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# SAN CARLOS HILLSIDE TRAILS PLAN FOR THE CITY OF SAN CARLOS





PREPARED BY:



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In Association With: WRA 2M Associates

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## **1** INTRODUCTION

The City of San Carlos rises up from the San Francisco Bay to meet the coastal mountains, creating dynamic hillside environments with impressive bay views. San Carlos has preserved large portions of its hillsides as both parks and open spaces, and established trails that allow residents and visitors to explore and enjoy the natural environment. The City currently maintains 8.9 miles of recreational trails, including 3.7 miles of hillside trails, and has identified 15 potential trail connections to expand the trail system, many of which are hillside trails.

Trails are a valuable asset to San Carlos residents, and therefore a priority consideration for the City. Since 2003, an active Trails Connections Committee has been working towards expanding the City's trail network. The San Carlos Potential Trails Connection Plan (Trails Connection Plan), an outcome of the Committee's work, was approved by the City Council on February 12, 2007. The 2008 Parks Master Plan recommends implementing the Trails Connection Plan as well as extending and improving trails in Big Canyon and Eaton Parks. In support of the Trails Connection Plan, the City has also adopted a trail standard of 1 mile of hiking trail per 1,000 residents. To meet this requirement, the City would need approximately 27 miles of trails (based on the city's current population).

The San Carlos Hillside Trails Plan (Hillside Trails Plan) helps San Carlos towards meeting its trail provision goals by identifying 1.62 miles of new trails within Big Canyon Park, Eaton Park and Devonshire Canyon. In addition to identifying new trail alignments, the Hillside Trails Plan provides design guidelines and construction protocols to ensure that hillside trails are designed and constructed so as to provide a safe and enjoyable experience for trail users and to avoid impacts to habitat and the watercourses. Lastly, the Hillside Trails Plan provides a parking program for the identified trails.

The Hillside Trails Plan provides specific guidance for the development of identified alignments within, and will also serve as the guiding document for the siting, design, and construction of future trails.

## CITY OF SAN CARLOS SAN CARLOS HILLSIDE TRAILS PLAN INTRODUCTION

## 2 TRAIL ALIGNMENTS

Alignments for approximately 1.62 miles of new trails in Big Canyon and Eaton Parks and Devonshire Canyon are described in this chapter and shown in Figure 2-1, Proposed Alignments. The new trails include several hiking trails and one accessible trail. Accessible trails are trails that are relatively flat (grades less than 8.33 percent) and that meet Americans with Disabilities Act (ADA) Accessibility Guidelines. Hiking trails are more challenging trails that have grades of up to 20 percent, narrower trail widths, and may require stairs and bridges.

The hiking trails identified in this Plan would require the construction of stairs and pedestrian bridges in several areas. Limited signage for orientation, wayfinding, and posting rules and regulations are recommended for existing and new trails. The overall setting of the trails is described below, followed by descriptions of the trail alignments according to location.



#### A. Setting

All of the areas for which trails have been identified are undeveloped land that is designated as either Park or Open Space by the San Carlos 2030 General Plan. A large portion of the Plan Areas are dominated by coast live oak (*Quercus agrifolia*) woodland that transitions to California bay laurel (*Umbellularia californica*) dominated forest along drainages and in basins. Additionally, annual grasslands are located on ridges and slopes and mixed northern chaparral is common on south and west facing slopes within the Plan Areas. Several water courses with defined beds and banks are also within the Plan Area. These creeks appear to meet the definition of Waters of the U.S. and may be considered jurisdictional by the California Department of Fish & Game (CDFG). All watercourses are linear and ephemeral drainages that appear to convey water only immediately after storm events or for up to a few months during the wet season. In general the creeks are perpendicular to the proposed trail alignments where the trail intersects drainages as they follow hillside contours.





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## B. Big Canyon Park Trail Alignments

Big Canyon Park encompasses 16 acres of primarily steep and hilly terrain and is one of the City's two open space areas. There are 1.35 miles of existing trails within the Park, none of which meet ADA requirements for accessibility. The two additional trail alignments identified by this Plan include a 1,875-foot-long (0.35-mile) hiking trail and a 360-foot-long accessible trail. These new alignments and their defining features are located in Figure 2-2, Big Canyon Park.

