

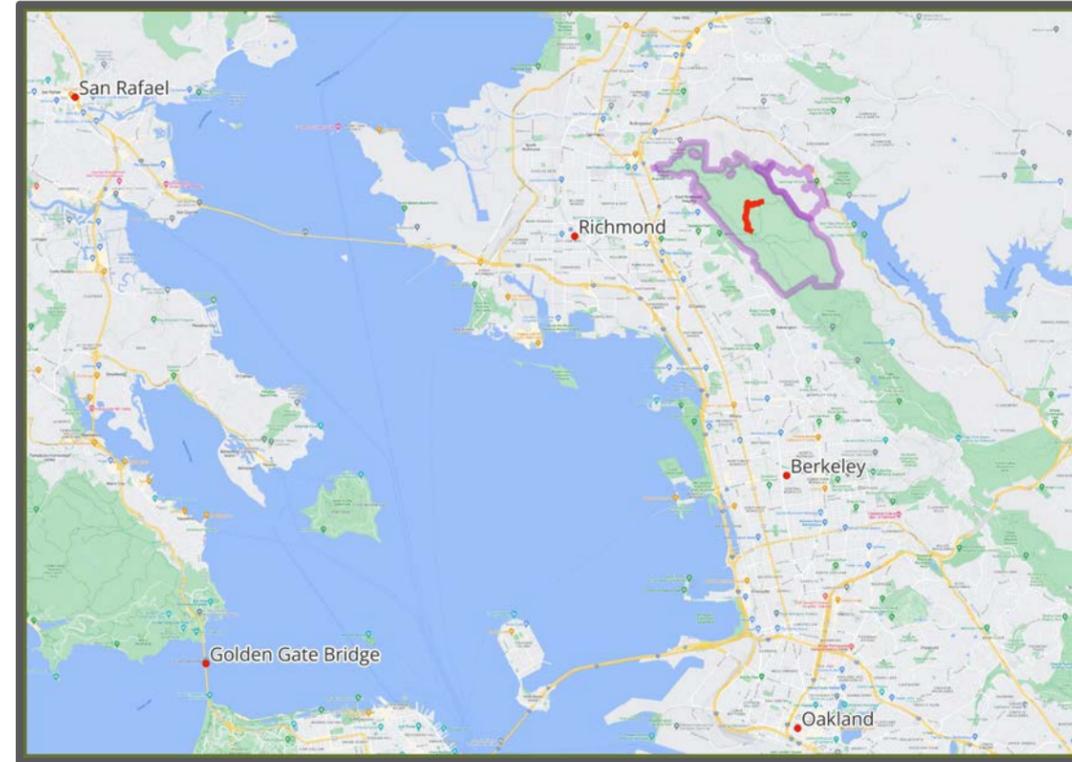
WILDCAT BIKE TRAIL

WILDCAT CANYON REGIONAL PARK

RICHMOND, CALIFORNIA

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PROJECT LOCATION

LATITUDE: 37°56'07.6"N
LONGITUDE: 122°17'31.9"W

DESIGNED FOR:

East Bay Regional
Park District
2950 Peralta Oaks Court,
Oakland, CA 94605
1-888-327-2757
www.ebparks.org

DESIGN BY:

Pointe Strategies
Info@pointestrategies.com
Pointestrategies.com
970-462-7059

LAND MANAGER:

East Bay Regional
Park District
2950 Peralta Oaks Court,
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WILDCAT CANYON REGIONAL PARK

RICHMOND, CALIFORNIA

COVER SHEET

SHEET NUMBER

CS-1

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Wildcat Bike Trail Narrative and Design Details

The project goal is to develop a conceptual plan for a directional, bike optimized, mountain bike trail within an identified corridor at Wildcat Canyon Regional Park near Richmond, CA. This trail aims to relieve pressure on other trails within the Tilden and Wildcat Canyon Parks while providing a fun and challenging trail experience for East Bay cyclists and provide a training area for local National Interscholastic Cycling Association (NICA) High School and Middle School teams.

Project Objectives:

- Develop a conceptual trail design that incorporates a variety of components popular with today's mountain biking community while offering options for riders to progressively build their skills.
- This document will support the California Environmental Quality Act (CEQA) process.

This trail alignment was developed using the best information available at the time. As additional information emerges from technical studies, this alignment will likely evolve and may need to be adjusted.

Project Design Criteria:

- Latest industry practices and trends
- Cost-benefit analysis of alternatives
- Avoidance or minimization of environmental impacts
- Reasonable maintenance burden and operational requirements
- Minimization of conflicts with park operations and other park activities

Trail Design Specifications

Trail Length: Approximately 7,613 ft/ 1.44 miles

Allowed Use: Mountain biking only

Direction of Travel: Downhill only

Desired Trail Experience: Progressive flow trail

Trail User Difficulty Rating: MTB green/blue, beginner/intermediate

Tread Width: 36", +/- 12" if needed

Tread Surface: Compacted natural soil

Corridor Width: At least 48' from centerline of trail tread

Grade: Average trail grade should be 5-7%. Trail grades between 8-15% must have grade reversals spaced 50' apart or less. Trail grades in excess of 15% must be armored with stone.

Elevation Change: Approximately 500 ft

Turns: Flowing, insloped, berm turns unless otherwise noted

Presence of Features: As frequent and often as deemed appropriate

Number of Features: Dependant upon feature type, budget, and final trail alignment and design

Build Cost Estimate: \$280,000-390,000 depending on feature type and final trail alignment. Prefab features not included in this estimate. Estimate based off of similar projects of size and scope.

Suggested Labor Source: Experienced professional trail builder, not recommended for volunteers or Youth Corps.

Anticipated Build Difficulty: Moderate. Given this style of trail, various construction techniques will be necessary to achieve finished product. Dirt shaping and feature sculpting skills will be required, dry masonry rock work, carpentry, and construction skills may be necessary depending on final design. All features will need to be field tested to insure a proper spacing and operation.

Suggested Method of Build: Machine build. Due to large amount of dirt work and open project corridor machine build would be ideal, but hand build could be appropriate if builder is highly experienced in hand built bike optimized flow trails.

Known Constraints: Trail must stay within predetermined, approved corridor. Livestock grazing is prevalent in area and must be considered.

General Environmental Description: Generally open hillside with little to no trees, small low shrubs, with ground cover being mostly grasses.

Special Considerations: Any alternate lines that are built should be signed as such with difficulty level. Livestock exclusion fencing may be necessary, see fencing plans for details.

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POINTE STRATEGIES
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

DESIGNED FOR



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 Healthy Parks Healthy People
 2950 Peralta Oaks Court,
 Oakland, CA 94605
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 www.ebparks.org

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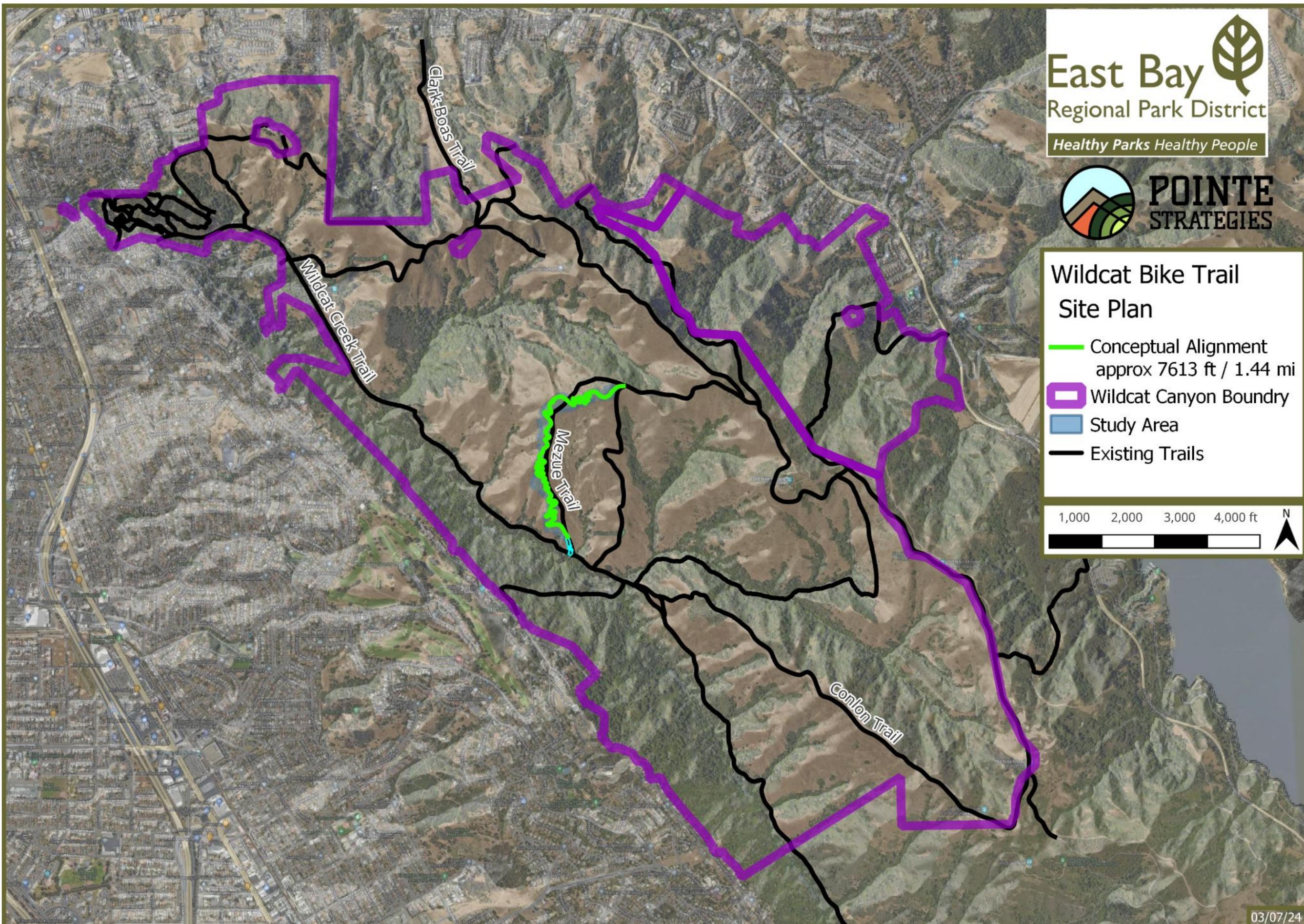
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TRAIL NARRATIVE
 DESIGN DETAILS

SHEET NUMBER

GD-1



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Wildcat Bike Trail
Site Plan

-  Conceptual Alignment
approx 7613 ft / 1.44 mi
-  Wildcat Canyon Boundry
-  Study Area
-  Existing Trails



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 Pointestrategies.com
 970-462-7059

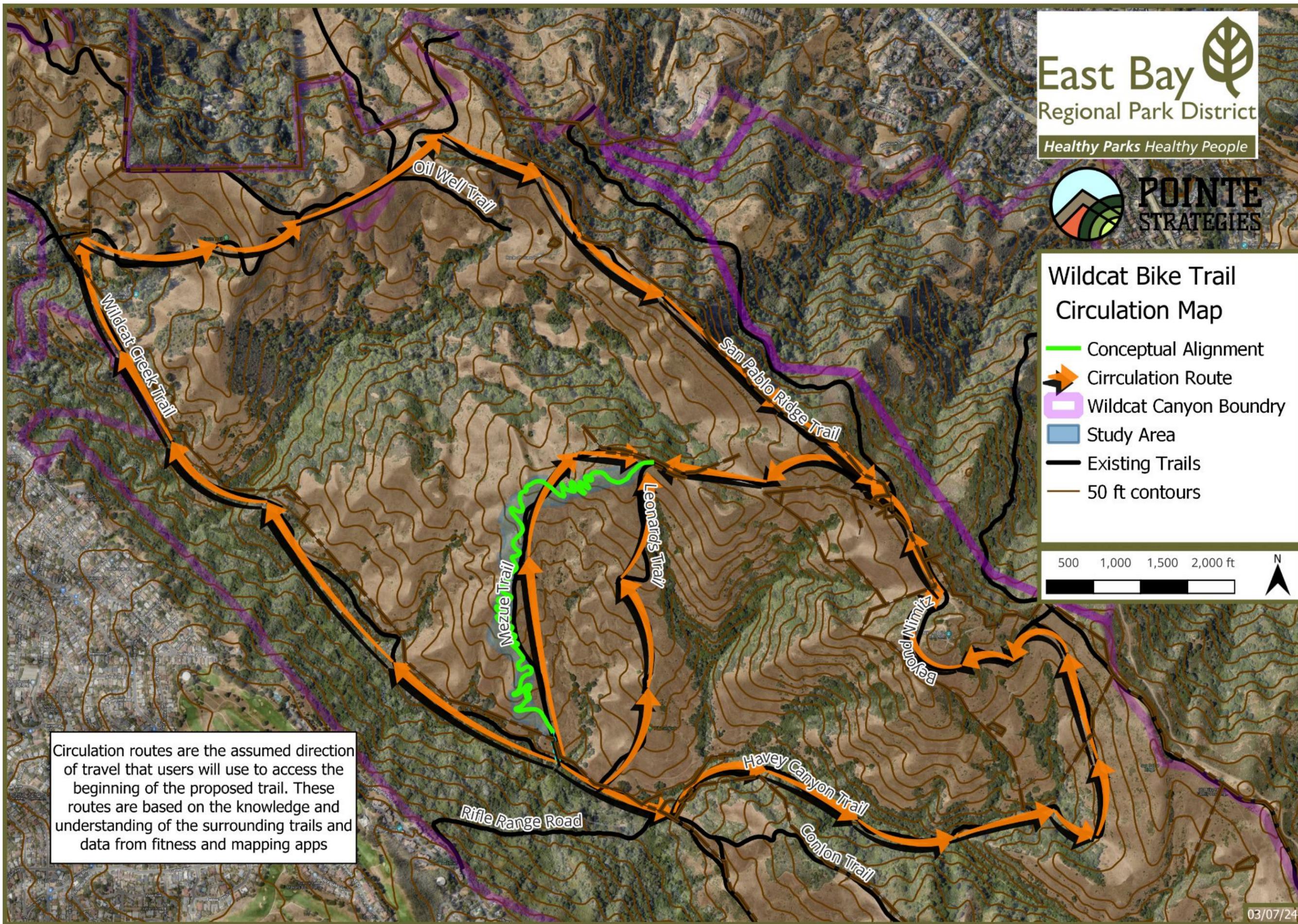
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SITE PLAN
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SP-1
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03/07/24



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- Wildcat Bike Trail Circulation Map**
-  Conceptual Alignment
 -  Circulation Route
 -  Wildcat Canyon Boundry
 -  Study Area
 -  Existing Trails
 -  50 ft contours



Circulation routes are the assumed direction of travel that users will use to access the beginning of the proposed trail. These routes are based on the knowledge and understanding of the surrounding trails and data from fitness and mapping apps

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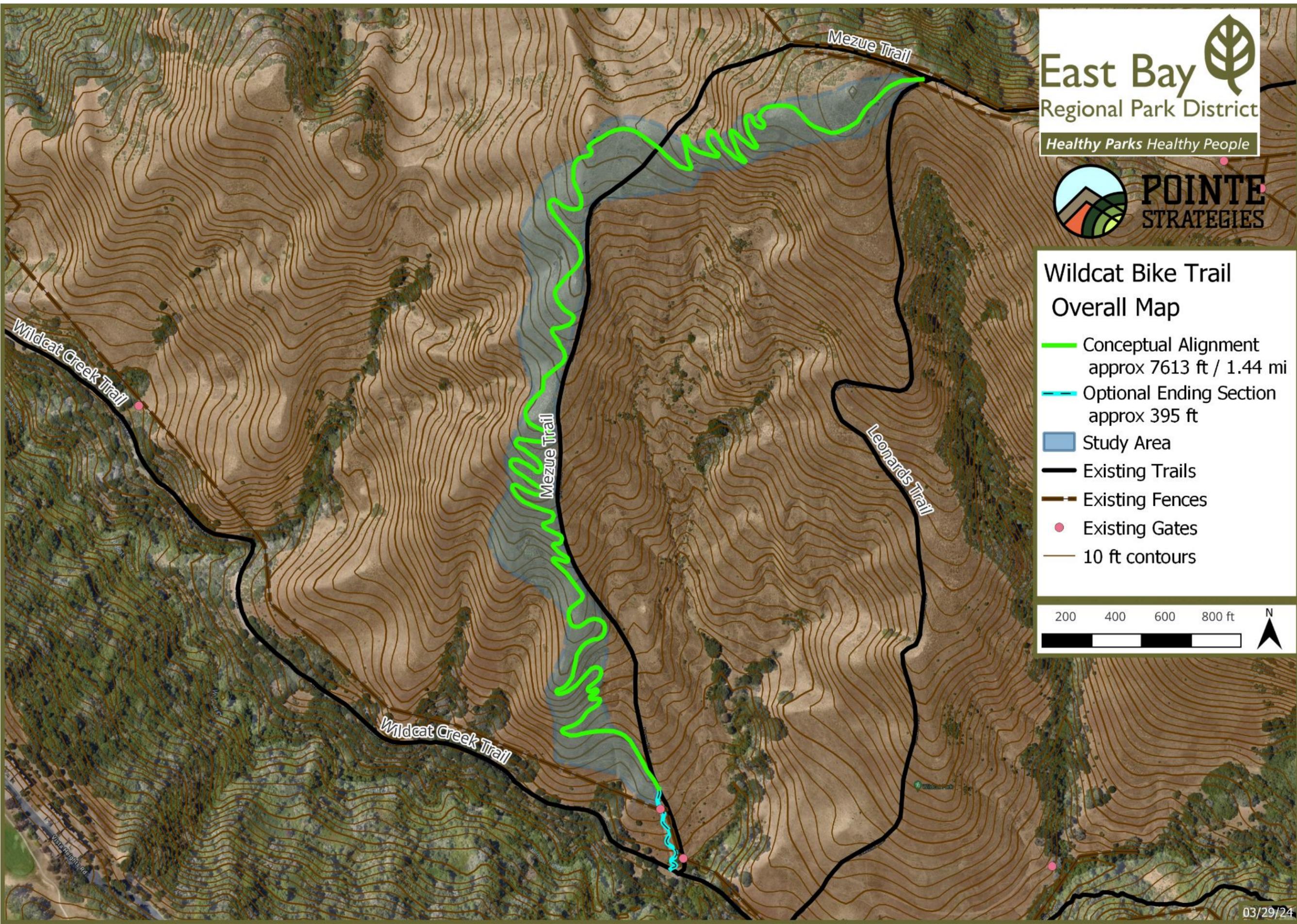
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CIRCULATION MAP
 SHEET NUMBER
SP-2
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Wildcat Bike Trail Overall Map

