

COUNTY OF MENDOCINO  
DEPT OF PLANNING AND BUILDING SERVICES

120 WEST FIR STREET  
FORT BRAGG, CA 95437

Telephone: 707-964-5379  
FAX: 707-961-2427  
pbs@co.mendocino.ca.us  
www.co.mendocino.ca.us/planning



Case No(s)	EM-2023-0002
CDF No(s)	
Date Filed	6/20/23
Fee	\$2581.00
Receipt No.	PRJ-057013
Received by	Tia Sar
Office Use Only	

**COASTAL ZONE APPLICATION FORM**

**APPLICANT**

Name Erik Olsborg, Brunsing Associates, Inc.  
Mailing Address 5468 Skylane Blvd., Suite 201  
City Santa Rosa State CA Zip Code 95403 Phone 707-528-6108

**PROPERTY OWNER**

Name Rebecca Kopriva rkopriva@wisc.edu  
Mailing Address 21 Florida Avenue  
City Berkeley State CA Zip Code 94707 Phone 202-744-2808

**AGENT**

Name Erik Olsborg, Brunsing Associates, Inc.  
Mailing Address 5468 Skylane Blvd., Suite 201  
City Santa Rosa State CA Zip Code 95403 Phone 707-528-6108

**PARCEL SIZE**

0.26 Square feet  
Acres

**STREET ADDRESS OF PROJECT**

6170 South Highway 1, Elk, CA 95624

**ASSESSOR'S PARCEL NUMBER(S)**

127-200-0

I certify that the information submitted with this application is true and accurate.

Erik E. Olsborg  
Signature of Applicant/Agent

10/24/2022  
Date

Rebecca Kopriva  
Signature of Owner

2/17/23  
Date

# COASTAL ZONE - SITE AND PROJECT DESCRIPTION QUESTIONNAIRE

The purpose of this questionnaire is to relate information concerning your application to the Planning and Building Services Department and other agencies who will be reviewing your project proposal. Please remember that the clearer picture that you give us of your project and the site, the easier it will be to promptly process your application. Please answer all questions. Those questions which do not pertain to your project, please indicate "Not Applicable" or "N/A".

## THE PROJECT

1. Describe your project and include secondary improvements such as wells, septic systems, grading, vegetation removal, roads, etc.

A slope - protection structure to be constructed back (on the uphill side) of a failing cut slope for an access road owned by the State of California, Parks & Recreation Department. The structure will consist of a row of drilled piers connected with a subsurface, concrete grade beam that is supported by diagonally-drilled tie-back anchors.

The slope-protection structure is intended to prevent erosion that is occurring on the State property from encroaching into the Kopriva property.

2. If the project is residential, please complete the following:

TYPE OF UNIT	NUMBER OF STRUCTURES	SQUARE FEET PER DWELLING UNIT
<input type="checkbox"/> Single Family	N/A	
<input type="checkbox"/> Mobile Home		
<input type="checkbox"/> Duplex		
<input type="checkbox"/> Multifamily		

If Multifamily, number of dwelling units per building: \_\_\_\_\_

3. If the project is commercial, industrial, or institutional, complete the following:

Total square footage of structures:	N/A
Estimated employees per shift:	
Estimated shifts per day:	
Type of loading facilities proposed:	

4. Will the proposed project be phased? ☐ Yes ☒ No  
If Yes, explain your plans for phasing.

5. Are there existing structures on the property? ☒ Yes ☐ No  
If yes, describe below and identify the use of each structure on the plot plan.

A. A single family residence

B. A large shed

6. Will any existing structures be demolished? ☐ Yes ☒ No  
Will any existing structures be removed? ☐ Yes ☒ No

If yes to either question, describe the type of development to be demolished or removed, including the relocation site, if applicable.

7. Project Height. Maximum height of structure 6-inches and deeper below the ground surface.

8. Lot area (within property lines): 0.26 ☐ square feet ☒ acres

9. Lot Coverage:

	EXISTING	NEW PROPOSED	TOTAL
Building coverage	_____ square feet	_____ square feet	_____ square feet
Paved area	_____ square feet	_____ square feet	_____ square feet
Landscaped area	_____ square feet	_____ square feet	_____ square feet
Unimproved area	_____ square feet	_____ square feet	_____ square feet

GRAND TOTAL: N/A square feet  
(Should equal gross area of parcel)

10. Gross floor area: \_\_\_\_\_ square feet (including covered parking and accessory buildings).

11. Parking will be provided as follows:

Number of Spaces	Existing _____	Proposed _____	Total _____
Number of covered spaces	<u>N/A</u>	Size _____	
Number of uncovered spaces	_____	Size _____	
Number of standard spaces	_____	Size _____	
Number of handicapped spaces	_____	Size _____	



12. Utilities will be supplied to the site as follows:

A. Electricity

☐ Utility Company (service exists to the parcel).

☐ Utility Company (requires extension of services to site: N/A feet \_\_\_\_\_ miles)

☐ On Site generation, Specify: \_\_\_\_\_

☐ None

B. Gas

☐ Utility Company/Tank

☐ On Site generation, Specify: \_\_\_\_\_

☐ None

C. Telephone:   ☐ Yes                  ☐ No

13.	Will there be any exterior lighting? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
	If yes, describe below and identify the location of all exterior lighting on the plot plan and building plans.
N/A	

14. What will be the method of sewage disposal?

☐ Community sewage system, specify supplier N/A

☐ Septic Tank

☐ Other, specify \_\_\_\_\_

15. What will be the domestic water source?

☐ Community water system, specify supplier N/A

☐ Well

☐ Spring

☐ Other, specify \_\_\_\_\_

16. Is any grading or road construction planned? ☐ Yes ☒ No

If yes, grading and drainage plans may be required. Also, describe the terrain to be traversed (e.g., steep, moderate slope, flat, etc.).

All drilling spoils will be hauled off site to a suitable location provided by contractor.

For grading and road construction, complete the following:

A.	Amount of cut:	<u>N/A</u>	cubic yards
B.	Amount of fill:	<u>                    </u>	cubic yards
C.	Maximum height of fill slope:	<u>                    </u>	feet
D.	Maximum height of cut slope:	<u>                    </u>	feet
E.	Amount of import or export:	<u>                    </u>	cubic yards
F.	Location of borrow or disposal site:	<u>To be determined</u>	



17.	Will vegetation be removed on areas other than the building sites and roads? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, explain:
18.	Does the project involve sand removal, mining or gravel extraction? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, detailed extraction, reclamation and monitoring may be required.
19.	Will the proposed development convert land currently or previously used for agriculture to another use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, how many acres will be converted? _____ acres (An agricultural economic feasibility study may be required.)
20.	Will the development provide public or private recreational opportunities? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, explain:
21.	Is the proposed development visible from:  A. State Highway 1 or other scenic route? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No B. Park, beach or recreation area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
22.	Will the project involve the use or disposal of potentially hazardous materials such as toxic substances, flammables, or explosives? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, explain:
23.	Does the development involve diking, filling, dredging or placing structures in open coastal waters, wetlands, estuaries or lakes?  A. Diking <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No B. Filling <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No C. Dredging <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No D. Placement of structures in open coastal waters, wetlands, estuaries or lakes <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  Amount of material to be dredged or filled? <u>N/A</u> cubic yards.  Location of dredged material disposal site: _____ _____  Has a U.S. Army Corps of Engineers permit been applied for? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

If you need additional room to answer any question, attach additional sheets.

SUBMIT ONLY ONE COPY

## CERTIFICATION AND SITE VIEW AUTHORIZATION

1. I hereby certify that I have read this completed application and that, to the best of my knowledge, the information in this application, and all attached appendices and exhibits, is complete and correct. I understand that the failure to provide any requested information or any misstatements submitted in support of the application shall be grounds for either refusing to accept this application, for denying the permit, for suspending or revoking a permit issued on the basis of such misrepresentations, or for seeking of such further relief as may seem proper to the County.
2. I hereby grant permission for County Planning and Building Services staff and hearing bodies to enter upon and site view the premises for which this application is made in order to obtain information necessary for the preparation of required reports and render its decision.

Erik S. Olsborg  
Owner/Authorized Agent

10/24/2022  
Date

NOTE: IF SIGNED BY AGENT, OWNER MUST SIGN BELOW.

### AUTHORIZATION OF AGENT

I hereby authorize Erik Olsborg, Brunsing Associates, Inc. to act as my representative and to bind me in all matters concerning this application.

Rebecca Kopriva  
Owner

2/17/23  
Date

## MAIL DIRECTION

To facilitate proper handling of this application, please indicate the names and mailing addresses of individuals to whom you wish correspondence and/or staff reports mailed if different from those identified on Page One of the application form.

Name	Name	Name
Mailing Address	Mailing Address	Mailing Address

**COASTAL ZONE DEVELOPMENT**  
COMPLETE FOR PROJECTS LOCATED IN THE COASTAL ZONE ONLY

List all property owners within 300 feet, and occupants within 100 feet along with the corresponding Assessor's Parcel Number for each owner/occupant. This form must be typed.

<b>AP# 000-000-00</b> <b>LASTNAME, FIRSTNAME</b> <b>STREET ADDRESS</b> <b>CITY, STATE ZIP</b>	<b>AP# 127-200-05</b> <b>6150 S Hwy 1</b> Johnson, Richard D. TTEE P.O. Box 15 Elk, CA 95432	
<b>AP#127-200-04</b> <b>6140 S Hwy 1</b> Flanagan, David & Hartkamp, Karin 1130 4th Ave Sacramento, CA 95818	<b>127-232-03-00</b> <b>6141 Hwy 1</b> Penrod, Jay P. & Sarah J. TTEE P.P. Box 82 Elk, CA 95432	
<b>127-232-04-00</b> <b>6145 Hwy 1</b> Pelose, John R. TTEE 1138 Settle Ave San Jose, CA 95125	<b>127-232-05-00</b> <b>6151 Hwy 1</b> Leslie, Bruce & Wolfe, Linda 206 El Cerrito Oakland, CA 94611	
<b>127-232-06-00</b> <b>6161 Hwy 1</b> Anton, Kenneth R. & Kathryn P.O. Box 370 Elk, CA 95432	<b>127-232-09-00</b> <b>6185 Hwy 1</b> Raftery, John Arjay TTEE 54 Via Ventura Monterey, CA 93940	
<b>127-233-01-00</b> <b>6191 Hwy 1</b> Heise, Kerry I. & Merenlender, Adina P.O. Box 251 Elk, CA 95432		



DECLARATION OF POSTING

At the time the application is submitted for filing, the applicant must **Post**, at a conspicuous place, easily read by the public and as close as possible to the site of the proposed development, notice that an application for the proposed development has been submitted. Such notice shall contain a general description of the nature of the proposed development and shall be on the standard form provided in the application packet. If the applicant fails to post the completed notice form and sign the **Declaration of Posting**, the Department of Planning and Building Services cannot process the application.

As **Proof of Posting**, please sign and date this Declaration of Posting form when the site is posted; it serves as proof of posting. It should be returned to the Department of Planning and Building Services with the application.

Pursuant to the requirements of Section 20.532.025(H) of the Mendocino County Code, I hereby certify that on  
MARCH 15, 2023 (date of posting), I or my authorized representative posted the "NOTICE OF PENDING  
PERMIT" for application to obtain a Coastal Development Permit for the development of:

DRILLED PIER AND GRADE BEAM STABILIZATION STRUCUTURE ABOVE ACCESS ROAD CUT SLOPE.

(Description of development)

Located at:

6170 SOUTH HIGHWAY 1, ELK

(Address of development and Assessor's Parcel Number)

The public notice was posted at:

AT THE SUBJECT PROPERTY NEXT TO HIGHWAY 1

(A conspicuous place, easily seen by the public and as close as possible to the site of proposed development)

Owner/Authorized Representative

MARCH 15, 2023

Date

(A copy of the notice which was posted shall be attached to this form).

**NOTE:** YOUR APPLICATION CANNOT BE PROCESSED UNTIL THIS "DECLARATION OF POSTING" IS  
SIGNED AND RETURNED TO PLANNING AND BUILDING SERVICES.

COMPLETE FOR PROJECTS  
LOCATED WITHIN THE  
COASTAL ZONE ONLY

# NOTICE OF PENDING PERMIT

A COASTAL PERMIT APPLICATION FOR DEVELOPMENT ON THIS SITE  
IS PENDING BEFORE THE COUNTY OF MENDOCINO:

**PROPOSED DEVELOPMENT :** DRILLED PIER AND GRADE BEAM STABILIZATION  
STRUCTURE ABOVE ACCESS ROAD CUT SLOPE

**LOCATION:** IN BACK OF 6170 SOUTH HIGHWAY 1

**APPLICANT :** BRUNSING ASSOCIATES, INC. FOR REBECCA KOPRIVA

**ASSESSOR'S PARCEL NUMBER(S):** 127-200-06

**DATE NOTICE POSTED:** March 15, 2023

FOR FURTHER INFORMATION, PLEASE TELEPHONE OR WRITE TO:

COUNTY OF MENDOCINO  
PLANNING & BUILDING SERVICES  
860 NORTH BUSH STREET  
UKIAH, CA 95482  
707-234-6650

**SUBMIT ONLY ONE COPY**

## **INDEMNIFICATION AND HOLD HARMLESS**

ORDINANCE NO. 3780, adopted by the Board of Supervisors on June 4, 1991, requires applicants for discretionary land use approvals, to sign the following Indemnification Agreement. Failure to sign this agreement will result in the application being considered incomplete and withheld from further processing.

### **INDEMNIFICATION AGREEMENT**

As part of this application, applicant agrees to defend, indemnify, release and hold harmless the County of Mendocino, its agents, officers, attorneys, employees, boards and commissions, as more particularly set forth in Mendocino County Code Section 1.04.120, from any claim, action or proceeding brought against any of the foregoing individuals or entities, the purpose of which is to attack, set aside, void or annul the approval of this application or adoption of the environmental document which accompanies it. The indemnification shall include, but not be limited to, damages, costs, expenses, attorney fees or expert witness fees that may be asserted by any person or entity, including the applicant, arising out of or in connection with the approval of this application, whether or not there is concurrent, passive or active negligence on the part of the County, its agents, officers, attorneys, employees, boards and commissions.

Date: 2/17/23

Rebecca Kopriva

Applicant



**Principal Engineering Geologist**

(707) 838-3027

[www.brunsing.com](http://www.brunsing.com)



**Brunsing Associates, Inc.**

5468 Skylane Blvd., Suite 201

Santa Rosa, CA 95403

[email policy](#)

**From:** Kraemer, Melissa@Coastal <[Melissa.Kraemer@coastal.ca.gov](mailto:Melissa.Kraemer@coastal.ca.gov)>

**Sent:** Friday, March 17, 2023 8:31 AM

**To:** Erik Olsborg <[eolsborg@brunsing.com](mailto:eolsborg@brunsing.com)>

**Subject:** RE: Kopriva, 6170 South Highway 1, Elk

Part of the house was built in the 1980s and permitted by the Coastal Commission. However, I think this new work would be in the County's jurisdiction for permitting. I would recommend considering the potential lifespan of the stabilization structure, an analysis of the conditions under which the buried structure would become exposed due to new landslides (factoring in SLR), evaluation of the future maintenance that may be needed on site to maintain the structure as it becomes exposed over time with natural processes, and any measures needed to minimize damage and impacts to surrounding areas that may be caused by the exposed structure if exposed in the future. We also always recommend consideration of alternatives, and least environmentally damaging feasible alternative. We also recommend consideration of mitigation for impacts to habitats and sand supply. I would recommend developing this information to support an application for the proposed structure. I will also run this by our geologist and engineer for input and they may have additional thoughts.

**From:** Erik Olsborg <[eolsborg@brunsing.com](mailto:eolsborg@brunsing.com)>

**Sent:** Thursday, March 16, 2023 11:21 AM

**To:** Kraemer, Melissa@Coastal <[Melissa.Kraemer@coastal.ca.gov](mailto:Melissa.Kraemer@coastal.ca.gov)>

**Subject:** RE: Kopriva, 6170 South Highway 1, Elk

Melissa, The house is visible in the 1972 California Coastline Oblique aerial photograph. Unless you have found something in your permit search, it appears that the house is "grandfathered" before the California Coastal Act. That being the case, can we proceed with our CDP application with the County of Mendocino? Erik

*Erik Olsborg, EG*

**Principal Engineering Geologist**

(707) 838-3027

[www.brunsing.com](http://www.brunsing.com)



**Brunsing Associates, Inc.**

5468 Skylane Blvd., Suite 201

Santa Rosa, CA 95403

[email policy](#)



# **Mendocino County**

## **Planning and Building Services**

860 North Bush Street  
Ukiah, CA 95482  
(707) 234-6650

120 West Fir Street  
Fort Bragg, CA 95437  
(707) 964-5379

**Paid By: Brunsing Associates, Inc**  
5468 Skylane BLVD, Suite 201

SANTA ROSA

CA 95403

**Project Number: EM\_2023-0002**

**Project Description: EM- BLUFF STABILIZATION, KOPRIVA, ELK**

**Site Address: 6170 SO HWY 1**

**EM\_2023-0002**

**Receipt: PRJ\_057013**

**Date: 6/20/2023**

**Pay Method: CHECK 22321**

**Received By: TIA SAR**

<b>Fee Description</b>	<b>Account Number</b>	<b>Qty</b>	<b>Fee Amount</b>
BASE FEES	1100-2851-822609		\$2,278.00
EM BASE			\$2,278.00
GENERAL PLAN	1100-2851-826188		\$175.00
			\$175.00
RECORDS MANAGEMENT	1222-2852-826260		\$128.00
			\$128.00

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<b>Total Fees Paid:</b>	<b>\$2,581.00</b>
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Erik Olsborg

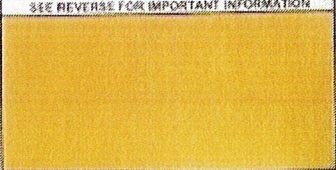
**From:** Rebecca Kopriva <rkopriva@wisc.edu>  
**Sent:** Monday, March 13, 2023 3:49 PM  
**To:** Erik Olsborg  
**Subject:** Proof of ownership

Here is my latest (2/23) property tax statement with me as owner. Is this sufficient?

