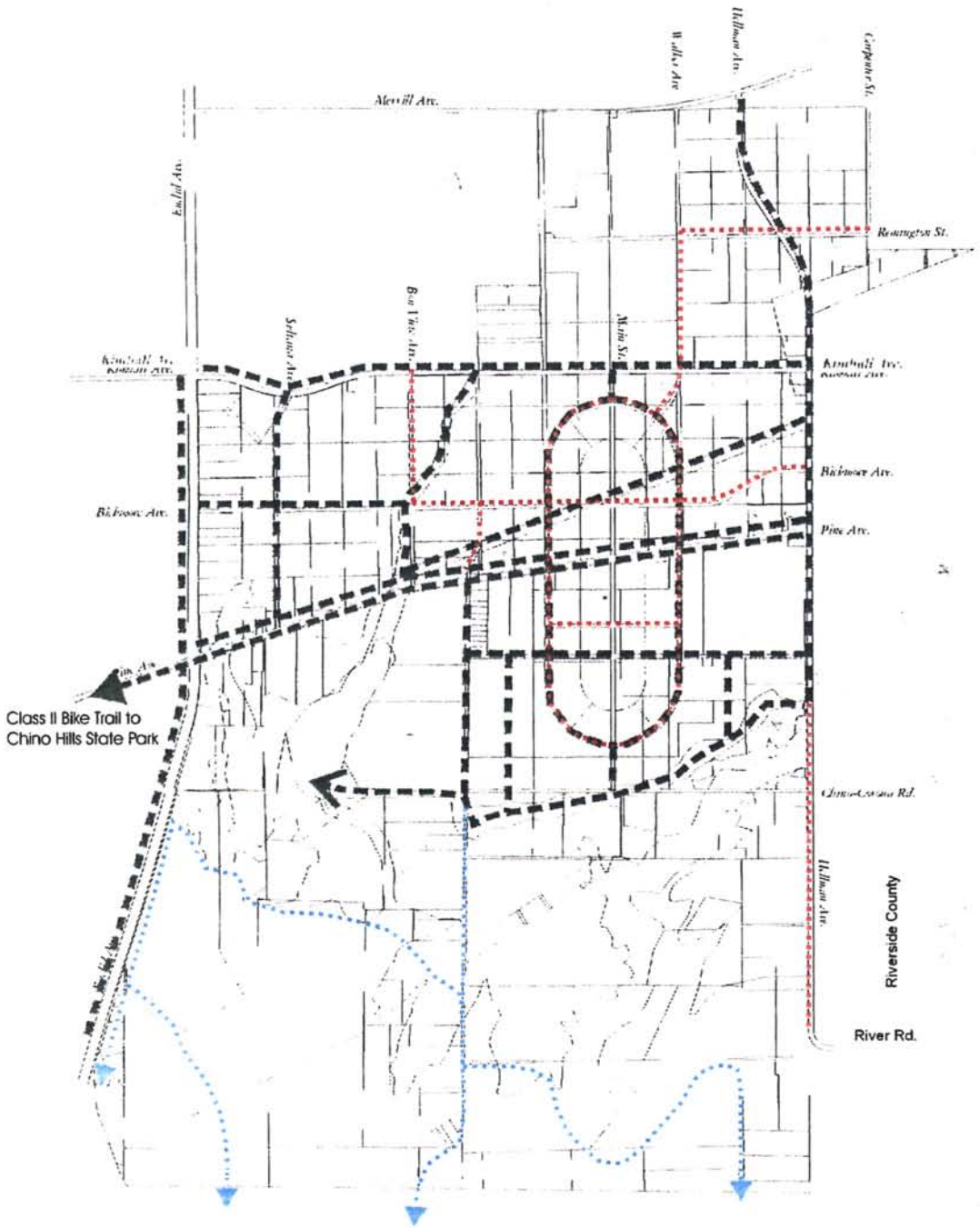
Figure 3: Planned Bicycle Facilities
City of Corona



Prepared for
City of Corona

BICYCLE PLAN

City of Chino



- Community Paseo and Open Space System (Includes Class I Bicycle Facility)
- Class II Bicycle Facility
- Potential Link to Crest to Coast Trail

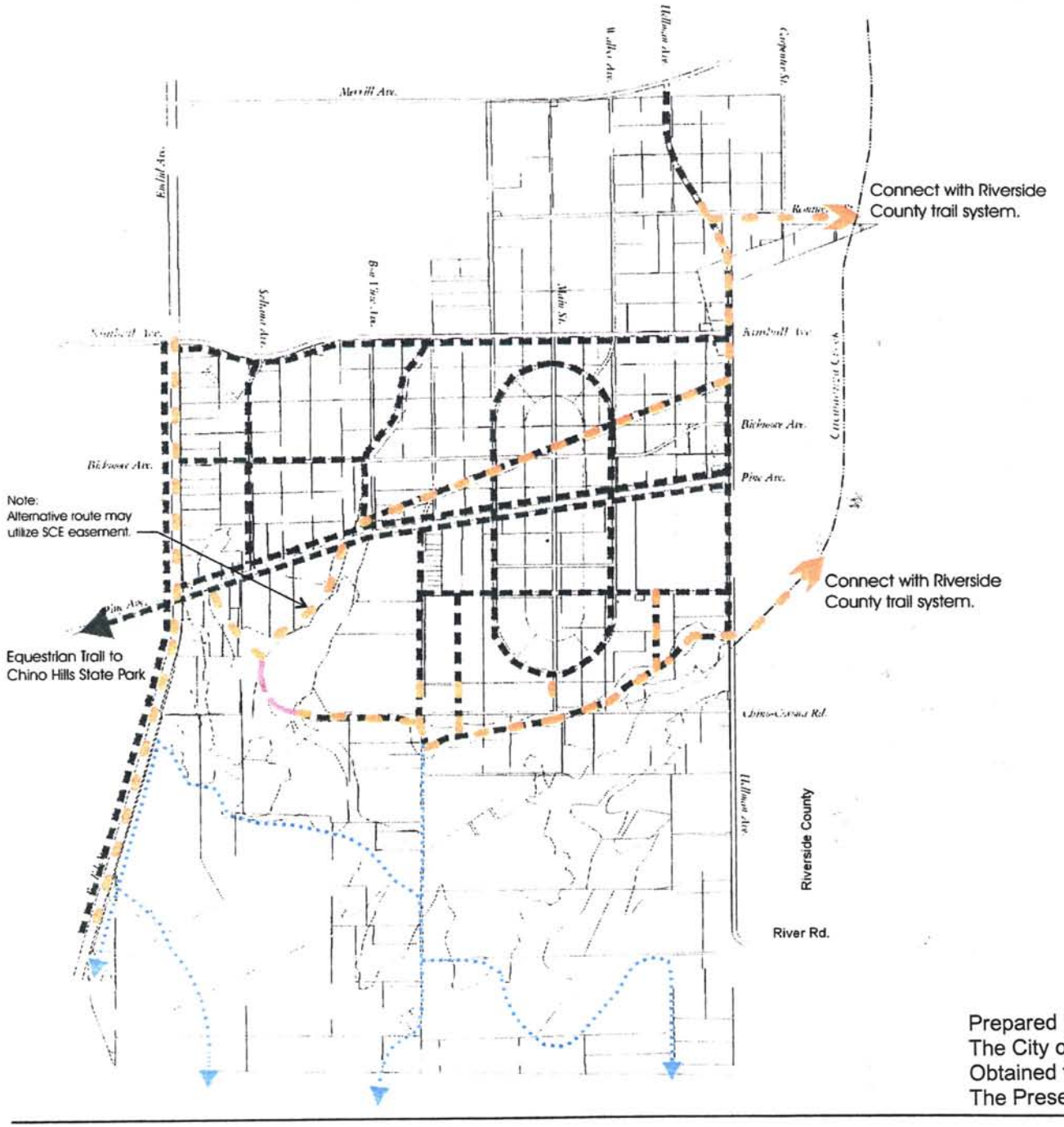
NOT TO SCALE

Prepared by
The City of Chino
Obtained from
The Preserve Specific Plan

Section V
Figure 13

EQUESTRIAN PLAN

City of Chino



- Community Paseo and Open Space System
- Equestrian Trails
- Potential Link to Crest to Coast Trail
- Conceptual Equestrian Trail

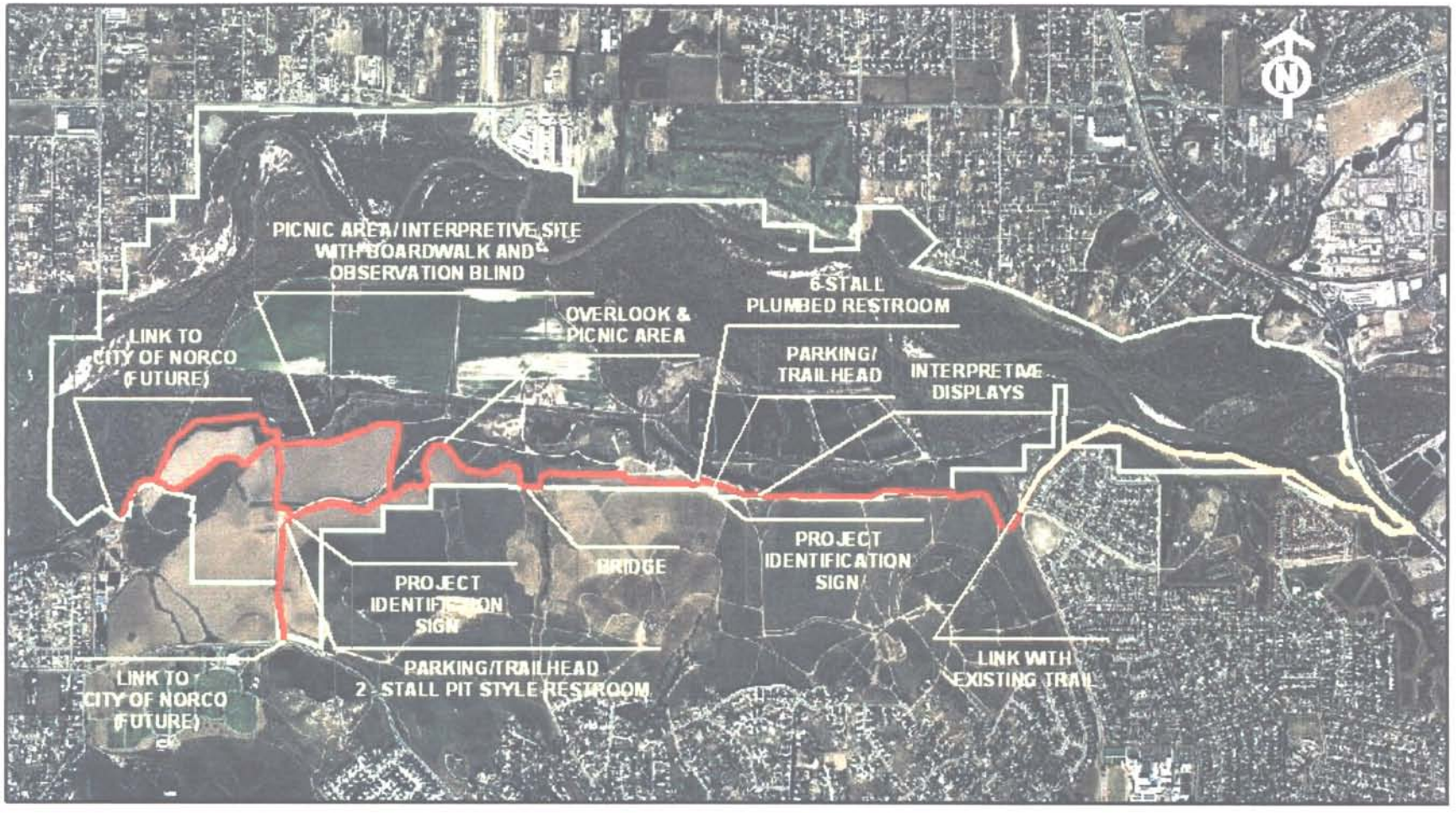
NOT TO SCALE

Prepared by
The City of Chino
Obtained from
The Preserve Specific Plan

Section V
Figure 14

PRELIMINARY SITE PLAN

Prepared by
Riverside County Parks
and Recreation Department



RESERVE BOUNDARY
EXISITING BIKEWAY
PROPOSED BIKEWAY

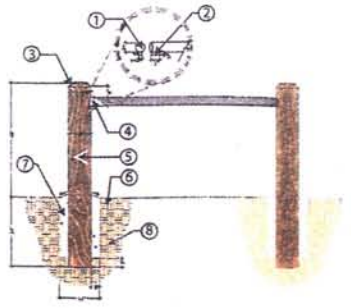
HIDDEN VALLEY S.A.R. BIKE TRAIL

0 500 1,000 2,000 3,000 4,000 5,000 6,000

SANTA ANA RIVER MULTI-USE TRAIL

JURUPA COMMUNITY SERVICES DISTRICT

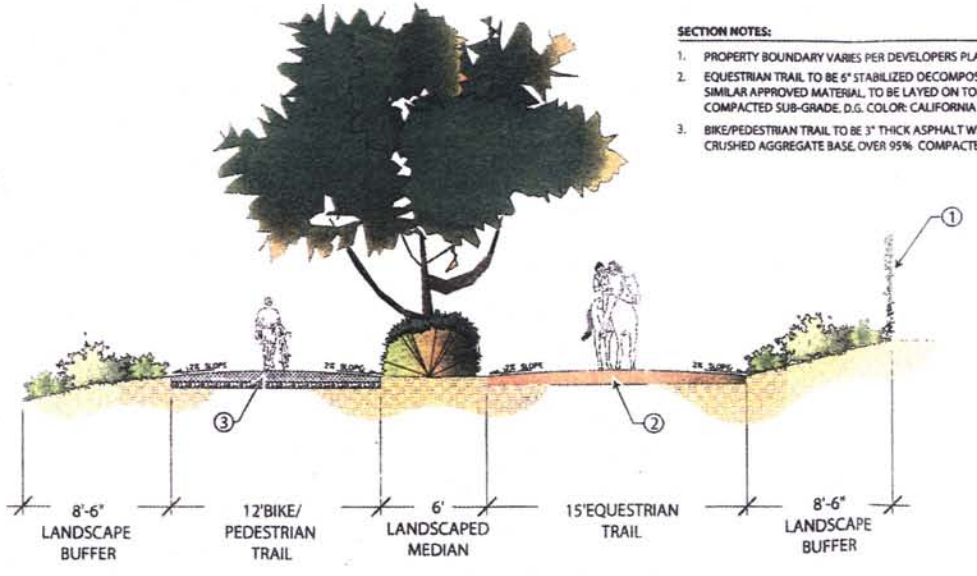
Prepared by
Jurupa Community
Services District



DETAIL NOTES:

1. KEYHOLE
2. APPROXIMATELY 1" HIGH x 3" LONG GALVANIZED STEEL TAB; TACK WELD CONTINUOUS.
3. 1" CHAMFER (TYP.)
4. 3" GALVANIZED STEEL POST; 6' O.C. (TYP.)
5. 8"Ø LODGEPOLE POST; FINISH APPLY 2 COATS OF THOMPSON'S WATER SEALER OR APPROVED EQUAL.
6. FINISH GRADE
7. 14"Ø CONCRETE POST FOOTING, 3000 PSI.
8. 95% RELATIVE COMPACTED SUBGRADE

HITCHING POST DETAIL



SECTION NOTES:

1. PROPERTY BOUNDARY VARIES PER DEVELOPERS PLANS.
2. EQUESTRIAN TRAIL TO BE 6" STABILIZED DECOMPOSED GRANITE OR SIMILAR APPROVED MATERIAL, TO BE LAYED ON TOP OF 95% COMPACTED SUB-GRADE. D.G. COLOR: CALIFORNIA GOLD.
3. BIKE/PEDESTRIAN TRAIL TO BE 3" THICK ASPHALT WITH A 4" THICK CRUSHED AGGREGATE BASE, OVER 95% COMPACTED SUB-GRADE.

TRAIL TYPICAL CROSS-SECTION

RECOMMENDED PLANT PALETTE:

BOTANIC NAME	COMMON NAME
TREES	
ALNUS RHOMBIFOLIA	WHITE ALDER
CERCIDIUM MICROPHYLLUM	FOOTHILL PALO VERDE
PLATANUS X ACERIFOLIA	LONDON PLANE TREE
PLATANUS RACEMOSA	CALIFORNIA BAY
POPULUS FREMONTII	FREMONT COTTONWOOD
QUERCUS LOBATA	VALLEY OAK TREE
UMBELLULARIA CALIFORNICA	WESTERN SYCAMORE
SHRUBS / GROUNDCOVERS	
ARCTOSTAPHYLOS SP.	MANZANITA
BACCHARIS SP.	COYOTE BUSH
CARPENTERIA CALIFORNICA	BUSH ANEMONE
CERCIS OCCIDENTALIS	WESTERN REDBUD
CEANOTHUS SP.	WILD LILAC
ERIOGONUM SP.	BUCKWHEAT
HETEROMELES ARBUTIFOLIA	TOYON
ISOMERIS ARBOREA	BLADDER POD
LAVATERA SP.	MALLOW
MAHONIA SP.	BARBERRY
MYRICA CALIFORNICA	PACIFIC WAX MYRTLE
RHUS LAURINA	LAUREL SUMAC
RHUS OVATA	SUGAR BUSH
RIBES SP.	CURRANT
ROMNEYA COULTERI	MATILIJA POPPY
ROSA CALIFORNICA	CALIFORNIA ROSE
SALVIA SP.	SAGE
SIMMONDSIA CHINENSIS	JOJOBA
YUCCA WHIPPLEI	OUR LORD'S CANDLE
VINES (FOR PROPERTY BOUNDARY WALL USE ONLY)	
CALYSTEGIA MACROSTEGIA	MORNING GLORY
MACFADYENA UNGUIS-CATI	CAT'S CLAW
PARTHENOCISSUS TRICUSPIDATA	BOSTON IVY
VITIS CALIFORNICA	CALIFORNIA GRAPE

SANTA ANA RIVER MULTI-USE TRAIL

JURUPA COMMUNITY SERVICES DISTRICT

COMMUNITY WORKS DESIGN GROUP
4848 Brockton Ave.
Riverside, CA 92506
(909) 368-8798
Fax (909) 368-4039
e-mail: amelia@communityworksdg.com
http://www.communityworksdg.com

Prepared by
Jurupa Community
Services District

Prepared by
The City of Norco

SANTA ANA RIVER TRAIL

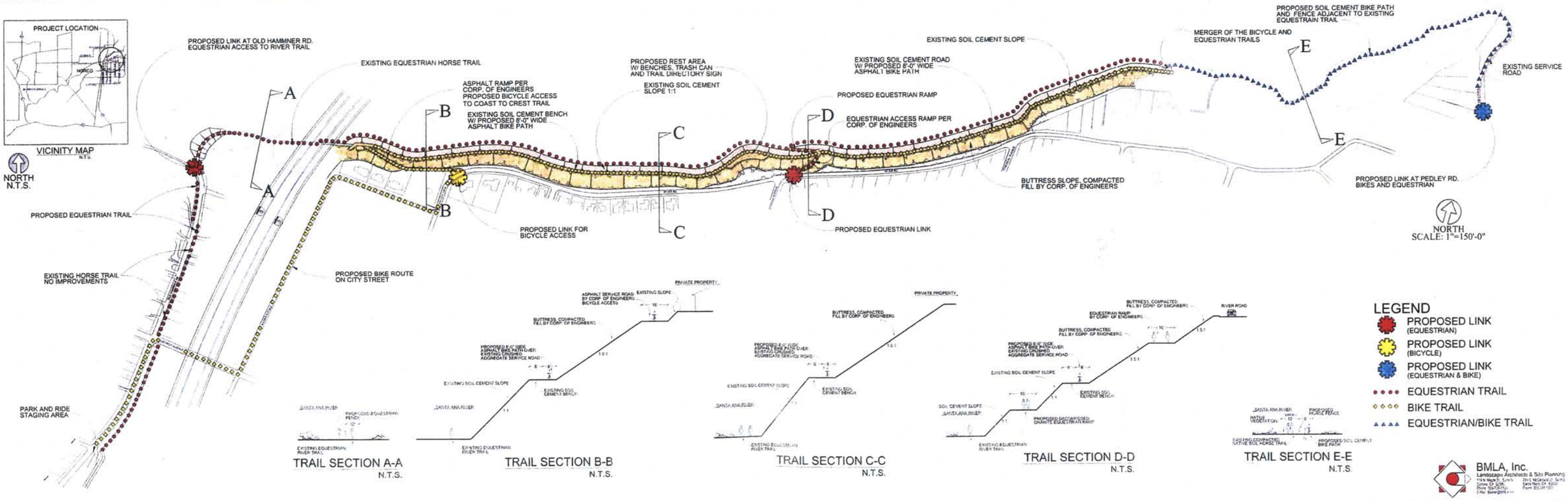
HORSE AND BIKE TRAIL FROM OLD HAMNER TO PEDLEY AVENUE

NORCO ELEMENT

City Of Norco

VICINITY MAP
N.T.S.

NORTH
N.T.S.



TRAIL SECTION A-A
N.T.S.

TRAIL SECTION B-B
N.T.S.

TRAIL SECTION C-C
N.T.S.

TRAIL SECTION D-D
N.T.S.

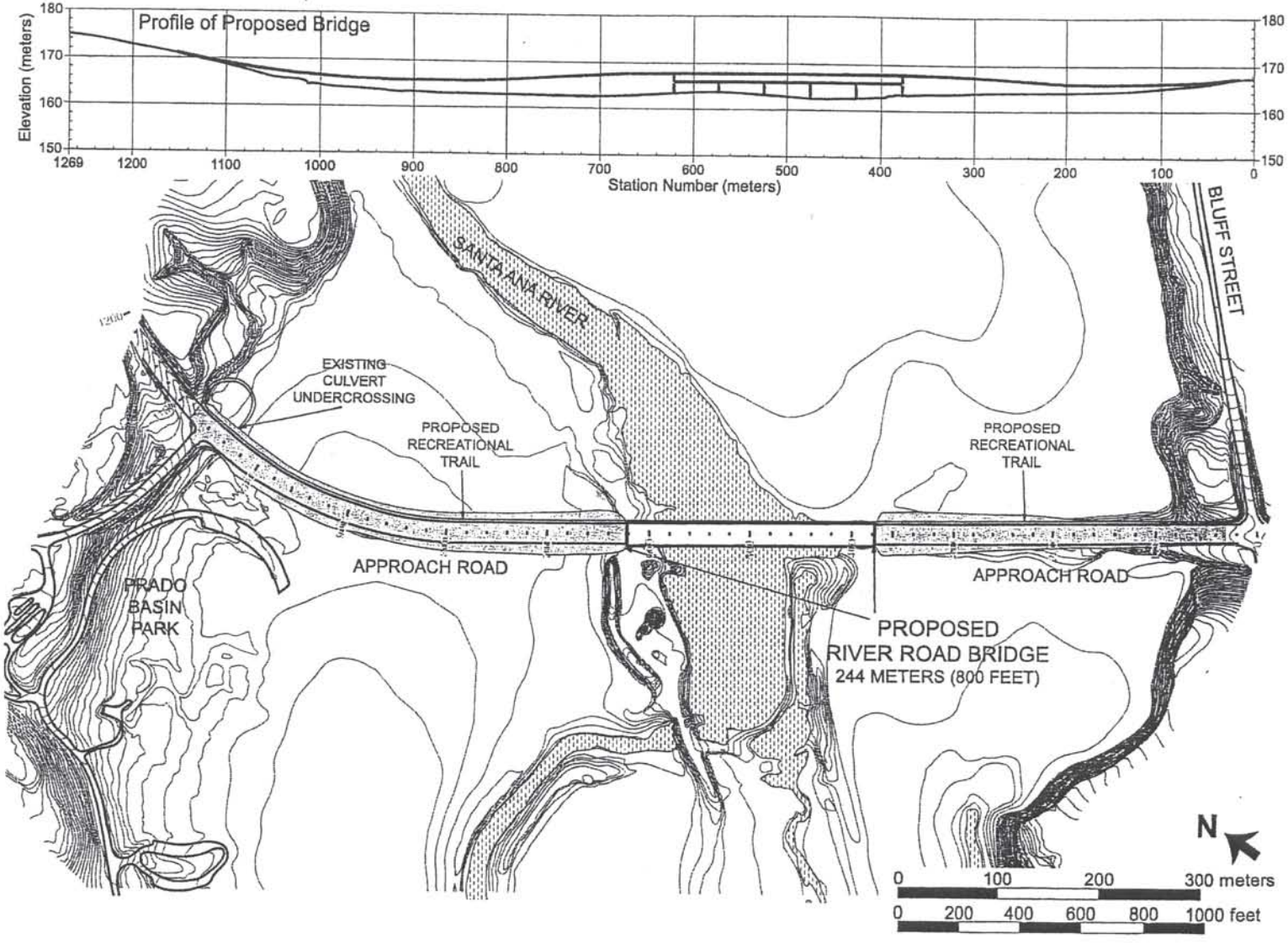
TRAIL SECTION E-E
N.T.S.