-  Conceptual Alignment
approx 7613 ft / 1.44 mi
-  Optional Ending Section
approx 395 ft
-  Study Area
-  Existing Trails
-  Existing Fences
-  Existing Gates
-  10 ft contours



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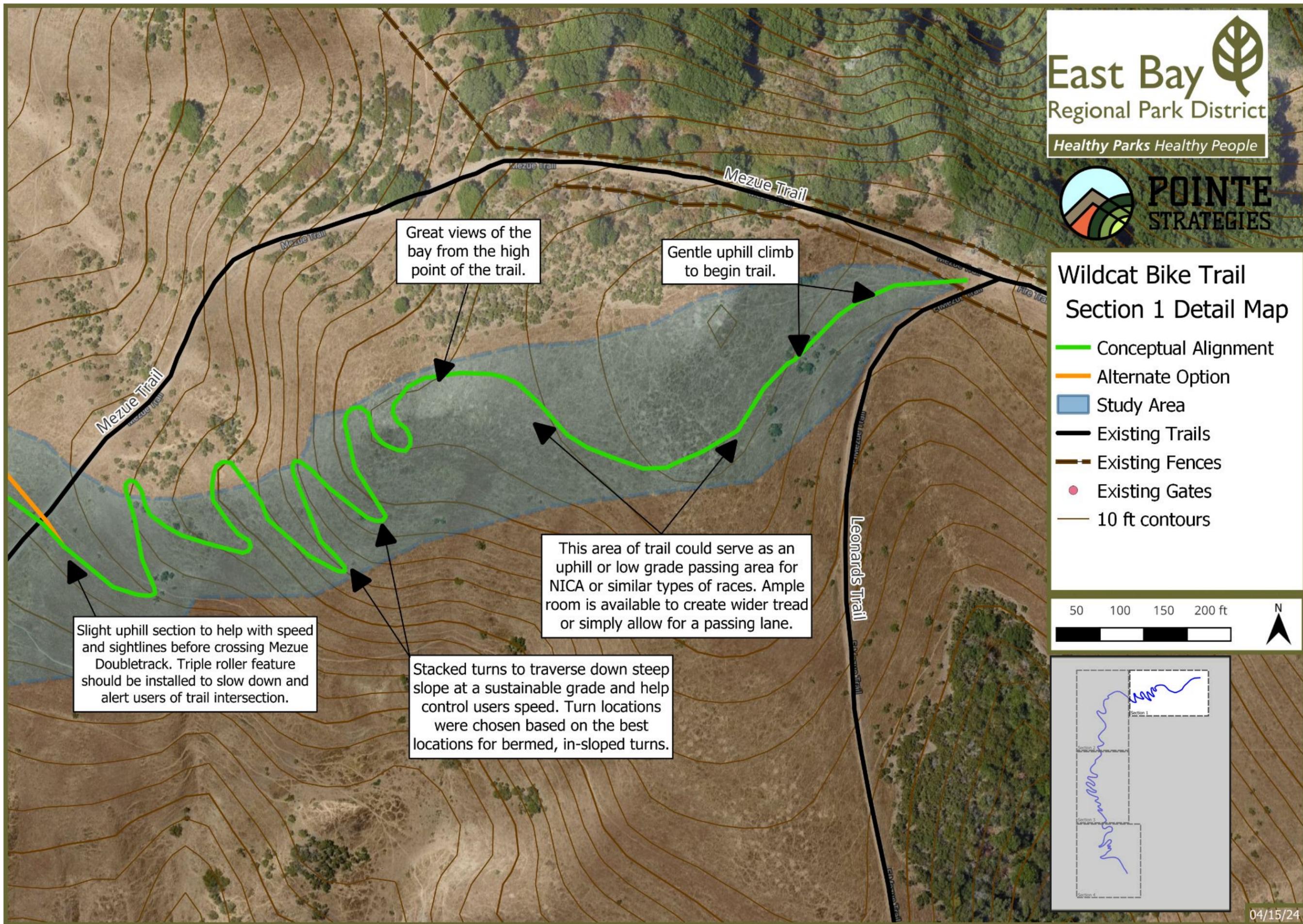
OVERALL MAP

SHEET NUMBER

TM-1

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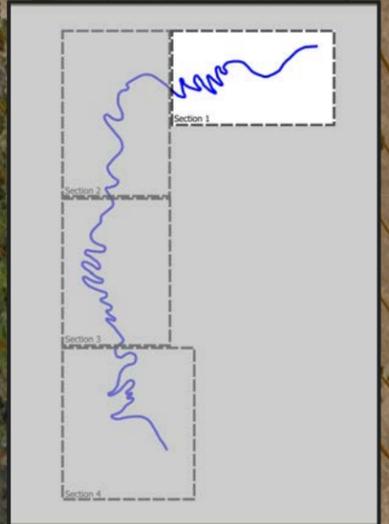
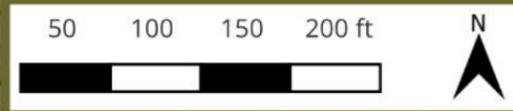
03/29/24



Wildcat Bike Trail

Section 1 Detail Map

- Conceptual Alignment
- Alternate Option
- Study Area
- Existing Trails
- Existing Fences
- Existing Gates
- 10 ft contours



Great views of the bay from the high point of the trail.

Gentle uphill climb to begin trail.

This area of trail could serve as an uphill or low grade passing area for NICA or similar types of races. Ample room is available to create wider tread or simply allow for a passing lane.

Slight uphill section to help with speed and sightlines before crossing Mezue Doubletrack. Triple roller feature should be installed to slow down and alert users of trail intersection.

Stacked turns to traverse down steep slope at a sustainable grade and help control users speed. Turn locations were chosen based on the best locations for bermed, in-sloped turns.

Alternate out of study area option. Route avoids heavy livestock areas and provides a lower grade alternative but leaves study area. Contains a relatively straight and flat section that would be ideal for three tabletop jump features on the west side of knoll.

Gentle uphill to help with speed control and water drainage.

Heavy livestock areas. Hilltops have lower vegetation and would be good to avoid.

Trail should take advantage of natural undulations in the terrain to improve drainage.

Slight uphill climb to give riders a break and help with speed control. This area could serve as an uphill or low grade passing area for NICA or similar types of races. Ample room is available to create wider tread or simply allow for a passing lane.

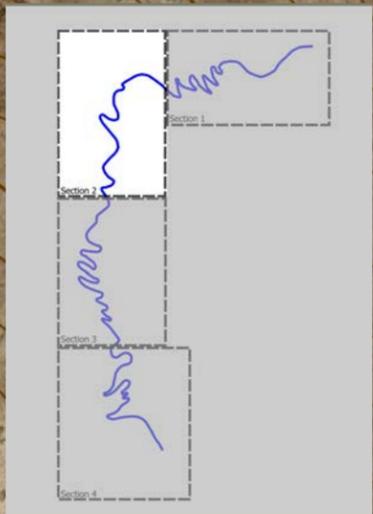
Triple roller feature should be installed to slow down and alert users of trail intersection.

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 **POINTE STRATEGIES**

Wildcat Bike Trail Section 2 Detail Map

-  Conceptual Alignment
-  Alternate Option
-  Study Area
-  Existing Trails
-  Existing Fences
-  Existing Gates
-  10 ft contours



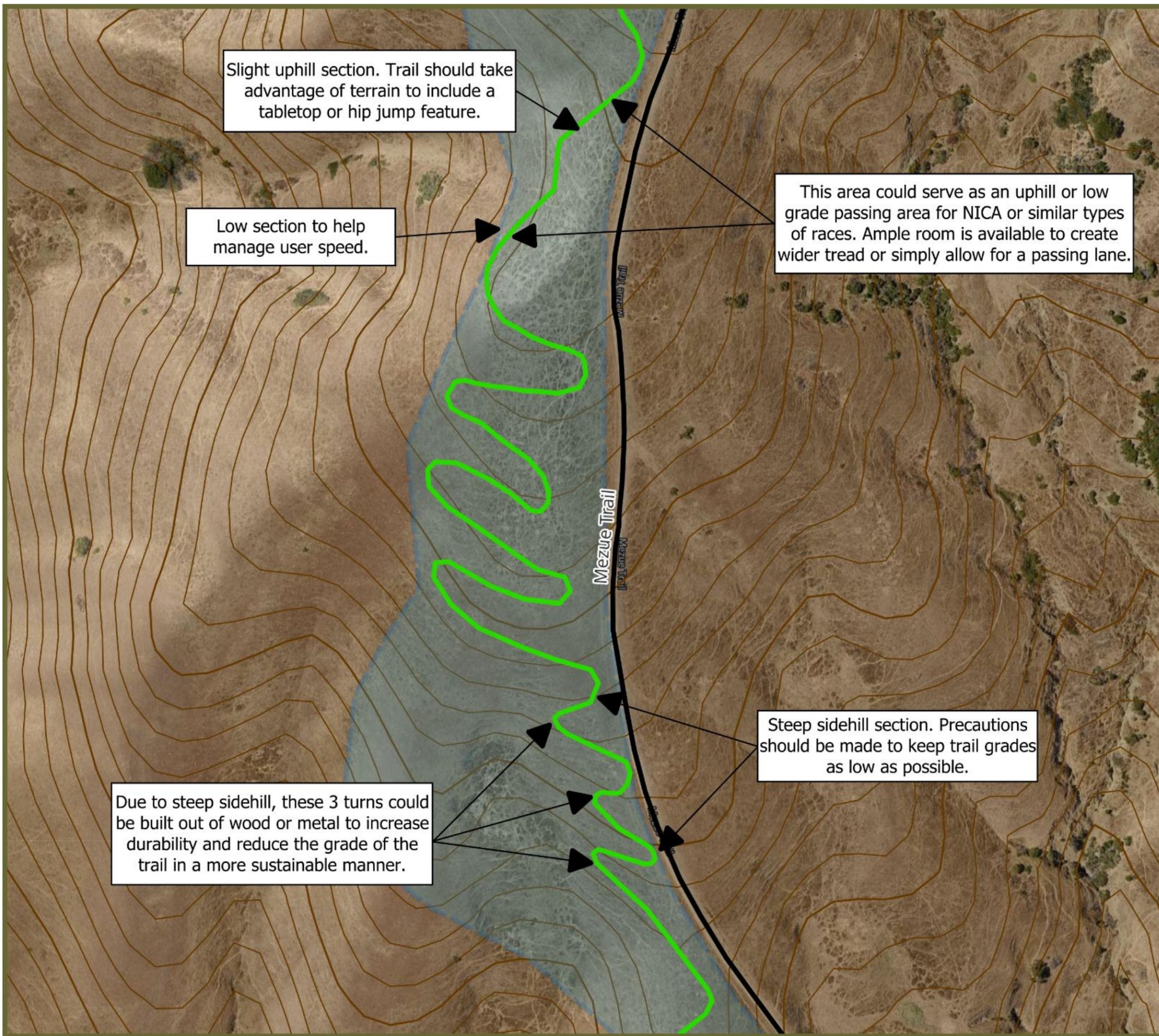
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SECTION 2
 DETAIL MAP
 SHEET NUMBER
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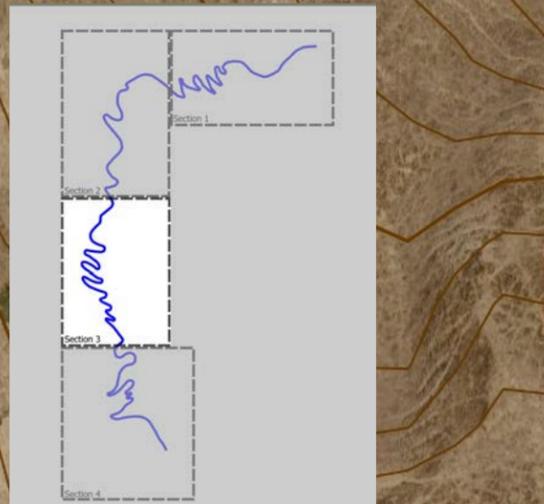
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POINTE STRATEGIES

**Wildcat Bike Trail
Section 3 Detail Map**

- Conceptual Alignment
- Alternate Option
- Study Area
- Existing Trails
- Existing Fences
- Existing Gates
- 10 ft contours



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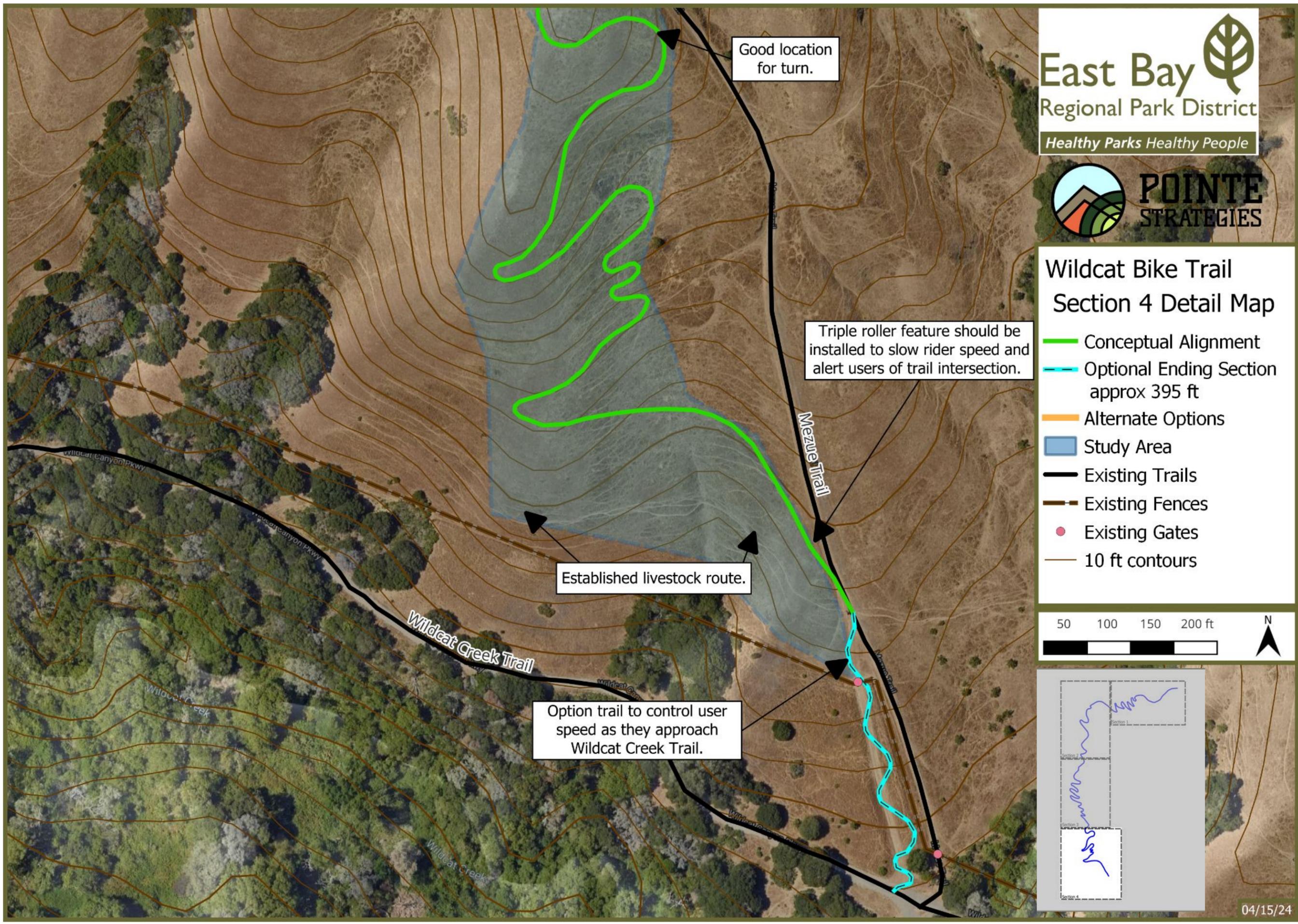
SECTION 3
DETAIL MAP

SHEET NUMBER

TM-4

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04/15/24

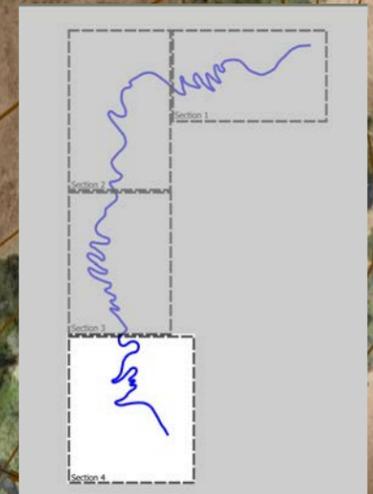



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POINTE STRATEGIES

Wildcat Bike Trail Section 4 Detail Map

- Conceptual Alignment
- Optional Ending Section approx 395 ft
- Alternate Options
- Study Area
- Existing Trails
- Existing Fences
- Existing Gates
- 10 ft contours



Good location for turn.