The additional hiking trail will connect with an existing trail at two points to create a loop trail within the park. This trail will include both relatively flat and steep grades, and will cross through forested and grassland habitat, providing for a high quality user experience. The trail will cross several watercourses with defined beds and banks. These watercourses are linear and ephemeral drainages that appear to convey water only during the season. The trail will also require stairs in at least three locations, three dry crossings, and one bridge crossing of a narrow drainage (less than 10 feet wide).

The accessible trail will connect the entrance of Big Canyon Park to a rest area shaded by large oak trees. The rest area overlooks a natural drainage which enters stormwater infrastructure to the south. Although the rest area would be a short walk from Brittan Avenue, the space is tucked away and surrounded by natural scenery, and therefore will offer a unique nature experience. The approximately 360-foot-long spine, or out-and-back, trail will meet ADA standards for accessibility and create an accessible nature experence.







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## C. Eaton Park Trail Alignments

Eaton Park is located to the southeast of Big Canyon Park, and is separated from Big Canyon Park by Brittan Avenue. Eaton Park encompasses 57.6 acres and is dominated by coast live oak/California bay woodland plant communities. Similar to Big Canyon Park, Eaton Park is comprised largely of steep hillsides. However, Eaton Park is located on a north facing slope and as a result is more forested than Big Canyon Park. The only improvements at Eaton Park are hiking trails and limited entry signage. In addition to formal trails, informal paths are well established in several areas. The proposed hiking trail for Eaton Park follows an existing, well worn social trail. This alignment is shown in Figure 2-3, Eaton Park.

The trail additions for Eaton Park would include a 0.35-mile segment connecting two existing trails, and a 0.15-mile segment connecting the first segment to the Park boundary located approximately 40 feet from Tramanto Drive/Appian Way. The combined length of these segments is 0.5 miles. The trails would traverse similar terrain as the proposed trails for Big Canyon Park, although a greater amount of the trails would be within canopy cover on the north facing slope of the hillside. The proposed alignment also crosses several linear and ephemeral watercourses with defined beds and banks. The trails would require steps in at least six locations, including connecting from the Park to Tramanto Drive. This connection will be constructed using steps and will stay as far south of the existing residences as possible. Pedestrian bridges over small creeks and erosion gullies will also be necessary in four locations. Free span bridges would be used wherever feasible. As discussed in Chapter 3, Hillside Trail Guidelines, bridges that span greater than 15 feet may require permits and possible mitigation if in-channel piers are necessary.

## D. Devonshire Canyon/Vista Park Trail Alignment

Devonshire Canyon is a privately owned designated open space area that supports exemplary coastal sage scrub vegetation. The Devonshire Canyon Trail would be sited on the northeast facing slope of Devonshire Canyon. As



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shown in Figure 2-4, Devonshire Canyon, the trail would be primarily within an existing trail easement. However, a short segment of the trail that connects from the easement to Vista Park is located within a parcel (Lot G) currently owned by Crestview Estates Home Owners Association. The City intends to purchase this parcel in the future. The trail will be an approximately 0.7-mile-long out-and-back hiking trail. The potential for the trail to be extended or for a loop trail to be created should be explored by the City in the future.



FIGURE 2-3 EATON PARK



## 3 HILLSIDE TRAIL GUIDELINES

Hillside trails are a key recreational amenity for the City, but have the potential to cause erosion and siltation and thereby lead to habitat and water quality degradation. The purpose of these guidelines is to provide clear design standards and construction protocols that ensure that San Carlos's hillside trails provide a safe and enjoyable experience for trail users, as well as protection for existing habitat, drainages, and water quality.

Existing trails should be maintained to meet these standards, and new trails should be designed and built according to the standards. The guidelines defined for San Carlos are based upon national, regional and local standards and have been modified with consideration to San Carlos's natural and cultural settings. The primary documents upon which the guidelines are based include:

- United States Forest Service Trails Management Handbook (2008)
- Forest Service Trail Accessibility Guidelines
- ♦ San Mateo County 2001 Trails Plan
- Trail Design Guidelines for Portland's Park System (May, 2009)
- California Disabled Accessibility Guidebook (CalDAG)
- Trail Planning for California Communities<sup>1</sup>

This chapter classifies public trails within San Carlos's hillsides, provides design guidelines for establishing these trails, and identifies construction protocols for trail development.