Rebecca

 **Chamise Cobbison**  
Auditor-Controller/Treasurer-Tax Collector  
501 Low Gap Rd, Room 1060  
Ukiah, CA 95482  
www.mendocinocounty.org/tic

**MENDOCINO COUNTY SECURED TAX STATEMENT**  
FOR FISCAL YEAR JULY 1, 2022 THROUGH JUNE 30, 2023  
**FOR TAX YEAR 2022 - 2023** Print Date: 03/13/2023

PROPERTY INFORMATION		SEE REVERSE FOR IMPORTANT INFORMATION	
BILL NUMBER: 1368341	TAX RATE AREA: 104025		
PARCEL NUMBER: 1272000600	ACRES: 0		
LOCATION: 8150 S HWY 1 ELK CA			
OWN DATE: 08/18/2022			
*****AD TOY ALL FOR A40045 *****			
KOPRIVA REBECCA 21 FLORIDA AVE BERKELEY CA 94702			

TELEPHONE NUMBER	COUNTY VALUES AND EXEMPTIONS
Tax Collection (707) 234-6878	VALUE DESCRIPTION
Address Change (707) 234-6890	Land \$388,433
Exemptions (707) 234-6801	Structures \$241,155
Assessed Values (707) 234-6859	Business Personal Property \$2,780
Tax Rates (707) 234-6859	Net Value \$612,368
Personal Property (707) 234-6815	

VOTER APPROVED TAXES, TAXING AGENCY DIRECT CHARGES AND SPECIAL ASSESSMENTS			
TELEPHONE NUMBER	DESCRIPTION	TAX RATE PERCENT	AGENCY TAXES/CHARGES
707-234-6859	County Wide Base Tax	1.000	\$6,123.67
707-961-1234	Mendocino Cst Hospital BIR	0.013	\$79.61
707-937-5868	Mendocino Unified Bond	0.179	\$1,096.14
707-476-4172	Mendo College/Rdwd JC Bond	0.010	\$61.24
707-677-1800	County CSD SA	0.000	\$34.00
510-725-2930	Mendo Cpld. Water Measure C	0.000	\$144.00
707-937-5868	Mendo USD Maint Assn	0.000	\$30.00

DUE AND PAYABLE ON	11/01/2022	DUE AND PAYABLE ON	02/01/2023	TOTAL TAXES
1ST INSTALLMENT	3,784.33	2ND INSTALLMENT	3,784.33	7,568.66
DELINQUENT AFTER	12/31/22	DELINQUENT AFTER	04/10/2023	

RETURN THIS STUB WITH YOUR PAYMENT TO: 2ND INSTALLMENT PAYMENT STUB

PLEASE MAKE CHECK PAYABLE TO:  
MENDOCINO COUNTY TAX COLLECTOR  
501 Low Gap Rd, Room 1060  
Ukiah, CA 95482  
www.mendocinocounty.org/tic

2ND INSTALLMENT PAYMENT CAN  
NOT BE ACCEPTED UNLESS THE  
1ST INSTALLMENT HAS BEEN PAID

**2ND** **2022 - 2023**

MENDOCINO COUNTY SECURED PROPERTY TAXES		
PARCEL NUMBER	TAX RATE AREA	BILL NUMBER
1272000600	104025	1368341
IF PAID BY 04/10/2023 3,784.33		
10% PENALTY 378.43		
COST CHARGE 20.00		
AFTER April 10, 2023 PAY THIS AMOUNT ▶ 4,182.76		

000000212720006000003784330004136276000756866



Provided by:



PARCELQUEST

S. 44° 31' 08" E. 1080.31'  
to S. 1/4 Sec. 26

C1 D10 P112

Por. of Lot 4 & por. of S.W. 1/4 of S.E. 1/4 Sec. 26 T.15N.R.17W. M.D.B.G.M.  
Greenwood - Elk Greenwood Meadow Subd. C2 064 P88

127-23

104-026  
104-043

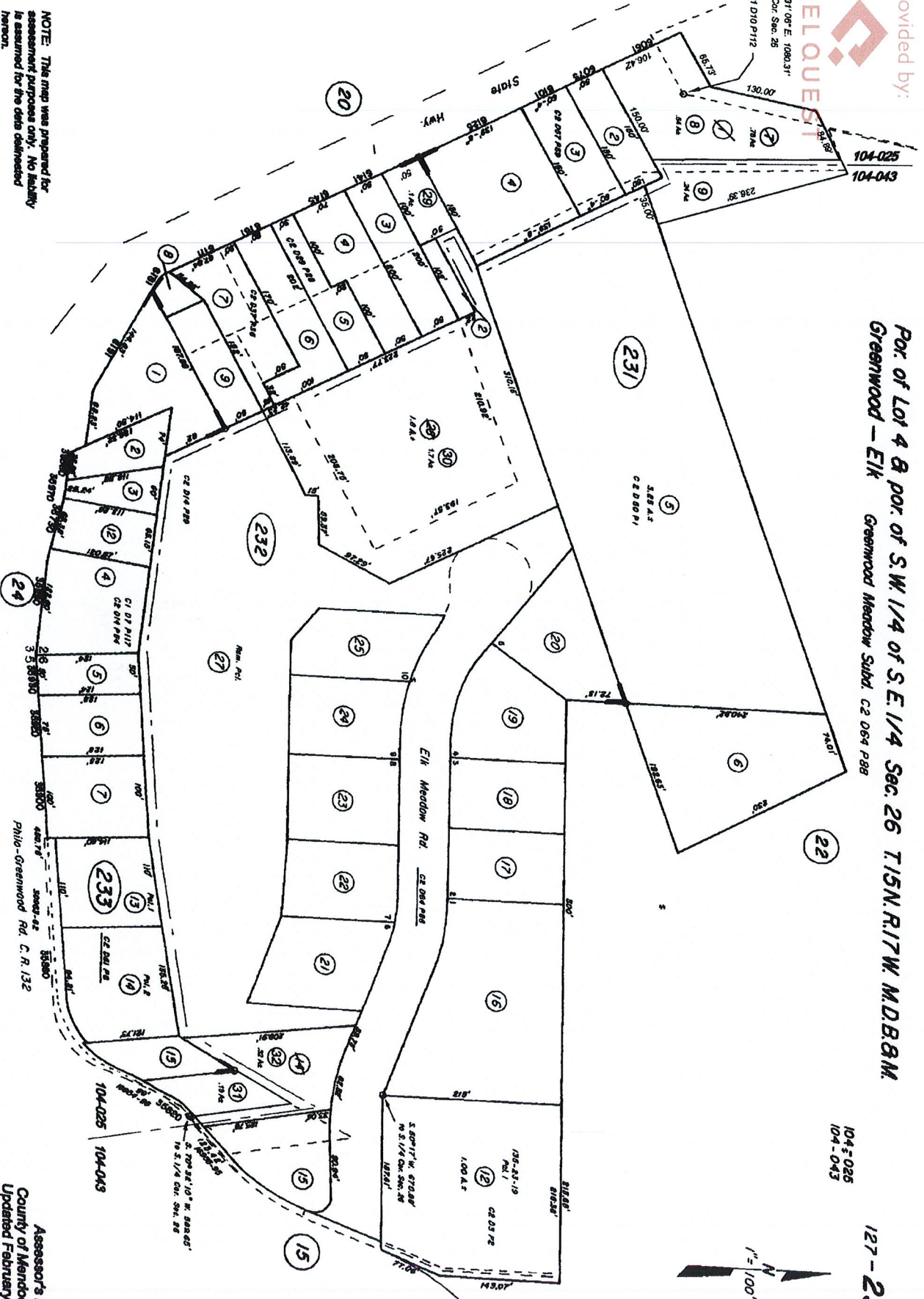
1" = 100'

NOTE: This map was prepared for  
assessment purposes only. No liability  
is assumed for the data delineated  
hereon.

3

3

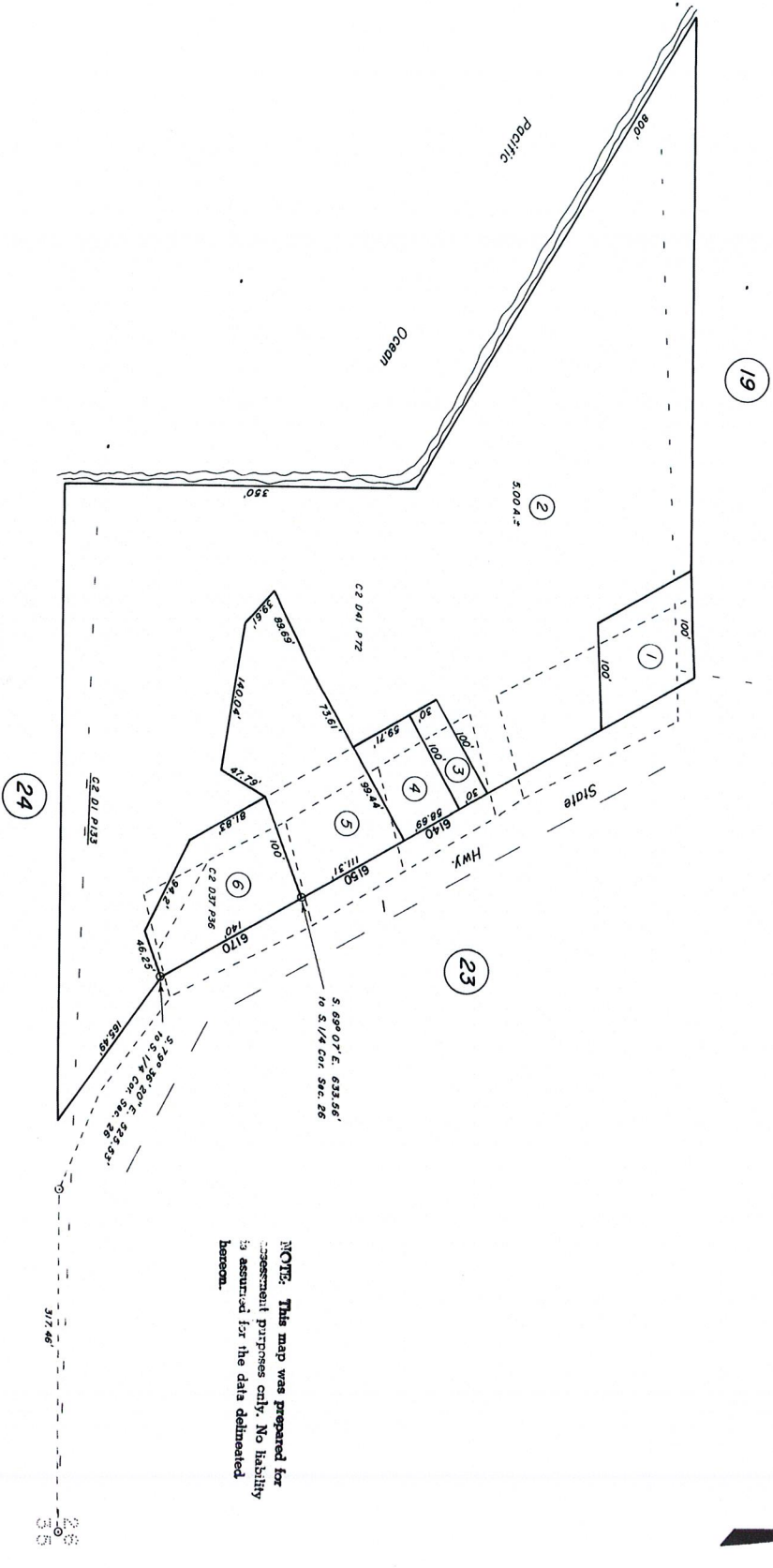
Assessor's Map  
County of Mendocino, Calif.  
Updated February 13, 2014



Por. of Lot 4 Sec. 26 T.15 N. R.17 W. M.D.B. & M.  
Greenwood - Elk

104-025

127-20







# REFERENCE:

Elk and Mallo Pass Creek Quadrangle  
7.5-Minute Series, USGS, 2018

Latitude: 39.128174  
Longitude: -123.716216



APPROXIMATE SCALE (FEET)



**Brunsing Associates, Inc.**  
5468 Skylane Blvd., Suite 201  
Santa Rosa, California 95403  
Tel: (707) 528-6108

Job No.: 13487.01  
Appr.: **EEO**  
Date: 05/03/23

**VICINITY FAULT MAP**  
KOPRIVA SLOPE STABILIZATION  
6170 South Highway 1  
Elk, California

**PLATE**  
**1**

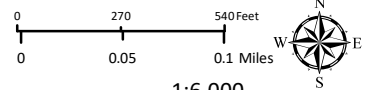




Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

**CASE: RM 2023-0002**  
**OWNER: KOPRIVA, Rebecca**  
**APN: 127-200-06**  
**APLCT: Erik Olsborg, Brunsing Associates**  
**AGENT: Erik Olsborg, Brunsing Associates**  
**ADDRESS: 6170 S HWY 1, Elk**

Hydrology  
Highways (2017)  
Public Roads  
Driveways/Unnamed Roads



1:6,000

AERIAL IMAGERY

**THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.**  
**DO NOT USE THIS MAP TO DETERMINE LEGAL PROPERTY BOUNDARIES**

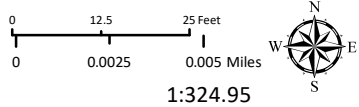




Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

**CASE: RM 2023-0002**  
**OWNER: KOPRIVA, Rebecca**  
**APN: 127-200-06**  
**APLCT: Erik Olsborg, Brunsing Associates**  
**AGENT: Erik Olsborg, Brunsing Associates**  
**ADDRESS: 6170 S HWY 1, Elk**

- Highways (2017)
- Public Roads
- ..... Driveways/Unnamed Roads








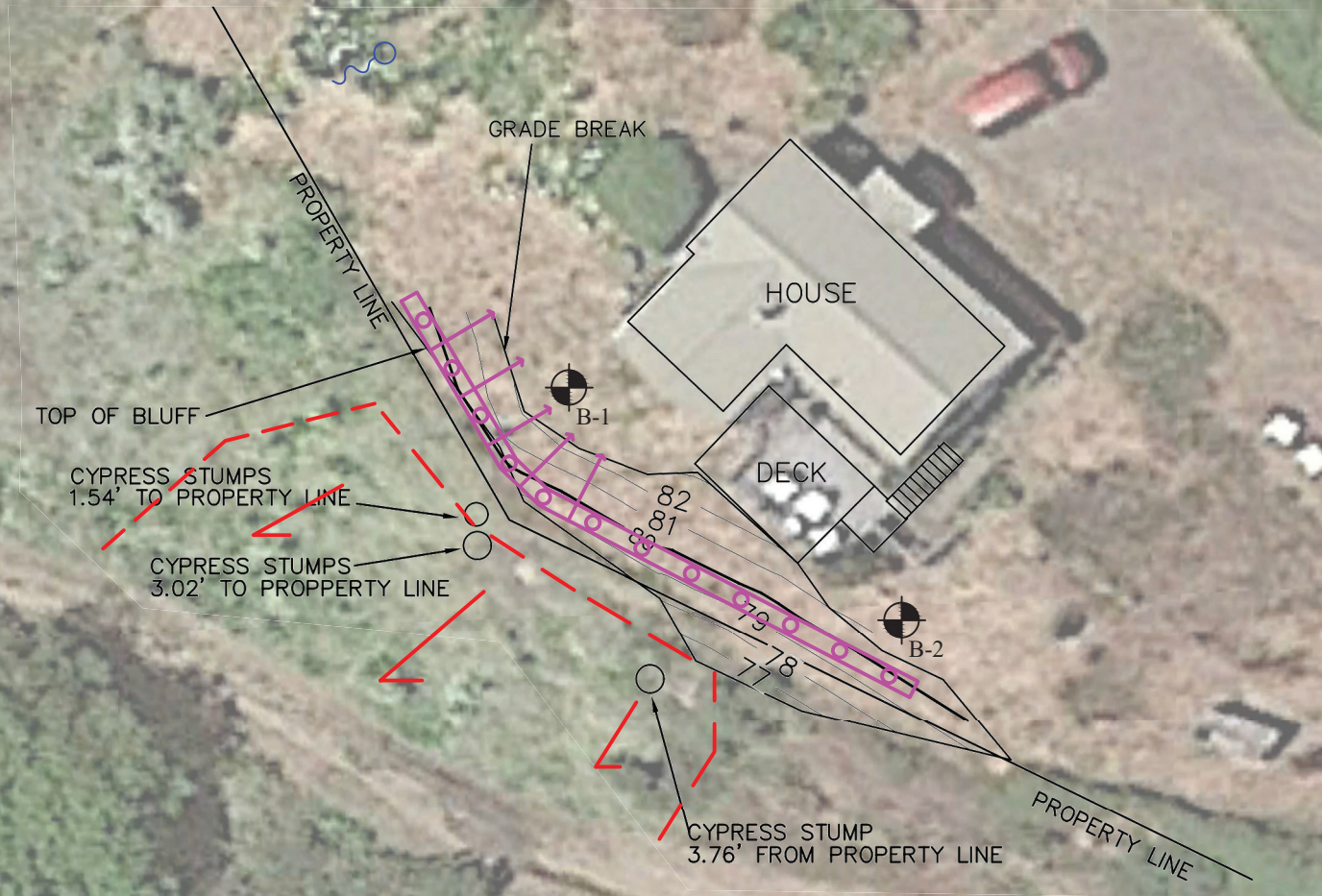
1:324.95  
**AERIAL IMAGERY**

**THIS MAP AND DATA ARE PROVIDED WITHOUT WARRANTY OF ANY KIND.**  
**DO NOT USE THIS MAP TO DETERMINE LEGAL PROPERTY BOUNDARIES**



# LEGEND

-  Borings location and number
-  Proposed location of stabilization structure
-  Approximate location of Tiebacks
-  Seepage area
-  Approximate landslide area with direction of flow



## Notes:

Elevations are assumed elevations and not based on Mean Sea Level.