LEGEND

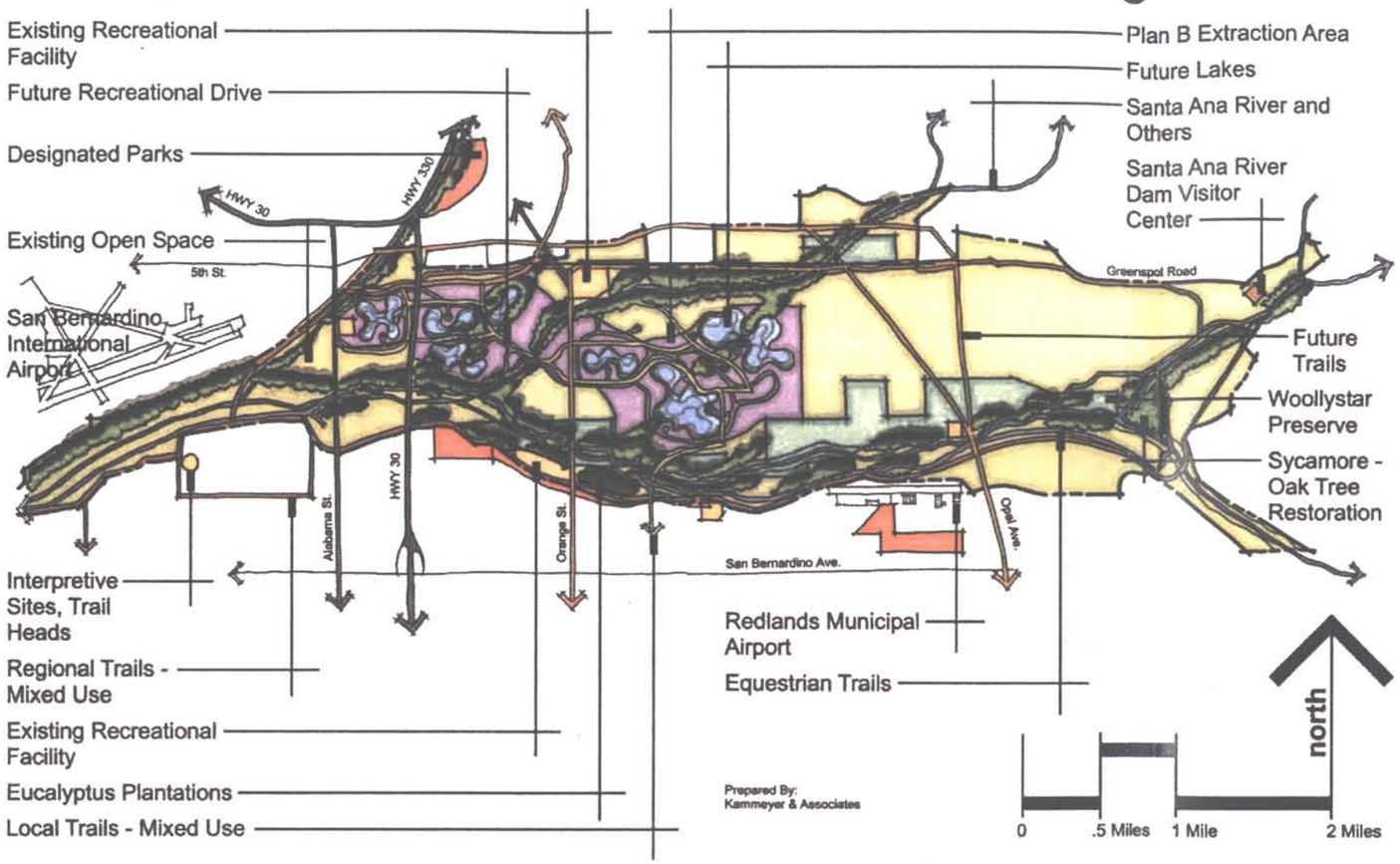
- PROPOSED LINK (EQUESTRIAN)
- PROPOSED LINK (BICYCLE)
- PROPOSED LINK (EQUESTRIAN & BIKE)
- EQUESTRIAN TRAIL
- BIKE TRAIL
- EQUESTRIAN/BIKE TRAIL

BMLA, Inc.
Landscape Architects & Site Planning

Figure 1-4: Alternative 2: 244 Meter (800 Foot) Bridge



Conceptual Master Plan - Santa Ana River Regional Park



INTRODUCTION

The Santa Ana River Regional Park Conceptual Master Plan

The following report provides background for the Conceptual Master Plan for the Santa Ana River Park proposal. This report provides the reader with the rationale for the park design, and description of the park uses. As a Conceptual Master Plan, the activities and their locations are suggestions only. As this plan goes forward into the Master Plan and Design phases, a design team will be selected to lead the Master Planning process and to develop detailed designs for the park, along with related environmental plans and reports. During the design development phase, this team will work in consultation with public officials, scientists, industry officials, community groups and others to see that specific needs and concerns are met.

SITE LOCATION

The proposed park will occupy lands north of Redlands and south of Highland between Greenspot Road on the east and Tippeecanoe Avenue on the west. Highway 30 crosses the park site, north to south. This area is often referred to as the "Santa Ana River Wash" and is the alluvial fan of the upper Santa Ana River. The area also has been designated as the terminus of the 110-mile Coast to Crest Santa Ana River Trail. See the plans in this report showing the southern California region and the site's boundaries overlaid on an aerial photograph.

The proposed site encompasses approximately 6,300 acres. Of this, about 1,150 acres, designated as Plan B under the current SMRA proposal, will be in intensive gravel extraction for the next 30 to 50 years. The recreation proposals shown on the Master Plan for this Plan B extraction area are future proposals, not included in the cost estimates shown herein. Both CEMEX Construction Materials, and L. P. Robertson's Ready Mix own aggregate extraction operations in the Wash zone. These operations continue to benefit the local economy.

Also within the 6,300-acre park boundary, 625 acres have been designated as preserve sites for threatened and endangered species such as the Santa Ana Woollystar, the Slender-horned Spineflower, and the California Gnatcatcher.

Interpretive Site - Santa Ana River Regional Park

Future Recreation Lakes - Santa Ana River Regional Park

Southern Bluff Trails - Santa Ana River Regional Park

COST ESTIMATE

➢ Trails	
a. Regional bicycle and hiking trails	$3,800,000.00
b. Equestrian (including two trailheads)	2,750,000.00
c. Local bicycle and hiking trails	2,500,000.00
➢ Visitor's Center (on Greenspot Road near Seven Oaks Dam)	4,500,000.00
➢ Interpretive nodes, campsites	2,250,000.00
➢ Re-establishment of Sycamore/Oak canopy	5,750,000.00
➢ Administrative costs	2,200,000.00
a. Deed transfers, surveys, design fees	
b. Local agency fees, public hearings	
➢ Contingency	4,000,000.00
➢ TOTAL:	$27,750,000.00

'repared by
:al Poly Pomona
:hool of Environmental Design
'repared for
:nv. Systems Research Institute, Inc.

WHY DESIGNATE THIS SITE FOR A REGIONAL PARK?

Three major concerns drove this proposed Conceptual Master Plan for the Santa Ana River Regional Park: 1) potential loss of open space due to "suburban" development; 2) the 1999 completion of the Seven Oaks Dam, part of a much larger project designed to end the threat of flood to San Bernardino, Riverside and smaller communities along the Santa Ana River; and 3) the need to complete the final section of the 110-mile "Coast to Crest" Santa Ana River Trail. These three concerns are discussed in more detail below.

1) Potential Loss of Open Space

The primary instigation was the recent increase of suburban development in Highland (which experienced a 29% population increase between 1990 and 2000) and the future threat of increased suburban development in Redlands that will result in a continual loss of open space and green belts. In the future, as the pressure for Southern California housing becomes more intense, and as area housing costs rise, additional development is anticipated. Citrus groves, foothills and the remaining undeveloped areas near the Santa Ana River Wash already are disappearing. The loss of this open space adjacent to the Wash will permanently change the character of this area; worse, development will preclude use of this area for recreational opportunities both locally and regionally, including the planned final leg of the 110 mile Santa Ana River Trail that serves Southern California's bikers, hikers and equestrians.

2) The New Dam

A secondary (but crucial) factor was the completion of the Seven Oaks Dam in the mountains at the head of the Santa Ana River. This new dam is part of a 1.3 billion dollar Army Corps of Engineers project designed as part of a series of projects to control the flood waters that historically have killed residents and destroyed property in the Santa Ana River Valley. Urban and suburban development had long-since altered the area's pre-settlement hydrology and replaced its native plants and animals. Thus, it is of ever-increasing importance that the Park's portion of this ancient floodplain will continue to serve as a water recharge area as well as habitat for plants and wildlife. While this dam performed comparably well in the intense rains of January 2005, the Santa Ana River floodplain and the lands immediately adjacent to it remain areas of greatest risk to construction (particularly housing) – and ones that are perfectly suitable for recreation, water recharge and habitat.

3) The Santa Ana River Trail

The vision for a Coast to Crest multi-user trail system was first envisioned 90 years ago: it still is "under construction." One of the largest remaining un-built segments of this trail system – and its mountain trailhead – will be completed within the Santa Ana River Regional Park plan.

GOALS OF THE SANTA ANA RIVER REGIONAL PARK PROJECT

When completed, the proposed park should provide the following benefits:

- ❖ The completion of a 110-mile multi-use trail system crossing Southern California from "Coast to Crest."
- ❖ The implementation of multi-objective management of the riverbed and banks for visual, recreational, natural and cultural resources. This includes:
  - ➢ The continued use of the park site for water conservation, flood management and habitat conservation.
  - ➢ The protection of the cohesive, historic regional character of San Bernardino County and the cities of Redland and Highland, including the long views to and from the mountains and the long, broad and open "green belt" of the Santa Ana River corridor.
  - ➢ The establishment of local and regional interpretive nodes, educating both citizens and visitors about the area's history, cultural life, economy and ecology.
  - ➢ The provision for suitable, non-residential development on a major floodplain.
- ❖ The sustained enhancement of property values, quality-of-life, economic development and tourism.
- ❖ The encouragement of alternative modes of transportation (hiking, biking, horseback riding) and a healthy lifestyle.
- ❖ The restoration of the historic canopy of Sycamore and Oak trees lining the riparian courses.
- ❖ The timely provision of a unique and irreplaceable recreational site– if we wait a decade, this opportunity will be gone!

REVIEWING AGENCIES

The Upper Santa Ana River Wash Land Management and Habitat Conservation Plan Task Force is comprised of stakeholder agencies who review and approve projects within the proposed park boundary. Several of these agencies, but not all, have reviewed the regional park proposal. No findings have been made by this group, relative to the regional park proposal.

Task Force Regular Members:
United States Bureau of Land Management
County of San Bernardino
San Bernardino County Flood Control District
City of Redlands
Redlands Utilities Department
City of Highland
East Valley Water District
San Bernardino Valley Water Conservation District
CEMEX Construction Materials, LP
Robertson's Ready Mix, LTD

Task Force Advisory Members:
United States Fish & Wildlife Service
United States Army Corps of Engineers
California Department of Fish and Game
California Department of Water Resources
County of Orange
Inland Valley Development Agency

SANTA ANA RIVER REGIONAL PARK PROJECT
CONCEPTUAL MASTER PLAN

EXECUTIVE SUMMARY

The citizens of New York City, St. Louis, Kansas City and other major metropolitan areas today acknowledge a huge debt to the long-dead public officials, citizens, planners and designers who saw far enough into the future to provide their cities with what are now recognized as great historic park systems. Today, all the elements are in place to allow far-sighted public officials to make a similar "ground-breaking" decision that will enhance the lives both of local citizens and of people from all over Southern California who will enjoy and benefit from the Santa Ana River Regional Park and (within it) the completion of the long-awaited 110-mile "Coast to Crest" Santa Ana River Trail.

The park site is located in San Bernardino County at the base of the new Seven Oaks Dam, one part of a larger Army Corps of Engineers flood control project for the Santa Ana River. The site itself is known as the Santa Ana River Wash and includes the historic alluvial floodplain of the upper Santa Ana River just below the San Bernardino Mountains, north of Redlands, CA and south of Highland.

This Conceptual Master Plan takes into account many of the existing proposals for the future use of this site, and its intent is to help move these proposals from discussion to implementation. Current proposals under consideration are a Habitat Conservation Plan (HCP) for the eastern portion of the proposed park site, and one that responds to the Surface Mining Reclamation Act (SMRA) for the west-central portions of the site. The regional park proposal has been coordinated with the HCP and SMRA proposals currently under consideration, and this plan seeks neither to alter nor delay those proposals.

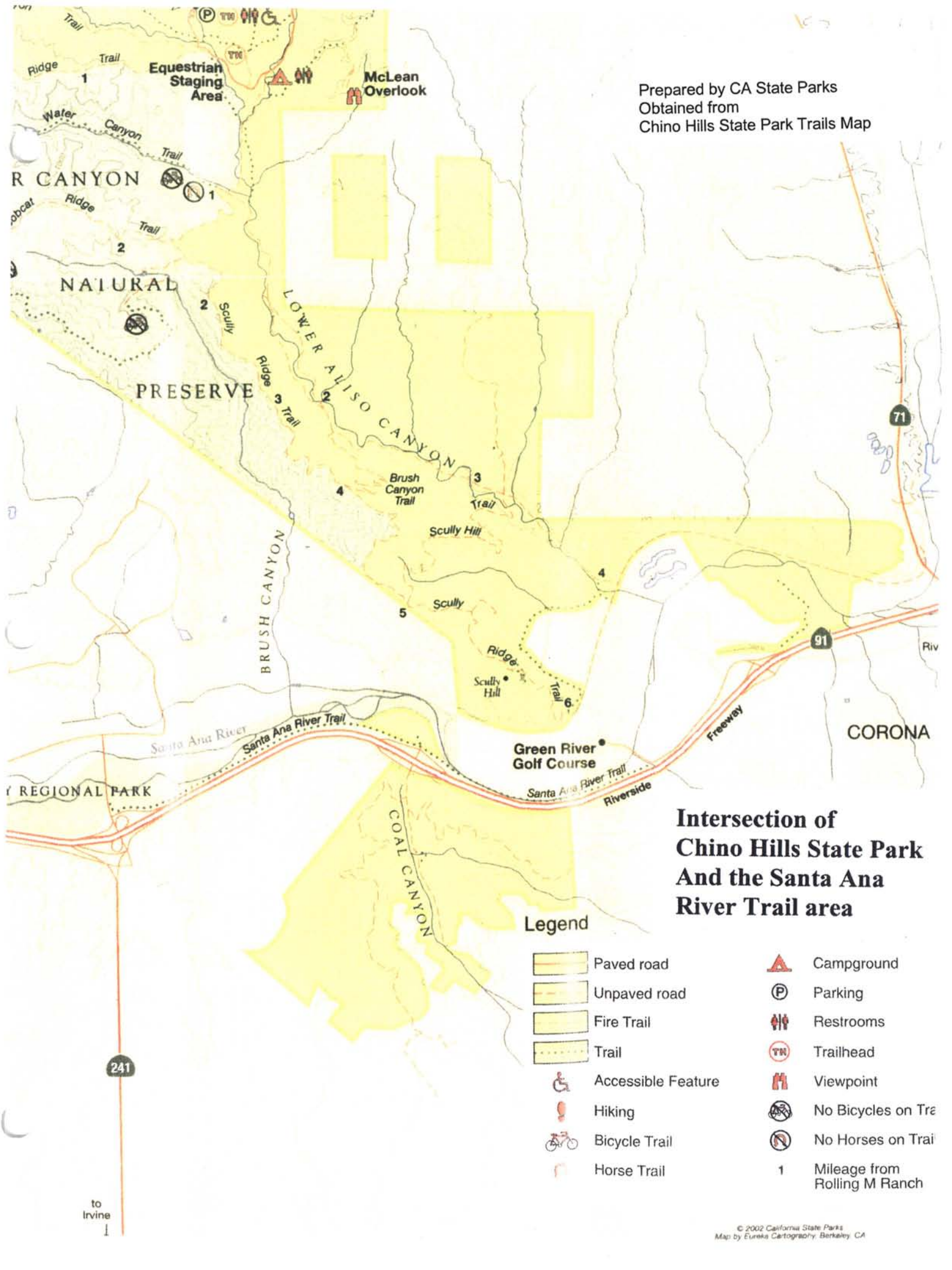
San Bernardino County is growing rapidly. Between 2000 and 2003, the U.S. Census Bureau estimates that the population of San Bernardino County rose by 8.8%, over double the rate of growth of Los Angeles County (3.7%) and nearly double that of the State of California as a whole (4.8%). The window of opportunity to set aside park and open space lands will soon close. Now is the time to designate this land as the Santa Ana River Regional Park and to begin implementation of the park plan and that portion of the Santa Ana River Trail that lies within its boundaries.

In summary, the completion of the Santa Ana River Regional Park will provide the following benefits:

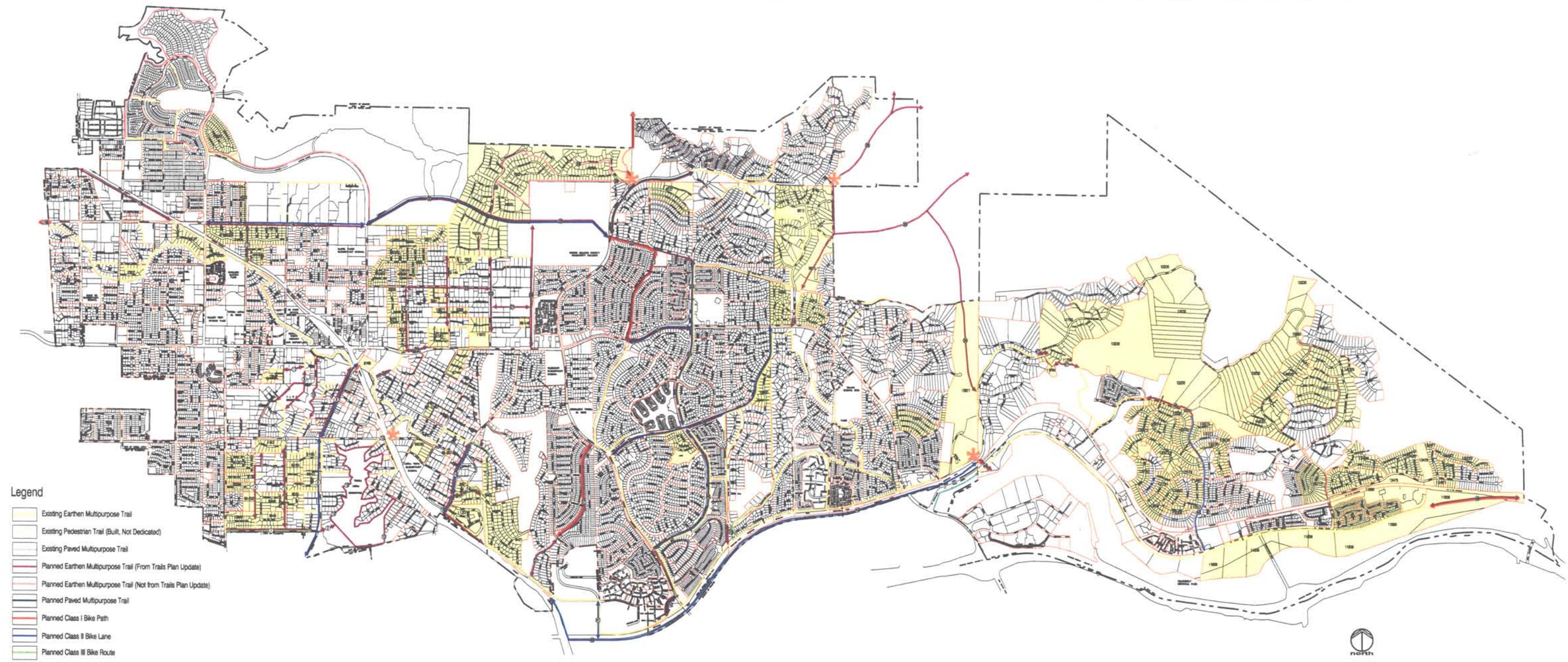
- ➢ *The implementation of multi-objective management of the riverbed and banks for visual, recreational, natural and cultural resources. This includes*
  - ▪ *The continued use of the park site for water conservation, flood management and habitat conservation.*
  - ▪ *The protection of the cohesive, historic regional character of San Bernardino County and the cities of Redlands and Highland, including the long views to and from the mountains and the long, broad and open "green belt" of the Santa Ana River corridor.*
  - ▪ *The establishment of local and regional interpretive nodes, educating both citizens and visitors about the area's history, cultural life, economy and ecology.*
  - ▪ *The provision of suitable recreational development on and near a major floodplain*
- ➢ *The sustained enhancement of property values, quality-of-life, economic development and tourism.*
- ➢ *The encouragement of alternative modes of transportation (hiking, biking, horseback riding) and a healthy lifestyle.*
- ➢ *The timely provision of a unique and irreplaceable recreational site– if we wait a decade, this opportunity will be gone!*

Conceptual Master Plan - Santa Ana River Regional Park

Prepared by
Cal Poly Pomona
School of Environmental Design
Prepared for
Env. Systems Research Institute, Inc.



Prepared by
The City of Yorba Linda



Legend

- Existing Earthen Multipurpose Trail
- Existing Pedestrian Trail (Built, Not Dedicated)
- Existing Paved Multipurpose Trail
- Planned Earthen Multipurpose Trail (From Trails Plan Update)
- Planned Earthen Multipurpose Trail (Not from Trails Plan Update)
- Planned Paved Multipurpose Trail
- Planned Class I Bike Path
- Planned Class II Bike Lane
- Planned Class III Bike Route
- Planned Staging Area
- Existing City of Anaheim Trail
- County of Orange Bike Path
- (1) Planned Trail Segment Number
- City Tract Boundary
- 10046 Select Tracts for Alta Field Analysis

north

Yorba Linda Trails Plan Update

MAY 2014

RBM DESIGN GROUP

alta

Prepared by
City of Riverside Parks Department
Obtained from Riverside City Parks
Master Plan

City of Riverside
Park & Recreation Master Plan

Proposed & Exisitng Trails fo the
Multi-Purpose Recreational Trails Master Plan
Proposed Trail Access Points
and Trail Hubs

**Trail Hubs w/Acreage to
Meet 3AC/1000 Population
for Year 2005 (12 AC)

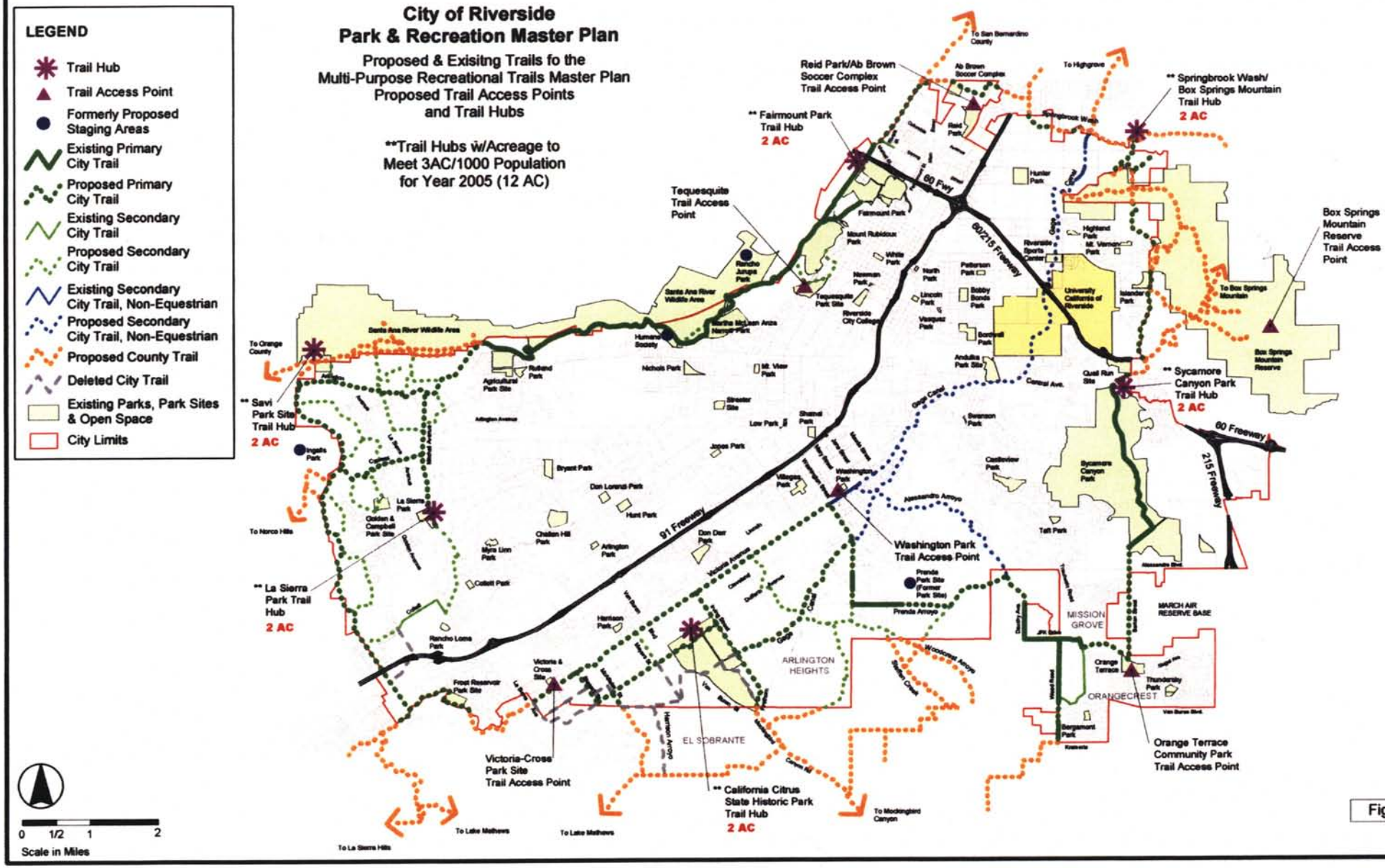


Figure 5

SAN BERNARDINO COUNTY

SANTA ANA RIVER PARKWAY

Eighteen miles of the 110-mile Santa Ana River Trail are under the jurisdiction of San Bernardino County (from the Riverside/San Bernardino (R/SB) County line to the National Forest Boundary). The Regional Parks Division is currently working on three phases of development for the trail/parkway.

Phase I - R/SB County line to La Cadena Drive (3.3 miles). Plans and specifications were completed in 1995. Funding is being sought for plan revisions and trail construction. Match funding has been pledged from The Wildlands Conservancy ($200,000) and San Bernardino County ($200,000).

Phase II - La Cadena Drive to Waterman Avenue (3.5 miles). Funding for design and construction has been received from the San Bernardino Associated Governments ($3.5 million), The Wildlands Conservancy ($412,000) and San Bernardino County ($274,000). In May 2002 the U.S. Environmental Protection Agency awarded a Brownfields Assessment Pilot to assess the cleanup and redevelopment of the Cooley Ranch Landfill along this section of the river trail. Construction started in May 2004 and is scheduled for completion in February 2005.

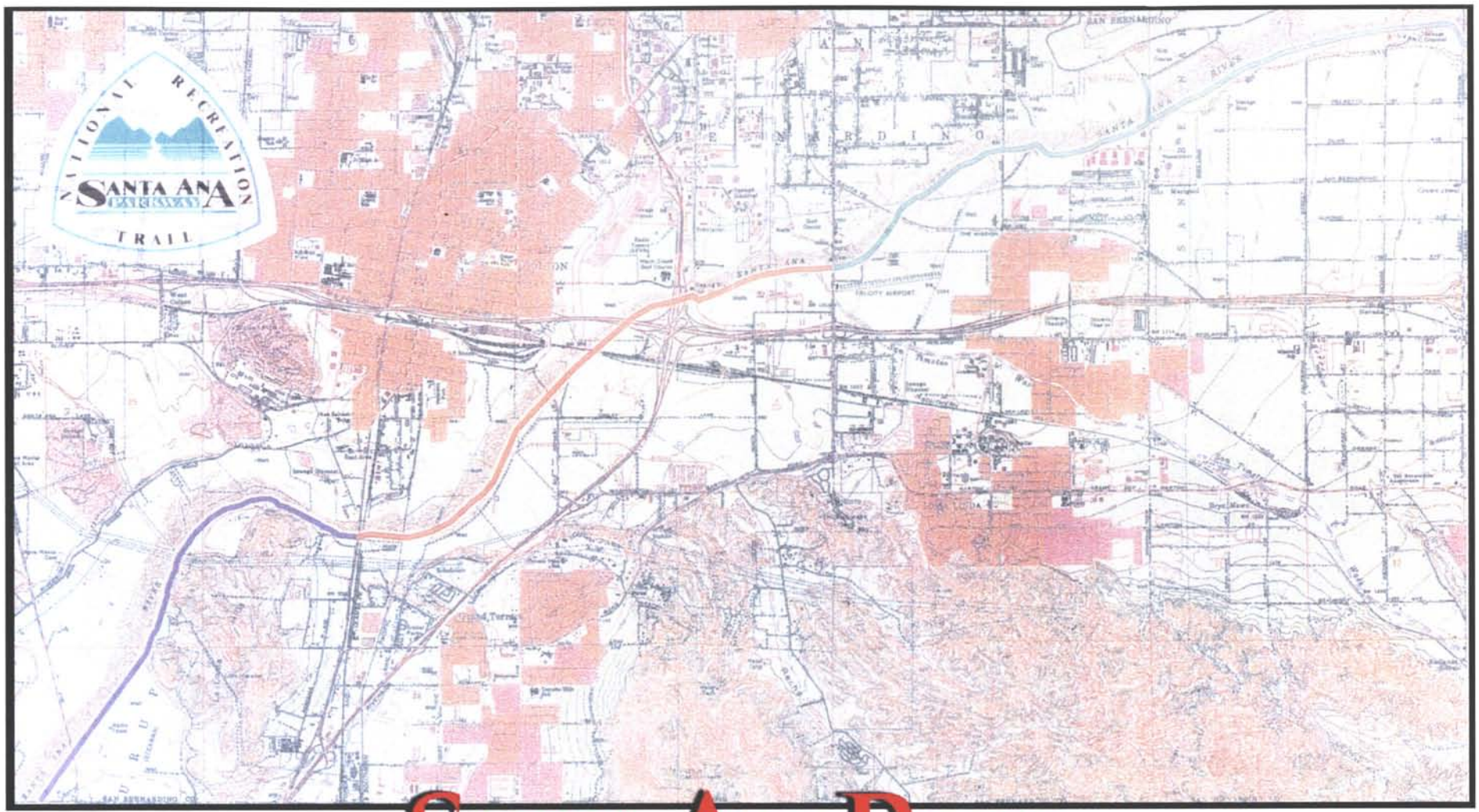
Phase III - Waterman Avenue to Alabama Street (4.5 miles). Transportation funds from San Bernardino Associated Governments ($1.6 million) have been awarded for the design and construction of this phase. In addition, The Wildlands Conservancy has pledged $500,000 and San Bernardino County has allocated $300,000 in match dollars. A site for constructed wetlands has been identified at the Mission Creek Channel. The engineering design is complete. Environmental and cultural resource studies will be finished in early 2006.

