COUNTY OF SAN MATEO
PLANNING AND BUILDING DEPARTMENT

DATE: March 19, 2026

TO: Zoning Hearing Officer

FROM: Planning Staff

SUBJECT: After-the-Fact Coastal Development Permit (CDP), pursuant to Section 6328.4 and Grading Permit, pursuant to Section 8600 of the Zoning Regulations to legalize approximately 850 cubic yards (c.y.) of grading associated with repair to a section of the Pine Tree Gulch Creek bank and a new culvert. The project involved the removal of several trees and planting approximately 200 trees to restore the creek bank. The project is appealable to the California Coastal Commission. In conjunction with the requested permits, it is recommended that the Zoning Hearing Officer determine that the project is categorically exempt from the California Environmental Quality Act under Class 33, small habitat restoration projects, typically under five acres, designed to protect or improve habitat for fish, plants, and wildlife.

County File Number: PLN2023-00371 (Twisted Fields/Theobald)

PROPOSAL

The project involves legalizing grading and creek restoration work that was completed by the owner without permits in 2022-2023 (VIO2023-00183). During the winter storms of 2022-2023, the northside of the creek bank at the Pine Tree Gulch collapsed, which created unsafe conditions. To repair the bank, the owner removed several trees, performed 850 c.y. of earth work to re-build the creek bank, widened an existing dirt road, installed erosion control measures, and re-planted several trees along the bank (Figures 3 and 7, Attachment D). The work also involved upgrading an existing 18-inch culvert overflow pipe which connects an on-site detention pond to the creek (Figures 5 and 6, Attachment D). The pipe was upgraded in 2023 to an in-kind 24-inch wide, 38-foot long High-Density Polyethylene (HDPE) pipe. This upgrade was made as a preventive measure to handle any pond overflow extreme weather events.

The culvert pipe replacement and subsequent slope stabilization were necessary to maintain the integrity of the embarkment and the functionality of the creek and prevent further erosion. Revegetation, willow staking, and laying down straw wattles offered a chance to improve biodiversity and increase plant growth cover, supporting long-term ecosystem health. Plug plants were added in regular intervals to further increase stability and for the propagation of native species. The variety of native species used in site re-vegetation included lilac, fern, yarrow, willow, and redwood.

Figure 1 Area of work

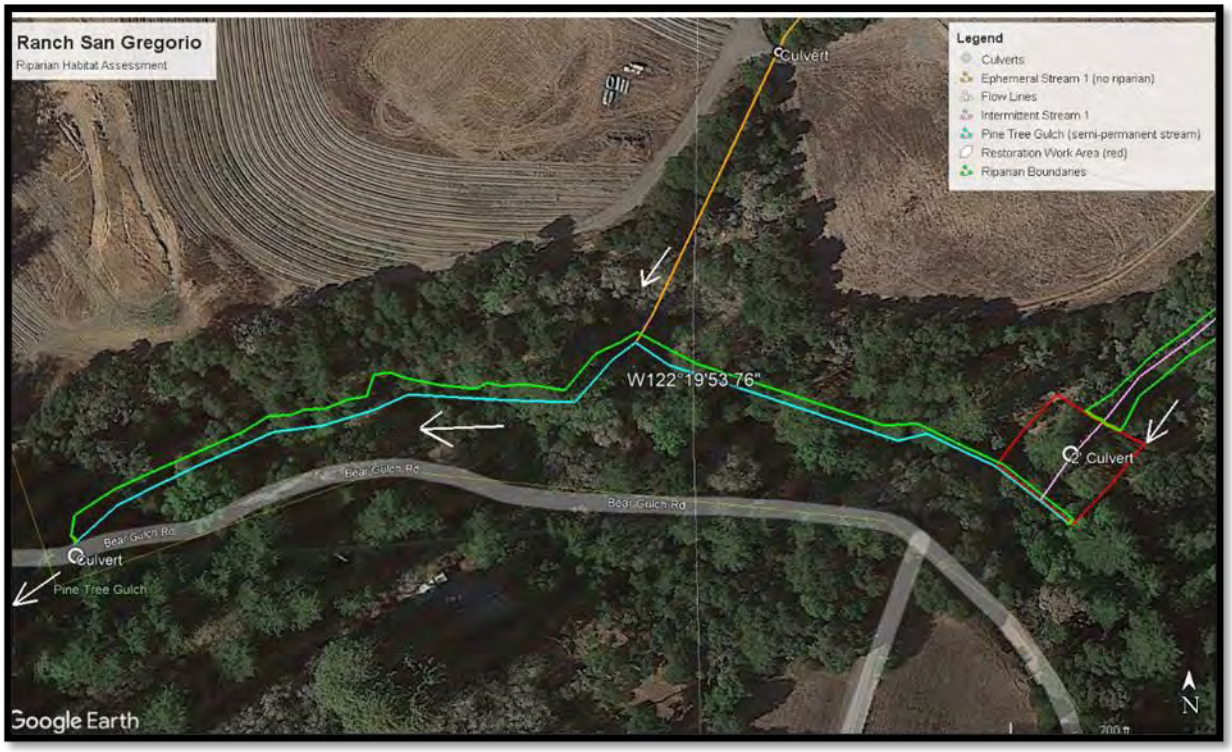


Figure 2 Location of the creek and Riparian Corridor

RECOMMENDATION

That the Zoning Hearing Officer approves the After-the-Fact CDP and Grading Permit for PLN2023-00371, by making the required findings and adopting the conditions of approval listed in Attachment A.

BACKGROUND

Report Prepared By: Sonal Aggarwal, Planner III, Saggarwal@smcgov.org

Owner/Applicant: Daniel Theobald, 100 Ralston Road, San Gregorio, CA 94074

Public Notification: Public notification was sent 10 days in advance of this meeting and was mailed to property owners within 300 feet of the project parcel. Notice of the hearing was posted in San Mateo County Times.

Location: 100 Ralston Road, San Gregorio, Unincorporated San Mateo County

APN: 081-350-150

Size: 127 Acres

Existing Zoning: PAD/CD (Planned Agricultural District/ Coastal Development District)

General Plan Designation: Agriculture

Local Coastal Plan Designation: Agriculture

Sphere-of-Influence: City of Half Moon Bay

Williamson Act: Yes, contract number 081350150

Existing Land Use: Agriculture

Water Supply: California Water Service - Bear Gulch is the service provider in this region.

Sewage Disposal: The site has its on-site septic system and sewage disposal system.

Flood Zone: Most of the site is in Flood Zone X (Area of Minimum Flooding) FEMA Panel No. 06081C0380E (Effective October 16, 2012), and only a small portion of the lot towards El Corte Madera Creek along Ralston Road is located in Flood Zone A.

Environmental Evaluation: The project is categorically exempt under Class 33, Section 15333 of the California Environmental Quality Act (CEQA) Guidelines. Class 33 consists of projects not to exceed five acres in size to assure the maintenance restoration, enhancement, or protection of habitat for fish, plants, or wildlife provided that a) there is no significant adverse impact on endangered, rare or threatened species or their habitat pursuant to section 15065, b) there is no hazardous material at or around the project site that may be disturbed or removed, and c) the project will not result in impacts that are significant when viewed in connection with the effects of past projects, the effect of other current projects, and the effects of probable future projects.

The total area of disturbance is approximately 60,000 sq. ft. as shown in Figure 8 in Attachment D. No significant impact was created on any endangered, rare or threatened species at or around the project site as discussed in Section A. below. Therefore, the project qualifies for the said exemption.

Setting: The subject site is a 127-acre parcel located on Ralston Road off of Bear Gulch Road, with approximately one acre in row crops, and orchards, 23 acres of field crops, and roughly 70 acres in rangeland. It is located approximately 3.6 miles east of the Pacific Ocean (as crow flies). Most of the site is characterized by steep forested slopes, grasslands and coastal rub. The site is located adjacent to other rural agricultural lands and is located in San Gregorio watershed, within the Corte de Madera sub-basin. West of the property is Corte de Madera Creek, and to the north and south are two tributaries. Pine Tree Gulch Creek runs at the Southend of the parcel.

Chronology:

Date		Action
October 11, 2023	-	VIO2023-00183 opened after receiving a complaint for illegal grading along the creek bank, non-permitted grading and removing several trees from the site.
November 1, 2023	-	Notice of Violation issued
November 13, 2023	-	PLN2023-00371 opened to address the Violation
November 28, 2023	-	Application deemed incomplete
2023 – 2025	-	Applicant's team met with Planning Department on several occasions to address the concerns and provide required incomplete documents
November 10, 2025	-	Revised Geotechnical Report signed off by County Geotechnical Engineer
November 26, 2025	-	Application deemed complete
March 19, 2026	-	Project scheduled for ZHO Hearing

DISCUSSION

A. KEY ISSUES

Upon reviewing the applicable provisions of the General Plan, staff has determined that the project complies with all General Plan Policies, including the following:

1. Compliance with the General Plan

Upon review of the applicable provisions of the General Plan, staff has determined that the project complies with all General Plan Policies, including the following:

a. Vegetative, Water, Fish, and Wildlife Resources

Policies 1.1 (*Conserve, Enhance, Protect, Maintain, and Manage Water, Fish, and Wildlife Resources*), 1.2 (*Protect Sensitive Habitats*), 1.21 (*Importance of Sensitive Habitats*), 1.24 (*Regulate Location, Density, and Design of Development to Protect Vegetative, Water, Fish, and Wildlife Resources*), 1.26 (*Protect Water Resources*), and

1.32 (*Regulate the Location, Siting, and Design of Development in Sensitive Habitats*) seek to conserve, enhance, protect, maintain, and manage the use of the County's vegetative, water, fish, and wildlife resources and sensitive habitats.

Policies 1.23 (*Regulate Development to Protect Vegetative, Water, Fish, and Wildlife Resources*), 1.27 (*Protect Fish and Wildlife Resources*), and 1.28 (*Regulate Development to Protect Sensitive Habitat*) seek to regulate land uses and development activities to prevent or, if infeasible, to mitigate significant adverse impacts on vegetative, water, fish, and wildlife resources and sensitive habitats.

The creek bank restoration work performed along Pine Tree Gulch Creek bank was performed to restore the creek after a landslide. Per the Riparian Habitat Assessment conducted by Jonathan Foster of Foster Consulting, dated December 14 and 18, 2023, there are eight soil series mapped in the general property area, none of which are listed as hydric soils, a wetland indicator.

Three streams were observed in the survey area, two unnamed seasonal streams (Intermittent (Int)-1 and Ephemeral Stream (ES-1)) and Pine Tree Gulch, a semi-permanent stream (as seen in Figure 2 above). Both steams associated with the restoration work area contained a thin band of woody riparian vegetation (Int-1 and Pine Tree Gulch). Two seasonal streams (Int-1 and ES-1) are tributary to Pine Tree Gulch. Pine Tree Gulch is tributary to El Corte de Madera Creek, which is tributary to San Gregorio Creek (at State Road- 84), a direct tributary to the Pacific Ocean at San Gregorio Beach, approximately 6.5 stream miles from the survey area.

San Gregorio Creek and several tributaries are habitat for sensitive steelhead, Coho Salmon. However, a survey conducted by California Fish and Wildlife (CDFW) dated 1973 found that adjacent Clear Creek "does not provide salmonoid summer nursery habitat, and offers minimal spawning habitat," indicating that these species are unlikely to be present in the smaller, seasonal tributaries nearby (Pine Tree Gulch, Int-1, and ES-1).

Staff assumes that some creek habitat was impacted by the landslide, that the repair performed involved a disturbed area, and that not repairing the creekbank would have resulted in greater erosion and habitat impacts to the creek.

Through a follow-up assessment by Project Biologist, dated September 3, 2024, Project Biologist confirmed that the installed erosion and sediment control practices appeared to be functioning well. The work area has continued to benefit from the installation of Best Management Practices (BMP) Measures and native vegetation, including the staked willow cuttings, and appears to have an increased vegetation cover, ranging from 20 to 65 percent (Figures 5 and 6, Attachment D). The existing erosion and sediment control BMPs continue to function and are stabilized. The project biologist recommends continuing yearly monitoring until 2027 and gauging the success of the restoration work through the following criteria:

(1) Annual surveys for riparian restoration areas including a visual assessment of hydrology, soils, and vegetation,

(2) An 80 percent absolute cover of riparian vegetation goals (excluding the roadway) by fifth year (2027),

(3) A species optimum test of three or greater for over 50 percent of plant species (rating scale below):

0-Dead, no evidence of recovery

1-Main stem dead, but basal sprouts emerging

2-Low vitality with evidence of biomass loss

3-Plant apparently not growing

4-Vigorous, but not optimal growth

5-Optimal growth (budding, new leaf growth, flowering, seeding, etc.)

(4) Provide annual monitoring reports through 2027, or until the success criteria are met.

b. Soil Resources

Policies 2.17 (*Regulate Development to Minimize Soil Erosion and Sedimentation*) and 2.23 (*Regulate Excavation, Grading, Filling, and Land Clearing Activities Against Accelerated Soil Erosion*) seek to regulate development to minimize soil erosion and sedimentation. As described previously, the project entails creek restoration work, re-vegetation and 850 c.y. of grading. Re-vegetation involved “Vegetated Soil Lift”. Soil wrapped in biodegradable straw wattle was placed along

the bank and staked in with live native willow cuttings to ensure stability and longevity of wattle. Plug-in plants were also added in regular intervals to further increase stability and for the propagation of native species.

2. Compliance with the Zoning Regulations

The project site is located within the PAD/CD Zoning District. The project would result in no new uses, no change to the existing on-site agricultural use, and the creek stabilization components would result in an overall benefit to flood protection and restoration of creek.

3. Compliance with Coastal Development Permit

A Coastal Development Permit shall be approved only upon making the following findings:

a. *That the project, as described in the application and accompanying materials required by Section 6328.7 and as conditioned in accordance with Section 6328.14, conforms with the plans, policies, requirements and standards of the San Mateo County Local Coastal Program.* The proposed creek bed restoration and re-vegetation project complies with the applicable plans, policies and requirements as discussed in Section A.1. a. and b. above.

b. *Where the project is located between the nearest public road and the sea, or the shoreline of Pescadero Marsh, the project is in conformity with the public access and public recreation policies of Chapter 3 of the Coastal Act of 1976 (commencing with Section 30200 of the Public Resources Code).* The project site is not located between the nearest public road and the sea.

c. *That the project conforms to specific findings required by policies of the San Mateo County Local Coastal Program.* The project found to be in compliance with the required policies of the San Mateo Local Coastal Program as discussed in Section A.1.a. and b. above.

d. *That the number of building permits for construction of single-family residences other than for affordable housing issued in the calendar year does not exceed the limitations of Policies 1.22 and 1.23 as stated in Section 6328.19. Policy 1.23 (Timing of New Housing Development in the Midcoast) limits the construction of new residential units in the Midcoast to no more than 40 per year.* No dwelling units are associated with this project.

4. Compliance with Grading Regulations

The project involved approximately 850 c.y. of grading to restore a failed creek bank and to widening an existing dirt road along the southside of the parcel near Pine Tree Gulch Creek. The dirt road was widened to improve the functionality and for fuel management. Staff confirmed through a site visit in November 2024 that all construction related equipment were parked outside the 50-foot buffer of the Pine Tree Gulch creek. The following findings shall be made pursuant to Section 9290 of the San Mateo County Ordinance Code:

a. *The granting of the permit will not have a significant adverse effect on the environment*.

The proposed grading was necessary to restore the failing creek bank. The Project Biologist confirmed that the installed erosion and sediment control practices appear to be functioning well. The work area has continued to benefit from the installation of BMP Measures and native vegetation, including the staked willow cuttings, and appears to have an increased vegetation cover, ranging from 20 to 65 percent.

b. *The project conforms to the criteria of Chapter 8, Division VII, of the San Mateo County Ordinance Code, including the standards referenced in Section 9296*.

The project, as proposed and conditioned, conforms to the standards in the Grading Ordinance, including those requiring an erosion and sediment control plan, dust control plan, fire safety, and the timing of grading activity. The project plans have been reviewed and recommended for approval by both the Geotechnical Section. Conditions of approval have been included in Attachment A to ensure compliance with the County's Grading Regulations.

c. *The project is consistent with the General Plan*.

The project has been reviewed against the applicable policies of the San Mateo County General Plan and found to be consistent with its goals and objectives. See Section A.1 of this report for a detailed discussion regarding the project's compliance with applicable General Plan Policies.

C. ENVIRONMENTAL REVIEW

The project is categorically exempt under Class 33, Section 15333 of the California Environmental Quality Act (CEQA) Guidelines. Class 15 consists of projects not to exceed five acres in size to assure the maintenance restoration, enhancement, or protection of habitat for fish, plants, or wildlife provided that a) there is no significant adverse impact on endangered, rare or threatened species or their habitat pursuant to section 15065, b) there is no hazardous material at or around the project site that may be disturbed or removed, and c) the project will not result in impacts that are significant when viewed in connection with the effects of past projects, the effect of other current projects, and the effects of probable future projects. The total area of disturbance where the work was performed is approximately 60,000 sq. ft. as shown in Figure 8 above. No significant impact was created on any endangered, rare or threatened species at or around the project site. Therefore, the project qualifies for the said exemption.