APPROXIMATE SCALE (FEET)



**REFERENCE:** Base map, Google Earth Image, 6/2/2021. Overlay by Mendocino Surveyors, Inc., 12/16/2021.



**Brusing Associates, Inc.**  
5468 Skylane Blvd., Suite 201  
Santa Rosa, California 95403  
Tel: (707) 528-6108

Job No.: 13487.01

Appr.: *KAC*

Date: 05/03/23

**SITE MAP**  
KOPRIVA SLOPE STABILIZATION  
6170 South Highway 1  
Elk, California

**PLATE**  
**2**



**Brunsing Associates, Inc.**

**GEOTECHNICAL INVESTIGATION**

**KOPRIVA SLOPE STABILIZATION  
6170 SOUTH HIGHWAY 1  
ELK, CALIFORNIA**

**Project Number 13487.01**

**May 3, 2023**

**Engineers and Geologists**



# GEOTECHNICAL INVESTIGATION

## KOPRIVA SLOPE STABILIZATION 6170 SOUTH HIGHWAY 1 ELK, CALIFORNIA

Project Number 13487.01

prepared for

Rebecca Kopriva  
21 Florida Avenue  
Berkeley, CA 94707

prepared by

Brunsing Associates, Inc.

5468 Skylane Blvd. Suite 201  
Santa Rosa, CA 95403  
(707) 528-6108

May 3, 2023



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## **1.0 INTRODUCTION**

This report presents the results of the geotechnical investigation that Brunsing Associates, Inc. (BAI) has performed for the slope stabilization structure downslope of the Kopriva residence at 6170 Highway 1, Elk, Mendocino County, California. The approximate location of the site is shown on the Vicinity Fault Map, Plate 1.

The Kopriva property overlooks Greenwood State Beach. An approximately 20-foot-high cut slope below (southwest of) the property is owned by the State of California. The cut slope is on the uphill side of the dirt access road to the beach. There have been ongoing erosional issues regarding the cut slope. There is concern that the erosion can migrate uphill and eventually threaten the house. The area of concern is shown on the Site Map, Plate 2.

The purpose of our investigation was to evaluate the site soil and bedrock conditions and the geologic hazards at the site in order to provide recommendations for erosion mitigation to protect the existing property. Our approach to providing the geotechnical guidelines for the design of the project utilized our knowledge of the soil, bedrock and geologic conditions in the site vicinity and experience with similar projects. Field exploration for this investigation was directed toward confirming anticipated soil, bedrock, and geologic conditions, in order to provide the basis for our conclusions and recommendations.

The scope of our services, as outlined in our Professional Services Agreement dated January 7, 2022, and Change/Extra Service Order dated January 25, 2022, consisted of field reconnaissance, subsurface exploration, engineering and geologic analyses, the preparation of this report and plan preparation by our structural engineering subconsultant.

## **2.0 INVESTIGATION AND LABORATORY TESTING**

### **2.1 Research**

As part of our investigation, we reviewed published geotechnical literature, including geologic, fault and seismic hazard maps for the site and vicinity. A list of selected published references reviewed for this investigation is presented in Appendix A.

### **2.2 Field Reconnaissance**

BAI's engineering geologist performed an initial reconnaissance of the site and vicinity on January 20, 2022. He marked the test boring locations, marked for underground service alert, observed drill rig access conditions and constraints, and photographed the area.

### **2.3 Subsurface Exploration**

The subsurface exploration consisted of drilling, logging, and sampling two test borings, B-1 and B-2, with a light portable drill rig on March 15, 2022. The approximate locations of the test borings are shown on Plate 2. The borings varied from about 6.8 to 12.8 feet in depth.





Our staff geologist logged the borings and obtained relatively undisturbed soil and bedrock samples using a 2.5-inch outside diameter, modified California (CM), split-barrel sampler driven by a 70-pound drop hammer falling 30-inches per blow. The sampler barrel contained interior liners for retaining the soil and bedrock materials. Blows required to drive the CM sampler were converted to Standard Penetration Test (SPT) blow counts for correlation with empirical test data, using a conversion factor of 0.4. SPT blow counts provide a relative measure of soil and bedrock consistency and strength and are utilized in our engineering analyses. Blow counts are presented on the boring logs alongside the sample locations.

The logs of test borings showing the various soil and bedrock materials encountered and the depths at which samples were obtained are presented on Plates 3 and 4. The soils are classified in accordance with the Unified Soil Classification System outlined on Plate 5. The soil and bedrock descriptive properties are presented on Plates 6 and 7, respectively.

## **2.4 Laboratory Testing**

Soil and bedrock samples obtained during our subsurface exploration were transported to our laboratory and examined to confirm field classifications. Laboratory tests were performed on selected samples to estimate their pertinent geotechnical engineering characteristics. Laboratory testing consisted of moisture content, dry density and unconsolidated-undrained triaxial compression tests.

The test results are presented opposite the samples tested on the boring logs. A key to test data is provided on Plate 5. Triaxial compression test data test results are presented on Plate 8.

## **3.0 SITE CONDITIONS**

The existing residence is situated on the west-southwest side of Highway 1. The subject residence and parking area are approximately 10 feet lower in elevation than the adjacent Highway 1. The two-story residence is built into the slope, the upper story is level with the driveway while the lower story has a retaining wall on the upslope side and the downslope side extending to the ground surface. There is also a detached garage northeast of the residence and west-southwest of Highway 1.

The two-story house resides on a gently sloping terrace that ends at a cut slope. The cut slope descends very steeply, approximately 1.2 horizontal to one vertical (1.2H:1V), for approximately 20 feet in height as shown on Drone Photograph A, Plate 9. At the base of the cut slope is the access road to Greenwood State Beach. The State beach access road cuts across the bluff downslope of the subject property. The top of the cut slope is at or near the downslope edge of the subject property line.

Highway 1 is the top of the ocean bluff in the property vicinity. Greenwood Beach is at the toe of bluff downslope of the subject property. The bluff toe (beach) is approximately 290 feet southwest of the residence. According to the Google Earth aerial photograph dated June 2, 2021, the beach elevation at the bluff toe is approximately 20 feet above Mean Sea Level. The slope



gradient of the bluff from the access road in the property vicinity down to the beach is approximately 3.5H:1V.

The bluff is densely vegetated with trees and brush. A seepage area was observed in the northwesterly corner of the property, uphill of the road cut. No other water was observed in the site vicinity during our investigation.

A mowed area is located between the existing residence/deck and the cut slope. Brush, weeds, nasturtiums, and pampas grass cover the cut slope below the property. Several large stumps are present on the cut slope; historical photos suggest those trees were removed sometime between 2011 and 2013.

#### **4.0 SITE GEOLOGY AND SOILS**

The site bedrock consists of sedimentary bedrock of the Cretaceous-Tertiary Franciscan Complex coastal belt, comprised of orange-tan clayey sandstone. The bedrock is closely fractured, moderate in hardness, and deeply weathered. The orange-tan clayey/silty sandstone was encountered at 12 feet and 6 feet below the ground surface in borings B-1 and B-2, respectively. Practical drilling refusal for the light, portable drill rig was encountered in the moderately hard sandstone in boring B-2 at 6.5 feet.

The bedrock is overlain by 6 to 12 feet of Pleistocene terrace deposits consisting of brown-black and orange, silty and clayey sands with occasional rock fragments. The sands are loose to medium dense. The upper 3.5 to 4 feet of the terrace deposits consist of dark to light brown, loose to very loose, silty sand with occasional rock fragments.

No deep-seated landslides were observed within or adjacent to the Kopriva property. Severe erosion is occurring on the beach access road cut slope below the Kopriva property as shown on Plate 9. The upper portion of the erosion area, just below the Kopriva property shows leaning tree stumps and small, bare scarps where the ground has dropped downslope. The stumps are from trees removed by the State of California prior to 2013. The hillside below the Kopriva property is mapped as a “debris slide slope” on California Division of Mines and Geology Open File Report 84-12 SF (OFR 84-12 SF). A debris slide slope” is defined as “a geomorphic feature characterized by steep..., usually well vegetated slopes that have been sculpted by numerous debris slide events; vegetated soils and colluvium above shallow soil/bedrock interface may be disrupted by active debris slides...”.

No evidence of faulting was observed in the site vicinity. A near-parallel pair of “lineament’s” are shown approximately 250 and 1000 feet northeast of the Kopriva property on OFR84-12 SF. Olsborg, while performing geologic investigations on other Elk projects and in consultation with OFR 84-12 SF author, Michael W. Manson, retired geologist (oral communication February 2016) reclassified the two “lineaments” as potentially active Faults. Olsborg unofficially named the two faults, the Elk Fault (nearest the Kopriva property) and the St. Anthony’s Fault, as shown on Plate 1. The active, San Andreas Fault is located offshore, approximately three miles to the southwest.





## **5.0 CONCLUSIONS**

The access road cut slope, downslope of the property, is in violation of current excavation and grading code, section 18.70.090 - Cuts. Cut slopes shall be no steeper than 2H:1V and not create a hazard to public or private property. Our client has requested that State Parks and Recreation Department construct a retaining wall at this location to support the steep cut slope. Short of legal action, State Parks is not inclined to construct a retaining wall. Instead, their apparent policy is to periodically clean up slough soils in order to just keep the road open. In order to avoid lengthy and costly litigation, our client is willing to build a stabilization structure on her own property at her own expense.

The cut slope erosion should be mitigated as soon as possible before the unstable area further enlarges and causes more damage to the property. Eventually, erosion could enlarge further upslope and affect the residence. Therefore, a stabilization structure to protect the residence should be constructed along the property line just above the erosion area, as shown on Plate 2. The stabilization structure would be intended to halt uphill migration of the downslope erosion. The stabilization structure, consisting of drilled piers connected by a concrete grade beam, will be entirely below the ground surface when completed.

## **6.0 ALTERNATIVE ANALYSIS**

### **6.1 Subsurface Stabilization Structure**

Our recommended subsurface stabilization structure would consist of a row of drilled piers connected at the top with a concrete grade beam. The grade beam would be constructed at, or a few inches under the existing ground surface, as shown on Plate 10. To supplement the stabilization structure, native vegetation could be planted on the slopes to help slow down current erosion; however this would need to be approved by the State Parks. Vines could be planted to cover the grade beam extending downslope and to cover the piers if or when they are eventually exposed. To help maintain the vines, a drip irrigation system could be used. If properly maintained, the stabilization structure should protect our client's property, with little or no visual impact for the next 75 years.

### **6.2 Retaining Wall**

A retaining wall could be constructed on State Parks property to support their overly steep cut slope. Such a wall would require an access agreement as well as a maintenance agreement for our client to construct the wall. State Parks has shown no interest in allowing such a wall to be built, regardless of who pays for it. Furthermore, the external retaining wall would be undesirable and likely unpermissible from a visual resources perspective.

### **6.3 Move Stabilization Structure Closer to the House**

Moving the stabilization structure closer to the house would delay the eventual exposure of the structure due to continuing erosion of the cut slope. However, our client would lose more of her land that she is trying to protect. This would defeat the purpose of the stabilization structure.



## **6.4 Relocate the Residence**

Relocating the residence closer to Highway 1 would substantially reduce the value of our client's property. Moving the residence would require large modifications to the residence since it is designed using the natural slope. The downslope side is two stories, while the uphill side is one story. The move would likely impact her driveway and parking area, plus reduce available room for a possible future addition (not intended at this time). Moving the residence would result in continued loss of her land to erosion.

## **6.5 Grading the Cut Slope**

Grading the State-owned cut slope to a more-stable slope angle is not practical. Even if permission were obtained, the result would be the loss of our client's land, which is what this project is trying to prevent.

## **6.6 Surface Stabilization System**

A surface stabilization system, such as geogrids, would require substantial grading work on the State-owned cut slope. The earthwork would involve excavating the cut slope and moving the excavated soils to a staging area elsewhere on the State property. The removed soil would then be brought back and placed and compacted between the geogrids. This operation would require shutting down the access road during "good" weather, when most visitors would be using the access road. Such an operation would need to be approved by the State Parks and most likely not be permissible.

## **7.0 RECOMMENDATIONS**

### **7.1 Stabilization Structure**

#### **7.1.1 Drilled Piers**

To provide lateral support and protection from erosion, a row of drilled cast-in-place concrete piers connected at the top by a grade beam should be constructed along the property line above the cut slope, as shown on Plates 2 and 10. The drilled piers and grade beam will need tiebacks along a portion of the stabilization structure as determined by the structural engineer. The row of drilled piers and connecting grade beam should be at least 70 feet in length. The grade beam should be at least 24-inches wide and at least 4 feet in depth. Drilled piers should penetrate through the overlying weak soil and penetrate the underlying sandstone. Drilled piers should be at least 18 inches in diameter and at least 20 feet deep below the existing ground surface. Piers encountering auger refusal in hard bedrock, as verified by BAI, should be cored (for full diameter) at least 7 feet into the hard bedrock. Pier diameter and length should be designed by a structural engineer based on our recommendations.

Spacing for the piers should be no closer than 2.5 pier diameters, center to center. Support for the piers may be gained from skin friction resistance within supporting bedrock equal to 400 psf



of pier surface area for dead plus long-term live downward loads. For the total downward load design, including wind or seismic forces, increase downward capacity by one-third. Uplift frictional capacity for piers should be limited to  $2/3$  of the allowable downward capacity.

When final pier depths have been achieved, as verified by BAI, the bottoms of the pier holes should be thoroughly cleaned of loose material. BAI should observe the drilling and final clean out of the pier holes, prior to the placement of reinforcing steel and concrete.

If groundwater is encountered during construction, the pier holes should be dewatered prior to placement of reinforcing steel and concrete. Alternatively, if more than six inches of groundwater has entered the pier hole, concrete can be tremied into place with an adequate head to displace water or slurry. Concrete should not be placed by freefall in such a manner as to hit the sidewalls of the excavation.

No caving was encountered in our test borings. However, if piers are drilled during the wet/rainy season, caving could occur. The driller should be prepared to case pier holes where caving occurs. If used, the casing would need to be withdrawn from the pier holes as the pier concrete is placed. Difficult drilling conditions could be encountered within hard bedrock. The drilling contractor should be prepared to use rock-coring equipment.

As the erosion continues the space between the drilled piers may become exposed. This exposed soil and/or bedrock between the drilled piers will need to be shotcreted or provided with some other barrier to keep the soil or bedrock between the piers from eroding.

### 7.1.2 Lateral Loads

Resistance to lateral loads can be obtained using passive earth pressure of 400 psf per foot of depth within supporting bedrock. Passive pressures can be projected over two pier diameters. In addition to the structure loads, the piers should be designed to resist creep forces equal to 50 pounds per cubic foot (pcf) equivalent fluid pressure (triangular distribution) over a depth of 10 feet below ground surface. Passive pressures should be neglected within the weak terrace deposits. The stabilization structure should also be designed to resist an active lateral earth pressure, triangular distribution, varying from 0 (zero) psf at the top of the structure to  $50H$  psf at the bottom of the retaining portion of the structure, as shown on Retaining Wall Lateral Earth Pressures, Plate 11.

In addition to static loads, the retaining structure should also be designed to resist potential seismic loads, in accordance with California Building Code requirements. For seismic loads, a pressure increment equivalent to a triangular distribution is recommended, varying from 0 (zero) pounds per square foot (psf) at the top of the wall to  $27H$  psf at the bottom of the retaining portion, where “H” is the height of the retaining portion of the structure (resultant dynamic thrust act at  $0.33H$  above the bottom of the retaining portion of the structure).





### 7.1.3 Tie-Back Anchors

Tiebacks are in-situ, laterally installed (directionally-drilled) reinforcing elements embedded with grout in boreholes. The grout shall be pressure grouted and achieve at least 75 pounds per square inch. Post grout may require higher pressure grouting. Tiebacks consist of high-strength steel cables that are post-tensioned onto steel base plates, placed into the grade beam system, after installation of the cables within a sleeve in the laterally drilled borehole.

For design one row of tiebacks will be needed in a portion of the wall. As the erosion continues to move, another row of tiebacks may be needed at a low depth. The center-to-center spacing for the tiebacks should match center-to-center spacing of the drilled piers, with each tieback inclined at about 15 degrees downward (from horizontal). The tiebacks should be at least 55 feet long (total length) with at least 15 feet of unbonded length, and a bore diameter of at least 6 inches. The tiebacks should be designed to resist a minimum load of at least 25,000-pound force (25 kips). Tiebacks can be attached to the grade beam or the piers. Tieback testing should conform to the requirements of the structural engineer and all tiebacks should be proof tested to 150 percent of their design load with at least one performance tested to 150 percent of design load.