Future phases

The remaining seven miles of the project will be addressed with future funding sources (Proposition 12, 13 and 40 funding, competitive grants, Transportation Enhancement funds, private corporation grants and habitat enhancement programs).

Prepared by
San Bernardino County
Regional Parks

Prepared by
San Bernardino County
Regional Parks



SANTA ANA RIVER
Parkway Development

N

Scale: 1" =3200'

County Line to Alabama St

County Line to La Cadena Reach

La Cadena Reach to Waterman Reach

Waterman to Alabama Trail

APPENDIX G
Project Cost Estimates

AppendixG

Construction Cost Estimates

Several Counties were surveyed for cost estimates for similar trail projects. Per item costs were collected for grading, paving, striping, fencing, signage, etc. The per item costs were compared for relevance and the most applicable comparisons were averaged and standardized to be current with three percent (3%) compound inflation.

The trails were all placed on a spreadsheet; the sheet was organized by trail segment and trail type. The trail segments' lengths were obtained from the GIS map files which provide "tenth of a foot" accuracy. The "per foot" item costs were then multiplied by the segment lengths, to get segment costs, and the segment costs added together to get estimates for the conceptual route costs.

The basic route costs were estimated at roughly $35 per linear foot for hiking and equestrian trails and $55 per linear foot for Class I cycling trails. Additional costs were added for fencing, permitting, mitigation and landscaping as appropriate. However, due to the recent large inflation of building material costs, the projections for this project will need to be reevaluated based on the cost of materials and labor at the anticipated time of construction.

Appendix G – Construction Costs

Construction Cost Estimate Summary

Gypsum Canyon to Prado Dam - $4.2 Million – 15.6 Miles

$ 2.0 M	3.8 mi	Orange County - Santa Ana River Trail preferred alignment - Class I/equestrian
$ 0.7 M	1.7 mi.	Riverside County - Santa Ana River Trail preferred alignment – Class I/equestrian
$ 0.5 M	1.4 mi	San Bernardino County - Santa Ana River Trail preferred alignment Class I/equestrian
$ 0.4 M	6.5 mi	Orange County - Santa Ana River Trail secondary alignment - Class II/equestrian
$ 0.2 M	1.5 mi	Riverside County - Santa Ana River Trail secondary alignment - Class II
$ 0.4 M	0.7 mi	San Bernardino County - Santa Ana River Trail secondary alignment - Class II

Prado Dam to Corydon Avenue - $3.4 Million – 10.9 Miles

$ 2.1 M	9.1 mi	Riverside County/Army Corps/City of Corona – Santa Ana River Trail preferred alignment - Class I/equestrian –
$ 0.8 M	1.8 mi	City of Corona - Santa Ana River Trail preferred alignment - Class I/equestrian
$ 0.5 M	0.0 mi	Riverside County/State Parks/City of Corona – staging area

Corydon Avenue to Hidden Valley Wildlife Center - $6.6 Million – 22.5 Miles

$ 2.8 M	9.2 mi	Riverside County/Norco - Santa Ana River Trail preferred alignment – Class I/equestrian
$ 0.4 M	0.5 mi	Riverside County/Corona - Santa Ana River Trail preferred alignment – Class I /equestrian
$ 0.6 M	0.0 mi	Riverside County - Santa Ana River Trail preferred alignment – Class I/equestrian - bridge
$ 0.3 M	0.4 mi	Riverside County/Corona – Santa Ana River Trail secondary alignment – Class II/equestrian
$ 0.7 M	8.4 mi	Riverside County/Corona - Santa Ana River Trail secondary alignment – Class II /equestrian
$ 0.1 M	0.5 mi	Riverside County - Santa Ana River Trail secondary alignment – Class II
$ 1.7 M	3.5 mi	San Bernardino County/Chino – Regional connectors Class I & II/equestrian

SR-71 – Proposed Santa Ana River Trail to Euclid Avenue - $4.0 Million – 3.4 Miles

$ 4.0 M	3.4 mi	Riverside County/Caltrans – regional connector - Class I

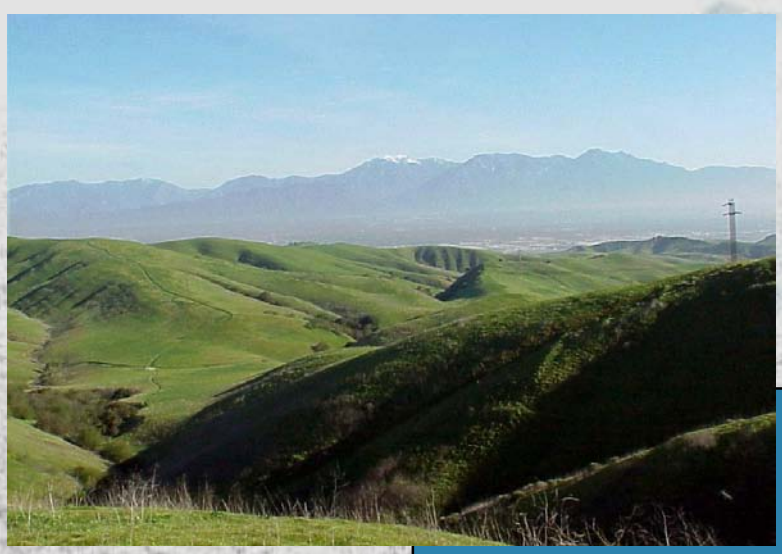
Riverside/San Bernardino County Line to California Street - $8.5 Million – 7.8 Miles

$ 8.5 M	7.8 mi	San Bernardino County - Santa Ana River Trail preferred alignment – Class I/equestrian

Alabama Street to 7-Oaks Dam Loop - $23.8 Million – 24.5 Miles

$ 6.6 M	San Bernardino County - Santa Ana River Trail preferred alignment (24.5 mile loop trail) - Class I/equestrian
$ 2.5 M	San Bernardino County - regional connector Class I & II/equestrian
$14.7 M	San Bernardino County - trail amenities including visitor's center, camping and interpretive nodes

Total Santa Ana River Trail - Main Alignment = $25.5 M plus 20% Contingency = $30.6 M
Total All Facilities = $50.5 M plus 20% Contingency = $60.6 M



CONSTRUCTION COST ESTIMATES
Overview

Appendix G

Construction Cost Estimate
Gypsum Canyon Road to Prado Dam

Segment	Trail Status	Location	Multi-Use	Bike	Hi/Eq	Trail Feet	Facilities	*Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Jurisdiction
						#REF!						
G3	SART	Gypsum Canyon Rd. to Creek Dr. (Yorba Linda)		X		5387	Bicycle	0.00		0		Orange County
							Metal Signage	2000.00	1/4 mile spacing (1320')	2,000	2,000.00	
G7a	SART	Creek Dr. east about 800 feet		X		899	Bicycle with Fencing, Permitting & Mitigation	66.00	L.F.	59,330		Orange County
							Metal Signage	250.00	1/4 mile spacing (1320')	500	59,829.99	
G7	SART	800 feet east of Creek Dr. to Evening Breeze Dr. (Yorba Linda)		X	X	1608	Bicycle with Permitting & Mitigation	62.00	L.F.	99,671		Orange County
							Metal Signage	250.00	1/4 mile spacing (1320')	500	100,170.70	
							Equestrian with Permitting & Mitigation	33.00	L.F.	53,051		
							Metal Signage	250.00	1/4 mile spacing (1320')	500	53,550.54	
G9	SART	West boundary of Green River Golf Course (GRGC) to GRGC clubhouse		X	X	2543	Bicycle with Caging/Fencing	60.00	L.F.	152,557		Orange County
							Metal Signage	250.00	1/4 mile spacing (1320')	500	153,057.20	
							Equestrian with Fencing	41.00	L.F.	104,247		
							Metal Signage	250.00	1/4 mile spacing (1320')	500	104,747.42	
G9a	SART	Approximately 600 feet west of Green River Golf Course clubhouse, over Burlington Northern Santa Fe tracks to approximatley 600' north of the clubhouse		X	X	2149	Bicycle with Partial Fencing and Permitting	55.00	L.F.	118,191		San Bernardino County
							Metal Signage	250.00	1/4 mile spacing (1320')	500	118,690.82	
							Equestrian with Partial Fencing	39.00	L.F.	83,808		
							Metal Signage	250.00	1/4 mile spacing (1320')	500	84,308.04	

Appendix G

Construction Cost Estimate
Gypsum Canyon Road to Prado Dam

Segment	Trail Status	Location	Multi-Use	Bike	Hi/Eq	Trail Feet	Facilities	*Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Jurisdiction
G10	SART	Evening Breeze Dr. to west boundary of Green River Golf Course		X	X		Bicycle with Fencing (See Bridge costs below)	55.00	L.F.	102,131		Orange County
							Metal Signage	250.00	1/4 mile spacing (1320')	500	102,631.30	
							Equestrian with Fencing	37.00	L.F.	68,707		
							Metal Signage	250.00	1/4 mile spacing (1320')	500		
						1857					69,206.51	
G12	SART	This route, extending from north of the clubhouse to SR-71 uses a portion of the Santa Ana Watershed Project Authority (SAWPA) maintenance road. However, this segment of the proposed trail is not on State Park land and appears to have ownership conflicts. The Orange County Public Facilities and Resources Dept. EIR should provide more information about ownership when it is released in late fall of 2004.		X	X		Bicycle	55.00	L.F.	490,627		Riverside County
							Metal Signage	250.00	1/4 mile spacing (1320')	2,000	493,127.24	
							Equestrian	31.00	L.F.	276,535		
							Metal Signage	250.00	1/4 mile spacing (1320')	2,000		
						8920					278,535.35	
G24	SART	This route, from approximately 750 feet to 3000 feet north of clubhouse links to the SAWPA maintenance road. This segment avoids ownership conflicts by using State Parks land.		X	X		Bicycle	57.00	L.F.	292,851		State Park /San Bernardino County
							Metal Signage	250.00	1/4 mile spacing (1320')	1,250		
						5138					294,100.77	
							Equestrian Existing	0.00	L.F.	0		
							Metal Signage	250.00	1/4 mile spacing (1320')	1,250	1,250.00	
						#REF!						
G20	SART	Gypsum Canyon to Creek Dr. (Yorba Linda)			X		Equestrian	31.00	L.F.	59,520		Orange County
						1920	Metal Signage	250.00	1/4 mile spacing (1320')	1,000	60,520.00	
G20	SART	Passes primarily through existing citrus groves from Gypsum Canyon Rd. east to 150 feet west of Evening Breeze Dr.			X		Equestrian with Permitting & Mitigation	33.00	L.F.	197,153		Orange County
							Metal Signage	250.00	1/4 mile spacing (1320')			
						5974				2,000	199,153.11	
							Bridges - x 3	360,000.00	Each	1,080,000	1,080,000.00	Orange County
										Santa Ana River Trail Bike Cost (no bridges)	**1,323,608.02**	
										Santa Ana River Trail Eques/Hike Cost (no bridges)	**851,270.97**	
										Santa Ana River Trail Total (with 3 bridges)	**3,254,878.99**	

Appendix G

Construction Cost Estimate
Gypsum Canyon Road to Prado Dam

Segment	Trail Status	Location	Multi-Use	Bike	Hi/Eq	Trail Feet	Facilities	*Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Jurisdiction
						#REF!						
G14, 14b, & 14c	SoRoute	Class I trail from Gypsum Canyon Rd. to Green River Rd.		X		13231	Bicycle Metal Signage	0.00 250.00	L.F. 1 mile spacing (1320')	0 5,000	5,000.00	Orange County
G15	SoRoute	Class II trail from the golf course entry to Green River Rd. intersection with SR-91.		X		8284	Striping Signage	0.73 250.00	linear foot (L.F.) 1/4 mile spacing (1320')	5,467 3,000	8,467.45	Orange County
G15a	SoRoute	Class II connector over Burlington Northern Santa Fe (BNSF) tracks on Crestridge Dr. (entry to Green River Housing Tract) from Green River Rd. To State Parks property and segments G15b.		X		584	Striping Metal Signage LS Screen Temp. Irrig.	0.73 250.00 12.00 0.40	L.F. 1/4 mile spacing (1320') L.F. L.F.	426 500 7,008 234	8,167.69	San Bernardino County
G15b & G15c	SoRoute	Class I trail on the Chino Hills State Park property (southern perimeter of Green River Housing Tract) to east boundary of Chino Hills State Park.		X		3018	Bicycle Metal Signage	55.00 250.00	L.F. 1/4 mile spacing (1320')	166,008 1,000	167,008.48	State Park/ San Bernardino County
G16	SoRoute	This proposed Class I local connection beneath SR-91 extends from the proposed ACOE maintenance road along the south side of the river to link to segment G15c.		X		1946	Bicycle with Permitting & Mitigation Metal Signage	65.00 250.00	L.F. 1/4 mile spacing (1320')	126,458 500	126,958.44	Riverside County
G26	SoRoute	Existing Class II on Green River Rd. from Dominguez Rd. east to City of Corona.		X		4518	Striping Metal Signage	0.73 250.00	L.F. 1/4 mile spacing (1320')	3,298 1,500	4,797.89	Corona
G14 & 14a	SoRoute	Gypsum Cnyn Rd. to Green River Rd.			X	11033	Equestrian with Permitting & Mitigation Additional Signage	33.00 250.00	L.F. 1 mile spacing (1320')	364,100 4,000	368,099.90	Orange County
G23	SoRoute	Proceeds north from SR-91, adjacent to the south bank of the river along the western perimeter of Green River Golf Course, to Creek Dr.			X	1670	Equestrian with Permitting & Mitigation Metal Signage	33.00 250.00	L.F. 1/4 mile spacing (1320')	55,108 1,000	56,107.60	Orange County
G27	SoRoute	Proposed hiking trail from SR-91 (south of Prado Dam) to Fresno Canyon.			X	1247	Hiking Metal Signage	0.00 250.00	linear foot (L.F.) 1/4 mile spacing (1320')	0 500	500.00	Riverside County
									South Route Bike Cost (no bridges)		**320,399.95**	
									South Route Eques/Hike Cost (no bridges)		**424,707.50**	
									South Route Total (no bridges)		**745,107.45**	

Appendix G

Construction Cost Estimate
Gypsum Canyon Road to Prado Dam

Segment	Trail Status	Location	Multi-Use	Bike	Hi/Eq	Trail Feet	Facilities	*Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Jurisdiction
						#REF!						
G21	Alternative	Gypsum Canyon Rd. Bridge.		X	X	3338	Bicycle	0.00		0		Orange County
							Metal Signage	250.00	1/4 mile spacing (1320')	750	750.00	
							Equestrian	0.00		0		
							Metal Signage	250.00	1/4 mile spacing (1320')	750	750.00	
G12a	Alternative	This route, extends from approximately 750 feet north of the golf course clubhouse to 3000 feet on the Santa Ana Watershed Project Authority maintenance road.		X	X	2694	Bicycle with Permitting & Mitigation	60.00	L.F.	161,640		State Park/ San Bernardino County
							Metal Signage	250.00	1/4 mile spacing (1320')	1,000	164,140.00	
							Equestrian Existing	0.00	L.F.	0		
							Metal Signage	250.00	1/4 mile spacing (1320')	750	750.00	
G25	Alternative	Proposed Class I would be a local connector adjacent to the north side of the BNSF tracks bearing east from segment 15a to the culvert beneath SR-91 (south of Prado Dam).		X		3445	Striping	0.73	linear foot (L.F.)	2,515		Riverside County
							Metal Signage	250.00	1/4 mile spacing (1320')	750	3,264.73	
										Alternate Bike Routes Costs (no bridges)	**168,154.73**	
										AlternateHike/Eques Routes Cost (no bridges)	**1,500.00**	
										So Route Total (no bridges)	**169,654.73**	
						#REF!						
G17	Constrained	Adjacent to western perimeter of Green River Mobile Home Park and Green River Housing Tract to the northeast corner of the Green River Housing Tract.		X		5899	Bicycle on Bank	60.00		353,933		Riverside County
							LS Screen	12.00	L.F.	70,787		
							Metal Signage	250.00	1/4 mile spacing (1320')	2,000	426,719.24	
G18	Constrained	Ridge Dr. west thru Chino Hills State Park - Class I.		X		3304	Bicycle	55.00	L.F.	181,707		Riverside County
							Metal Signage	250.00	1/4 mile spacing (1320')	1,000	182,707.11	
G4	Constrained	Creek Dr. to Evening Breeze Dr. (Yorba Linda) north of BNSF tracks.			X	1545	Equestrian	28.00	L.F.	43,267		Orange County
							Triple Box Undercrossing	2500.00	L.F.	375,000		
							Metal Signage	250.00	1/4 mile spacing (1320')	500	418,767.19	

Appendix G

Construction Cost Estimate
Gypsum Canyon Road to Prado Dam

Segment	Trail Status	Location	Multi-Use	Bike	Hi/Eq	Trail Feet	Facilities	*Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Jurisdiction
G8	Constrained	Evening Breeze Dr. to west boundary of Green River Golf Course		X	X		Bicycle with Permitting & Mitigation	60.00	L.F.			Orange County
										89,172		
							Equestrian with Partial Mitigation	30.00	L.F.			
										44,586		
							River infill with Mitigation	130.00	1800 C.U.	234,000		
							Metal Signage	250.00	1/4 mile spacing (1320')			
						1486				500	368,258.22	
G11	Constrained	Clubhouse through existing BNSF undercrossing.		X	X		Bicycle with Fencing	50.00	L.F.			Riverside County
										251,309		
							Equestrian with	37.00		185,969		
							Metal Signage	250.00	1/4 mile spacing (1320')			
						5026				1,000	438,278.15	
G5	Constrained	Evening Breeze Dr. to north of Green River Golf Course clubhouse.			X		Equestrian with Fencing	40.00	linear foot (L.F.)	170,995		Orange County
							Metal Signage	250.00	1/4 mile spacing (1320')	1,000		
						4275					171,995.30	
						10777						

***Trail Status**

SART	Preferred Santa Ana Trail Route. Some segments may have time constraints which would delay their completion.
SoRoute	Preferred alternate routes. These include existing/proposed segments and can be completed at minimal cost within the next few years.
Alternate	Existing routes. These duplicate SoRoute segments are less direct, aesthetic, safe or otherwise less desirable.
Constrained	Severely constrained. These trail segments are constrained by cost, geology, ownership, etc. and are no longer being considered.
***Unit Cost**	The Unit costs for bicycle and equestrian trails include 10% for plan preparation

SART Trail Bike	**1,323,608.02**
SART Hike/Equest	**851,270.97**
Bridges	**1,080,000.00**
So. Route Bike	**320,399.95**
So. Route Hike/Equest	**424,707.50**
Alternate Route Bike	**168,154.73**
Alternative Route Eques.	**1,500.00**
Total	**4,169,641.18**

Appendix G

Construction Cost Estimates
Prado Dam to Corydon Avenue

March 15, 2005

Segment	Location	Multi-Use	Bike	Equest.	Trail Feet	Facilities	Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Segment	Jurisdiction
P1	Santa Ana River east to proposed headwall		X		2382	Bicycle on Maintenance Rd. with Permitting	5.00		11,909.30	73,527.85	P1	ACOE/ Corona
						Striping	0.66	L.F.	1,572.03			
						Chain Link Fencing	25.00	L.F.	59,546.52			
						Metal Signage	250.00	1/4 mile spacing (1320')	500.00			
P2	Santa Ana River east to proposed headwall		X		1821	Bicycle on Maintenance Rd. with Permitting	5.00		9,104.22	57,327.08	P2	ACOE/ Corona
						Striping	0.66	linear foot (L.F.)	1,201.76			
						Chain Link Fencing	25.00	L.F.	45,521.10			
						Metal - signage	250.00	1/4 mile spacing (1320')	1,500.00			
P3 & P3a	Headwall to edge of spillway plain and on existing bluff along southern perimeter of Prado Basin		X		2533	Bicycle with Ramp	55.00	L.F.	139,302.77	139,802.77	P3	ACOE/ Corona
						Metal - signage	250.00	1/4 mile spacing (1320')	500.00			
P4	Descent from existing bluff to P5		X		3268	Bicycle on Levee	50.00	L.F.	163,383.84	164,883.84	P4	ACOE/ Corona
						Metal - signage	250.00	1/4 mile spacing (1320')	1,500.00			
P5 & P5a	Continuation of P4 to wastewater treatment levee		X		3806	Bicycle with Earthen Ramp	55.00	L.F.	209,315.04	210,315.04	P5 & P5a	ACOE/ Corona
						Metal - signage	250.00	1/4 mile spacing (1320')	1,000.00			
P6	On proposed Corona wastewater treatment levee		X		2940	Bicycle on Levee with fence	77.00	L.F.	226,348.95	227,848.95	P6	ACOE/ Corona
						Metal Signage	250.00	1/4 mile spacing (1320')	1,500.00			

Appendix G

Construction Cost Estimates
Prado Dam to Corydon Avenue

Segment	Location	Multi-Use	Bike	Equest.	Trail Feet	Facilities	Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Segment	Jurisdiction
P6a	On proposed Corona wastewater treatment levee		X		709	Bicycle with Additional Grading Metal Signage	77.00 250.00	L.F. 1/4 mile spacing (1320')	54,566.27 1,500.00	56,066.27	P6a	ACOE/ Corona
P7	From Corona Wastewater treatment plant levee to Smith Ave.		X		3688	Bicycle with Culvert Metal Signage	55.00 250.00	L.F. 1/4 mile spacing (1320')	202,819.06 2,500.00	205,319.06	P7	ACOE/ Corona
P15	On proposed Alcoa levee		X		1791	Bicycle on Levee Metal Signage	45.00 250.00	L.F. 1/4 mile spacing (1320')	80,609.26 1,000.00	81,609.26	P15	ACOE/ Corona
P16	From Alcoa Dike to Auburndale St. intersection with Temescal Canyon Wash		X		1968	Bicycle on Levee Metal Signage	50.00 250.00	L.F. 1/4 mile spacing (1320')	98,424.00 1,500.00	99,924.00	P16	ACOE/ Corona
P17 & P17a	On Rincon St. from Smith Ave. to Corydon Ave.		X		4692	Bicycle with Clearing and Ls-Berm Temp. Irrig Taffic Guard Wall Metal Signage	55.00 2.75 0.40 100.00 6000.00	L.F. S.F. S.F. L.F. 1/4 mile spacing	108,266.40 5,413.32 787.39 469,154.40 6,000.00	589,621.51	P17 & P17a	Corona
					29596				**Total Bicycle Trails**	**1,906,245.62**		
P8	Santa Ana River east to proposed headwall			X	3976	Equestrian on Maint. Rd. (fence included in bicycle estimate) Metal Signage	12.00 250.00	L.F. 1/4 mile spacing (1320')	47,715.96 500.00	48,215.96	P8	ACOE/ Corona

Appendix G

Construction Cost Estimates
Prado Dam to Corydon Avenue

Segment	Location	Multi-Use	Bike	Equest.	Trail Feet	Facilities	Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Segment	Jurisdiction
P9	Headwall to edge of spillway plain and on existing bluff along southern perimeter of Prado Basin			X	2018	Equestrian with Permitting and Grading Metal Signage	37.00 250.00	L.F. 1/4 mile spacing (1320')	74,654.60 500.00		P9	ACOE/ Corona
P10	Descent from existing bluff to P11			X	4934	Equestrian with Earthen Ramp Metal Signage	32.00 250.00	S.F. 1/4 mile spacing	157,898.34 1,500.00	159,398.34	P10	ACOE/ Corona
P11	Continuation of P10 to wastewater treatment levee			X	3855	100' Culvert Equestrian with Permitting and Fence Metal Signage	245.00 48.00 250.00	L.F. L.F. 1/4 mile spacing (1320')	24,500.00 185,037.12 500.00	210,037.12	P11	ACOE/ Corona
P12	Along base of Corona wastewater treatment levee			X	1968	Equestrian with chain link fence Metal Signage	55.00 250.00	1/4 mile spacing (1320')	108,266.40 500.00	108,766.40	P12	ACOE/ Corona
P13	Adjacent to westbound lane of Butterfield Dr. to base of Alcoa levee, or proceed across Prado Basin to hug the western perimeter of the Corona Airport			X	6322	Equestrian with 300' Fence Metal Signage	42.00 250.00	L.F. 1/4 mile spacing (1320')	265,528.27 2,500.00	268,028.27	P13	ACOE/ Corona

Appendix G

Construction Cost Estimates
Prado Dam to Corydon Avenue

Segment	Location	Multi-Use	Bike	Equest.	Trail Feet	Facilities	Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Segment	Jurisdiction
P14	On Rincon St. from Smith Ave. to Corydon Ave.			X	4692	Equestrian Flat with Fence	42.00	L.F.	197,044.85		P14	Corona
						Metal Signage	250.00	1/4 mile spacing (1320')	1,500.00	198,544.85		
					27765			**Total Eques./Hike Trails**		**1,068,145.54**		
								Total Prado Basin Trails		***2,974,391.16***		
Staging Area	In Prado Basin adjacent to southbound land of Auto Center Dr. in current location of paintball facility					Clearing	0.21	S.F.	1,041.67		S1	State Parks/ Corona
						Grading	2.75	S.F.	12,375.00			
						Paving - asphalt	3.00	S.F.	13,500.00			
						Striping	0.66	linear foot (L.F.)	1,650.00			
						Potable water	16.00	L.F.	8,000.00			
						DG	1.00	S.F.	7,000.00			
						Entry Dr.	3.00	S.F.	360.00			
						Fencing, cedar	15.00	L.F.	10,500.00			
								Total State Park Staging Area		**467,526.67**		
								Total Prado Basin		***3,441,917.82***		