D. REVIEWING AGENCIES

County Building Inspection Geotech Section
California Coastal Commission
County Fire
California Fish and Wildlife (CDFW)

ATTACHMENTS

A. Recommended Findings and Conditions of Approval
B. Vicinity Map
C. Plans submitted November 22, 2024
D. Photos for Staff Report
E. Rancho San Gregorio Riparian Habitat Assessment, Foster Consulting, dated December 20, 2023,
F. Rancho San Gregorio Riparian Habitat Assessment, Foster Consulting, dated September 3, 2024
G. Rancho San Gregorio Creek Bank Repair and Grading Work
H. Site inspection Photos, November 11, 2024
I. Slope Stability Report by Sigma Prime dated July 26, 2024

Attachment A

County of San Mateo
Planning and Building Department

RECOMMENDED FINDINGS AND CONDITIONS OF APPROVAL

Permit or Project File Number: PLN2023-00371 Hearing Date: March 19, 2026

Prepared By: Sonal Aggarwal For Adoption By: Zoning Hearing Officer

RECOMMENDED FINDINGS

Regarding the Environmental Review, Find:

1. The project is categorically exempt under the provisions of Section 15333 of the California Environmental Quality Act, relating to small projects not to exceed five acres in size to assure the maintenance, restoration, enhancement, or protection of habitat for fish, plants, or wildlife.

Regarding the Coastal Development, Find:

2. That the project, as described in the application and accompanying materials required by Section 6328.7 and as conditioned in accordance with Section 6328.14, conforms with the plans, policies, requirements and standards of the San Mateo County Local Coastal Program. The proposed creek bed restoration and re-vegetation project complies with the applicable plans, policies and requirements as discussed in Section A.1. a. and b. discussed in this report.

3. The project site is not located between the nearest public road and the sea.

4. The project found to be in compliance with the required policies of the San Mateo Local Coastal Program as discussed in Section A.1.a. and b. above.

5. That the number of building permits for construction of single-family residences other than for affordable housing issued in the calendar year does not exceed the limitations of Policies 1.22 and 1.23 as stated in Section 6328.19. Policy 1.23 (*Timing of New Housing Development in the Midcoast*) limits the construction of new residential units in the Midcoast to no more than 40 per year. No dwelling units are associated with this project.

Regarding the Grading Permit, Find:

6. That the granting of the permit will not have a significant adverse effect on the environment. This project has been reviewed and approved by the Building Inspection Section's Geotechnical Section.

7. That the project conforms to the criteria of Chapter 8, Division VII, San Mateo County Ordinance Code, including the standards referenced in Section 9283. The project, as proposed and conditioned, conforms to the standards in the Grading Regulations, including erosion and sediment control, dust control, and timing of grading activity.

8. That the project is consistent with the General Plan. The project has been reviewed against the applicable policies of the San Mateo County General Plan and found to be consistent with its goals and objectives.

RECOMMENDED CONDITIONS OF APPROVAL

Current Planning Section

1. The project shall be constructed in compliance with the reports and plans approved by the Zoning Hearing Officer on March 19, 2026. Any changes or revisions to the approved plans shall be submitted to the Director of Planning and Building for review. Minor adjustments to the project may be approved by the Director of Planning and Building if they are consistent with the intent of and are in substantial conformance with this approval. Alternatively, the Director of Planning and Building may refer consideration of major revisions to the Zoning Hearing Officer, with applicable fees to be paid.

2. The Grading Permit shall be valid for one year from the date of approval, in which time a building permit shall be issued and a completed inspection (to the satisfaction of the Building Inspector) shall have occurred within 180 days of its issuance. This approval may be extended by a one-year increment with submittal of an application for permit extension and payment of applicable extension fees 60 days prior to the expiration date.

3. No grading activities shall commence until the applicant has been issued a grading permit (issued as the "hard card" with all necessary information filled out and signatures obtained) by the Current Planning Section. No grading shall be allowed during the winter season (November 1 to April 30) to avoid potential soil erosion. The applicant shall submit a letter to the Current Planning Section, a minimum of two weeks prior to commencement of grading for any future grading activities.

4. Due to work within a waterway and the need for a Grading Permit, the project meets the County's definition of a Stormwater Regulated Site (SWRS Site). The County will perform monthly erosion and sediment control inspections during the rainy season, as required by the Regional Water Quality Control Board.

5. The applicant shall implement and maintain the erosion control measures at the site, as prepared and signed by the engineer of record and approved by the Zoning Hearing Officer.

6. Prior to issuance of the grading permit "hard card" for any future work, the applicant shall submit a schedule of all grading operations to the Current Planning Section, subject to review and approval by the Current Planning Section. The submitted schedule shall include a schedule for winterizing the site. If the schedule of grading operations calls for the grading to be completed in one grading season, then the winterizing plan shall be considered a contingent plan to be implemented if work falls behind schedule. All submitted schedules shall represent the work in detail and shall project the grading operations through to completion.

7. Prior to building permit issuance, please submit a copy of the Stormwater Pollution and Prevention Plan (SWPPP).

8. It shall be the responsibility of the engineer of record to regularly inspect the erosion control measures for the duration of all grading remediation activities, especially after major storm events, and determine that they are functioning as designed and that proper maintenance is being performed. Deficiencies shall be immediately corrected, as determined by and implemented under the observation of the engineer of record.

9. The provision of the San Mateo County Grading Regulations shall govern all grading on and adjacent to the project site. All equipment used in grading operations shall meet spark arrester and firefighting tool requirements, as specified in the California Public Resources Code.

11. An Erosion Control and/or Tree Protection Pre-Site Inspection is required prior to the issuance of a building permit for grading, construction, and demolition purposes, as the project requires tree protection of significant tree(s) and a grading permit, to ensure that the approved erosion control and tree protection measures are installed adequately prior to the start of ground disturbing activities.

14. A tree protection plan, for review and approval, shall be required prior to the issuance of a Building permit and shall include the following:

    a. Identify, establish, and maintain tree protection zones throughout the entire duration of the project.

b. Isolate tree protection zones using 5-foot tall, orange plastic fencing supported by poles pounded into the ground, located at the driplines as described in the arborist's report.

c. Maintain tree protection zones free of equipment and materials storage; contractors shall not clean any tools, forms, or equipment within these areas.

d. If any large roots or large masses of roots need to be cut, the roots shall be inspected by a certified arborist or registered forester prior to cutting as required in the arborist's report. Any root cutting shall be undertaken by an arborist or forester and documented. Roots to be cut shall be severed cleanly with a saw or toppers. A tree protection verification letter from the certified arborist shall be submitted to the Planning Department within five business days from the site inspection following root cutting.

e. Normal irrigation shall be maintained, but oaks shall not need summer irrigation, unless the arborist's report directs specific watering measures to protect trees.

f. Street tree trunks and other trees not protected by dripline fencing shall be wrapped with straw wattles, orange fence, and 2x4 boards in concentric layers to a height of eight feet.

g. Prior to Issuance of a Building Permit, the Planning and Building Department shall complete a pre-construction site inspection, as necessary, to verify that all required tree protection and erosion control measures are in place.

15. The project involves a five-year post-construction period to assess and document short-term effectiveness. Monitoring involves annual surveys for riparian restoration areas including a visual assessment of hydrology, soils, and vegetation, an 80 percent absolute cover of riparian vegetation goals (excluding the roadway) by fifth year (2027), a species optimum test of three or greater for over 50 percent of plant species, and revegetation in the project area. Such an assessment report shall be submitted to the Project Planner at Saggarwal@smcgov.org.

16. In order to complete any further project components, the applicant shall be responsible for ensuring that the following dust control guidelines are implemented:

a. All graded surfaces and material, whether filled, excavated, transported, or stockpiled, shall be wetted, protected, or contained in such a manner as to prevent any significant nuisance from dust, or spillage, upon adjoining water bodies, properties, or streets. Equipment and materials on the site shall be used in such a manner as to avoid excessive dust. A dust control plan may be required at any time during the course of the project.

b. A dust palliative shall be applied to the site when required by the County. The type and rate of application shall be recommended by the soils engineer and approved by the Department of Public Works, the Planning and Building Department's Geotechnical Section, and any appropriate State agency.

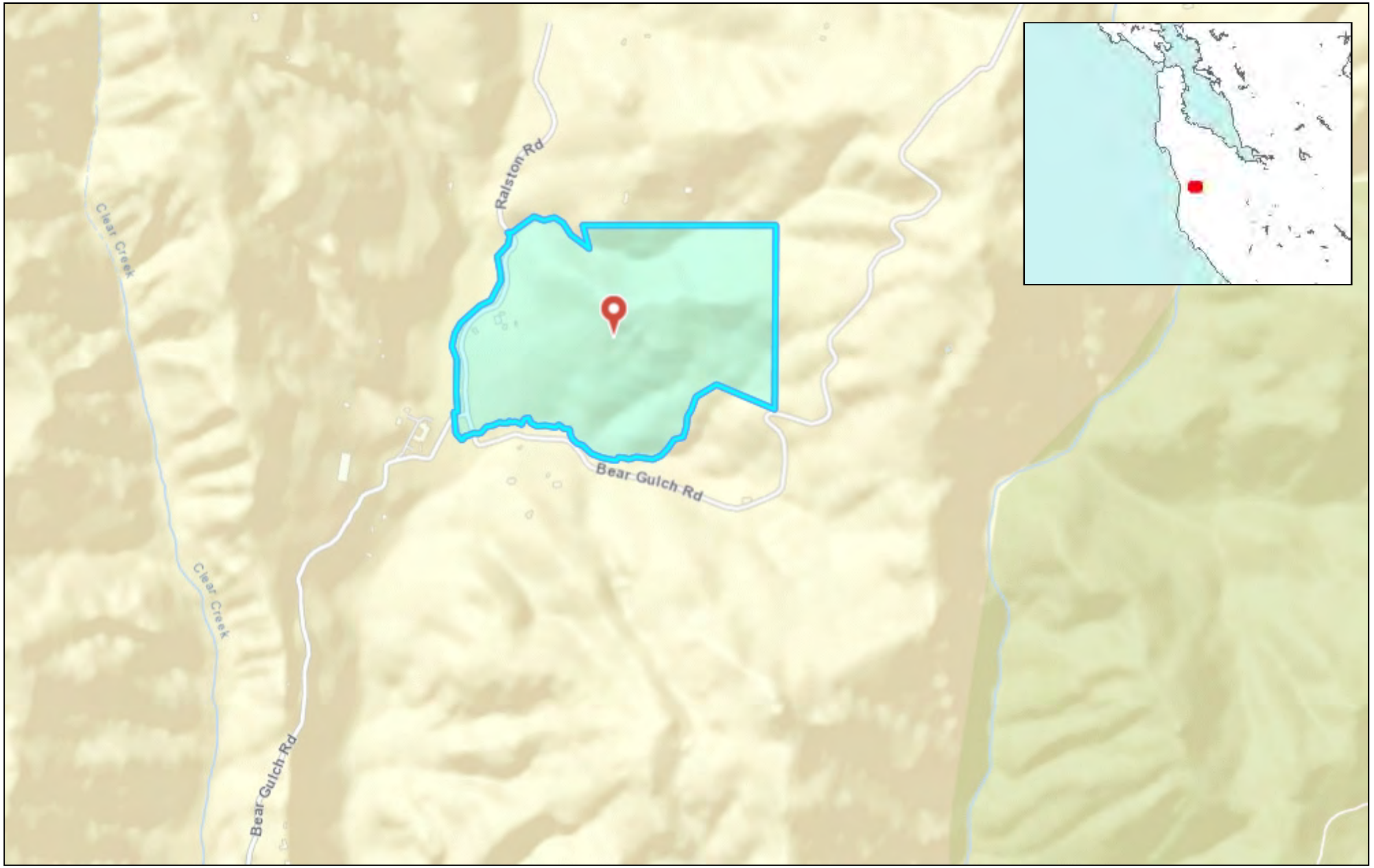
17. Noise sources associated with demolition, construction, repair, remodeling, or grading of any real property shall be limited to the hours from 7:00 a.m. to 6:00 p.m., weekdays and 9:00 a.m. to 5:00 p.m., Saturdays. Said activities are prohibited on Sundays, Thanksgiving, and Christmas (San Mateo Ordinance Code Section 4.88.360).

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT B

San Mateo County

PLN2023-00371, 100 Ralston Road



0.57 0 0.28 0.57 Miles

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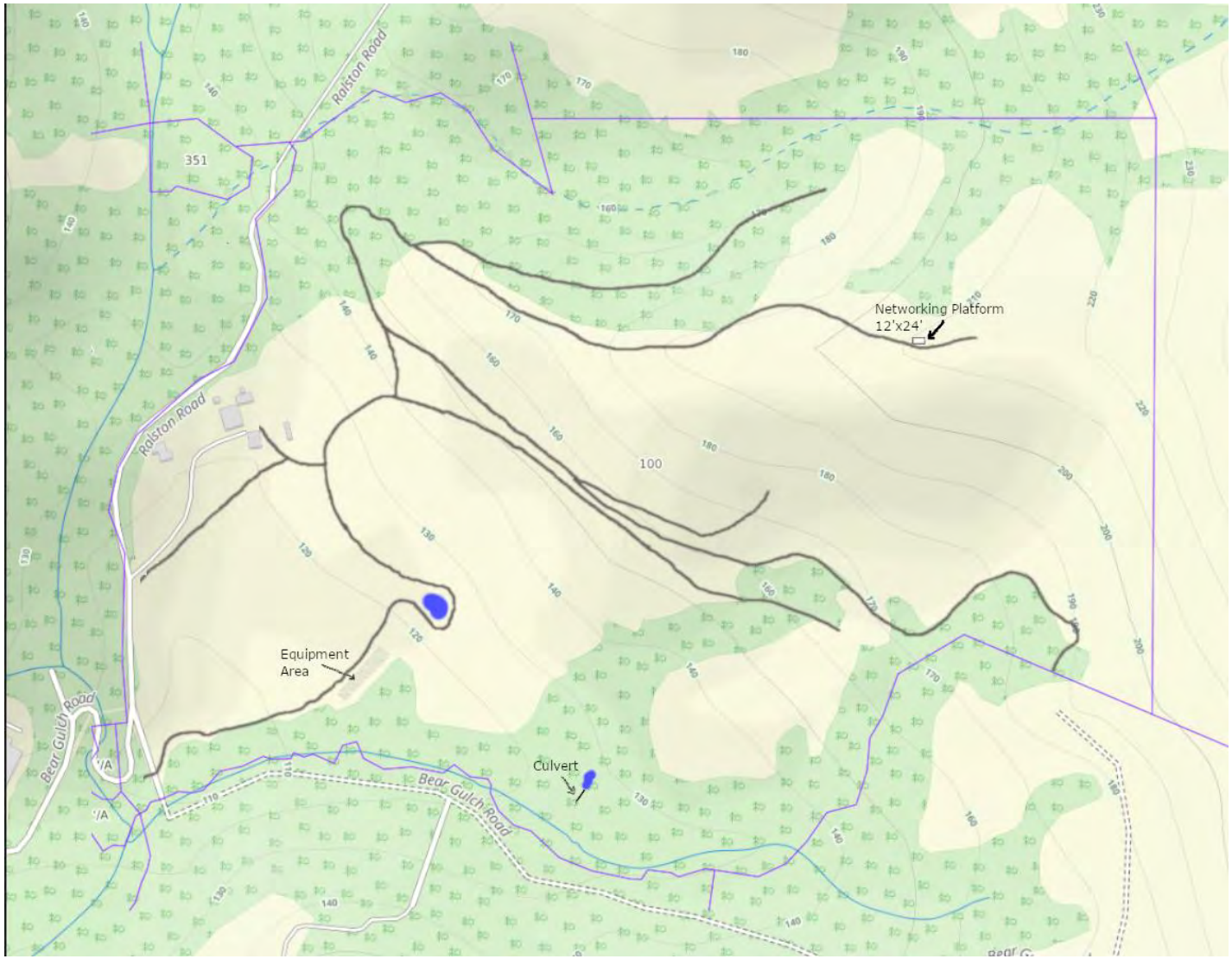
1: 18,056

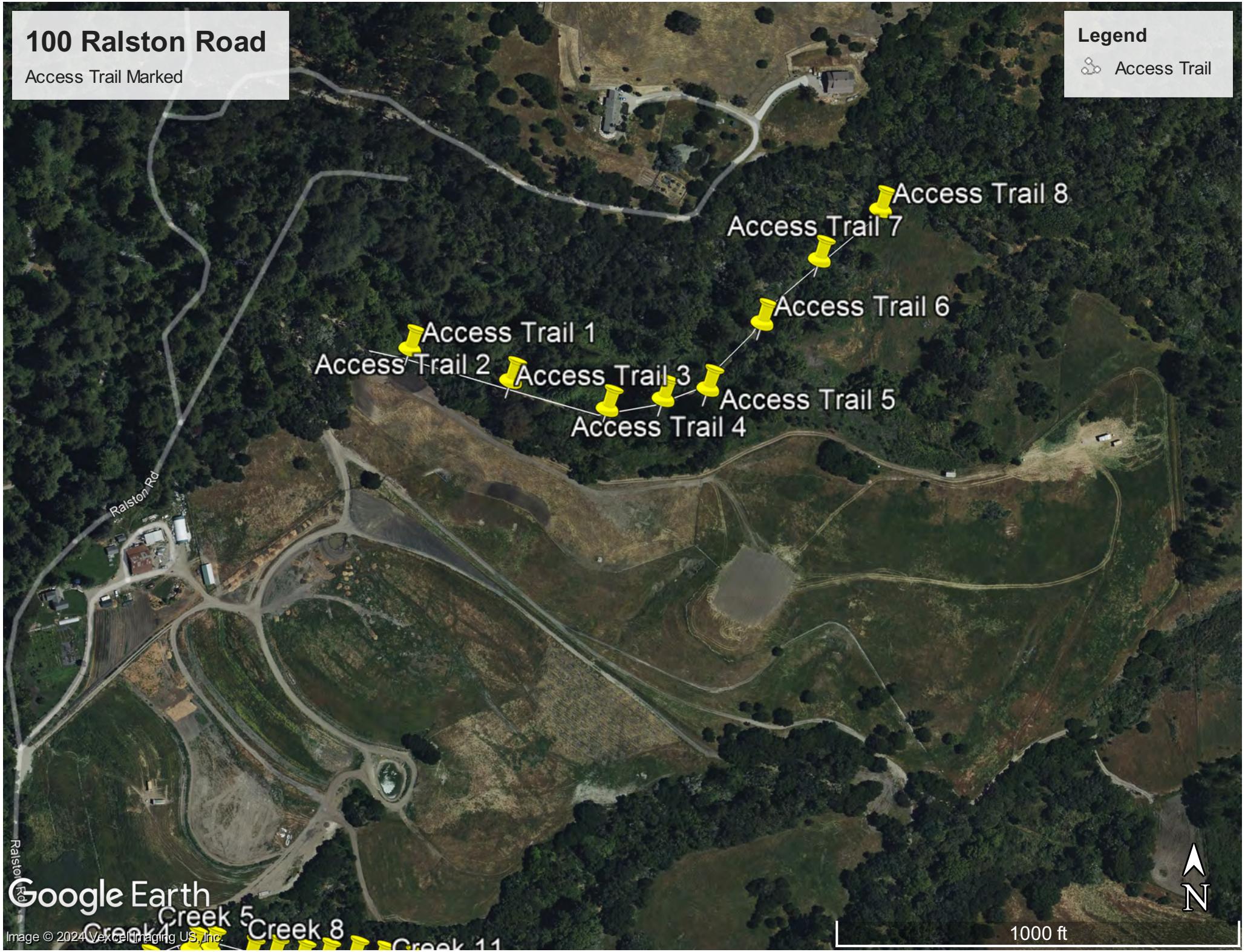
COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT C