Design provisions for corrosion protection of the tiebacks is required. For design of the tiebacks by the structural engineer, the following average, ultimate (no geotechnical factor of safety) bedrock parameter values will be subject to further confirmation during final design:

Average friction resistance of sandstone, “f” = 2,000 psf (pressure grout)

Average unit weight of sandstone, “γ” 125 pcf

## 7.2 Seismic Design Criteria

Structures should be designed and constructed to resist the effects of strong ground shaking (on the order of Modified Mercalli Intensity IX) in accordance with current building codes. The California Building Code (CBC) 2022 edition indicates that the site classification for the property is Site Class C. The following seismic design parameters are appropriate for the site:

**Table 1: Seismic Design Parameters**

Site Class	=	C
Mapped Spectral Response Acceleration at 0.2 sec	$S_s =$	1.931g
Mapped Spectral Response Acceleration at 1.0 sec	$S_1 =$	0.794g
Modified Spectral Response Acceleration at 0.2 sec	$S_{MS} =$	2.317g
Modified Spectral Response Acceleration at 1.0 sec	$S_{M1} =$	1.112g
Design Spectral Response Acceleration at 0.2 sec	$S_{DS} =$	1.544
Design Spectral Response Acceleration at 1.0 sec	$S_{D1} =$	0.741g
Site Coefficient	$F_a =$	1.2
Site Coefficient	$F_v =$	1.4
Long-period Transition	$T_L =$	12
Seismic Design Category	=	E



## **8.0 ADDITIONAL SERVICES**

Prior to construction, BAI should review the final grading and structural plans, and geotechnical related specifications for conformance with our recommendations.

During construction, BAI should be retained to provide periodic observations, together with field and laboratory testing, during site preparation, placement and compaction of fills, and foundation construction. Foundation excavations should be reviewed by BAI while the excavation operations are being performed.

## **9.0 LIMITATIONS**

This geotechnical investigation was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in this report. Our conclusions are based upon reasonable geological and engineering interpretation of available data.

The observations made, are considered to be representative of the site; however, soil, bedrock and geologic conditions may vary significantly between test borings and across the site. As in most projects, conditions revealed during construction excavation may be at variance with preliminary findings. If this occurs, the changed conditions must be evaluated by BAI, and revised recommendations be provided as required.

This report is issued with the understanding that it is the responsibility of the Owner, or his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of all other design professionals for the project, and incorporated into the plans, and that the Contractor and Subcontractors implement such recommendations in the field. The safety of others is the responsibility of the Contractor. The Contractor should notify the owner and BAI if he/she considers any of the recommended actions presented herein to be unsafe or otherwise impractical.

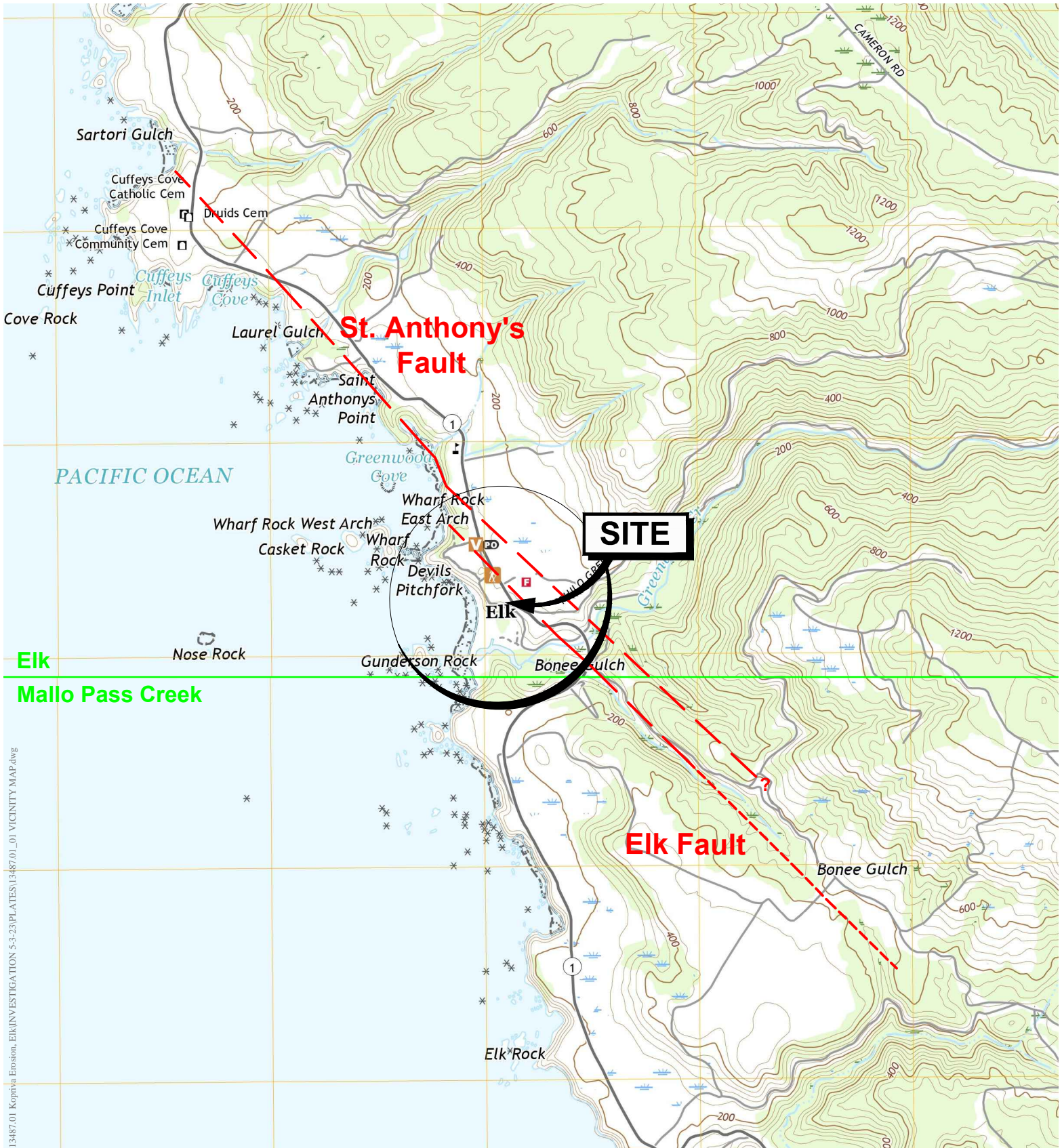
Changes in the condition of a site can occur with the passage of time, whether they are due to natural events or to human activities on this, or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, this report may become invalidated wholly or partially by changes outside of our control. Therefore, this report is subject to review and revision as changed conditions are identified.





## PLATES





**REFERENCE:**

Elk and Mallo Pass Creek Quadrangle  
7.5-Minute Series, USGS, 2018

Latitude: 39.128174  
Longitude: -123.716216



**APPROXIMATE SCALE (FEET)**



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Job No.: 13487.01  
Appr.: **EEO**  
Date: 05/03/23

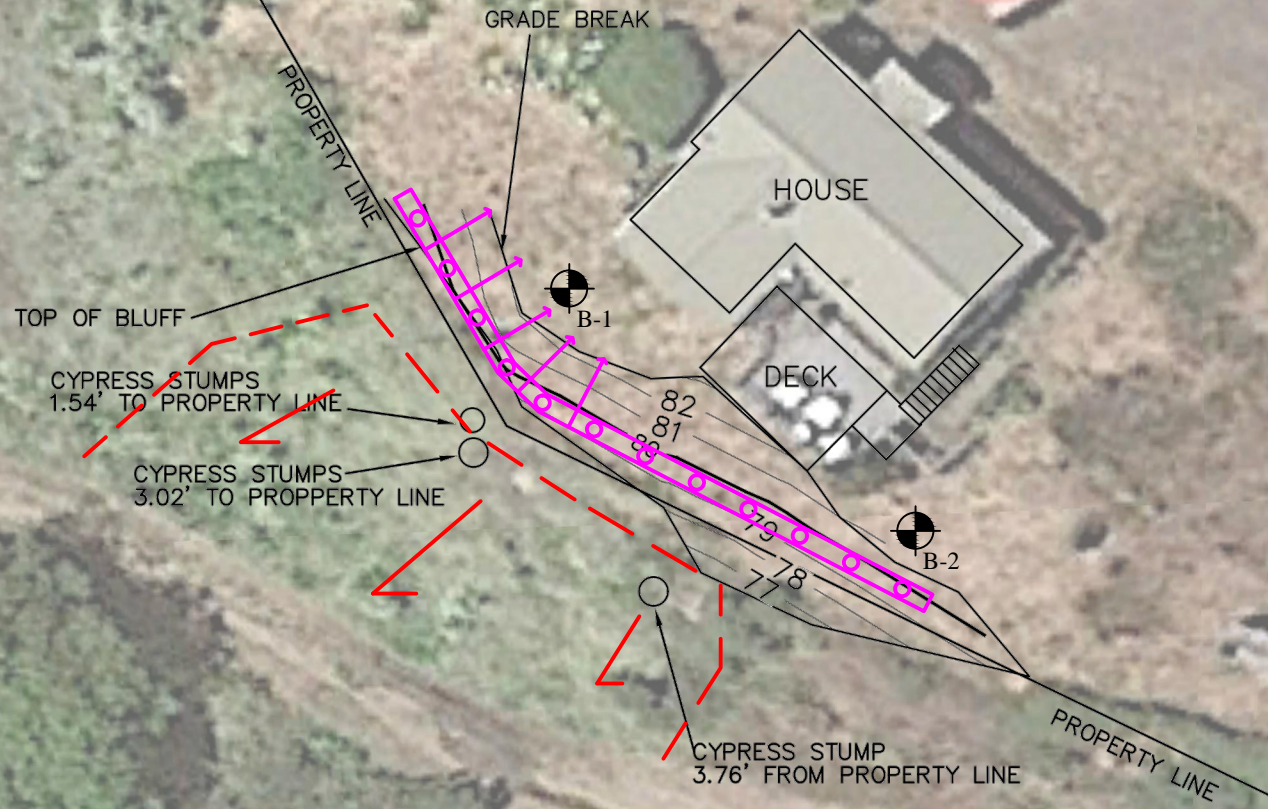
**VICINITY FAULT MAP**  
KOPRIVA SLOPE STABILIZATION  
6170 South Highway 1  
Elk, California

**PLATE**  
**1**



# LEGEND

-  Borings location and number
-  Proposed location of stabilization structure
-  Approximate location of Tiebacks
-  Seepage area
-  Approximate landslide area with direction of flow

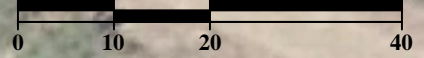


## Notes:

Elevations are assumed elevations and not based on Mean Sea Level.



APPROXIMATE SCALE (FEET)



**REFERENCE:** Base map, Google Earth Image, 6/2/2021. Overlay by Mendocino Surveyors, Inc., 12/16/2021.



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Date: 05/03/23

**SITE MAP**  
KOPRIVA SLOPE STABILIZATION  
6170 South Highway 1  
Elk, California

**PLATE**

**2**

## Log of Boring B-1

Equipment: Light Portable Drill Rig (Little Beaver)

Date: 3/15/22

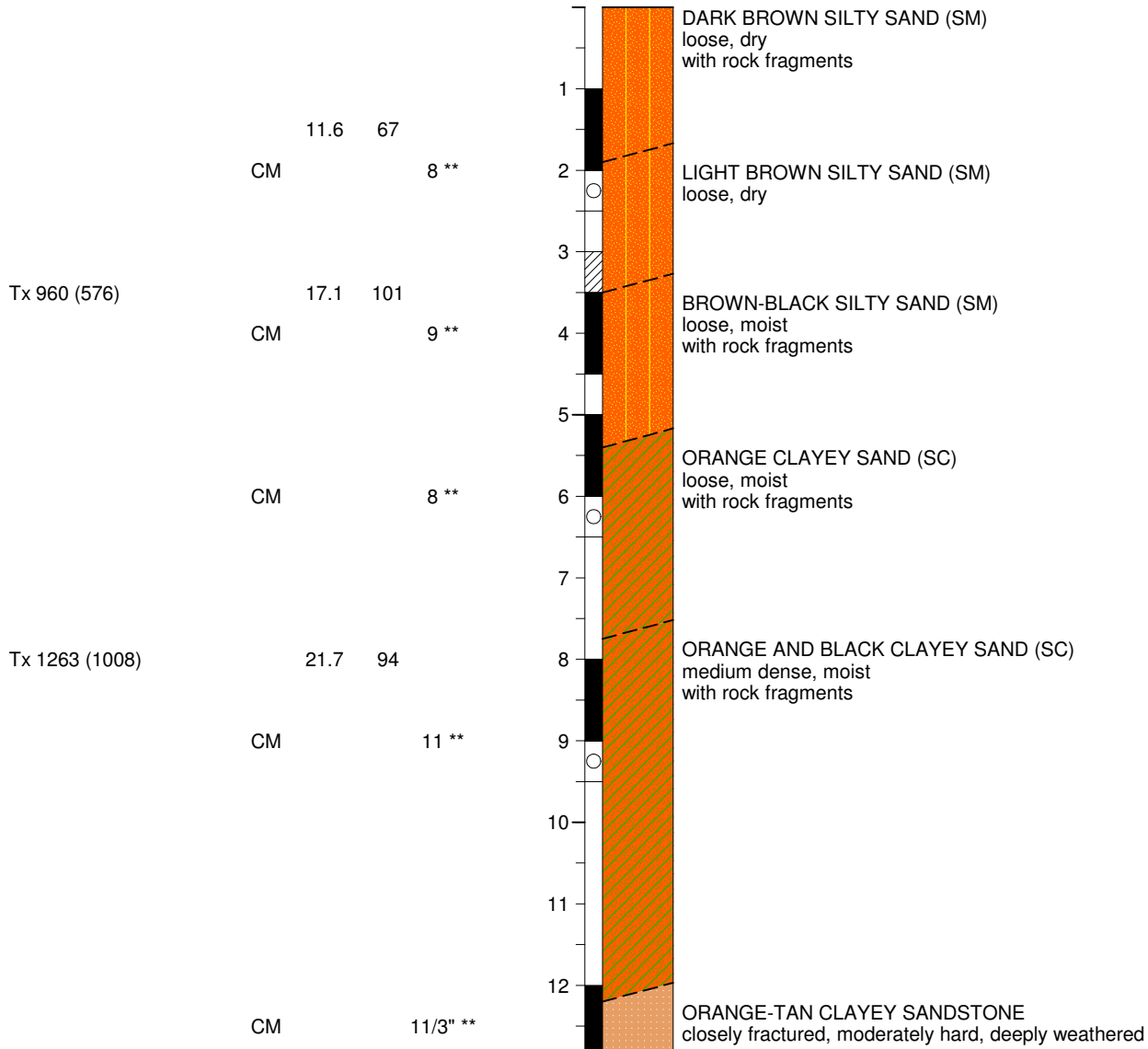
Logged By: DJS

Elevation: 82 feet \*\*\* Latitude: 39.128216 Longitude: -123.716248

### Laboratory Tests

Sampler Type\*  
Moisture Content (%)  
Dry Density (pcf)  
Blows/foot

Depth (ft.)  
Sample



#### Notes:

1. No water encountered
2. No caving

Latitude/Longitude estimated from Google Earth.

\* See Soil Classification Chart & Key to Test Data

\*\* Equivalent "Standard Penetration" Blow Counts.

\*\*\* Elevations interpolated from Plate 2.



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**LOG OF BORING B-1**  
KOPRIVA SLOPE STABILIZATION  
6170 South Highway 1  
Elk, California

**PLATE**  
**3**

SHEET 1 of 1



## Log of Boring B-2

**Equipment:** Light Portable Drill Rig (Little Beaver)

**Date:** 3/15/22

**Logged By:** DJS

**Elevation:** 82 feet \*\*\* **Latitude:** 39.128147 **Longitude:** -123.71612

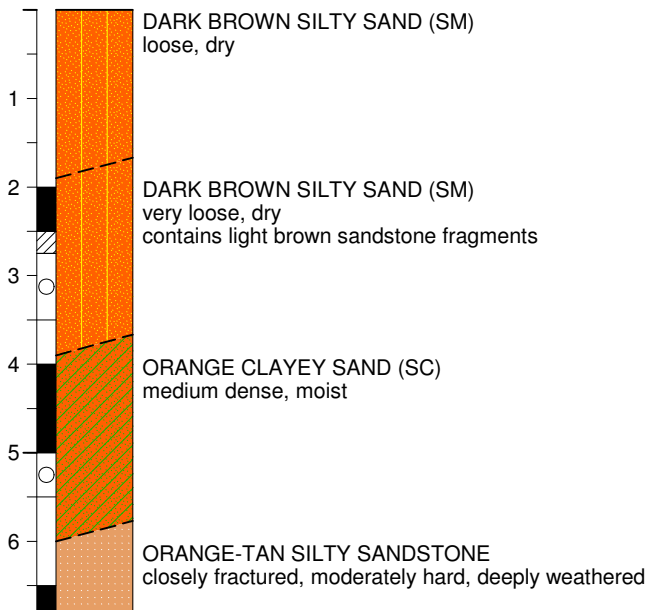
### Laboratory Tests

**Sampler Type\***  
**Moisture Content (%)**  
**Dry Density (pcf)**  
**Blows/foot**

**Depth (ft.)**  
**Sample**

Tx 2240 (576)

	20.6	84	
CM			4 **
	16.9	103	
CM			10 **
			20/3" **



**Notes:**

1. No water encountered
2. No caving
3. Practical drilling refusal at 6.5 feet

Latitude/Longitude estimated from Google Earth.

\* See Soil Classification Chart & Key to Test Data

\*\* Equivalent "Standard Penetration" Blow Counts.