Triple roller feature should be installed to slow rider speed and alert users of trail intersection.

Established livestock route.

Option trail to control user speed as they approach Wildcat Creek Trail.

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 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

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 RICHMOND, CALIFORNIA

SECTION 4
DETAIL MAP

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TM-5

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04/15/24

Soft Surface Bike-Optimized Trail Features

Roller: A trail feature in which the trail tread rises and lowers gradually with no defined lip, takeoff, or landing. For beginner users this is a feature to help teach a 'pumping' motion to create speed without pedaling. Feature can be used as a reversal in grade to be a drainage technique to force water off the trail. Feature is also an effective speed measure to slow and alert users of an intersection or direction change by creating a roller that is taller than longer.

Difficulty rating: Beginner to Intermediate depending on size.

Spacing Guidelines: Feature can be placed most anywhere with few spacing restrictions. It can be spaced 50-100' to increase drainage or add undulations to a particular section of trail, 10-25' to create more vertical texture for user enjoyment, or be placed in quick succession to help slow down users.

Price: \$

Tabletop Jump: A jump feature that has a defined lip or takeoff and defined landing with a flat surface connecting the two allowing users to ride across the feature without their tires leaving the ground. This feature allows beginner users to ride the trail within their comfort level but promotes progression for frequent users. Advanced users will find this feature exciting and will generally leave the ground to clear the flat section on top.

Difficulty rating: Beginner to Advanced depending on size.

Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the jump and readjust after the jump. Depending on the size of the feature, beginner sized tabletops should have spacing of roughly 15-30', intermediate should be spaced 25'-50' apart and advanced can range from 30-100' depending on the terrain and level of difficulty.

Price: \$-\$\$\$

Double or Gap Jump: A jump feature that has a defined lip or takeoff and defined landing but no rideable surface connecting the two. This feature has a mandatory gap that users must clear in order to avoid crashing. This is considered an advanced feature and should only be incorporated into advanced trails.

Difficulty rating: Advanced to Expert.

Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the jump and readjust after the jump. Depending on the size of the feature and gap, spacing can range from 30-100' depending on the terrain and level of difficulty.

Price: \$-\$\$\$

Step-down Jump: A jump feature in which the landing is lower than the lip or takeoff. This feature can be used to generate speed where needed. This feature can be built in a tabletop or gap jump style, with the tabletop style being more appropriate for most trails and the gap jump style being only appropriate for advanced trails.

Difficulty rating: Intermediate to Advanced depending on size.

Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the jump and readjust after the jump. Depending on the size of the feature, intermediate rated features should be spaced 25'-50' apart and advanced can range from 30-100' depending on the terrain and level of difficulty.

Price: \$-\$\$\$

Step-up Jump: A jump feature in which the landing is higher than the lip or takeoff. This feature is generally used to slow users down where needed. This feature can be built in a tabletop or gap jump style, with the tabletop style being more appropriate for most trails and the gap jump style being only appropriate for advanced trails.

Difficulty rating: Intermediate to Advanced depending on size.

Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the jump and readjust after the jump. Depending on the size of the feature, intermediate rated features should be spaced 25'-50' apart and advanced can range from 30-100' depending on the terrain and level of difficulty.

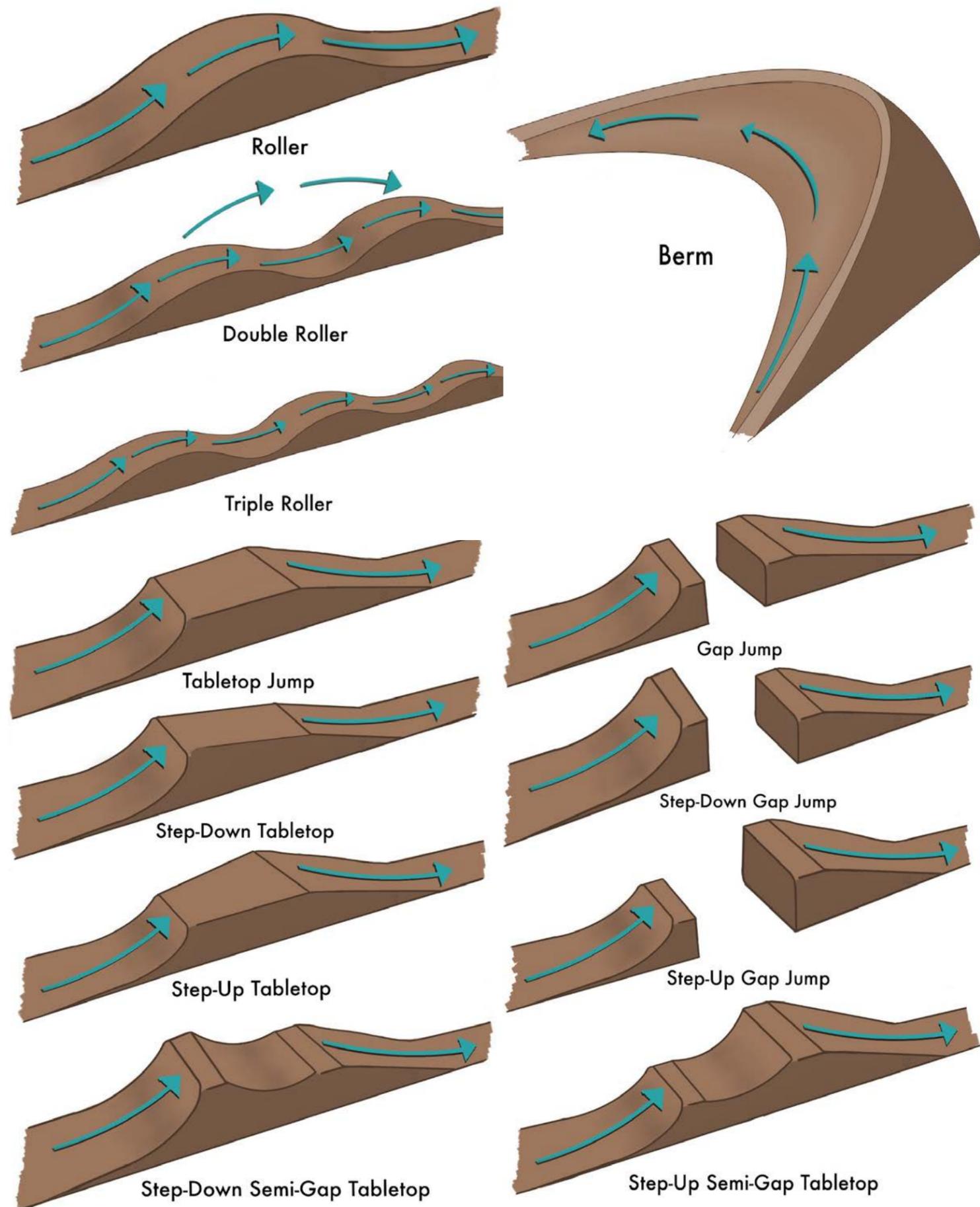
Price: \$-\$\$\$

Berm: An trail feature designed to keep a user's speed through a turn and provide a change of direction by using a built up in-sloped tread surface. Bike optimized berms typically are located where a trail is changing direction for more than 90°, with most features carrying users thru a complete 180° change of direction. Typically soil is built up above ground to achieve this feature, but the natural terrain may provide opportunity for partial or fully natural berms in ideal conditions. An in-sloped turn may become a bermed turn with use over time.

Difficulty rating: Beginner to Advanced depending on size.

Spacing Guidelines: Given the special use case of this feature, berms should be placed anywhere the trail turns more than 90°. Spacing therefore coincides with trail design and no spacing requirements are necessary. Two berms can be built in succession creating a feature called a chicane.

Price: \$-\$\$\$



Hard Surface Bike-Optimized Trail Features

Prefabricated Features

Roller: A prefab feature in which you can rollover the feature and accelerate through it. It can also serve as a small jump for more advanced users. The feature is similar to the soft surface version and does not have a defined lip, takeoff, or landing. For beginner users this is a feature to help teach a 'pumping' motion to create speed without pedaling.

Difficulty rating: Beginner to Intermediate depending on size.

Spacing Guidelines: Feature can be placed most anywhere with few spacing restrictions. It can be spaced 50-100' to add undulation to a particular section of trail, 10-25' to create more vertical texture for user enjoyment, or be placed in quick succession to help slow down users.

Dimensions: 2' H x 18.7' L x 36" W

Price: \$2,507.78 - tax, shipping, and installation not included.



Roller



A-Frame

A-Frame: A prefab feature in which you can rollover the feature and can also serve as a small jump for more advanced users. The feature is similar to the prefab Roller feature but does have a more defined lip, takeoff, and landing.

Difficulty rating: Beginner to intermediate depending on size.

Spacing Guidelines: Feature has relatively low spacing restrictions. It can be spaced 50-100' to add undulation to a particular section of trail, 10-25' to create more vertical texture for user enjoyment, or be placed in quick succession to help slow down users.

Dimensions: 2' H x 19' L x 36" W

Price: \$2,185.00 - tax, shipping, and installation not included.



Straight Ladder



Straight Ladder: A prefab feature in which you can ride over the feature and may serve as a jump for advanced users. The feature is similar to a Tabletop soft surface feature and does have a defined takeoff, top, and landing.

Difficulty rating: Beginner to Intermediate depending on size.

Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the feature and readjust after. Straight Ladder feature should be spaced roughly 25'-50' from other features other than Rollers, which can be spaced 10-25' if necessary.

Dimensions: 2' H x 22.8' L x 36" W

Price: \$2,895.24 - tax, shipping, and installation not included.



Double Roller

Rollable Sender: A prefab version of a tabletop soft surface feature. This feature that has a defined lip or takeoff and defined landing with a flat surface connecting the two allowing users to ride across the feature without their tires leaving the ground. This feature allows beginner users to ride the trail within their comfort level but promotes progression for frequent users. Advanced users will generally leave the ground to clear the flat section on top.

Difficulty rating: Beginner to Advanced depending on size.

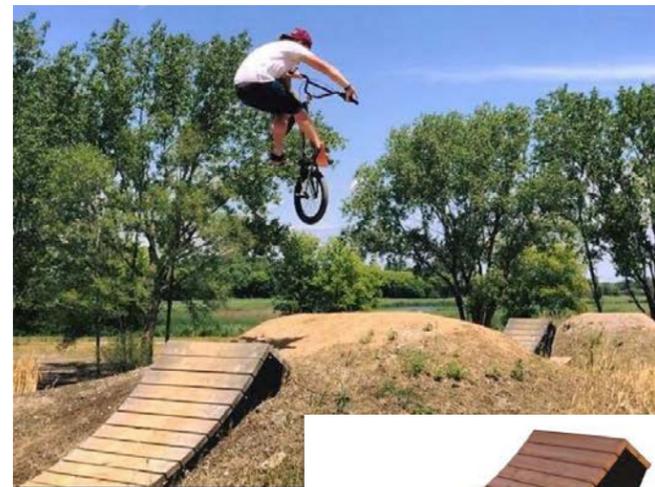
Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the jump and readjust after the jump. Depending on the size of the feature, beginner sized tabletops should have spacing of roughly 15-30', intermediate should be spaced 25'-50' apart and advanced can range from 30-100' depending on the terrain and level of difficulty.

Dimensions: 2' H x 17.8' L x 48" W, 3' H x 21.5' L x 48" W, or 4' H x 28' L x 48" W

Price: 2ft H - \$3,525.10, 3ft H - \$4,602.06, 4ft H - \$6,242.48 - tax, shipping, and installation not included.



Rollable Sender



Ladder Drop

Kicker Ramp: When paired with a dirt or prefabricated landing, this is a hard surface version of a Double or Gap Jump soft surface feature. This a jump feature that has a defined lip or takeoff and defined landing but no rideable surface connecting the two. This feature has a mandatory gap that users must clear in order to avoid crashing. This is considered an advanced feature and should only be incorporated into advanced trails.

Difficulty rating: Advanced to Expert

Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the jump and readjust after the jump. Depending on the size of the feature and gap, spacing can range from 30-100' depending on the terrain and level of difficulty.

Dimensions: 3' H x 8.3' L x 48" W, 4' H x 8.3' L x 48" W, or 5' H x 8.9' L x 48" W

Price: 3ft H - \$2,208.04, 4ft H - \$2,715.52, 5ft H - \$3,164.80 - tax, shipping, and installation not included.



Kicker Ramp

Ladder Drop: When paired with a dirt or prefabricated landing, this becomes a constructed drop feature to replicate what users may find on an intermediate or advanced singletrack trail. This feature requires users to lift up the front wheel of the bike to prepare for landing after 'dropping' off of the ladder. The height of the drop can be adjusted to relatively any height for full customization.

Difficulty rating: Intermediate to Expert depending on height of drop.

Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the drop and readjust after the drop. Depending on the size of the drop, spacing can range from 20-75'.

Dimensions: 1' to 8' H x 8' L x 36" W

Price: 1ft H - \$1,208.04, 5ft H - \$3,164.80 - tax, shipping, and installation not included.



Berm Turn

Berm Turn: A prefabricated hard surface version on a Berm. This is a feature designed to keep a user's speed through a turn and provide a change of direction by using a built up curved tread surface. The feature is available in 45° sections, four sections can be put together to complete a 180° change of direction. This feature can be used to create a durable turn for areas where an excessive amount of material may be needed to ensure a durable soft surface turn.

Difficulty rating: Beginner to Intermediate.

Spacing Guidelines: Given the special use case of this feature, berms should be placed anywhere the trail turns more than 90 degrees. Spacing therefore coincides with trail design and no spacing requirements are necessary. Two berms can be built in succession creating a feature called a chicane.

Dimensions: 180° section 3' H x 34'-4" L x 17'-3" W

Price: \$18,481.00 - tax, shipping, and installation not included.

All features spec'd from
 Progressive Bike Ramps
 601 S. McKinley Ave.
 Joplin, MO 64801
 855-727-7267
 www.progressivebikeramps.com

DESIGNED BY

POINTE STRATEGIES
 info@pointestrategies.com
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HARD SURFACE
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FO-2
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Hard Surface Bike-Optimized Trail Features

Rock Features

Rock Roller: A trail feature that can be constructed using a large semi smooth rock to mimic a soft or hard surface Roller feature. Construction consists of a medium to large size rock(s) with at least 1/3 of the rock(s) buried in the ground, oriented in a fashion that allows users to roll over it in a generally smooth manner creating undulations in the terrain. For beginner users this is a feature to help teach a 'pumping' motion to create speed without pedaling and help with body positioning while navigating rock features. This feature may also serve as a jump or drop for more advanced users depending on construction.

Difficulty rating: Beginner to Intermediate depending on size.

Spacing Guidelines: Feature can be placed most anywhere with few spacing restrictions. It can be spaced 50-100' to add undulation to a particular section of trail, 10-25' to create more vertical texture for user enjoyment, or be placed in quick succession to help slow down users.

Rock Armoring: A series of medium to large sized rocks placed in a fashion to create a protected section of trail that can test users skills or protect sensitive sections of trails. Rocks should be constructed in a relatively smooth fashion for trail tread, rocks can still create a challenging riding surface but the goal of this feature is to protect steep grades or pour trail conditions. This type of feature would be ideal for sections of trail with heavy livestock activity or where user speed is creating brake bumps to protect trail tread.

Difficulty rating: Beginner to Intermediate depending on size.

Spacing Guidelines: Feature can be placed most anywhere with few spacing restrictions. Adequate space should be left both before and after rock armoring to allow users time to prepare for and readjust after the feature. Depending on the length and smoothness of the armoring, spacing can range from 5-25' depending on the terrain and level of difficulty.

Rock Garden: A series of medium to large sized rocks placed in a fashion to create a challenging section of trail to test users skills, slow user speed, or protect sensitive sections of trails. Rocks do not need to be constructed in a smooth fashion for trail tread, rocks should create a challenging trail tread but still allow users to pass over without stopping. This type of feature would be ideal for sections of trail with heavy livestock activity to protect trail tread.

Difficulty rating: Beginner to Advanced depending on construction.

Spacing Guidelines: Feature can be placed most anywhere with few spacing restrictions. Adequate space should be left both before and after a rock garden to allow users time to prepare for and readjust after the feature. Depending on the length and smoothness of the rock garden, spacing can range from 10-50' depending on the terrain and level of difficulty.

Rock Kicker Ramp: When paired with a dirt or prefabricated landing, this is a rock version of a Double or Gap Jump soft surface feature. This a jump feature that uses a large rock to create a defined lip or takeoff allowing users to leave the ground and land further down the trail. There is generally no rideable surface connecting the takeoff and the landing, but one can be made to mimic more of a tabletop style jump feature. These types of feature can be used on the side of the trail to create an more advanced option while not impacting the main trail tread.

Difficulty rating: Intermediate to Expert

Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the jump and readjust after the jump. Depending on the size of the feature and gap, spacing can range from 20-50' depending on the terrain and level of difficulty.

Rock Drop: When paired with a dirt or prefabricated landing, this becomes a constructed drop feature to replicate what users may find on an intermediate or advanced singletrack trail. This feature requires users to lift up the front wheel of the bike to prepare for landing after 'dropping' off of the large rock. The height of the drop can be adjusted to relatively any height for full customization. These types of feature can be used on the side of the trail to create an more advanced option while not impacting the main trail tread.

Difficulty rating: Intermediate to Expert depending on height of drop.

Spacing Guidelines: Adequate space must be left both before and after a feature to allow users time to prepare for the drop and readjust after the drop. Depending on the size of the drop, spacing can range from 20-75'.

Rock Berm: This feature is typical constructed mostly of soil and then capped or finished with large flat rocks to help increase the durability of the berm. The large flat rocks should follow rock armoring guidelines and allow users to ride across the surface relatively smoothly. This type of feature is typical constructed in locations with poor soil conditions, steep grades, or where user speed is creating brake bumps in turn. If the terrain and materials allow, the berm can be built entirely with rock as well. This goal of this feature is to keep a user's speed through a turn and provide a change of direction by using a built up curved tread surface.