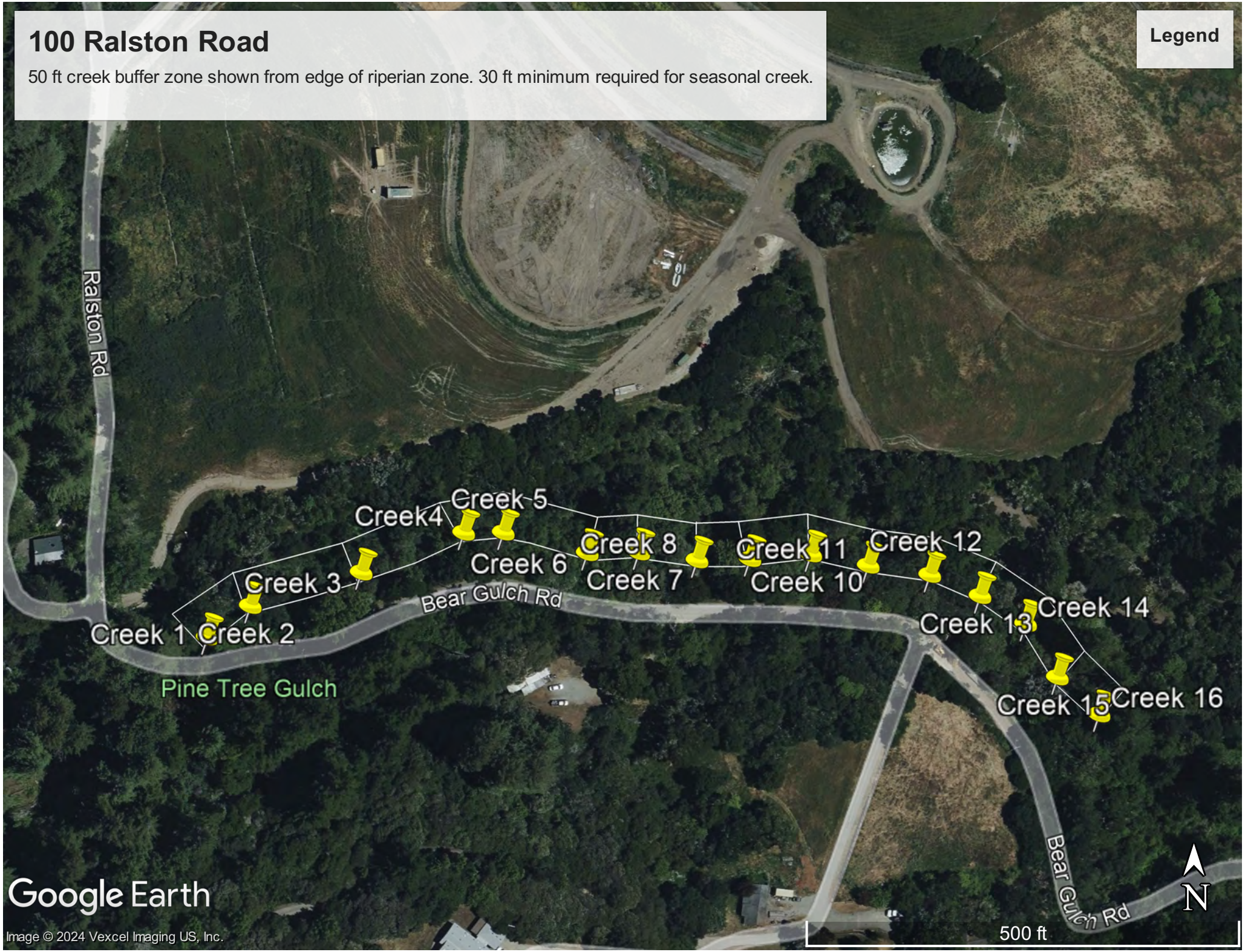
Existing Site Plan – Submitted 11/22/24

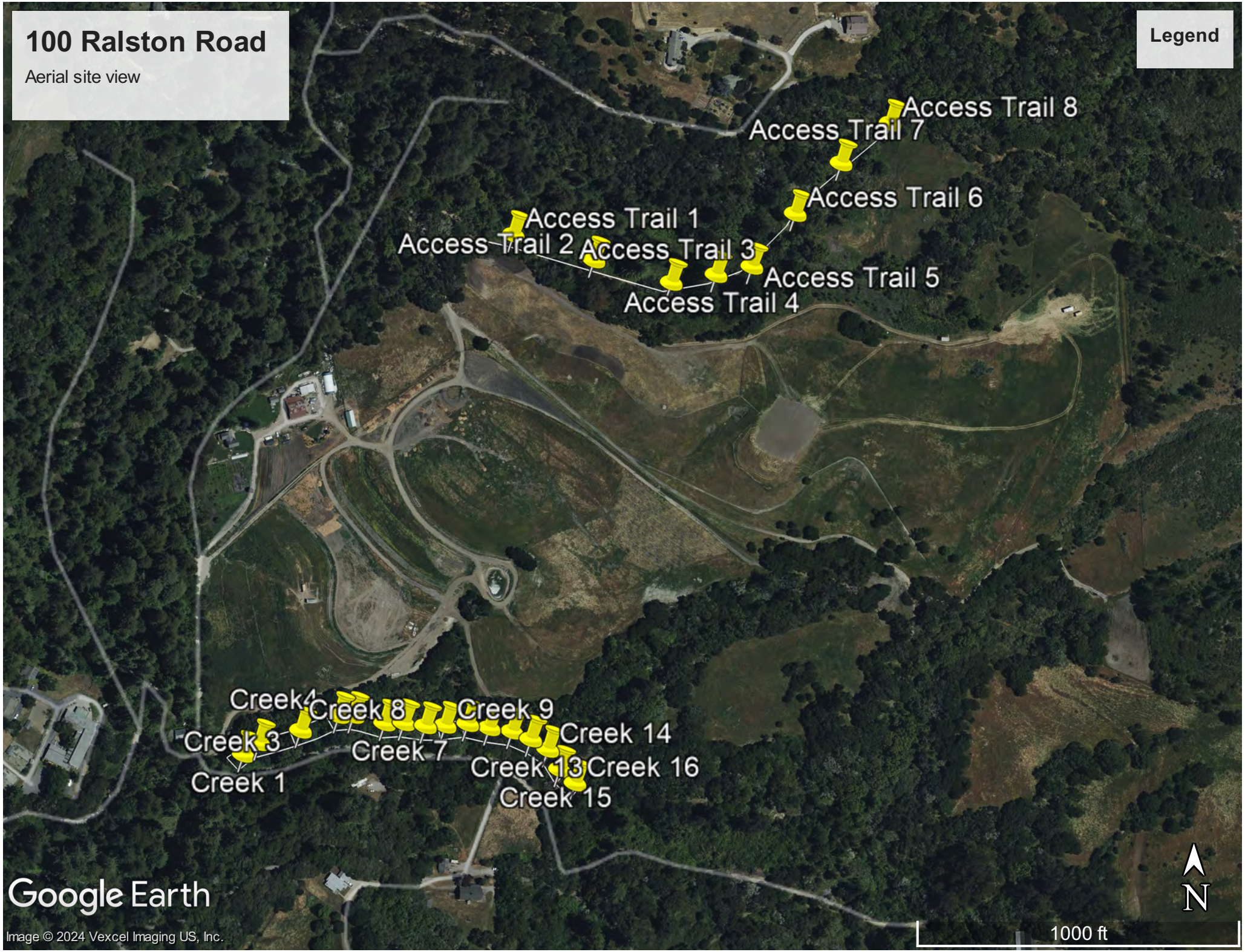

Twisted Fields
May 2023 -- Google Earth
Legend
Ralston Rd
2015 Bear Gulch Rd
Rancho San Gregorio
Bear Gulch Rd
Bear Gulch Rd
Pine Tree Gulch
Bear Gulch Rd
Bear Gulch Rd
Google Earth
Image © 2023 Airbus
N
1000 ft


100 Ralston Road
Access Trail Marked
Legend
Access Trail
Access Trail 8
Access Trail 7
Access Trail 6
Access Trail 1
Access Trail 2
Access Trail 3
Access Trail 5
Access Trail 4
Ralston Rd
Ralston Rd
Google Earth
Image © 2024 Vexcel Imaging US, Inc.
Creek 5
Creek 8
Creek 4
Creek 11
N
1000 ft

100 Ralston Road

50 ft creek buffer zone shown from edge of riperian zone. 30 ft minimum required for seasonal creek.




100 Ralston Road
Aerial site view
Legend
Access Trail 8
Access Trail 7
Access Trail 6
Access Trail 1
Access Trail 2
Access Trail 3
Access Trail 5
Access Trail 4
Creek 4
Creek 8
Creek 9
Creek 14
Creek 3
Creek 7
Creek 13
Creek 16
Creek 1
Creek 15
Google Earth
Image © 2024 Vexcel Imaging US, Inc.
N
1000 ft

0 100' IMAGE DATE: 5-12-23

0 100' IMAGE DATE: 9-27-21

GENERAL NOTES

1. PLANS PREPARED AT THE REQUEST OF:
   DANIEL THEOBALD, OWNER
2. IMAGES FROM GOOGLE EARTH. MEASUREMENTS WERE MADE ON THE GROUND WITH LONG TAPE MEASURES FOR BETTER ACCURACY REGARDING AERIAL EXTENT AND THICKNESS OF FILL .
3. THE ROAD DATED 9-7-21 WAS FIRST CREATED IN LATE 2018, AFTER SEPTEMBER.

GRADING NOTES

CUT VOLUME : 0 CY
FILL VOLUME: 850 CY

VOLUMES ABOVE ARE APPROXIMATE.

THE GRADING WAS PERFORMED IN 2022 TO CREATE A STAGING FOR FARM ACTIVITIES.

MAXIMUM FILL THICKNESS ESTIMATED TO BE 2.5 FEET.

GRADIENT OF FILL SLOPE IS LESS THAN 2:1.

FILL SLOPE IS WELL-VEGETATED AND ABSENT OF EROSION.

DRAINAGE NOTES

NO IMPERVIOUS SURFACES WERE ADDED.

SURFACE RUNOFF EXISTS AS DISPERSED SHEET FLOW. DRAINAGE PATTERNS WERE NOT DIVERTED OR ALTERED APPRECIABLY.

SURFACE RUNOFF FLOWS AS SHEETFLOW THROUGH OAK WOODLAND FOR ABOUT 150 FEET BEFORE REACHING AN UNNAMED STREAM.

REGISTERED PROFESSIONAL ENGINEER
CHARLES M. KISSICK
No. 62264
9-30-25
EXPIRES
CIVIL
STATE OF CALIFORNIA

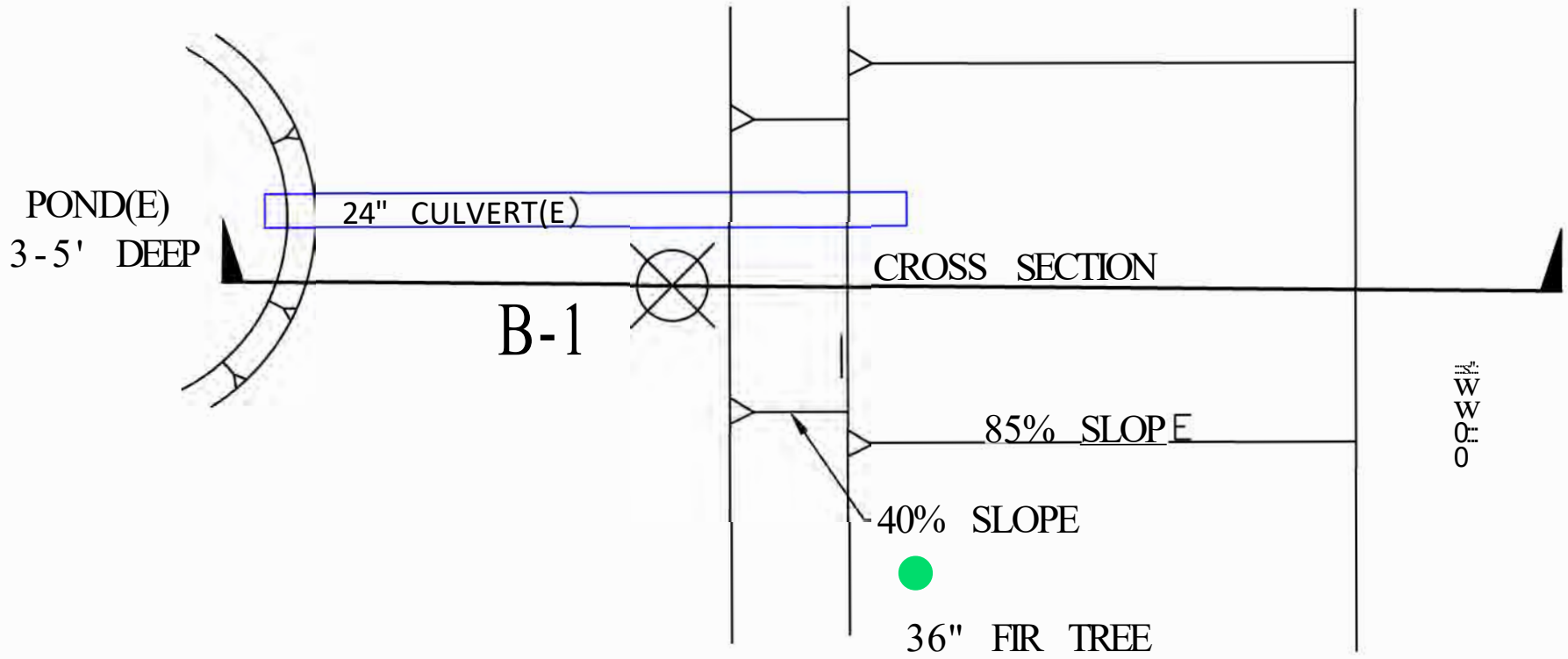
Sigma Prime Geosciences, Inc.
SIGMA PRIME GEOSCIENCES, INC.
332 PRINCETON AVENUE
HALF MOON BAY, CA 94019
(650) 728-3590
FAX 728-3593

DATE: 1-29-25
DRAWN BY: CMK
CHECKED BY: AZG
REV. DATE:
REV. DATE:
REV. DATE:

GRADING PLAN

100 RALSTON ROAD
SAN GREGORIO

SHEET
C-1



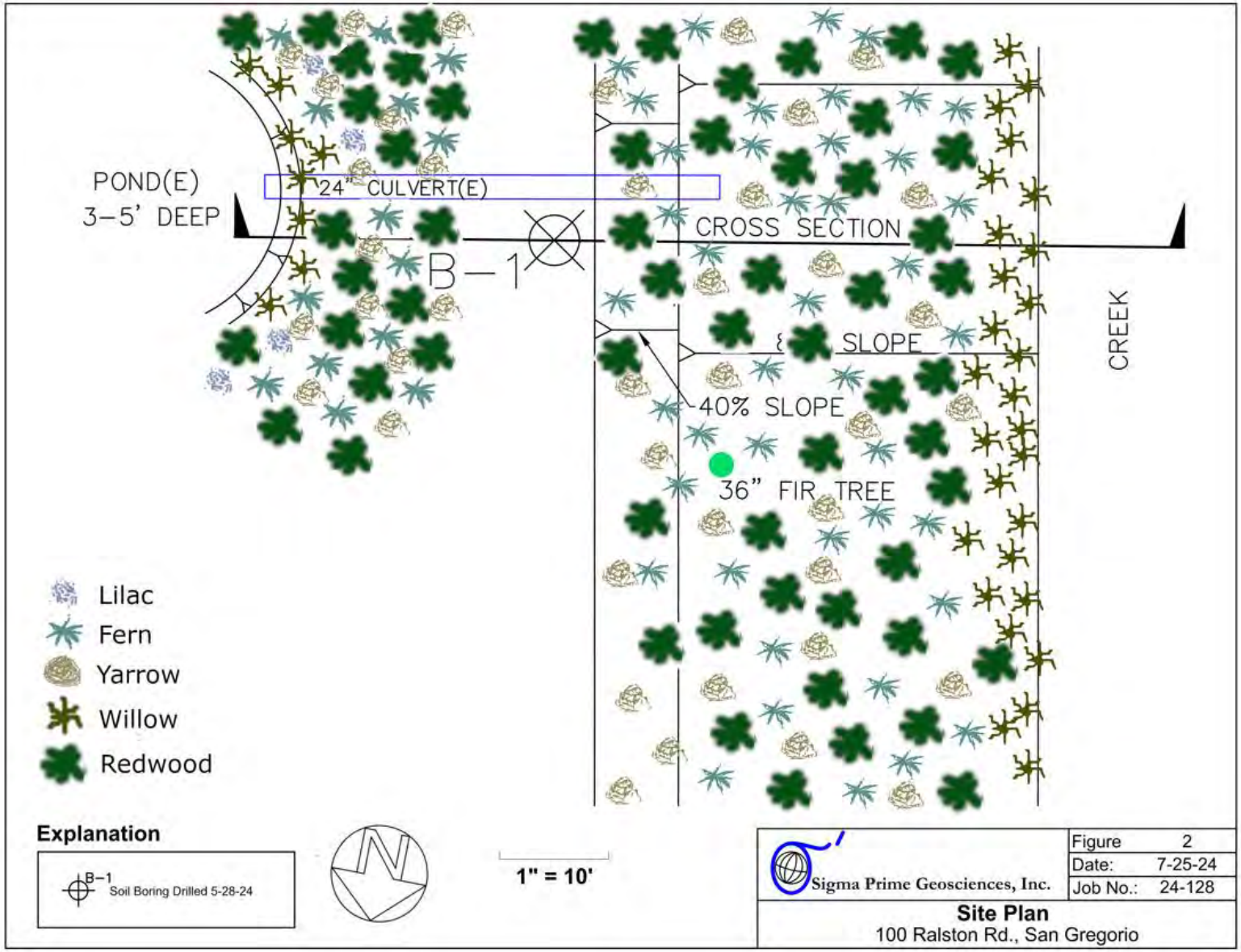
1" = 10'

Explanation

M-1 = Soil Boring Drilled 5-28-24

i:'igma Prime Geosciences, Inc.	Fiaure 2
	Date: 7-25-24
	Job No.: 24-128

Site Plan
100 Ralston Rd., San Gregorio


POND(E)
3–5' DEEP
24" CULVERT(E)
B–1
CROSS SECTION
SLOPE
40% SLOPE
36" FIR TREE
CREEK
Lilac
Fern
Yarrow
Willow
Redwood
Explanation
B–1 Soil Boring Drilled 5-28-24
1" = 10'
Sigma Prime Geosciences, Inc.
Figure 2
Date: 7-25-24
Job No.: 24-128
Site Plan
100 Ralston Rd., San Gregorio

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT D

Figure 3 Area of road widening

Figure 4 Stabilized and restored area

Figure 5 Culvert outfall to Pine Tree Gulch in Restoration Area, December 18, 2023

Figure 6 August 2024 picture with BMP Measures installed and increased vegetation cover by 20-30%

Figure 7 Map showing location of the culvert and re-vegetation efforts.