\*\*\* Elevations interpolated from Plate 2.



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**LOG OF BORING B-2**  
**KOPRIVA SLOPE STABILIZATION**  
6170 South Highway 1  
Elk, California

**PLATE**

**4**

SHEET 1 of 1

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)	MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
				GRAPHIC	LETTER	
	COARSE-GRAINED SOILS	GRAVELS AND GRAVELLY SOILS	CLEAN GRAVELS  (Less than 5% fines)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
					GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GRAVELS WITH FINES  (Greater than 12% fines)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
					GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
		SAND AND SANDY SOILS	CLEAN SANDS  (Less than 5% fines)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
					SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SANDS WITH FINES  (Greater than 12% fines)		SM	SILTY SANDS, SAND-SILT MIXTURES
					SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
				SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50	MH
	CH	INORGANIC CLAYS OF HIGH PLASTICITY				
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS				
	HIGHLY ORGANIC SOILS					PT

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

## KEY TO TEST DATA

LL - Liquid Limit

PI - Plasticity Index

Sample Retained

Sample Recovered, Not Retained

Bulk Sample

Sample Not Recovered

CA - California Modified Split Barrel Sampler 3.0-inch O.D.

CM - California Modified Split Barrel Sampler 2.5-inch O.D.

SPT - California Split Barrel Sampler 2.0-inch O.D.

SH - Shelby Tube

RC - Rock Coring

Recovery - Percent Core Recovered

RQD - Rock Quality Designation (length of core pieces &gt;= 4-inches / core length)

Consol - Consolidation

EI - Expansion Index

SA - Sieve Analysis

Shear Strength, psf

Confining Pressure, psf

Tx 1564 (1440) - Unconsolidated Undrained Triaxial

TxCU 1564 (1440) - Consolidated Undrained Triaxial

DS 2020 (1440) - Consolidated Drained Direct Shear

FVS 520 - Field Vane Shear

UC 1500 - Unconfined Compression

PP 1500 - Field Pocket Penetrometer

Sat - Sample saturated prior to test

Initial Groundwater Level Reading

Second Groundwater Level Reading



**Brunsing Associates, Inc.**  
5468 Skylane Blvd., Suite 201  
Santa Rosa, California 95403  
Tel: (707) 528-6108

Job No.: 13487.01

Appr.: *EEO*

Date: 05/03/23

## SOIL CLASSIFICATION CHART &amp; KEY TO TEST DATA

**KOPRIVA SLOPE STABILIZATION**  
6170 South Highway 1  
Elk, California

PLATE

5



## RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	Standard Penetration Test Blow Count (blows per foot)
Very loose	4 or less
Loose	5 to 10
Medium dense	11 to 30
Dense	31 to 50
Very dense	More than 50

## CONSISTENCY OF FINE-GRAINED SOILS

Consistency	Identification Procedure	Approximate Shear Strength (psf)
Very soft	Easily penetrated several inches with fist	Less than 250
Soft	Easily penetrated several inches with thumb	250 to 500
Medium stiff	Penetrated several inches by thumb with moderate effort	500 to 1000
Stiff	Readily indented by thumb, but penetrated only with great effort	1000 to 2000
Very stiff	Readily indented by thumb nail	2000 to 4000
Hard	Indented with difficulty by thumb nail	More than 4000

## NATURAL MOISTURE CONTENT

<b>Dry</b>	No noticeable moisture content. Requires considerable moisture to obtain optimum moisture content* for compaction.
<b>Damp</b>	Contains some moisture, but is on the dry side of optimum.
<b>Moist</b>	Near optimum moisture content for compaction.
<b>Wet</b>	Requires drying to obtain optimum moisture content for compaction.
<b>Saturated</b>	Near or below the water table, from capillarity, or from perched or ponded water. All void spaces filled with water.

\* Optimum moisture content as determined in accordance with ASTM Test Method D1557, latest edition.

Where laboratory test data are not available, the above field classifications provide a general indication of material properties; the classifications may require modification based upon laboratory tests.



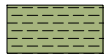
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Tel: (707) 528-6108

Job No.: 13487.01  
Appr.: *EEO*  
Date: 05/03/23

**SOIL DESCRIPTIVE PROPERTIES**  
**KOPRIVA SLOPE STABILIZATION**  
6170 South Highway 1  
Elk, California

**PLATE**  
**6**

# Generalized Graphic Bedrock Symbols



Claystone



Siltstone



Tuff (Volcanic Ash)



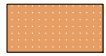
Shale



Chert



Andesite



Sandstone



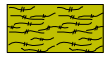
Serpentine



Basalt



Conglomerate



Greenstone



Schist

## Stratification

### Bedding of Sedimentary Rocks

Massive  
Very thick bedded  
Thick bedded  
Thin bedded  
Very thin bedded  
Laminated  
Thinly laminated

### Thickness of Beds

No apparent bedding  
Greater than 4 feet  
2 feet to 4 feet  
2 inches to 2 feet  
0.5 inches to 2 inches  
0.125 inches to 0.5 inches  
less than 0.125 inches

## Fracturing

### Fracturing Intensity

Little  
Occasional  
Moderate  
Close  
Intense  
Crushed

### Fracture Spacing

Greater than 4 feet  
1 foot to 4 feet  
6 inches to 1 foot  
1 inch to 6 inches  
0.5 inches to 1 inch  
less than 0.5 inches

## Strength

Soft  
Friable  
Low hardness  
Moderate hardness  
Hard  
Very hard

Plastic or very low strength.  
Crumbles by hand.  
Crumbles under light hammer blows.  
Crumbles under a few heavy hammer blows.  
Breaks into large pieces under heavy, ringing hammer blows.  
Resists heavy, ringing hammer blows and will yield with difficulty only dust and small flying fragments.

## Weathering

**Deep** Moderate to complete mineral decomposition, extensive disintegration, deep and thorough discoloration, many extensively coated fractures.

**Moderate** Slight decomposition of minerals, little disintegration, moderate discoloration, moderately coated fractures.

**Little** No megascopic decomposition of minerals, slight to no effect on cementation, slight and intermittent, or localized discoloration, few stains on fracture surfaces.

**Fresh** Unaffected by weathering agents, no disintegration or discoloration, fractures usually less numerous than joints.

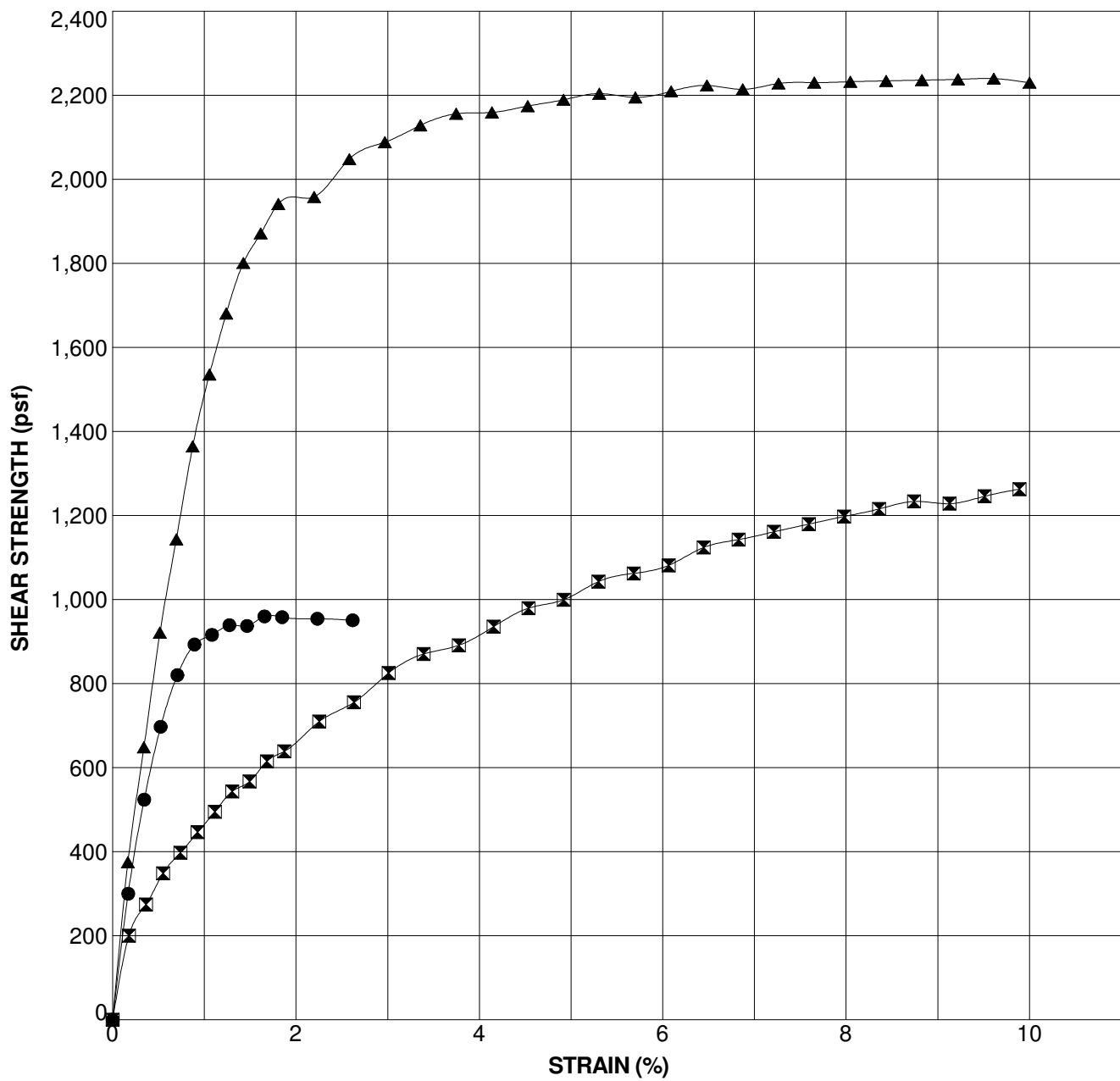


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Appr.: *EEO*  
Date: 05/03/23

**BEDROCK DESCRIPTIVE PROPERTIES**  
KOPRIVA SLOPE STABILIZATION  
6170 South Highway 1  
Elk, California

**PLATE**  
**7**



Sample Source	Classification	Confining Pressure (psf)	Ultimate Strength (psf)	Strain (%)	Dry Density (pcf)	Moisture Content (%)
● B-1 at 3.5 ft	BROWN-BLACK SILTY SAND (SM)	576	960	1.7	101	17.1
☒ B-1 at 8 ft	ORANGE AND BLACK CLAYEY SAND (SC)	1008	1263	9.9	94	21.7
▲ B-2 at 4.5 ft	ORANGE CLAYEY SAND (SC)	576	2240	9.6	103	16.9

UNCONSOLIDATED TRIAXIAL (ULTIMATE), 13487.01 GINT.GPJ, 6/14/23



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Job No.: 13487.01  
Appr.: *EEO*  
Date: 05/03/23

**UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST RESULTS**

**KOPRIVA SLOPE STABILIZATION**  
6170 South Highway 1  
Elk, California

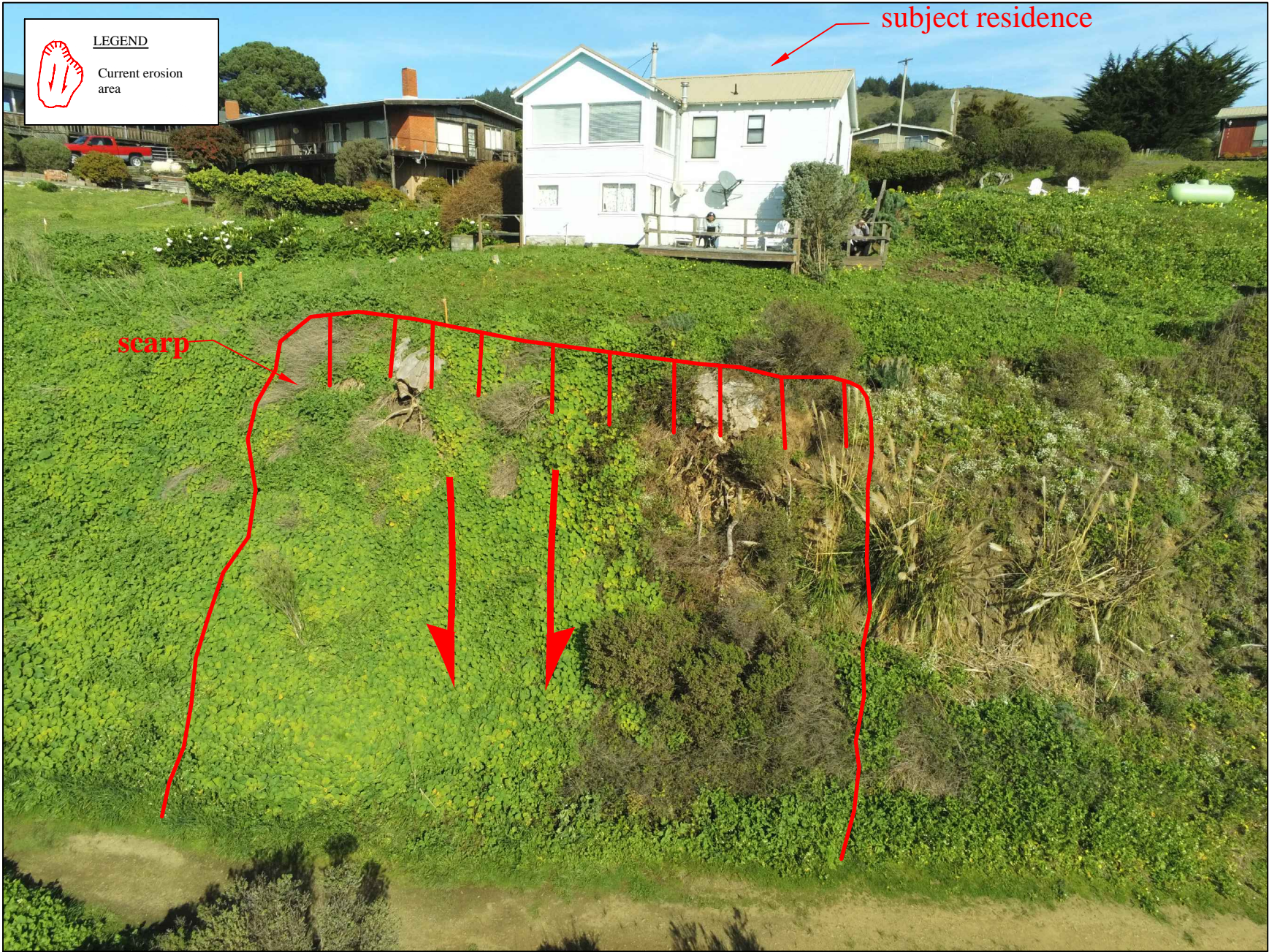
**PLATE**  
**8**





**LEGEND**

Current erosion area



L:\Geotech Projects\13487.01 Kopriva Erosion, EIK\INVESTIGATION 5-3-23\PLATES\13487.01\_09 DRONE PHOTO A.dwg

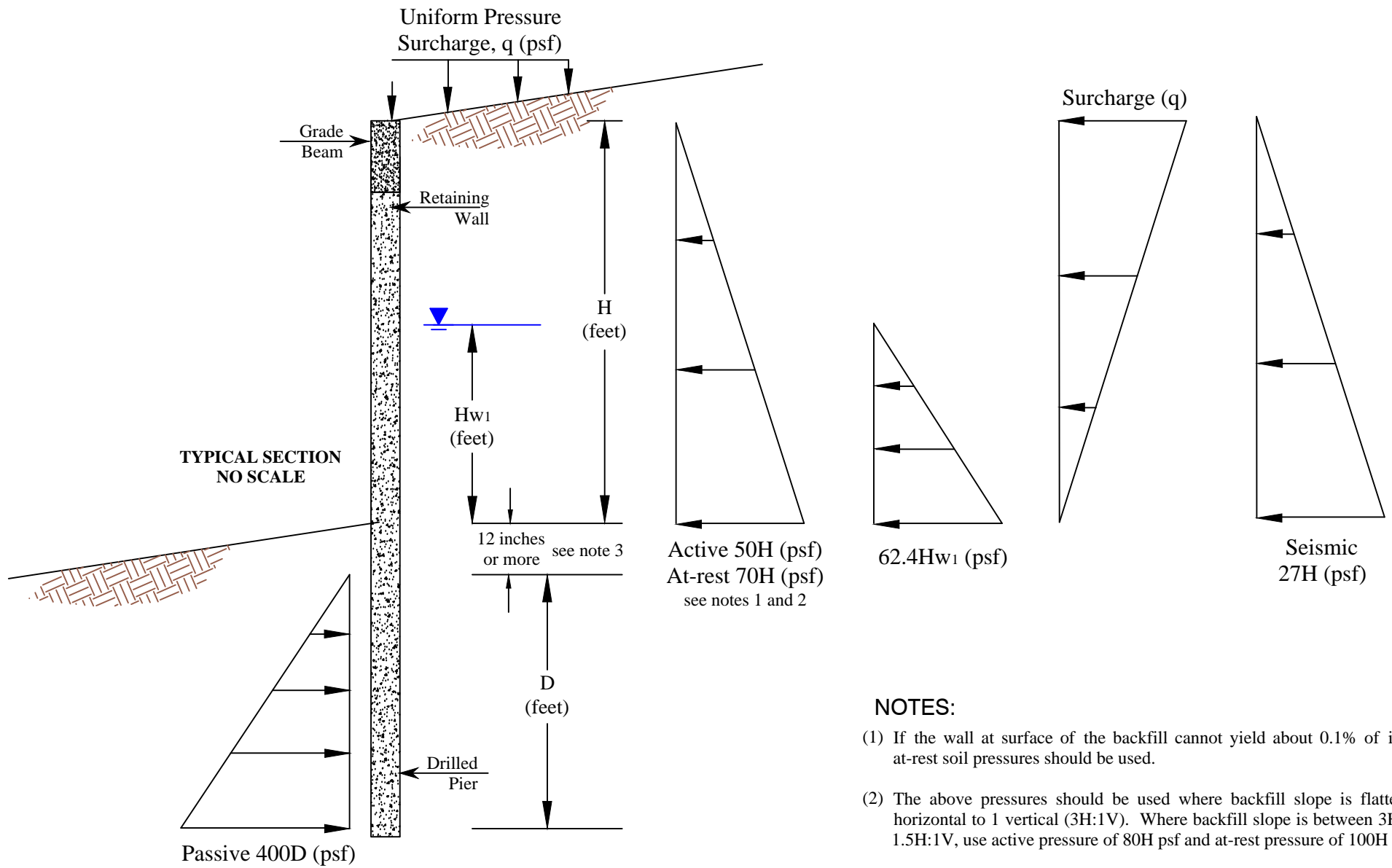
5/3/2023 8:52:51 AM save date  
6/13/2023 2:05:03 PM plot date