## A. Trail Classification

There are two types of hillside trails within the City of San Carlos: hiking trails and accessible trails. Hiking trails are single lane trails that traverse steep gradients, often requiring steps and/or drainage crossings. Accessible trails are less challenging trails that require little grade change and meet Amer-

<sup>&</sup>lt;sup>1</sup> Bondurant, Julie and Laura Thompson, et al, 2009, *Trail Planning for California Communities*, Point Arena: Solano Press.

icans with Disabilities Act (ADA) requirements for accessibility. Due to constraints related to the natural terrain, most of San Carlos's hillside trails are hiking trails.

Characteristics of hillside trails and accessible trails are provided in Table 3-1, Summary of Hillside Trail Guidelines. Further detail on the design and construction of these trail types is provided in Section B, Design Guidelines, below.

## B. Design Guidelines

Guidelines for the development of new hillside trails are organized according to key topics of trail setting, basic design, drainage crossings and bridges, steep slopes, stairs, materials, and signage. The guidelines provided in this section are supplemented by Figures 3-2 through 3-7, which provide specific standards for the design of trail features.

## 1. Trail Setting

- D.G.1.1 Trail alignments shall be sited and designed so as to retain natural appearances and value of open space, to minimize impacts to natural drainages and existing vegetation, and to offer a range of enjoyable experiences. Techniques for achieving these goals are to:
  - Avoid steep grades
  - ♦ Follow contours
  - Avoid sensitive habitat
  - ♦ Frame views
  - Traverse different habitat types
  - Design for loop trails
  - Vary the slope, length and challenge levels of trails
  - Establish trail connections (this is an ideal way to provide for both short and long hiking experiences)
  - Avoid unstable or otherwise hazardous areas

Trail Feature	Hiking Trail	Accessible Trail
Tread Width	24"- 30" (May be 36"-48" at steep side slopes)	60"- 72"
Target Trail Grade	0%- 12%	0 – 4.99%
Out Slope (Cross Slope)	3%-6%	2% or crowned
Maximum Interval for 5'x5' Passing Area	400'	Not necessary if trail is 60" wide or great- er
Maximum Ramp Gradi- ent	20%	8.33% (handrails required for slopes 5% and greater)
Maximum Ramp Rise to Landing	72"	48"
Maximum Ramp Run to Landing	40'	40'
Horizontal Clearance	1-2'	2'
Vertical Clearance	7'	8'

## TABLE 3-1 SUMMARY OF HILLSIDE TRAIL GUIDELINES

- **D.G.1.2** Trails shall be sited and designed to be sensitive to existing cultural resources.
- D.G.1.3 Trails shall be sited a minimum of 50 feet from occupied dwellings, and larger setbacks should be established where possible. In cases where this is not feasible, potential noise and privacy impacts shall be minimized using landscaping, berms, fencing, or other barriers.
- **D.G.1.4** Trail alignments shall be evaluated by a professional biologist to identify potential impacts to sensitive habitats. Where it is

not feasible for sensitive habitat to be avoided, trails shall be realigned or mitigations measures such as trail closures or replacement planting will be necessary.

**D.G.1.5** Trails shall be setback 5 feet from the top of channel banks or from the edge of a riparian zone where possible.

## 2. Basic Trail Design

This section describes basic principles for designing and constructing both hiking and accessible trails. Figure 3-1, below, defines key terminology used when constructing trailbeds. Specific standards for constructing hiking and accessible trails is provided in Figure 3-2, Accessible Trails and Figure 3-3, Hiking Trails.









FIGURE 3-3 HIKING TRAILS

Source: Modified from Trail Design Guidelines for Portlands Park System, 2009

In steep terrain like that of San Carlos's hillsides, preventing erosion is the paramount consideration in trail design. Whether constructing hiking or accessible trails, the following standards shall be adhered to:

- **D.G.2.1** Trail alignments across open hillsides and near ridgelines shall be sited to avoid permanent, noticeably visible lines on the existing landscape when viewed from afar.
- D.G.2.2 Trail width shall be limited to the minimum requirement to minimize soil disturbance and potential impacts to existing vegetation and habitat
- **D.G.2.3** On trail grades greater than 5 percent, shallow ditches, water bars, crests and dips shall be used as necessary to divert water from trails.
- D.G.2.4 Trail cuts shall be contoured to blend with natural side slopes.
- D.G.2.5 Maximum cut for backslopes shall be determined based upon slope material. In most of San Carlos's hillside areas, backslope shall be no steeper than 2 horizontal feet for every 1 foot vertical rise (2:1). See Table 3-2, Maximum Back Slopes.
- D.G.2.6 The amount of benching used for a trailbed shall be determined with consideration to sideslope. The steeper the sideslope, the greater the bench and smaller the fill slope. On sideslopes of 10 to 30 percent, cut and fill should be balanced. On sideslopes of 30 to 50 percent, a quarter bench should be created. This standard is illustrated in Figure 3-4.
- **D.G.2.7** Outslope shall be a minimum of 3 percent for hiking trails and 2 percent for Accessible Trails, unless surface is crowned.
- **D.G.2.8** Trail grade, or longitudinal slope, shall be less than half the slope of the sideslope. For instance, where the sideslope is 30 percent, trail grade shall be less than 15 percent.
- **D.G.2.9** Vertical clearance for trails shall be 7 feet and shoulder clearance shall be 1 to 2 feet for hiking trails and 2 feet for accessible trails.

## TABLE 3-2MAXIMUM BACK SLOPES

Material	Horizontal: Vertical
Sandy Soil	3 to 4 :1
Moist Clay	2 to 3: 1
Loose, gravelly soil or humus	1.5 to 2: 1
Shale or Loose Rock	1:1

Source: Modified from Trail Design Guidelines for Portland's Park System, May 2009.

## Figure 3-4 Benching



- D.G.2.10 Where feasible, the design of hillside trails shall recognize the intent of the Americans with Disabilities Act (ADA). The potential for trails to be accessible shall be evaluated on an individual basis for accessibility potential.
- **D.G.2.11** Resting places, such as benches or boulders, should be provided at regular intervals where feasible.
- D.G.2.12 Barriers should be used where necessary to prevent vehicles from entering trail routes. Possible types of barriers include bollards, boulders or stiles.
- D.G.2.13 Barriers may be employed to deter trail users from leaving the trail in areas where trail routes are adjacent to residential property, hazardous areas, or other areas that the public should not enter. Barriers may include vegetation, fallen trees or branches, or fences.

## 3. Drainage Crossings and Bridges

Many of the drainages in the San Carlos hills are ephemeral and only flow immediately following rain events. These drainages do not hold water long and dry out very quickly. The appropriate construction of a free-span bridges with spans of 15 feet or less is described in Figure 3-5, Bridged Crossings. Free-span bridges with spans 8 feet or greater may be built according to the United States Forest Service, Region 9, standard for pedestrian and crosscountry ski bridges, with appropriate modifications for site conditions and current regional requirements (see Appendix A). Additional guidelines for drainage crossings are provided below.

- **D.G.3.1** Where the gradient permits, trails shall simply cross drainages at-grade (rather than bridging).
- **D.G.3.2** Where bridges are necessary due to water levels or the slope of the drainage, free-span bridges shall be used where possible.
- **D.G.3.3** Bridges shall be level where possible.

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FIGURE 3-5 RIDGED CROSSINGS

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- **D.G.3.1** Guard rails shall be used where the fall distance is 30 inches or greater. Guard rails and railings shall be 42 inches high.
- **D.G.3.2** Where steep drop-offs pose a significant safety concern, consider adding screening or other facing to vertical face of bridge for safety.
- **D.G.3.3** Footings of free-span bridges shall be on the upland side of the top of bank to avoid jurisdictional areas of the regulatory permitting agencies (U.S. Army Corps of Engineers (Corps), California Department of Fish and Game (CDFG), and the San Francisco Regional Water Quality Control Board (RWQCB)).
- D.G.3.4 When free-span bridges are not feasible due to required span or site conditions, non-free span bridges may be necessary. Such bridges shall be designed similar to the standard shown in Figure 3-5, Bridged Crossings, but will require in-channel footings. In-channel footings should be placed above the actual flow line, or "ordinary high watermark" of the drainage.

## 4. Steep Slopes

Hiking trails on steep slopes have the potential to cause erosion and other problems if not properly designed and constructed.

D.G.4.1	Hiking trails should follow contours as much as possible, and
	should not exceed a 20 percent slope.

**D.G.4.2** When trail grades are steeper than 12.5 percent for an extended length, switchbacks may be used. Switchbacks should be long and gradual rather than short and steep.

## 5. Stairs

The guidelines provided below for the design of stairs are supplemented by Figure 3-6, Cribbed Steps, and Figure 3-7, Timber Steps.