ATTACHMENT D

Figure 8 Total area of disturbance

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT E

December 20, 2023

Carly Stines, Operations Manager
Twisted Fields
100 Ralston Road
San Gregorio, CA 94074

SUBJECT: Rancho San Gregorio Riparian Habitat Assessment

Dear Carly,

I am writing to provide you with a riparian habitat assessment for the restoration work located along the southern boundary of the Twisted Fields property. The survey was conducted at Rancho San Gregorio, located at 100 Ralston Road, in San Gregorio, California. The purpose of this letter report is to identify the riparian vegetation boundaries associated with the restoration work area along the ranch road and Pine Tree Gulch for past and any potential future restoration work needs. The survey methods, results, and discussion are provided below.

Methods

Foster Consulting biologist Jonathan Foster conducted a general riparian habitat assessment on December 14th and 18th of 2023. The survey focused on the two streams associated with the restoration work area along the southern boundary of the Twisted Fields farm in San Mateo County, California (See Figure 1 and 2, the survey area). A global positing system (GPS) unit, capable of sub-meter accuracy was used to record a path and points along the riparian boundaries and later super-imposed onto a Google Earth aerial photograph for project planning use (See Figure 2.). Field flagging (orange) was also placed intermittently along the riparian boundaries of both steams for planned surveyor use.

Results

Weather conditions during the survey varied:
December 14, 2023, was dry, mild, and partly sunny, ~60 ºF.
December 18, 2023, was rainy, wet, and overcast, ~55ºF.

The surrounding area is in active agriculture operation including plowed fields with associated forest habitat consisting of mixed coastal coniferous forest. Riparian habitat consisted of a thin band of woody shrub-vine vegetation along two small freshwater streams (Pine Tree Gulch and unnamed Intermittent Stream-1).

Plant species observed in the Survey Area

Arroyo Willow (*Salix lasiolepis*)	Flowering current (*Ribes sanguineum*)
Bracken fern (*Pteridium aquilinum*)	Madrone (*Arbutus menziesii*)
California bay (*Umbellularia californica*)	Monterey Pine (*Pinus radiata*)
California blackberry (*Rubus ursinus*)	Poison oak (*Toxicodendron diversilobum*)
Coastal redwood (*Sequoia sempervirens*)	Sword fern (*Polystichum munitum*)
Coast live oak (*Quercus agrifolia*)	Thimbleberry (*Rubus parviflorus*)
Common rush (*Juncus patens*)	Wild grape (*Vitis californica*)
Douglas fir (*Pseudotsuga menzeisii*)	Yarrow (*Achillea millefolium*)

There are eight soils series mapped in the general property area (See attached NRCS 2023), none are listed as a hydric soil series. The soils associated with the restoration work area and the streams are Hugo and Josephine loams, steep (HuE) and very steep (HuF).

Three streams were observed in the survey area, two unnamed seasonal streams (Int-1 and Ephemeral Stream-1) and Pine Tree Gulch, a semi-permanent stream (See Figures 2 and 3). Both streams associated with the restoration work area contained a thin band of woody riparian vegetation (Int-1 and Pine Tree Gulch). See the attached representative site photographs for further detail on the restoration work area and mapped aquatic features with associated riparian habitat. The two seasonal streams (Int-1 and ES-1) are tributary to Pine Tree Gulch. Pine Tree Gulch is tributary to El Corte de Madera Creek, which is tributary to San Gregorio Creek (at SR-84), a direct tributary to the Pacific Ocean at San Gregorio Beach, approximately 6.5 stream miles from the survey area.

Discussion

The existing erosion and sediment control best management practices (BMPs) appear to be stabilized and functioning going into the wet season. It is recommended that you regularly inspect your BMPs during and after moderate to heavy rain events to ensure continued function and for maintenance needs until vegetation cover and slope stability is restored. The restoration work area could benefit from staked willow cuttings (located on site) at the base of the toe-slope to help stabilize the upland, stream boundary long-term. Please let me know if you have any questions or need any further clarifications on this study.

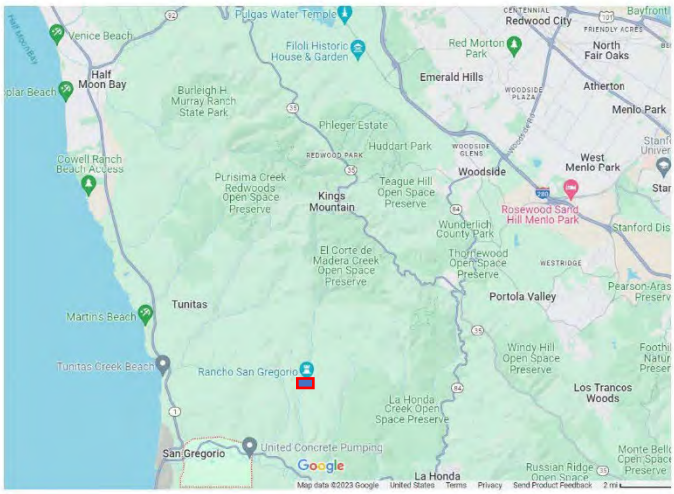
Sincerely,

Jonathan Foster
Wetland Ecologist

Attachments:

Figure 1. Project Location
Figure 2. Riparian Boundary Drawing
Figure 3. USGS Hydrology Map
NRCS Soil Map and Information
Representative Site Photos (Photos 1 to 8)

Figure 1. Project Location



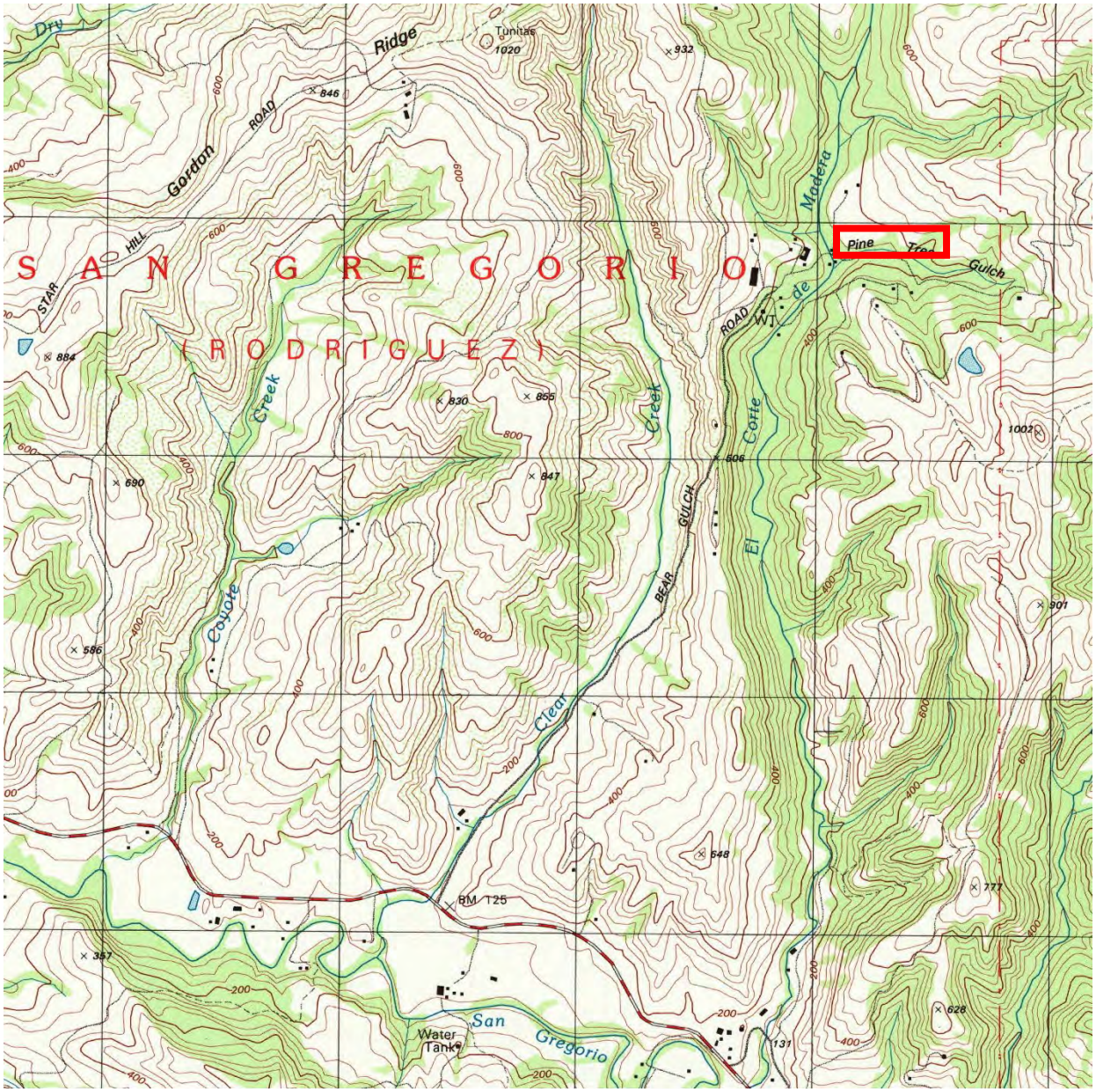


Figure 2. Riparian Habitat Boundary Drawing

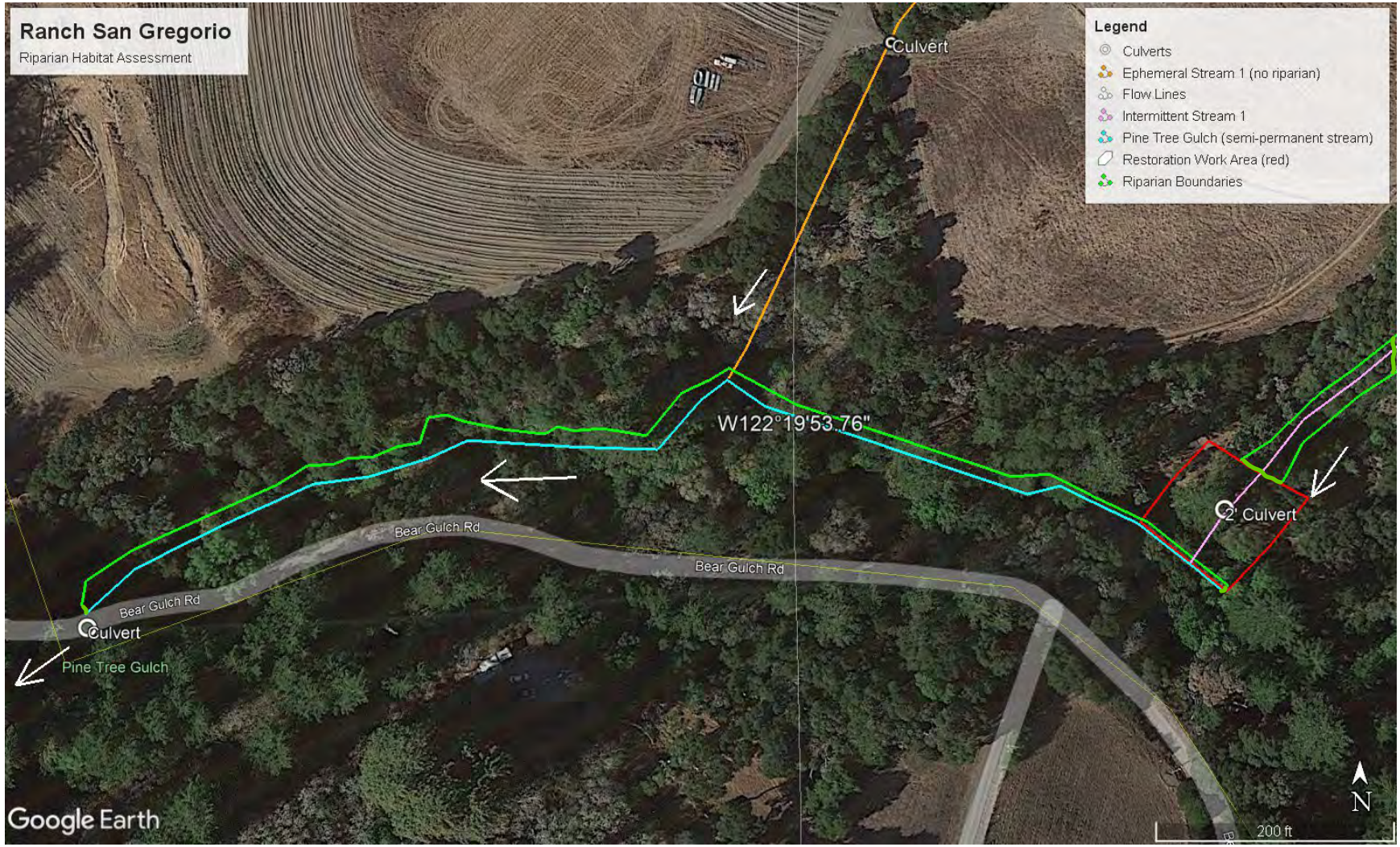
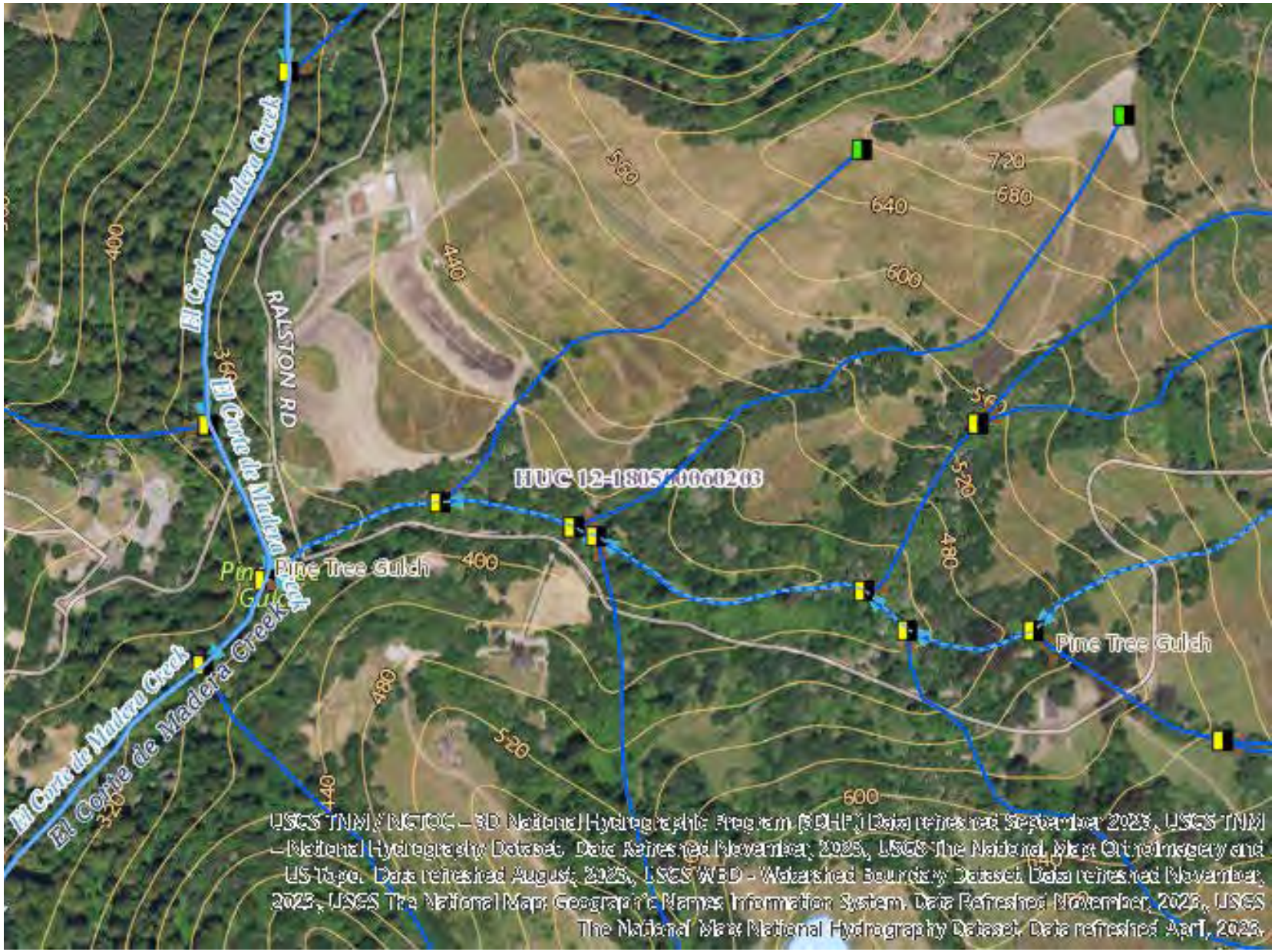
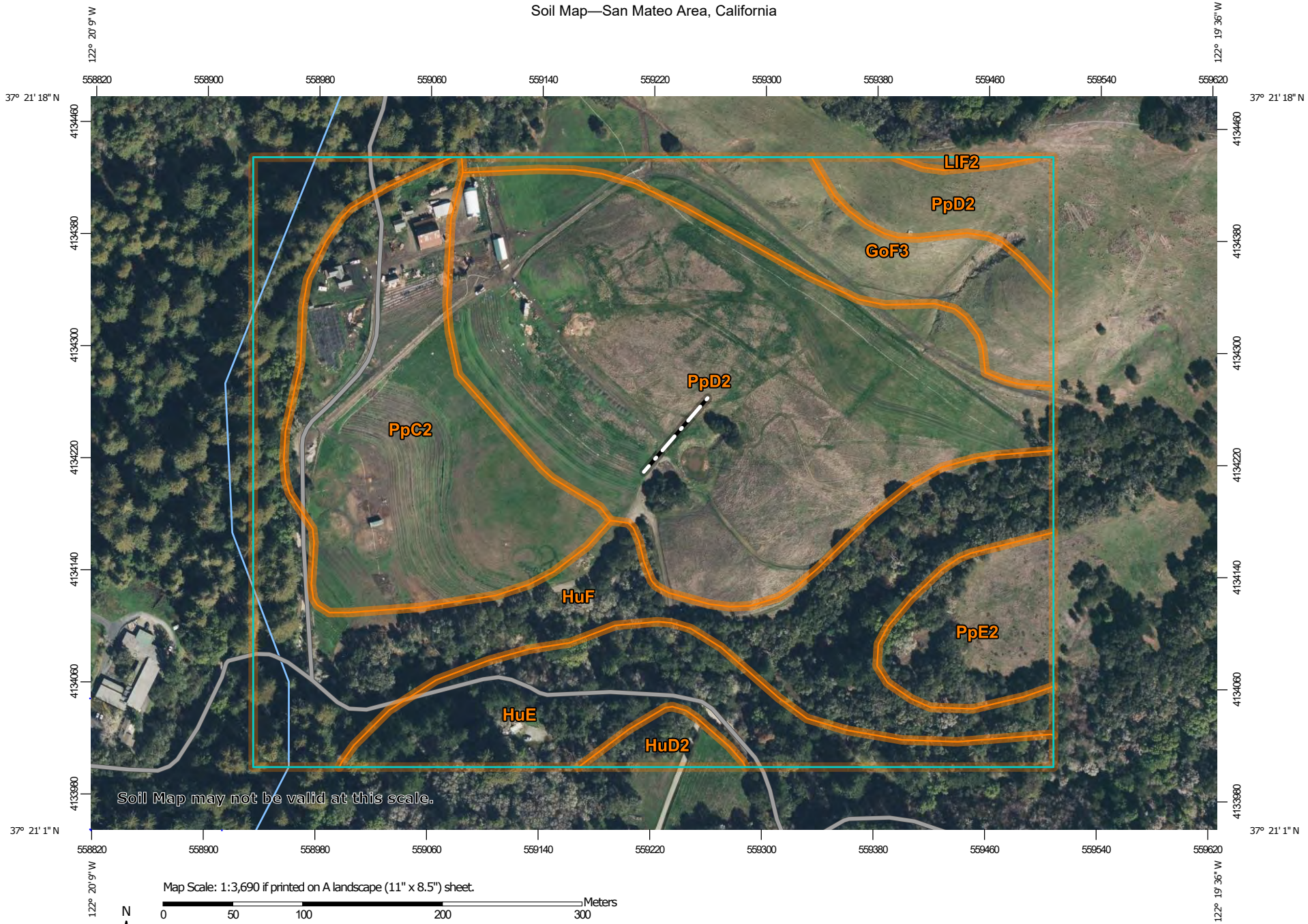