REFERENCE: BAI photo library,  
2022

	<b>Brunsing Associates, Inc.</b> 5468 Skylane Blvd., Suite 201 Santa Rosa, California 95403 Tel: (707) 528-6108		<b>Job No.:</b> 13487.01	<b>DRONE PHOTOGRAPH A</b> <b>KOPRIVA SLOPE STABILIBATION</b> 6170 South Highway 1 Elk, California	<b>PLATE</b>  <b>9</b>
			<b>Appr.:</b> <i>EEO</i>		
			<b>Date:</b> 05/03/23		







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Job No.: 13509.01

Appr.: *KAC*

Date: 05/03/23

**RETAINING WALL LATERAL EARTH PRESSURES**

KOPRIVA SLOPE STABILIZATION  
6170 South Highway 1  
Elk, California

**PLATE**

**11**



## APPENDIX A

### References

- Brunsing Associates, Inc., 2001, Geotechnical Investigation Proposed Spa Remodel Greenwood Pier Inn, Elk, Mendocino County, California, dated May 14.
- Brunsing Associates, Inc., 2015, Geotechnical Investigation, Planned Near Bluff-Edge Structural Improvements, Greenwood Pier Inn and Griffen House Inn, 5926 and 5910 South Highway 1, Elk, California, dated January 16.
- Franciscan and Related Rocks, and Their Significance in the Geology of Western California, Bulletin 183, 1964, CDMG.
- Geology and Geomorphic Features Related to Landsliding, Elk 7.5 Minute Quadrangle, Mendocino County, California, Open File Report (OFR) 84-12, SF, 1984, California Division of Mines and Geology (CDMG).
- Geology and Geomorphic Features Related to Landsliding, Mallo Pass Creek 7.5 Minute Quadrangle, Mendocino County, California, OFR 84-13, SF, 1984, CDMG.
- Hampton, M. A. and Griggs, G. B., 2004, “Formation, Evolution, and Stability of Coastal Cliffs – Status and Trends”, USGS Professional Paper 1693.
- Hapke, C. J. and Reid, D., 2007, “National Assessment of Shoreline Change, Part 4: Historical Coastal Cliff Retreat along the California Coast”: USGS. Open File Report 2007-1133.
- Johnsson, M. J., 2003, Establishing Development Setback from Coastal Bluffs: Proceedings, California and the World Ocean ‘02.
- Philip Williams & Associates, Ltd., 2009, “California Coastal Erosion Response to Sea Level Rise Analysis and Mapping”, prepared for the Pacific Institute.
- Sea-Level Rise for the Coasts of California, Oregon and Washington: Past, Present, and Future, 2012, National Research Council.
- The California Earthquake of April 18, 1906, Report of the State Earthquake Investigation Commission, 1908, Carnegie Institution of Washington.
- Ukiah Sheet: Geologic Map of California, 1960, CDMG.
- Untitled Plot Map, Elk, January 16, 1899, delivered to the “Hall of Maps”.
- Update to the Sea-level Rise Guidance Document, 2013, Coastal and Ocean Working Group of the California Climate Action Team.



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703 North Main Street, Fort Bragg CA 95437  
ph: 707-964-2537 fx: 707-964-2622 www.WCPlan.com

September 30, 2022

Brunsing Associates, Inc.  
Attn: Erik Olsborg  
5468 Skylane Blvd, Suite 201  
Santa Rosa, CA 95403

RE: Biological Scoping Survey Letter  
Lands of Kopriva  
6170 S. Hwy. 1  
Elk, CA 95432  
APN: 127-200-06

Dear Mr. Olsborg,

Thank you for the opportunity to assist you with your natural resource needs for your client's property at 6170 S. Hwy. 1, Elk, CA. Wynn Coastal Planning & Biology (WCPB) conducted a Biological Scoping Survey within 100ft of the subject parcel. The Biological Scoping Survey addresses potential Environmentally Sensitive Habitat Areas (ESHAs) within 100ft of the proposed project that could be identified at the time of the site visit. No ESHAs were observed during the survey.

It is the professional opinion of the biologists at WCPB the proposed project will not significantly impact any special status resources. The ecological condition of the parcel is already altered due to human disturbance and special status animals are highly unlikely to utilize the property as habitat. No ESHAs were identified in the study area and potential sensitive species that have the potential to move into the study area such as birds, bats, and/or amphibians will be addressed with mitigation measures recommended in the report.

Please let us know if you have any questions or comments.

Sincerely,

A handwritten signature in black ink that reads "Nicole D.B. Herrera".

Nicole D.B. Herrera  
Biologist  
Wynn Coastal Planning & Biology

Encl: BACE-Kopriva Biological Scoping Survey; Appendix A – USDA NRCS - Custom Soil Resource Report;  
Appendix B – USFWS National Wetlands Inventory Map

CC: file



## Biological Scoping Survey

**Investigators:** Nicole Herrera (B.A. Environmental Studies, Gonzaga University) & Asa B Spade (B.S. Environmental Science: Landscape Ecosystems, Humboldt State)

**Property Address:** 6170 S. Hwy. 1, Elk, CA

**APN:** 127-200-06

**Survey Date:** August 25, 2022

**Study Area Size:** ~2.15 acres

**Parcel Size:** ~0.26 acres

### **Site Description:**

The subject parcel is located at 6170 S. Hwy. 1, Elk, CA (**Figure 1**). The parcel is in the town of Elk, west of Highway One, and within the Coastal Zone. The parcel can be accessed via CA-1 and is surrounded by residential development and California State Parks land. The study area is sloped in a southwestern direction with the elevation ranging from approximately 75-150 feet above sea level. Existing development on the parcel includes a single-family residence with associated development and a shed. The residence is currently used as a vacation rental.

### **Proposed Development:**

The proposed development according to the project Engineering Geologist is to install a stabilization structure with the intent to halt uphill migration of the downslope erosion. **Figure 2** depicts the location of the proposed development on the property.

### **Methodology:**

Prior to visiting the site, Wynn Coastal Planning & Biology (WCPB) biologists compiled a list of sensitive and natural species of plants, animals, and communities occurring within the 9 quads centered on the project site (**Table 2**). This list was used to identify species and communities with the greatest potential for occurring at the project site, but the survey was not strictly limited to this list of potential rare and sensitive species. Maps were also created using the California Natural Diversity Database (CNDDB) for records within one mile of the study area (**Figure 3** and **Figure 4**). A U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) soil map (**Appendix A**) and a USFWS National Wetlands Inventory (NWI) map (**Appendix B**) were generated.

On August 25, 2022, WCPB biologists visited the site for a total of 2.5 person hours to examine the plant communities and vegetation on, and within 100ft of, the subject parcel. The focus of the study area was to determine if, and to what extent, special status plant communities, plants, wetlands, and/or special status wildlife habitat that could be considered Environmentally Sensitive Habitat Area (ESHA) occur within 100ft of the proposed development. The survey was limited to areas that were safely and legally accessible.

### **Survey Results:**

Two types of soil have been mapped by the Natural Resource Conservation Service in the study area: Dystropepts, 30-75% slopes and Windyhollow loam, 0-5% slopes. Dystropepts, 30-75% slopes, is found on marine terraces and is formed in material derived from sandstone and shale. Permeability is extremely variable. Windyhollow loam, 0-5% slopes, is found on marine terraces and is formed in alluvium derived from mixed rock sources. Permeability is moderately slow. Windyhollow loam, 0-5% slopes, is listed as a hydric soil type due to the inclusion of Flumeville soils, which make up approximately 4% of the soil unit. According to the NRCS mapping results, one soil type within the study area met hydric soils criteria (USDA Natural Resource Conservation Service, 2001; **Appendix A**). It should be noted that when a given soil is listed on the National Hydric Soils List as a hydric soil, that does not necessarily mean a wetland is present. Soil complexes are mapped at a coarse resolution and contain a number of components, any one of which may or may not be hydric, and may or may not be present in the particular mapped location. The NWI map

was consulted (**Appendix B**) and showed no mapped wetlands within the study area. Ground surveys confirmed that no wetland features are present in the project area.

Plant communities and vegetation observed within the study area consisted of coyote brush – poison oak scrub, landscaping and non-native plants, mowed lawn, and a couple red alder trees. The majority of the parcel and the adjacent residential properties were vegetated by landscaping and non-native plants (**Figure 5**). Dominant non-native species in this community included garden nasturtium (*Tropaeolum majus*), English ivy (*Hedera helix*), and iceplant (*Carpobrotus edulis*). Other species observed in the landscaping vegetation included wild radish (*Raphanus sativus*), calla lily (*Zantedeschia aethiopica*), poison hemlock (*Conium maculatum*), naked ladies (*Amaryllis belladonna*), red claws (*Escallonia rubra*), Mediterranean spurge (*Euphorbia characias*), shrub balsam (*Impatiens sodenii*), and nettle-leaved goosefoot (*Chenopodium murale*).

A lawn/non-native grassland was present just behind the residence (**Figure 6**) and on the adjacent property to the north. The lawn was dominated by common velvet grass (*Holcus lanatus*) and wild oats (*Avena barbata*). Other species present in the grassland include prostrate cap weed (*Arctotheca prostrata*), wild radish, Italian rye grass (*Festuca perennis*), veldt grass (*Ehrharta erecta*), California brome grass (*Bromus sitchensis* var. *carinatus*), foxtail barley (*Hordeum murinum*), hairy cats ears (*Hypochaeris radicata*), scarlet pimpernel (*Lysimachia arvensis*), petty spurge (*Euphorbia peplus*), groundsel (*Senecio vulgaris*), borage (*Borago officinalis*), and feverfew (*Tanacetum parthenium*).

Coyote brush – poison oak scrub (**Figure 7**) was observed just off property to the east, south, and west. This community was dominated by coyote brush (*Baccharis pilularis*) and poison oak (*Toxicodendron diversilobum*). Other species present included California blackberry, wild radish, Italian thistle (*Carduus pycnocephalus*), wild oats, pampas grass (*Cortaderia jubata*), garden nasturtium, California bee plant (*Scrophularia californica*), thimbleberry (*Rubus parviflorus*), hardy fuchsia (*Fuchsia magellanica*), purple western morning glory (*Calystegia purpurata* ssp. *purpurata*), rough hedgenettle (*Stachys rigida*), English plantain (*Plantago lanceolata*), and tall flatsedge (*Cyperus eragrostis*). A couple red alder (*Alnus rubra*) trees were present just west of the study area between the coyote brush scrub.

Special status plants and plant communities with recorded CNDDDB occurrences within a 0.25 mile of the study area were further analyzed to rule out the possibility of their presence in the study area. Two special status plants are currently recorded in the CNDDDB database within a 0.25 mile of the parcel: short leaved evax (*Hesperis matronalis* var. *brevifolia*) and Mendocino coast paintbrush (*Castilleja mendocinensis*). Mendocino coast paintbrush is a low growing perennial herb with bright orange-red flowers that is endemic to the coastlines of Mendocino and Humboldt County. Mendocino coast paintbrush is hemiparasitic and WCPB biologist often observe it associated with seaside daisy (*Erigeron glaucus*) which likely serves as a host plant. Short leaved evax is an inconspicuous low growing annual herb with bluish green leaves. Both Mendocino coast paintbrush and short leaved evax usually grow in northern coastal bluff scrub and coastal bluffs. Since the appropriate habitat was not observed in the study area neither Mendocino coast paintbrush nor short leaved evax are likely to occur in the study area.

Special status animals with recorded CNDDDB occurrences within a 0.25 mile of the study area were further analyzed to rule out the possibility of their presence in the study area. The Sonoma tree vole has been recorded within a 0.25 mile of the parcel. This Species of Special Concern spends almost the entirety of its life in the canopy of old-growth forests and is found from Sonoma County north to the South Fork of the Smith River in Del Norte County. Preferred habitat is considered mesic old-growth Douglas fir (*Pseudotsuga menziesii*) forest; however, Sonoma tree voles are known to utilize other conifer trees including grand fir (*Abies grandis*), Sitka spruce (*Picea sitchensis*), Monterey pine (*Pinus radiata*), or Bishop pine (*P. muricata*) needles for food and nesting, and have been observed in relatively young forests and even within planted conifer trees adjacent to natural areas. No coniferous trees were observed in the study area and therefore, no further surveys are recommended.

## Recommendations:

It is the professional opinion of WCPB biologists that based on the current information the project as proposed will not result in a significant negative impact to any special status resources. In the surveyors' experience, special status plants typically occur in relatively uncommon and specialized niche habitats. For example, special status plants are observed on or near bluff tops, pygmy type vegetation, wetlands and perimeter of wetlands, and within certain special status plant communities. Surveyors also search for common indicator species that are often associated with special status plant and/or species of concern. Due to the habitat already being altered with landscaping and non-native plants around the project area the likelihood of special status plants and animals being present is low.

The following mitigation measures are recommended to minimize impacts from development to animals that may be seasonally or temporarily present within the study area.

### 1.1. Potential Impact to Nesting Birds

Construction in the study area has the potential to disturb birds during the nesting season. Removal of vegetation and construction activity near trees and vegetated areas has the potential to disturb birds' nesting process.

#### 1.1.1. Avoidance Measure: Seasonal Avoidance

No nesting bird surveys are recommended if activity occurs in the **non-breeding season** (September to January). If development is to occur during the **breeding season** (February to August), a pre-construction survey is recommended within the 14 days prior to the onset of construction to ensure that no nesting birds will be disturbed during development.

Months During Which Preconstruction Surveys Are Required For Birds											
January	February	March	April	May	June	July	August	September	October	November	December
Legend											
	Surveys Are Not Needed										
	Surveys Are Needed										

#### 1.1.2. Avoidance Measure: Nest Avoidance

If active special status bird nests are observed, no ground disturbance activities shall occur within a 100-foot exclusion zone. These exclusion zones may vary depending on species, habitat and level of disturbance. The exclusion zone shall remain in place around the active nest until all young are no longer dependent upon the nest. A biologist should monitor the nest site weekly during the breeding season to ensure the buffer is sufficient to protect the nest site from potential disturbance.

#### 1.1.3. Avoidance Measure: Construction activities only during daylight hours

Construction should occur during daylight hours to limit disturbing construction noise and minimize artificial lights.

### 1.2. Potential Impact to Special Status Amphibians

Construction activities will involve walking across areas where amphibians may be traveling. Staging of materials and removal of construction debris could also disturb special status amphibians that may be hiding underneath these materials. To minimize impacts to amphibians, the following avoidance measures should be followed.

#### 1.2.1. Avoidance Measure: Contractor education

Within two weeks prior to construction activities, project contractors will be trained by a qualified biologist in the identification of the frogs and salamanders that occur along the Mendocino County coast. Workers will be trained to differentiate between special status and common species and



instructed on actions and communications required to be conducted in the event that special status amphibians are observed during construction.

**1.2.2. Avoidance Measure: Pre-construction search**

During ground disturbing activities, construction crews will begin each day with a visual search around the staging and impact area to detect the presence of amphibians.

**1.2.3. Avoidance Measure: Careful debris removal**

During construction and debris removal, any wood stockpiles should be moved carefully by hand in order to avoid accidental crushing or other damage to amphibians.

**1.2.4. Avoidance Measure: No construction during rain event**

If a rain event occurs during the ground disturbance period, all ground disturbing activities will cease for a period of 48 hours, starting after the rain stops.

Prior to resuming construction activities, trained construction crew member(s) will examine the site for the presence of special status amphibians.

If no special status amphibians are found during inspections, ground-disturbing activities may resume.

If a special status amphibian is detected, construction crews will stop all ground disturbing work and will contact the California Department of Fish and Wildlife (CDFW) or a qualified biologist. Clearance from CDFW will then be needed prior to reinitiating work. CDFW will need to be consulted and will need to be in agreement with protective measures needed for any potential special status amphibians.