Difficulty rating: Beginner to Intermediate.

Spacing Guidelines: Given the special use case of this feature, berms should be placed anywhere the trail turns more than 90 degrees. Spacing therefore coincides with trail design and no spacing requirements are necessary. Two berms can be built in succession creating a feature called a chicane.



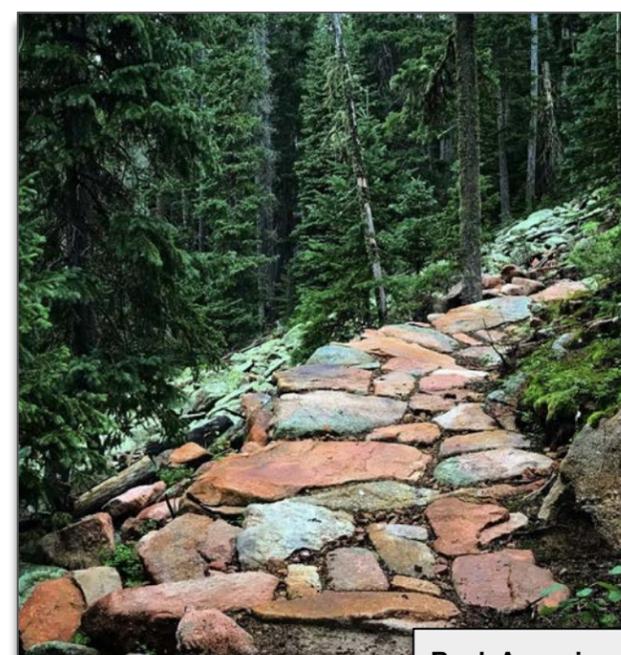
Rock Roller



Rock Kicker Ramp



Rock Garden



Rock Armoring



Rock Berm

DESIGNED BY
 **POINTE STRATEGIES**
info@pointestrategies.com
Pointestrategies.com
970-462-7059

DESIGNED FOR

East Bay 
Regional Park District
Healthy Parks Healthy People
2950 Peralta Oaks Court,
Oakland, CA 94605
1-888-327-2757
www.ebparks.org

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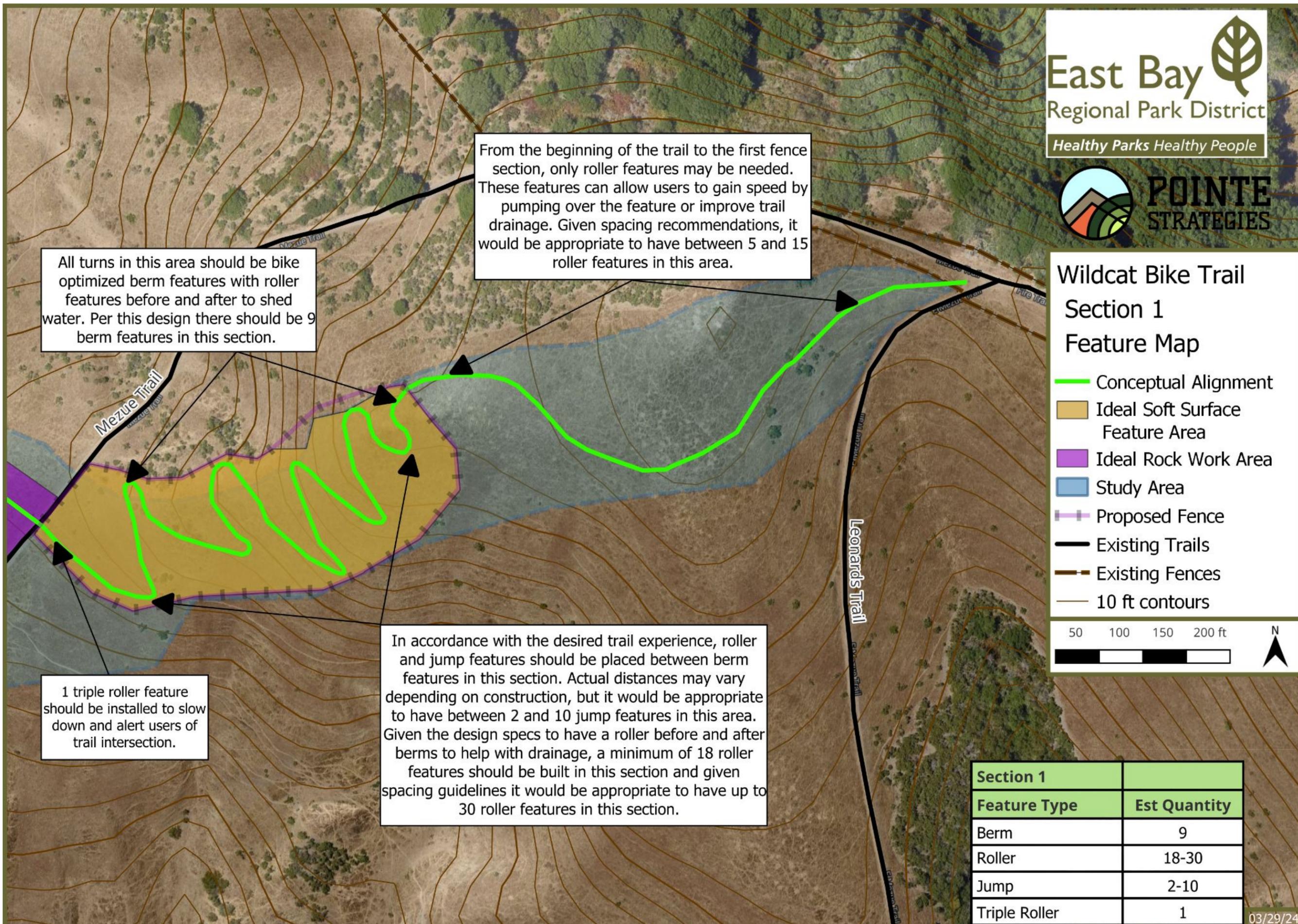
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HARD SURFACE
ROCK FEATURES

SHEET NUMBER

FO-3

13 of 32



All turns in this area should be bike optimized berm features with roller features before and after to shed water. Per this design there should be 9 berm features in this section.

From the beginning of the trail to the first fence section, only roller features may be needed. These features can allow users to gain speed by pumping over the feature or improve trail drainage. Given spacing recommendations, it would be appropriate to have between 5 and 15 roller features in this area.

1 triple roller feature should be installed to slow down and alert users of trail intersection.

In accordance with the desired trail experience, roller and jump features should be placed between berm features in this section. Actual distances may vary depending on construction, but it would be appropriate to have between 2 and 10 jump features in this area. Given the design specs to have a roller before and after berms to help with drainage, a minimum of 18 roller features should be built in this section and given spacing guidelines it would be appropriate to have up to 30 roller features in this section.



Wildcat Bike Trail
 Section 1
 Feature Map

- Conceptual Alignment
- Ideal Soft Surface Feature Area
- Ideal Rock Work Area
- Study Area
- Proposed Fence
- Existing Trails
- Existing Fences
- 10 ft contours



Section 1	
Feature Type	Est Quantity
Berm	9
Roller	18-30
Jump	2-10
Triple Roller	1

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FEATURE MAP 1

SHEET NUMBER

FM-1

High livestock usage in this area would make this area ideal for rock armoring or rock garden features to help protect trail tread. Actual distances may vary depending on construction, but it would be appropriate to have between 10 and 100 linear feet of rock work in this area.

The uphill nature of this section would not be suitable for jump features. Roller features may be used if desired but would not be necessary as high livestock usage may impact roller features.

Roller and jump features should be placed between berm features in this section. Actual distances may vary depending on construction, but it would be appropriate to have between 3 and 8 jump features in this area. Given the design specs to have a roller before and after berms to help with drainage, a minimum of 12 roller features should be built in this section and given spacing guidelines it would be appropriate to have up to 35 roller features in this section.

Most turns in this area should be bike optimized berm features with roller features before and after to shed water. Per this design there should be at least 6 berm features in this section.

Triple roller feature, see Section 1 for details.

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**Wildcat Bike Trail
 Section 2
 Feature Map**

-  Conceptual Alignment
-  Ideal Soft Surface Feature Area
-  Ideal Rock Work Area
-  Study Area
-  Proposed Fence
-  Existing Trails
-  Existing Fences
-  10 ft contours



Section 2	
Feature Type	Est Quantity
Berm	6-7
Roller	12-35
Jump	3-8
Rock Work	10-100 LF

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DESIGNED BY
 **POINTE STRATEGIES**
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

DESIGNED FOR

 East Bay Regional Park District
 Healthy Parks Healthy People
 2950 Peralta Oaks Court,
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 1-888-327-2757
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FEATURE MAP 2
 SHEET NUMBER
FM-2
 15 of 32

High livestock usage in this area would make this area ideal for rock armoring or rock garden features to help protect trail tread. Actual distances may vary depending on real life construction, but it would be appropriate to have between 30 and 240 linear feet of rock work in this area.

All turns in this area should be bike optimized berm features with roller features before and after to shed water. Per this design there should be at least 12 berm features in this section.

3 highlighted turns are appropriate places for a prefabricated hard surface berm to increase durability and reduce need for excessive fill material.

Livestock usage in this area could make this area appropriate for rock armoring or rock garden features to help protect trail tread. Actual distances may vary depending on construction, but it would be appropriate to have between 20 and 300 linear feet of rock work in this area.

Roller and jump features should be placed between berm features in this section. Actual distances may vary depending on construction, but it would be appropriate to have between 4 and 12 jump features in this area. Given the design specs to have a roller before and after berms to help with drainage, a minimum of 24 roller features should be built in this section and given spacing guidelines it would be appropriate to have up to 40 roller features in this section.

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**Wildcat Bike Trail
 Section 3
 Feature Map**

-  Conceptual Alignment
-  Ideal Soft Surface Feature Area
-  Ideal Rock Work Area
-  Study Area
-  Proposed Fence
-  Existing Trails
-  Existing Fences
-  10 ft contours



Section 3	
Feature Type	Est Quantity
Berm	12
Roller	24-40
Jump	4-12
Rock Work	50-540 LF
Prefab Berms	3

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 Pointestrategies.com
 970-462-7059

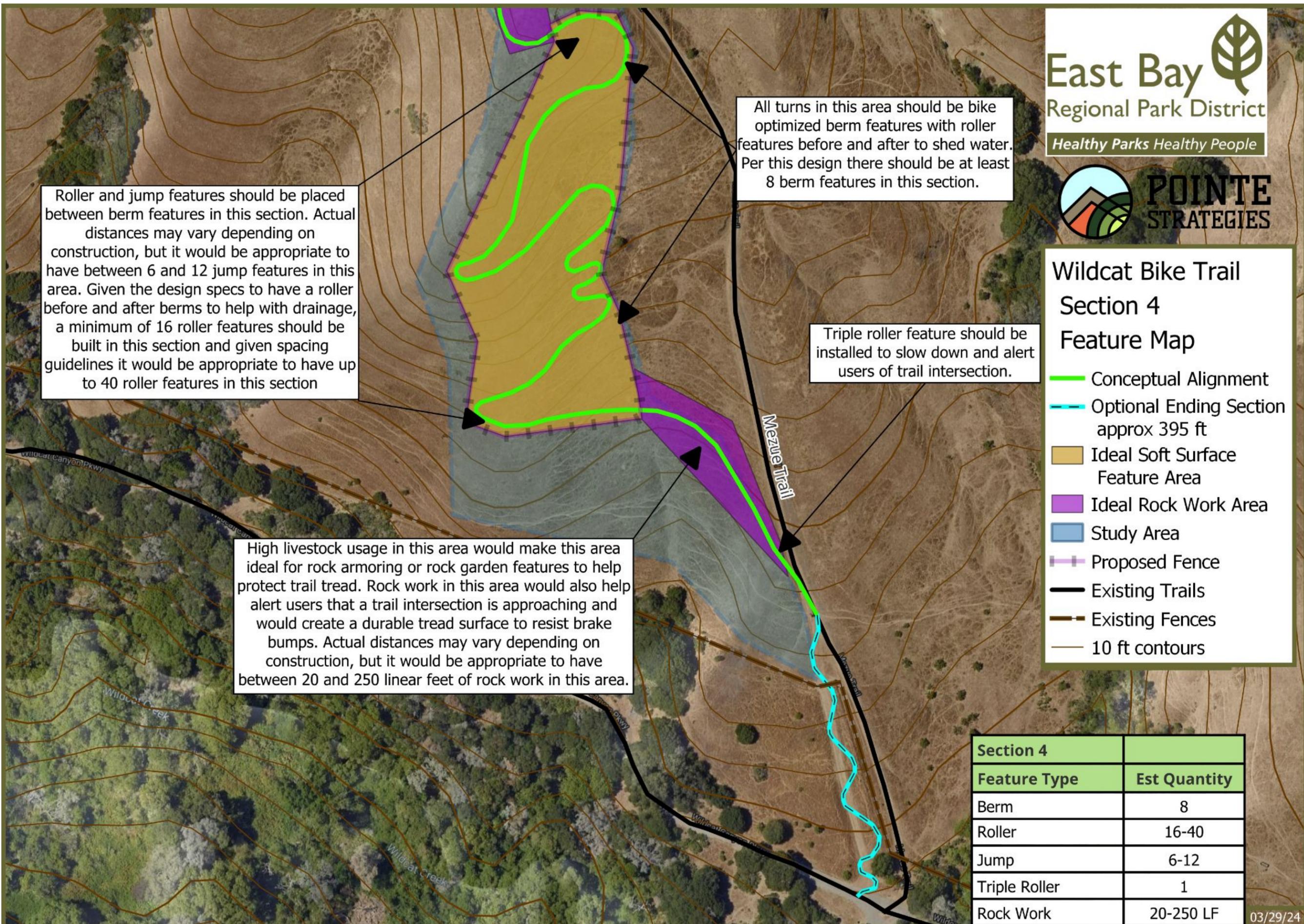
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FEATURE MAP 3
 SHEET NUMBER
FM-3
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Roller and jump features should be placed between berm features in this section. Actual distances may vary depending on construction, but it would be appropriate to have between 6 and 12 jump features in this area. Given the design specs to have a roller before and after berms to help with drainage, a minimum of 16 roller features should be built in this section and given spacing guidelines it would be appropriate to have up to 40 roller features in this section

All turns in this area should be bike optimized berm features with roller features before and after to shed water. Per this design there should be at least 8 berm features in this section.

Triple roller feature should be installed to slow down and alert users of trail intersection.

High livestock usage in this area would make this area ideal for rock armoring or rock garden features to help protect trail tread. Rock work in this area would also help alert users that a trail intersection is approaching and would create a durable tread surface to resist brake bumps. Actual distances may vary depending on construction, but it would be appropriate to have between 20 and 250 linear feet of rock work in this area.



Wildcat Bike Trail Section 4 Feature Map

- Conceptual Alignment
- - - Optional Ending Section approx 395 ft
- Ideal Soft Surface Feature Area
- Ideal Rock Work Area
- Study Area
- Proposed Fence
- Existing Trails
- Existing Fences
- 10 ft contours

Section 4	
Feature Type	Est Quantity
Berm	8
Roller	16-40
Jump	6-12
Triple Roller	1
Rock Work	20-250 LF

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DESIGNED BY
POINTE STRATEGIES
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

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 2950 Peralta Oaks Court,
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FEATURE MAP 4
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FM-4
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Proposed Fencing Map:

To help reduce the impacts to the trail from the livestock in the area, fencing is being proposed in certain highly sensitive areas. These areas will contain a majority of the soft surface trail features and will use a Cattle Guard Roller feature to allow users seamless transition in and out of these areas. A majority of the Berm features requiring higher amounts of dirt work will be found in these fenced in areas. These fence lines are subject to change given construction and terrain.