Figure 3. USGS Hydrology Map





Map Scale: 1:3,690 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Mateo Area, California
Survey Area Data: Version 17, Sep 11, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 17, 2021—Feb 21, 2021

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GoF3	Gazos and Lobitos soils, steep and very steep, severely eroded	4.8	7.7%
HuD2	Hugo and Josephine loams, moderately steep, eroded	0.7	1.2%
HuE	Hugo and Josephine loams, steep	6.3	10.1%
HuF	Hugo and Josephine loams, very steep	14.7	23.7%
LIF2	Lobitos loam, very steep, eroded	0.1	0.2%
PpC2	Pomponio loam, sloping, eroded	10.4	16.8%
PpD2	Pomponio loam, moderately steep, eroded	22.0	35.6%
PpE2	Pomponio loam, steep, eroded	2.9	4.7%
Totals for Area of Interest		**62.0**	**100.0%**

Rancho San Gregorio Riparian Habitat Assessment Site Photos (flow lines in yellow)

Photo 1. Culvert outfall to Pine Tree Gulch in restoration work area

Photo 2. Intermittent Stream-1 north of the restoration work area

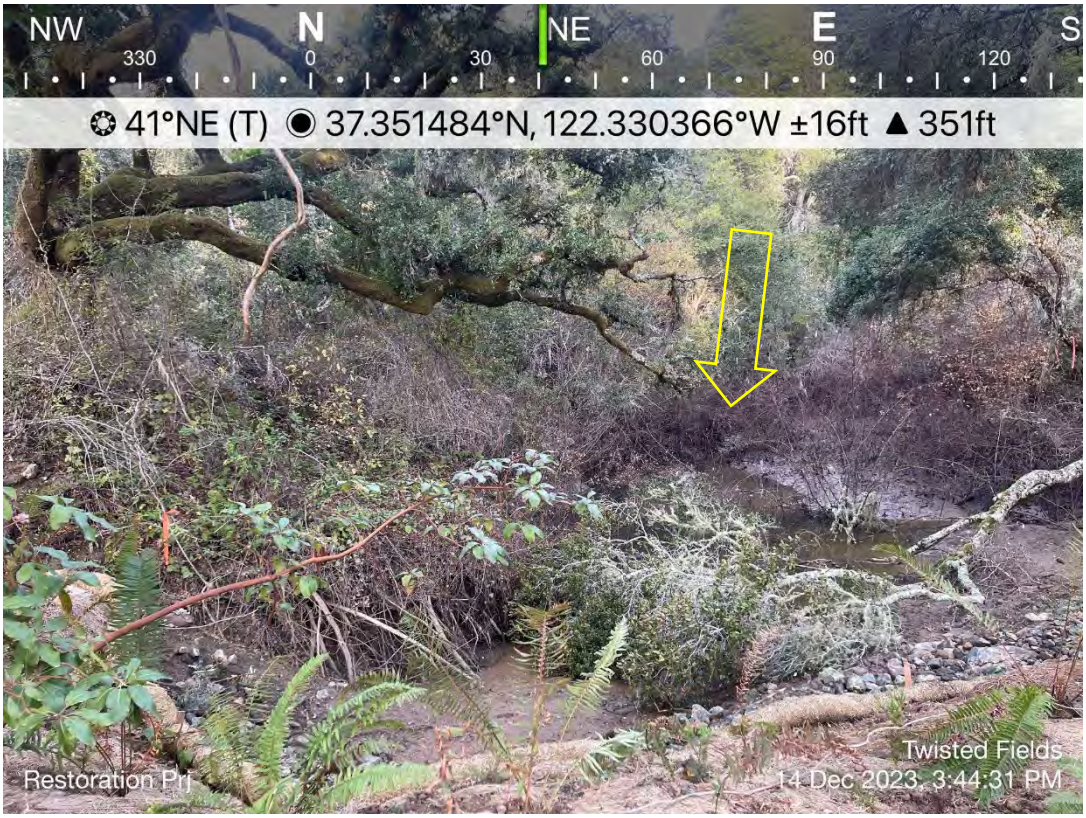


Photo 3. Overview of ranch road in the restoration work area. Int-1 (right), Pine Tree Gulch (left)

Photo 4. Restoration work area from Pine Tree Gulch.

Photo 5. Pine Tree Gulch below restoration work area.

Photo 6. Restoration work area along Pine Tree Gulch.

Photo 7. Riparian boundary along Pine Tree Gulch.

Photo 8. Riparian boundary where ES-1 terminates into Pine Tree Gulch.

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT F

September 3, 2024

Carly Stines, Operations Manager
Twisted Fields
100 Ralston Road
San Gregorio, CA 94074

SUBJECT: Rancho San Gregorio Riparian Habitat Monitoring

Dear Carly,

I am writing regarding the riparian habitat restoration work located along the southern boundary of the Rancho San Gregorio property, located at 100 Ralston Road, in San Gregorio, California. Per your request I am providing you with a follow up assessment from my December 2023, letter report (Foster 2023), based on our review of Sigma Prime Geoscience's July 26, 2024, Slope Stability Study (Sigma 2024) and the current condition site photos you provided (August 2024).

Based the current conditions, the work area has continued to benefit from the installation of BMPs and native vegetation, including the staked willow cuttings, and appears to have an increased vegetation cover, ranging from 20 to 65% (see attached 2023-2024 photo comparison sheets).

The analysis and conclusions in the Sigma 2024, report align with my past findings and recommendations (Foster 2023). The existing erosion and sediment control best management practices (BMPs) continue to function and are stabilized. It is recommended that you regularly inspect your BMPs during and after moderate to heavy rain events to ensure continued function and for maintenance needs until vegetation cover and slope stability is fully restored. To determine full restoration, we recommend continued yearly monitoring from a qualified professional through 2027. We propose the following general monitoring plan:

The success of the restoration area will be gauged by the following criteria:

(1) Annual surveys for riparian restoration areas will include a visual assessment of hydrology, soils, and vegetation including,

(2) A 80% absolute cover of riparian vegetation goal (excluding the roadway) by year 5 (2027).

(3) A species optimum test of 3 or greater for over 50% of planted species:

a. 0 – Dead, no evidence of recovery
b. 1 – Main stem dead, but basal sprouts emerging
c. 2 – Low vitality with evidence of biomass loss
d. 3 – Plant apparently not growing
e. 4 – Vigorous, but not optimal growth
f. 5 – Optimal growth (budding, new leaf growth, flowering, seeding, etc.)

(4) Provide annual monitoring reports through 2027, or until the success criteria are met.

Please let me know if you have any questions.

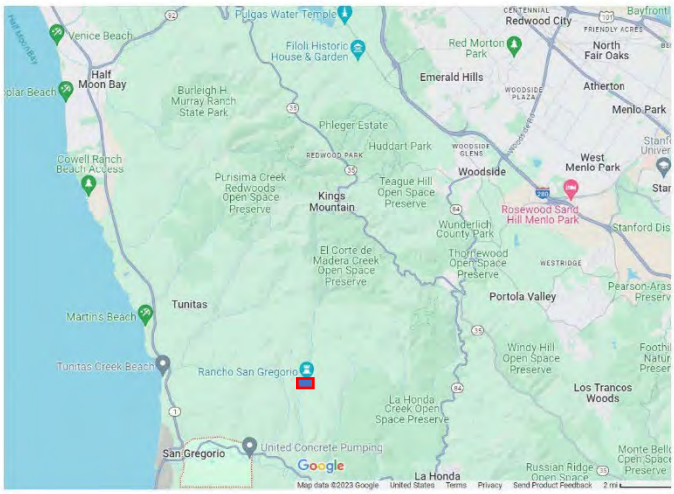
Sincerely,

Jonathan Foster
Wetland Ecologist

Attachments:

Figure 1. Project Location
Figure 2. Riparian Boundary Drawing
2023-2024 Photo Comparisons

Figure 1. Project Location



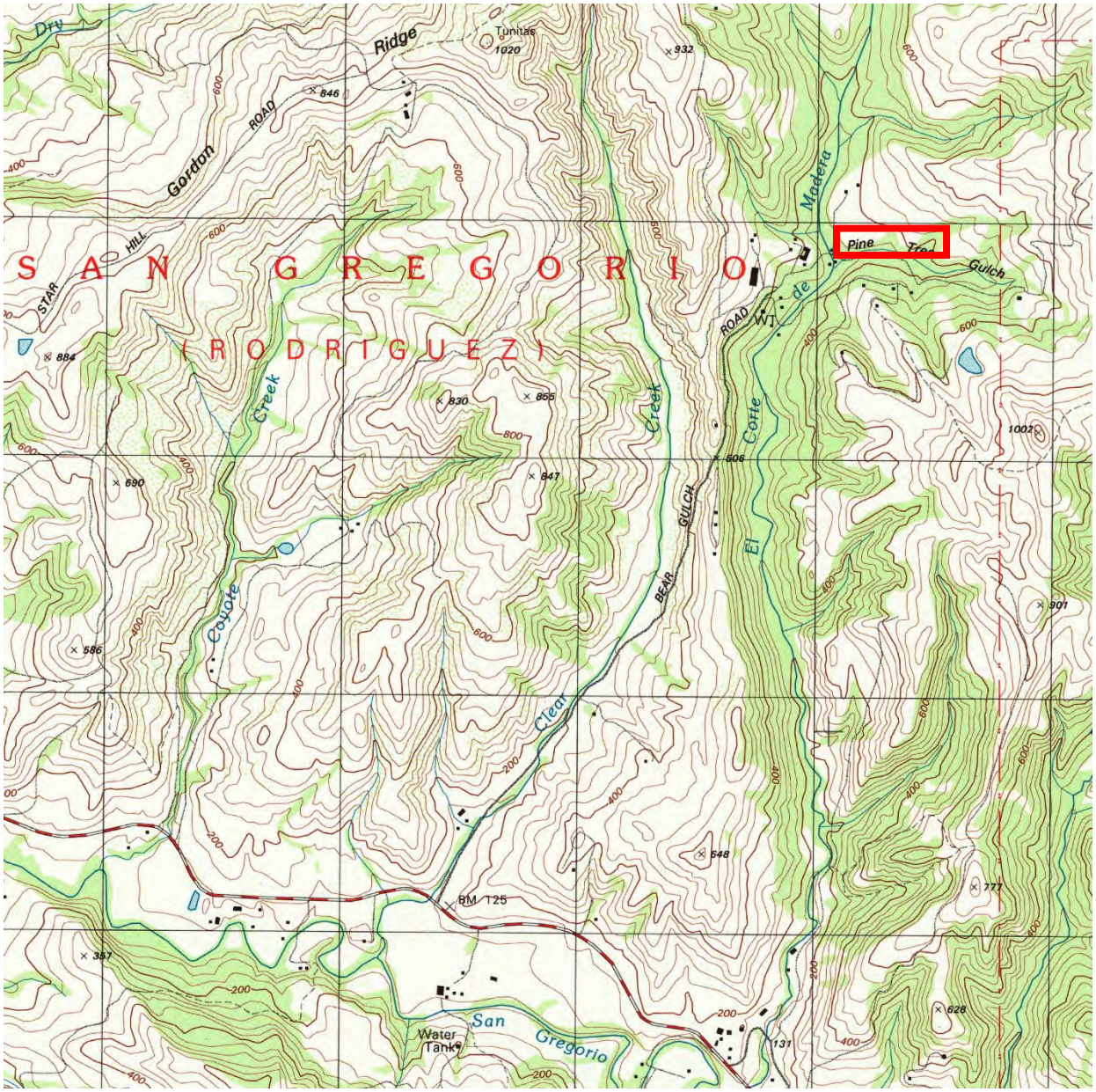
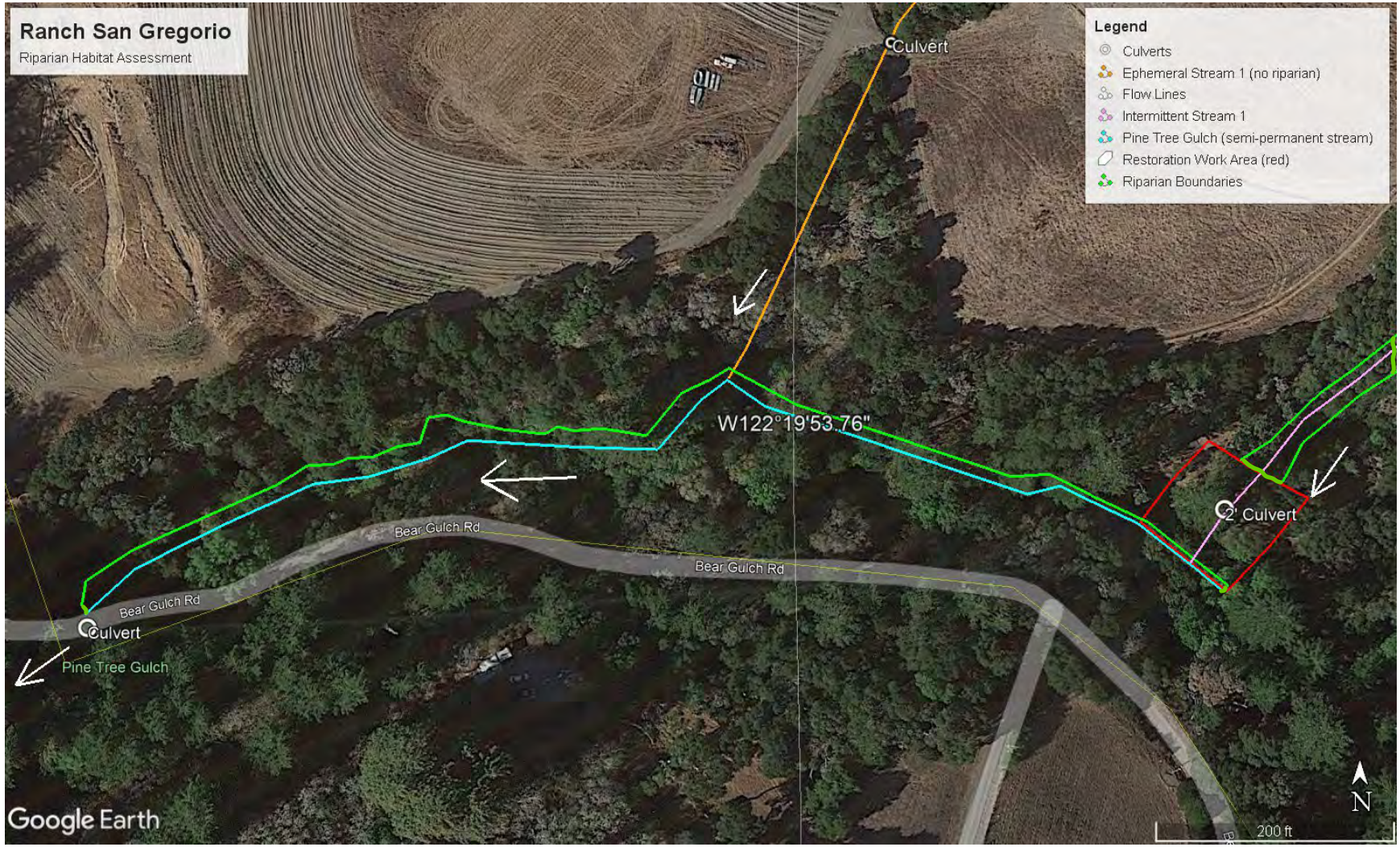