Appendix G

Construction Cost Estimates
Corydon Avenue to Hidden Valley Wildlife Center

March 15, 2005

Segment	Trail Status	Location	Multi	Bike	Hi/Eq	Trail Feet	Facilities	Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Jurisdiction
HE-B 10	SART	Corydon Ave. to Bluff St. on the slope of the bluff adjacent to Prado Basin.		X	X							
							Bicycle with retaining wall, permitting and mitigation	88.00	L.F.	493,694.78		
							Equestrian with permitting and mitigation	31.00	L.F.	173,915.21		
							Metal Signage	250.00	1/4 mile spacing (1320')	4,000.00	671,609.99	
						5610	Fencing, cedar	12.00	L.F.	67,322.02	738,932.01	Corona/Norco / Riverside County
HE-B 10a	SART	Short trail to Prado Basin overview location.		X	X							
							Bicycle with permitting and mitigation	55.00	L.F.	18,405.29		
							Equestrian with permitting and mitigation	31.00	L.F.	10,373.89		
							Metal Signage	250.00	1/4 mile spacing (1320')	4,000.00	32,779.18	
						335	Fencing, cedar	12.00	L.F.	4,015.70	36,794.88	Norco/ Riverside County
HE-B 20	SART	Bluff St. to River Rd. on the slope of the bluff adjacent to Prado Basin.		X	X							
							Bicycle with retaining wall, permitting and mitigation	88.00	L.F.	541,043.29		
							Equestrian with permitting and mitigation	31.00	L.F.	190,594.80		
							Metal Signage	250.00	1/4 mile spacing (1320')	4,000.00	735,638.08	
						6148	Fencing, cedar	12.00	L.F.	73,778.63	809,416.72	Norco/ Riverside County
HE-B 30	Regional Trail	River Rd. from Bluff St. to Prado Basin Park Rd. Proposed to be built by Riverside County Transportation and Land Management Agency.		X	X		Proposed by other					
						2418					0.00	Riverside County Transportation
HE-B 40	Regional Connector	From River Rd. Bridge through Prado Basin Park north on Hellman Ave. to McCarty Rd.		X	X							
							Bicycle with permitting and mitigation	55.00	L.F.	556,308.85		
							Equestrian with permitting and mitigation	31.00	L.F.	313,555.90		
							Metal Signage	250.00	1/4 mile spacing (1320')	7,000.00	876,864.75	
						10115	Fencing, cedar (1/2 of trail length)	12.00	L.F.	60,688.24	937,552.99	Chino/ San Bernardino County

Appendix G

Construction Cost Estimates
Corydon Avenue to Hidden Valley Wildlife Center

Segment	Trail Status	Location	Multi	Bike	Hi/Eq	Trail Feet	Facilities	Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Jurisdiction
HE-B 50	Regional Connector	From Hellman Ave. west on McCarty Rd. to the proposed Chino trail system.		X	X	8530	Bicycle with easement, permitting and mitigation	55.00	L.F.	469,154.40	745,586.88	Chino/ San Bernardino County
							Equestrian with easement, permitting and mitigation	31.00	L.F.	264,432.48		
							Metal Signage	250.00	1/4 mile spacing (1320')	12,000.00		
HE-B 60	SART	Bluff St. north from River Rd. crossing Army Corps of Engineers (ACOE) property to link with Orange County Water District's proposed River Road Project perimeter road.		X	X	446	Bicycle	35.00	L.F.	15,616.61	33,125.59	Norco
							Equestrian	25.00	L.F.	11,154.72		
							Metal Signage	250.00	1/4 mile spacing (1320')	1,000.00		
							Fencing, cedar	12.00	L.F.	5,354.27		
HE-B 70	SART	Orange County Water District's proposed maintenance road from River Rd. to 5th St. staging area.		X	X	8487	Paving - asphalt	9.00	L.F.	76,386.87	93,988.57	Norco/Orange County Water District
							Striping	0.66	L.F.	5,601.70		
							Metal Signage	250.00	1/4 mile spacing (1320')	12,000.00		
HE-B 80	SART	Class I bike trail on bluff adjacent to, and hiking/equestrian trail at base of ACOE proposed toe stabilization project (south of Hamner Ave.) extending from the Orange County Water District's proposed River Road Project perimeter to the northern boundary of the ACOE project just south of the Hamner Ave. bridge.		X	X	9721	Bicycle with easement, permitting and mitigation	55.00	L.F.	534,655.57	843,006.89	Army Corps/ Norco
							Equestrian with easement, permitting and mitigation	31.00	L.F.	301,351.32		
							Metal Signage	250.00	1/4 mile spacing (1320')	7,000.00		
HE-B 90	SART	Class I bike trail on Norco bluff and hiking/equestrian trail at base of bluff from Pedley Ave. to La Sierra Wildlife Center trails.		X	X	6453	Bicycle with easement, permitting and mitigation	55.00	L.F.	354,933.35	561,986.69	Norco
							Equestrian with easement, permitting and mitigation	31.00	L.F.	200,053.34		
							Metal Signage	250.00	1/4 mile spacing (1320')	7,000.00		
HE-B 100	Regional Connector	Hamner Ave. bridge.		X	X	1558	Future by other			450,000.00	600,000.00	Norco/ Riverside County Transportation Dept.
HE-B 110	Regional Trail	Jurupa Community Services District's multi-use trail.		X	X		Proposed by other			0.00	0.00	Jurupa Community Services District

Appendix G

Construction Cost Estimates
Corydon Avenue to Hidden Valley Wildlife Center

Segment	Trail Status	Location	Multi	Bike	Hi/Eq	Trail Feet	Facilities	Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Jurisdiction
B1	So. Route	Corydon Ave. from Stagecoach Dr. to River Rd.		X		4613	Existing			0.00	0.00	Corona (Existing)
B2	So. Route	River Rd. from Corydon Ave. to Bluff St.		X		2539	Striping Metal Signage	0.66 250.00	L.F. 1/4 mile spacing (1320')	1,675.96 1,000.00	2,675.96	Norco
B3	So. Route	Corydon Ave. from River Rd. north to Vine St.		X		5305	Striping Metal Signage	0.66 250.00	L.F. 1/4 mile spacing (1320')	3,501.34 1,000.00	4,501.34	Norco
B4	So. Route	Corydon Ave.and Norco Dr. from Vine St. to Old Hamner Rd.		X		8487	Striping Metal Signage	0.66 250.00	L.F. 1/4 mile spacing (1320')	5,601.70 1,500.00	7,101.70	Norco
B5	So. Route	Old Hamner Rd./Detroit St. from Norco Dr. to Sierra Ave.		X		2848	Striping Metal Signage	0.66 250.00	L.F. 1/4 mile spacing (1320')	1,879.50 1,750.00	3,629.50	Norco
B6	So Route	La Sierra Ave./River Dr. from Old Hamner Rd. to ACOE bluff stabilization along south bank of river		X		2582	Striping Metal Signage	0.66 250.00	L.F. 1/4 mile spacing (1320')	1,704.11 1,000.00	2,704.11	Norco
B7	SART	Trail on platform created by ACOE bluff stabilization project on south bank of the river from Hamner Ave. to Pedley Ave.		X		6972	Paving - asphalt Striping Metal Signage	3.00 0.33 250.00	L.F. linear foot (L.F.) 1/4 mile spacing (1320')	20,915.10 2,300.66 2,500.00	25,715.76	Army Corps/ Norco
B8	So. Route	From existing river trail on bluffs south on Pedley Ave. to 8th St., east to California Ave. and north to North Dr.		X		3619	Striping St. Crossing stripe, sign Metal Signage	0.66 5000.00 250.00	L.F. Each 1/4 mile spacing (1320')	2,388.36 5,000.00 1,500.00	8,888.36	Norco
B9	So. Route	North Ave.east to Arlington Ave. to Hidden Valley Wildlife Center trails via Arlington Ave.		X		2736	Striping St. crossing stripe, sign, signal Metal Signage	0.66 65000.00 250.00	L.F. L.F. 1/4 mile spacing (1320')	1,805.88 65,000.00 1,000.00	67,805.88	Riverside City
B10	SART	Class I bike trail linking ACOE proposed toe stabilization project (south of Hamner Ave.) to the ACOE bluff stabilization (north of Hamner Ave.)		X		646	Clearing Grading Bicycle Equestrian Metal Signage	2.50 2.75 45.00 25.00 250.00	L.F. L.F. L.F. L.F. 1/4 mile spacing (1320')		Unknown	Norco
HE1	So, Route	On Stagecoach Dr. from Corydon Ave. to Corona/Norco city limit.			X	2110	Clearing Fill Fencing, cedar	2.50 120.00 12.00	L.F. L.F. L.F.	5,273.89 253,146.53 25,314.65	258,420.41 292,118.51	Corona
HE1a	So, Route	On Stagecoach Dr. from Corona/Norco city limit to end of Stagecoach Dr.			X	512	Existing					Norco
HE3	So, Route	On Bluff Rd. from Stagecoach Dr. to River Rd.			X	4823	Existing					Norco

Appendix G

Construction Cost Estimates
Corydon Avenue to Hidden Valley Wildlife Center

Segment	Trail Status	Location	Multi	Bike	Hi/Eq	Trail Feet	Facilities	Unit Cost	Unit	Cost Breakdown	Total Cost by Segment	Jurisdiction
HE4a	So, Route	Bluff St. from River Rd. to Vine St.			X		Equestrian	25.00	L.F.	45,357.06		
							Metal Signage	250.00	1/4 mile spacing (1320')			
						1814				1,250.00	46,607.06	
HE4b	So, Route	Vine St. from Bluff St. to Corydon Ave.			X		Existing					
						3228				0.00		Norco
HE5	So, Route	Norco Dr. from Vine St. To Old Hamner Rd. - Existing.			X		Equestrian	25.00	L.F.	221,043.90		
							Metal Signage	250.00	1/4 mile spacing (1320')	1,250.00	222,293.90	
						8842	Fencing, cedar	12.00	L.F.	106,101.07	328,394.97	Norco
HE6	So, Route	Old Hamner Rd. from Norco Dr. to south bank of river.			X		Equestrian	25.00	L.F.	111,957.30		
							Metal Signage	250.00	1/4 mile spacing (1320')	1,500.00	113,457.30	
							Fencing, cedar	12.00	L.F.	106,101.07	219,558.37	
						4478						Norco
HE7	SART	Trail on south bank of river from Old Hamner Rd. to Pedley Ave. at base of ACOE toe stabilization project.			X		Equestrian with easement, permitting and mitigation	31.00	L.F.	216,122.70		
							Metal Signage	250.00	1/4 mile spacing (1320')	3,000.00	219,122.70	Army Corps/ Norco
HE8	SART	Hiking/Equestrian trail linking ACOE proposed toe stabilization project (south of Hamner Ave.) to the ACOE bluff stabilization (north of Hamner Ave.).			X		Clearing	2.50	L.F.			
							Equestrian with easement, permitting and mitigation	31.00	L.F.			
							DG	3.50	L.F.			
							Metal Signage	250.00	1/4 mile spacing (1320')			
						650					Unknown	Norco

Subtotal SART	51144	**SART - Class I and Equestrian Pref. Alignment**	**3,216,973.46**	**3,216,973.46**
Total SART with Fencing		**SART Equestrian Fencing**	**150,470.61**	**3,367,444.07**
	32729	**So. Route Class II Alignment**	**97,306.86**	
Subotal So. Route	25807	**So. Route On-Rd. Equest. Alignment**	**674,476.77**	**771,783.63**
Total So. Route with Fencing		**So. Route Equestrian Fencing**	**237,516.80**	**911,993.56**
	22621	**Regional Connectors**	**1,622,451.63**	
Total Regional Connectors with Bridge		**Hamner Ave. Bridge Bicycle Extension**	**600,000.00**	**2,222,451.63**
	1296	**Missing Link**	**Unknown**	
		Total Trails	**6,599,196.13**	

CITY OF CORONA
ROUTE 71 BIKE TRAIL ALIGNMENT
PRELIMINARY ENGINEER'S ESTIMATE

GRGC TRAIL TO PRADO DAM ACCESS ROAD

Item No.	Item Description	Estimated Quantity	Unit	Unit Price	Total Amount
1	Construct 4.0' High Retaining Wall	250	LF	$ 150.00	$ 37,500.00
2	Construct 0.33' Asphalt Concrete Pavement	1100	Tons	$ 65.00	$ 71,500.00
3	Construct 0.50' Class II Aggregate Base	900	CY	$ 50.00	$ 45,000.00
4	Construct Graded Shoulder	3000	LF	$ 4.00	$ 12,000.00
5	Construct Drainage Culvert	100	LF	$ 200.00	$ 20,000.00
				TOTAL AMOUNT - ITEMS 1 THROUGH 5:	**$ 186,000.00**

PRADO DAM ACCESS ROAD TO EUCLID AVENUE

Item No.	Item Description	Estimated Quantity	Unit	Unit Price	Total Amount
6	Grading	15000	CY	$ 8.00	$ 120,000.00
7	Construct 8.5' High Retaining Wall	3000	LF	$ 200.00	$ 600,000.00
8	Construct 5.0' Traffic Guard Wall	16700	LF	$ 120.00	$ 2,004,000.00
9	Construct 7.0' Fence	16700	LF	$ 25.00	$ 417,500.00
10	Construct 0.33' Asphalt Concrete Pavement	6000	Tons	$ 65.00	$ 390,000.00
11	Construct 0.50' Class II Aggregate Base	4700	CY	$ 50.00	$ 235,000.00
12	Construct Graded Shoulder	700	CY	$ 4.00	$ 2,800.00
13	Construct Wildlife Crossing Bridge	100	LF	$ 200.00	$ 20,000.00
				TOTAL AMOUNT - ITEMS 6 THROUGH 13:	**$ 3,789,300.00**
				TOTAL AMOUNT - ITEMS 1 THROUGH 13:	**$ 3,975,300.00**
				CONSTRUCTION CONTINGENCIES (10%):	**$ 397,530.00**
				TOTAL CONSTRUCTION AMOUNT:	**$ 4,372,830.00**
				ROUNDED TOTAL AMOUNT:	**$ 4,373,000.00**

August 18, 2004

Ms. JoAnn Ross
The Dangermond Group
5700 Elvas Avenue
Sacramento, California 95819

Dear JoAnn:

At your request, we are providing this planning level Scope of Work to prepare and process biological and wetlands regulatory studies and permits for two bike trail crossings across the Santa Ana River in the vicinity of the Green River Golf Course and Prado Basin.

We have attached project and habitat designation maps as Figures 1-4. Based on these Figures, the following studies and permits are anticipated:

- Biological Technical Report prepared to meet California Environmental Quality Act (CEQA) requirements. Includes Focus surveys for threatened and endangered species and species of special concern that are expected to occur in the area, including: $50,000
  - least Bell's vireo;
  - southwestern willow;
  - Santa Ana Sucker; and
  - southwestern pond turtle.

  We do not anticipate focus surveys for the California gnatcatcher.

- Regulatory permitting for two bridge crossings across the Santa Ana River, including: $30,000
  - U.S. Army Corps of Engineers Section 404 Permit;
  - California Department of Fish & Game Section 1602 Streambed Alteration Agreement; and

- Regional Water Quality Control Board(s) Section 401 Water Quality Certification.

- Preparation of a Biological Assessment for U.S. Fish & Wildlife Service Section 7 Consultation and issuance of a Biological Opinion in the event threatened or endangered species are found on site. $10,000

Total: $90,000

This estimate was prepared by Julie Vandermost of Vandermost Consulting Services, Inc. (949-489-2700, ext 203) and Tony Bomkamp of Glenn Lukos Associates (949-837-0404, ext. 41) based on current knowledge of the Santa Ana River in this area as of the date of this Scope of Work. This Scope of Work has been prepared as a planning level Scope to provide the magnitude of costs only. The actual costs would be expected to reflect the regulatory climate at the time of construction.

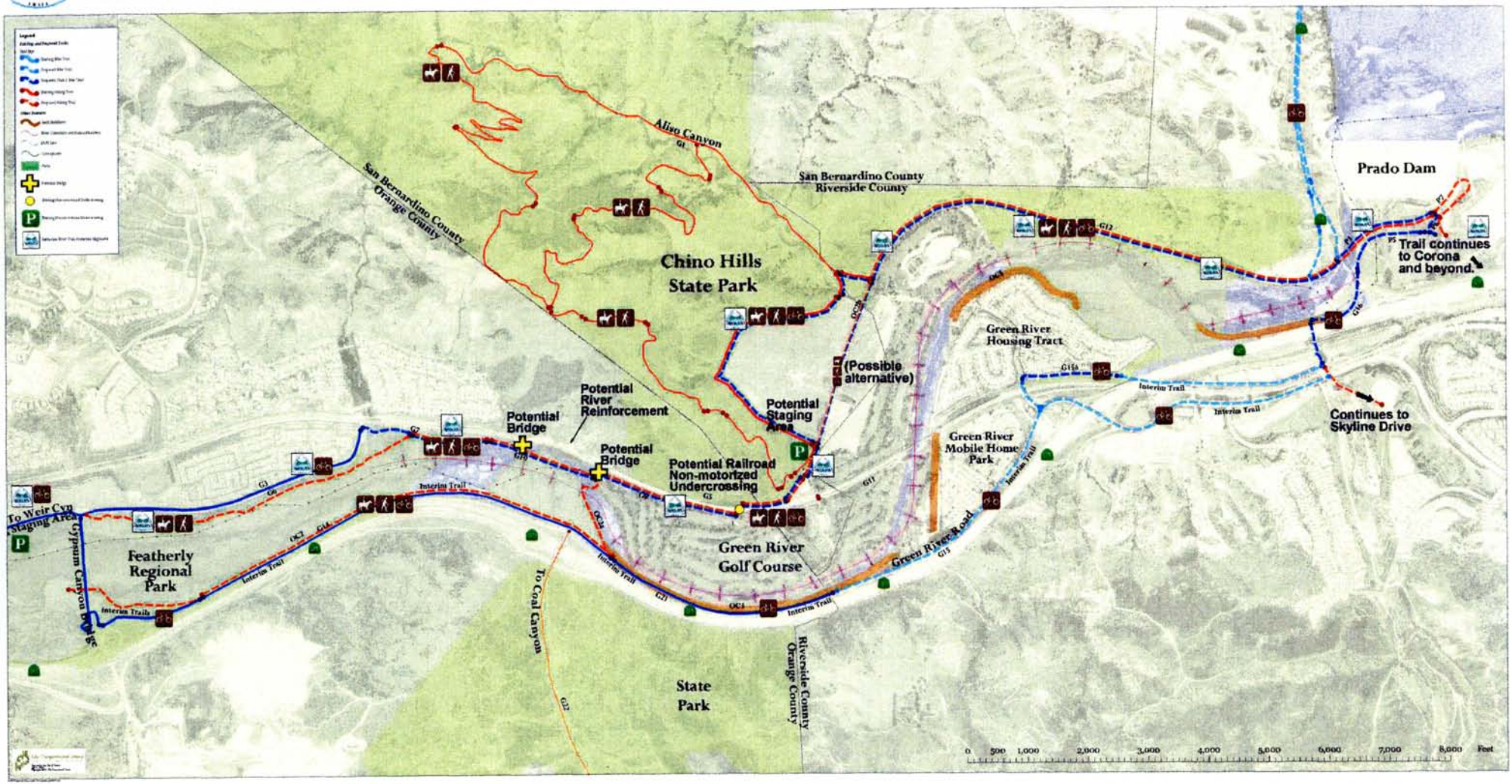
Please do not hesitate to contact me with any questions regarding this Scope.

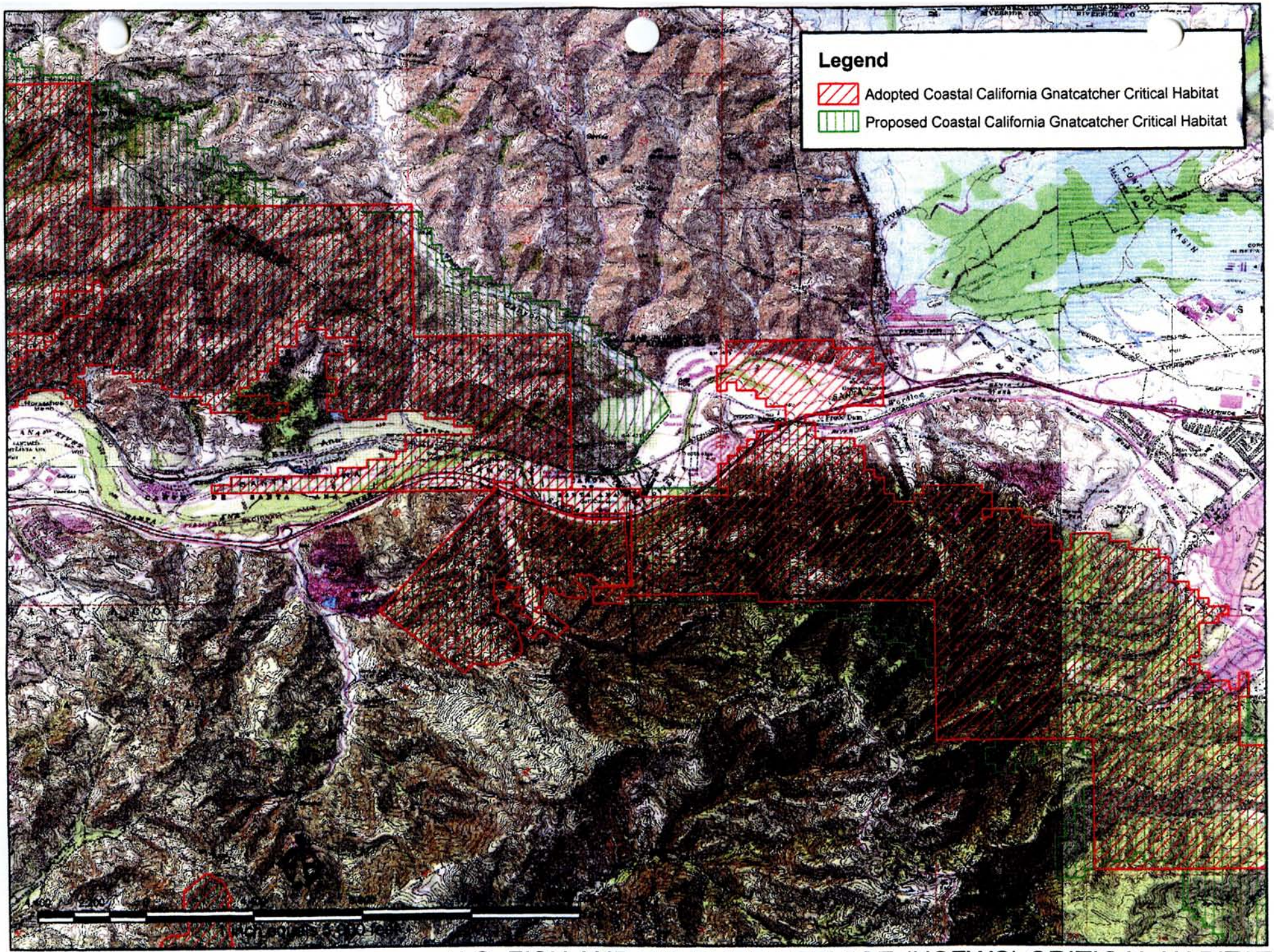
Sincerely,

Julie Vandermost
President

Cc: Tony Bomkamp, Glenn Lukos Associates

Santa Ana River Trail - Draft Alignment Study
Green River Golf Course - Preferred Routes Exhibit

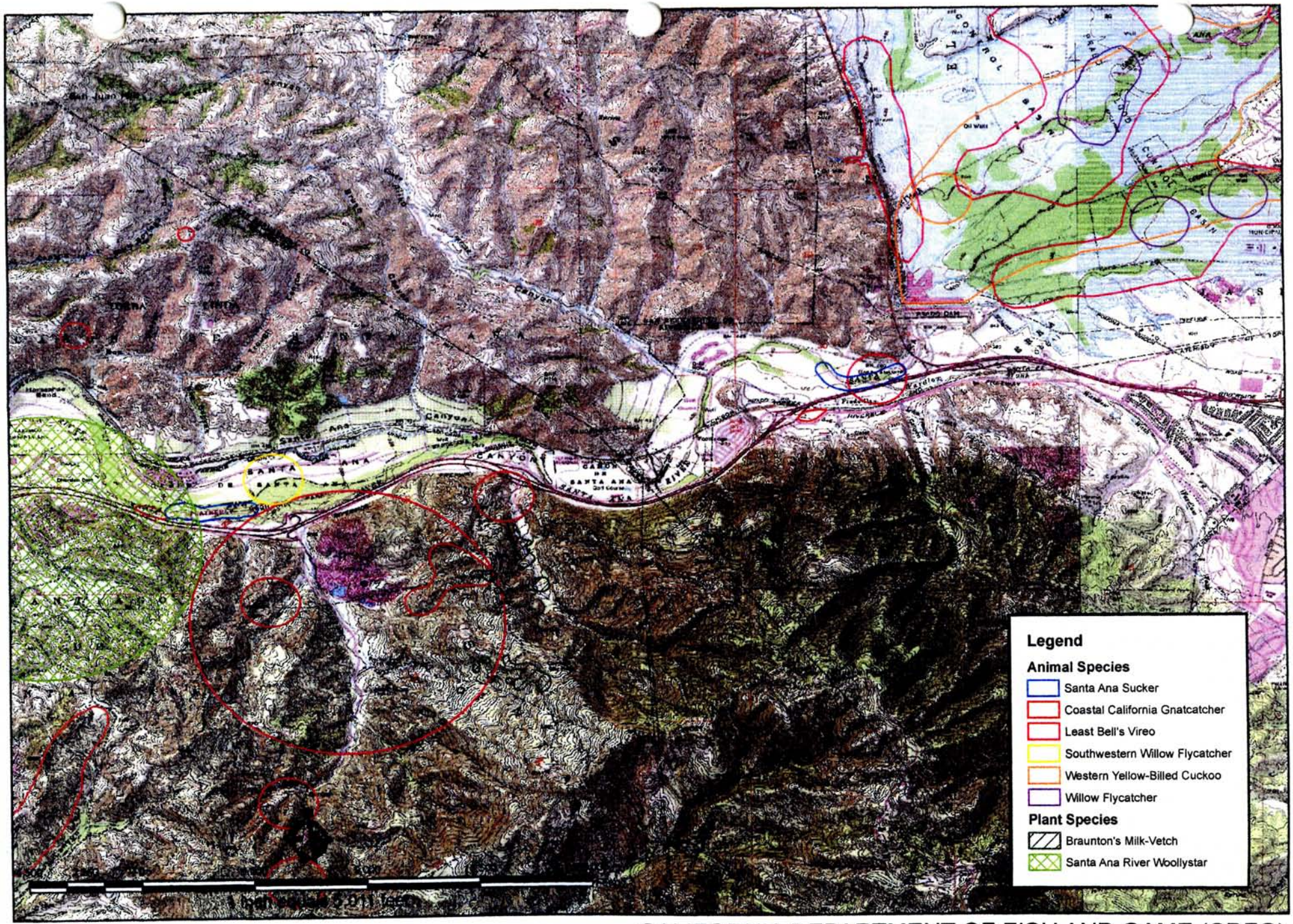




Prepared By: Vandermost Consulting Services, Inc.
(949) 489-2700
Prepared On: August 17, 2004
Data Sources: USGS, USFWS