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Wildcat Bike Trail Fencing Map

- Conceptual Alignment
- Proposed Fences
- Study Area
- Existing Trails
- Existing Fences
- Existing Gates
- 10 ft contours



DESIGNED BY
POINTE STRATEGIES
info@pointestrategies.com
Pointestrategies.com
970-462-7059

DESIGNED FOR
East Bay Regional Park District
Healthy Parks Healthy People
2950 Peralta Oaks Court,
Oakland, CA 94605
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www.ebparks.org

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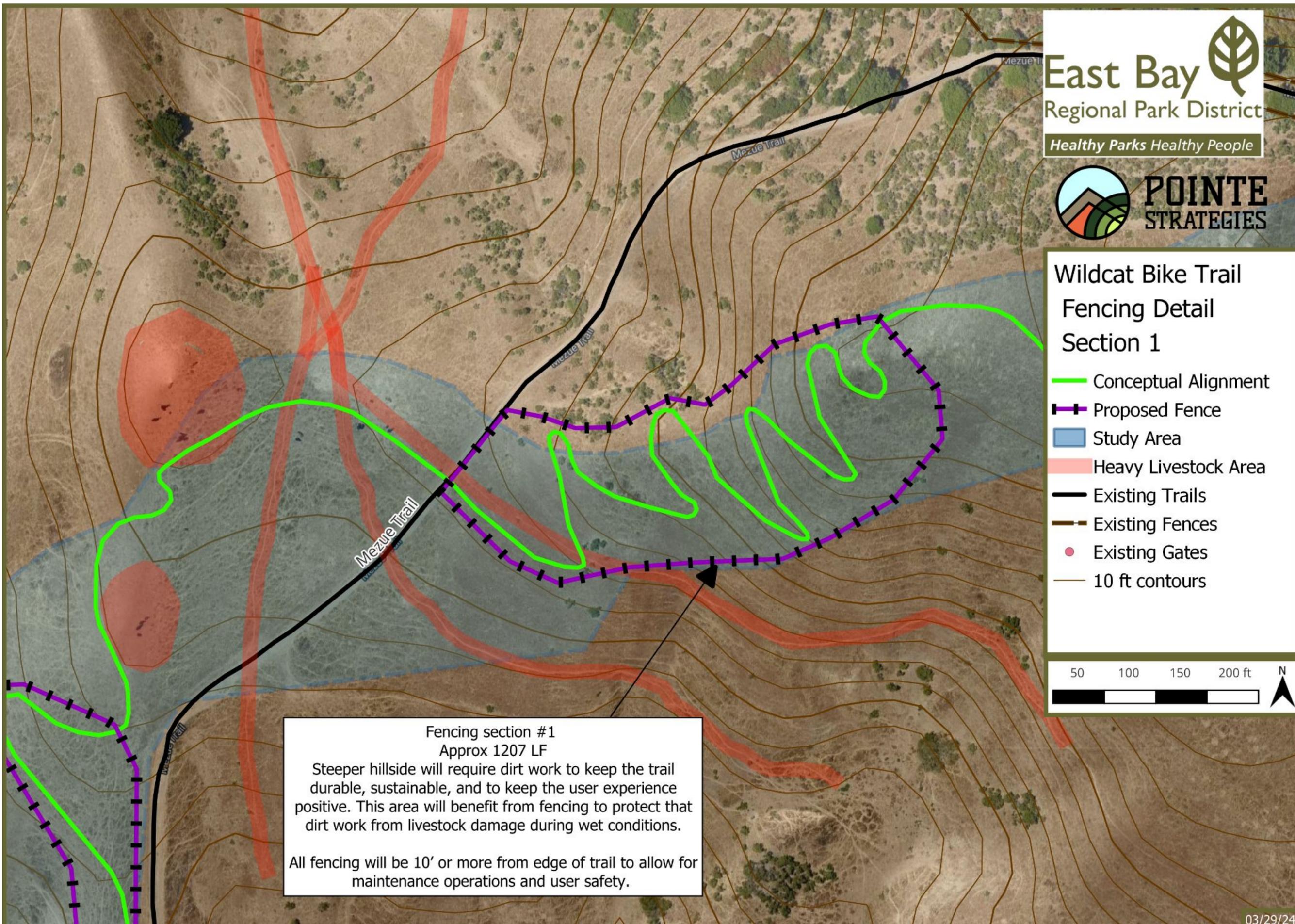
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OVERALL FENCING PLAN
SHEET NUMBER

FP-1

03/07/24





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Wildcat Bike Trail
Fencing Detail
Section 1

-  Conceptual Alignment
-  Proposed Fence
-  Study Area
-  Heavy Livestock Area
-  Existing Trails
-  Existing Fences
-  Existing Gates
-  10 ft contours



Fencing section #1
 Approx 1207 LF

Steeper hillside will require dirt work to keep the trail durable, sustainable, and to keep the user experience positive. This area will benefit from fencing to protect that dirt work from livestock damage during wet conditions.

All fencing will be 10' or more from edge of trail to allow for maintenance operations and user safety.

DESIGNED BY

POINTE STRATEGIES
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

DESIGNED FOR

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 Regional Park District
Healthy Parks Healthy People
 2950 Peralta Oaks Court,
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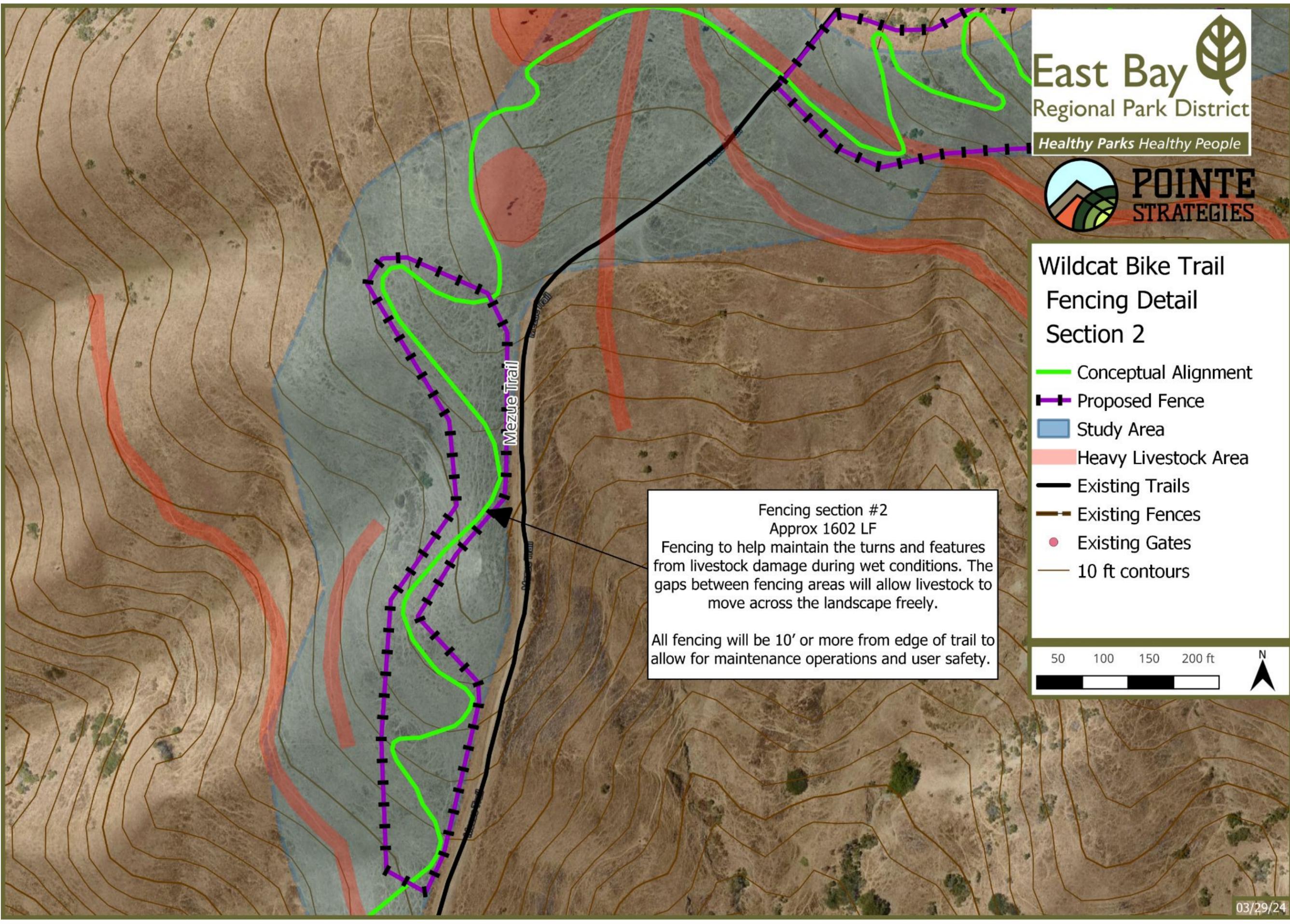
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FENCING
 SECTION MAP 1
 SHEET NUMBER

FP-2

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Wildcat Bike Trail
Fencing Detail
Section 2

- Conceptual Alignment
- - - Proposed Fence
- Study Area
- Heavy Livestock Area
- Existing Trails
- - - Existing Fences
- Existing Gates
- 10 ft contours

Fencing section #2
 Approx 1602 LF
 Fencing to help maintain the turns and features from livestock damage during wet conditions. The gaps between fencing areas will allow livestock to move across the landscape freely.
 All fencing will be 10' or more from edge of trail to allow for maintenance operations and user safety.



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POINTE STRATEGIES
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

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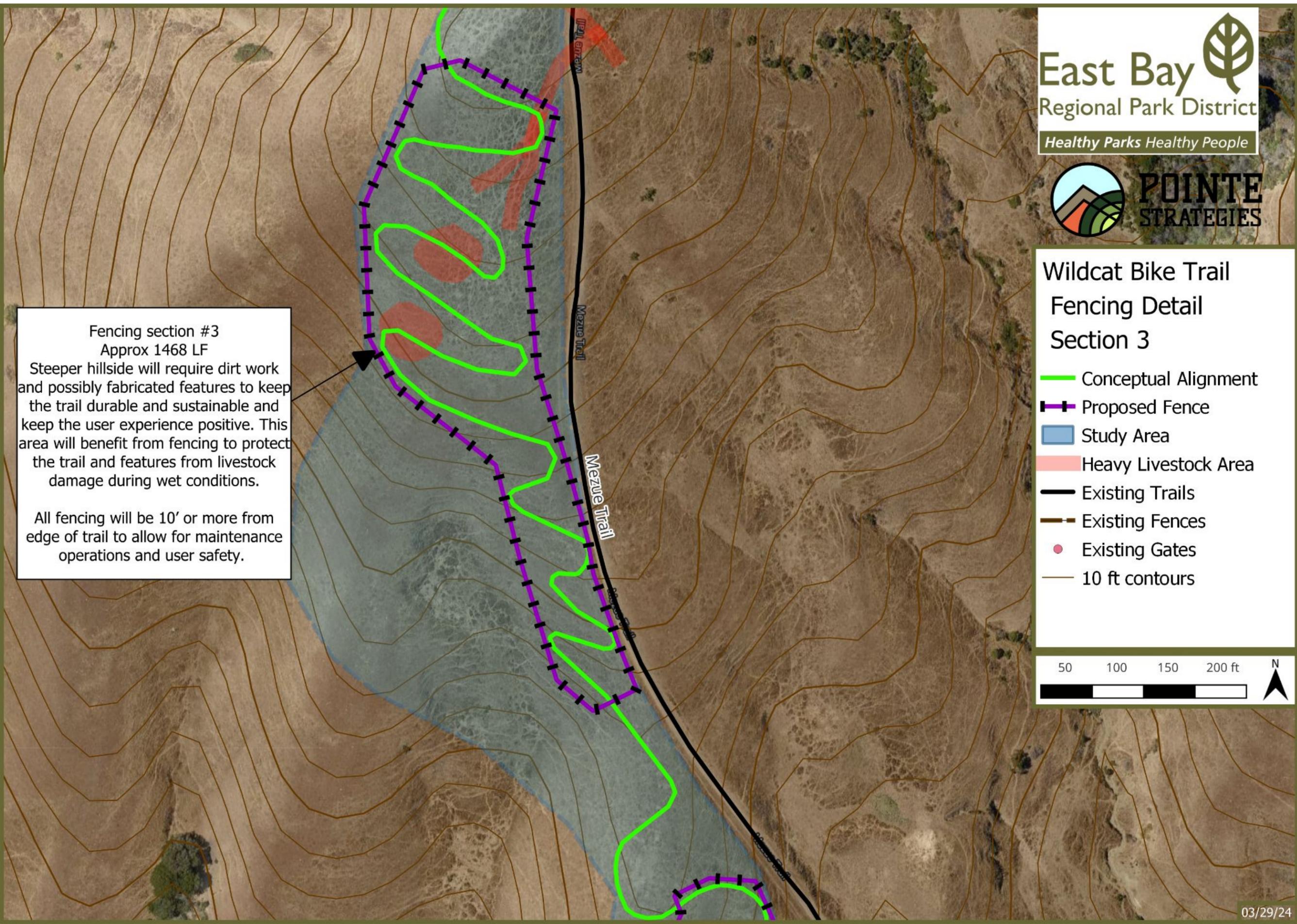
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FENCING
 SECTION MAP 2
 SHEET NUMBER

FP-3

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Wildcat Bike Trail
Fencing Detail
Section 3

- Conceptual Alignment
- - - Proposed Fence
- Study Area
- Heavy Livestock Area
- Existing Trails
- Existing Fences
- Existing Gates
- 10 ft contours



Fencing section #3
Approx 1468 LF
 Steeper hillside will require dirt work and possibly fabricated features to keep the trail durable and sustainable and keep the user experience positive. This area will benefit from fencing to protect the trail and features from livestock damage during wet conditions.

 All fencing will be 10' or more from edge of trail to allow for maintenance operations and user safety.

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POINTE STRATEGIES
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

DESIGNED FOR

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Healthy Parks Healthy People
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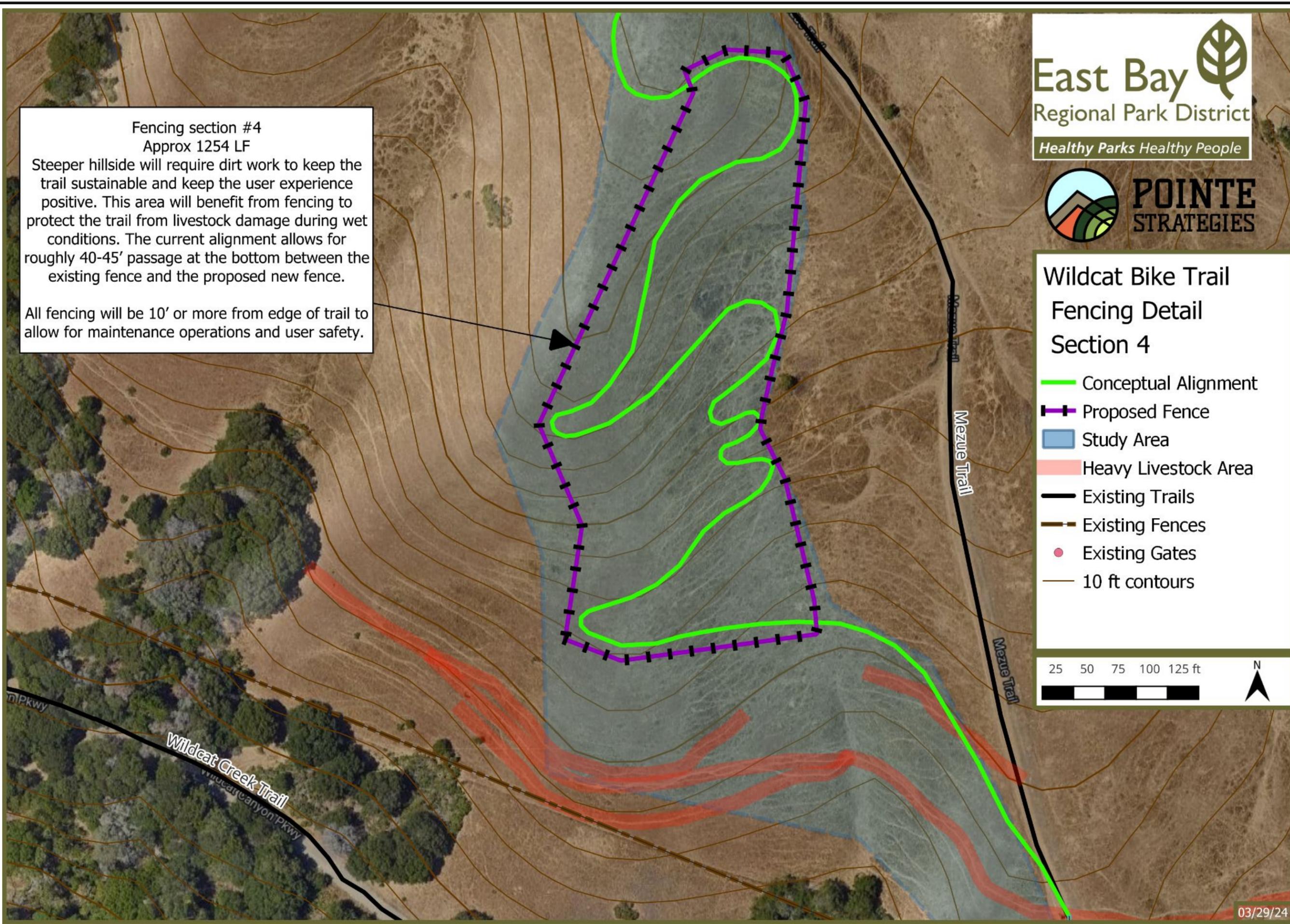
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FENCING
 SECTION MAP 3
 SHEET NUMBER

FP-4
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Fencing section #4
 Approx 1254 LF
 Steeper hillside will require dirt work to keep the trail sustainable and keep the user experience positive. This area will benefit from fencing to protect the trail from livestock damage during wet conditions. The current alignment allows for roughly 40-45' passage at the bottom between the existing fence and the proposed new fence.
 All fencing will be 10' or more from edge of trail to allow for maintenance operations and user safety.