**D.G.5.1** Stairs may be used when shorter vertical routes will have less of an impact on natural surroundings.

- D.G.5.2 Stairs may not be used for accessible trails.
- **D.G.5.3** Stairs shall be constructed as either cribbed steps or timber steps. These steps are defined below and described in greater detail in Figures 3-6 and 3-7.
  - Cribbed Steps. Cribbed steps are long lasting, stable steps that are excellent for straight stairways on consistent slopes. Each step is "cribbed", or bounded on the front and sides, to create uniform risers and treads (see Figure 3-6).
  - Timber Steps. Most of the existing steps on hillside trails in San Carlos are timber steps. Timber steps have consistent risers created by timbers, yet the tread width varies and is constructed of native soil and/or gravel. This type of step is generally easier to construct than cribbed steps and can be fit into inconsistent slopes. Unlike cribbed steps, timber steps do not have any side support to prevent fill (soil or gravel) from slipping. To minimize the slipping of fill, large rocks or backfill of native soil can be placed along the sides of the timber steps (see Figure 3-7).

## 6. Materials

- D.G.6.1 Hillside trails should be built using natural materials that blend with the natural surroundings and that minimize impacts to habitat and water quality. Trail beds shall be built using native soil and rock. Bridges and steps shall be built using wood and metal.
- **D.G.6.2** The City of San Carlos Building Department requires the use of pressure treated wood or redwood for deck framing, both of which have good longevity. FSC certified clear heart redwood, which is naturally resistant to fungus and decay, will not bring contaminants into the natural environment and therefore shall be used when possible.



FIGURE 3-8 CRIBBED STEPS





- D.G.6.3 When it is not possible to use redwood, pressure treated wood may be used for all members except for railings, which will be in frequent contact with trail users. However, wood treated with Chromate Copper Arsenic (CCA) shall not be used, due to the hazards it poses to human health and the environment. As a result of US EPA regulations, CCA treated wood is no longer available for residential use and therefore is not widely available. Appropriate alternative treatments to CCA include Alkaline Copper Quaternary (PT ACQ), Micronized Copper Quaternay (PT MCQ), and Copper Azole (CA).
- **D.G.6.4** Recycled materials should be used where possible.
- D.G.6.5 Bolt heads and other hardware should be recessed for safety.

## 7. Signage

- **D.G.7.1** Sign Design. Signage shall be designed to be similar to existing signage, and compatible with the visual character and quality of the park surroundings.
- D.G.7.2 Trail Use and Orientation Signage. Signage providing information on rules, regulations, and wayfinding should be provided at all entry points to the trail system. Entry signs shall include a map of the trail network, with all trails named, and a list of pertinent Municipal Codes such as Chapter 12.12, Section 190 of the City's Municipal Code which prohibits bicycles and other vehicles from trails in "open space parks." Entry signage shall also indicate whether the trail is classified as a hiking trail or accessible trail.
- **D.G.7.3 Directional Signage.** Directional signs should be provided at all trail intersections to increase trail safety for users and enhance the hiking experience.

**D.G.7.4** Other Signage. Additional signage should be limited to that which is necessary to ensure the safety of trail users and protection of natural resources.

## C. Trail Construction Protocols

The following protocols shall guide the planning, construction and maintenance of San Carlos's hillside trails. These protocols are intended to ensure the protection of biological, cultural, hydrologic resources, and air quality, and are grouped according to these topics.

## 1. General Protocols

- GEN.1 Volunteers. Volunteer trail builders and all other individuals handling PT ACQ wood shall use gloves, masks and protective eye wear.
- **GEN.2** Volunteer Supervision. A qualified supervisor shall be present at all volunteer events to ensure quality construction, resource protection, and volunteer safety.
- GEN.3 Construction Machinery. Trails shall be constructed by hand or with small machinery, such as chainsaws, where feasible to minimize site disturbance and potential noise impacts to surrounding areas.
- **GEN.4** Construction site. Visible evidence of trail construction shall be limited to the trail clearing area.
- **GEN.5** Closure. In the event of a wildland fire, San Carlos's hillside trails shall be closed and access restricted by emergency service personnel.