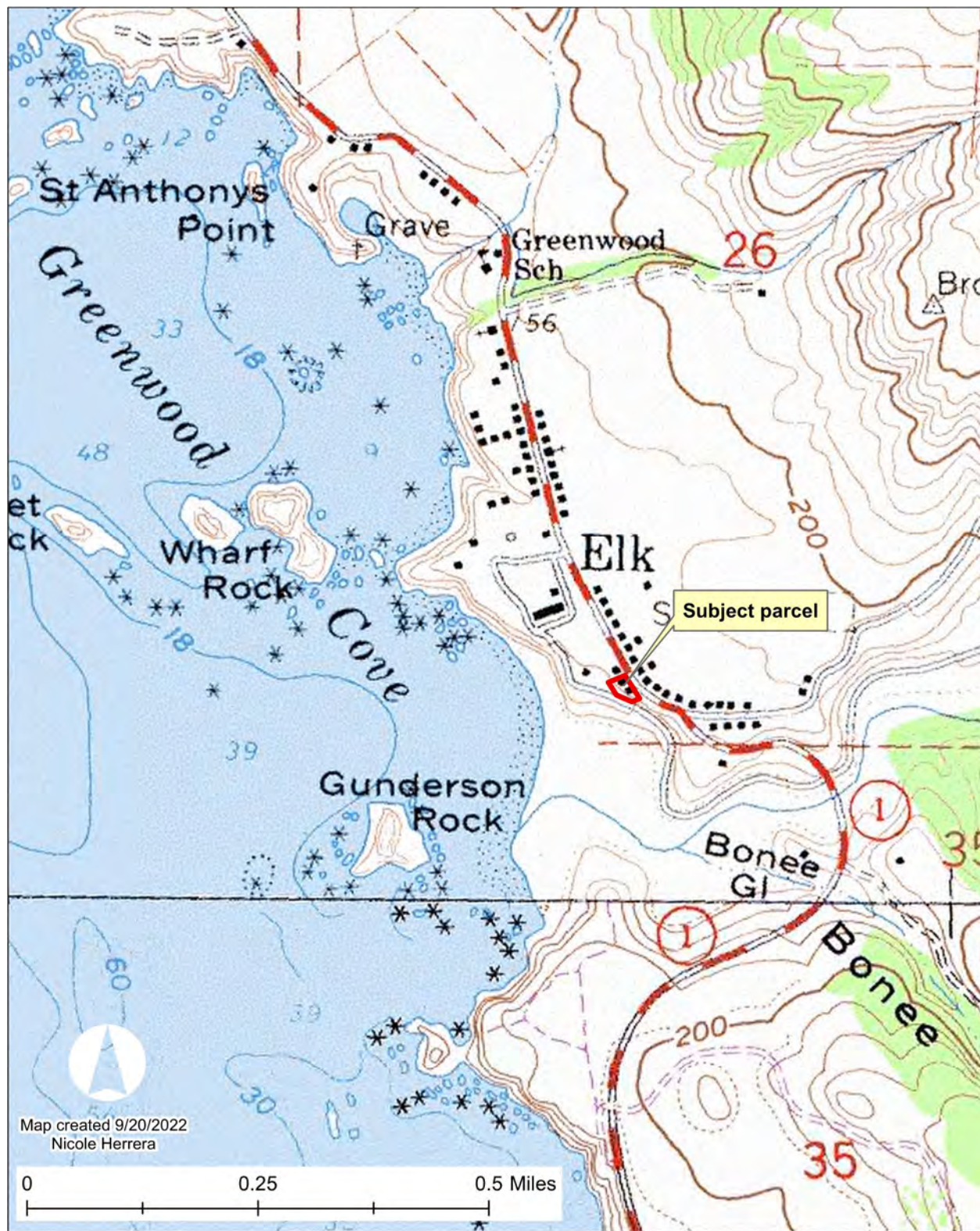
**Discussion:**

A stabilization structure is proposed along the western property line with the intent to halt uphill migration of the downslope erosion. The parcel is surrounded by residential development, Highway One, and California State Parks land. A trail leading down to Greenwood Creek State Beach is just downslope of the erosion area. The ecological conditions of the lot are degraded with non-native grasses and forbs dominating the vegetation in the surrounding project area. Proposed development is not expected to impact special status resources and mitigation measures recommended in this report address special status animals that have the potential to be seasonally or temporally present.

## **Biologist Biographies:**

**Asa B Spade** graduated from Humboldt State University with a Bachelor of Science majoring in Environmental Science, with a concentration in Landscape Ecosystems as well as a minor in Botany. Since that time, he has been working in the natural resources field, first with Mendocino County Environmental Health and later with California State Parks and the Department of Fish and Game. He has been trained in Army Corps wetland delineation by the Coastal Training Program at Elkhorn Slough and in Advanced Wetland Delineation by the Wetland Science and Coastal Training Program. He has been trained in the environmental compliance process for wetland projects in San Francisco bay and outer coastal areas. In 2011 Asa completed training to survey for California red-legged frog held by Elkhorn Slough Coastal Program. In 2015 he attended a Townsend's big eared bat basal hollow habitat assessment and survey methods workshop taught by Michael Baker, Leila Harris, and Adam Hutchins. Asa has trained with the Carex Working Group in identifying grasses and sedges of Northern California as well as a CNPS sedge workshop taught by CA Fish and Wildlife staff biologist Gordon Leppig. In 2019, he completed a training for burrowing owls taught by Dr. Lynne Trulio through the Elkhorn Slough Coastal Training Program and completed foothill yellow legged frog training taught by David Cook and Jeff Alvarez. Asa conducted field work for the Classification and Mapping of Mendocino Cypress Woodland and Related Vegetation using CNPS/CDFW Rapid Assessment/Relevé protocol. In 2021 Asa completed training by Jeff Alvarez and Jeff Wilcox on the eradication of bullfrogs within the range of California red-legged and foothill yellow legged frog. He is on the Fish and Wildlife Service approved list for Point Arena mountain beaver surveys and has done surveys for Behren's silverspot butterfly, Northern spotted owl, Sonoma tree vole, foothill yellow-legged frog and the California red-legged frog. He has contributed natural resources expertise to more than 200 coastal development projects in Mendocino County.

**Nicole Herrera** graduated from Gonzaga University with a Bachelor's Degree in Environmental Studies and a minor in Biology. After graduating, she worked as an intern for The Nature Conservancy conducting vegetation monitoring for the endangered golden-cheeked warbler. She served as an AmeriCorps member for the Watershed Stewards Program which aims to conserve, restore, and enhance anadromous watersheds for future generations. She worked as a fisheries technician conducting salmonid monitoring and habitat restoration for various agencies, including the California Department of Fish and Wildlife, Pacific States Marine Fisheries Commission, and the Bureau of Land Management. She also has experience planning and implementing northern spotted owl, Sonoma tree vole, and amphibian surveys. She has been trained in U.S. Army Corps of Engineers wetland delineation by the Wetland Training Institute, Inc. She is on the U.S. Fish and Wildlife Service's approved list for Point Arena mountain beaver and Behren's silverspot butterfly surveys. She completed the Bullfrog Control in California Field Workshop 2021 led by Jeff Alvarez and Jeff Wilcox held at a UC Berkeley Field Station.

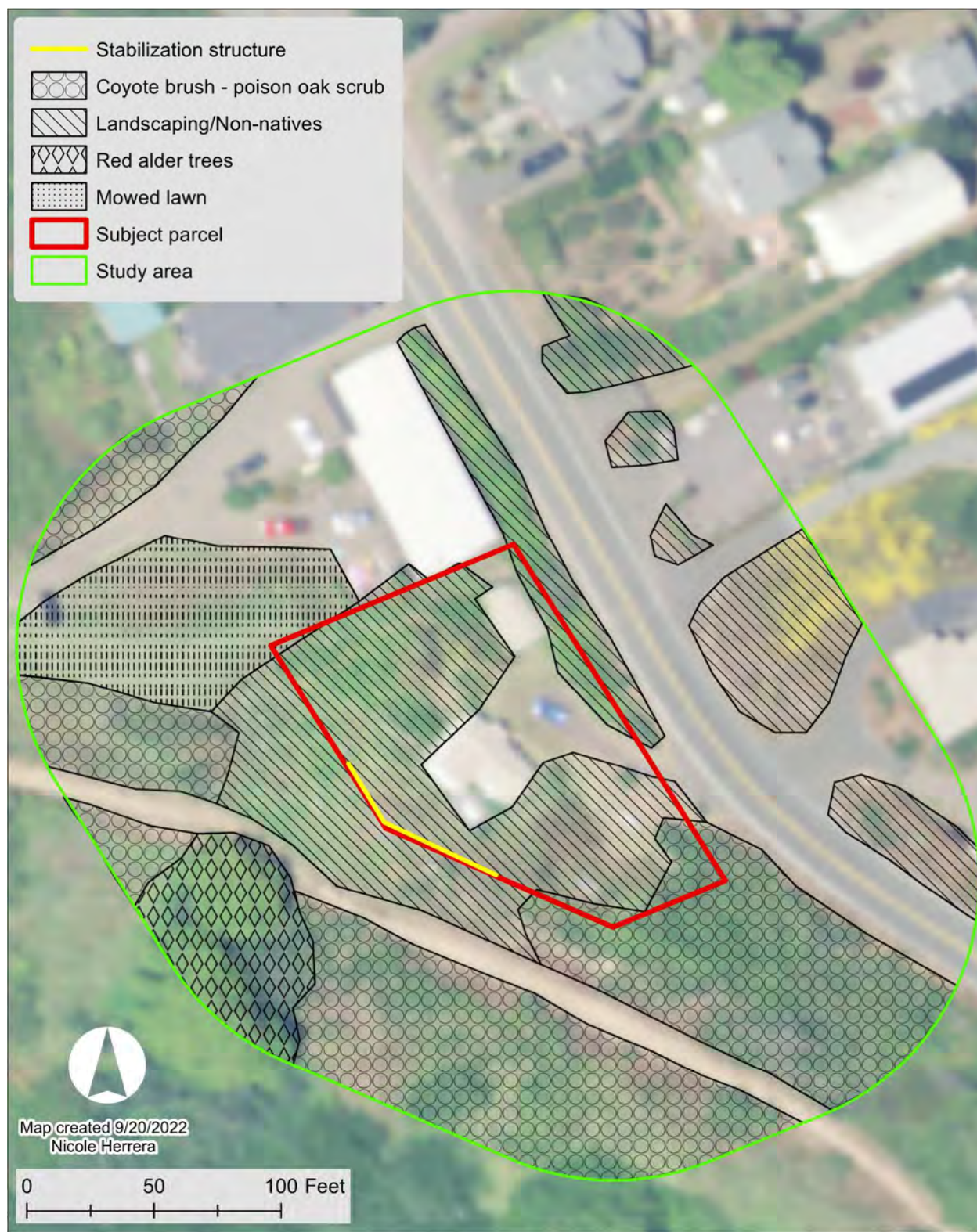


CLIENT: BACE-Kopriva  
APN: 127-200-06  
ADDRESS: 6170 S Hwy 1  
Elk, CA

## Location Map

Figure 1. Location of project area in relation to Elk, California.



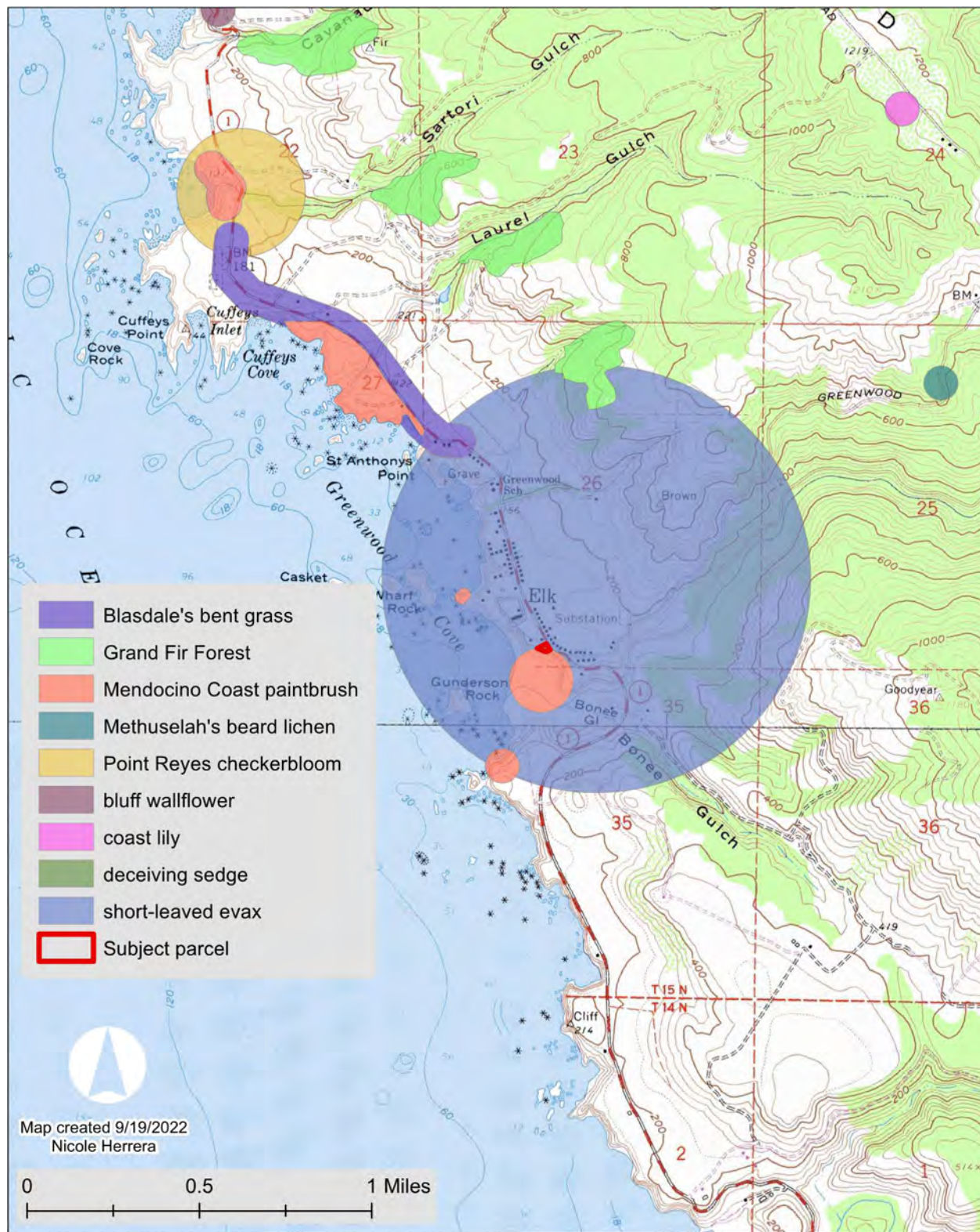


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## Plant Communities & Vegetation w/ Proposed Development

Figure 2. Map plant communities and vegetation with the proposed stabilization structure.



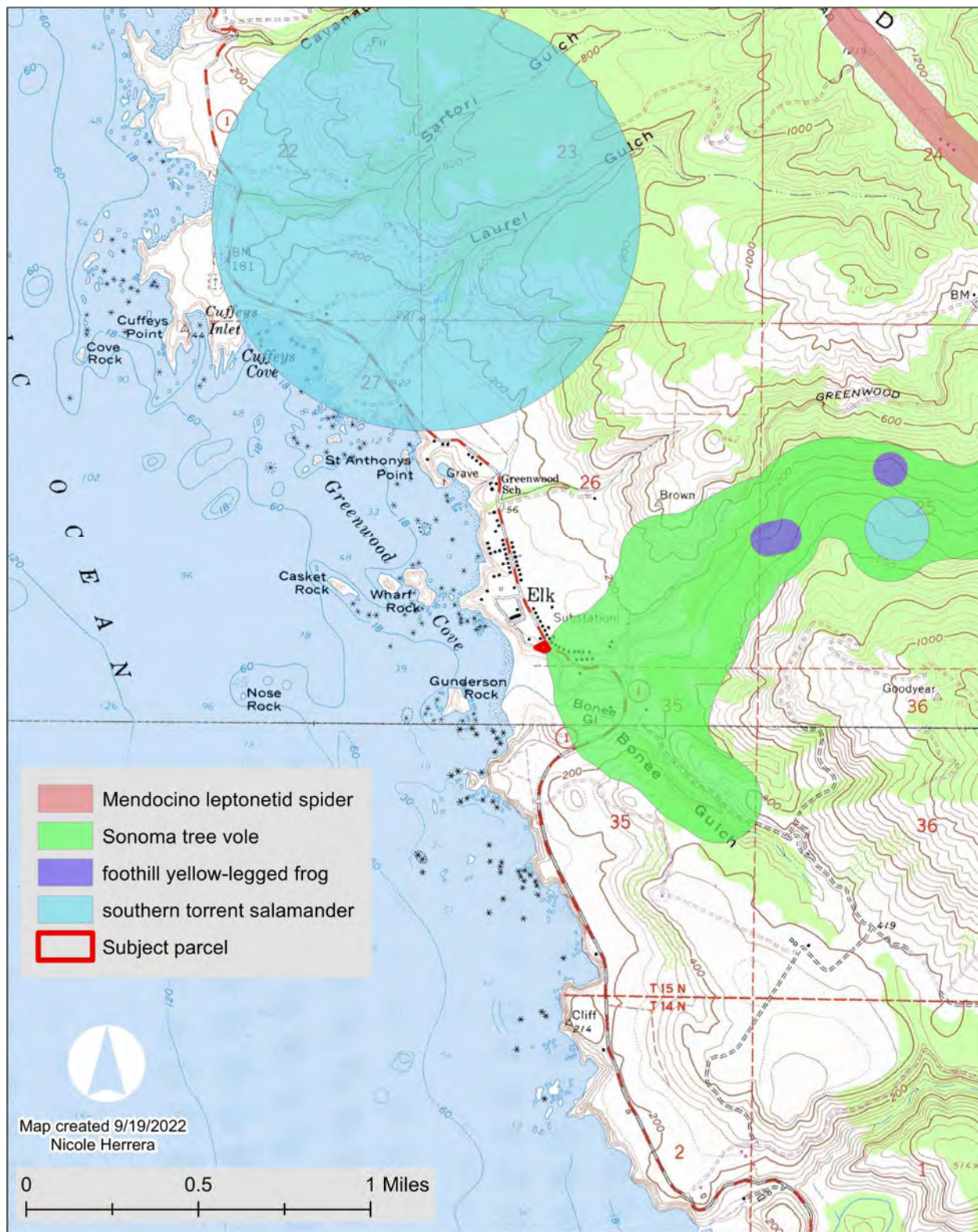


CLIENT: BACE-Kopriva  
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## CNDDDB Flora

Figure 3. Special status flora reported to CDFW in the proximity of the study area and recorded in the CNDDDB database.