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**Wildcat Bike Trail
 Fencing Detail
 Section 4**

-  Conceptual Alignment
-  Proposed Fence
-  Study Area
-  Heavy Livestock Area
-  Existing Trails
-  Existing Fences
-  Existing Gates
-  10 ft contours



DESIGNED BY
 **POINTE STRATEGIES**
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

DESIGNED FOR

East Bay
 Regional Park District
Healthy Parks Healthy People
 2950 Peralta Oaks Court,
 Oakland, CA 94605
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FENCING
 SECTION MAP 4
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FP-5
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Wildcat Canyon Bike Trail

Conceptual Image

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POINTE STRATEGIES
info@pointestrategies.com
Pointestrategies.com
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2950 Peralta Oaks Court,
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CONCEPTUAL
IMAGE

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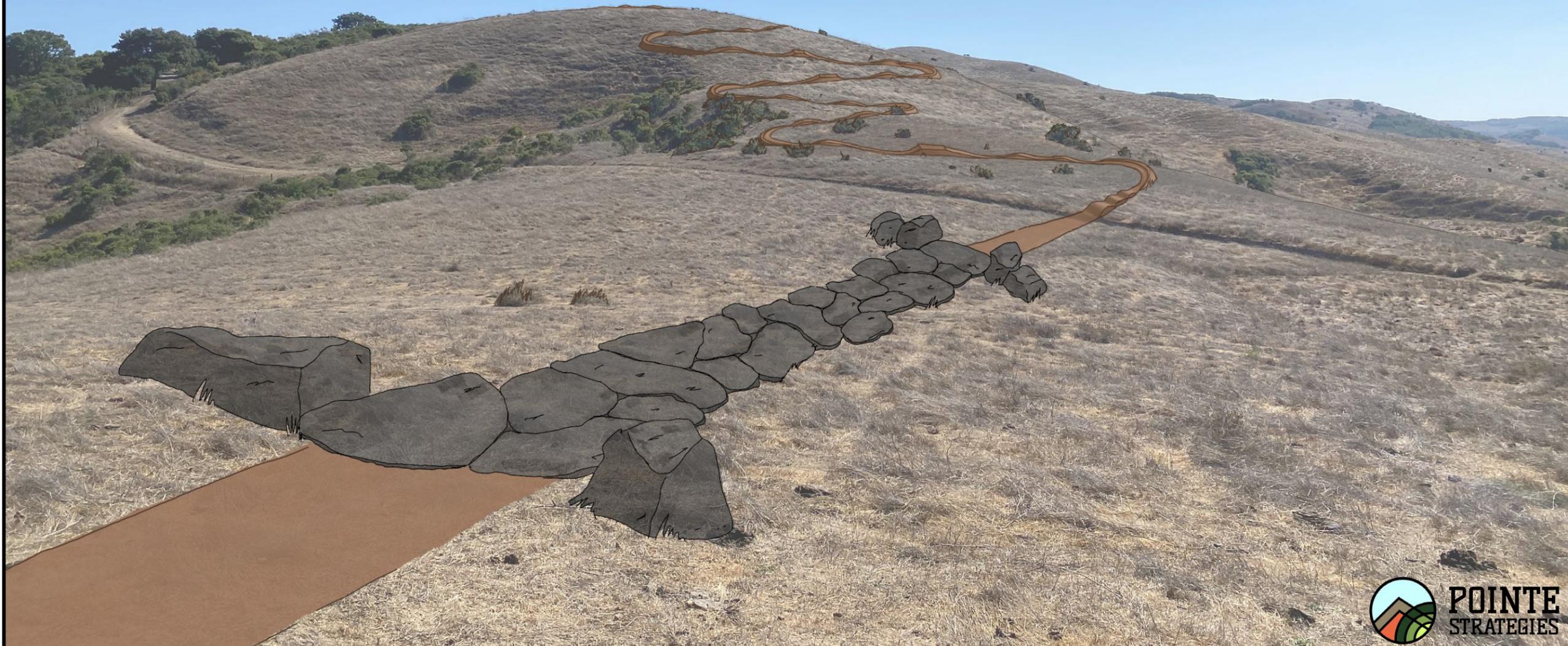
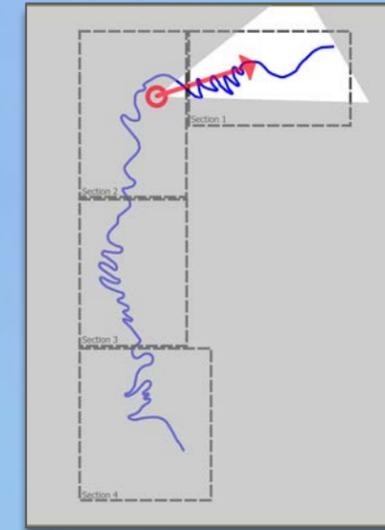
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Wildcat Canyon Bike Trail

Conceptual Image

Section 1



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 **POINTE STRATEGIES**
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

DESIGNED FOR
 **East Bay**
 Regional Park District
Healthy Parks Healthy People
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 Oakland, CA 94605
 1-888-327-2757
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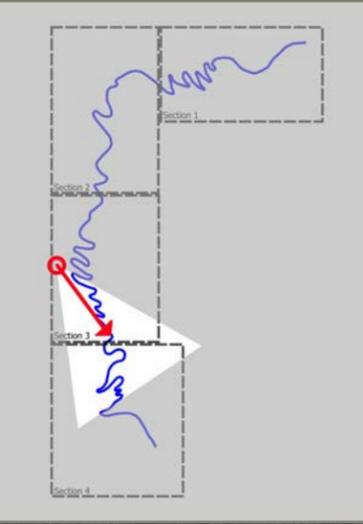
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Wildcat Canyon Bike Trail

Conceptual Image

Section 3



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 **POINTE STRATEGIES**
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

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Healthy Parks Healthy People
 2950 Peralta Oaks Court,
 Oakland, CA 94605
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CONCEPTUAL IMAGE

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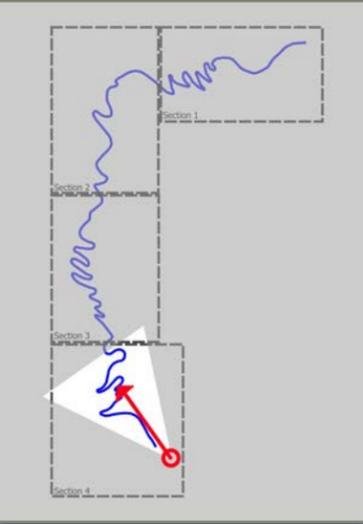
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Wildcat Canyon Bike Trail

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 Pointestrategies.com
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CONCEPTUAL
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General Construction Notes

1. Trail details convey general trail corridor, tread, and constructed feature attributes. Immediately prior to the construction process flagging will be placed to delineate a specified trail location. Minor field adjustments are likely to occur during the construction process, including alterations to better position trails in relation to large trees and/or other vegetation, to avoid wet soils and/or other negative subsurface conditions, and/or to optimize the desired design characteristics of the particular trail.
2. Contractor is to avoid any site disturbance beyond the necessary limits of construction to the extent possible. Any areas disturbed during construction activities shall be revegetated and restored to professionally finished conditions. Minimize disturbance to existing vegetation.
3. Prior to construction, contractor shall contact all utility companies potentially involved in or having facilities on or near the site. Although the design considered utilities in the area, the contractor is responsible to know the exact location of all utilities. Contractor shall contact for a utility locate or work with the Owner Representative for the equivalent.
4. Construction will be limited to the daily output that can be considered finished work and ready for inspection.
5. Construction access, materials stockpile, and/or borrow pit locations will be coordinated with the designated site representative.
6. All work shall be in accordance with OSHA codes and standards. Nothing indicated in this document shall relieve those providing construction services from complying with any and all appropriate safety regulations.
7. Trail corridors developed in the design process have been cleared for environmental and/or historic/cultural significance. In the event that a previously unidentified resource is found during the construction process, construction shall be immediately suspended and the Owner's Representative contacted, who will provide an evaluation and determination of best procedure in moving ahead with construction.
8. Trail corridor clearing shall be confined to vegetation within four feet (4') of the centerline of the trail. Mature trees greater than six inches (6") dbh and vines greater than two inches (2") dbh will be retained unless permission for removal is secured with the Owner's Representative. Trees within the trail corridor shall be stumped and removed or cut to an elevation below the finished trail tread. All cleared vegetation shall be cut to a maximum length of twenty four-inch (24") lengths, scattered so as not to impede water flow, and butt ends of any cut materials greater than one inch (1") shall be angled away from the trail tread.
9. Trails shall be constructed with frequent grade changes, dips, rollers, etc., to minimize water flow distances along trail surfaces and to minimize erosion.
10. Trail tread shall be full bench cut construction whenever possible, with mineral soil forming the entire width of the tread. Finished trail tread will be mechanically compacted and retain a three-to-eight percent (3-8%) outslope. Tread roughness, protrusions, and obstacles may be left as per trail specifications.
11. Back-slopes shall be graded back to an angle less than the angle of repose for the soil with a three-to-one (3:1) slope being the general condition. Large roots and stumps will be flush cut with the final slope and forest debris (i.e. leaves, needles, duff) will be lightly spread over the slope to aid in stabilization and naturalization.
12. All excavated materials not used in the trail tread or other trail structures shall be stabilized within seven (7) days of the construction. Spoils shall be distributed in a thin layer adjacent to the trail tread not to exceed 4" in depth. Care should be taken to avoid placing spoils in drainages or swales. When possible, spoils should be mulched with native materials to discourage erosion while native seed stocks reestablish.

13. In many locations, small amounts (generally one to five cubic yards) of fill material will be necessary to elevate turns, protect root systems of vegetation, and/or create tread transitions to bridges, boardwalks, and/or constructed technical trail features. It is assumed that the majority of this material will be created through the tread cutting process. If this native material is not readily available, suitable fill should be located near the trail, transported with minimal impact to the surrounding forest, and off-trail tracking shall be naturalized with forest materials following the fill development process. When imported material is necessary, it shall be uncontaminated and free of organic material, trash, and other objects.

14. The Trail Contractor shall be responsible for fine grading and positive drainage away from all trails and trail features. No ponding of surface water shall be on or adjacent to the trail surface. During construction, additional drainage methods may be necessary by the contractor to promote positive site drainage. All drainage methods, devices and locations shall be employed in accordance with professional trail building standards and approval by the Owner's Representative.

15. A turn is defined as a change of direction across the landscape that requires the trail to cross the fall line. Turns will be constructed as traditional rolling crown switchbacks or as insloped, bermed turns as appropriate considering the trail type. Turn radii and grades will be field-fit to maintain optimized flow for bike use. All turns must include an entrance and exit rolling grade dip to minimize down-trail flow during precipitation events.

16. Any portion of trail above the finished trail tread shall be composed of mineral soil. Fill structures shall have a fill slope no steeper than two-to-one (2:1) or the angle of repose of the local soil, whichever is shallower. Fill structures shall be completely stabilized and mechanically compacted at no more than six-inch (6") lifts. Raw faces that are not part of the trail tread shall be stabilized as described above.

17. Mechanized equipment use shall be limited to the trail corridor and approved access routes, as determined by the Owner's Representative. Following construction, all track marks will be raked smooth and affected areas will be finished to have a natural shape (i.e. spoils piles rounded, smoothed and cleared of significant brush, blade edges blended). A spill kit suitable for five gallons of fluid will be maintained onsite and within five hundred feet (500') of mechanized equipment whenever equipment is being operated. Scarring of trees is to be avoided. Machine service and fueling shall not take place within five hundred feet (500') of a wetland or perennial drainage. Machine access is restricted to the trail corridor, except for minimal and restored incursions to access fill materials.

18. It is the intent of the trail design and grading to achieve a balance between earthwork cut and fill. Contractor shall make field adjustments while meeting all required performance specifications for bike trails, technical trail features and grading requirements herein.

19. No abrupt changes in slope and contour will be accepted. Contractor shall take special care to taper graded areas backslopes to match grade at edge of existing landscape.

20. Contractor shall leave trails and adjacent areas in a finished and natural looking condition and minimize disturbance to permanent existing vegetation to the extent possible.

21. All trails and features shall be compacted to 90% density in a manner that will support the intended use.

22. Completed trail shall reflect professional workmanship in appearance, quality, and attention to detail. Trail and trail features shall be well integrated into site, aesthetically pleasing in appearance, and well-shaped, crafted, and finished according to commonly accepted best practices for high quality and sustainable mountain biking trails. Work must be completed to the satisfaction of the Owner's Representative.

DESIGNED BY



POINTE STRATEGIES
 info@pointestrategies.com
 Pointestrategies.com
 970-462-7059

DESIGNED FOR



East Bay
 Regional Park District
 Healthy Parks Healthy People
 2950 Peralta Oaks Court,
 Oakland, CA 94605
 1-888-327-2757
 www.ebparks.org

4/25/24
DRAWN BY: EE
REVISIONS

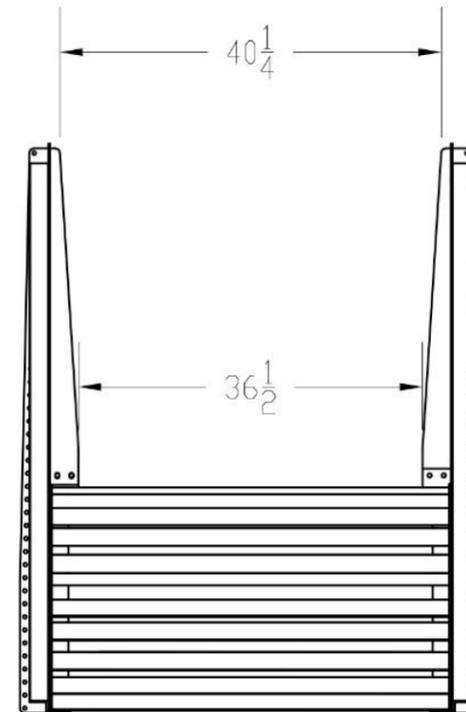
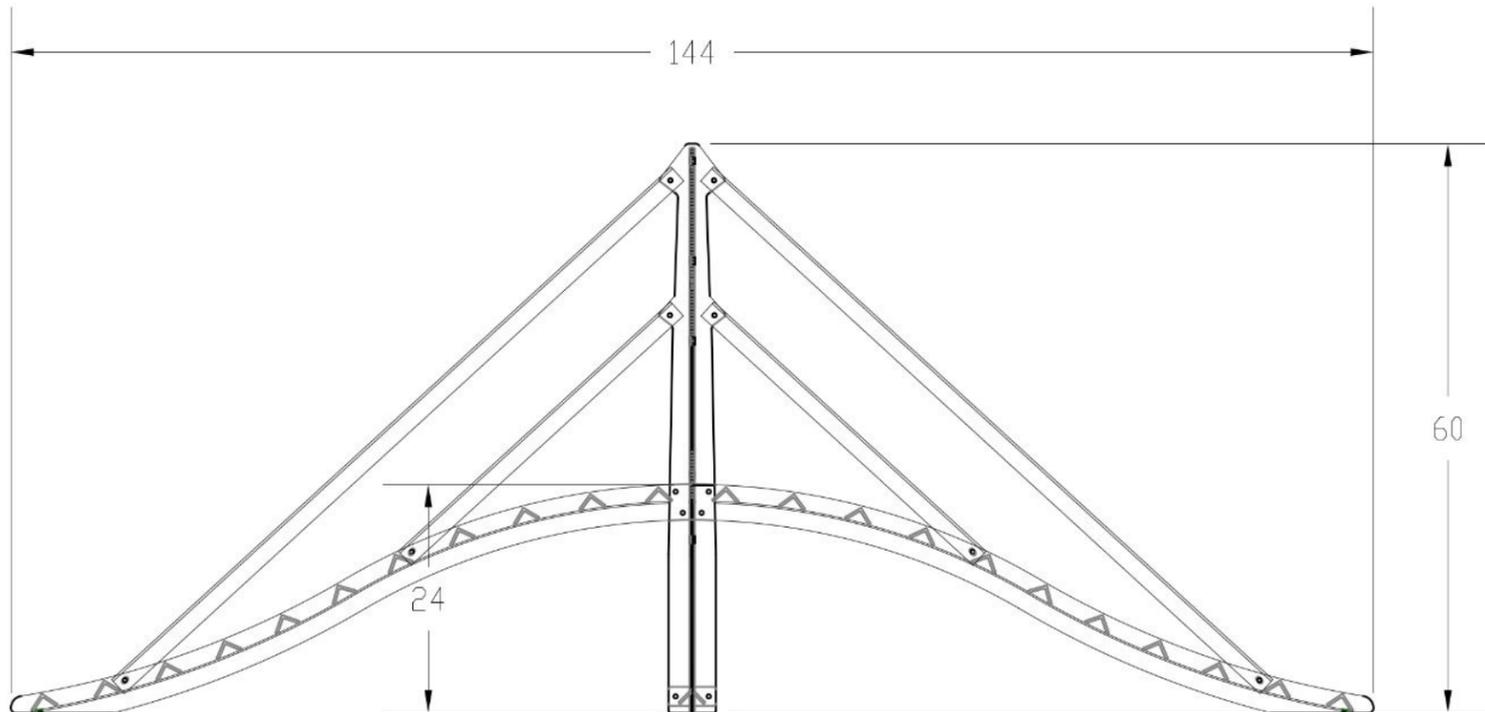
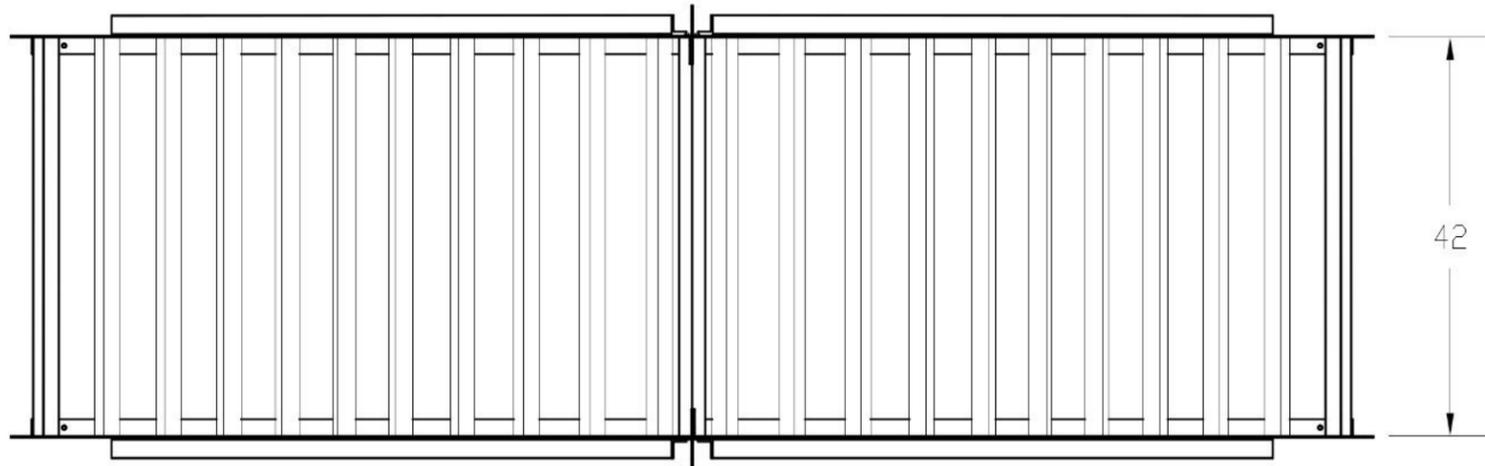
WILDCAT BIKE TRAIL
 WILDCAT CANYON REGIONAL PARK
 RICHMOND, CALIFORNIA

GENERAL CON
 NOTES
 SHEET NUMBER
CN-1
 27 of 32

4/25/24

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Prefabricated Trail Feature Typical

Cattle Guard Roller:

A prefabricated feature that creates a barrier to keep livestock from passing through a fence line while allowing users to navigate through the fence line as desired. Trail users are able to 'roll over' the feature without having to stop to open and close a gate. This feature eliminates the opportunity for a gate to be left open by being a constant and consistent barrier. Feature by Progressive Bike Ramps or approved alternate

Spacing Guidelines: Any location where the trail crosses a fenceline.