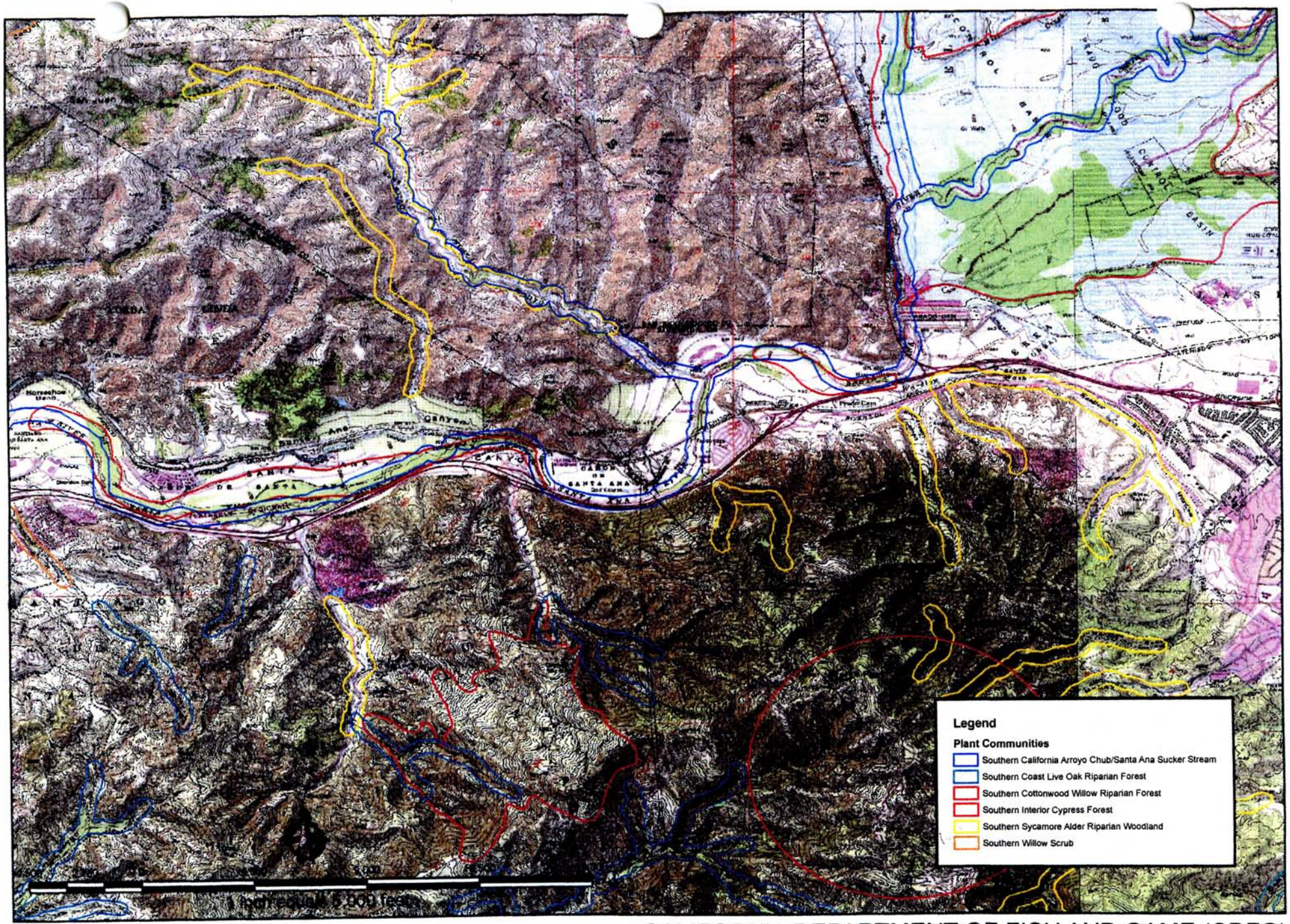
U.S. FISH AND WILDLIFE SERVICE (USFWS) CRITICAL HABITAT

SANTA ANA RIVER TRAIL



CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG)
CALIFORNIA NATURAL DIVERSITY DATABASE (CNDDB) ANIMAL AND PLANT SPECIES
SANTA ANA RIVER TRAIL

Prepared By: Vandermost Consulting Services, Inc.
(949) 489-2700
Prepared On: August 17, 2004
Data Sources: USGS, CDFG



CALIFORNIA DEPARTMENT OF FISH AND GAME (CDFG)
CALIFORNIA NATURAL DIVERSITY DATABASE (CNDDB) PLANT COMMUNITIES
SANTA ANA RIVER TRAIL

Prepared By: Vandermost Consulting Services, Inc.
(949) 489-2700
Prepared On: August 17, 2004
Data Sources: USGS, CDFG

MAINTENANCE COST ESTIMATES
Overview

Appendix G

Maintenance Cost Estimates

The maintenance cost estimates for the Santa Ana River Trail project were discerned from taking the per mile average costs of several similar facilities in California. San Bernardino, Riverside, Orange, San Diego and Sacramento Counties were surveyed to find relevant projects and costs. Several of the other estimates were a year or two old, so the samples were compiled onto a spreadsheet and updated at 3% (compound) inflation per year up to 2005. The resultant figures were then averaged for a best estimate of maintenance costs. **Average annual trail cost per mile is: $2,977.67 (Class I, Class II, and hike/equestrian trails) with fencing and landscaping average annual cost goes up to: $4,818.36 per mile in 2005 dollars.** This per mile cost was then extended out over the actual miles of trail in the conceptual plan.

Class I Bike Trails– Class I bikeway maintenance costs are estimated at $3,500 per mile. This estimate accounts for all applicable materials and labors to include bi-annual resurfacing and repair, monthly sweeping, and weekly trash removal.

Maintenance Access – Class I bike trails can be serviced by standard city street sweepers and refuse pick-up trucks, any narrowed or pedestrian access sites fall under normal liability of local agencies who operate under applicable laws and guidelines to minimize liability. This fundamental design ideology also allows for emergency vehicle access to class I bike trails and most equestrian trails.

Class II Bike Trails – Class II bikeways are generally maintained as part of the regular street repairs by the local authority, with some additions for sweeping, trash pick up, re-striping, and additional signage. An annual maintenance cost of $2,000 per mile can be used as a guideline for Class II bike trails.

Hiking/ Equestrian Trails - These multi-use trails are generally cleared and graded when first constructed and then the decomposed granite (DG) surfaces require minimal maintenance. These trails can experience erosion after heavy rain and may require periods of closure and reconstruction after an unusually heavy storm event. Local sources give and annualized trail estimate of $1,000 per mile.

The costs were also broken down by responsible jurisdiction, i.e. the City of Norco is responsible for the portions of the trails within the city boundary and thus the maintenance of those trails.

Trail Maintenance Cost Comparisons

Below are a few comparable figures from southern California cities in different stages of development. These cities are utilizing some volunteer labor where applicable and California Conservation Corps (CCC) where possible to cut some costs as noted.

[1] (2003 survey published in *The Squeaky Wheel*, SABA 2004)

Appendix G

Below are a few comparable figures from southern California cities in different stages of development. These cities are utilizing some volunteer labor where applicable and CCC where possible to cut some costs as noted.

City	Encinitas	Poway	Vista	Otay
Miles Trails	12 miles existing	80 miles planned	61 miles existing	72 miles existing
Trail Type	natural & paved	natural	natural & paved	natural
Cost per mile	$ 2,617*	$ 2,033	$ 2,050	$ 2,500

Appendix G

Maintenance Cost Estimates

Good faith estimate of annualized maintenance costs based on 2003 dollars, derived from similar projects in surrounding cities

	Gypsom Cyn Rd. - Prado Dam (GRGC)			Prado spillway - Rincon Street (Prado)			City of Corona (COR)			City of Norco (Nor)		
		G 14-18	Route 1		P 1 - 17a	Route 2		C			N	
	feet	miles	cost	feet	miles	cost	feet	miles	cost	feet	miles	cost
Bicycles												
Class I ($8500/mi.)	37152	7.036363636	$59,809.09	32199	6.098295455	$51,835.51	1122	0.2125	$1,806.25	22451	4.252083333	$36,142.71
Class II ($1000/mi.)	8402	1.591287879	$1,591.29		0	$0.00	10137	1.919886364	$1,919.89	24993	4.733522727	$4,733.52
								bike sub tot.	$3,726.14		bike sub tot.	$40,876.23
Equestrian and										**		
Hiking trails ($2000/mi.)	4078	0.772	$1,544.00	30584	5.792	$11,584.00	8330	1.578	$3,156.00	29032	5.498484848	$10,996.97
Multipurpose *	on bridge?			0	0	$0.00				Bridge to JCSD?		
*** cost depends on surface**												
		GRGC total	**$62,944.38**		**Prado Total**	**$63,419.51**		**Cor total**	**$6,882.14**		**Nor total**	**$51,873.20**

** mostly existing trails

Appendix G

Maintenance Cost Comparison

Annual Trails Maintenance Estimates*						compounded annually at 3% for inflation										ESTIMATED
	1998			**1999**		**2000**		**2001**		**2002**		**2003**		**2004**		**2005**
Encinitas	2617	0.03	78.51	2695.5	80.865	2776.4	83.291	2859.7	85.79	2945.5	88.364	3033.8	91.015	3124.8	93.75	**$3,218.58**
Poway	2033	0.03	60.99	2094	62.82	2156.8	64.704	2221.5	66.645	2288.2	68.645	2356.8	70.704	2427.5	72.83	**$2,500.33**
Vista	2050	0.03	61.5	2111.5	63.345	2174.8	65.245	2240.1	67.203	2307.3	69.219	2376.5	71.295	2447.8	73.43	**$2,521.24**
Otay	2500	0.03	75	2575	77.25	2652.3	79.568	2731.8	81.955	2813.8	84.413	2898.2	86.946	2985.1	89.55	**$3,074.68**
Corona		0.03						3175	95.25	3270.3	98.108	3368.4	101.05	3469.4	104.08	**$3,573.49**

* averaged cost of class I, classII, and hiking/equestrian trails

Average of above 5 Cities **$2,977.67**

Analysis with Fencing and Landscaping

		0.03				4000	120	4120	123.6	4243.6	127.31	4370.9	131.13	4502	135.06	**$4,637.10**
American River Pkwy						2000		2001		2002		2003		2004		

*estimate is based on devloped acre per year - includes fencing and landscaping
** estimate is compared with Mission Bay (San Diego), City of Encinitas, City of Sacramento, and East Bay Parks
Source: American River Parkway - Financial Needs Study, (2000), p11

Norco		0.03										4500		4854	145.62	**$4,999.62**
												2003		2004		

* 12' dg trails with Lodge pole fencing along surface streets.
Initial cost source: Brian Petree 2004
Norco cost details : 0.005 per sqft. then 0.071 per ft., then 373.35 per foot per mile, times 13 feet width (12' DG+ fence) = **$4853.58 ave trail cost per mile 2004**

last year detail: .00443 per sqft. Then 0.06557 per ft., then 346.21 per ft per mile, times 13 ft width = $ **4500.72 cost per mile 2003**

Average of above 2 cities with landscaping / fencing **$4,818.36**

APPENDIX H
Funding Sources

Appendix H

Potential Trail and Bikeway Funding Sources

Grant Source	Due Date	Agency	Approximate Annual Funding Total	Matching Requirement	Eligible Applicant	Eligible Project Type			Project Element	Contact Information
						Bicycle Commute	Bicycle Recreation	Trail		
Construction Funds										
Federal Funding										
Air Quality										
Congestion Mitigation and Air Quality (CMAQ)	Call for projects Summer, 2003	Not used for bicycles in Orange County; Small amounts will be available in San Bernardino County	Expect about $10 Million dollars total CMAQ for the next 2 year funding cycle. In the past about 1/2 of CMAQ funds have been used for bikeways.	11.47% - Reimbursement	Public agencies, cities, counties, transit operators, Caltrans	X				Sanbag Lisa Poe lpoe@sanbag.ca.gov Wrcog Kevin Viera 909-951-8305
Environmental										
Land and Water Conservation Fund	2-May-05	State Department of Parks and Recreation	$7.7 Million statewide - 60% to Southern California	50% - Reimbursement	States, cities, counties and districts authorized to acquire, develop, operate and maintain park and recreation areas.		X	X	Acquisition or development of outdoor recreation areas and facilities. Priority development projects include trails, campgrounds, picnic areas, natural areas and cultural areas for recreational use.	Orange County - Don Shapiro - 916-651-8575 - dshap@parks.ca.gov Riverside County - Barbara Baker - 916-651-7743 - bbaker@parks.ca.gov San Bernardino County - Cristelle Momeyer - 916-654-8686 - cmomeyer@parks.ca.gov
Rivers, Trails and Conservation Assistance (RTCA) Program	Oct. 1 Annually	National Park Service	Technical Assistance	N/A	States, cities, counties, citizen groups w/state or local government sponsor.		X	X	Corridor Conservation Plans: Statewide Rivers or Trails Assistance	Southern California Field office: 570 W. Avenue 26, Suite 175 Los Angeles, CA 90065 Phone 323-441-2117/9307 FAX 323-226-9235
Recreation										
National Recreational Trails	Oct. 1 Annually	State Department of Parks & Recreation	$2.2 M/yr statewide - subject to availability of Federal funds	20% (95% can be Federal dollars)	State agencies, cities, counties, jurisdictions, special districts, non-profits with management responsibilities over the land.		X	X	Acquisition of easements and fee simple title, construction of recreational trails and trailside facilities - up to 20% for plan preparation.	Orange County - Luan Aubin - 916-651-8573 - laubin@parks.ca.gov Riverside County and San Bernardino Counties - Sandy Berry - 916-651-7738 - sberr@parks.ca.gov

Appendix H

Potential Trail and Bikeway Funding Sources

Grant Source	Due Date	Agency	Approximate Annual Funding Total	Matching Requirement	Eligible Applicant	Eligible Project Type			Project Element	Contact Information
						Bicycle Commute	Bicycle Recreation	Trail		
U.S. Army Corps of Engineers 50/50 Program										Joy Jaysewal (213) 452-3851
Transportation										
TEA-21/ SAFETEA Transportation Enhancement Activities	Oct. 15 Annually	Local Metroplitan Planning Organization Caltrans and State Resources Agency	Not yet reauthorized OCTA uses approx. 50% of regional TEA for bike/pedestrian trails project - approx. $3.2 M.	None	Jurisdictions, special districts, non-profits with management responsibilities over the land.		X		For recreational trails to benefit bicyclists, pedestrians, and other users.	www.dot.ca.gov/hq/TransEnhAct SCAG - 213-236-1800 State Resources Agency Caltrans Local Assistance TEA Coordinators: San Bernardino - Ernie Rogers - 909-383-4578 Santa Ana - Alan Williams - 909-724-7805
State Transportation Improvement Program (STIP)	Biennially - even numbered years	For RTIP (Regional Trasnporation Improvement Program) (75% of projects) - RTPA (Regional Transportation Planning Agency) - Riverside County Transportation Commission For ITIP (Interregional Transportation Improvement Program) (25% of			Cities, counties, transit operators and Caltrans under sponsorship of a State Legislator	X		X	RTIP - projects that are needed to improve transportation within the region, including bicycle and pedestrain facilities ITIP - projects that are needed to facilitate interregional movement of people and goods and includes state highways Both may include permits, environmental studies, design, right-of-way acquisition and construction	County Regional Complex 4080 Lemon Street, 3rd Floor Mailing Address: P.O. Box 12008 Riverside, CA 92502-2208 Phone: 951-787-7141 Fax: 951-787-7920
Hazard Elimination Safety (HES) Program	November	Caltrans	$10 M annually (not all has been appropriated) Maximum grant = $500,000	10-20%	City and county agencies	X			Lighting, traffic signs, shoulder widening	Caltrans District Local Assistance Engineers District 8 464 West Fourth Street P.O. Box 231 San Bernardino, CA 92404 909-383-4030

Appendix H

Potential Trail and Bikeway Funding Sources

Grant Source	Due Date	Agency	Approximate Annual Funding Total	Matching Requirement	Eligible Applicant	Eligible Project Type			Project Element	Contact Information
						Bicycle Commute	Bicycle Recreation	Trail		
State Funding										
Air Quality										
MSRC - Mobile Source Air Pollution Reduction Review Committee	MSRC releases annual RFP's	Air Quality Management District	$12 M annually statewide	None known - can use AB2766 Subvention Funds from local districts as matching funds					Earmarked to reduce pollutant emissions from motor vehicles, including improvements to bicycle and pedestrian facilities that would decrease motor vehicle trips.	Eyvonne Sells - Air Quality Specialist MSRC Mobile Source Air Pollution Reduction Review Committee (MSRC) 21865 East Copley Drive Diamond Bar, CA 91765-4182
AB2766 Subvention Fund Program Local Air District Projects Funded by Vehicle Registration Surcharge	4 times per year (quarterly)	Apply to Local Juridictions	Unknown	Unknown	Cities, counties, Caltrans	X			Bicycle trails and lanes, bicycle staging near transit	To obtain a list of City and County contacts please request the booklet entitled: AB 2766 Subvention Fund Program Resource Guide from: South Coast Air Quality Management District 21865 E. Copley Drive Diamond Bar, CA 91765-4182
Environmental										
Environmental Enhancement and Mitigation Program (EEMP)	November Annually	State Resource Agency	$10 Million statewide 60% to Southern California - Grants limited to $250,000 each	Unknown		X	X		Roadside Recreational - roadside rest stops, bicycle facilities, scenic overlooks, parks and trailheads.	State Resources Agency - Carolyn Dudley - 916-653-5656 www.dot.ca.gov/hq/LandArch/eem/eemframe.htm

Appendix H

Potential Trail and Bikeway Funding Sources

Grant Source	Due Date	Agency	Approximate Annual Funding Total	Matching Requirement	Eligible Applicant	Eligible Project Type			Project Element	Contact Information
						Bicycle Commute	Bicycle Recreation	Trail		
Recreation										
Prop 40 per capita funds	Until City's share of funds is depleted	State Department of Parks and Recreation	**Per capita funds:** Chino - $186,301 Chino Hills - $312,000 Corona - $589,000 Riverside - $1,185,000 Yorba Linda - $267,000 Orange County - $8,006,000 Riverside County - $4,478,000 San Bernardino County - $4,858,000	None	Cities and counties	X	X	X	Eligible Projects include acquisition, development, improvement, rehabilitation, restoration, enhancement, and the development of interpretive facilities, of local parks and recreational lands and facilities. Per Capita grant funds can only be used for capital outlay.	Orange County - Don Shapiro - 916--651-8575 - dshap@parks.ca.gov Riverside County - Barbara Baker - 916-651-7743 - bbaker@parks.ca.gov San Bernardino County - Cristelle Momeyer - 916-654-8686 - cmomeyer@parks.ca.gov
Prop 40 Roberti-Zieberg and Regional Parks District funds	November 3 Annually	State Department of Parks and Recreation	Chino - $186,301 Chino Hills - $192,258 Corona - $362,853 Riverside - $729,497 Yorba Linda - $164,638 Orange County - $5,895,658 Riverside County - $3,297,919 San Bernardino County - $53,577,508	3/7 - non-state share			X		Acquisition, development and rehabilitation of parks and recreation land in urban and some non-urban areas. Most economically disadvantaged in area will be most competitive. Also special maintenance, but cannot be more than 30% of the grant	Orange County - Luan Aubin - 916-651-8573 - laubi/@parks.ca.gov Riverside County and San Bernardino Counties - Sandy Berry - 916-651-7738 - sberr@parks.ca.gov
Competitive Prop 40 Urban Parks and Park Poor Communities		State Department of Parks and Recreation	$190 Million statewide				X		Urban parks, and park poor communities	Orange County - Don Shapiro - 916--651-8575 - dshap@parks.ca.gov Riverside County - Barbara Baker - 916-651-7743 - bbaker@parks.ca.gov San Bernardino County - Cristelle Momeyer - 916-654-8686 - cmomeyer@parks.ca.gov
Transportation										
Bicycle Transportation Account (BTA)	Spring	Caltrans	$7.2 Million statewide	10%	Cities and counties	X			Contact local Caltrans district office for details. Element must be on approved bikeway plan.	Contact David Priebe at Caltrans david_priebe@dot.ca.gov
Safe Routes to School (AB1475)	Varies - likely May 2004	Caltrans	$18 Million statewide sunsets January 1, 2005 (may be funded in the future by State funds		Government agencies, non-profit groups, schools, community groups	X	X	X	Capital construction of trails that provide safe routes to schools.	Caltrans Local programs 916-653-4727 Local.Programs@dot.ca.gov

Appendix H

Potential Trail and Bikeway Funding Sources

Grant Source	Due Date	Agency	Approximate Annual Funding Total	Matching Requirement	Eligible Applicant	Eligible Project Type			Project Element	Contact Information
						Bicycle Commute	Bicycle Recreation	Trail		
State Highways Operations Planning Program (SHOPP)		Caltrans				X			Up to $750,000 per project for local roadway improvements, including widening state highway shoulders to accommodate bicycles.	Orange County - OCCOG, occog@occog.org WRCOG - Ruthanne Taylor Berger, Dep. Exec. Dir., 951-955-7985 SANBAG - Lisa Poe, lpoe@sanbag.ca.gov
Habitat Conservation Fund	October 5, 2005	State Department of Parks and Recreation	$2 Million statewide	50%-Non-State Match	Cities, counties and districts		X	X	Fee acquisition of land and easements for Trails.	Orange County - Luan Aubin - 916-651-8573 - laubi/@parks.ca.gov Riverside County and San Bernardino Counties - Sandy Berry - 916-651-7738 - sberr@parks.ca.gov
Office of Traffic Safety Program (OTS)	January 31, 2005	Office of Traffic Safety	Unknown	Unknown	State, city, county, non-profit with governmental host	X			Police traffic services, pedestrian and bicycle safety.	Office of Traffic Safety 7000 Franklin Blvd., Suite 440 Sacramento, CA 95823-1899 916-262-0990 916-262-2960 www.ots.ca.gov
Petroleum Violation Escrow Account (PVEA)	Ongoing	California Energy Commission - Sponsorship by state legislator required before approval by U.S. Department of Energy (DOE)	Varies - past bicycle grants in the range of $100,000	None known	Cities, counties, transit operators and Caltrans under sponsorship of a State Legislator	X			Bicycle facilities, Bicycle promotion programs.	Local California Legislator and Caltrans Federal Resources Office, Budgets Program at 916-7287

Appendix H

Potential Trail and Bikeway Funding Sources

Grant Source	Due Date	Agency	Approximate Annual Funding Total	Matching Requirement	Eligible Applicant	Eligible Project Type			Project Element	Contact Information
						Bicycle Commute	Bicycle Recreation	Trail		
Local Funding										
Recreation										
Quimby Act Fees						X	X		Developer's assessments to be used for construction of recreational facilities, including pathways. Fees within Coastal Zone must be used within the Coastal Zone.	
Developer Impact Fees	NA	Local Jurisdiction	NA	NA	Local jurisdictions	X	X	X	Developer's assessments to be used for construction of recreational facilities, including pathways.	Local jurisdiction
Transportation										
Local Sales Tax for Transportation Orange County Measure M San Bernardino County Measure I	Expires: Orange County - 2/0/11 San Bernardino County - 2/0/10	Local Jurisdictions in Orange and San Bernardino Counties	Measure M in Orange County provides money that could be used for bicycle lanes, but rarely, if ever is used for this purpose.	Unknown	Local jurisdictions	X			Unknown	Orange County - OCCOG, occog@occog.org SANBAG - Lisa Poe, lpoe@sanbag.ca.gov

Appendix H

Potential Trail and Bikeway Funding Sources

Grant Source	Due Date	Agency	Approximate Annual Funding Total	Matching Requirement	Eligible Applicant	Eligible Project Type			Project Element	Contact Information
						Bicycle Commute	Bicycle Recreation	Trail		
Foundation and Corporate Funding Sources										
Bikes Belong Coalition, Ltd.	Ongoing	National Park Service	Grants up to $10,000	These funds are intended to match state or federal dollars	Bicycle advocacy groups, government agencies and municipalities	X	X		Match money for bicycle facilities.	Tim Baldwin tim@bikesbelong.org Grants Program Administrator Bikes Belong Coalition, Ltd. 1368 Beacon Street Suite 102 Brookline, Ma 02446-2800 Phone:617-734-2111 FAX: 617-734-2810 Mail@Bikesbelong.org www.bikesbelong.org
Maintenance Funds										
State Funding										
TDA - Article 3 funds (Transportation Development Act)		Orange County Transportation Authority San Bernardino County Transportation Authority	Approx. 25% of total annually for bike trails maintenance - allocated on percentage of total existing miles of Class I bike trails	Require use within one year of allocation	Local jurisdictions	X			Bicycle and pedestrian facilities.	Orange County Transportation Authority 550 S. Main St. P.O. Box 14184 Orange, CA 92863-1584 714-560-OCTA San Bernardino County Transportation Authority San Bernardino Associated Governments 1170 W. 3rd Street, 2nd Floor San Bernardino, CA 92410-1715 Phone: 909-884-8276 FAX: 909-885-4407 info@sanbag.ca.gov

APPENDIX I
Newsletters

Help Plan our Trail

Do you think the Santa Ana River Trail is complete? Not yet. We want your best ideas to make this an outstanding trail experience. From bicyclists to equestrians, youngsters to seniors, we need fresh eyes and ideas on what to include and where to put it. Do you think the trail should connect up to the Savage Adobe historic site along the SR71 spur? Do you think access to Chino Hills State Park at Aliso canyon is a priority? Come tell us. We are currently setting dates for "a planning affair," covering the trail project through the west end of Orange County, Corona, Chino Hills, Norco, and Riverside. The dates and locations are currently being decided, so please watch for announcements.

SART Field trips November 2003

The recent field trips covered the following:

Gypsum Canyon Road to Prado Dam including access to Chino Hills State Park
SR71 adjacent to Prado Dam
Corona and Norco segments
Prado Basin
City of Chino, Savage Adobe, and the Dog Park area.

What is a Greenway

There is a recent rebirth of the greenway concept. Greenways traditionally encompass a river, park or open space land, including recreational trails, and provide connections to larger bodies of open space or water. They create a natural or green (as the name implies) coorridor in an otherwise urbanized area. As cities are increasingly creating large networks of interconnecting greenways and trails, the City of Riverside's new parks and recreation master plan calls for an "emerald necklace" of greenways around the city. The Santa Ana River, with its extensive size, year round flow, natural vegetation and developing trail network, provides a terrific opportunity to create a greenway in the Inland Empire.

Whats next?

In 2004 efforts will be focused on achieving the goals of the Caltrans Community Planning Grant, specifically developing a conceptual alignment for the entire trail and cost studies of the proposed alignments - in particular, for time-sensitive segments that need to be coordinated with work proposed by local agencies. The three main projects that are concurrent with the trail planning effort include the Army Corps of Engineers' Prado Dam raising project, Orange County Flood Control District's flood control efforts at Green River Golf Course and Caltrans' State Highway 71 widening. An important aspect of the current trails planning effort is coordinating with levee planning and flood control grading in a timely manner. Failure to coordinate planning would result in higher costs, possible gaps in the Trail and possibly the loss of important linkages.

2004 Bikeway and Trail Planning Effort Focus

Green River Golf Course to Prado Dam
Prado Dam Loop
Corona and Norco segments
Complete bicycleequestrian trails through Hidden Valley Wildlife Area to Marth McLean Park
Riverwash Loop

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Santa Ana River Trail Newsletter
Issue 1 January 2004

Caltrans Grant Awarded to Corona

City of Corona awarded Caltrans grant for Santa Ana River Trail and Greenway Planning

The City of Corona, under the leadership of Ned Ibrahim (Public Works), was recently awarded a Caltrans Community Planning Grant to complete the alignment for the Santa Ana River Trail and Greenway from Green River Golf Course through La Sierra, and in San Bernardino County.