## 2. Biological Resources

- **BIO.1** The following measures will ensure that potential impacts to special status plant species are less-than-significant:
  - BIO-1a Conduct preconstruction special status plant surveys along the Devonshire Canyon trail corridor and for any future corridors where there is potential for special status plant species to occur.
  - BIO-1b If special status plant species are found, the trail alignment shall be altered to avoid impacting the plants and a suitable buffer (species-dependent and to be determined by a biologist) established to protect the plants during construction.
  - BIO-1c If direct impacts are unavoidable, the following compensatory measures shall be implemented:
    - Perennial special status species with potential to be directly impacted by the trail alignment shall be transplanted to a nearby suitable location. The recipient location shall be selected by a qualified botanist and the transplanting shall be overseen by a qualified botanist.
    - Annual special status species with potential to be directly impacted by the trail alignment shall have seed collected and planted at a nearby suitable location. The planting location shall be selected by a botanist and the planting shall be overseen by a botanist.
    - A special status plant species protection plan shall be prepared that addresses short term (three to five years) monitoring and care of the affected individuals. The plan shall include monitoring requirements, success criteria, and a maintenance and weeding program.
- **BIO.2** The following measures shall be implemented to avoid impacts to breeding birds:

- BIO-2a The clearing of vegetation and the initiation of and construction using power tools or machinery shall be done in the non-breeding season from September through January.
- BIO-2b If construction activities cannot be done in the nonbreeding season, a qualified biologist shall perform pre-construction breeding bird surveys within 14 days of the onset of clearing of vegetation or construction requiring power tools or machinery. The survey area shall encompass all areas where this type of disruptive work is proposed during the breeding season.
- BIO-2c If nesting birds are discovered in the vicinity of the above-mentioned activities, a buffer area around the nest shall be established until the nest is vacated. The size of the buffer shall be dependent on the habitat, level of disturbance and the particular species of nesting bird.
- **BIO.3** The following measures shall be implemented in the event that trail construction would require removing trees or snags to avoid take of roosting or special status bats:
  - BIO-3a Potential roost habitat (trees with cavities and snags) may be removed outside of the maternity roosting season, September through March, without performing preconstruction bat surveys. Preconstruction surveys for bats shall take place during the maternity roosting season (April 1 through August 31) if trees with cavities or snags are to be removed during this time frame.
  - BIO-3b If special status bat species are detected during surveys, species and roost specific mitigation measures shall be developed by a qualified biologist. Such measures may include postponing removal of trees or

snags until the end of the maternity roosting season or construction of species appropriate roosting habitat within, or adjacent to, the project area. Consultation with CDFG may be warranted to determine appropriate mitigation measures if roosts are disturbed or destroyed. If no potential bat roost habitat is proposed for removal, bat roost surveys are not necessary.

- BIO.4 The following measures shall be implemented to reduce impacts to San Francisco dusky-footed woodrat to a less than significant level:
  - BIO-4a San Francisco dusky-footed woodrat stick houses shall be avoided.
  - BIO-4b If avoidance is not feasible, the houses shall be dismantled by hand under the supervision of a biologist.
  - BIO-4c If young are encountered in the nest during the dismantling process, the material shall be placed back on the house and the house should remain unmolested for two to three weeks in order to give the young enough time to mature and leave the house. After two to three weeks, the nest dismantling process may begin again.
  - BIO-4d Dismantled nest material shall be moved to suitable adjacent areas that will not be impacted.
- **BIO.5** The following measures shall be implemented to reduce impacts to riparian habitat and other sensitive natural communities to a less-than-significant level:
  - BIO-5a Removal or alteration of riparian trees greater than 4 inches in diameter at breast height along creeks in the project areas shall be avoided if at all possible.
  - BIO-5b If such trees cannot be avoided, they shall be preferentially trimmed, and completely removed only as a

last resort. If removal of riparian trees is unavoidable, a 1602 Agreement may be necessary from the CDFG. The agreement shall include mitigation measures for impacts to riparian habitat which may include habitat restoration such as tree replacement.