Dimensions: 1' tall x 3' wide x 7' long

Price: \$3,650 each. Tax, shipping, and installation not included.

WILDCAT BIKE TRAIL
 WILDCAT CANYON REGIONAL PARK

RICHMOND, CALIFORNIA

PREFAB
TYPICAL

SHEET NUMBER

PT-1

28 of 32

TOLERANCES UNLESS OTHERWISE SPECIFIED XX.X : ±0.125 XX.XX : ±0.060 XX.XXX : ±0.030 ANGULAR : ±1.0° DIMENSIONS ARE IN INCHES DRAWN BY : R. BOTTS 01/30/18 RELEASE LEVEL Concept		 AMERICAN RAMP COMPANY 601 MCKINLEY JOPLIN, MO. 64801 PHONE: (417) 206-6816 FAX: (417) 206-6888 www.americanrampcompany.com	
PROPRIETARY THIS DOCUMENT CONTAINS PROPRIETARY DATA BELONGING TO AMERICAN RAMP COMPANY. IT IS NOT TO BE COPIED OR DISTRIBUTED TO ANYONE WITHOUT WRITTEN PERMISSION.		REVISION LEVEL -- MASS (POUNDS) 500	CATTLE GUARD ROLLER PROGRESSIVE TRAIL DWG NO. CGR-2-12-42
DO NOT SCALE THIS PRINT		SHEET 2 OF 2	

4/25/24

DRAWN BY: EE

REVISIONS

WILDCAT BIKE TRAIL
 WILDCAT CANYON REGIONAL PARK

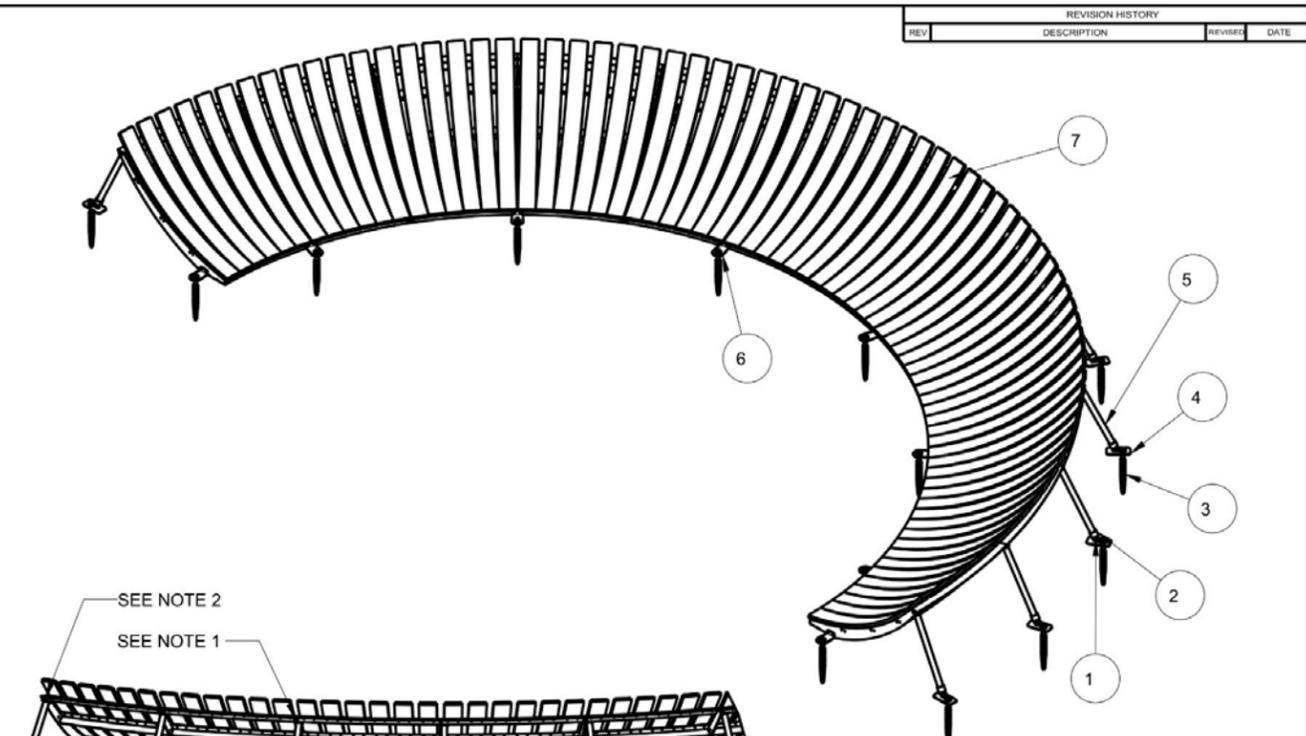
RICHMOND, CALIFORNIA

PREFAB
 TYPICAL

SHEET NUMBER

PT-2

29 of 32



REV	DESCRIPTION	REVISED	DATE

ITEM	PART NUMBER	DESCRIPTION	QTY
7	170110477W	3' BERM TURN FRAME ASSY., 15", 11.5' TURN RADIUS	12
6	170911276	ANCHOR BRACKET, 90° ANGLE	8
5	170200389	SUPPORT, REAR, 3' HIGH BERM TURN	13
4	170200282	ANCHOR BRACKET, REAR, BERM TURN	13
3	110460024	EARTH ANCHOR, 18" LONG	21
2	110460011	ADJ ELL/TEE FEMALE, 1 1/2", PIPE FITTING	13
1	110460008	SS PIVOT PIN, SS	13

TOLERANCES
 UNLESS OTHERWISE SPECIFIED
 (X.X) : ±0.125
 (X.XX) : ±0.060
 (X.XXX) : ±0.030
 ANGULAR : ±1.0°
 DIMENSIONS ARE IN INCHES

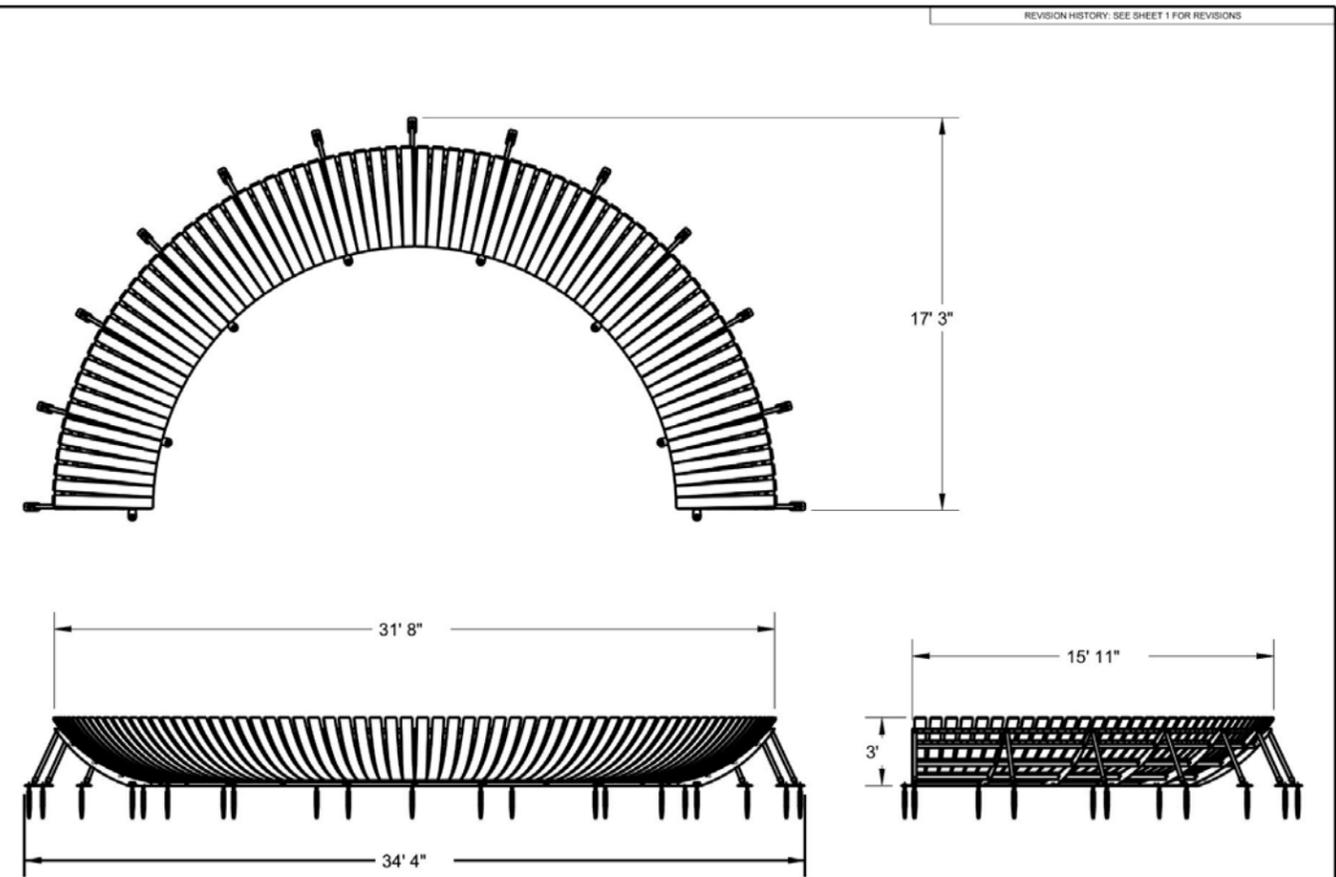
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PROGRESSIVE BIKE RAMPS
 601 S. MCKINLEY AVE.
 JOPLIN, MO 64801-3220
 PH: 855-727-7267
 www.progressivebikeramps.com

REVISION LEVEL	DESCRIPTION	DATE	BY
-	BERM TURN		
-	3' HIGH, 180 DEG, EA		
1442	BRM-31801		

Design
 DO NOT SCALE THIS PRINT
 SHEET 1 OF 2

NOTES:
 1. USE 1-1/4" LONG HEX FASTENERS AT INNER SUPPORT MOUNT LOCATIONS.
 2. USE 1-1/4" LONG BUTTON HEAD FASTENERS AT OUTER SUPPORT MOUNT LOCATIONS.



REVISION HISTORY: SEE SHEET 1 FOR REVISIONS

TOLERANCES
 UNLESS OTHERWISE SPECIFIED
 (X.X) : ±0.125
 (X.XX) : ±0.060
 (X.XXX) : ±0.030
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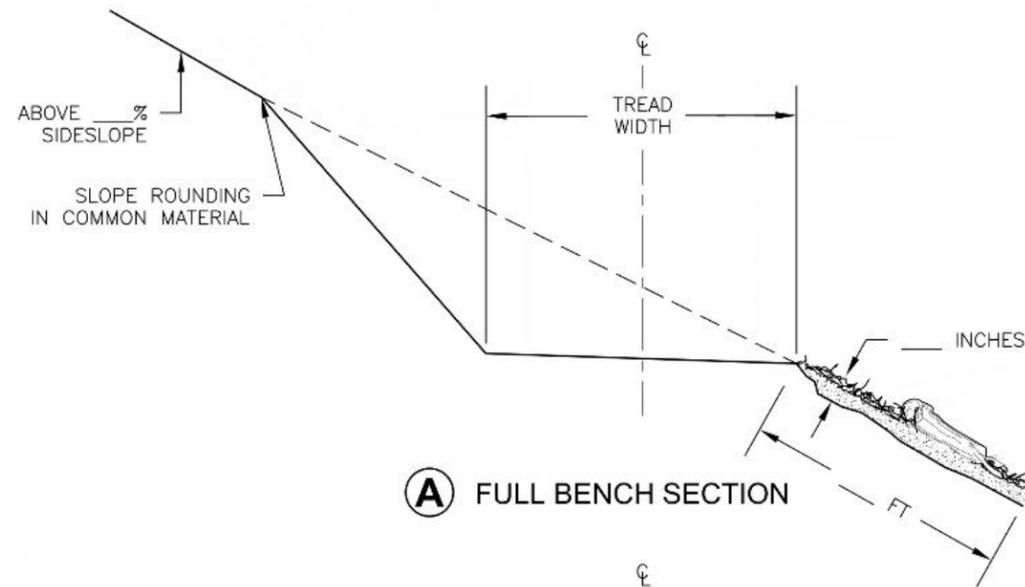
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REVISION LEVEL	DESCRIPTION	DATE	BY
-	BERM TURN		
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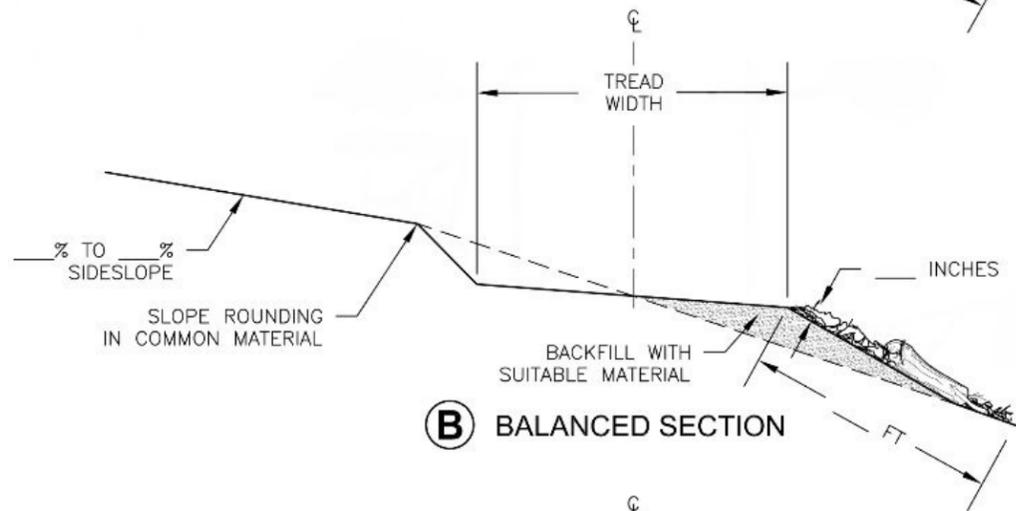
Design
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 SHEET 2 OF 2

Prefabricated Berm Feature Typical

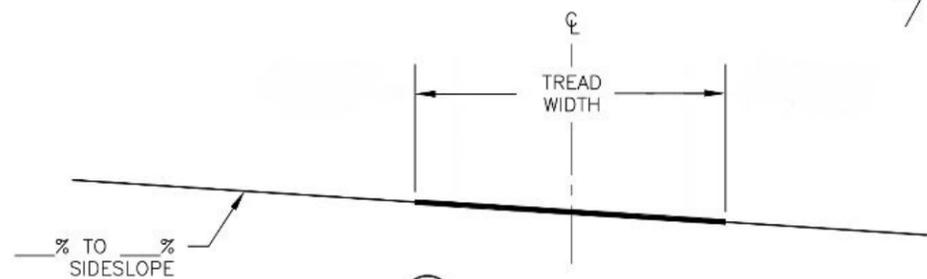
TYPICAL TRAIL CROSS SECTIONS



A FULL BENCH SECTION



B BALANCED SECTION



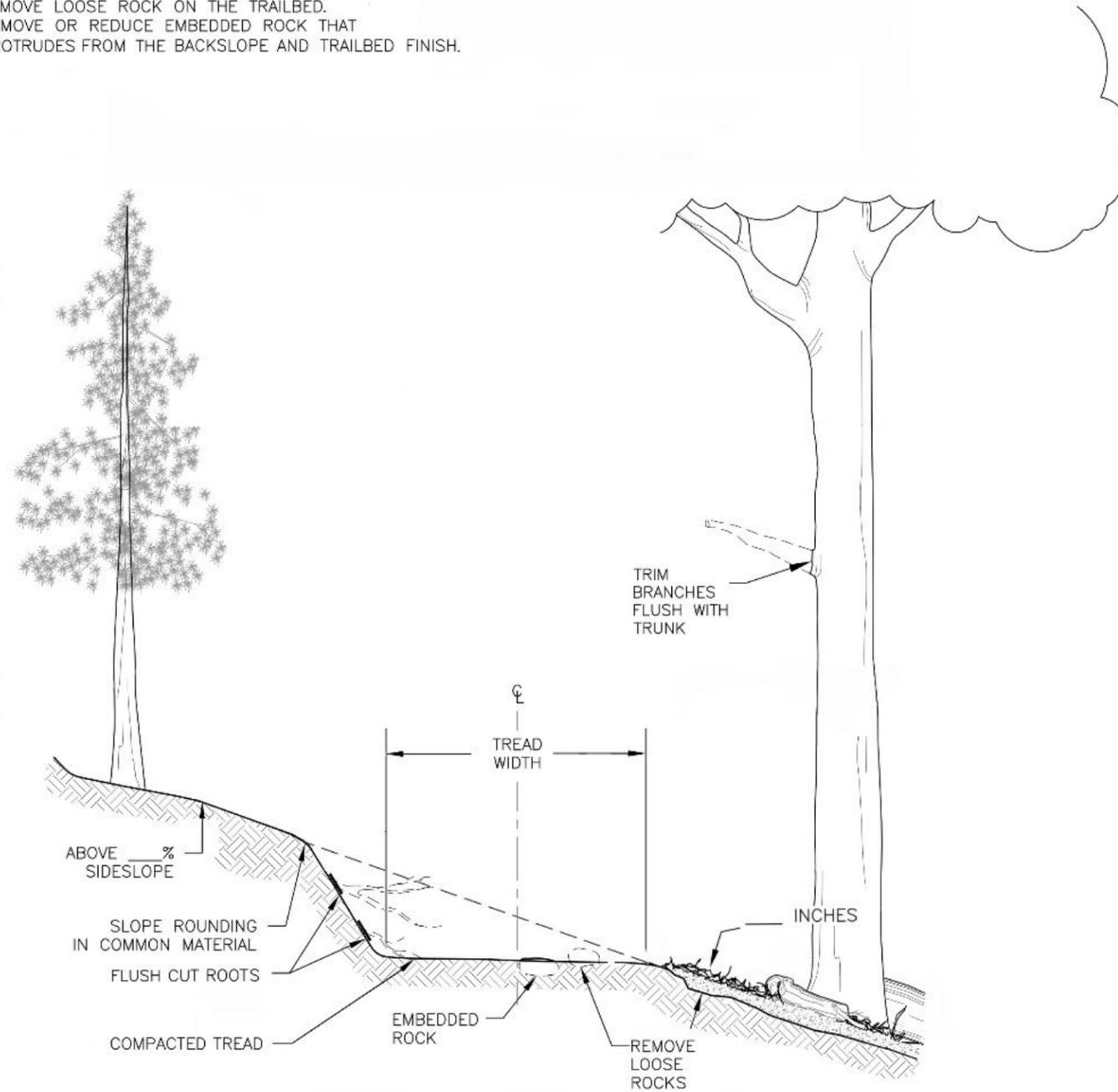
C FLAT SECTION

SLOPE FINISH

REMOVE ROOTS THAT PROTRUDE FROM THE BACKSLOPE.