The planning effort will develop a conceptual plan that incorporates a variety of community values, including recreational, transportation, interpretative, historic and environmental elements. To ensure a trail that meets the needs of people in the community, a series of public workshops will seek input about a important trailcomponents, including safety, amenities, linkages, watershed values and privacy concerns for community members. The meetings will include representives from a broad spectrum of backgrounds and experience and will follow an interactive format.

The planning effort is anticipated to culminate in agency approvals of the conceptual plan. John Chiu, Caltrans, Ned Ibrahim and Viren Shah, City of Corona and JoAnn Ross of The Dangermond Group will provide project vision and management and TKE Engineering and Vandermost Assoc. Inc. will provide support.

The dirt roads and equestrian areas along Green River Golf Course and south of Aliso Canyon is one alignments being considered for the Trail

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Inland Empire - Historical Overview

Southern California's mild climate, harbors, rivers, alluvial soils and flat terrain provided an ideal location for Native American hunting and gathering activities, and later, for early pioneer's agricultural development and ranching. Over time the citrus orchards, farms, and cattle ranches became small towns and cities with schools and churches, and these settlements were linked by stage trails and then private rail lines. At the end of the 19th century, hydroelectric plants were built in the canyons to capture energy from the water rushing down from the mountains. Droves of people were attracted to the cheap land and warm climate, and with them came money to build civic buildings and homes designed by some of the finest architects of all time. With the popularity of the automobile came an ever increasing network of roads and population. The history of Southern California is written in the remnants of the buildings, groves, vineyards, bridges, roads and power plants adjacent to the proposed Santa Ana River Trail and Greenway.

Architecture

Many fine examples of architecture proliferate along the Santa Ana River Trail. A wide variety of architectural styles can be found in the Cities adjacent to the Santa Ana River, including Mission and Spanish revival, ranch style and original Craftsman and Queen Anne Victorian architecture, to name just a few.

Transportation

In the late 1850's the Butterfield Stage line delivered mail and passengers from the east coast to Southern California, with a stage stop in Corona, near Prado Basin. But by the late 1800's the stage had been replaced with the railroad. Local travel underwent a similar metamorphosis with the advent of the electric railway 20-30 years later, lasting until the 1950's, when the popularity of the automobile and declining riderships caused the owners to sell the tracks, and automobiles became a way of life in Southern California. With increasing population and gridlock came the recent reintroduction of rail-based public transit. The Santa Ana River Trail and Geenway Project offers a great opportunity to link local neighborhoods to this system.

Visitors can still appreciate the romance of the old Trolley Bridge and Greenspot Bridge in San Bernardino, as well as the Railroad Depot in Riverside.

Coordination with the Railraods, Caltrans and the Army Corps of Engineers, as well as the seasonally changing river itself, will result in big benefits to the Santa Ana River Trail.

Water Management

The Santa Ana River watershed has many faces. In addition to serving as a source of water for the growing Inland Empire, it is also a source of hydro-electric power. Its tendancy towards seasonal flooding has resulted in two large dams, Prado Dam and 7-Oaks. Current efforts include conservation efforts directed at water quality and habitat preservation as well as planning appropriate recreational uses that showcase the river and provide a place for people to enjoy this wonderful resource.

Coordination of the Trail with the Army Corps' Prado Dam raising project will save money and result in a better trail alignment.

History of the Trail

In the 1960's enthusiasm was generated by men and women in all three Counties to build a trail along the Santa Ana River corridor from the ocean to the mountans. In the 1970's this enthusiasm was translated into action in Orange County which proceeded to build most of the Trail, completing it up to Green River Golf Course. In addition Riverside County purchased the river bottom necessary to complete a majority of the Trail in Riverside County. The economic downtrend of the 1980's halted the progress of the trail, until the three Counties organized an effort to create a plan for it's completion - the 1990 EDAW plan. Just as things were taking off again another recession caused a lapse in trail building. With the economic swing of the late 1990's enthusiasm once again brought leaders back together to complete the trail.

The restored Yorba-Slaughter Adobe adjacent to Prado Basin, is one of the oldest standing residences in San Bernardino County. Not only does it have historic value but it also houses horses, mules, and alpacas, and will make a great staging areas for the trail

Completion of the Trail

A meeting hosted by the City of Corona was called by Paul Frandsen, Riverside County Parks Director on August 27, 2003 to update agency staff regarding recent progress and future plans that would affect the Santa Ana River Trail. It was truly exciting to hear the amount of progress that has been made over the past 2 years.

At the top of the list was the passage of Proposition 40 with the $10 million dollars allotted evenly among the three Counties for use on the Santa Ana River. Particular thanks to David Myers at Wildlands Conservancy and to Daniel Cozad at SAWPA for their intensive efforts in working with legislators and ther Resource Department in making this happen.

Also, of great interest are plans by OCWD to include a hiking/equestrian trails element in their sinking basin

Completion of the Trail (cont.)

design just upstream from River Road. In the same area the Jurupa Community Services District is planning a trail along the north bank of the River from Prado Basin to I-15.

Orange County staff shared the progress by Withers, Sangren and Smith in preparing a conceptual plan for the completion of the trails from Yorba Linda to the Riverside County line which was funded by te Wildlands Conservancy. The Public Facilities and Resources Department spoke about their plans to purchase Green River Golf Course as partial mitigation for the Santa Ana Mainstem project.

David Myers gave an overview of the Resource Department rafting trip down the Santa Ana River and briefly described his vision to expand the trails vision to include a parkway.

The Riverside County staff is in the final stages of completing the segment of the trail from Mission Avenue to the San Bernardino County line. They plan on focusing their efforts on completing the trail through the Hidden Valley area and working with the Army Corps of Engineers to include a bicycle and hiking/equestrian trail through Prado Basin as part of the Dam raising efforts. Other remaining segments of the trail in Riverside County include the segment through the Green River Golf Course area and the segments through Corona and Norco. County staff expressed support of a bicycle route along the SR-71 corridor from SR-91 to Euclid Avenue.

The San Bernardino County staff is busy planning the trail from The Riverside County line to Alabama Street. They have obtained funding for the trail from the Riverside County line to Alabama Street. They will not be utilizing the Caltrans funds, but anticipate completing the trails planning in time to include in the final report to Caltrans.

Santa Ana River Trail Newsletter Issue 2 June 2004

Trails Planning Progress

Planning Overview

The Santa Ana River Trails planning effort has been proceeding in three phases. The first phase encompasses the area downstream from Prado Dam in the Green River Golf Course area; the second phase addresses the trail east of Prado Dam through Corona and Norco to Hidden Valley; and the third phase addresses the trail north of Prado Dam to Chino and Chino Hills, including potential alignments along the SR-71 route.

Phase 1 - Gypsum Canyon Road to SR-71

A primary consideration for Phase 1 has been coordination with agencies involved in proposed and potential future flood control, SARI line protection, and roadway projects, in time to meet deadlines for use of existing funding resources.

Additional opportunities for this phase include developing an enjoyable, cost effective route that takes into account potential habitat conflicts and the Santa Ana River meander which extends from SR-91 on the south to the BNSF Railroad tracks on the north.

The meander of the Santa Ana River abuts the Railroad tracks in the Green River Golf Course area.

In preparation for a joint agency meeting regarding the trail alignment between Gypsum Canyon Road and Prado Dam, an Opportunities and Constraints Exhibit including cost estimates has been compiled. This exhibit incorporates suggested trail alignments supplied by Orange County staff. Also included in the exhibit is information regarding parcel ownership and railroad right of way.

Phase 2 - Prado Dam to Hidden Valley

Prado Basin

The second phase also entails considerable agency coordination, expecially in Prado Basin and Norco. Staff from the City of Corona, River-

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side County Parks and The Dangermond Group met with the Army Corps of Engineers and presented a potential alignment for bicycle and equestrian/hiking trails in Prado Basin between SR-71 and Rincon Street. The alignment proposed was developed to maximize the proposed Army Corps maintenance roads and levees, and avoid, where possible, valuable habitat and wildlife corridors. A possible 50/50 construction funding match was also discussed. The Army Corps is currently reviewing this proposed alignment through PradoBasin.

Corona

Beyond Prado Basin, a safe route through developed areas of Corona and Norco will need to be identified. Flooding on the east side of Prado Basin is an important consideration in developing the bicycle route.

Recent flooding on Butterfield Drive serves as a reminder to keep the trail on high ground where possible

Norco

Orange County Water District staff attended a multiple agency field trip and shared their preliminary plans for a nexus of equestrian trails on the proposed levees that compose the backbone of the River Road Project. Additional conversation revolved around the potential for using the maintenance road along the south bank of the river as a Class I bicycle trail and the possible constraint represented by limited access to ths road.

Riverside County

The opportunities for bicycle and hiking/equestrian trails along the south side of the river presented by Orange County Water District's River Road project could be combined with the proposed Jurupa Community Services District's trail along the north bank of the river to create a loop trail between River Road and Hamner Avenue. To complete this loop trail, alignment options linking the trails at River Road and Hamner Avenue are being studied, including consideration of alignments bypassing the narrowing of the river just south of Hamner Avenue.

Riverside

The trail through La Sierra is being jointly planned by County of Riverside staff and owners of the La Sierra property adjacent to the County property. The Dangermond Group has prepared a prelimnary plan on behalf of the property owners, which is being reviewed by Riverside County staff for evaluation and comments.

Phase 3 - Prado Dam to Pine Avenue

Third phase studies will consider the linkage from Prado Dam to Pine Avenue. Routes along the SR-71 corridor will be discussed with Caltrans and alternate routes east and west of the highway are being explored. Staff from San Bernardino County and the Cities of Chino and Chino Hills will study linkages between the Chino and Chino Hills proposed trails systems and the County trails system.

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The Regional Picture

The proposed Santa Ana River Trail alignments provide links to several adjoining trail system, including trails in Yorba Linda, Corona, Chino Hills State Park, Norco, Jurupa, Riverside, Chino, Chino Hills and Hidden Valley.

GRGC Alignment

West of Gypsum Canyon Rd. bicycles can access Class 2 bicycle lanes on Via Lomas de Yorba E in Yorba Linda from the existing maintenance road/bicycle route along the north side of the River. Further east all users can connect to Chino Hills State Park at Coal Canyon. At Aliso Canyon they can access the Park from the SAWPA easement road along the perimeter of Green River Golf Course. These linkages provide further access to local and regional trail systems in Los Angeles, Orange, Riverside and San Bernardino Counties.

Existing maintenance road/bike path inYorba Linda east of Gypsum Canyon Rd.

Connection from Santa Ana River Trail to Aliso Canyon trail in Chino Hills State Park

Corona to Hidden Valley

In Corona the proposed Santa Ana River Trail alignment would connect with the proposed Temescal Wash Bicycle Trail south to Lake Elsinore.

Further east in Norco, the trail would provide access toRiverside County's proposed northbound multi-use trail adjacent to the River Road Bridge. This alignment would provide a connection to Prado Park and further west to the City of Chino's proposed trail system. It would also provide a second link to the proposed eastbound Jurupa Community Services District's (JCSD) multi-use trail along the northern bank of the River to Hamner Ave. This trail would connect three adjacent parks proposed by JCSD, City of Norco and Jurupa Recreation District. This alignment creates the potential for a loop trail on both sides of the River from River Rd. to Hamner Ave. at such time as a future crossing at Hamner Ave. can be created.

Adjacent to Norco, in Riverside, the proposed trail alignment would link to the proposed Norco Hills trail heading south to the City of Corona bicycle trail system, potentially creating a loop trail on the east of the City of Corona.

Prado Dam to Chino Hills/Chino

Heading north from Prado Dam an alignment along SR-71 is being proposed to unite the City of Chino HIlls trails with the City of Chino trails systems, including trails along Chino Creek, Mill Creek and Cucamonga Creek. This, potentially would create a loop trail around Prado Basin by way of theRiver Rd. Bridge.

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Santa Ana River Trail Newsletter **Issue 3 August 2004**

Making Regional Connections

Progress Update

Recent planning efforts for the Santa Ana River Trail conceptual alignment project have included the creation of preferred trails alignments from Gypsum Canyon Rd. in Yorba Linda east through Prado Basin to La Sierra. As part of the decision making process, interested agency staff were invited to participate in joint meetings where information was shared and the merits of various trail alignments were discussed. The resulting alignments reflect an effort to create trails that are affordable, provide alternate regional transportation connections, and respect wildlife corridors and native vegetation. In keeping with Liveable Communities concepts, routes that enhance quality of life by avoiding the congestion, fumes and noise of motor vehicles and providing an experience-enriching scenic route are designated as preferred.

GRGC Alignment - Gypsum Canyon Rd. to Prado Dam

Several trail alignments between Gypsum Canyon Rd. and Prado Dam were considered at a meeting on June 23 at the City of Corona. In particular three routes were discussed, including a route sandwiched between SR-91 and the River (Southern Route), a route north of the River and south of the Burlington North Santa Fe (BNSF) railroad tracks (Northern Route) and a route north of the tracks. The route north of the tracks was quickly disqualified because of right-of-way problems and slope-slippage of adjacent hills.

Steep, unstable slopes, north of BNSF railroad tracks

The equestrian trail west of Green River Golf Course would wind through historic orange groves

The preferred Northern Route offers many desirable qualities. It would be quiet, beautiful and permanent. However, because Flood Control plans in this area have not yet been made public, a trail alignment cannot be finalized, and it is possible that the final acquisition of land/easements and flood control improvements might be as much as a decade away. Also, this multi-use alignment would require two bridges where the river abuts the BNSF tracks, adding significantly to the cost of the alignment. Things get easier and less expensive upstream, where the Northern Route could use of the Santa Ana Watershed Project Authority (SAWPA) easement northwest of the golf course to provide a relatively low-

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cost, permanent route that would link to the proposed trail alignment in Prado Basin (see "The Regional Picture" below).

The existing regional bike path inYorba Linda, located on the south side of the river adjacent to SR-91can be seen across the River from the cart path in Green River Golf Course

Alternatively, a Class 1 trail sandwiched between SR-91 and the River (Southern Route), while it might be the less expensive and more timely alternative, would be hot and noisy. , and might be temporary depending on future widening plans for SR-91. Because the trail segment downstream of Green River Rd. exists as a regional bicycle trail and upstream bicyclists use existing roadways to connect to the City of Corona bicycle trail system, the cost of this route would be comparatively low. Due to the increasing price of construction materials, it is difficult to predict the exact cost of completing and formalizing this alignment, but most likely it would not exceed $350,000, making it possible for the Southern Route to serve as a viable alignment until plans and funding could be worked out for Northern Route - possibly a decade away.

Bicyclists currently use existing roads to connect Corona to he existing regional bike path in Yorba Linda

While there is adequate room for a hiking/equestrian trail adjcent to the bicycle trail between Gypsum Canyon Rd. and Green River Golf Course (GRGC), due to limited space further east, it would need to veer north and join the Northern Route heading east as described above.

Prado Basin

To minimize wildlife impacts and contain costs, the connections from the proposed GRGC alignments to both the proposed Prado Basin and SR-71 alignments would use the proposed Army Corps of Engineers (ACOE) maintenance roads alongside the river channel.

A view of construction in Prado Basin shows the alignment of the river channel which will be sandwiched between two maintenance roads

The Northern Route would access a proposed ACOE maintenance road along the north side of the main channel by way of the SAWPA easement. It would cross the river from the north to the south side of the River using a proposed Army Corps of Engineers (ACOE) bridge just downstream from the inlet structure headwall and proceed upstream along the southern perimeter of Prado Basin on the south side of the river (the Prado Basin alignment). The ACOE maintenance road on the north side of the channel would also provide access to a route along the SR-71 highway corridor.

The bluff along SR-91sin provides excellent views of Prado Basin

The Southern Route would also connect Yorba Linda to Prado Basin and SR-71 alignments by way of an ACOE maintenance road, this time along the south side of the channel, crossing the ACOE bridge from the south side to the north side of the River.

From the inlet headwall, the proposed Prado Basin alignment would incline to the spillway basin and then climb the bluff along the southern perimeter of Prado Basin, adjacent to SR-91, thus avoiding habitat on the floor of the basin. It would follow the southern perimeter of Prado Basin upstream to the ACOE auxilliary dike where the bicycle trail would be sited on top of the dike and the hiking/equestrian trail would dip to parallel the base of the dike. Near the eastern end of the dike the bicycle trail would descend to join the equestrian trail in an alignment along the southern perimeter of Prado Basin. The trails would continue to the proposed Corona wastewater treatment dike where they again would split. The hiking/equestrian trail would wind across Prado Basin to the western and then the northern perimeter of Corona Airport, daylighting at Rincon St. just north of the water treatment ponds. To avoid flooding, the bicycle trail would be situated on the wastewater treatment plant dike and follow the bluff east over a small drainage channel and then decline to follow the base of the bluff along the southern perimeter of Butterfield Stage Park. It would then climb the ACOE levee and on to Rincon St. Continuing as a Class 1 bicycle trail adjacent to a realigned south-eastbound lane of traffic on Rincon St. it would be joined by the hiking/equestrian trail as they continue along Rincon St. to Stagecoach Dr. No habitat would be impacted along the northbound lane of traffic.

North of the wastewater treatment plant in Corona the equestrian trail would traverse the floor of Prado Basin to gain access to Rincon St.

A view of the existing Rincon St. alignment heading north

Corona to Hidden Valley

Two potential routes are being considered through Corona and Norco - a Class 1 and a Class 2 route.

The preferred Class 1 route would provide an aesthetic route at the base of the bluff in Corona from Stagecoach Rd. and Corydon Ave. to Bluff St. and River Rd. However, habitat and construction costs may influence a decision for Class 2 bike lanes along Corydon Ave. and River Rd. Equestrians and hikers would use existing trails along Stagecoach Dr. and Bluff St. with the exception of a small segment of additional trail proposed along the north side of Stagecoach Dr. from Corydon to the Norco City limit.

Existing roadside equestrian trail in the City of Norco

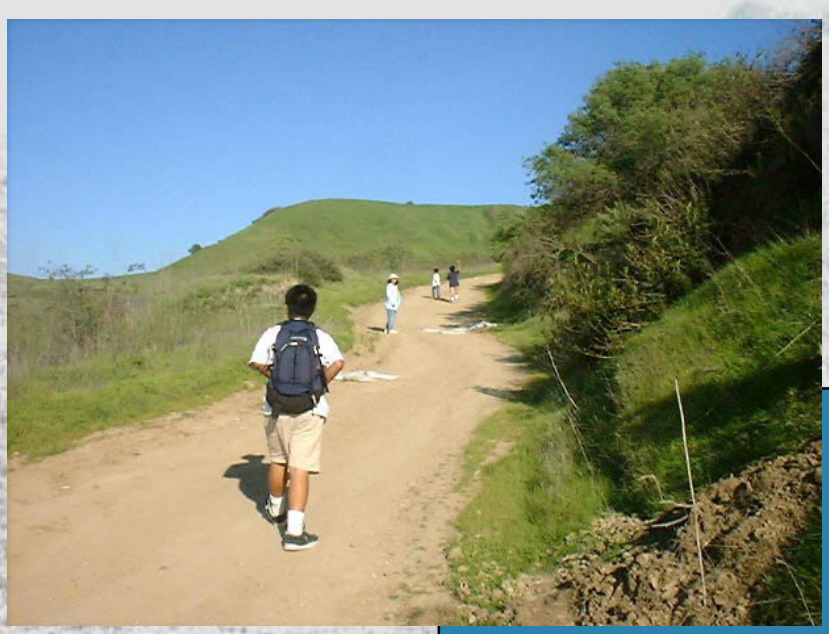
At the corner of River Rd. and Bluff St. the bicycle trail would turn to the River and utilize the Orange County Water District's (OCWD) proposed perimeter road to the existing staging area across from Wayne Makin Park in Norco. OCWD is also proposing a series of equestrian trails within their project boundary.

Bluff St., north of River Rd., could provide access to the River Road Bridge project multi-use trail and the Orange CountyWater District River Road project perimeter road

Further upstream, trail users could access the Orange County Water District River Rd. project perimeter road from the existing staging area in Norco

Upstream again, both Class 1 and Class 2 routes are proposed. The preferred Class 1 trails would utilize the proposed ACOE toe stabilization base to just south of Hamner Ave. The feasibility of a Class 1 trail route between the ACOE toe stabilization project and the ACOE bluff stabilization project is unclear at this time. Therefore, alternatively, the trail would exist as Class 2 bike lanes in Norco, and roadside equestrian trails, connecting upstream to the ACOE bluff stabilization project east of Old Hamner Rd.

Further upstream, preferably both trails would proceed in the riverbed to link to the proposed trails in Hidden Valley. Alternatively, Class 2 bicycle lanes would link to Hidden Valley by way of Pedley Ave. 8th St., Crestview Dr. and Arlington Ave.



APPENDIX J
Public Workshop

Appendix J

Public Workshop Summary

Location: City of Chino Hills Council Chambers
December 9, 2004

A Public Workshop was hosted on December 9, 2005 to present an overview of the Santa Ana River Trail planning effort. Invitations were mailed or emailed to agency staff, local bicycling and equestrian groups, and attendees at the annual Santa Ana River Trail Symposium. Additionally, notices were posted in local newspapers.

Approximately fifty people, representing bicyclists, equestrians, hikers, local community members and agency staff attended the meeting.

A brief summary of the Trail's history opened the meeting and was followed by a Power Point presentation of the planning process and proposed trail alignments.

The intention of the presentation was to inform the public about opportunities and constraints in the project area, describe the process through which the proposed trail alignments were chosen, and to stimulate conversation and comments during breakout sessions that were conducted during the latter part of the workshop.

Attendees were encouraged to write down their comments and paste them on the trail exhibits. These comments have been compiled into a summary worksheet by project area wherein comments were assigned to four basic categories:

NA	No Action	These comments may have been already addressed by the plan, or they were non-specific.
DG	Design Guidelines	These comments referred to design issues and suggestions that are incorporated in the design and maintenance guidelines
AA	Agency Agenda	These comments identified issues that are more relevant to specific jurisdictional concerns
FS	Further Study	These comments reference issues that are beyond the scope of this study and are expected to be part of future planning efforts

Also, specific written responses to each of the comments were added to the worksheet, including information about how suggestions are expected to be addressed.

Appendix J

Public Workshop December 9, 2004
Public Comments

Comment entries are lettered in the order they were received and to avoid creating a hierarchy or preference. There are four categories of response:
NA - no action/addressed in existing plan
DG - deal with in design guidelines
AA - refer to appropriate agency agenda
FS - conduct further study

Type	*ID #*	*Segment #*	*Comment*	*Response*
I GRGC Map Area:				
General				
NA	1	All	This is the best thing I've seen in years.	
NA	2	All	Participants seemed pleased with the trail and bikeway alignments (facilitator) .	
Access & Alignments				
NA	3	G24	Access to Chino Hills State Park is very important.	There is a proposed linkage from the SART to Aliso Canyon trail. See State Parks trail map (Appendix K).
NA	4	G5, G9a	At "County Line" need access across golf course.	Bridge over railroad tracks and alignment adjacent to golf course are proposed.
NA	5	G12, G24	Yorba Linda residents would really appreciate an equestrian trail from Yorba Linda to Chino Hills State Park by lower Aliso canyon. A staging area would be great for users from the east, so they can ride into Orange County or Yorba Linda existing plan.	There is a proposed linkage with staging area, from the SART to Aliso Canyon trail. See State Parks trail map (Appendix K).
NA	6	G27	Fresno Canyon has great access to new trails for biking and joggers existing connection.	This is outside the scope of this project area.
DG	9	G5, G9a	We do need a safe crossing over the railroad.	Proposed bridge over the river.

Appendix J

Public Workshop December 9, 2004
Public Comments

Type	ID #	Segment #	Comment	Response
AA	10	G12, G24	Clearer picture needed of equestrian trail through Chino Hills State Park, up Aliso Canyon and then where?	There is a proposed linkage from the SART to Alison Canyon trail. See State Parks trail map (Appendix K).
FS	7	G3, G20	Trail is adjacent to neighborhoods along Creek Drive near Gypsum Bridge, how are you addressing concerns about trail users, horse smells, etc. – maintenance.	Bicyclists currently use this trail. Equestrians will be separated from the street by a minimum 5' vegetated strip. Also, Design Guidelines recommend equestrians pack out horse manure in sensitive areas.
FS	11	G15	Preserve bikeway access to golf course access (near G15).	Orange County Public Facilities and Resources Department (PFRD) needs to study this as they finalize their plans for flood control improvements.
FS	8	G5, G9a	The potential railroad bridge (near Green River golf Course clubhouse) may require long ramps to get up to grade, might need to be as high as Metrolink (2 stories).	Future engineering studies will be necessary to determine the best approach for crossing the railroad tracks at this location
Facilities & Materials				
DG	12	G5	Chain Link Fencing: 6 foot only fair, 8 – 9 feet more ideal. Fence height for equestrians near trains or at night.	Higher fence heights have been incorporated into the design guidelines.
DG	13	G9a	Staging areas need to include room for autos/trucks with horse trailers.	Major staging areas are recommended to include room for adequate equestrian parking.
DG	14	G5	Don't use chain link fencing; try to find something more aesthetically pleasing.	Where feasible trailside planting is recommended. Where fencing is required the design guidelines propose green vinyl clad fencing with green slats.
DG	15	G5	How about putting "slats" in fences near trains and freeways?	Where feasible trailside planting is recommended. Where fencing is required the design guidelines propose green vinyl clad fencing with green slats.
AA	16	All	Keep signage consistent throughout the entire trail, San Bernardino – Riverside – Orange.	

Type	ID #	Segment #	Comment	Response
Environmental & Maintenance				
DG	19	G5	What about horse manure drawing cow birds and their impacts on Gnatcatchers? Please provide maintenance to clean horse manure off trails at least weekly.	Design Guidelines recommend equestrians pack out horse manure in sensitive areas.
FS	20	All	Plant native trees and restore vegetation along trails to reduce habitat destruction.	This is proposed where appropriate.
II State Route-71 and Prado Basin				
General				
NA	21	All	Kudos to the long term visionaries, it may take another generation (I hope not) but all contributors can take pride in this legacy project.	
DG	22	All	North Prado Region: 1. Construction & Maintenance costs, 2. Fire & Police protection, 3. Restrooms?	See Appendix D for Construction & Maintenance Cost Estimates. See Appendix G for Fire and Police Department comments. Protection will be provided by local jurisdictions. Restrooms will be provided in the major staging area at Auto Center Drive and in existing and proposed parks adjacent to the trail.
DG	23	All	North Prado – Safety, Traffic, Homeless, and Children.	This portion of the trail will be built and maintained by local jurisdictions. Please see Appendix K to determine jurisdictions.
DG & FS & AA	24	All	Issues: safety, endangered species, maintenance, and lights.	These issues have been addressed in the Design Guidelines (Appendix B) . More specific decisions will be made in the next stages of planning the trail.
DG	25	All	Safety is the biggest concern.	Safety issues have helped drive the alignment decisions for this project. However, many safety issues will more specifically addressed in the next phases of planning.
DG	26	SR-1	Is there a noise buffer along SR-71?	No. However, where possible the trail will be eingineered below grade which will provide a natural noise buffer.