- **BIO.6** The following measures shall be implemented to avoid impacts to creeks in the project area:
  - BIO-6a At-grade "dry-crossings" of several of the creeks are proposed. Since many of the drainages are ephemeral and only flow immediately following rain events, they do not hold water for a long duration and dry out very quickly. Dry crossings of these creeks shall not result in any impacts to the creek banks and no fill shall be placed within the creek channel.
  - BIO-6b Free-span bridges shall be used to cross watercourses where dry-crossings are not appropriate, where feasible. Footings of free-span bridges shall be on the upland side of the top of bank to avoid jurisdictional areas of the regulatory permitting agencies (Corps, CDFG, and the RWQCB).
  - BIO-6c Bridge construction or other trail work adjacent to creek corridors shall be conducted during the dry season (April 15 through October 15). If water is flowing within any of the channels during construction, best management practices (BMP) such as weed seed free straw wattle, silt fencing, etc. shall be placed between the watercourse and ground disturbance areas to protect water quality.
  - BIO-6d Native species seeding/planting and invasive species management in disturbed, exposed soils should be conducted immediately following bridge construction.

- BIO-6e In-channel footings, when necessary for bridges that are not free-span, shall be above the ordinary high watermark. A jurisdictional wetland delineation shall be conducted to determine the extent of jurisdiction of the Corps, RWQCB, and CDFG prior to construction. Incursion into the jurisdictional areas of any of these agencies will likely require permits from those agencies. Permits may include a 1602 Streambed Alteration Agreement permit from the CDFG, and a Waste Discharge Requirement (WDR) from the SFRWQCB. If footings must be placed within the "ordinary high watermark" of the drainage, a Section 404 Permit from the Corps of Engineers and a 401 Water Quality Certification would be necessary; and a Delineation of Waters of the U.S. (wetland delineation) would need to be conducted to map the ordinary high watermark of the creeks in question.
- BIO-6f Permits shall be obtained as necessary for the construction of bridges, and projects shall conform with all mitigation measures included in permits.
- **BIO.7** The following measures are recommended to avoid impacts to sensitive vegetation, habitat, and heritage trees:
  - BIO-7a Adherence to the requirements set forth in Chapter 12.20 of the San Carlos Municipal Code (SCMC) shall limit impacts to protected trees in the project area. This includes avoidance of trees greater than 36 inches in circumference, measured 48 inches from natural grade. The ground within the drip line of such trees shall not be cut, filled, compacted or paved without having first obtained permission of the Director. The City is not required to obtain a permit for removal of trees on public property.

- BIO-7b Trail alignments with potential impacts to oak savanna/woodland habitat shall avoid, minimize, or compensate for the loss of oak savanna/woodland habitat. Avoidance is the preferred measure where feasible. If it is deemed that an impact is unavoidable, minimization of direct and indirect impacts or compensation through habitat restoration, preservation, or enhancement may be required.
- **BIO.8** Existing vegetation shall only be removed as necessary to accommodate trail clearing width.

## 3. Cultural Resources

Historical resources within the City are limited to several known archeological sites located near the banks of Cordilleras and Pulgas Creeks and two properties that are listed on the National Register of Historic Places.<sup>2</sup> There are no known cultural resources located within Big Canyon, Eaton or Vista Parks, or in Devonshire Canyon. However, in the event that cultural artifacts are encountered during trail construction, the following protocols shall be followed.

CULT.1 Archaeological Resources. During construction, construction personnel shall look out for buried archaeological resources. If an archaeological site(s) is encountered during grading or other soil disturbing activities, the site(s) will be recorded by a qualified archaeologist, including the extent of the site boundaries. The trail alignment(s) and/or associated features shall be relocated away from the archaeological site(s), unless the site(s) are evaluated and determined not to be eligible for listing on the California Register of Historical Resources. The archaeologist shall determine the required distance from the resource. If the eligible site(s) cannot be avoided, the proposed trail shall be designed with protective elements that would provide for trail use

<sup>&</sup>lt;sup>2</sup> San Carlos 2030 General Plan

with minimal affect on the archeological site(s). These protective elements may include fencing, or placement of the trail on a bridge, boardwalk or earthen berm. Prior to construction, data recovery and testing shall be conducted as needed. A final report, including the results of the surveys and evaluations, shall be provided to the State Historic Preservation Officer for review.

- **CULT.2 Paleontological Resources.** If paleontological resources are encountered during grading or other soil disturbing activities, construction shall be halted within 50 feet of the site and a qualified paleontologist will be contacted to investigate the find within 24 hours. If the find is deemed to be significant, a complete paleontological survey and removal of paleontological finds shall be warranted prior to resuming construction activities in the area.
- CULT.3 Human Remains. If human remains are encountered, work shall halt within 50 feet of the find and the County Coroner shall be notified immediately. An archaeologist will also be contacted to evaluate the find. In accordance with subdivision (c) of Section 7050.5 of the California Health and Safety Code (CHSC), if the Coroner recognizes the human remains to be of Native American origin or has reason to believe they are, the Coroner must notify the Native American Heritage Commission within 24 hours of this identification. Subsequently, pursuant to Section 5097.98 of the Public Resources Code, the Native American Heritage Commission will identify a Native American Most Likely Descendent to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods.