Figure 2. Riparian Habitat Boundary Drawing



Rancho San Gregorio Riparian Habitat Assessment

December 2023 to August 2024 Site Photos Comparison

Photo 1. Culvert outfall to Pine Tree Gulch in restoration work area

Photo 2. August 2024 – BMPs stable and vegetation cover increase of ~20-30%

Photo 3. Intermittent Stream-1 north of the restoration work area

Photo 4. August 2024 – stabilized slope and established vegetation (~20-30% increase)

Photo 5. Overview of ranch road in the restoration work area. Int-1 (right), Pine Tree Gulch (left)

Photo 6. August 2024 – Stabilized slopes and established vegetation cover (25-30% increase)

Photo 7. Restoration work area from Pine Tree Gulch.

Photo 8. August 2024 – Successful willow staking (~65% increase in vegetation cover)

Photo 9. Pine Tree Gulch below restoration work area.

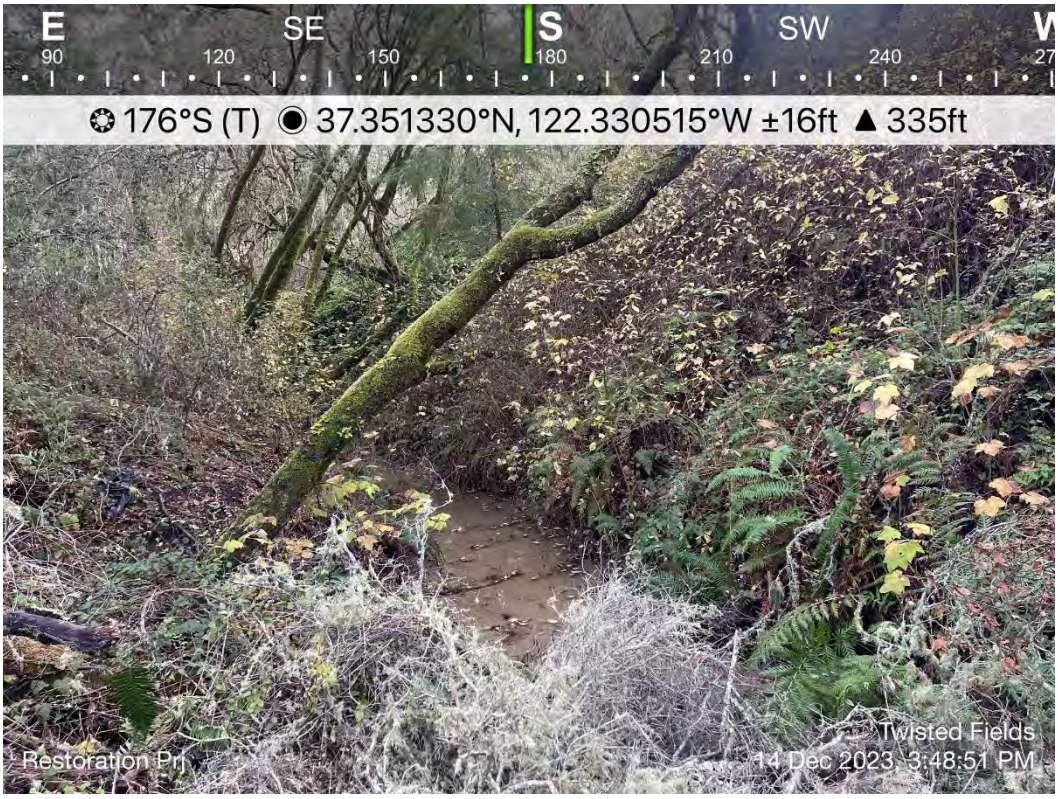


Photo 10. Augst 2024 – Willow staking has been effective and increased veg cover ~65%

Photo 11. Restoration work area along Pine Tree Gulch.

Photo 12. August 2024 – Slope stabilization, re-vegetation, and willow staking have been effective.

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT G

Rancho San Gregorio Creek Bank Repair and Grading Work

Produced by Madi Trudeau (Operations Manager) and Daniel Theobald (Property Owner)

Location: Ralston Rd off of Bear Gulch Rd, north of CA-84

County Region: Coastside

Maintenance Tier: Tier 2 or 3

Coordinates: 37°21'05"N 122°19'47"W

Watershed: San Lorenzo-Soquel 18060001

Creek/Tributary: Int-1 and Ephemeral Stream-1 (Unnamed seasonal streams), Tributary to San Gregorio Creek

Maintenance Work Area: Approximately 4000 square feet

Maintenance Activity Type: Bank stabilization, culvert pipe replacement, and grading work

Work Below OHWM (Ordinary High Water Mark)? No

Physical Setting: The Ralston Road erosion repairs involved slope stabilization efforts, the replacement of an existing culvert pipe, and grading work. The repair site is located on Ralston Rd, off of Bear Gulch Rd approximately 3 miles east of the unincorporated town of San Gregorio in San Mateo County.

Maintenance Site Location Map and Approximate Work Area Map

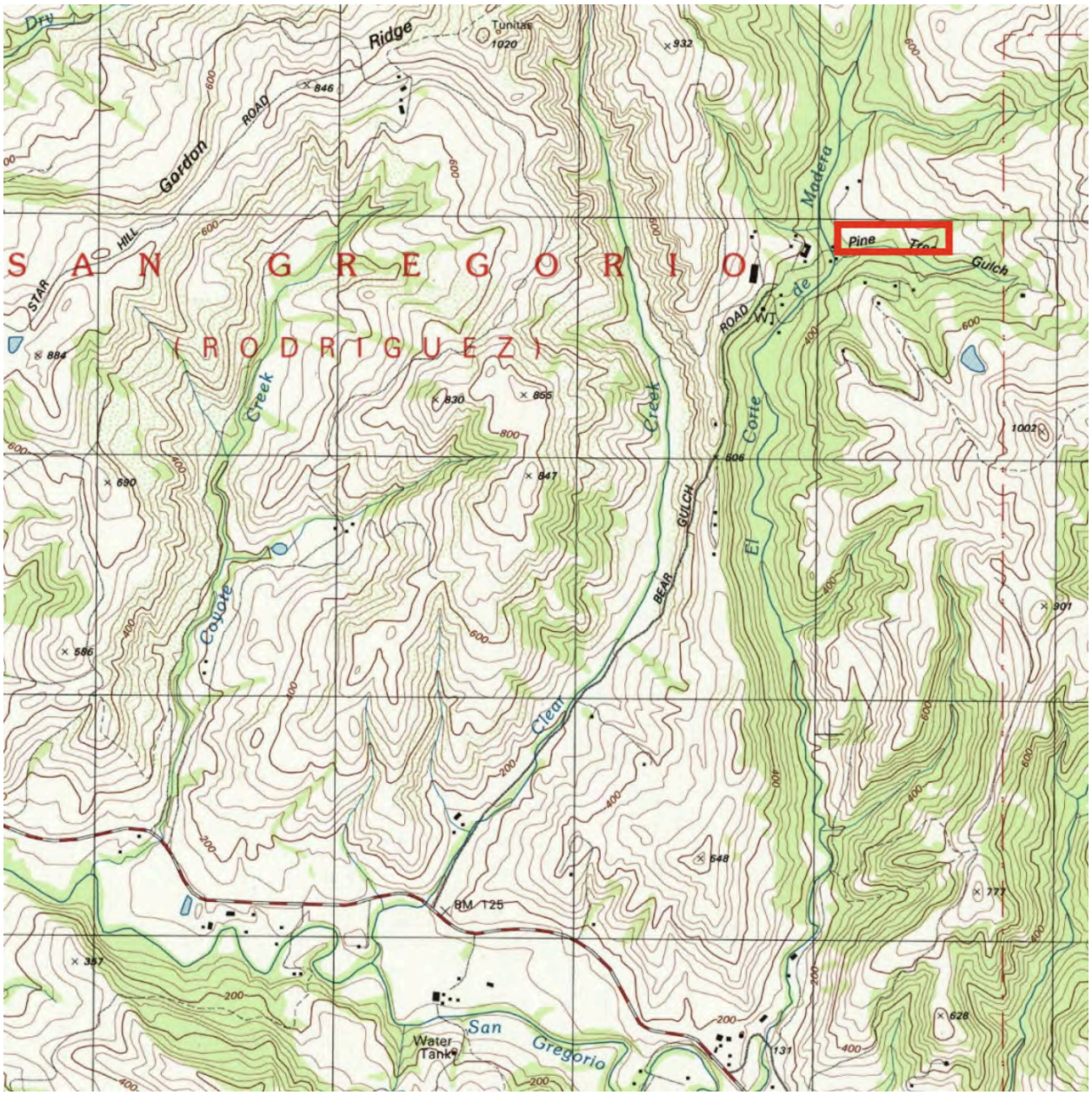


Figure 1. Project location outlined in red box on Pine Tree Gulch. Figure shows San Gregorio Creek and its tributaries, including Coyote Creek, Clear Creek, and El Corte de Madera Creek.

Biological Conditions

Aquatic or Instream Habitat: Two unnamed seasonal streams (Int-1 and Ephemeral Stream-1) and one semi-permanent stream (Pine Tree Gulch) were identified in the survey area (Foster 2023). San Gregorio Creek and several of its tributaries are habitat for sensitive steelhead and Coho salmon, but a CDFW survey (1973) found that the adjacent Clear Creek "does not provide salmonid summer nursery habitat, and offers minimal spawning habitat," indicating that these species are unlikely to be present in the smaller, seasonal tributaries nearby.

Vegetation Composition: The area surrounding the eroded embankment consists of plowed fields adjacent to forest habitat comprised of mixed coastal coniferous forest. El Corte de Madera Creek and Pine Tree Gulch Stream are surrounded by a thin band of woody riparian vegetation. These plant species have been observed in the survey area: flowering current, madrone, monterey pine, poison oak, sword fern, thimbleberry, wild grape, yarrow (Foster 2023).

Maintenance Needs and Enhancement Opportunities:

The culvert pipe replacement and subsequent slope stabilization were necessary in maintaining the integrity of the embankment, the functionality of the creek, and preventing further erosion. Re-vegetation, willow staking, and laying down straw wattles offered the chance to improve biodiversity and increase plant growth cover, supporting long-term ecosystem health.

The method employed for re-vegetation was "Vegetated Soil Lift" described in the EC-13 section of the SMC Routine Maintenance Program. Soil wrapped in biodegradable straw wattle was placed along the bank and staked in with live native willow cuttings to ensure stability and longevity of wattle. Plug plants were added in regular intervals to further increase stability and for the propagation of native species.

Figure 2 references the variety of California native species used in site re-vegetation, including lilac, fern, yarrow, willow, and redwood. Jonathan Foster, the wetland ecologist who advised the usage of "Vegetated Soil Lift" methodology and completed follow-up riparian habitat assessment commented that these methods produced an increased vegetation cover of 20-65% (2024).

Figure 2. Map showing re-vegetation efforts. The key indicates different species utilized, with species intentionally planted and spread apart by size and growth pattern.

In addition to re-vegetation efforts for bank stabilization, we also upgraded an existing 18 inch culvert pipe. The pipe was upgraded in 2023 to an in-kind 24-inch wide, 38 ft long HDPE pipe (Figure 3).

Kissick performed a series of culvert sizing calculations after it was installed to ensure it was the appropriate size based on estimated volume of storm runoff (Figure 4). It was found that a minimum culvert requirement would be 11.1 inches, indicating that the replacement diameter of 24 inches is sufficient. The upgrade was deemed as appropriate conservative, preventative action to handle any extreme weather events caused by climate change.

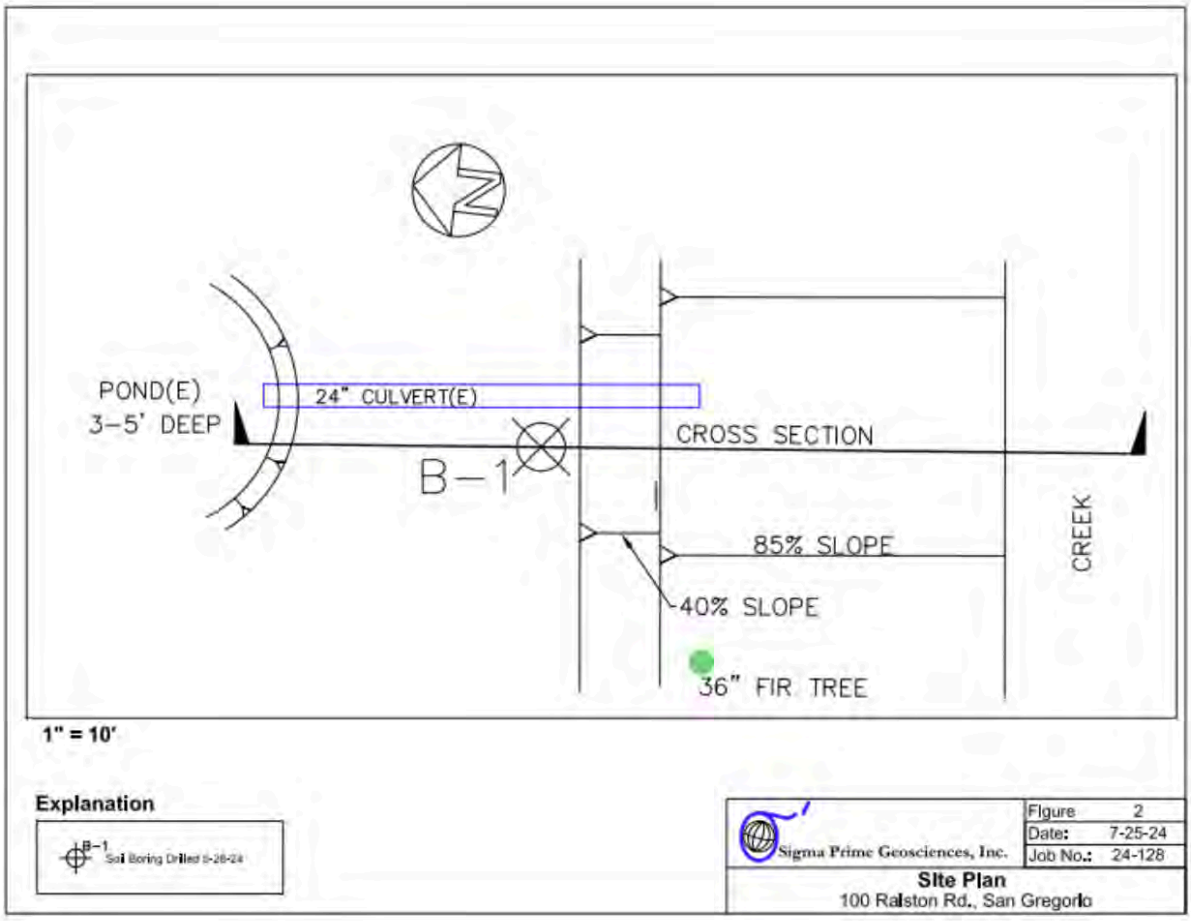


Figure 3. Map showing pond, replacement culvert pipe, and slope grade into the creek. Figure pulled from Charles Kissick's "Slope Stability Study", completed in 2024.