Appendix J

Public Workshop December 9, 2004
Public Comments

Type	ID #	Segment #	Comment	Response
AA	27	All	Can you develop a website with agency links back and forth for information and education and environmental interpretation?	Because of the multi-jurisidictional nature of the trail, there are several existing websites, including: http://www.ci.corona.ca.us/depts/pubworks/transit/pdf/SART_Newsletter_IIIBU.pdf http://www.healthycities.com/sart_goals.htm http://www.sawpa.org/projects/planning/sart.htm http://www.wildlandsconservancy.org/projects_santa.html
FS	28	All	Provide an art component with some percentage of the funding, sponsor a contest to promote trails, links, and associated structures.	Good idea for future study.
Access & Alignments				
DG	29	SR-1	Regards SR71: Keep cars off the bikeways and bikes off the highways.	The bikeway is proposed to be separated by a K-rail and where practical, grade separation.
DG	30	Sr-1	What safety will the proposed fencing provide the bikers along SR-71?	The bikeway is proposed to be separated by a K-rail (concrete) and where practical, grade separation.
DG	31	All	Can you provide fast and slow lanes similar to the beach trails, maybe walking versus bike lanes?	This is proposed in this plan. See maps, orange trails are slow, blue are fast.
DG	32	All	Can you make the trails wider in merging and connector areas.	Incorporated into the design guidelines.
DG	33	All	All trails should maximize scenery and views.	
DG	47	P14 & P17A	We need a fence or some other barrier on Rincon Street.	The design guidelines propose a K-rail barrier.
FS	34	Sr-1	Use other underpasses for trail access to Chino Hills State Park, south of Butterfield Ranch Rd.	This is a decision for State Parks. They have approved the Aliso Canyon link.
AA	49	P14 & P17A	Suggest on Rincon there be a multi-use trail and (2) Class II bike lanes.	The street crossings at Smith Ave. and Rincon St., Corydon Ave. and Stagecoach Dr. required of a Class 2 bikeway, would be dangerous. Alternately a K-rail is recommended for separation of a Class 1 Bike path from motorized traffic.

Appendix J

Public Workshop December 9, 2004
Public Comments

Type	ID #	Segment #	Comment	Response
Trails Facilities & Materials				
DG	35	All	Provide information kiosks with shade and water.	A minimum of signage with shade is recommended. Water will be available at existing and proposed parks and the proposed staging area at Auto Center Dr.
DG	36	All	Sign equestrian trails where special conditions exist (near rail roads). Some horses are boom-proof, most are not.	Incorporated into the design guidelines.
DG	38	All	Make trail user friendly, educational, incorporate signage, sound, lighting, and restrooms.	A minimum of signage with shade is recommended. Water will be available at existing and proposed parks and the proposed staging area at Auto Center Dr. Lighting opportunities are limited due to their impacts on wildlife
FS	37	SR-1	Beware of too much lighting, some is needed as on SR-71 for commuters, but natural areas should not be lit like city streets.	Proposed lighting is for low lumen lighting incorporated into the K-rail.
Environmental & Maintenance				
DG	39	Sr-1	How much of an impact is horse waste near a riparian area and how can it best be managed (Chino Creek at Euclid Ave.)?	Design Guidelines recommend equestrians pack out horse manure in sensitive areas.
DG	40	P1-P17a	Keep people out of Prado Basin and keep the basin OFF the trail (animals, vegetation, and run off). How will this be addressed?	Where feasible the trail alignment has been proposed for areas with the least impact possible. Since many animals are nocturnal and no lighting has been proposed for habitat areas, impacts are minimized. Fencing has been proposed for highly sensitive areas. Design Guidelines recommend equestrians pack out horse manure in sensitive areas.
DG	41	All	Teach environmental issues along the trails to make people more sensitive to wildlife. Do they need to be quiet? What do they need to know along the way?	Interpretive signage is proposed in the design guidelines. Orange County Water District offers tours of their facilities in the Basin.
DG	42	All	1.Disruption to endangered species are a concern. 2. Avoid killing animals by traffic. 3) Pay attention during breeding seasons. Signage	Where feasible the trail alignment has been proposed for areas with the least impact possible. Since many animals are nocturnal and no lighting has been proposed for habitat areas, impacts are minimized. Fencing has been proposed for highly sensitive areas. Design Guidelines recommend equestrians pack out horse manure in sensitive areas.

Type	ID #	Segment #	Comment	Response
DG	43	All	Bike and pedestrian access near wildlife crossings, how will you keep people out of sensitive areas?	Where feasible the trail alignment has been proposed for areas with the least impact possible. Since many animals are nocturnal and no lighting has been proposed for habitat areas, impacts are minimized. Fencing has been proposed for highly sensitive areas. Design Guidelines recommend equestrians pack out horse manure in sensitive areas.
FS	44	All	Find a solution to putting a trail through a sensitive environment (Prado), there has got to be an answer.	There is no perfect answer. However, avoiding sensitive areas, providing fire buffers, fencing the trail in sensitive areas, limiting use to daylight hours, walking bicycles in ultra sensitive areas, informative signage and removing animal wastes have been incorporated into this plan to address safety and environmental issues.
III Corona Norco Map Area				
General				
NA	45	All	In 100 years this is going to be a wonderful legacy.	
Access & Alignments				
DG	46	All	Make as much Class I bikeway as possible off the city streets and away from the horses.	Long-range that is the plan. However, in the short term an alternative Class II Bicycle alignment is proposed.
FS	48	All	Keep trails as far from houses as possible for example, around Bluff St.	The trails are proposed to be placed mid-slope, held in place with a retaining wall.
Trails Facilities & Materials				
DG	50	All	Use slats in chain link fences to make better screening and privacy.	Where feasible trailside planting is recommended. Where fencing is required the design guidelines propose green vinyl clad fencing with green slats.
DG	51	All	Can you have split rail fences to maintain the rural character of the area?	Separation of trails by a 3 foot minimum vegetated berm is recommended.

Appendix J
Public Workshop December 9, 2004
Public Comments

Type	ID #	Segment #	Comment	Response
Environmental & Maintenance				
DG	52	All	Do not fill in any arroyos or other sensitive natural areas.	Culvert crossings will be used where needed.
FS	53	All	Use fencing that allows for wildlife movement between the river corridor and the upland areas.	Coordination with biologists will be on-going to determine the best way to protect wildlif and people.
AA	54	All	Provide native plant materials for landscaping and to decrease loss of habitat areas.	The proposed trail alignment, primarily uses man-made structures such as levees and maintenance roads. Native plants are being planned adjacent to these structures.
AA	55	All	Is there a plan to plant trees along the trail and maintain the leaves and branches and litter?	The proposed trail alignment, primarily uses man-made structures such as levees and maintenance roads. Native plants are being planned adjacent to these structures. Trails will be maintained by local jurisdictions. Please see Appendix B for general recommended maintenance guidelines.

City of Corona in partnership with the Counties of Orange, Riverside and San Bernardino, Caltrans, and the Cities of Chino, Chino Hills and Norco

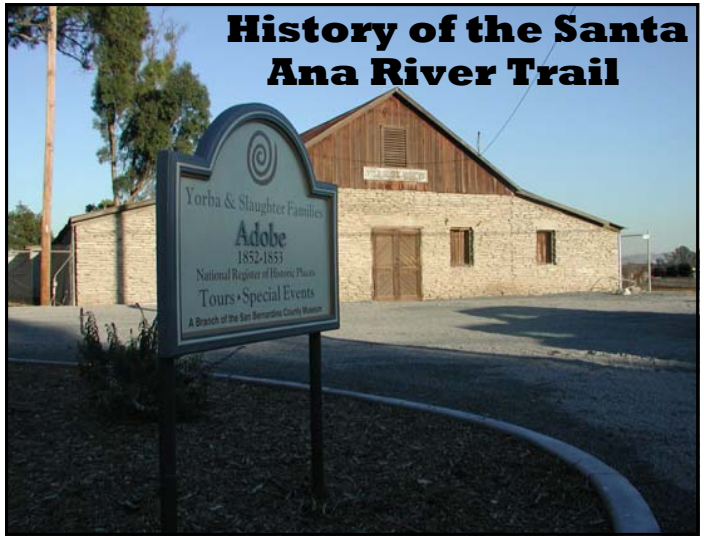
Santa Ana River Trail Conceptual Plan

Public Workshop

May 9, 2004

Prepared by
The Dangermond Group

Funding for this project was provided by
Caltrans, the Riverside County Regional Park and Open Space District and the City of Corona



History of the Santa Ana River Trail

The Santa Ana River area was first proposed as a State Recreation Area in 1955.

The value of the river corridor came into focus with the first "Crest to Coast Trail event" in 1969, this event traversed the entire way, 110 miles from the San Bernardino Mountain crest to the Orange County coastline.

In 1977 the Santa Ana Trails project gained National Recreational Trail status and was conceived to connect with the Pacific Crest Trail.

History of the Trail 1977 - Present

The 1980s brought more inquiry and demands for a public trails system as the surrounding areas grew rapidly.

In 1990 the first master plan for the entire trail was completed outlining the goals and phases for each segment.

Development along the trail route led to a revision of the 1990 master plan from 2201-2002, under the leadership of the Santa Ana Watershed Project Authority.

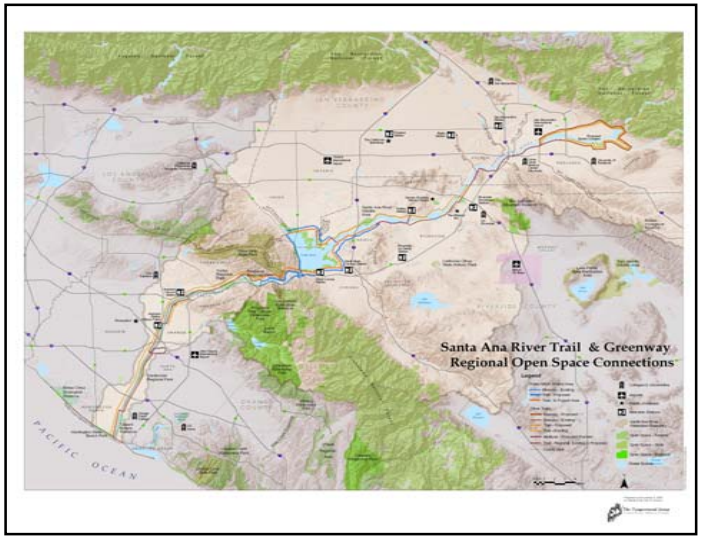
The baton was passed to the City of Corona in 2003, culminating in the proposed Conceptual Alignment overviewed in the following presentation. This project proposes to seek approval of the Conceptual Alignment by key City and County agencies in preparation for seeking funding of construction costs of the trail.

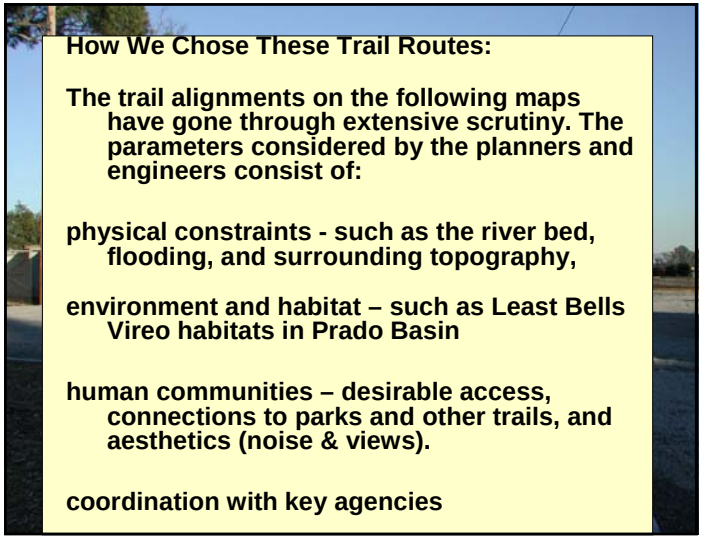
Regional Project Overview

This conceptual trail plan outlines the designs, alignments, and costs for finishing the hiking, biking, and equestrian trail system to make it continuous through the region.

The Geographic scope of the plan covers the eastern edge of Orange County, the western portion of Riverside County and the southwestern portion of San Bernardino County.

With this plan the Santa Ana Trail planning will be mostly completed, with the exception of a few small portions that still need to be finished, mostly in San Bernardino County





How We Chose These Trail Routes:

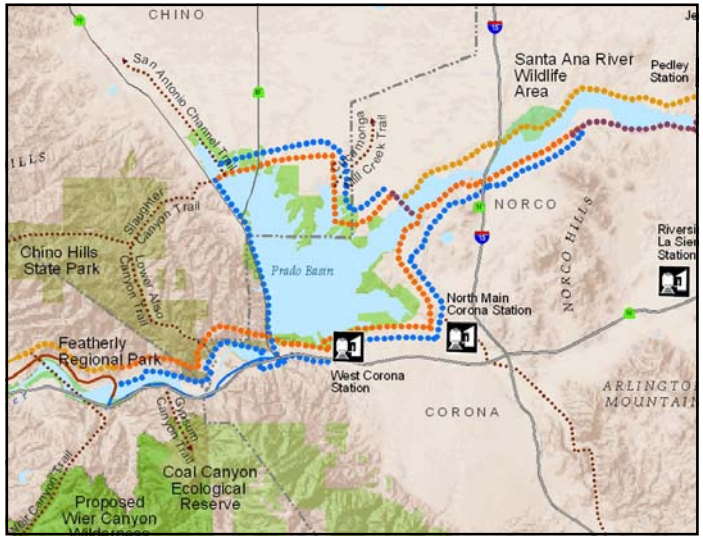
The trail alignments on the following maps have gone through extensive scrutiny. The parameters considered by the planners and engineers consist of:

physical constraints - such as the river bed, flooding, and surrounding topography,

environment and habitat – such as Least Bells Vireo habitats in Prado Basin

human communities – desirable access, connections to parks and other trails, and aesthetics (noise & views).

coordination with key agencies



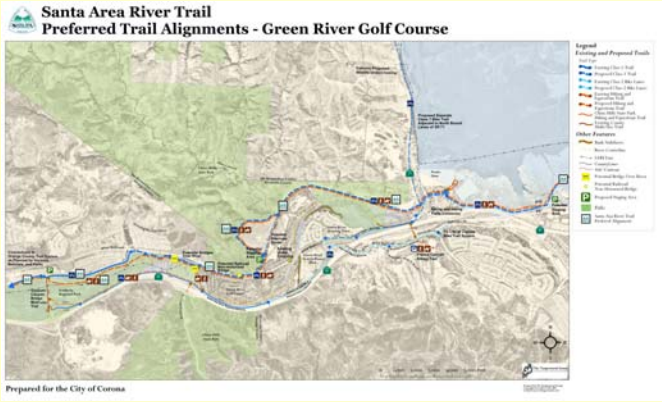
What We Expect to Accomplish this Evening:

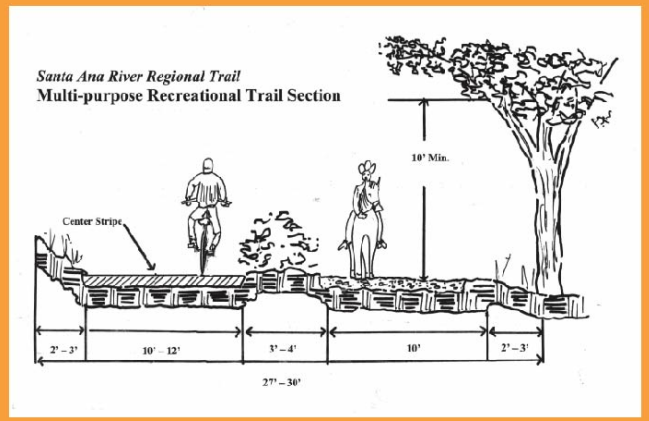
We hope to gather comments and insights on access, designs, safety, alignments, connectivity, and environmental issues.

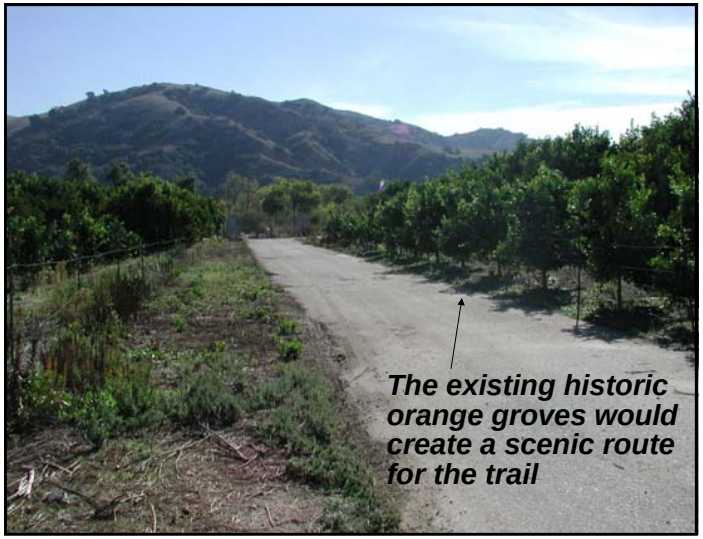
We especially want comments from hike, bike and equestrian users.

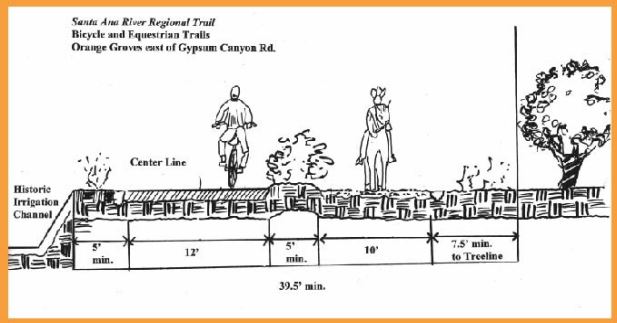
We propose to gather the comments tonight, review and incorporate them as possible, and circulate a summary with the revisions.

If you would like to receive a copy of the summary please get your name and address on the sheet.

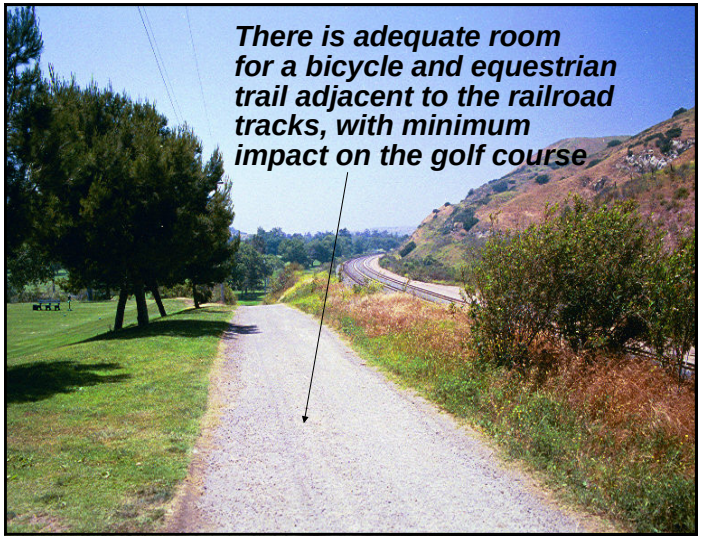


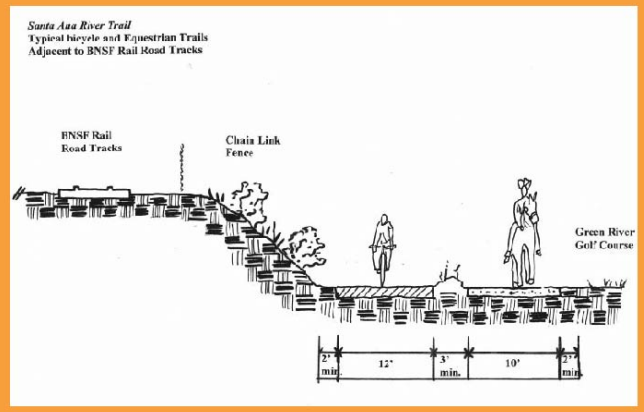


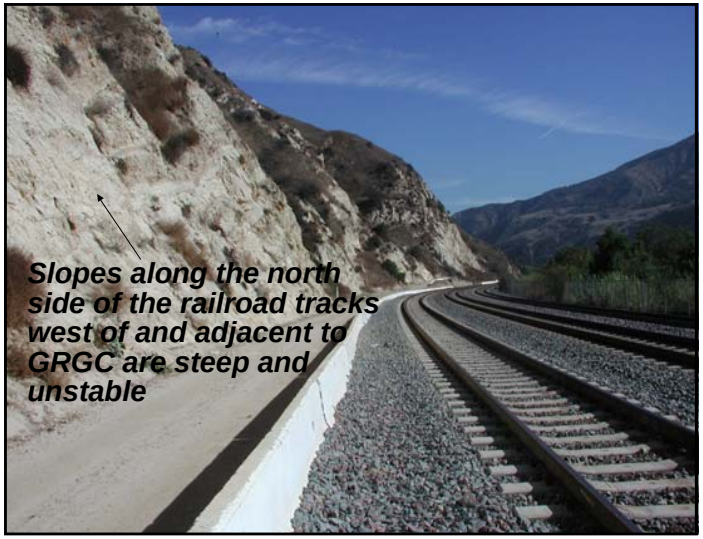


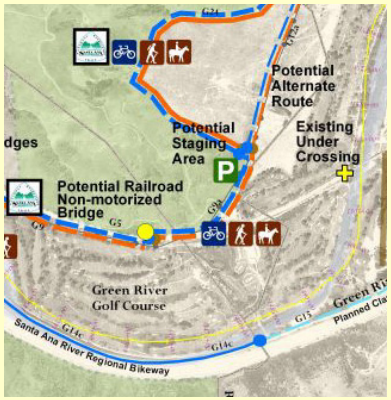


Green River Golf Course
Potential Bridges over River

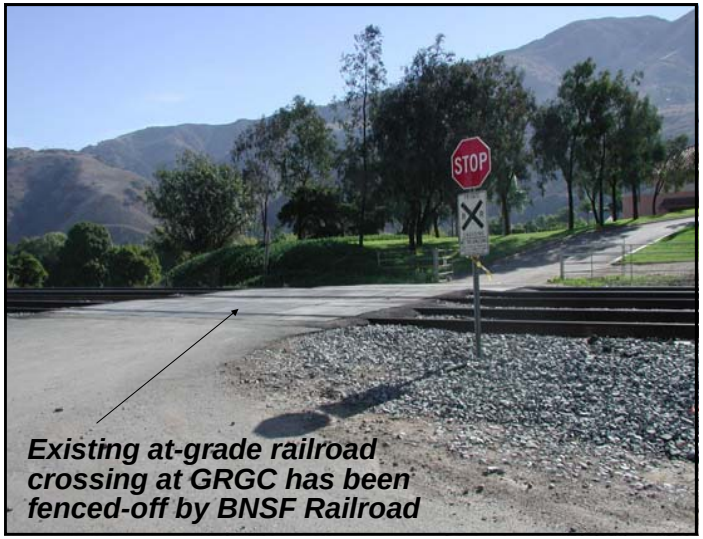




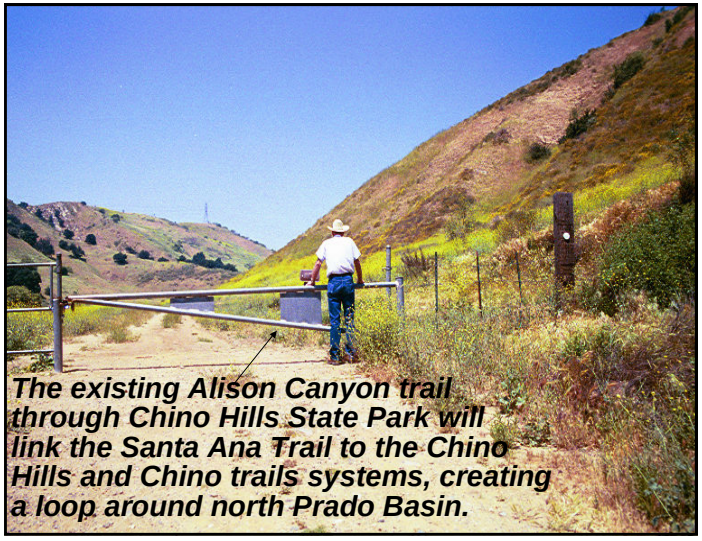




Green River Golf Course
Railroad Non-Motorized Bridge

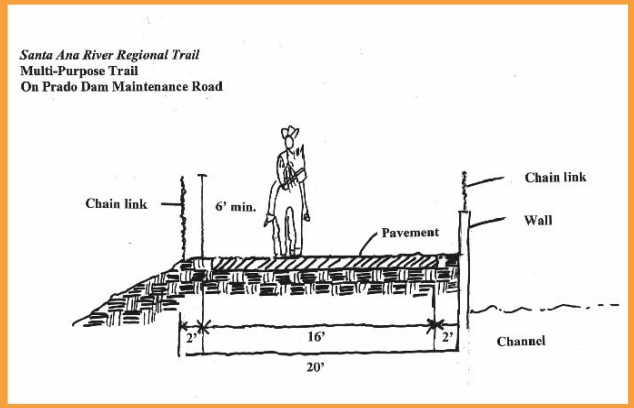


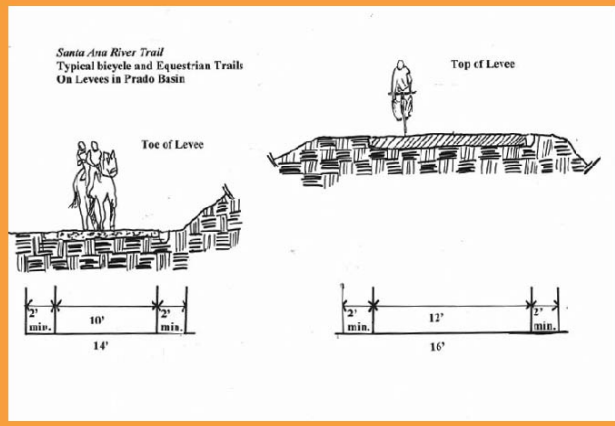
Green River Golf Course to SR-71
Potential Trail Alignments



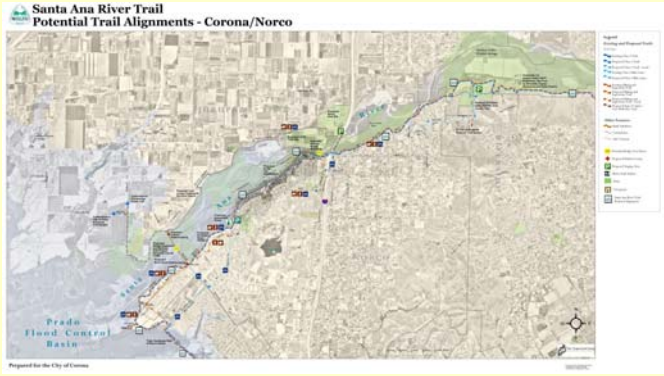
Prado Basin and SR-71 Potential Trail Alignments