## 4. Hydrologic Resources

HYDRO.1 Bridges. Crossing structures shall be designed to allow for passage of high flows.

- HYDRO.2 Best Management Practices. Implementation of the project shall follow Construction Best Management Practices (BMPs) recommended by City of San Carlos Building Division and/or other relevant agencies, to prevent erosion during construction. Such BMPs include the following:
  - Limit construction activities to the dry season. All bridges shall be constructed during the dry season (April 15 through October 15).
  - Stabilize construction sites, including entrances and exits.
  - If water is flowing within any of the channels during construction, weed-seed-free straw wattles or compost fiber roles shall be placed between the watercourse and ground disturbance areas to protect exposed slopes.
  - Following construction, disturbed areas, including streambanks, shall be stabilized with native plant materials, hydroseeding, or similar measures as needed to prevent erosion.
- HYDRO.3 Balanced Cut and Fill. Cut and fill shall be balanced when possible. When this is not possible, excess soil shall be deposited on site as shown in Figures 3-2 and 3-3.
- HYDRO.4 NPDES Permit. Consistent with the requirements of the statewide water quality standards, if a specific trail project will result in greater than one acre of ground disturbance, the project must obtain a NPDES permit (Construction General Permit). This includes preparing and implementing a Storm Water Pollution Prevention Plan (SWPPP) designed to reduce potential adverse impacts to surface water quality through the project construction period.
  - The SWPPP shall be prepared by a Qualified SWPPP Developer.
  - The SWPPP shall include the minimum BMPs required in Attachment D for Risk Level 2 dischargers, or Attachment E for Risk Level 3 dischargers (as applicable, based on final

determination of the project's Risk Level status [to be determined as part of the Notice of Intent for coverage under the Construction General Permit]).

- The SWPPP shall also include the erosion and sediment control and construction BMPs required by the City of San Carlos. BMP implementation shall be consistent with the BMP requirements in the most recent version of the California Stormwater Quality Association Stormwater Best Management Practice Handbook for Construction or the Caltrans Storm Water Quality Handbook Construction Site BMPs Manual.
- 5. Air Quality
- AIR.1 Dust Control. The following dust control practices shall be followed during the construction phase of the project:
  - Cover stockpiles of debris, soil, sand or other materials that can be blown by the wind.
  - Cover open truck beds delivering soil, sand, and other loose materials to the Plan areas.

## 4 PARKING PROGRAM

This chapter identifies parking programs for the San Carlos hillside trails located within or adjacent to Big Canyon, Eaton, and Vista Parks.

San Carlos hillside trails identified in this Plan will be accessed from Big Canyon, Eaton, and Vista Parks, as well as from Tramanto Drive. Although many park visitors currently access, and will continue to access, these parks by foot, some visitors require vehicular parking. It is anticipated that new and expanded trails will have an inconsequential increase on parking demand, and that existing on-street parking near park entrances and along Tramanto Dive will accommodate any increase in demand. Figures 2-2, 2-3, and 2-5, provided in Chapter 2, identify existing on-street parking that shall be utilized to access the trail connections. Table 4-1 identifies parking capacity at each access area.





Site	Identified Spaces	Location	Additional Spaces and Location
Big Canyon Park at Brittan Avenue	5	Park frontage along east side of Brittan Avenue	Additional parking provided in front of residential properties along Brittan Avenue
Eaton Park at Brittan Avenue	2	North of Park entrance along west side of Brittan Avenue	Additional parking provided in front of residential properties along Brittan Avenue
Eaton Park at Tramanto Drive	5	North side of Tramanto Drive in proximity to neighborhood entrance	Additional parking could be provided along both sides of Tramanto Drive and Appian Court
Vista Park at Crestview Drive	5	Inset parallel parking along Park frontage	20 additional on-street spaces are available on the south side of Crestview Drive along Park frontage

## TABLE 4-1**PARKING ALLOCATION**

## CITY OF SAN CARLOS SAN CARLOS HILLSIDE TRAILS PLAN PARKING PROGRAM