Culvert Sizing

Job: Theobald
No.: 24-128
Date 8/20/2024
by: CMK

Rational Method to Estimate Storm Runoff (page 20-13)

$Q_p=CIA_d$ Reference: Civil Engineering Reference Manual

Area (SF):	553212	
Area, A_d (acres):	12.7000	
C (Appendix 20.A):	0.3	
I (rainfall intensity):	NOAA Atlas 14	
Storm Frequency:	100	years
Time of Concentration, t_c	180	minutes
I=	**1.09**	in/hr
Q_p=	**4.15**	**ft^3/sec** = 1859.1 **gal/min**

Culvert Size (page 19-6)

$D=1.335(nQp/sqrt(S))^{3/8}$ Eq. 19.16b, page 19-6, full flow

n:	0.009	Manning roughness coefficient, from Appendix 19.A
S:	0.01	Slope of pipe
D=	**0.92**	**feet**
=	**11.1**	**inches**

Culvert Diameter is 24 inches.

Figure 4. Culvert pipe calculations completed by Charles Kissick in 2024. Kissick found the minimum pipe diameter to be 11.1 inches, based on the Civil Engineering Reference Manual.

Grading Work Commentary

Alongside efforts to restabilize the eroding creek embankment, grading fill was brought in at a separate equipment storage area on the property to address the issue of muddy conditions during heavy winter storms. These conditions have made parts of the property inaccessible, with several of our vehicles needing to be towed out on multiple occasions. In effort to expand agricultural operations throughout the property, fill was used to establish and maintain a safe and functional area for storage of farm equipment.

This fill was placed approximately 150 years from where the stream bank failure occurred. Small amounts of dirt and gravel were brought in over the course of a few years. Per section 9.8 of the SMC Local Coastal Program, fill placed greater than 50’ away from a creek bank is considered an acceptable setback limit, and therefore unlikely to have an appreciable effect on the stability of the creek bank and restoration work.

Discussion

Kissick’s analyses found that the slope is likely more stable than the surrounding natural slopes, and with the planting efforts producing well-established native vegetation, he determined that further mitigation work would likely be counter-productive (2024). Annual monitoring and maintenance, which has been conducted by professional ecologist Jonathan Foster, was recommended as an appropriate means of determining restoration effort efficacy.

Between Kissick’s culvert pipe calculations, Foster’s biological reports, and San Mateo County’s guidelines, we have evidence that the environmental restoration measures taken were scientifically justified and effective means of improving ecological health of the creek embankment and functionality for our intended purposes. Additional photos below are provided in Foster’s follow up 2024 report, highlighting vegetation cover increase in the work areas.

Additional Photos (Foster 2024)

Photo 1. August 2024 - BMPs stable and vegetation cover increase ~20-30%.

Photo 2. Restoration work area from Pine Tree Gulch.

Photo 3. August 2024 - Stabilized slopes and established vegetation cover (25-30% increase).

Photo 4. August 2024 - Successful willow staking (~65% increase in vegetation cover).

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT H

FRONTIER

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT I

Sigma Prime Geosciences, Inc.
Effective Solutions

July 26, 2024

Daniel Theobald
100 Ralston Road
San Gregorio, CA 94074

Subject: Slope Stability Study: 100 Ralston Road, San Gregorio.
Sigma Prime Job No. 24-128

Dear Mr. Theobald:

As requested, we have performed a site analysis and slope stability evaluation at 100 Ralston Road in San Gregorio, California. The accompanying reports summarize the results of our field study and engineering analyses, and presents the results and recommendations.

Thank you for the opportunity to work with you on this project. If you have any questions concerning our study, please call.

Yours,
Sigma Prime Geosciences, Inc.

Charles M. Kissick, P.E., CEG

332 Princeton Avenue, Half Moon Bay, CA 94019 (650) 728-3590 sigmaprm@gmail.com

SLOPE STABILITY STUDY
100 RALSTON ROAD
SAN GREGORIO, CALIFORNIA

PREPARED FOR:
DANIEL THEOBALD
100 RALSTON ROAD
SAN GREGORIO, CA 94074

PREPARED BY:
SIGMA PRIME GEOSCIENCES, INC.
332 PRINCETON AVENUE
HALF MOON BAY, CALIFORNIA 94019

JULY 26, 2024

TABLE OF CONTENTS

1. INTRODUCTION

We are pleased to present this slope stability study report for the embankment at 100 Ralston Road in San Gregorio, California at the location shown in Figure 1.

1.1 PROJECT DESCRIPTION

Site analysis suggests that an old earthen, 25-foot tall embankment was built to create a small pond many years ago, likely as a watering hole for livestock. The base of the embankment comprises the right bank of a small, seasonal creek. The age of the embankment is unknown, however a Douglas fir tree on the embankment suggests an age of over 100 years.

It is likely that a galvanized steel outlet culvert for the pond rusted and failed, creating a narrow gulley through the embankment. The gulley was re-filled in 2018 and a 18-inch HDPE pipe was installed. In 2023, the 18-inch pipe was upgraded to a 24-inch diameter, 38 foot long HDPE pipe. The pipe drains onto an HDPE trough that directs the runoff to the bottom of the embankment and into the creek. The pond is small, estimated to be only 3 to 5 feet deep, covering an area of about 3000 square feet.

1.2 SCOPE OF WORK

In order to complete this project we have performed the following tasks:

- Reviewed published information on the geologic and seismic conditions in the site vicinity;
- Geologic site reconnaissance;
- Subsurface study, including 1 soil boring at the top of the slope;
- Laboratory testing and evaluation of the subsurface data to develop input parameters for the slope stability analyses; and
- Preparation of this report presenting our findings.

2. FINDINGS

2.1 GENERAL

The site reconnaissance and subsurface study were performed on May 28, 2024. The subsurface study consisted of drilling 1 soil boring with continuous sampling. The soil boring was advanced to a depth of 18 feet. The approximate location of the boring is shown in Figure 2, Site Plan. The soil boring log is attached in Appendix A.

2.2 SITE CONDITIONS

The site was mapped with a tape measure and is presented in Figure 2. The embankment is about 25 feet tall, with a 40 degree slope down to a seasonal creek that feeds into El Corte de Madera Creek. The top of the embankment serves as a ranch road. The level top of the embankment is about 35 feet wide.

2.3 REGIONAL AND LOCAL GEOLOGY

Based on Brabb, et al (1998), the site vicinity is primarily underlain by the Pomponio mudstone member of the Purisima formation. The unit is described as gray to white porcelaneous shale and mudstone, in places rhythmically bedded with alternating layers of nonsiliceous mudstone.

2.4 SITE SUBSURFACE CONDITIONS

The subsurface conditions at the site, based on the soil boring, consists of about 5.5 feet of soft to medium stiff clayey fill material, over medium stiff native clay. The clay becomes stiff at a depth of 11 feet. Mudstone was not encountered to the depth drilled of 18 feet. The conditions of the subsurface materials, as they pertain to the slope stability analyses, are discussed in detail in Section 3.1.

2.5 GROUNDWATER

Groundwater was encountered at a depth of 13 feet. For slope stability analyses, this depth was used.

2.6 FAULTS AND SEISMICITY

There are no active faults in the site vicinity.

3. CONCLUSIONS AND RECOMMENDATIONS

3.1 SLOPE STABILITY ANALYSES

There is no evidence of past instability on this slope. The only damage to the slope was the development of an erosion gulley when the previous culvert rusted away. A recent slope failure was noted downstream of the embankment in a natural slope, and a second failure had occurred a few years ago, also on a natural slope, upstream of the embankment.

We performed slope stability analyses to determine the potential for a landslide on the embankment. We used a software program called Geo5, using the Bishop method and the cross section shown in Figure 3. Soil strength parameters for the materials are based on direct shear testing on sample #4 in Boring B-1. Ultimate strength values were: Friction Angle, Phi, = 34.6 degrees; cohesion = 157 psf. Since the clayey soil did not vary significantly, this is the only material used in the model.

Figures 4 and 5 show stability analysis results for static and pseudo-static conditions, respectively. We obtained a static factor of safety of 1.39, and a pseudo-static factor of safety of 0.88, but applying 15 cm of deformation (per SP-117A), the factor of safety increases to 1.05. We also performed a slope deformation analysis based on Makdisi and Seed (1978), concluding that during the design earthquake (a M7.9 event on the San Andreas fault, generating a peak ground acceleration of 0.46g), an estimated 10 cm of deformation may occur. The two different types of deformation analyses coincide fairly well.

The analyses indicate that the slope is stable under static conditions, and potentially unstable during pseudo-static (earthquake) conditions. In the event of the design earthquake, the slope may fail, resulting in minor sown-slope movement. Due to the 35-foot width of the embankment, the headscarp would be far from the pond and the flexible culvert would probably remain intact. The pond is unlikely to be adversely impacted. The ranch road does not provide unique access to any part of the property and so is not critical. Damage to the road would not be a hardship. Improving the stability of the embankment would require extensive earthwork in an area that is currently comprised of sensitive vegetation and a wetland and likely not provide practical benefit.

Given the fact that the slope is likely more stable than surrounding natural slopes, and has substantial native vegetation well established, we believe that any further mitigation work would likely be counter-productive. In the unlikely case of a slope failure here, there would be no risk to facilities or structures, and a failure would likely result in far less environmental damage than a mitigation project. It is my understanding that a licensed professional biologist has reviewed the site multiple times and has come to the same conclusion, that the site would be best served by annual monitoring and maintenance only.

4. LIMITATIONS

This report has been prepared for the exclusive use of the property owner for specific application in evaluating the stability of the slope at 100 Ralston Road in San Gregorio, California. We make no warranty, expressed or implied, except that our services were performed in accordance with geotechnical engineering principles generally accepted at this time and location. The report was prepared to provide engineering opinions and recommendations only. In the event that there are any changes in the nature, design or location of the project, or if any future improvements are planned, the conclusions and recommendations contained in this report should not be considered valid unless 1) The project changes are reviewed by us, and 2) The conclusions and recommendations presented in this report are modified or verified in writing.

The analyses, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our investigation; the currently planned improvements; review of previous reports relevant to the site conditions; and laboratory results. In addition, it should be recognized that certain limitations are inherent in the evaluation of subsurface conditions, and that certain conditions may not be detected during an investigation of this type. Changes in the information or data gained from any of these sources could result in changes in our conclusions or recommendations. If such changes do occur, we should be advised so that we can review our report in light of those changes.

5. REFERENCES

Brabb, Earl E., Graymer, R.W., and Jones, D.L.., 1998, Geology of the Onshore Part of San Mateo County, California, Derived from the Digital Database Open-File 98-137.

Makdisi, F.I. and Seed, H.B, 1978, Journal of Geotechnical and Geoenvironmental Engineering, Volume 104, Issue Number GT7.

APPENDIX A

FIELD INVESTIGATION

The soils encountered during drilling were logged by our representative, and samples were obtained at depths appropriate to the investigation. The samples were taken to our laboratory where they were carefully observed and classified in accordance with the Unified Soil Classification System. The logs of our borings, as well as a summary of the soil classification system, are attached.

Several tests were performed in the field during drilling. The standard penetration resistance was determined by dropping a 140-pound hammer through a 30-inch free fall, and recording the blows required to drive the 2-inch (outside diameter) sampler 24 inches. The standard penetration resistance is the number of blows required to drive a standard split spoon sampler the last 12 inches of an 18-inch sample and is recorded on the boring logs at the appropriate depth. Use of the standard split spoon sampler defines a Standard Penetration Test (SPT), and yields an SPT-equivalent blow count. (Where we drove the sampler 24 inches in some cases, this is a modified SPT test.) A modified California (Mod-Cal) sampler was also used, which results in blow counts that are higher than an SPT-equivalent blow count, due to the Mod-Cal sampler's larger diameter. For analyses, it is normal practice to reduce the Mod-Cal blow counts to correspond to an SPT-equivalent blow count. The blow counts from the Mod-Cal sampler are uncorrected on the logs. The results of these field tests are presented on the boring logs.

The boring log and related information depict our interpretation of subsurface conditions only at the specific location and time indicated. Subsurface conditions and ground water levels at other locations may differ from conditions at the locations where sampling was conducted. The passage of time may also result in changes in the subsurface conditions.

APPENDIX B

LABORATORY TESTS

Samples from the subsurface study were selected for tests to establish the physical and engineering properties of the soils. The tests performed are briefly described below.

The natural moisture content and dry density were determined in accordance with ASTM D 2216 on selected samples recovered from the borings. This test determines the moisture content and density, representative of field conditions, at the time the samples were collected. The results are presented on the boring log, at the appropriate sample depth.

Direct shear tests were performed on a modified California sample using ASTM D 3080 Modified test methods.

N

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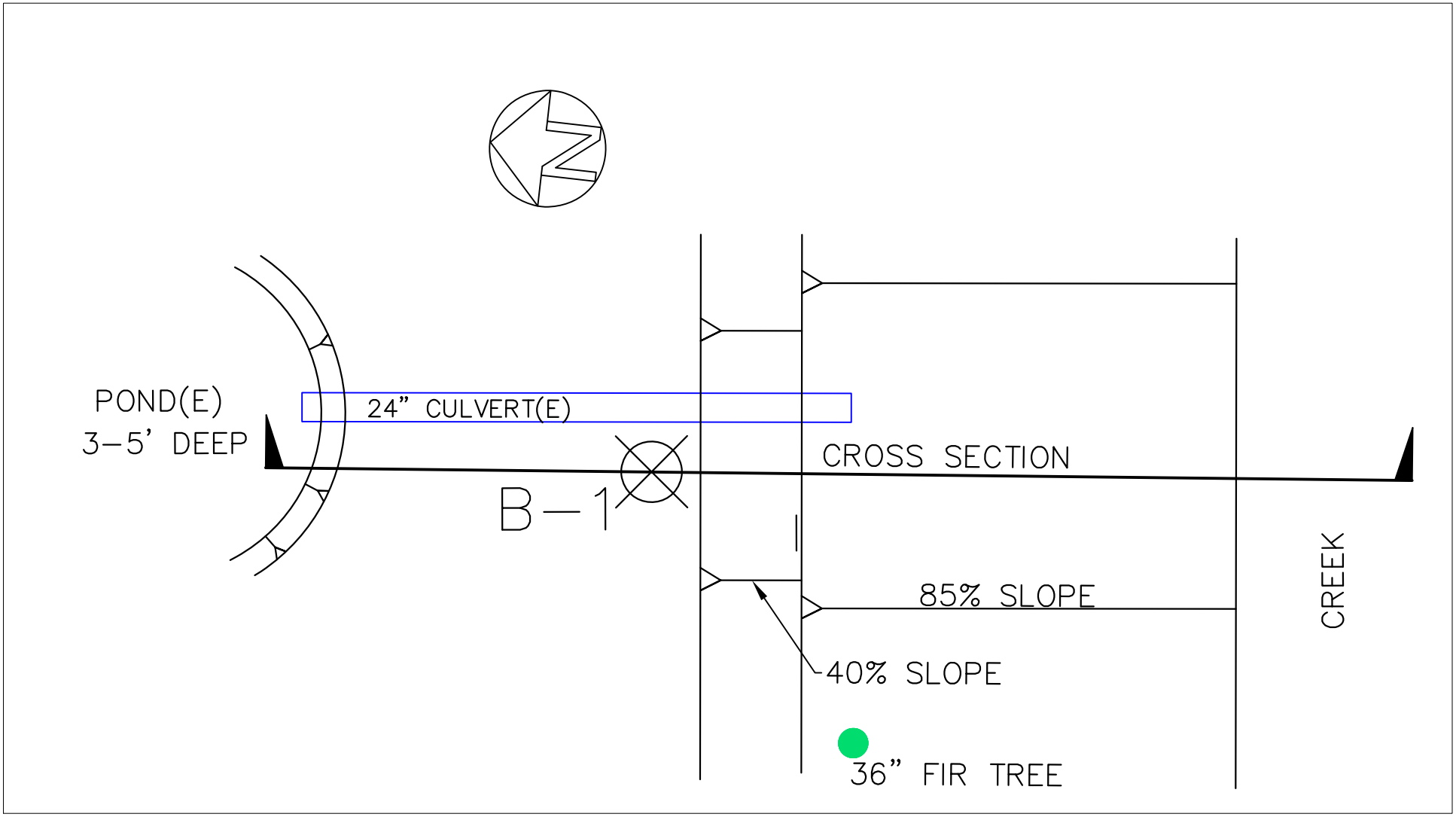
Figure	1
Date:	7-25-24
Job No.:	24-128

Location Map

100 Ralston Rd., San Gregorio



1" = 10'