Close-up Map of Prado Dam

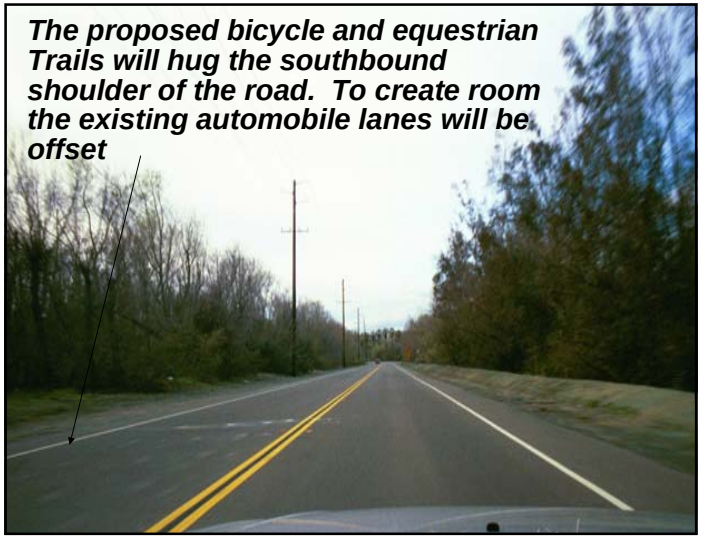


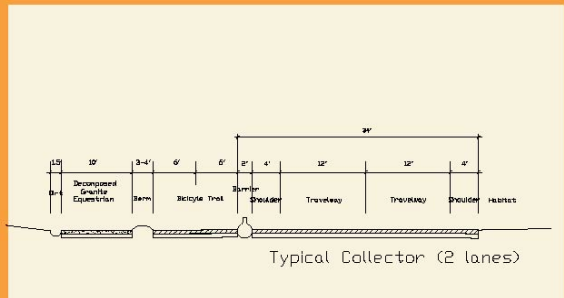


Corona/Norco
Potential Trail Alignments

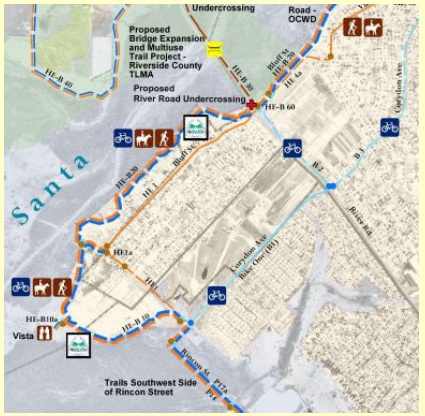


Potential Trail Alignments

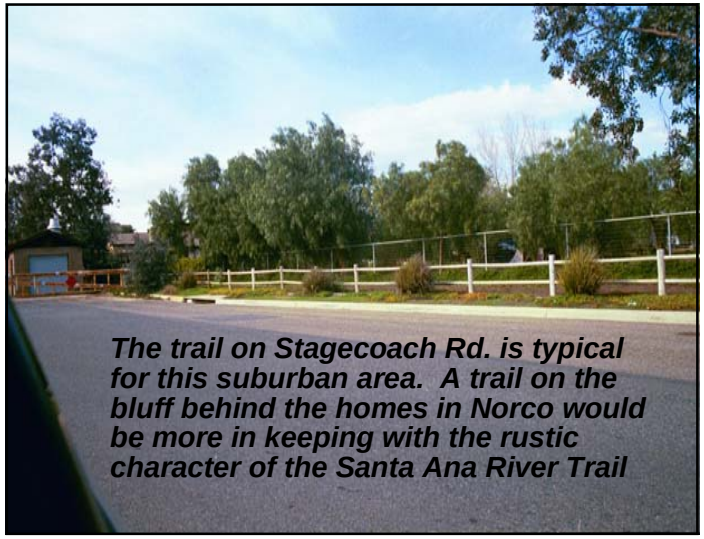




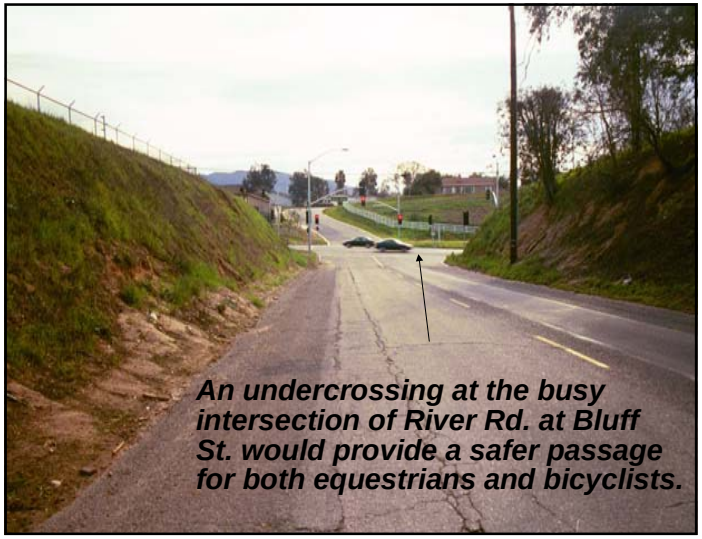
Proposed Bicycle and Equestrian trails
Rincon Street, west of Smith Avenue
City of Corona, CA



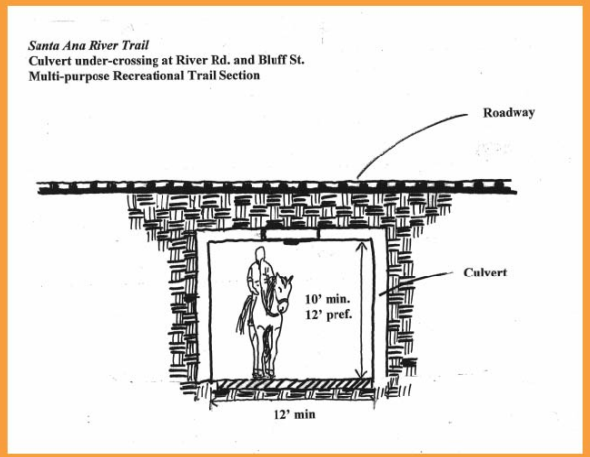
Corona/Norco
Potential Trail Alignments

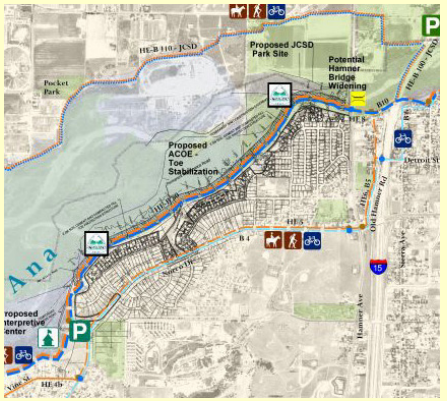


The trail on Stagecoach Rd. is typical for this suburban area. A trail on the bluff behind the homes in Norco would be more in keeping with the rustic character of the Santa Ana River Trail

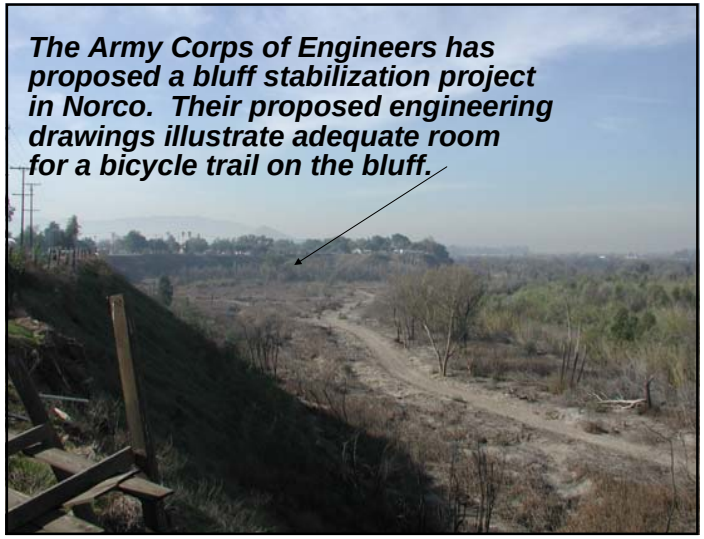


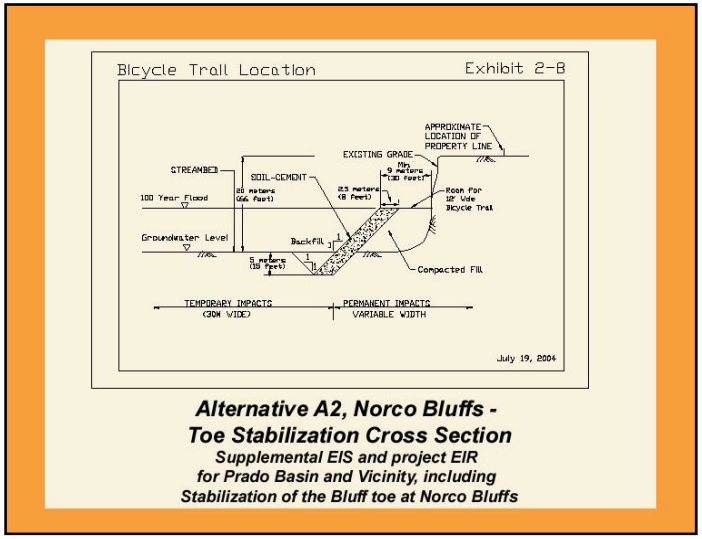
An undercrossing at the busy intersection of River Rd. at Bluff St. would provide a safer passage for both equestrians and bicyclists.





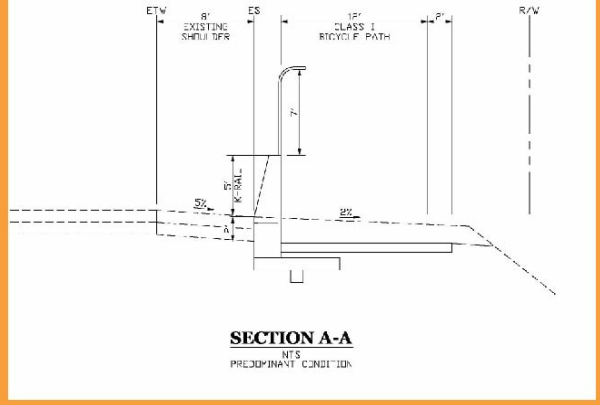
Corps Bluff Stabilization in Norco
Potential Trail Alignments

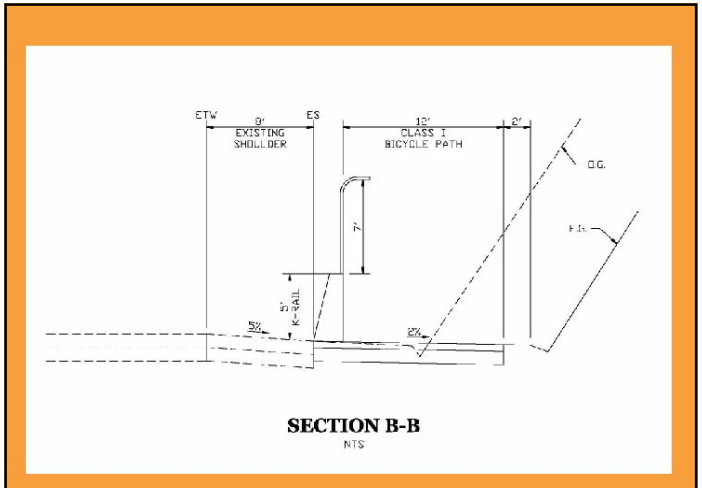


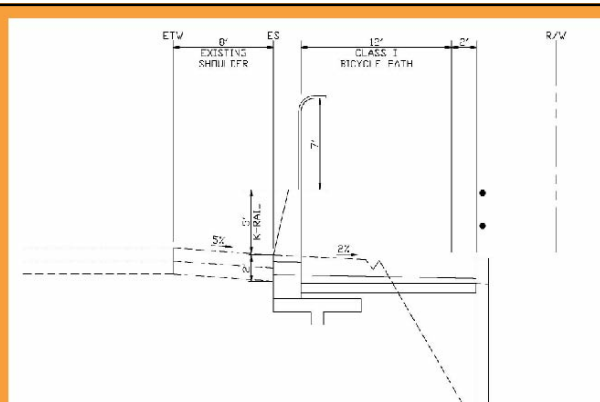


Alternative A2, Norco Bluffs - Toe Stabilization Cross Section
Supplemental EIS and project EIR for Prado Basin and Vicinity, including Stabilization of the Bluff toe at Norco Bluffs

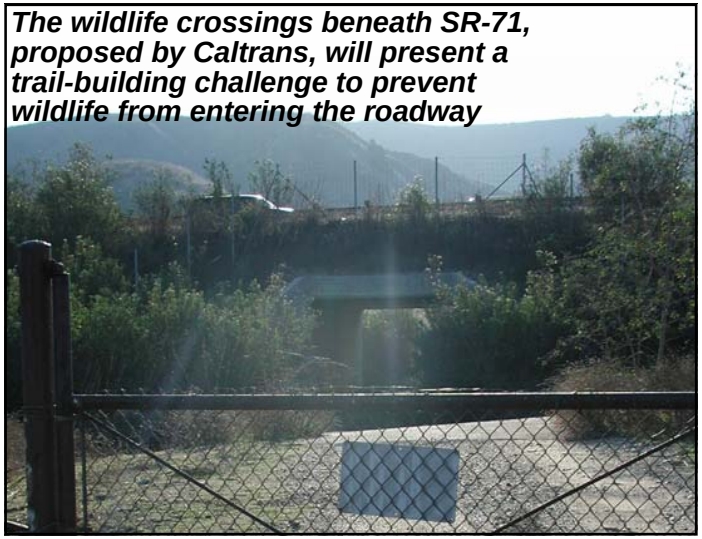
Prado Basin and SR-71 Potential Trail Alignments







The wildlife crossings beneath SR-71, proposed by Caltrans, will present a trail-building challenge to prevent wildlife from entering the roadway



Estimated Costs – All Trails

County	Total Miles	Total Cost – Million
Riverside	38 Miles	$14.87 M
San Bernardino (Visitor's Center, Camping and Interpretive Nodes)	24.5 Miles	$29.0 M
Orange	8.5 Miles	$2.5 M

Projected Total Cost – Gypsum Canyon Road to Hidden Valley Wildlife Area	
GRGC/Prado Basin	$8.6 M
Corona/Norco	$6.9 M
SR-71	$4.0 M
Total Construction	$19.5 M
Total Construction with 20% Contingency	$23.4 M

Estimated Total Costs - Santa Ana River Trail Only - Gypsum Canyon Road to Hidden Valley Wildlife Area

Projected total cost	
GRGC	$3.2 M
Prado Basin	$4.4 M
Norco/Corona	$4.5 M
Total Construction	$12.1 M
Total Construction with 20% Contingency	$14.52 M

Estimated Total Costs – Alternate Class II and On-street Eqeustrian - Gypsum Canyon Road to Hidden Valley Wildlife Area

Projected total cost	
GRGC	$1.0 M
Norco/Corona	$ 3.3 M
Total Construction	$ 4.3 M
Total Construction with 20% Contingency	$5.16 M

Please take a moment to reflect, then go to the tables and give us your best thoughts.

SANT-DEC

SANTA ANA RIVER TRAIL PUBLIC WORKSHOP

December 9, 2004

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Agency TRAILS 4 ALL	92702.4048	Pager
~~GENDER~~		E-Mail JMEYERTY4@AOL.com
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Title SENIOR LANDSCAPE PLANNER	CHINO HILLS CA	FAX " " 2795
Agency CHINO HILLS	91709	Pager
		E-Mail RSANDERS@CHINOHILLS.ORG
Name ENRIQUE ARROYO	Address 17801 Lake Perris Dr	Phone 951 940-5664
Title DISTRICT PLANNER	Perris, CA 92571	FAX
Agency STATE PARKS		Pager
		E-Mail earroyo@parks.ca.gov
Name D.P. MYERS	Address 29611 OAKGLEN RD #17	Phone 909-797-8807 x17
Title Santa Ana River Coordinator	Oak Glen ~~RD~~, CA 92399	FAX 909 797-4377
Agency The Wildlands Conservancy		Pager
		E-Mail DMYERS@wildlandsconservancy.org
Name Rudy M. Romo	Address 6075 Kimball Ave.	Phone (909) 993-1720
Title Enviro Planner	Chino, CA 91710	FAX (909) 597-8875
Agency Inland Empire Utilities Agency		Pager
		E-Mail rromo@ieua.org
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Title	CORONA 92882	FAX
Agency		Pager
		E-Mail HEXIRMN@

SANTA ANA RIVER TRAIL PUBLIC WORKSHOP

December 9, 2004

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SANTA ANA RIVER TRAIL PUBLIC WORKSHOP

December 9, 2004

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SANTA ANA RIVER TRAIL PUBLIC WORKSHOP

December 9, 2004

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APPENDIX K
Agency Comments

Santa Ana River Trail

General Review Comments
from
Caltrans Staff

December 9, 2004

Environmental Comments:

City of Corona described Santa Ana River Trail as 110 miles covering from the Pacific Ocean to an eventual connection with the Pacific Crest Trail in the San Bernardino Mountains.

The current project for a portion of the SART that was the subject of this meeting appears to be mostly located in the County of Riverside.

It is currently sponsored by the City of Corona.

The City of Corona described that the funds they have for project development at this point are for alignment design and planning in something more than just Corona or Riverside County.

Part of the project is expected to be in Riv91 R/W, Riv71 R/W, and a small portion on SB71 R/W.

The project will cross ACOE managed federal lands in the Prado Basin. It is advised that NEPA would thus apply even if there were no federal transportation dollars in the project, but that ACOE might implement NEPA differently, more strictly or less strictly, relative to FHWA.

Current status is conceptual design/alignment.

The current effort is not expected to produce a PSR or other Caltrans PID.

City of Corona expects future phases of project development will utilize federal transportation dollars.

City of Corona stated that two substantially different alternatives have been considered and that each crosses county line. City of Corona stated that this project potentially may affect alignment within San Bernardino County, but did not consider there current planning efforts to either necessarily include or exclude alignment planning within San Bernardino County.

It is advised that they needed to identify controlling points where all reasonable alternatives naturally converge and that their eventual environmental document needed to cover the entire alignment between the controlling points. I advised this may necessitate preparing a project and environmental document that straddled county line and two cities. I said 23CFR771.111(f) prohibits projects from precluding alternatives from reasonably foreseeable projects. I stated the City of Corona was free to pursue any strategy they wanted, but that FHWA NEPA expectations are frequently greater than what many local jurisdictions are familiar with from their CEQA experience.

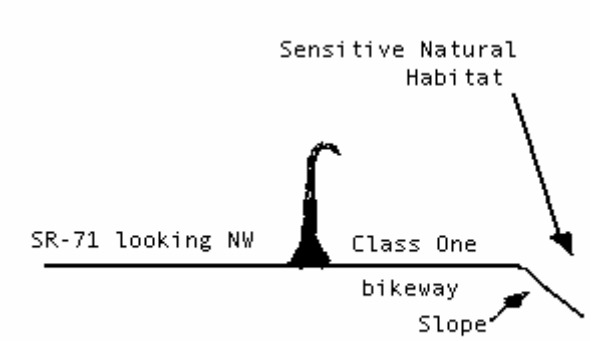
It is advised that FHWA expects Caltrans to filter for FHWA all local agency projects (Local Assistance) receiving federal transportation dollars.

It is advised that NEPA 404 MOU would probably be triggered and that in that case FHWA would probably refuse to approve of any alignments for final studies until all NEPA 404 MOU signatories had agreed to the project's Purpose and Need.

Caltrans HQ's policy is that Caltrans shall pursue CEQA Lead Agency status on all projects within State Highway R/W. I advised that if the C/Corona wanted to be CEQA Lead that they should formally submit a request to the District Director. I advised that it was unlikely that Caltrans would give up CEQA Lead Agency status, but that we commonly retain CEQA Lead Agency status while a local agency performs all the project development, design work, environmental studies, and ED preparation. I advised that Caltrans retains CEQA Lead Agency status so that it can have the final authority in Environmental Documents affecting State Highway, but that we work with the local agency to resolve all issues amicably.

Biology Comments:

1. The common Cross-section shows :



This proposal places the bikeway on the east side of SR-71. The cross-section above shows the most common condition on the east side (if you are looking NW toward San Bernardino section of 71). In a few cases the slope is up rather than down. It is mandatory that a high fence is placed

on this east side to avoid bicyclists from venturing into these sensitive wildlife areas. A solid wall would be preferred with a barrier at the top of the wall to discourage trespass.

2. There are wildlife crossings which will pass under this bikeway. Under no circumstances is it appropriate to attempt to use these wildlife crossing for future bikeway routes. Please do not attempt to even propose future bikeway segments utilizing these crossings for future bike routes.

3. Some police surveillance will also be necessary because wildfire could occur be simply throwing burning objects into the sensitive wildlife areas. There will also be trespass if the fence/wall protecting these nearby wildlife resources is not a sufficient deterrent.

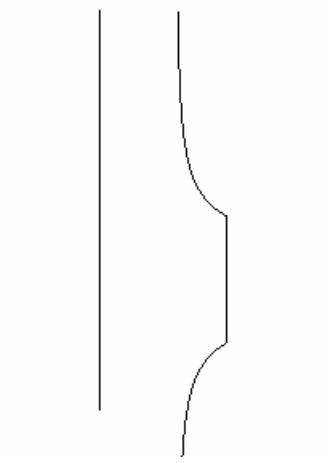
Landscape Comments:

1. Dangermond North Prado map

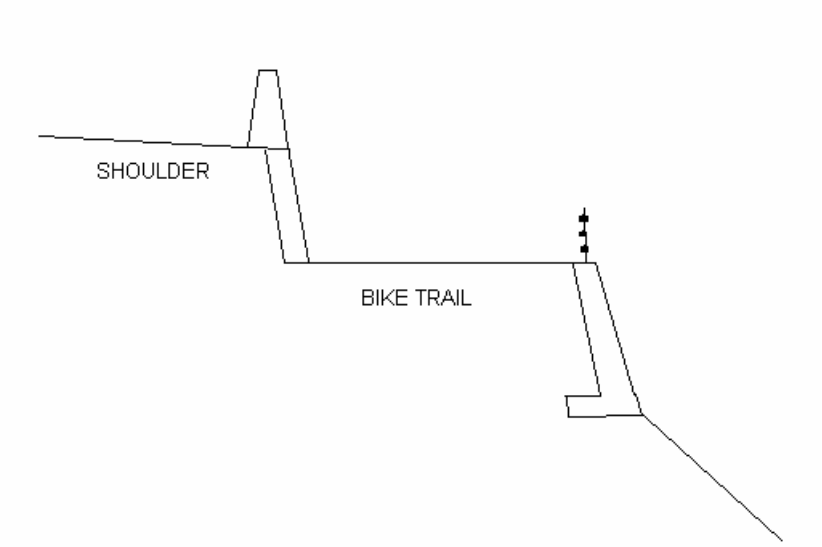
- Our 12/2003 proposed bike map from Corona shows Class 2 bike lanes near the Metrolink station along Auto Center, Maple and Smith Ave. If these are still proposed, they should be shown as connections to the Class 1 trail.

2. TKE topo map, North Prado

- The section letters are not shown on the plan.
- We recommend a 'stopping pocket' about halfway along the 2.5 mile route 71 portion to accommodate slower riders:



- Consider separating the bike trail down-slope from the roadway where terrain allows; this reduces the impacts of a large retaining wall as shown in Section C-C, and separates the riders visually from auto traffic:



- All sections - Krail is 3 feet high, not 5 feet as shown.
- Make provisions for emergency personnel to access the trail from the roadway shoulder.

General Comments:

1. Bikeways of this size and goals (i.e. going completely around Prado Dam, reaching to the San Bernardino Forest, etc.) must have trash receptacles and service, access for emergency vehicles, and bathroom facilities and service.

2. Most sections will be like "C-C", not "A-A".

3. Keep the trail above the wildlife crossings.

4. Avoid going down into the basin as much as possible. Keep the trail adjacent to the highway in the basin area.

5. Because of the length and grade, you may want to consider a "turnout/wildlife viewpoint/rest area" at location near the midpoint.

6. Provide barriers along the entire length of bike path adjacent to traffic.

7. Animal Crossings Bridges currently under construction need to be widened to accommodate the proposed bike path.

8. Animal Crossing Fences on the west side needs to be modified at selected locations.

9. Drainage on the west side needs to be modified.

10. On the Draft Alignment Study Exhibit, identify the cross-sections in accordance with the Legend (i.e. as section A-A, B-B, C-C.)

11. On the Vegetation and Habitat Map, what is 1a, 1b, 1c, 1d, and 2 stand for?

12. On the Green Public Golf Course Exhibit, what is p1,p2 ---------p10 referring to?

13. Be aware that the area is subject to heavy fog.

JoAnn Ross

From: Maria Aranguiz [Maria.Aranguiz@ci.corona.ca.us]
Sent: Wednesday, December 08, 2004 8:54 AM
To: Viren Shah
Cc: JoAnn Ross
Subject: SART Project: Comments from City of Corona P.D.

Viren:

Below are comments provided by our P.D. in regards to SART Project.

Sole

After having discussed the project with Lt. Anderson and Sgt. Blaize, we came to the need for the following.

1. Emergency access points for emergency vehicles ever 1/4 mile to 1/2 mile. These entrances should be large enough to accommodate fire trucks and ambulances.

2. Watering troths placed along the trail for horses

3. More then one staging area other then Auto Center & Railroad

If you have any questions feel free to call me at X2355 or 4882

im Mott
PD Traffic

From: Galen Young
To: Aranguiz, Maria
Date: 11/3/04 10:00AM
Subject: Re: Santa Ana River Trail (SART): Conceptual Alignment Plan Review

Maria, per our telephone conversation today the following are my thoughts and concerns related to the proposed Santa Ana River Trails project;
1. What we do and propose within the City needs to be consistant as much as possible with the other jurisdictions along the trail, i.e. what is prohibitied or allowed on the trail should be prohibited or allowed along the entire trail unless specific needs can be demonstrated.

2. Fire is a significant concern along the Santa Ana River and creates difficult problems and issues for the Fire Departments along the river. These fires when they occur are difficult to access, fight, and extinguish and often times create significant exposure problems to homes and properties that are adjacent to the river or basin. For this reason it is my recommendation that the use of the trail be limited to no camping except in designated campgrounds, smoking be limited to designated smoking areas along the trail, and that off road motor vehicles be prohibited from use on the trails. I would suggest that rest areas be located at appropriate intervals which would allow for users to have a stop and rest, have a place to smoke, and be in a somewhat safe location for that. The proposed clearance along the trail should be adequate as long as it is maintained to reduce the chance of an accidential fire originating from the user on the trail. I do have a concern that if a fire in the basin gets started we may have people on the trail placed in danger and not be able to evacte or escape in time. To prevent this I would suggest that safety zones be provided and identified as such along the trail.

3. Access for emergency services is very important as we are now allowing the public into areas that we have not had to respond to in the past. I realize that we will not be able to drive a fire engine on the trails so we will need to have as many access points to the trail within the city so that we may get on scene more quickly.

These are my main thoughts and I have spoken with the Police Department and advised them what I had brought up at the meeting. They have similar concerns and will be providing their comments to Viren. If you need more from me just let me know.

Galen

>>> Maria Aranguiz 11/03/04 08:57AM >>>
Galen Young, Fire Marshal
City of Corona Fire Department

Dear Mr. Young:

During our joint review and comments meeting of October 27th., various items of concern were brought to our attention. In fact, many of these important items were yours. As part of our follow-up effort, we would like to further inquire about potential fire-related concerns that in your experience, we should further consider within and beyond the City's boundaries. We would also like to know, if you have had the opportunity to meet and share items discussed during our review meeting with Lt. Anderson? If you have, would it be possible to obtain copy of comments received from our Police Department? Do you believe there is a need to schedule a separate meeting with both Police Department and Fire Department to further discuss items such as, i.e. safety along the Trail?

I do truly appreciate your valuable time and assistance.

Yours,
Maria 'Sole' Aranguiz, ABD
Transportation Planner

PW-Transportation
Ph. (951) 279-3763
mariaa@ci.corona.ca.us