CLIENT: BACE-Kopriva  
APN: 127-200-06  
ADDRESS: 6170 S Hwy 1  
Elk, CA

## CNDDDB Fauna

Figure 4. Special status fauna reported to CDFW in the proximity of the study area and recorded in the CNDDDB database.





*Figure 5. Non-native plants dominating eroding hillslope beneath residence.*



*Figure 6. Non-native grassland behind residence.*





*Figure 7. Coyote brush-poison oak scrub.*

Table 1. Nine-quad search of special status flora, fauna, and communities centered on the Elk quad.

Element Type	Scientific Name	Common Name	Federal Status	State Status	CDFW Status	CRPR
Animals - Amphibians	Ascaphus truei	Pacific tailed frog	None	None	SSC	-
Animals - Amphibians	Rana aurora	northern red-legged frog	None	None	SSC	-
Animals - Amphibians	Rana boylei	foothill yellow-legged frog	None	Endangered	SSC	-
Animals - Amphibians	Rana draytonii	California red-legged frog	Threatened	None	SSC	-
Animals - Amphibians	Rhyacotriton variegatus	southern torrent salamander	None	None	SSC	-
Animals - Amphibians	Taricha rivularis	red-bellied newt	None	None	SSC	-
Animals - Arachnids	Calileptoneta wapiti	Mendocino leptonetid spider	None	None	-	-
Animals - Birds	Elanus leucurus	white-tailed kite	None	None	FP	-
Animals - Birds	Brachyramphus marmoratus	marbled murrelet	Threatened	Endangered	-	-
Animals - Birds	Fratercula cirrhata	tufted puffin	None	None	SSC	-
Animals - Birds	Ardea herodias	great blue heron	None	None	-	-
Animals - Birds	Progne subis	purple martin	None	None	SSC	-
Animals - Birds	Hydrobates homochroa	ashy storm-petrel	None	None	SSC	-
Animals - Birds	Agelaius tricolor	tricolored blackbird	None	Threatened	SSC	-
Animals - Birds	Pandion haliaetus	osprey	None	None	WL	-
Animals - Birds	Pelecanus occidentalis californicus	California brown pelican	Delisted	Delisted	FP	-
Animals - Birds	Nannopterum auritum	double-crested cormorant	None	None	WL	-
Animals - Birds	Strix occidentalis caurina	Northern Spotted Owl	Threatened	Threatened	-	-
Animals - Fish	Hesperoleucus venustus navarroensis	northern coastal roach	None	None	SSC	-
Animals - Fish	Entosphenus tridentatus	Pacific lamprey	None	None	SSC	-
Animals - Fish	Oncorhynchus kisutch pop. 4	coho salmon - central Calif coast ESU	Endangered	Endangered	-	-
Animals - Fish	Oncorhynchus mykiss irideus pop. 16	steelhead - northern California DPS	Threatened	None	-	-
Animals - Fish	Oncorhynchus tshawytscha pop. 17	chinook salmon - California coastal ESU	Threatened	None	-	-
Animals - Insects	Bombus caliginosus	obscure bumble bee	None	None	-	-
Animals - Insects	Bombus occidentalis	western bumble bee	None	None	-	-
Animals - Insects	Atractelmis wawona	Wawona riffle beetle	None	None	-	-
Animals - Insects	Plebejus anna lotis	lotis blue butterfly	Endangered	None	-	-
Animals - Insects	Danaus plexippus plexippus pop. 1	monarch - California overwintering population	Candidate	None	-	-
Animals - Insects	Speyeria zerene behrensii	Behren's silverspot butterfly	Endangered	None	-	-
Animals - Mammals	Apodontia rufa nigra	Point Arena mountain beaver	Endangered	None	SSC	-
Animals - Mammals	Arborimus pomo	Sonoma tree vole	None	None	SSC	-
Animals - Mammals	Erethizon dorsatum	North American porcupine	None	None	-	-
Animals - Mammals	Corynorhinus townsendii	Townsend's big-eared bat	None	None	SSC	-
Animals - Mammals	Lasiurus cinereus	hoary bat	None	None	-	-
Animals - Mammals	Myotis yumanensis	Yuma myotis	None	None	-	-
Animals - Mollusks	Haliotis kamtschatkana	pinto abalone	None	None	-	-
Animals - Mollusks	Helminthoglypta arrosa pomoensis	Pomo bronze shoulderband	None	None	-	-
Animals - Mollusks	Margaritifera falcata	western pearlshell	None	None	-	-
Animals - Reptiles	Emys marmorata	western pond turtle	None	None	SSC	-
Community - Terrestrial	Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	None	None	-	-
Community - Terrestrial	Coastal Brackish Marsh	Coastal Brackish Marsh	None	None	-	-
Community - Terrestrial	Grand Fir Forest	Grand Fir Forest	None	None	-	-
Community - Terrestrial	Mendocino Pygmy Cypress Forest	Mendocino Pygmy Cypress Forest	None	None	-	-
Community - Terrestrial	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None	-	-
Community - Terrestrial	Sphagnum Bog	Sphagnum Bog	None	None	-	-
Plants - Bryophytes	Buxbaumia viridis	green shield-moss	None	None	-	2B.2
Plants - Lichens	Usnea longissima	Methuselah's beard lichen	None	None	-	4.2
Plants - Lichens	Ramalina thrausta	angel's hair lichen	None	None	-	2B.1
Plants - Vascular	Angelica lucida	sea-watch	None	None	-	4.2
Plants - Vascular	Erigeron supplex	supple daisy	None	None	-	1B.2
Plants - Vascular	Hesperoxys sparsiflora var. brevifolia	short-leaved evax	None	None	-	1B.2
Plants - Vascular	Lasthenia californica ssp. bakeri	Baker's goldfields	None	None	-	1B.2
Plants - Vascular	Lasthenia californica ssp. macrantha	perennial goldfields	None	None	-	1B.2
Plants - Vascular	Microseris borealis	northern microseris	None	None	-	2B.1
Plants - Vascular	Packera bolanderi var. bolanderi	seacoast ragwort	None	None	-	2B.2
Plants - Vascular	Erysimum concinnum	bluff wallflower	None	None	-	1B.2
Plants - Vascular	Streptanthus glandulosus ssp. hoffmanii	Hoffman's bristly jewelflower	None	None	-	1B.3
Plants - Vascular	Campanula californica	swamp harebell	None	None	-	1B.2
Plants - Vascular	Calystegia purpurata ssp. saxicola	coastal bluff morning-glory	None	None	-	1B.2
Plants - Vascular	Cuscuta pacifica var. papillata	Mendocino dodder	None	None	-	1B.2
Plants - Vascular	Cornus unalaschensis	bunchberry	None	None	-	2B.2
Plants - Vascular	Hesperocyparis macrocarpa	Monterey cypress	None	None	-	1B.2
Plants - Vascular	Hesperocyparis pygmaea	pygmy cypress	None	None	-	1B.2



Plants - Vascular	Carex californica	California sedge	None	None	-	2B.2
Plants - Vascular	Carex livida	livid sedge	None	None	-	2A
Plants - Vascular	Carex lyngbyei	Lyngbye's sedge	None	None	-	2B.2
Plants - Vascular	Carex saliniformis	deceiving sedge	None	None	-	1B.2
Plants - Vascular	Rhynchospora alba	white beaked-rush	None	None	-	2B.2
Plants - Vascular	Arctostaphylos nummularia ssp. mendocinensis	pygmy manzanita	None	None	-	1B.2
Plants - Vascular	Astragalus agnicidus	Humboldt County milk-vetch	None	Endangered	-	1B.1
Plants - Vascular	Hosackia gracilis	harlequin lotus	None	None	-	4.2
Plants - Vascular	Lathyrus palustris	marsh pea	None	None	-	2B.2
Plants - Vascular	Trifolium buckwestiorum	Santa Cruz clover	None	None	-	1B.1
Plants - Vascular	Trifolium trichocalyx	Monterey clover	Endangered	Endangered	-	1B.1
Plants - Vascular	Phacelia insularis var. continentis	North Coast phacelia	None	None	-	1B.2
Plants - Vascular	Juncus supiniformis	hair-leaved rush	None	None	-	2B.2
Plants - Vascular	Erythronium revolutum	coast fawn lily	None	None	-	2B.2
Plants - Vascular	Lilium maritimum	coast lily	None	None	-	1B.1
Plants - Vascular	Lilium rubescens	redwood lily	None	None	-	4.2
Plants - Vascular	Lycopodium clavatum	running-pine	None	None	-	4.1
Plants - Vascular	Sidalcea calycosa ssp. rhizomata	Point Reyes checkerbloom	None	None	-	1B.2
Plants - Vascular	Sidalcea malachroides	maple-leaved checkerbloom	None	None	-	4.2
Plants - Vascular	Sidalcea malviflora ssp. patula	Siskiyou checkerbloom	None	None	-	1B.2
Plants - Vascular	Sidalcea malviflora ssp. purpurea	purple-stemmed checkerbloom	None	None	-	1B.2
Plants - Vascular	Veratrum fimbriatum	fringed false-hellebore	None	None	-	4.3
Plants - Vascular	Pityopus californicus	California pinefoot	None	None	-	4.2
Plants - Vascular	Abronia umbellata var. breviflora	pink sand-verbena	None	None	-	1B.1
Plants - Vascular	Cypripedium montanum	mountain lady's-slipper	None	None	-	4.2
Plants - Vascular	Piperia candida	white-flowered rein orchid	None	None	-	1B.2
Plants - Vascular	Castilleja ambigua var. humboldtensis	Humboldt Bay owl's-clover	None	None	-	1B.2
Plants - Vascular	Castilleja litoralis	Oregon coast paintbrush	None	None	-	2B.2
Plants - Vascular	Castilleja mendocinensis	Mendocino Coast paintbrush	None	None	-	1B.2
Plants - Vascular	Cordylanthus tenuis ssp. brunneus	serpentine bird's-beak	None	None	-	4.3
Plants - Vascular	Kopsiopsis hookeri	small groundcone	None	None	-	2B.3
Plants - Vascular	Pinus contorta ssp. bolanderi	Bolander's beach pine	None	None	-	1B.2
Plants - Vascular	Agrostis blasdalei	Blasdale's bent grass	None	None	-	1B.2
Plants - Vascular	Calamagrostis bolanderi	Bolander's reed grass	None	None	-	4.2
Plants - Vascular	Calamagrostis crassiglumis	Thurber's reed grass	None	None	-	2B.1
Plants - Vascular	Pleuropogon hooverianus	North Coast semaphore grass	None	Threatened	-	1B.1
Plants - Vascular	Pleuropogon refractus	nodding semaphore grass	None	None	-	4.2
Plants - Vascular	Gilia capitata ssp. pacifica	Pacific gilia	None	None	-	1B.2
Plants - Vascular	Gilia millefoliata	dark-eyed gilia	None	None	-	1B.2
Plants - Vascular	Leptosiphon acicularis	bristly leptosiphon	None	None	-	4.2
Plants - Vascular	Chorizanthe howellii	Howell's spineflower	Endangered	Threatened	-	1B.2
Plants - Vascular	Coptis laciniata	Oregon goldthread	None	None	-	4.2
Plants - Vascular	Ceanothus gloriosus var. exaltatus	glory brush	None	None	-	4.3
Plants - Vascular	Ceanothus gloriosus var. gloriosus	Point Reyes ceanothus	None	None	-	4.3
Plants - Vascular	Sanguisorba officinalis	great burnet	None	None	-	2B.2
Plants - Vascular	Darlingtonia californica	California pitcherplant	None	None	-	4.2
Plants - Vascular	Chrysosplenium glechomifolium	Pacific golden saxifrage	None	None	-	4.3
Plants - Vascular	Mitellastrum caulescens	leafy-stemmed mitrewort	None	None	-	4.2



United States  
Department of  
Agriculture

**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Mendocino County, Western Part, California



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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## How Soil Surveys Are Made

---

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil



## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

## Soil Map

---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.



# Custom Soil Resource Report Soil Map


BACE - Kopriva Biological Scoping Survey Letter  
September 30, 2022




## Custom Soil Resource Report

### 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 1:24,000.

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: Mendocino County, Western Part, California  
Survey Area Data: Version 16, Sep 6, 2021

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

Date(s) aerial images were photographed: Apr 7, 2022—May 31, 2022

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.

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## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
139	Dystropepts, 30 to 75 percent slopes	2.1	63.2%
225	Windyhollow loam, 0 to 5 percent slopes	1.2	36.8%
<b>Totals for Area of Interest</b>		<b>3.3</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,



## Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Custom Soil Resource Report

## Mendocino County, Western Part, California

### 139—Dystropepts, 30 to 75 percent slopes

#### Map Unit Setting

*National map unit symbol:* hmlk  
*Elevation:* 10 to 1,500 feet  
*Mean annual precipitation:* 35 to 55 inches  
*Mean annual air temperature:* 48 to 57 degrees F  
*Frost-free period:* 250 to 330 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Dystropepts and similar soils:* 75 percent  
*Minor components:* 25 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Dystropepts

##### Setting

*Landform:* Marine terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Concave  
*Across-slope shape:* Convex  
*Parent material:* Residuum weathered from sandstone and shale

##### Properties and qualities

*Slope:* 30 to 75 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None

#### Minor Components

##### Rock outcrop

*Percent of map unit:* 10 percent  
*Landform:* Marine terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Concave  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

##### Vizcaino

*Percent of map unit:* 8 percent  
*Landform:* Marine terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Concave  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## Custom Soil Resource Report

### **Abalobadiah**

*Percent of map unit:* 7 percent  
*Landform:* Marine terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Riser  
*Down-slope shape:* Concave  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

## **225—Windyhollow loam, 0 to 5 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* hmq4  
*Elevation:* 0 to 980 feet  
*Mean annual precipitation:* 40 inches  
*Mean annual air temperature:* 54 degrees F  
*Frost-free period:* 250 to 330 days  
*Farmland classification:* Prime farmland if irrigated

### **Map Unit Composition**

*Windyhollow and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Description of Windyhollow**

#### **Setting**

*Landform:* Marine terraces  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Riser, tread  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Alluvium derived from igneous, metamorphic and sedimentary rock

#### **Typical profile**

*A - 0 to 16 inches:* loam  
*Bt1 - 16 to 24 inches:* clay loam  
*Bt2 - 24 to 43 inches:* gravelly clay loam  
*Bt3 - 43 to 61 inches:* clay loam

#### **Properties and qualities**

*Slope:* 0 to 5 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Somewhat poorly drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.60 in/hr)  
*Depth to water table:* About 30 to 48 inches  
*Frequency of flooding:* None



## Custom Soil Resource Report

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* High (about 9.3 inches)

### **Interpretive groups**

*Land capability classification (irrigated):* 2w

*Land capability classification (nonirrigated):* 3w

*Hydrologic Soil Group:* C

*Ecological site:* R004BY059CA - Loamy Terrace (Perennial Grass)

*Hydric soil rating:* No

### **Minor Components**

#### **Flumeville**

*Percent of map unit:* 4 percent

*Landform:* Marine terraces

*Hydric soil rating:* Yes

#### **Biaggi**

*Percent of map unit:* 4 percent

*Hydric soil rating:* No

#### **Mallopass**

*Percent of map unit:* 4 percent

*Hydric soil rating:* No

#### **Unnamed, steeper slopes**

*Percent of map unit:* 3 percent

*Hydric soil rating:* No

## References

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- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_054262](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262)
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053577](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577)
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053580](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580)
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

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United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)





September 20, 2022

### Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland

- Freshwater Emergent Wetland
  - Freshwater Forested/Shrub Wetland
  - Freshwater Pond
  - Lake
  - Other
  - Riverine
- WYNN COASTAL PLANNING & BIOLOGY

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

**From:** [Dixon, Jackie@Parks](mailto:Dixon,Jackie@Parks)  
**To:** [Tia Sar](#)  
**Subject:** EM\_2023-0002 State Park Comments  
**Date:** Thursday, August 24, 2023 2:18:33 PM

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Hi Tia,

Thanks for the chat about EM\_2023-0002.

As we discussed, State Parks is okay with this work being done, however we would like to ensure that the CDP addresses or includes the follow provisions:

- That no part of the structure will be visible. As we understand it, based on conversations with the engineer, the entire structure will be underground and therefore not visible. If this changes, we would like to be informed and be part of the design discussions.
- State Parks would like to be engaged in any landscaping and/or revegetation plans for this project. We'd like to see proposed plans, have a chance to review, and collaborate with the applicant before anything is planted. We suggest proposing native vines such as *Rubus ursinus*, the native blackberry, *Lonicera involucrata*, twinberry or something similar. We'd potentially like to see wax myrtle planted in this area. We are happy to discuss this with the applicant as their plans develop.
- None of the construction, access, or staging can be done on State Parks property unless we issue a Right of Entry Permit. The applicant may reach out to me if they need to acquire this permit.

I think that's it for now.

Thank you again and please keep us updated on this project.

Jackie

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