Explanation

B–1 Soil Boring Drilled 5-28-24

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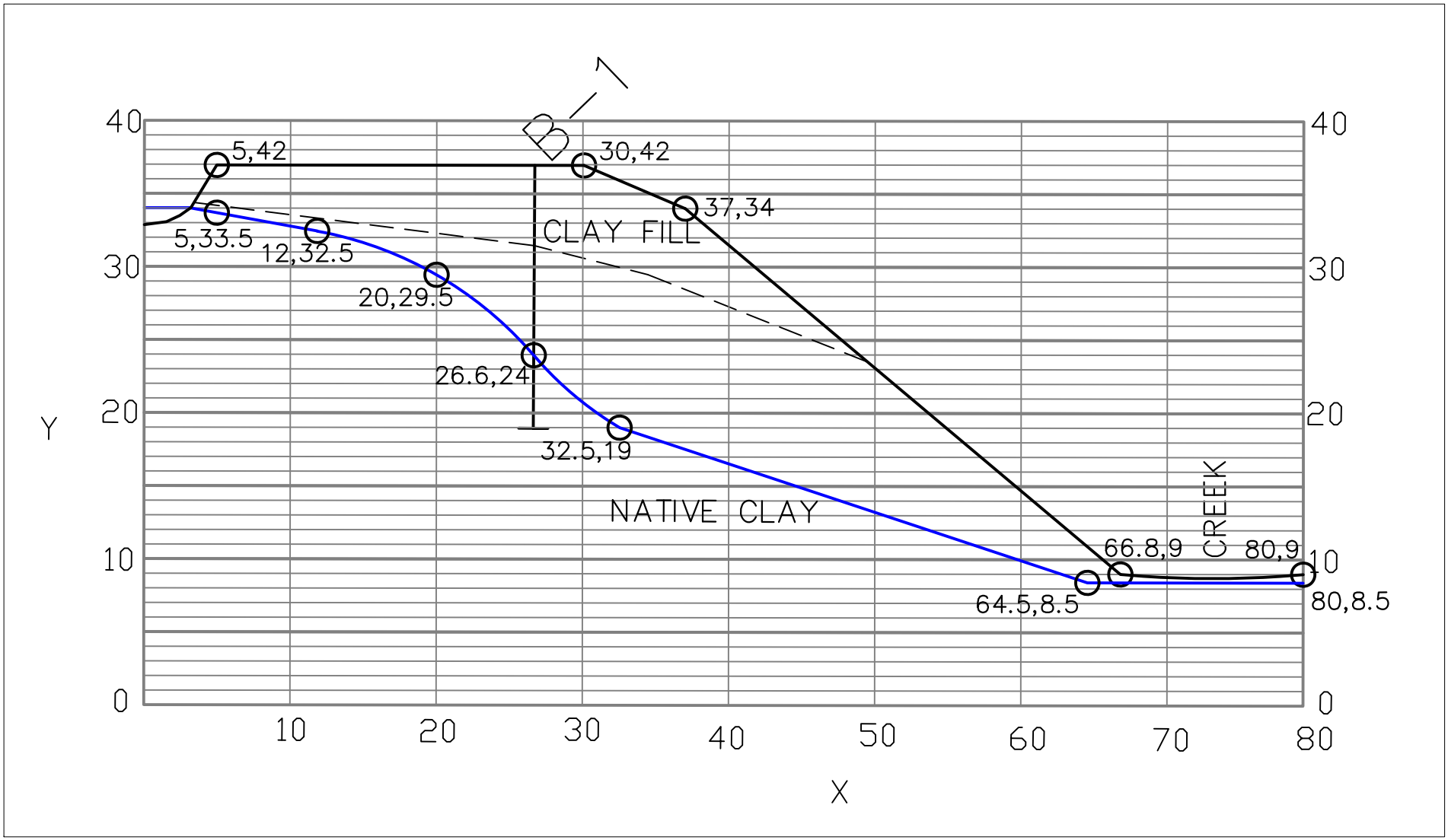
Figure	2
Date:	7-25-24
Job No.:	24-128

Site Plan

100 Ralston Rd., San Gregorio

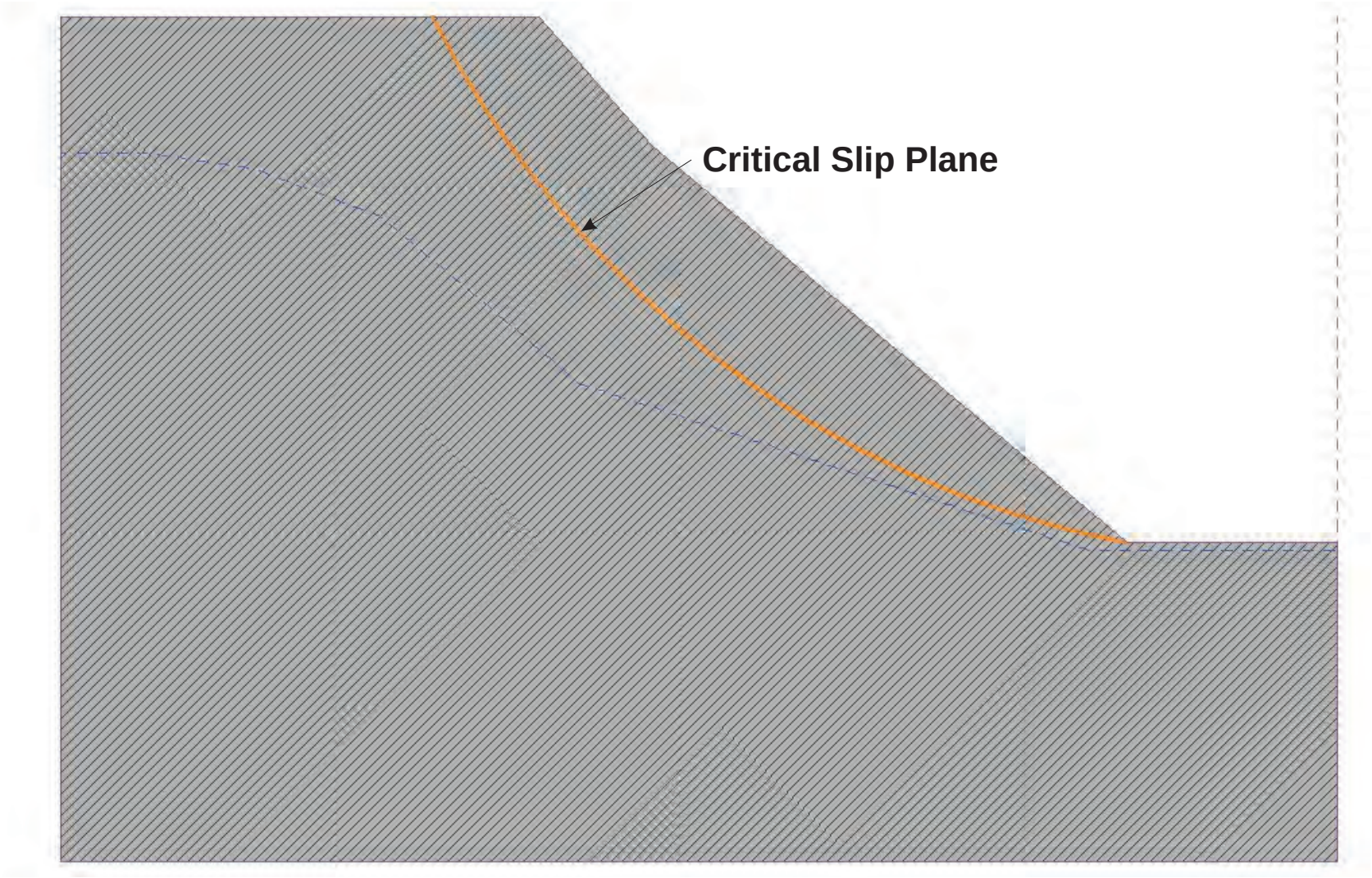


1" = 10'

Sigma Prime Geosciences, Inc.

Figure	3
Date:	7-25-24
Job No.:	24-128

Cross Section for Computer Model
100 Ralston Road, San Gregorio

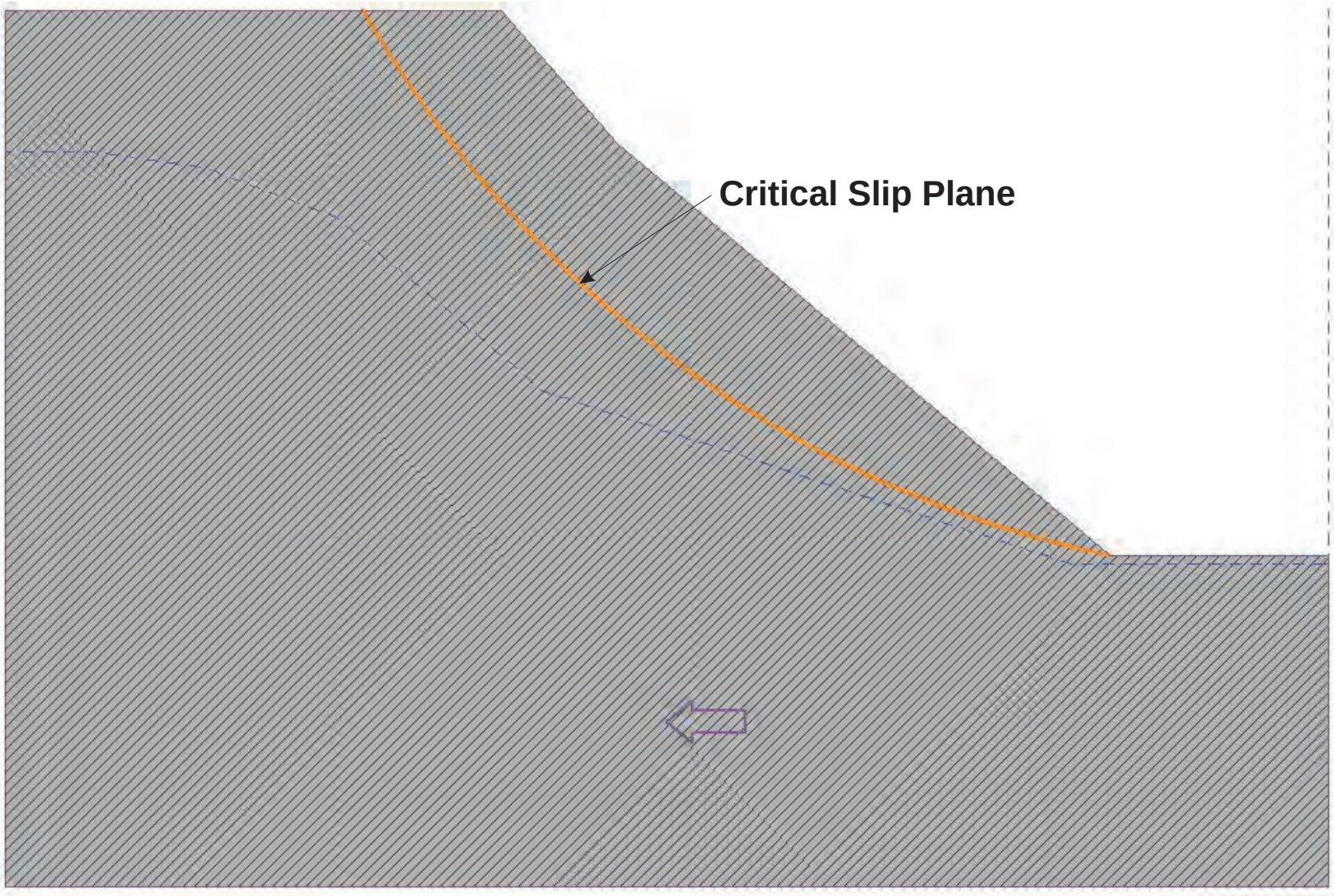


Static Factor of Safety = 1.39
Assumed ground water as shown by blue line

Clay: (Ultimate Strength Values)
Unit Weight = 117 pcf
Phi= 34.6 degrees
Cohesion = 157 psf

Sigma Prime Geosciences, Inc.	Figure 4
	Date: 7-25-24
	Job No.: 24-128

Static Factor of Safety
100 Ralston Rd., San Gregorio



Pseudo-Static Factor of Safety = 1.05 (allowing 15 cm deformation, per SP-117A)
Assumed ground water as shown by blue line

Clay: (Ultimate Strength Values)
Unit Weight = 117 pcf
Phi= 34.6 degrees
Cohesion = 157 psf

Sigma Prime Geosciences, Inc.	Figure 4
	Date: 7-25-24
	Job No.: 24-128

Pseudo-Static Factor of Safety
100 Ralston Rd., San Gregorio

Project Name	Project Number	Sigma Prime Geosciences, Inc.
Theobald	24-128	

Location: Top of slope

Drilling Method	Hole Size	Total Depth	Soil Footage	Rock Footage	Elevation	Datum	Boring No.	B-1
Continuous	4“	18’	18’	0’	380’	NAVD88		

Drilling Company	Logged By	Page
Access Soil Drilling	CMK	1 of 1

Type of Drill Rig	Type of Sampler(s)	Hammer Weight and Fall	Date(s)
	Mod Cal, 2½, SPT	140 lb, 30“	5-28-24

Depth (feet)	Description	Graphic Log	Class	Blow Count	Sample No.	Sample Type	Comments
0	0’ - 3’: Gravelly Clay (FILL): moderate brown; medium stiff; moist.		CL	9 10 9 15	1	MC	
	3’ - 5.5’: Sandy Clay w/ Gravel (FILL): gray-brown; soft; moist.		CL	11 7 5 5	2	MC	
5	5.5’ - 18’: Clay (NATIVE): dark blue-gray; medium stiff; moist.		CL	5 5 7 10	3	MC	
				7 9 10 11	4 5	MC	Lab, Sample #4: Moisture%=31.0% Dry Density=88.7 pcf cohesion=157 pcf phi=34.6 degrees
10	Stiff.			6 6 7 9	6	2½“	
				9 11 13 14	7	2½“	
				5 6 8 8	8	SPT	▽ Groundwater
15	Horizontal, thin brown layers, up to ¼“ thick.			5 7 8 12	9	SPT	
				8 11 14 15	10	SPT	
	Bottom of Hole 18’ below ground surface. Groundwater encountered at 13’.						
20							

UNIFIED SOIL CLASSIFICATION (ASTM D-2487-85)

MATERIAL TYPES	CRITERIA FOR ASSIGNING SOIL GROUP NAMES			GROUP SYMBOL	SOIL GROUP NAMES & LEGEND
COARSE-GRAINED SOILS > 50% RETAINED ON NO. 4 SIEVE	GRAVELS > 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS < 5% FINES	Cu > 4 AND 1 < Cc < 3	GW	WELL-GRADED GRAVEL
			Cu < 4 AND/OR 1 > Cc > 3	GP	POORLY-GRADED GRAVEL
		GRAVELS WITH FINES > 12% FINES	FINES CLASSIFY AS ML OR CL	GM	SILTY GRAVEL
			FINES CLASSIFY AS CL OR CH	GC	CLAYEY GRAVEL
	SANDS > 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN SANDS < 5% FINES	Cu > 6 AND 1 < Cc < 3	SW	WELL-GRADED SAND
			Cu < 6 AND/OR 1 > Cc > 3	SP	POORLY-GRADED SAND
		SANDS WITH FINES > 12% FINES	FINES CLASSIFY AS ML OR CL	SM	SILTY SAND
			FINES CLASSIFY AS CL OR CH	SC	CLAYEY SAND
FINE-GRAINED SOILS > 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT < 50	INORGANIC	PI > 7 AND PLOTS > "A" LINE	CL	LOW-PLASTICITY CLAY
			PI > 4 AND PLOTS < "A" LINE	ML	LOW-PLASTICITY SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OL	ORGANIC CLAY OR SILT
	SILTS AND CLAYS LIQUID LIMIT > 50	INORGANIC	PI PLOTS > "A" LINE	CH	HIGH-PLASTICITY CLAY
			PI PLOTS < "A" LINE	MH	HIGH-PLASTICITY SILT
		ORGANIC	LL (oven dried)/LL (not dried)<0.75	OH	ORGANIC CLAY OR SILT
HIGHLY ORGANIC SOILS		PRIMARILY ORGANIC MATTER, DARK COLOR, ORGANIC ODOR		PT	PEAT

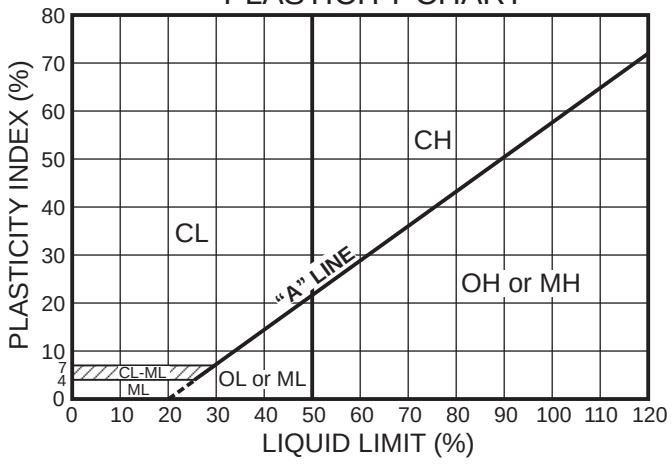
NOTE: $Cu=D_{60}/D_{10}$

$Cc=(D_{30})^2/(D_{10}+D_{60})$

BLOW COUNT

THE NUMBER OF BLOWS OF THE HAMMER REQUIRED TO DRIVE THE SAMPLER THE LAST 12 INCHES OF AN 18-INCH DRIVE. THE NOTATION 50/4 INDICATES 4 INCHES OF PENETRATION ACHIEVED IN 50 BLOWS.

PLASTICITY CHART



SAMPLE TYPES

B	BULK SAMPLE
ST	PUSHED SHELBY TUBE
SPT	STANDARD PENETRATION
MC	MODIFIED CALIFORNIA
P	PITCHER SAMPLE
C	ROCK CORE

ADDITIONAL TESTS

CA - CHEMICAL ANALYSIS
CN - CONSOLIDATION
CP - COMPACTION
DS - DIRECT SHEAR
PM - PERMEABILITY
PP - POCKET PENETROMETER
Cor. - CORROSIVITY
SA - GRAIN SIZE ANALYSIS
(20%) - (PERCENT PASSING #200 SIEVE
SW - SWELL TEST
TC - CYCLIC TRIAXIAL
TU - CONSOLIDATED UNDRAINED TRIAXIAL
TV - TORVANE SHEAR
UC - UNCONFINED COMPRESSION
WA - WASH ANALYSIS
▽ - WATER LEVEL AT TIME OF DRILLING AND DATE MEASURED
▼ - LATER WATER LEVEL AND DATE MEASURED

LEGEND TO SOIL DESCRIPTIONS

Sigma Prime Geosciences, Inc.

FIGURE A-1