TRAILBED FINISH

REMOVE LOOSE ROCK ON THE TRAILBED.
REMOVE OR REDUCE EMBEDDED ROCK THAT PROTRUDES FROM THE BACKSLOPE AND TRAILBED FINISH.



4/25/24

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REVISIONS

WILDCAT BIKE TRAIL
 WILDCAT CANYON REGIONAL PARK

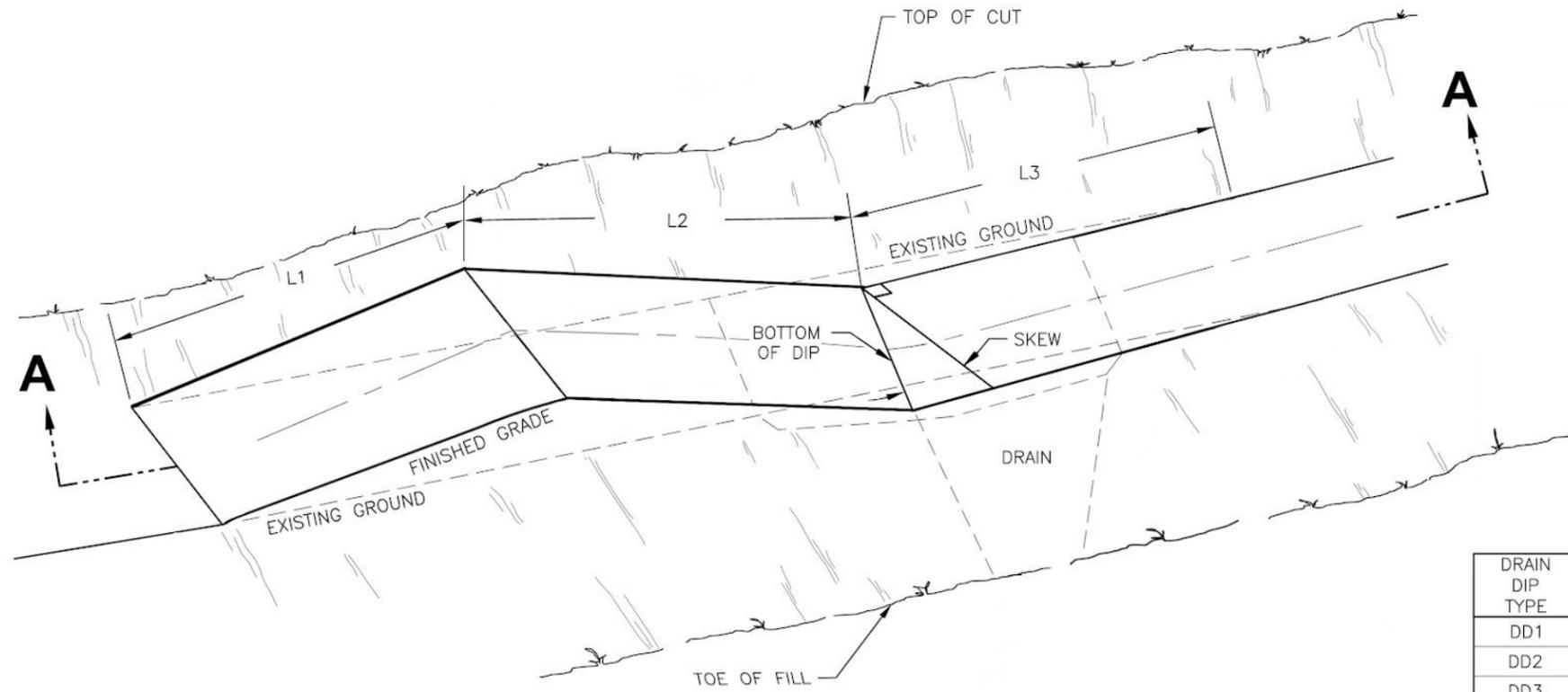
RICHMOND, CALIFORNIA

TRAIL TYPICAL

SHEET NUMBER

TT-1

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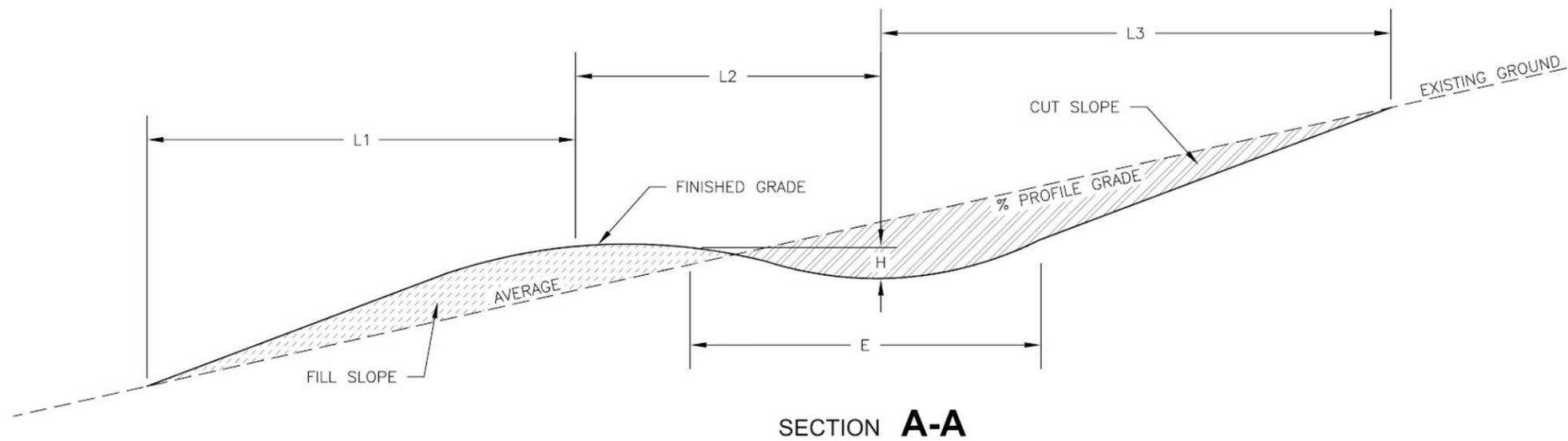


DRAIN DIP

DRAIN DIP CONSTRUCTION DIMENSIONS

DRAIN DIP TYPE	% PROFILE GRADE	L1	L2	L3	(H)	(E)
DD1	0 TO 4					
DD2	5 TO 6					
DD3	7 TO 8					
DD4	9 TO 10					
DD5						

OVER 10% NOT RECOMMENDED



SECTION A-A

WILDCAT BIKE TRAIL
 WILDCAT CANYON REGIONAL PARK

RICHMOND, CALIFORNIA

TRAIL TYPICAL

SHEET NUMBER

TT-2

4/25/24

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WILDCAT BIKE TRAIL
 WILDCAT CANYON REGIONAL PARK

RICHMOND, CALIFORNIA

TRAIL TYPICAL

SHEET NUMBER

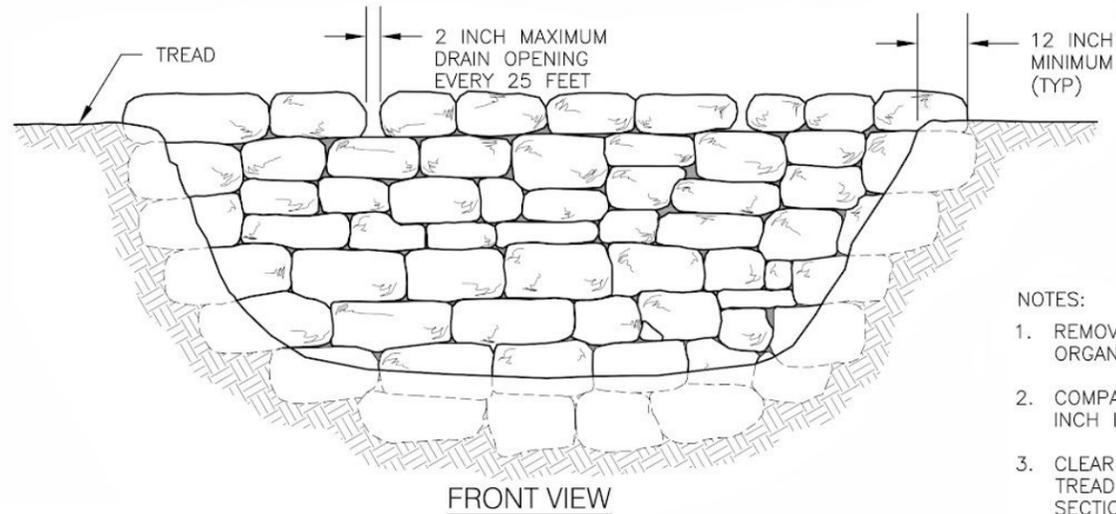
TT-3

32 of 32

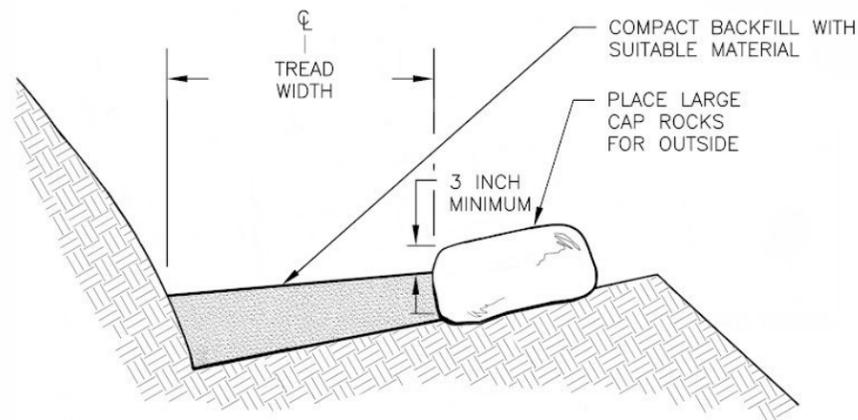
STACKED ROCK RETAINING WALL

TYPICAL ID	GEOTEXTILE TYPE	EMBEDMENT DEPTH			COMMENTS
		FOUNDATION	SIDE	HEIGHT	
RRW-1					

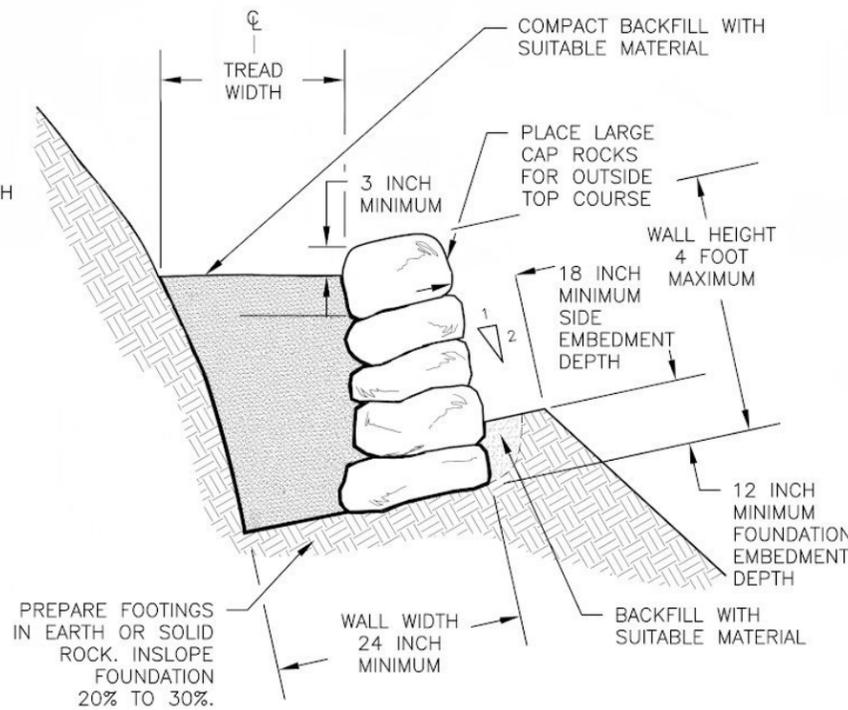
N/A WHEN NOT APPLICABLE



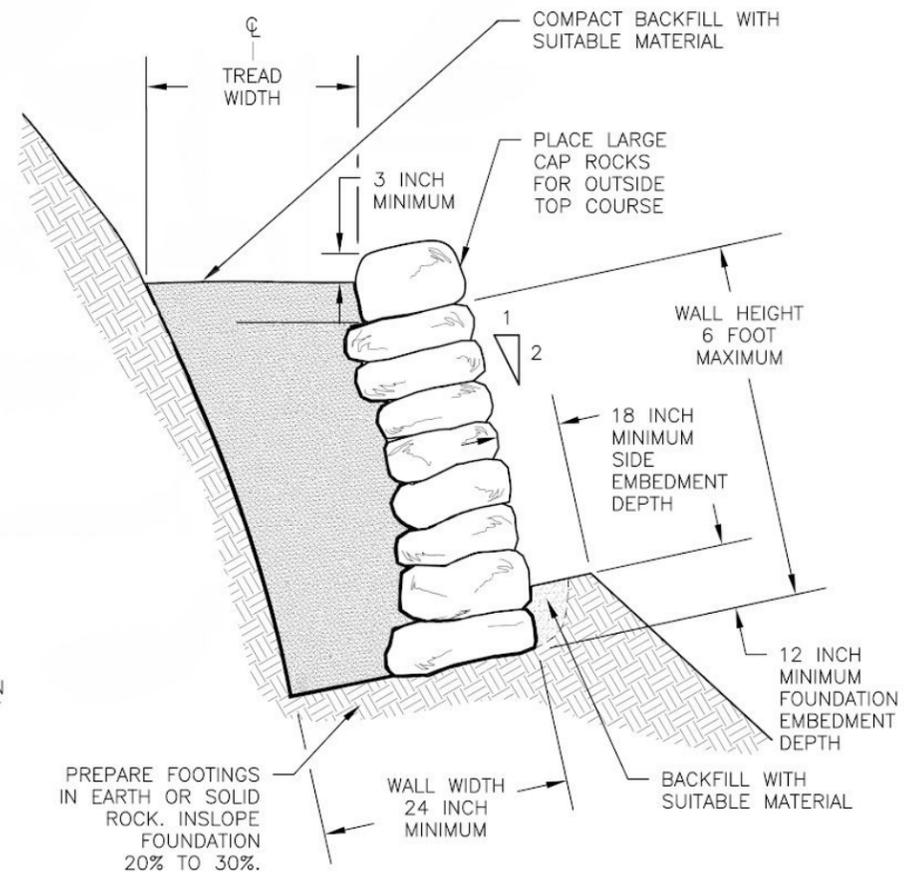
- NOTES:
1. REMOVE AND DISPOSE OF DUFF AND TOP ORGANIC LAYERS DOWN TO MINERAL SOIL.
 2. COMPACT BACKFILL AND FOUNDATION IN 6 INCH LIFTS UNTIL NO VISUAL DISPLACEMENT.
 3. CLEAR WIDTH IS GREATER OR EQUAL TO THE TREAD AND SHOULDER WIDTHS DEFINED IN SECTION 911.



B UNDERTREAD RETAINING WALL SECTION
 WALL WIDTH SHALL BE 2 FEET WIDE OR 1/2 THE WALL HEIGHT, WHICHEVER IS GREATER.



B UNDERTREAD RETAINING WALL SECTION
 WALL WIDTH SHALL BE 2 FEET WIDE OR 1/2 THE WALL HEIGHT, WHICHEVER IS GREATER.



B UNDERTREAD RETAINING WALL SECTION
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